

# Broadcast Engineering<sup>®</sup>

THE JOURNAL OF DIGITAL TELEVISION

N A B 2 0 0 4

A  
winning  
hand



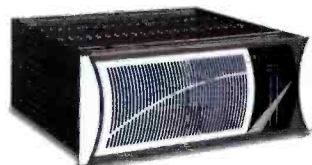
## NAB Preview

- 2003 Excellence Awards
- NAB map
- DTV marketplace
- FASTtrack

Digital Audio Network Router

# The Bridge

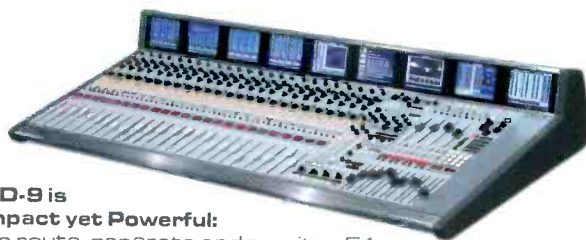
**The Bridge Router** can hold all the electronics you'll need for a small console: I/O cards, mix engines, and DSP processors. Naturally it can also have automatic fail-over DSP and CPU cards to keep you on-air. You can expand the system with a simple cage-to-cage interconnect.



## It's not just a Digital Console, IT'S AN ENTIRE AUDIO INFRASTRUCTURE

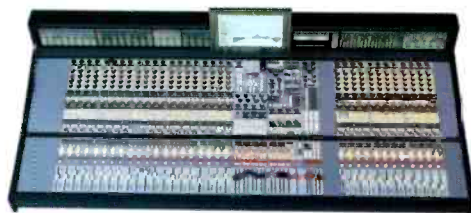
**YOU CAN START** with a simple AES router with analog and digital inputs and outputs. From there you can add logic I/O cards and scheduling software; you can link multiple master bridge cages together to achieve thousands and thousands of I/O ports; you can create a custom system that includes multiple smaller remote satellite cages— with everything interconnected via CAT5 or fiberoptic links.

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# Broadcast Engineering

THE JOURNAL OF DIGITAL TELEVISION

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We showcase the winning facilities.

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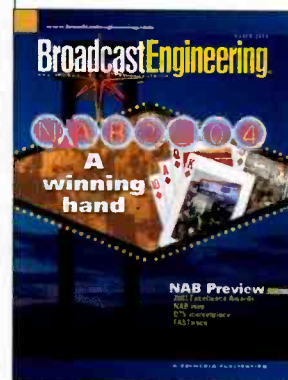
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**ON THE COVER:**  
Conceptual cover design by Robin Morsbach, associate art director.

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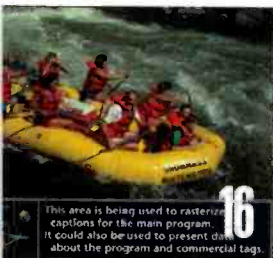
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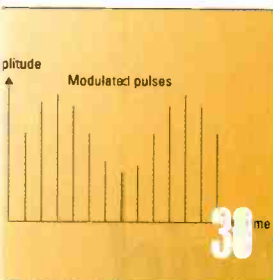
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This area is being used to rasterize captions for the main program. It could also be used to present data about the program and commercial tags.



30

A hand is shown holding a Panasonic P2 card, which is a solid-state storage device. The card is black with a blue and white P2 logo and the text "Panasonic" and "4.3" visible. The card is being held next to a laptop keyboard, which is partially visible in the background. The word "instant access" is written in large, bold, yellow letters across the top of the image.

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# Broadcast Engineering

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COMMENTS

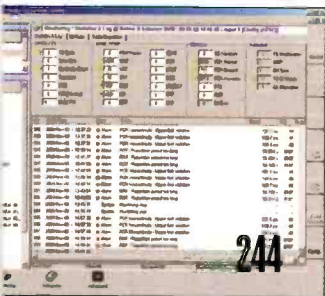
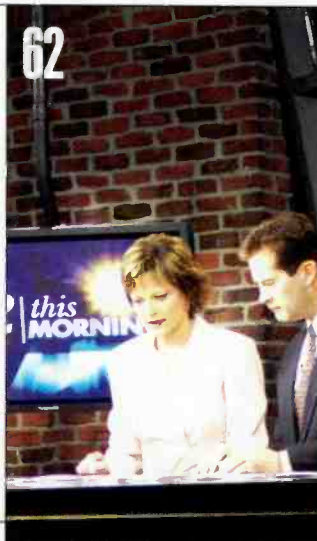
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Name this company

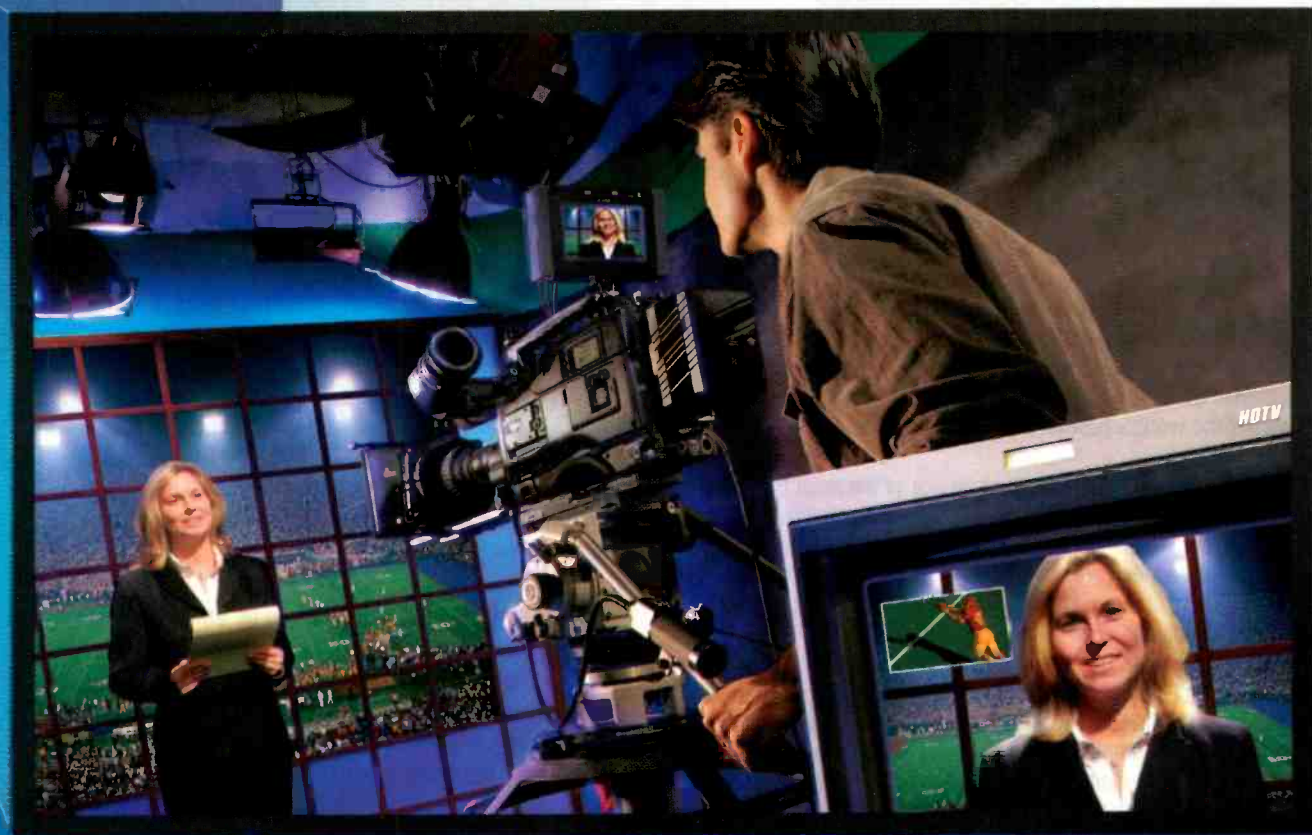
BROADCAST engineering



What former TV automation company went by a name that rhymes with bake and marketed a product called ALS? Entry must include both company and product name. Correct entries will be eligible for a drawing of *Broadcast Engineering* T-shirts. Enter by e-mail. Title your entry "Freeze-frame-March" in the subject field and send it to: [bdick@primediabusiness.com](mailto:bdick@primediabusiness.com). Correct answers received by May 17, 2004, are eligible to win.



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### Setting standards on principle

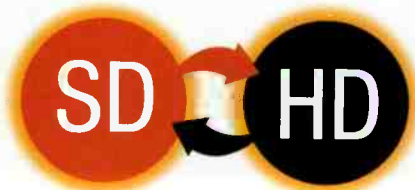
Every HD product with our name on it adheres to a common set of principles:

- It must support multiple formats, or be truly format and resolution independent
- It must be prepared for the future by being switchable, configurable, or easily upgradeable
- It must deliver superior quality images and/or sound
- It must be feature-rich and fully capable so as to exceed the highest industry benchmarks

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Media leaders worldwide are leveraging Grass Valley HD solutions because they want to bring their "A" game. They know that if they want to compete with the best content possible, it's imperative to demand the best.





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Today, our Grass Valley line of products is emerging as the de facto standard for mobile production. Over the last year, more mobile production companies in the U.S. and Europe standardized on our equipment than any other manufacturer. Some of them include:



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- New Century Productions
- Trio Video
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- LDK 5000 camera, field upgradeable from SD to HD
- LDK 6000 mk II WorldCam, a highly popular choice for multi-format production
- PVS 3000 Profile® XP Media Platform SD/HD server
- Kalypso Video Production Center and XtenDD switcher lines
- Trinix™ SD/HD digital video router
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## Play the cards

**Y**ou've heard the crying. Boo hoo, it's tough out there. We're not making any money (or not as much as we used to). Those mean 'ol cable and satellite guys are taking our audience. They don't even pay us for our programming. Blah blah blah.

While I've talked as much as anyone about the problems broadcasters face, I recently had my spirits lifted while attending the fourth Digital TV conference co-sponsored by *Broadcast Engineering* magazine.



The conference focused on ways stations can become competitive using some of the new digital technology that's available. During a breakfast seminar, three new companies, all targeting the digital delivery of content and data, presented some interesting new thoughts on how stations can survive and prosper — i.e., make money with DTV spectrum. However, to take advantage of these solutions, stations have to re-examine their business model.

All those of us old enough to remember the days of black-and-white television have ever known is the broadcast model where stations use their one channel assignment to transmit one program. Pretty boring if you think about it, especially in light of what digital can do.

What if broadcasters gave up on the one-channel-one-program model, and instead implemented a wideband digital transmission model saying, "Here's my bit bucket, what do you want to transmit?" Now, instead of each station attempting to fill all that bit bucket, why not lease whatever bit-space isn't needed by the station to someone else? Let them fill it with something that generates revenue and pay the station for that access.

This service could offer regular broadcast TV, including the local station's SD and HD signals, plus 20 to 30 channels of cable and pay-per-view, subscription programming and even Internet service. Assume this new service was less expensive than cable or satellite. The local station wouldn't have to be involved in program acquisition, rights, installation or subscriber billing. All you'd have to do is become a digital pipe and collect the checks. Interested?

It may sound too easy, but there's already a service on the air doing just this. It's called US Digital TV and it's based in Salt Lake City.

For less than \$20 per month, subscribers get broadcast SD and HD plus 25 other channels. The key to getting this service off the ground was for the local stations to cooperate by allowing a third party to use their excess spectrum.

Does it work? You bet it works. And it's only one of the three business models proposed at the DTV conference. Other proposals for similar digital broadcast-friendly ventures were presented by All TV Connect and Cache Networks.

These are only three of the new venture ideas floating around out there. Many more are just getting off the ground. Broadcasters have been dealt a winning hand of digital cards. All we have to do is play them. **BE**

*Broad Dick*

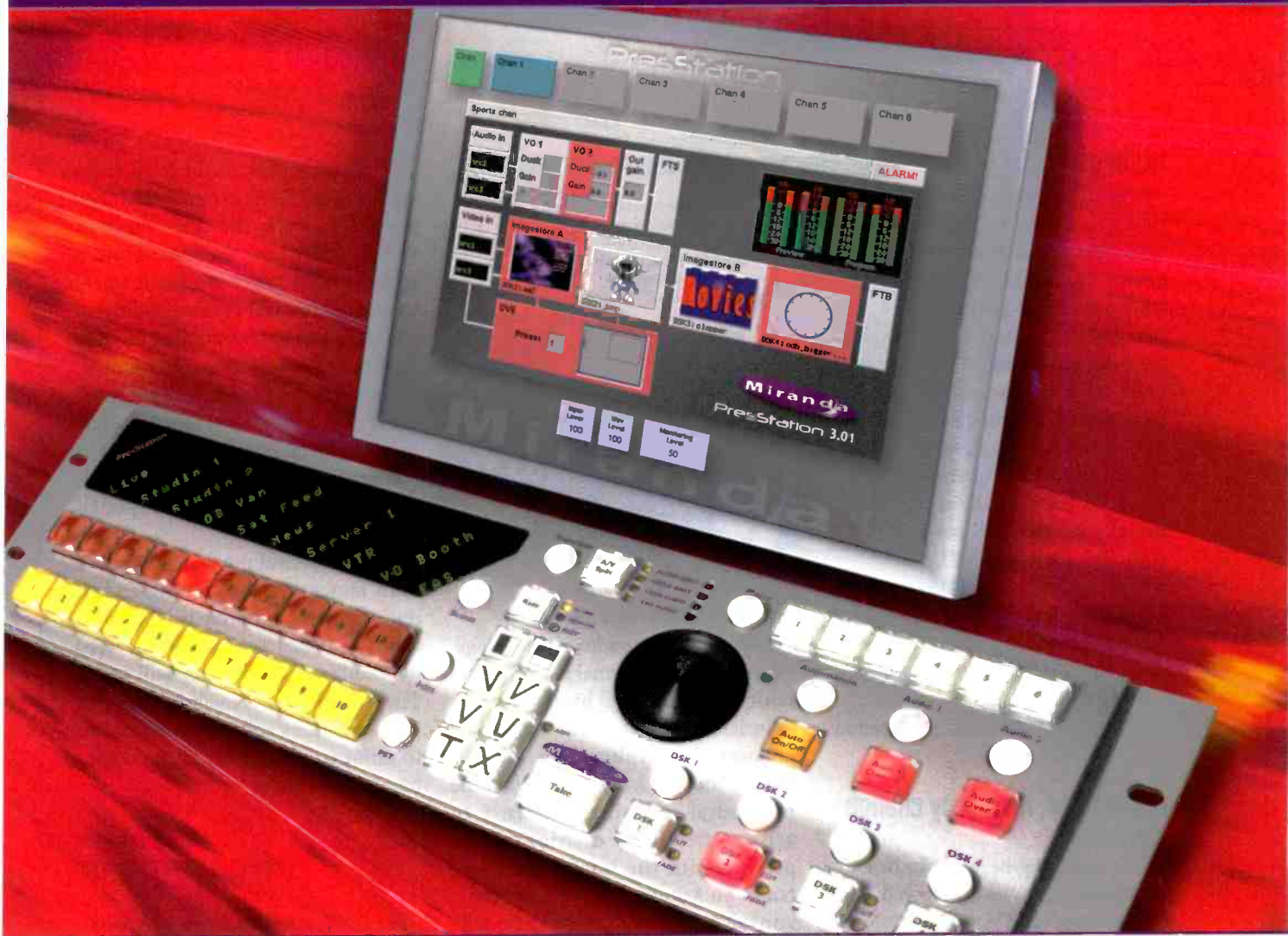
editorial director

Send comments to: • [editor@primediabusiness.com](mailto:editor@primediabusiness.com) • [www.broadcastengineering.com](http://www.broadcastengineering.com)

# PRES STATION

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## HD bugs

In your January editorial, you forgot to mention that local stations power down their digital transmitter for a day or two (with no explanation) for maintenance or to let someone else install their digital antenna, etc. Also, there is either a poor guide to HD programming, or none at all, especially on the PBS station in Orlando, FL, which is running the PBS high-def feed part-time, separate from their analog feed (when they don't have their hand out for money).

CHARLES E. THOMPSON

## Audio rates, frequency change

Michael:

This one may be foolish, but I've wondered if movies are slowed down for viewing on TV, since the NTSC field rate is 59.94 per second. I calculate that this adds a few seconds per hour of material. I know it's only 0.1 of one percent, but would this be enough to change, for example, the pitch of music? Would someone with perfect pitch notice the difference? Or is some other compensation made when telecining movies to video?

Another question, I understand that they changed the scan rate from 15750 to 15734.25 to make the 227th and 228th harmonics of this frequency just straddle the color subcarrier at 3.579545MHz. But what were the reasons for locating the color subcarrier at that frequency, rather than one that would have allowed the horizontal scan frequency to stay as it was?

JAY SCLAR  
WYCKOFF, NJ



Michael Robin responds:

Concerning the audio pitch change, I don't think any normal person would notice or be annoyed by it!

Concerning the location of the chrominance subcarrier, its frequency must be a multiple of half the horizontal scanning frequency to achieve frequency division multiplexing with the luminance spectrum. So keeping the original horizontal scanning frequency unchanged, the audio carrier frequency would have to be changed. This was entirely possible and would have worked quite well, but the FCC objected to this approach and now we are stuck with the consequences. This was one of the "wise" FCC decisions.

## Outsourcing

Dear Brad,

I was perplexed by your editorial in the November 2003 issue. Since I learned about *Broadcast Engineering* in the mid-60s, I have looked to this magazine for industry news and insight into new technologies, and felt it was geared to "in-the-trenches" engineers. However, I read you to be saying that there is no more use for staff engineers. Maybe not even a chief engineer in the long haul. And maybe that is inevitable.

In my early days, at the local radio station that I hung around until they put me to work, the chief engineer talked about how the management sector desired to get to a point where they could just call the local radio and TV service shop (we still had those in the 60s) when something went wrong. I thought "never," but his prophesy has come true. Maybe it isn't the local service shop getting the business, but the contract engineers, corporate engineers and, as you suggest, the specialist companies.

What perplexed me was that, rather than lamenting the coming end of staff engineers, you seem to be encouraging it. At that point, I feel the need for *Broadcast Engineering* will cease. The base of readers will be so small that advertisers will find other means to influence those purchasing equipment and services.

MIKE DANIELS  
WTVQ-TV/WTVQ-DT

Brad Dick, editorial director, responds:  
Mike:

I recall the early days of TV automation. My fellow engineers complained bitterly about the use of the new technology. But you know what? It came anyway, and it made stations more efficient. The result was that those engineers who saw the technological change as an opportunity, rather than a threat, got to keep their jobs.

Change is uncomfortable, sometimes in bitter ways. And complaining won't change the inevitable. The desire for increased efficiency drives perhaps most business decisions in some way. Today, that desire for improved efficiency, better workflow if you prefer, can be a factor in 90 percent of the equipment-buying decisions. We can either embrace change or be run over by it. When is the last time you saw a "TV repair shop"? **BE**

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# Multichannel bitcasting

BY CRAIG BIRKMAIER

In February, this column examined a hot new topic in the broadcast industry: digital workflow. That column touched upon the history behind the development of standards to manage digital assets — not just the *essence media* (audio and video streams) that we broadcast today, but the *metadata* that is produced from the moment a program is conceived to the moment that a version of the final program is aired.

erates that operate the six largest broadcast television networks.

We noted that this could be the year of MXF (Material Exchange Format) at NAB, as traditional video equipment manufacturers announce plans to use MXF to manage metadata from acquisition to emission.

It seems only fitting that we segue from this examination of what the large media conglomerates are doing to prepare for the future of digital tele-

## Multiple channels and still nothing to watch

Just weeks ago, when the decision was made to link the subjects of digital asset management with multichannel broadcasting through these columns, the task looked manageable. Then the dominos started falling.

It was expected that the FCC would release its Further Notice of Proposed Rulemaking on Cable Carriage of DTV broadcasts by the end of January. The original order only requires cable companies to carry the primary video from a broadcaster. The cable industry is drooling over the prospect of challenging any FCC order that would require them to carry multicasts. This would provide an opportunity to mount a new challenge to existing must-carry and retransmission consent regulations; regulations that were nearly overturned by the Supreme Court when they were challenged in the mid-90s.

Broadcasters continue to push for carriage of the entire digital multiplex, and have been telling the FCC and Congress that they would develop new channels to fill these multiplexes. Proposals include weather channels, news channels and maybe even a few slots for public affairs.

What is not clear is who is going to watch these channels, and how broadcasters can turn a profit programming them. The OTA audience is too small to make this strategy viable; cable carriage is critical. But the multichannel services already offer many similar channels; they see no legitimate reason to give broadcasters more real estate on their systems. What broadcasters would like is to carry the channels now carried by cable, but this opens a huge can of worms in terms of who has the right to carry what and the



**The cable industry is drooling over the prospect of challenging any FCC order that would require them to carry multicasts.**

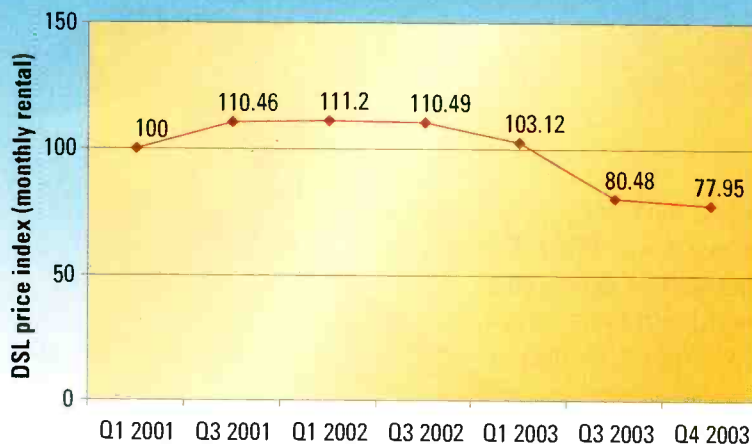
We also touched on the development of network operations centers for the large multichannel “broadcasters” of today: companies such as Turner Broadcasting, Discovery Networks, ESPN and a host of other cable networks, many of which are now owned and operated by the media conglomerates.

vision, to an examination of the implications their actions may have with respect to the future of free-to-air local broadcasting. Many industry leaders and pundits now believe this future will involve the delivery of multiple channels in each broadcaster’s digital multiplex.

## FRAME GRAB A look at the issues driving today's technology

### DSL rental prices begin to stabilize

Worldwide trend is clearly headed downward

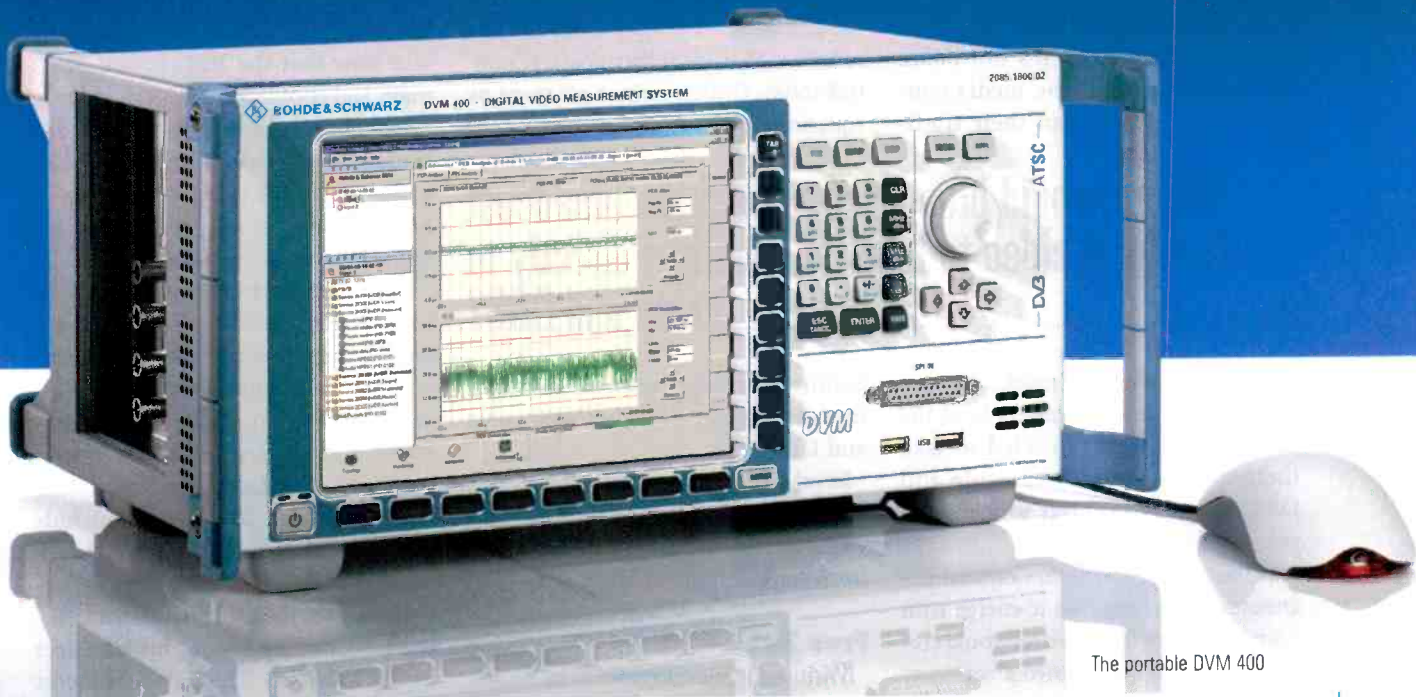


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The single/dual-stream DVM 50



right to insert local commercials into these channels.

For the moment it appears that the FCC has tabled any action on this subject, lacking a consensus on how to move forward.

Local broadcast affiliates have little leverage in their attempts to balance their power against the media conglomerates, other than their tradi-

tion with the largest provider of multichannel DBS services, not just in the United States, but also in Europe, South America, Asia and Australia.

The handwriting is on the wall. The media conglomerates do not need local affiliates; what they want are the revenues that local broadcasters control today. If they cannot get there by squeezing affiliates and pressuring the

that can receive about 30 advertiser-supported channels in the clear. In the UK, Freeview now has more than two million "subscribers," again with about 30 channels delivered in the clear. The annual TV receiver license fee in the UK helps to pay for this service now that the BBC is one of its main stakeholders.

Some of our representatives are curious as to how all of this is possible, and if any of the things happening in Europe could be adapted here to get the DTV transition moving.

They may have an opportunity to learn firsthand why the U.S. DTV system is ill-equipped to provide a competitive multichannel service. Late last year, USDTV announced the availability of a multichannel subscription package in Salt Lake City. The service will offer about 20 channels, including all local digital broadcasts and a number of cable networks. The capacity to deliver the cable networks is being provided by several broadcasters in Salt Lake City. The service will cost \$19.95 per month.

A receiver will cost \$95 with a one-year service agreement; an additional receiver will cost \$49.95 and will add another \$4.95 per month in subscription fees. The HD-capable ATSC receivers are being sold at several retail locations in

## Where would broadcasters be if the broadcast networks decided to take their content directly to cable and DBS?

tional role as the local gatekeepers.

Where would broadcasters be if the broadcast networks decided to take their content directly to cable and DBS? You may find out sooner than you would like ...

As this is being written, Comcast has announced its intention to merge with Disney. If approved, this deal would create the world's largest media company and deliver one of the four major broadcast networks into the hands of the largest multichannel cable television provider in the United States. This just after the government approved the merger of Newscorp with DirecTV, combining the FOX programming em-

politicians to raise the ownership caps, they can just take their content to cable and DBS and ...

Local broadcasters certainly do not want to go there. But can they convince the politicians to prevent this from happening?

### Free TV?

Meanwhile, developments in multichannel broadcasting in Great Britain and Germany have attracted the attention of politicians here in the United States. Analog broadcasts in the region surrounding Berlin have been shut down. In their place, the public can buy an inexpensive DVB set-top box

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## Multiple Orders...

In 2003 Euphonix received more than seven multiple orders for its Max Air and System 5-B digital audio mixing consoles. These orders illustrate growing market acceptance of Euphonix's latest digital audio broadcast console Max Air, and continued customer satisfaction of the highly regarded, System 5-B.

Examples of recent multiple sales of Max Air have included (3) Max Air consoles to CNN in New York, (2) Max Air consoles to CNN in Atlanta, (2) Max Air consoles to Tribune Studios in Los Angeles and (3) Max Air consoles to WIPR in San Juan, Puerto Rico.

Multiple sales of System 5-B consoles have included (3) System 5 consoles to Western Mobile Television, (2) System 5 consoles to NBC for *The Tonight Show* in Los Angeles, and (2) System 5-B's to CBC in Canada.

## Three Euphonix System 5 Digital Audio Mixing Consoles for NBC Burbank

NBC Studios now has three Euphonix all digital mixing consoles at their Burbank studios. Two of the three Euphonix System 5 digital mixing consoles are located in NBC's Studio 3, joining an existing Euphonix CS3000B broadcast production console. All three are used for *The Tonight Show with Jay Leno*, which airs nightly on NBC.

KNBC's local news studio upgraded to a System 5-B at the end of 2003 to handle the increased audio complexity of their daily news broadcasts. Telemundo KVEA moved their System 5-B console onto the NBC lot. The console is used in the production of Spanish language programming.



## CBC Radio Buys a Second Euphonix System 5-B After Going Live with Their First

The Canadian Broadcasting Corporation (CBC) Radio, Canada's national public broadcaster has again selected Euphonix's System 5-B digital audio console. The decision to purchase a second console came shortly on the heels of the first, which they use for production work in their world class Toronto Radio Drama studio.

Radio Network Operations Manager, John McCarthy explained, "The new System 5-B will be put to heavy use over the next several years to satisfy the demand for our new fully digital remote recording truck. We made the decision to purchase the first Euphonix System 5 due to its powerful and intuitive control surface." McCarthy continued, "We ordered a second System 5-B after discovering how easy the console is to use and understand, and our engineers love the sound."

## Digital Audio Mixing Products for Broadcast

SYSTEM 5-B  
DIGITAL AUDIO BROADCAST



**System 5-B** is Euphonix's top of the line digital audio broadcast mixing system designed for larger installations. System 5-B has 8 knobs per channel, hi-res stereo meters next to each fader and a color TFT screen at the top of each channel showing routing, metering and panning graphs. The system can be expanded with over 300 channels and is fitted with full dynamic automation for live/post applications.

Max Air  
DIGITAL AUDIO BROADCAST



### Max Air

Max Air is a compact and cost effective on-air digital audio mixing solution. Max Air has 96 channels, 24 mix busses, 16 aux sends and 24 mix minus/clean feeds plus a dedicated mix minus bus with N-1 feeds from each channel. Each channel strip includes 4 knobs, with a central assignable Superchannel. Max Air has been designed to be fast, easy to learn and use, with a highly intuitive touch screen display for master functions.

Both systems make use of the same rugged routing, DSP and I/O hardware, and both have comprehensive redundancy packages designed for reliable on-air operation. Each console is fully 5.1 surround capable.

## Puerto Rico's Tu Universo Television Orders Three Euphonix Max Air Consoles

Tu Universo Television (TUTV), a PBS station in Puerto Rico, is upgrading its main broadcast and production facilities with three Euphonix Max Air consoles. They will be installed in the summer of 2004 in TUTV studios in San Juan. TUTV is planning to use the systems for all its productions and news.

Director of Engineering, Jorge Gonzalez explained what made TUTV purchase not one but three Euphonix Max Air consoles, "The Euphonix Max Air digital console was evaluated as part of a public bid. What distinguished Max Air from the rest of the consoles was its advanced design, reliability and value. Ergonomically, it was created for fast access and control. System and power supply redundancy made us feel comfortable in critical live on-air situations. And lastly, Max Air is not only high performing but also cost-effective."

## Austin's KVUE Installs Max Air Digital Audio Console



KVUE in Austin Texas recently completed the installation of a 96-channel Max Air digital audio mixing console as part of their upgrade to an all-digital station. With *Daybreak*, a two-hour morning show, and four separate newscasts each day, the station needed a flexible console that was able to switch quickly between

broadcasts. Assistant Chief Engineer, Ernie Saldaña commented, "Max Air covered all of our requirements including additional channels. The console is all-digital and opens up the possibility of incorporating surround elements into our local shows—it will make a big difference to our broadcasts. It also makes it easier for us to handle ABC's surround content."

## WCPO Cincinnati Orders a Second Euphonix System 5-B



WCPO-TV9 in Cincinnati Ohio, an ABC-affiliate station, owned by E.W. Scripps, has purchased their second Euphonix System 5-B digital broadcast console in less than two years.

Director of Engineering, Joe Martinelli explains, "We have always been very impressed with the 32 fader System 5-B that we purchased nearly two years ago. We've really appreciated the dependability of the console, as well as the great customer support from Euphonix."

The newly purchased 24 fader System 5-B, will be used in the studio's Production Studio B for broadcasting popular programs such as *Sports of all Sorts*, *Around the House*, and *Hot Seat*.

## KUTV Installs Max Air After Euphonix Broadcast Tour Demo



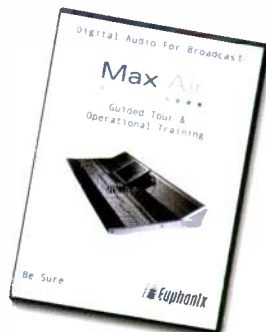
KUTV2, the station Utah Broadcasters Association named the best newscast in the market and Utah's most watched TV station, has recently installed a Euphonix Max Air console. The CBS Television Network decided to purchase the console after an on-site station visit by the Euphonix Max Air Broadcast Tour.

KUTV's Chief Engineer, Kipp Greene, remarked, "We were looking for a full-featured digital console that was reliable and affordable. It was great to have the Max Air Broadcast Tour come to our station. The Tour made it very easy for us to demo Max Air and conclude that the console met our needs in both operational efficiency and cost-effectiveness. We are very pleased with the performance and the excellent support we get from Euphonix."

## Training and Information

Learn More At: [www.euphonix.com](http://www.euphonix.com)

### Max Air Training & Overview DVD



Hot off the press is a Euphonix DVD that takes a close look at the Max Air all-digital broadcast console. The DVD includes a 15 minute video guided tour of the Max Air system covering all the main features. Also included is an operational tutorial, which can be used as a hands-on introduction to working with Max Air, as well as a reference for those already familiar with the console.

### System 5-B & Max Air Guided Tour Booklets

Two recently published 36 page high resolution pdf documents take an in-depth look at these popular and powerful on-air audio mixing systems. Go to the broadcast section of the Euphonix Web site and then to the Max Air or System 5-B pages.



# Let Us Come to You...

Make sure you don't miss your chance to 'Take it to the Max' with the latest digital audio console.

Max Air. See our US Max Air Broadcast Tour dates for the days we will be in your area. If your station is located in one of the cities and you would like the Tour to stop by your facility, please contact our Euphonix Sales Coordinator: Jonathan McDonell at (650) 846-1114 [jmcdonell@euphonix.com].

The Euphonix Max Air US Broadcast Tour demonstration vehicle will come directly to your station.



This specially commissioned truck is outfitted with a 96 channel Max Air mixing system and is set-up to simulate a local TV station digital audio control room with playback of 48 channels of digital audio and 8 video streams, which includes program, preview and 6 camera/OB sources.

## About Euphonix

Euphonix is a leading manufacturer of large format digital audio mixing consoles, converters and routers for live broadcast applications. This year Euphonix celebrates 16 years of success and innovation in the professional audio industry. Founded in 1988 in the Silicon Valley, Euphonix has satisfied more large format digital console users worldwide than any other manufacturer.



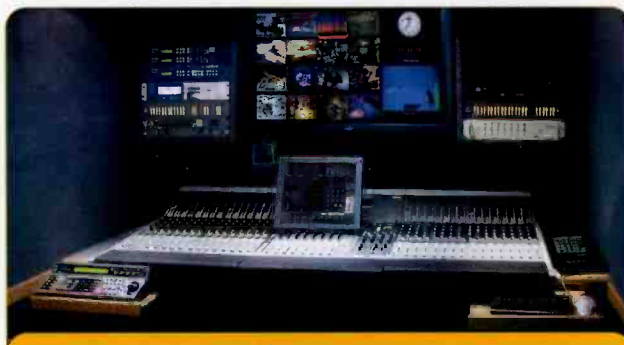
The Euphonix broadcast product line includes the all-digital System 5-B mixing console, which has been shipping

for over four years, and the powerful new Max Air mixing system designed to make the transition to digital affordable for all stations.

Euphonix maintains direct sales and service facilities around the world together with an extensive network of distributors.

With over 150 audio mixing systems installed in on-air TV broadcast facilities, Euphonix has a strong and loyal client base including ABC & Seven Network Australia, Canal + France, CCTV China, CBC Canada, NHK Japan, Television New Zealand, and in the US, CNN, Harpo (Oprah), In Touch Ministries, KCBS, KUTV (CBS), National Mobile Television, NBC Network News, NBC (Tonight Show), Paramount Pictures, Telemundo, Tribune Broadcasting, TUTV Puerto Rico, WCPO (ABC), WEDU (PBS), Westwood One, and WFLD (Fox).

digital emotion



### Extended US/Canada Max Air Broadcast Tour Dates

#### 2004

Mon Mar 01	Fri Mar 19	San Francisco Bay Area, CA
Mon Mar 22	Fri Mar 26	Salem, Portland, OR
Mon Mar 29	Fri Apr 02	Seattle, WA, Vancouver, BC
Mon Apr 05	Fri Apr 09	Caldwell, Nampa, Boise, MT
Mon Apr 12	Tue Apr 13	Henderson, Las Vegas, NV

Wed April 14 - Sat April 17 Visit Euphonix at the PBS Conference in Las Vegas  
 Mon April 19 - Thu April 22 Visit Euphonix at NAB 2004, Booth #N3616, Las Vegas

Fri Apr 23	Fri Apr 23	Las Vegas, NV
Mon Apr 26	Fri Apr 30	Provo, Salt Lake City, UT
Mon May 03	Fri May 07	Pocatello, Idaho Falls, Helena, MT
Mon May 10	Fri May 14	Butte, Bozeman, Billings, MT
Mon May 17	Fri May 21	Casper, Cheyenne, WY
Mon May 24	Fri May 28	Denver, Colorado Springs, CO
Mon May 31	Fri Jun 04	Lincoln, Omaha, NE
Mon Jun 07	Fri Jun 11	Des Moines, IA, Milwaukee, WI
Mon Jun 14	Fri Jun 18	Chicago, IL, Indianapolis, IN
Mon Jun 21	Fri Jun 25	Cincinnati, Columbus, Cleveland, OH
Mon Jun 28	Fri Jul 02	Buffalo, NY, Toronto, Canada
Mon Jul 05	Fri Jul 09	Rochester, Syracuse, NY
Mon Jul 12	Fri Jul 16	Boston, MA
Mon Jul 19	Fri Jul 23	Portland, ME, Providence, RI, Hartford, CT
Mon Jul 26	Fri Jul 30	New York, NY, Newark, NJ
Mon Aug 02	Fri Aug 06	Philadelphia, PA, Wilmington, DE
Mon Aug 09	Fri Aug 13	Baltimore, MD, Washington D.C.
Mon Aug 16	Fri Aug 20	Richmond, Norfolk, VA
Mon Aug 23	Fri Aug 27	Durham, Raleigh, NC

For the most up-to-date tour news and international tour listings, please see our Web site at: [www.euphonix.com/tour/](http://www.euphonix.com/tour/)

### US Tour Sponsors

The companies listed below have provided audio and video equipment that interfaces with Max Air to help create a realistic state-of-the-art digital broadcast environment.

#### Main Sponsors:

- **Accom** - Abekas® 6000 Video Production Server
- **Miranda** - Kaleido-K2 Monitor Wall Processor
- **Pioneer** - PDP-433CMX 43" plasma display

#### Co-Sponsors:

- 360 Systems • Clear-Com • DK-Audio America
- Dolby Laboratories • Genelec • NVISION • TC Electronic
- TerraSonde • Wohler Technologies

### Euphonix Contact Information

#### Headquarters:

Palo Alto, CA, USA (650) 855-0400  
 (Pacrim Sales Distribution, Tech Support, Manufacturing, and R&D)

#### Local Sales & Support Centers:

West USA & S. America - Los Angeles, CA, USA (818) 766-1666

South & Central USA - Nashville, TN, USA (615) 327-2933

North East USA - New York, NY, USA (212) 889-6869

Europe - London, UK +44 (0)20 7267-1226

Japan - Tokyo, Japan +81 (0)3 3288-4423

[www.euphonix.com](http://www.euphonix.com)

## Web links

USDTV multichannel subscription service

[www.usdtv.com](http://www.usdtv.com)

Webware: Content Management 101

[www.webwarecorp.com/about\\_us\\_content\\_management.html](http://www.webwarecorp.com/about_us_content_management.html)

PDF versions of related DTV articles and papers by the author:

"Limited Vision: The Techno-Political War to Control the Future of Digital Mass Media," *ACM Networker* - June 1997 and

"A Visual Compositing Syntax for Ancillary Data Broadcasting," paper presented at the 31st SMPTE Advanced Motion Imaging Conference, February 1997

[www.pcube.com/dtv.html](http://www.pcube.com/dtv.html)

Salt Lake City, including Wal-Mart. Hisense Company of China has invested \$75 million in USDTV to subsidize the \$150 cost of the HD capable set-top boxes it will build for USDTV. The cable channels will be encrypted so that they can only be viewed on authorized USDTV receivers.

Could this be a viable business model for broadcasters in the United States?

The original On Digital service in the UK required a similar monthly subscription fee for a similar number of channels. It could not compete effectively against BskyB, the Newscorp DBS service for the UK.

Then there is the issue of service reliability. USDTV has carefully chosen its test markets. Las Vegas and Phoenix are on their list of cities to serve

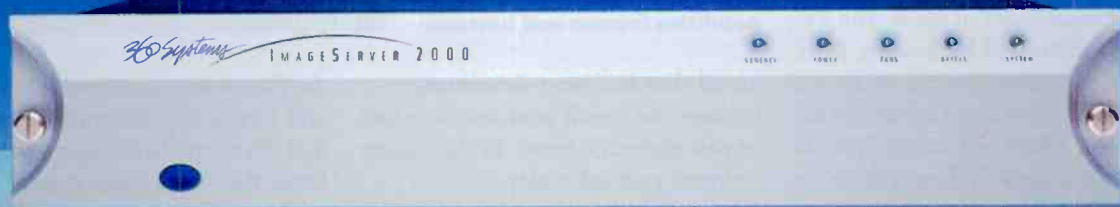
next. All of these markets have virtually ideal transmission characteristics for the ATSC standard; all of the transmitters used for the service are co-located on mountains above the city. Multipath issues should not be a major factor in these markets.

From here, it looks like the USDTV offering may be overpriced for what is offered, and the need to put up antennas may be a significant barrier to consumer adoption.

What broadcasters need is a reliable system to deliver a basic cable/DBS equivalent. A limited channel offering could work if it is free, but a monthly fee will be difficult to justify unless the service offers a competitive channel lineup.

In order to compete, broadcasters will need to develop a new business model; create a reliable delivery infrastructure that is easy to receive — preferably by both fixed and mobile/portable receiv-

## The Right Stuff. The Right Price. 360 Systems' Image Server 2000



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**WHEN THE VIDEO SERVER SALES GUY COMES CALLING,** it seems there's always an Elephant in the room: *You know* storage should cost less now than ever before, but truth is, 90's-era servers can't make the change.

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ers; create a customer-support infrastructure to handle installations, service and billing; and figure out how to negotiate with the media conglomerates to carry the same channels as the services they are competing with.

Needless to say, this is a daunting task, one that would require fundamental changes in the existing regulatory infrastructure and laws regarding terrestrial broadcasting.

And there is one more thing. Broadcasters will need a viable platform to support the service: a platform that equals or leapfrogs those now being deployed by cable and DBS. This means advanced features such as a PVR for local caching; the ability to tie to another network for a backchannel (preferably the Internet); the ability to integrate multiple media for on-screen navigation and new services; and a real security system — no broadcast flag waving here.

### Attitude adjustment

It looks like broadcasters have a lot to look forward to at this year's NAB. In addition to looking at the latest and greatest in broadcast gear, it might be a good idea to look at the business model for digital TV, with an eye for reinvigorating the broadcast business.

As noted last month, MXF is going to be a big buzz word at NAB. The Pro MPEG Forum will be hosting MXF University sessions during NAB, and digital workflow will be the buzz on the show floor. Take a look at MXF and all of the technology bubbling up from the Internet. This is where the innovations that can save local broadcasting are being developed.

operations center than today's facilities. And this is just the beginning — the next step will be to localize and personalize media experiences for the viewers in your market.

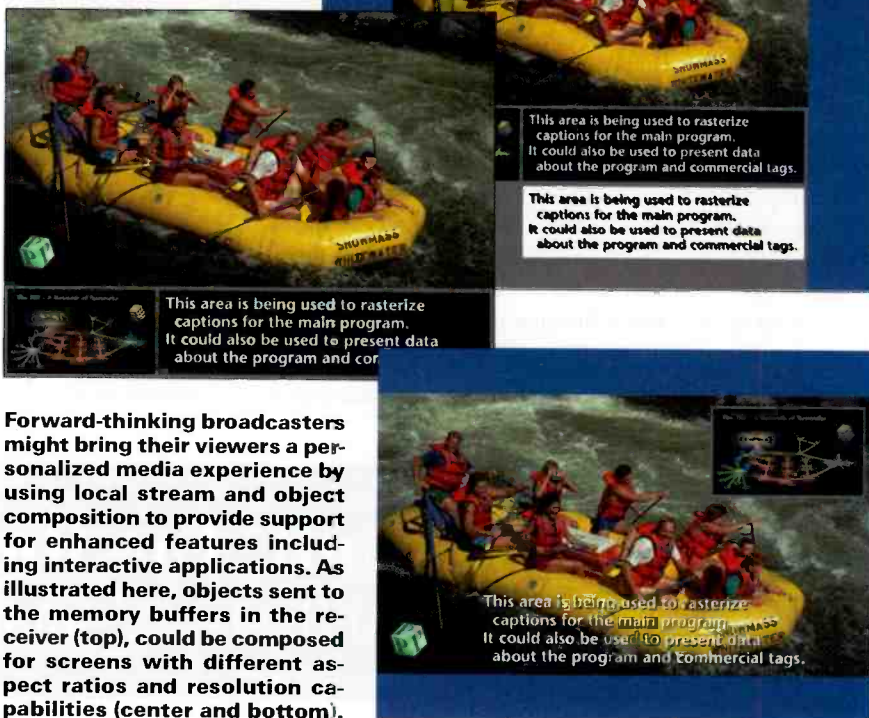
There are two keys to unlocking the potential of digital broadcasting:

- Local caching — think of this as a server that you can control when the viewer is tuned to your content. You can instruct that server to insert

composite them in the receiver.

The revolution in nonlinear video editing tools has also barely begun. Almost all of them still produce a linear program output. In the future this is likely to change in two important ways:

- These systems will begin to take advantage of the ability to access all me-



**Forward-thinking broadcasters might bring their viewers a personalized media experience by using local stream and object composition to provide support for enhanced features including interactive applications. As illustrated here, objects sent to the memory buffers in the receiver (top), could be composed for screens with different aspect ratios and resolution capabilities (center and bottom).**

an ad that has been downloaded — perhaps during off-peak hours — just as you instruct a server in the station to insert your ads today.

- Local media composition — think of this as your master control switcher in the receiver. This is not a revolu-

dia files randomly to create branching and interactive programs; programs that will use metadata extensively to enhance the viewing experience.

- In time, the output of these systems will be metadata wrapped around the objects (files) that are used in the final composition. The actual composition process may take place in the network operations center using a metadata recipe to create each different version of the program or, the objects and the metadata will be delivered to the point of consumption, where they can be filtered to create a version that is localized to a sub-market and rendered to take full advantage of the capabilities and resolution of the receiver/display.

## Managing your digital assets properly is the gateway to survival in the emerging digital world.

Open your mind to new possibilities. Managing your digital assets properly is the gateway to survival in the emerging digital world. Chances are good that the broadcast station of the future will look more like a multichannel network

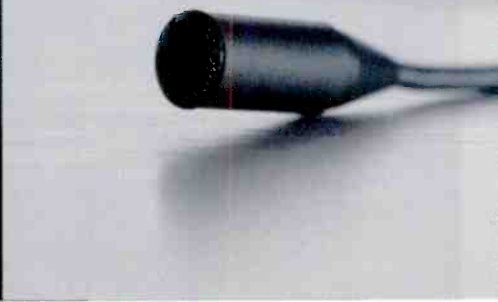
tionary idea. Web pages are composed from media objects on PCs today; objects that can include audio and video streams, text, graphics, still images, etc. MPEG-4 provides a complete architecture to deliver media objects and



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Broadcasters think in terms of delivering a linear program stream with the same ads for everyone in the market. Multichannel broadcasts are merely an extension of this model. The broadcasters who survive the digital transition will be the ones who change the model. They'll think in terms of uploading targeted ads to a viewer's local

cache, with instructions on when they can be inserted into the program streams that the station is broadcasting.

They will think in terms of zoned advertising — broadcasting several different ads simultaneously and having the receiver select the ad that is targeted to the zone where that receiver is located.

They will think in terms of delivering

programs to local cache, and giving viewers the option of viewing the program with the commercials as aired (if the viewer does not skip the ads), or without ads, after the viewer watches a few targeted ads from local advertisers who are willing to sponsor the show. Instead of 12 to 15 minutes per hour of ads, the viewer might only see one to two minutes. The cost of these targeted ads could generate far more revenue than the untargeted advertisements.

They will think in terms of delivering navigable experiences to local cache. For example, a documentary that can be consumed in a nonlinear fashion, complete with ads that you can navigate through voluntarily.

They will think in terms of clicking through from a broadcast to get more information from another network, such as the Internet. The viewer will expect that the linear broadcast will continue to be cached, so that they can pick up where they left off, before they decided to get more information because of an advertisement.

These broadcasters will think in terms of delivering bits instead of paper. For example, a navigable newspaper that may include video clips to support the story. A directory service that is constantly updated, not printed once each year; directories that are cached locally so that they can be accessed from any TV or computer in the home.

And they will look at all of these services as incremental revenue streams.

It is growing increasingly obvious that multichannel programming will be one component of the next business model for digital terrestrial broadcasting in the United States. Before this can happen, however, broadcasters must consider what it will take to compete in the competitive multichannel television business, and to overhaul the archaic regulatory infrastructure of broadcasting. **BE**

*Craig Birkmaier is a technology consultant at Pcube Labs, and he hosts and moderates the OpenDTV Forum.*



Send questions and comments to:  
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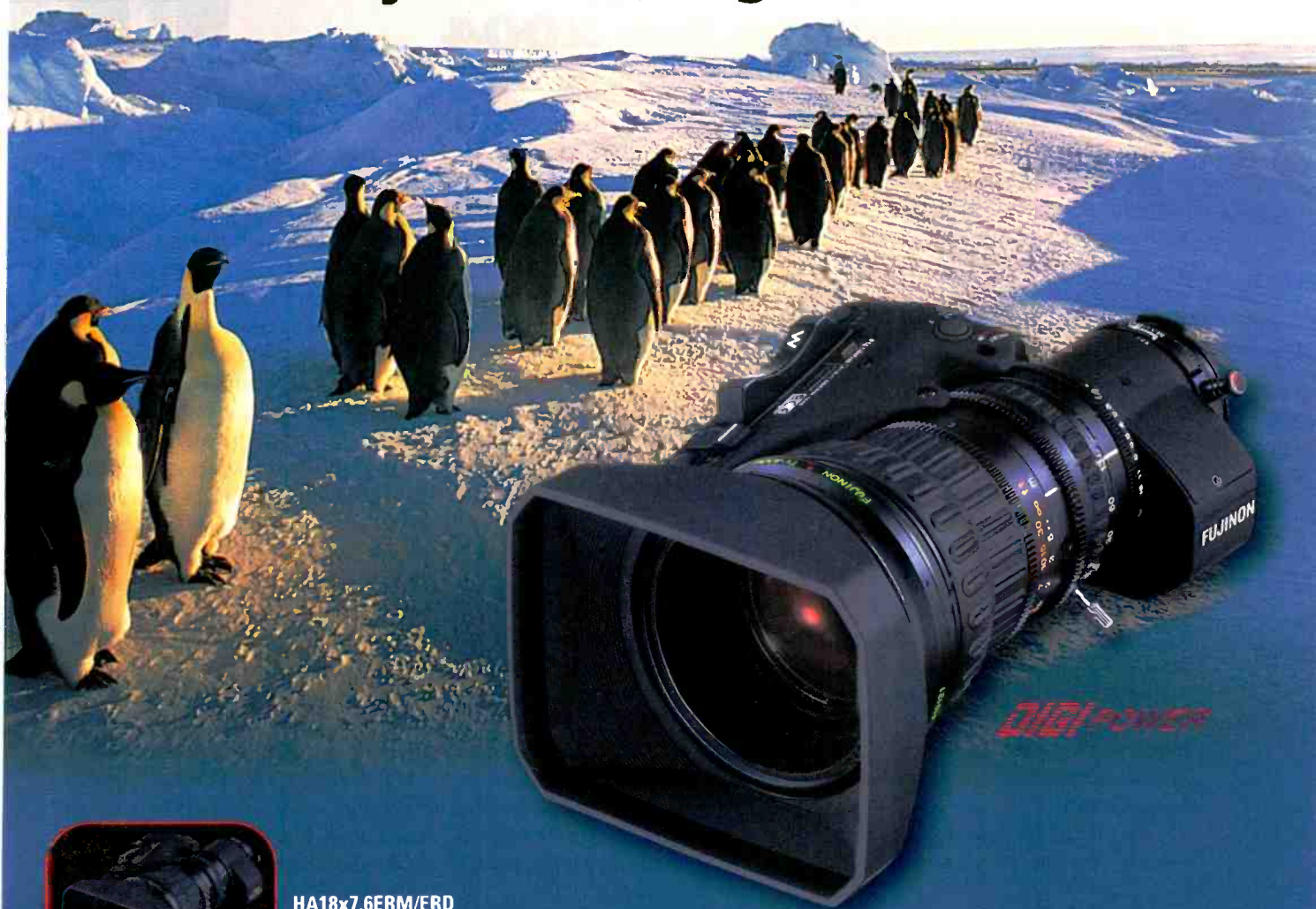
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## New closed captioning requirements for 2004

BY HARRY C. MARTIN

The commission is reminding video programming distributors that the closed captioning benchmarks for new English and Spanish non-exempt video programming took effect on Jan. 1, 2004, and will remain in effect until Dec. 31, 2005. "New" programming is defined as analog video programming that was first published or exhibited *on or after* Jan. 1, 1998, or digital video programming first published or exhibited *on or after* Jan. 1, 2002. The benchmarks apply to analog and digital new programming.

With regard to new non-exempt English-language programming, a video distributor shall provide at least 1350 hours of captioned video programming per channel, per quarter. If the programmer has fewer than 1350 hours of new non-exempt English-language programming, then all of its English-language programming must be captioned.

With regard to new non-exempt Spanish-language programming, 900

hours of programming must be closed captioned per channel, per quarter. This benchmark increases the requirement from 450 hours. The benchmark for 100 percent captioning of new non-exempt Spanish-language programming is not until Jan. 1, 2010, so there will be another partial increase in this requirement on Jan. 1, 2006. These closed captioning requirements are separate from programmers' obligations to make emergency information accessible to persons with vision and hearing disabilities.

### FTC gives warning on weight-loss products

Obesity is an epidemic in America, and so are false advertisements for weight-loss products that promise lots of gain without much pain, says the Federal Trade Commission (FTC). The FTC wants broadcasters and other media outlets to screen out commercials for slim-down products that make claims they can't possibly deliver.

The FTC recommends that broad-

casters "red flag" advertisements for non-prescription drugs, skin patches, dietary supplements, creams, or other products that are worn on the body or rubbed into the skin if they claim that the product in question can do any of the following things: cause weight loss of two pounds or more a week for a month or more without dieting or exercise; cause substantial weight loss no matter what or how much the consumer eats; cause permanent weight loss (even when the consumer stops using the product); block the absorption of fat or calories to enable consumers to lose substantial weight; safely enable consumers to lose more than three pounds per week for more than four weeks; or cause substantial weight loss for all users.

After flagging these types of ads, the FTC recommends that broadcasters demand proof of their claims. Without proof, the FTC implores — *but does not require* — broadcasters to refuse to run a spot. The FTC provides tips on evaluating weight-loss claims at its Web site: [www.ftc.gov/bcp/online/edcams/redflag/whatyoucando.html](http://www.ftc.gov/bcp/online/edcams/redflag/whatyoucando.html).

The advertisers themselves face legal action for false and misleading claims. The FCC generally defers to the FTC on deceptive advertising issues in which the station is nothing more than a paid conduit for the advertiser's claims. But the FTC does caution that a broadcast outlet can put at risk the credibility of *all* of its advertisers, legitimate and otherwise, by advertising bogus items. **BE**

### Dateline

Television stations in D.C., Maryland, Virginia and West Virginia must begin their pre-filing renewal announcements on April 1, 2004, in preparation for renewal application filing on June 1, 2004. Ownership reports without filing fees must be filed with 2004 renewals. Other television stations renewal application filing dates in 2004 are:

Station location	Renewal filing date
North Carolina, South Carolina	Aug. 1
Florida, Puerto Rico, Virgin Islands	Oct. 1
Alabama, Georgia	Dec. 1

Also on April 1, stations in Delaware, Indiana, Kentucky, Maryland, Pennsylvania, Tennessee, Texas, Virginia and West Virginia must place their annual EEO reports in their public files.

Harry C. Martin is an attorney with Fletcher, Heald & Hildreth PLC, Arlington, VA.

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## Revisiting Nyquist

BY MICHAEL ROBIN



The 20th century brought with it the need for the transport of pictures and sound. A large number of engineers and scientists working for Bell Telephone Laboratories became engaged in studies leading to solutions of imminent as well as long-term needs.

One of these talented people was the prolific Harry Nyquist. Among his earliest work was the development of the frequency division multiplexing (FDM) concept. FDM used individual and harmonically related (multiples of 8kHz) carriers, each of them amplitude-modulated with a specific message: telephone quality audio with a frequency range

of 300Hz to 3.4kHz.

Early implementations used double-sideband AM. Later approaches used

upper sideband. The number of the individual carriers used depended on the cable losses.

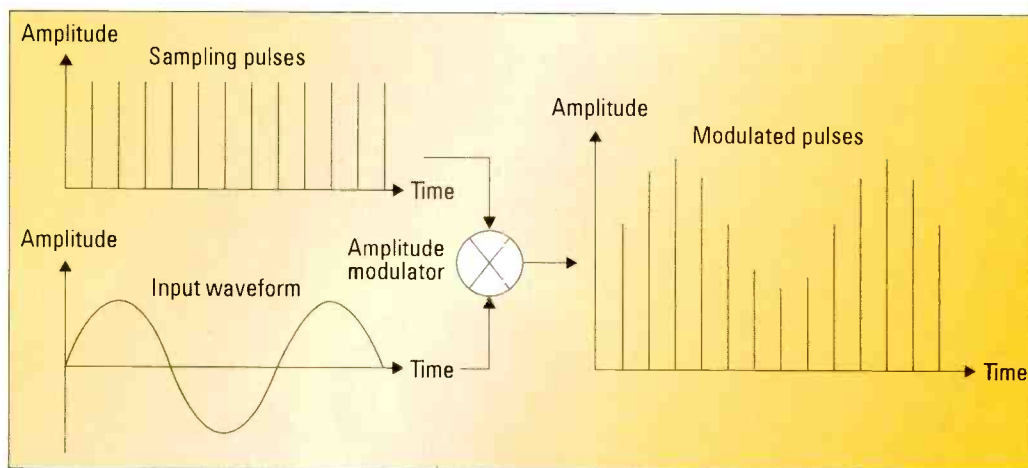


Figure 1. The sampling process results in a pulse amplitude modulation.

single-sideband suppressed-carrier concepts. This allowed the doubling of the number of messages by assigning different messages to the lower and

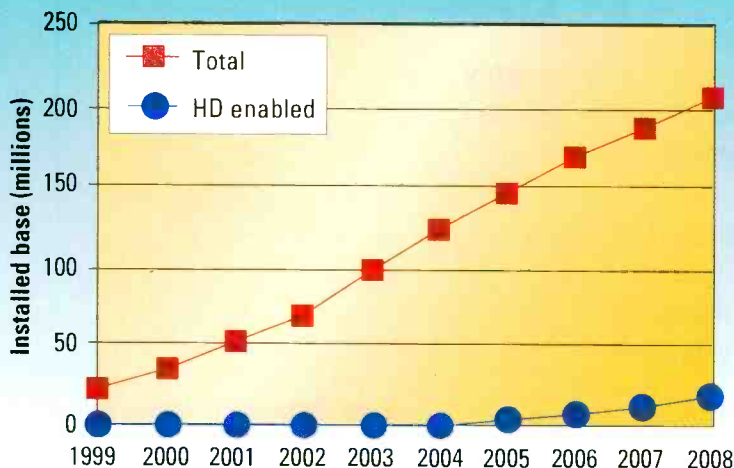
The invention of the electronic tube by Lee De Forest introduced the use of amplifiers to compensate for cable losses. But amplifiers have shortcomings and introduce linear and nonlinear distortions, which can lead to mutual interference between the multiplexed messages. Nyquist worked on reducing these defects by developing and applying the negative feedback concept.

While FDM allows for the transmission of multiple simultaneous messages, a better approach — time division multiplexing (TDM) — gives superior results. In TDM, several different signals are transmitted sequentially over a single channel. Nyquist became interested in and developed the TDM concepts with early application to telephone circuits. The signals transmitted by TDM are pulse code modulated (PCM). The basis of PCM is Nyquist's sampling theorem. According to the sampling theorem, we can convey the entire message of an information signal by sending only the

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amplitudes of the signal at specific instants, called sampling times.

### The sampling concept

The sampling of an analog signal consists of checking its amplitude at regular intervals ( $T$ ). Nyquist's sampling theorem stipulates that the sampling frequency,  $F_s = 1/T$ , be at least twice the maximum baseband frequency  $F_b > 2F_b$ .

Figure 1 shows the sampling mechanism of a sinewave. The amplitude of the sampled sinewave is measured at constant time intervals,  $T$ . The ampli-

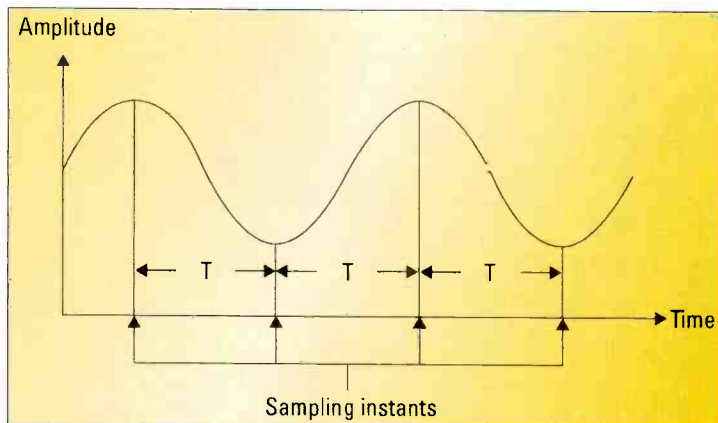


Figure 2. Example of a sinewave  $F$  sampled at twice its frequency

carrier and its sidebands, there are spectral components at multiples of  $F_s$ . In the real world, the baseband spectrum exceeds  $\frac{1}{2}F_s$ . To avoid the generation of spurious responses

known as "aliasing," the base-band spectrum has to be limited to less than  $\frac{1}{2}F_s$  through the use of a well-designed brick-wall low-pass filter. A good low-pass filter features a sharp cutoff while avoiding pass-band ripple effects and high-frequency group delays, which degrade the analog signal char-

acteristics and result in an unacceptable performance.

Figure 4 shows an example of a sinewave  $F$  sampled at 1.33 times its frequency. The result is an insufficient number of samples, and the original

spectrum result in audible or visible (as the case may be) spurious low-frequency spectral components, which cannot be eliminated.

Figure 6 on page 34 shows the PAM spectrum of a sampled filtered baseband signal. Note that  $F_s > 2F_b$  to

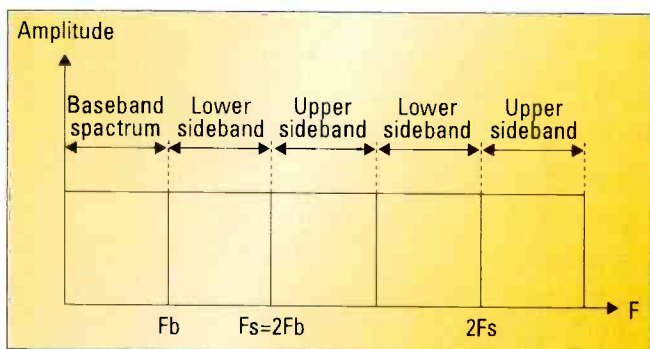


Figure 3. An ideal spectrum of a PAM process, where  $F_s = 2F_b$  and  $F_b$  is the baseband spectrum.

tude of the samples is modulated by the sampled frequency, resulting in a process of pulse amplitude modulation (PAM).

Figure 2 shows an example of a sinewave  $F$  sampled at twice its frequency. It is intuitively evident that there are sufficient samples to allow for the reconstruction of the original waveform.

Figure 3 shows an ideal spectrum of a PAM process, where  $F_s = 2F_b$  and  $F_b$  is the baseband spectrum. The PAM spectrum resembles an AM spectrum, except that in addition to the  $F_s$

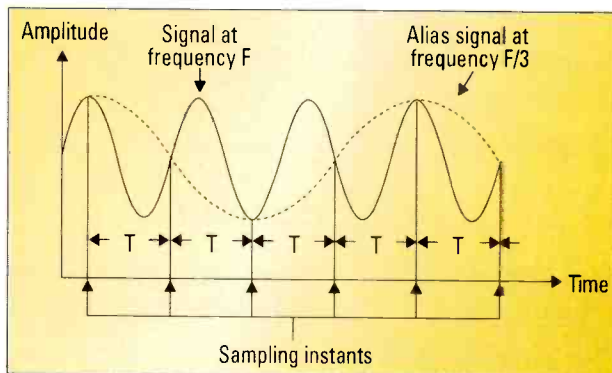


Figure 4. Example of a sinewave sampled at 1.33 times its frequency, resulting in alias.

waveform cannot be reconstructed. The dotted line represents the reconstructed sinewave with a frequency of  $F/3$ .

Figure 5 shows the PAM spectrum, where  $F_s < 2F_b$ . As a result, the lower sideband of  $F_s$  overlaps the baseband  $F_b$ , resulting in aliasing. The aliasing components of the PAM

**Telephone audio (voice) is sampled with a resolution of 8 bits per sample.**

allow the design of realizable and cost-effective low-pass filters with minimum ripple and high-frequency group delay.

PAM results in a sequence of pulses whose amplitude is proportional to the amplitude of the sampled analog signal at the sampling instant. The process of PCM helps represent the amplitudes of the successive samples of the analog waveform by binary numbers. Thus, an infinite number of possible pulse amplitude values are converted to a finite number of discrete levels  $Q$  according to the expression  $Q = 2^n$ , where  $n$  is the number of bits per sample. Telephone audio (voice) is sampled with a resolution of 8 bits per sample. Video signals are sampled with a resolution of



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8 bits or 10 bits per sample. Audio signals are sampled with a resolution of 16 bits per sample (CD format) and between 20 and 24 in studio productions. Once in binary form, the numbers are transmitted as on (1) and off (0) pulses. Each sequence of pulses is a code for a sample amplitude, hence the name of pulse code modulation. The capacity of a PCM signal (bit rate) is expressed in bits-per-second (bps) obtained by multiplying the number of bits per sample (n) by the sampling frequency (Hz). The required transmission bandwidth is related to the bit rate.

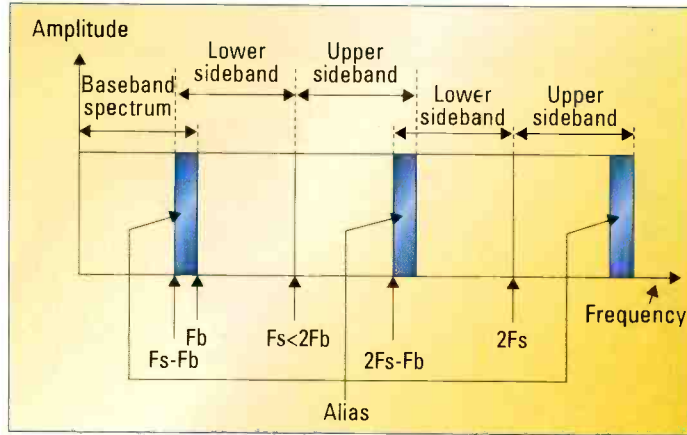


Figure 5. The PAM spectrum, where  $F_s < 2F_b$ . As a result, the lower sideband of  $F_s$  overlaps the baseband  $F_b$ , resulting in aliasing.

sampled at 8kHz with an accuracy of 8 bits per sample) for telephone conversations. Table 1 lists some of the more common digital distribution

sampled at 10.7MHz with an accuracy statistically varying between 6 bits per sample and 9 bits per sample, depending on the picture complexity. The compression used was known as differential pulse code modulation (DPCM), and it is obsolete today. The equivalent hierarchy level in Europe offers a bit rate of 33.368Mb/s and was used to transmit DPCM composite PAL signals.

As the state of the art improved, MPEG-2 signals with a bit rate of the order of 8Mb/s offer a picture quality subjectively superior to that of a 45Mb/s DPCM composite NTSC signal. A DS3 45Mb/s channel can accommodate several multiplexed SDTV MPEG-2 8Mb/s digital signals of distribution quality and this, in the long run, will contribute to the demise of the obsolete and spectrum-wasting DPCM compression schemes. With the advent of DTV with a terrestrial transmission bit rate of the order of 19.4Mb/s, an entirely new set of signal distribution scenarios have yet to unfold. **BE**

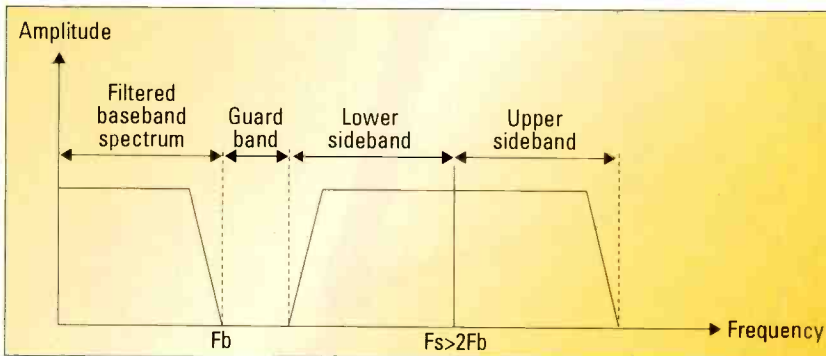


Figure 6. The PAM spectrum of a sampled filtered baseband signal. Note that  $F_s > 2F_b$  to allow the design of realizable and cost-effective low-pass filters with minimum ripple and high-frequency group delay.

Michael Robin, a fellow of the SMPTE and former engineer with the Canadian Broadcasting Corp.'s engineering headquarters, is an independent broadcast consultant located in Montreal, Canada. He is co-author of Digital Television Fundamentals, published by McGraw-Hill, and recently translated into Chinese and Japanese.

**Common carrier sampling hierarchy**

Common carriers have developed a set of digital transmission hierarchies, which are a multiple of 64kb/s, the bit rate required to send a voice signal (bandwidth 300Hz to 3400Hz,

hierarchies used in North America. Transmitting digital SMPTE 259M bit-serial component digital signals with a bit rate of 270Mb/s requires either the displacement of 4032 telephone conversations (DS4) or some means of compression to fit into one of the other available channels. One of the most popular digital hierarchies in North America is DS3, colloquially referred to as 45Mb/s. DS3 was initially used to transmit composite NTSC signals

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Hierarchy Level	Bit Rate	64kb/s Channels
DS 0	64kb/s	1
DS 1	1.544Mb/s	24
DS 2	6.312Mb/s	96
DS 3	44.736Mb/s	672
DS 4	274.16Mb/s	4032

Table 1. Standard PCM voice channels

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# VPNs for broadcasters



BY BRAD GILMER

**E**xtranets are networks built to link facilities over large distances. For years, broadcasters have moved content between facilities, frequently through special video circuits leased from various service providers (traditional telephone companies, satellite companies and terrestrial carriers). Such extranets are intrinsically private. Providers control access to these networks, and coding the content makes it difficult for unauthorized parties to monitor the content or to divert it in transit from one facility to another. But these dedicated networks can also be quite expensive.

Thus, it is becoming increasingly common for broadcasters to link facilities using the public Internet. This option is much less expensive, but it may be difficult to attain adequate security while meeting the broadcaster's needs. The risk increases when the broadcaster wishes to link its facilities on a full-time basis. Broadcasters recognize the value of full-time connectivity between affiliates, station group members and others in the field, especially when they can use this con-

two or more computers or facilities. It allows a broadcaster to create a single network, even though the network may connect facilities that are hundreds of miles apart. When interconnected using a VPN, computers act as if they are all on the same network. Workstations in one loca-

## Linking facilities

In Figure 1, you can see that location A uses a private address of 192.168.2. Note that location B uses a private address of 192.168.1. The VPN routers are configured to route traffic between the two networks. On the public side of the Internet, loca-

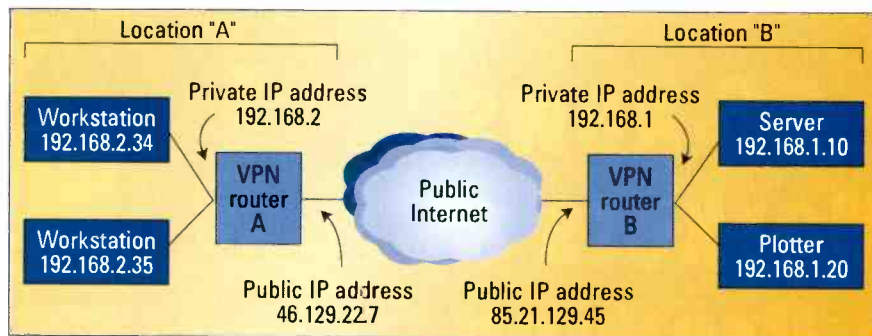


Figure 1. A VPN can connect two facilities on a permanent basis.

tion can access a server, plotter or other device in another location. This may not seem like a major breakthrough — you can access a server over the Internet without any special software or connection. But, in this case, the workstation on the

tion A has an address of 46.129.22.7, and location B has an address of 85.21.129.45. When setting up the VPN, the engineer tells VPN router A to connect to 85.21.129.45. Once the connection is established, the two networks are connected together. The magic of the VPN is that, to the outside world, the only things visible are two public Internet addresses. The router typically contains a firewall that prevents unauthorized access to the networks. But the VPN connection allows the two networks to be linked together over the public Internet. The VPN router encrypts packets sent between the two locations, and the network rejects unauthorized VPN connection attempts.

**A VPN allows a broadcaster to create a single network, even though the network may connect facilities that are hundreds of miles apart.**

nectivity to transmit both content and data. So, how can a broadcaster use the Internet as a secure extranet? The answer may lie with virtual private networks (VPNs).

## VPN advantages

A VPN is a private network that uses the public Internet to connect

VPN behaves almost exactly as if it was connected to a port on a local switch. Moreover, VPNs incorporate security technology that is hard to break, and you can set them up so that remote workstations can traverse a firewall without compromising security. And setting up a VPN is relatively simple to do.

## Accessing files

Figure 2 on page 38 illustrates how someone on the road might use a

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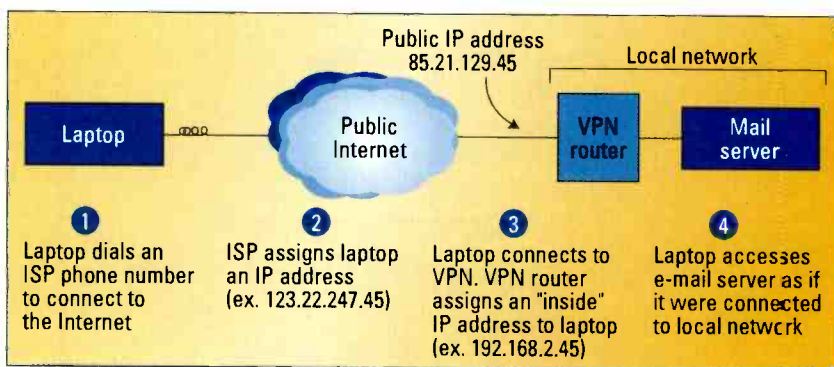
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laptop computer and a VPN to access a local e-mail server. First, the traveler connects to the Internet, typically by using a dial-up connection to an Internet service provider. Second, when the connection is established,

*www.broadcastengineering.com* (which is 216.74.139.174) is not on the local network. The VPN router sends the packet back out on the Internet, directed to the *Broadcast Engineering* Web site. When the Web site responds,

and that all data flow over the same path all the time; this is not true. As with most traffic carried over the Internet, the exact path that data take from source to destination can vary on a packet-by-packet basis. So, while a permanent tunnel using the same route does not exist, it is fair to say that a VPN creates a virtual tunnel between the two facilities. To the user, it looks as if the two facilities are connected together using a permanent connection. Second, a tunnel implies that someone on the outside of the tunnel cannot see what is happening inside. Hackers who are monitoring a VPN can see the packets as they travel along the Internet. But, because you've encrypted the data inside the packets, the hacker cannot tell what you are transmitting.



**Figure 2.** When a laptop connects to the Internet and establishes a VPN connection to the local network, the laptop acts exactly as if it is physically connected directly to the local network.

the ISP assigns the laptop a public IP address (example: 123.22.247.45). At this point, the traveler can use the laptop to access the Internet as usual, including Web sites, FTP sites and so on. But the laptop cannot see the e-mail server on the local corporate network. Third, the laptop user "dials in" to the VPN by entering the IP address of the VPN along with a username and password combination. In this case, the user would enter 85.21.129.45 to connect to the VPN. Once authenticated, the VPN router assigns the laptop an IP address (example: 192.168.2.45). When the connection is complete, the laptop acts as if it is connected to the local network. The laptop can access the local e-mail server. Requests to access content on the Internet travel from the laptop, over the Internet to the local network, then back out through the VPN router to the Internet.

To illustrate this point, let's look at what happens if the laptop calls up a Web site (*www.broadcastengineering.com* for example). First, the Web browser message travels from the laptop over the Internet to the VPN router at corporate headquarters. The VPN recognizes that the IP address of

the VPN router sends the packets back to the laptop at 192.168.2.45, which it knows is physically connected via the VPN. Once a computer is connected through the VPN, it acts as if it were plugged into a switch located at corporate headquarters.

### A virtual tunnel

You might wonder how it is that a VPN can be secure when it connects two facilities together over the public Internet. While you are using the Internet to carry the data between

**Once a computer is connected through the VPN, it acts as if it were plugged into a switch located at corporate headquarters.**

two facilities, you are not really "on the Internet." Instead, you are creating a "tunnel" between the two facilities. Data then pass through the tunnel from one facility to another without being visible on the Internet. This tunneling analogy breaks down though, when you look at the details. First, the image of a tunnel implies that some sort of permanent connection exists between the two facilities,

calculates a small number based upon the data carried in the packet. The VPN application appends this number to the data packet before transmitting it. The receiving VPN application puts the data in the packet through the same "hash system" and compares its result with the one sent with the data. If the two differ, the receiving application notifies the user that a packet may have been altered



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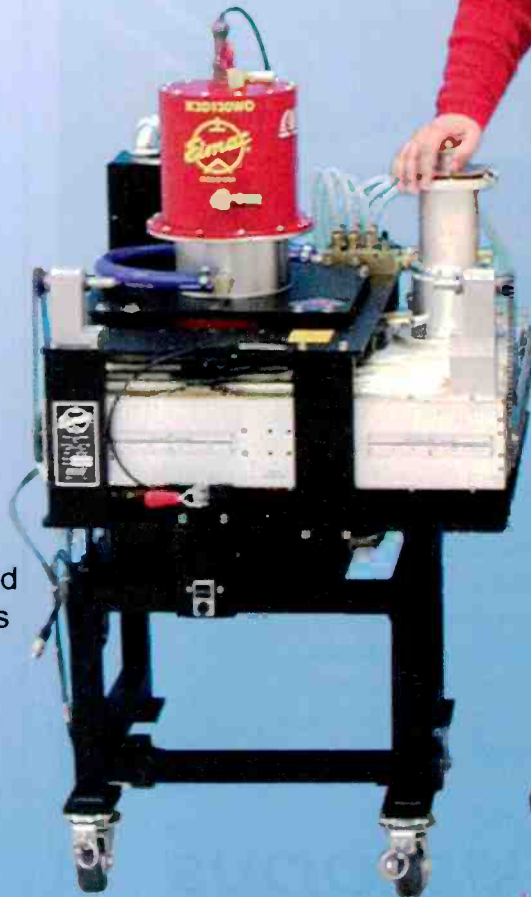
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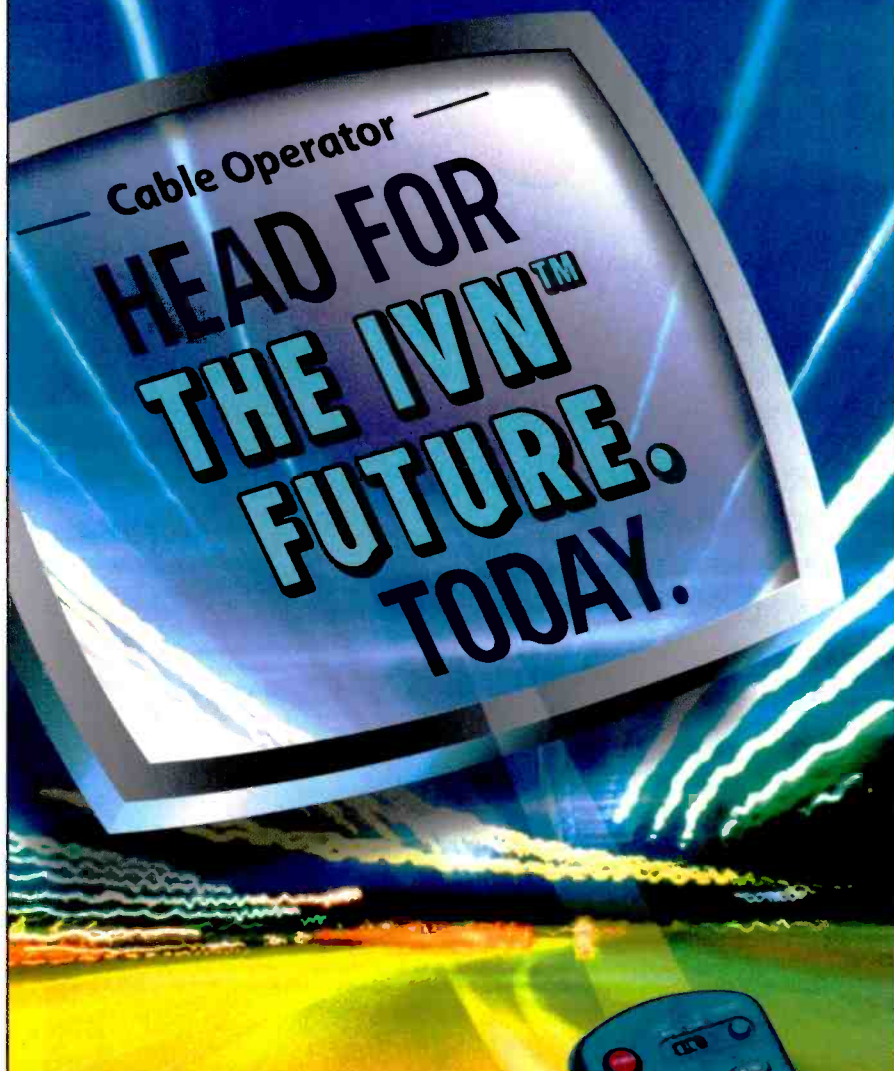
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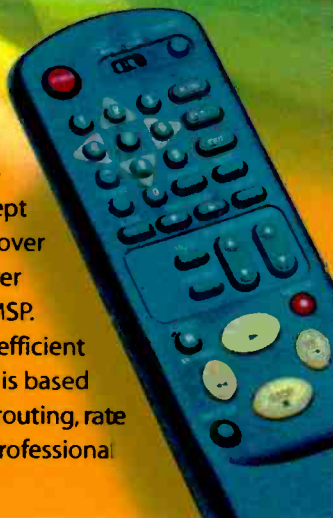
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during transmission. The final component encrypts messages sent over the public Internet using encryption keys. This is a detailed subject, but 3DES, an encryption scheme in wide use these days, uses 168-bit keys. To try all possible keys, a hacker would have to try  $2^{168}$  combinations — a monumental task.

#### Get more

VPNs are inexpensive, relatively easy to deploy, well-tested and quite secure. There used to be some issues with interoperability of different types of VPNs but, at this point, most of these issues have been resolved. In addition, most common operating systems have included support for VPNs for several years. So configuring a VPN on a remote computer can be as easy as configuring a dial-up connection.

VPNs can provide you with much greater security than a straight dial-up connection. Broadcasters have always been challenged to provide secure connections for their networks. VPNs are currently the best way to provide this without having to resort to expensive, dedicated networks.

You can find a great deal of information about VPNs at the Virtual Private Network Consortium's Web site ([www.vpnc.org](http://www.vpnc.org)). **BE**

*Brad Gilmer is president of Gilmer & Associates, executive director of the AAF Association and executive director of the Video Services Forum.*

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# Surround sound micing techniques

BY JASON COREY AND GEOFF MARTIN

**A**s broadcasters move into 5.1 and surround broadcasting, the importance of remote audio has increased greatly. It's no longer adequate to hand a couple of mics out the press box window and call that adequate stereo sound.

There are several issues to consider when recording for surround sound. Not only does the engineer need to optimize imaging and image location, but he or she also needs to ensure the smooth and even distribution of the reverberation around the listener. In addition, there should be a cohesion of the front and back components of the sound field. The main idea behind a 5-channel microphone technique is to capture the entire acoustic sound field, rather than to simply present the instruments in the front and the reverb in the surrounds.

## System response at listener's location

When recording, first consider the listener's environment. Remember that the response of the front and rear loudspeakers are different at the listening position. For example, there is far more interference at the listener's

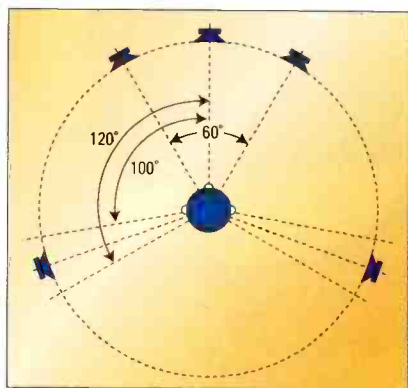


Figure 1. Shown here is the standard loudspeaker configuration for a 5-channel surround sound system.

ears between the signals from the center and left or left and left surround loudspeakers than there is between the signals from the left and right, or left surround and right surround drivers. The result of this interference is a comb-filter effect that is caused by the lack of attenuation provided by head shadowing.

In order to reduce or eliminate this comb filtering, the microphone array must ensure that the signals produced by some pairs of loudspeakers are different enough not to create a recognizable interference pattern. This is most easily achieved by separating the microphones, particularly the pairs that result in high levels of mutual interference. At the same time, however, the engineer must ensure that the signals are similar enough that a coherent sound field is presented. This means the microphones must be in relatively the same location.

After all, if the microphone separation is too great, the result is five completely unrelated recordings of the same event. The result is little sound-image continuity or fusion between channels. With optimal microphone spacing, the reproduced sounds from the five loudspeakers work together to form a single coherent sound field.

## Microphone placement

The proposed microphone placement in Figure 1 provides adequate separation between specific pairs of microphones to prevent interchannel interference. At the same time, the

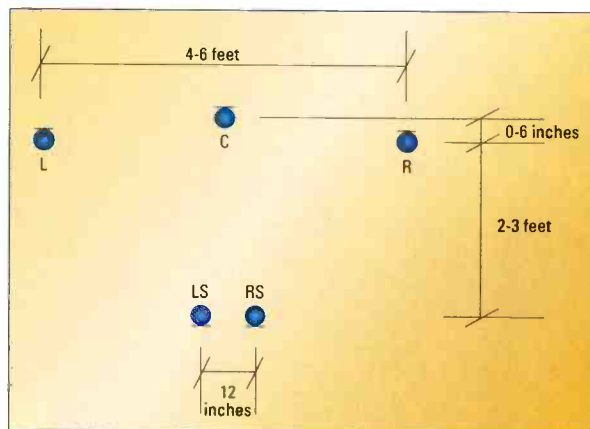


Figure 2. This drawing illustrates the dimensions between microphones for proper placement. The L, C and R subcardioid mics face forward, the LS and RS microphones are typically ceiling-facing cardioids, but may be angled slightly to the rear, away from the stage.

configuration relies on the response of the loudspeakers at the listening position to permit closer spacing and, therefore, a smoother distribution of the sound field for the rear pair of microphones.

The 5.1 recording configuration consists of three front-facing subcardioids and two ceiling-facing cardioid microphones, as shown in Figure 2. The approximate dimensions of the array are two feet between the center subcardioid and the left and right subcardioids, two feet between the front microphones and the surround pair, and one foot between a pair of cardioid microphones aimed upward. If desired, the center microphone can be moved slightly forward of the left and right mics to an approximate maximum of six inches.

## The configuration's response

A subcardioid microphone is theoretically equivalent to coincident cardioid and omnidirectional microphones whose signals are mixed at equal levels. By using subcardioid microphones,

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the result is a wider pick-up than is typical with cardioid mics, but with a higher directivity than omnidirectional mics. In this way, the microphones can be placed further away from the ensemble than omnidirectional microphones for an equivalent direct-to-reverberant ratio.

The key is to provide a certain amount of diffused, reverberant sound in the front channels that blends with the direct sound and with the reverberant signals produced by the surround channels. The direct-to-reverberant ratio can be adjusted by changing the distance between the microphone array and the sound source.

The width of the front array is determined by the size of the ensemble being recorded or by the desired level of interchannel coherence. For a larger ensemble, a wider array (up to six feet) is likely necessary. A narrow spacing (four feet) is appropriate for a small ensemble. A wide spacing will reduce

the amount of coherence between the front three channels, thereby reducing the image fusion between the loudspeakers. The amount of coherence between the front and surround images can be partly determined by the spacing between the front and rear microphones.

For the surround channels, aiming the surround cardioid microphones to the ceiling has two advantages. First, the direct sound from the ensemble is attenuated because it is arriving near the null of the polar pattern. This is also true of audience noise in the case of a live recording. That being said, any direct sound that is picked up by the surround microphones helps to create some level of coherence between the front and surround channels. The front-back coherence provides an even spread of the sound image along the sides of the loudspeaker array. The level of front-to-back coherence can be adjusted by changing the angle of

the microphones and, therefore, controlling the amount of direct sound in the surround channels.

Second, the often-ignored vertical dimension of an acoustic space provides diffuse signals that are ideal for the surround channels. For instance, when listening to live music in a concert hall, we hear sound arriving from all directions, not only the horizontal plane.

The microphone array allows for a large listening area in the reproduction system. Even when a listener is seated behind the sweet-spot, the front image of the direct sound will remain in the front and will not be pulled to the rear, despite the listener being closer to the rear loudspeakers. **BE**

*Editor's note: This article was adapted from a presentation by Jason Corey, University of Michigan and Geoff Martin, Bang & Olufsen, Denmark. The complete paper, along with a wealth of other microphone application notes, is available at the DPA Microphones Web site at [www.dpamicrophones.com](http://www.dpamicrophones.com).*

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# San Bernardino combines two local broadcasting operations

BY JEFF MUHLEMAN

California's San Bernardino Valley, just east of Los Angeles, has long been underserved in local broadcasting. Surpassing three million in population, the region is considered part of the number-two Los Angeles television market and, for many years, has received its news and local programming from the city.

In response to the need for a locally originated newscast aimed at regional viewers, California State University of San Bernardino last year directed \$1.2 million in federal funding toward the purchase of digital equipment. This funding led to the development of the City of San Bernardino telecommunications production facility, a highly automated, multichannel SDI facility that offers up to four simultaneous program streams. The university contracted Digital System Technology (DST) to design and integrate the multichannel facility.

The facility is home to two organizations: The Inland California Television Network (ICTN) and KCSB-TV. ICTN is a new network founded to produce and cablecast local news for the San Bernardino Valley. KCSB-TV is an established local network that broadcasts educational, public and government-access programming. The facility's headend links 15 municipal-government channels. At 10 p.m. every day, all 15 channels switch from

local public-interest programming to carry ICTN's half-hour newscast.

## Upstairs, downstairs

DST pre-built the equipment racks for the two-floor facility off-site, employing its patented "palletization" method for a smoother integration process. The facility has small elevators, so DST integrated the equipment and consoles designated for the upper floor as individual racks.

From an engineering standpoint, the project was straightforward. But DST faced some challenges stemming from the facility's government-based funding. Changes in some equipment specifications resulted in engineering challenges during the integration process. Nonetheless, with great assistance from chief engineer Klyde Layon, DST met these challenges and prepared the facility for system upgrades well into the future.

## Upstairs

The upper floor is dedicated to the ICTN news operation and features a studio, a newsroom area and a control room. For live news production, ICTN uses a ParkerVision PVTV CR16 production automation system. The ParkerVision system automates all aspects of a traditional newsroom, including the switcher, audio and graphics. PVTV allows ICTN to produce a large-market-level newscast using a minimal production crew.

**The upper floor of the City of San Bernardino Telecommunications Facility is dedicated to the ICTN news operation. In the news-control console, a ParkerVision PVTV CR16 production automation system allows ICTN to produce a large-market level newscast using a minimal production crew by automating all aspects of a legacy production.**

The news staff programs the entire 10 p.m. newscast into PVTV prior to air and produces it using the system's Windows-based graphical user interface. The system features 16 inputs to integrate additional gear, including three ParkerVision Digital CameraMan cameras in the news studio and a

an Image Server 2000, creating a completely tapeless newsflow. For now, the news staff shoots with JVC's Pro DV GY-DV5000 using Mini DV as its tape format, but is looking forward to adding a JVC DR-DV5000 hard-drive solution to its cameras. A 360 Systems DigiCart provides additional live news production effects.

dio, and two editing bays.

Master control and the terminal-gear area share space within a long, narrow (about 7-foot wide) corridor. Master control is a fairly simple operation. It transmits four automated standard-definition channels through Ross CDK111 downstream keyer for bug insertion and then on to the cable headend. A console built by Laguna Design houses a BlueLine Automation Suite to create playlists and to ingest programming into two BlueLine video servers.

The BlueLine Automation Suite, combined with two BlueMPEG video servers, are central to the facility's multichannel broadcast operation. The automation equipment controls all relevant equipment and play-to-air feeds, minimizing manual operation in master control. Four SDI encoded streams ingest programming from satellite or tape into BlueMPEG; four SDI or analog playout streams are used to play to air. The playout streams account for most on-air programming, except for news, direct-to-air satellite feeds and other live in-house productions. Automated playout streams are scheduled for the appropriate on-air output channel using BlueMPEG.

A 7TB DVD jukebox archival system from DISC-Storage Systems provides long-term storage. The BlueLine Automation Suite communicates with the DVD jukebox to recall long-term programming when needed. A network-attached storage (NAS) solution



**Production control on the lower floor is generally used for KCSB-TV productions but also serves as a backup to the ICTN news operation upstairs. A Ross Synergy One production switcher and an Ikegami monitor are among the visible components in this photo.**

SHOT Director multi-camera control system. An Avid iNEWS system integrates scripts from the news rundown into the PVTV system.

Editors prepare story edits on an Avid NewsCutter XP nonlinear editing system and store them on a 360 Systems Image Server 2000 playout server. PVTV then calls for the appropriate clip as designated on the system's news rundown. The integration team chose the Image Server 2000, with 48 hours of storage, three playback channels and one channel of record, because of its low price and because, during previous testing, it had proven its ability to interface with PVTV. Image Server 2000's support of the MXF format allows ICTN to eventually transfer data files from the facility's shared network storage system (Avid LANshare EX) to

Three equipment racks of ParkerVision gear are integrated near the news control-room desk console, along with a mixed Ikegami and JVC monitoring wall. The ParkerVision equipment connects to other production sources on the first floor, including a Chyron Duet character generator and a Spencer Technology Newstore system, which is used to integrate stills and animation sources for over-the-shoulder boxes.

### **Downstairs**

The lower floor is home to the cable headend transmission facility that links the 15 municipal stations. Several areas shared between the ICTN network and KCSB flesh out the main floor: master control, terminal gear, production control, a production stu-

## **Design team**

### **DST:**

Dwight Crumb,  
design engineer/PM

### **ICTN:**

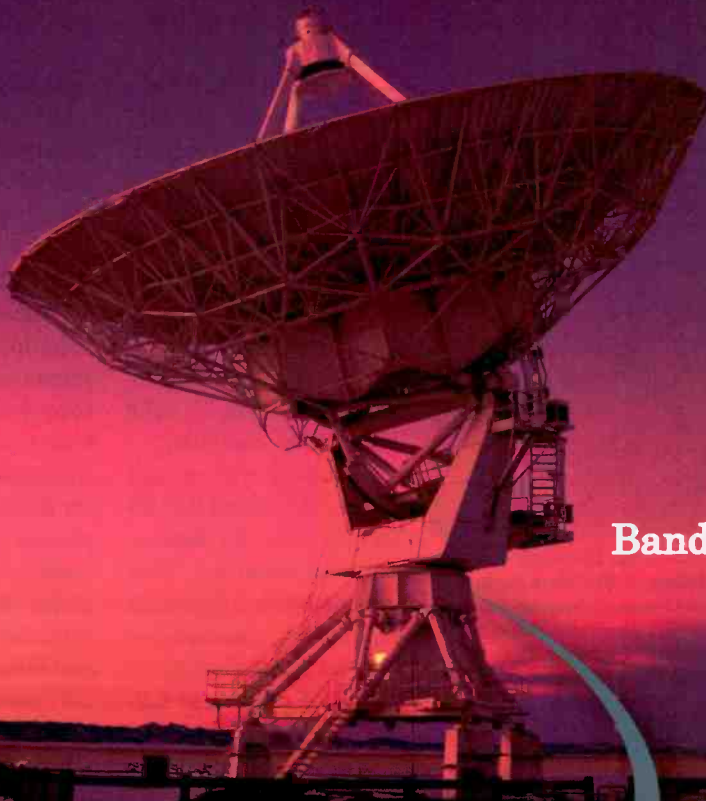
Klyde Layon, CE

Frank Keller, cable television  
manager for the City of San  
Bernardino and executive-in-  
charge for network operations

Cindi Pringle, executive director



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The BlueLine Automation Suite

comprises several software application packages divided among five computers. AirStation recalls programming to air from the BlueMPEG2 video server, while two additional computers ingest and play out. (The fifth computer, PrepStation, is installed upstairs for traffic purposes.) All BlueLine systems are mirrored and redundant; if the AirStation computer fails, AirStation capabilities can be performed on the PrepStation computer.



All feeds from KCSB-TV and ICTN go through master control before leaving the building. A BlueLine Automation Suite is central to the multichannel master-control operation and communicates with BlueLine video servers to ingest and recall on-air programming. Two master control racks next to the console are home to monitors and tape machines for recording and duplication.

ure. Master control can also connect to the Spencer Technology Newstore system in production control, using its built-in DVE capabilities to create squeezebacks during credits.

The terminal-gear area is built on an access floor 12 inches above master control. Equipment racks here house electronics for all facility equipment except for some news-control systems. A Ross Talia 40x32 routing system handles video and audio source distribution throughout the facility; the system is expandable to 64x64 as new sources are added. Leitch DPS575 frame synchronizers and Scientific-Atlanta and Motorola satellite receivers fill out the terminal-gear racks to process incoming satellite feeds. Those feeds are then recorded to BlueLine or played directly to air off the receivers. Minimal physical space was the biggest integration challenge in this area. DST installed rear doors on the equip-

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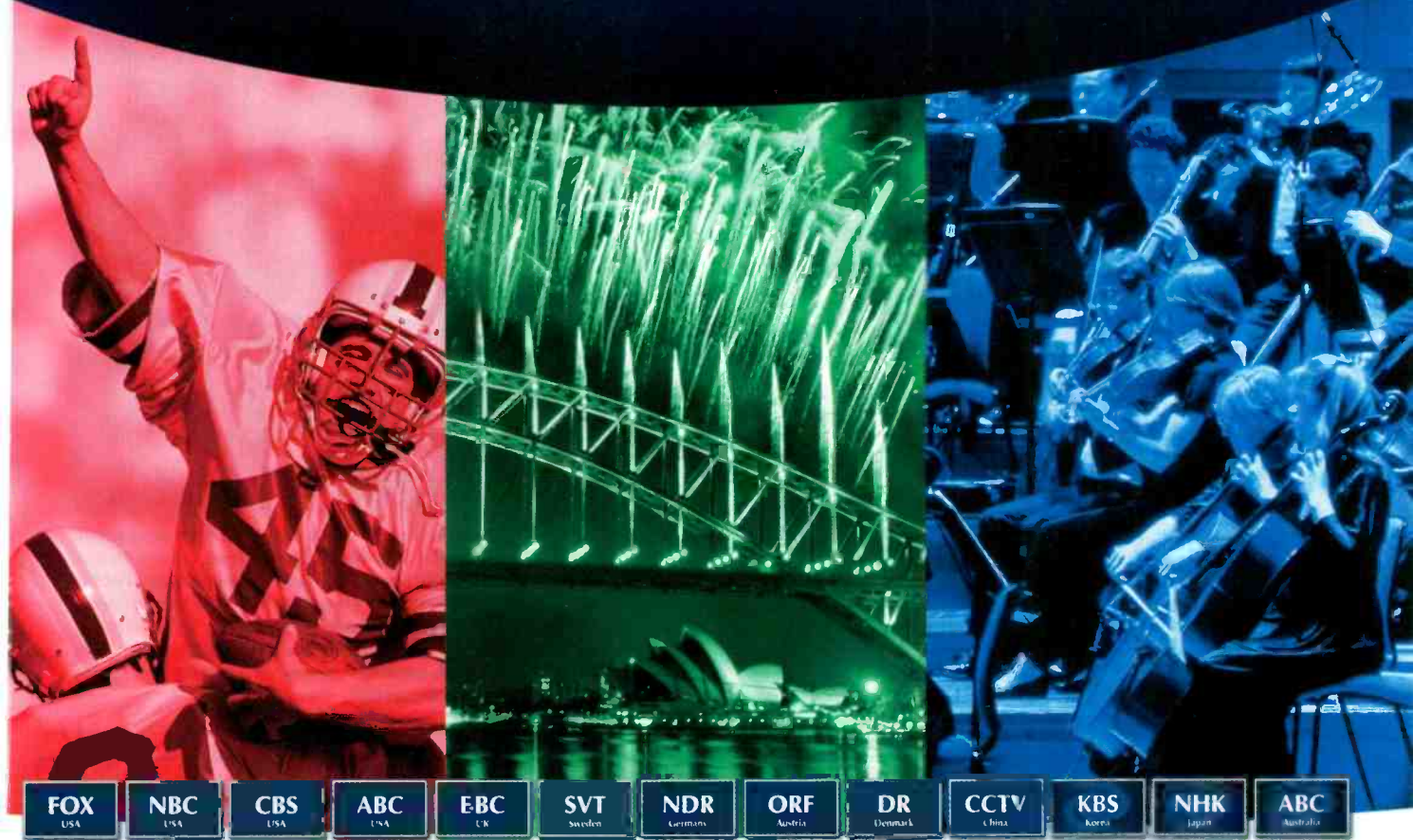
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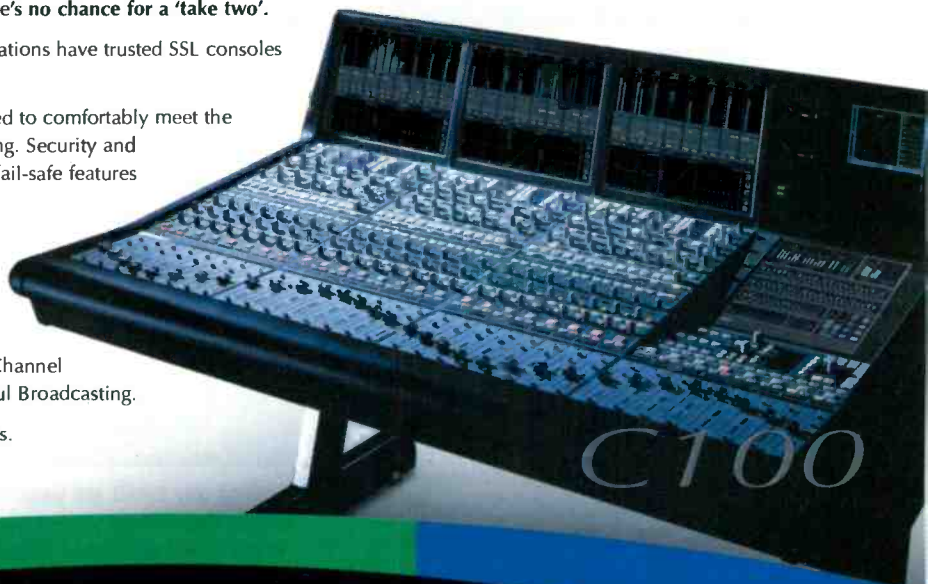
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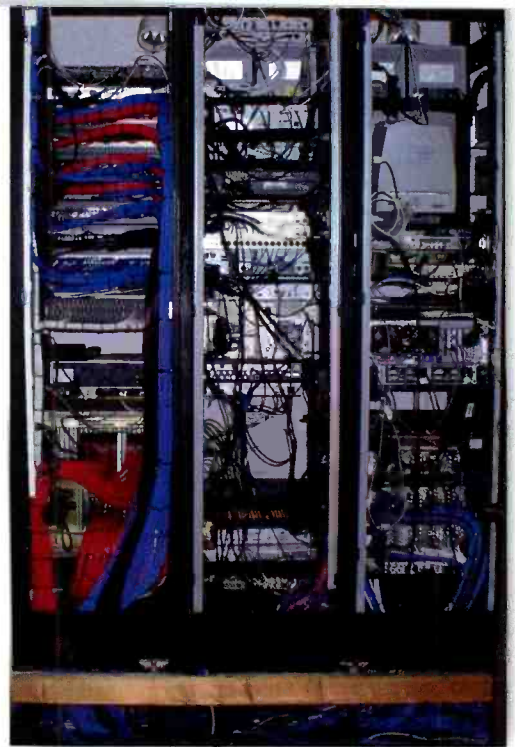
ment racks for system maintenance. Engineers can access these racks through doors installed in the production studio, located directly behind the terminal-gear area. The master-control console pulls out from the wall for maintenance access.

A sliding glass door separates production control from the terminal-gear area. A Mackie digital audio mixer with support hardware is central to the audio operation, located within a booth on the right side of the room. A window in front of the Mackie board looks directly toward the production control console, built by Laguna Designs. A Ross Synergy One production switcher sits atop the console, along with a Chyron Duet character generator, SpencerTech Newstore for DVR capabilities, JVC D9 tape machines and Thomson OCP42 camera-control units. The

ICTN network-news operation upstairs and various cable productions downstairs share many of these systems.

A monitoring wall sits above the console displaying the status of various video feeds. Multiple Ikegami 9-inch black-and-white monitors and JVC color monitors are arranged on adjustable shelving for reconfiguration. The Ikegami monitors are for confidence monitoring; the JVC color monitors are for critical signal monitoring. A TSL under-monitor display system tracks the monitor feeds.

The 4000-square-foot production studio is large for a cable-television facility, with three new Thomson 1707



**DST simplified maintenance procedures for the engineering team by adding rear access doors to all terminal gear equipment racks and built doors into a production studio wall behind the terminal-gear area. This allows engineers to access those racks through the production studio instead of pulling the racks out from the wall.**

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	• RGB Analog	• RGB Analog
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	• 1080 30/24/25P	• Composite Analog
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cameras sitting on Vinten Pro-Ped pedestals and heads.

This studio adds a redundancy layer for news control. If the ParkerVision system were to fail, the ICTN staff could produce the news manually between the studio and production control. KCSB and ICTN will produce locally originated programming from this studio. Both entities also produce contract-for-services work, including infomercials and marketing videos. The studio is also available for rent to independent producers.

The downstairs editing bays feature Avid Xpress DV nonlinear systems, which also tie to the Avid LANShare EX system and its 3TB of storage. LANShare EX can accommodate 20 users, and an external switch divides that number evenly between floors — 10 upstairs, 10 downstairs. This setup allows the production and news departments to share content.

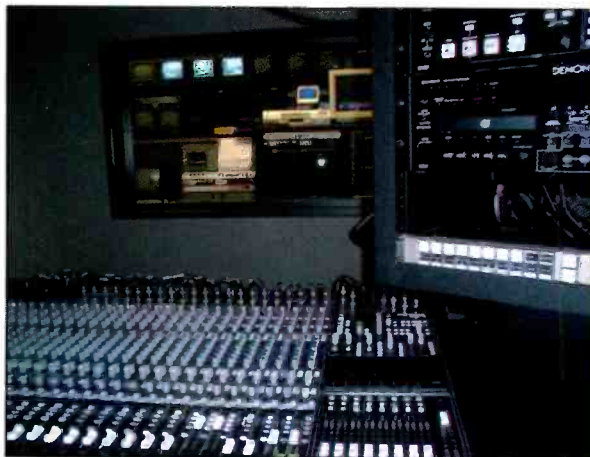
One path to and from each editing area connects to the Ross Talia routing system, so edits done through the Avid systems can be ingested into the BlueMPEG video servers. Firewire patchbays were installed to connect between all facility editing bays. An operator in one edit bay requiring a tape machine in another bay can patch between the different systems.

### Making the connection

All facility wiring is Belden 1505. Conduit runs were installed to connect systems between floors. Wiring for both the production control room and terminal-gear equipment is located under access floors, and that wiring feeds directly into the master-control console. A path from there feeds into the news control-room equipment upstairs. All wiring is HD-

capable for future expansion.

Four cable-company-supplied modulators multiplex the separate broadcast signals as they leave the building. The multichannel signals go through the Ross CDK111 downstream keyers out of master control and into Videotek 12x1 analog switchers to provide backup signals in the event of router failure. Those signals then go into the cable headend modulators.



**The audio suite within production control is located within a booth on the right side of the room. An audio operator has clear view of production control through a window built into the suite. A Mackie digital audio mixer with support hardware is central to the audio operation.**

With the Inland California Television Network and KCSB co-located in the same facility, it was important to connect sources throughout the facility to allow both operations to share equipment. The openness of the facility and sense of inter-communication, along with future upgrade paths for a tapeless newsflow and high-definition television, create a future-ready cable television system that positions the City of San Bernardino telecommunications production facility well for the future.

*Jeff Muhleman is vice president of contracts at Digital System Technology.*

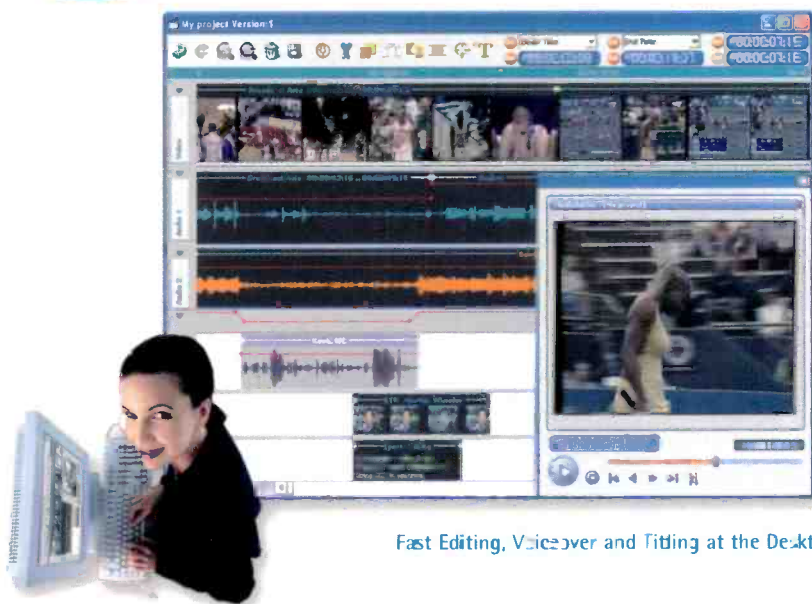
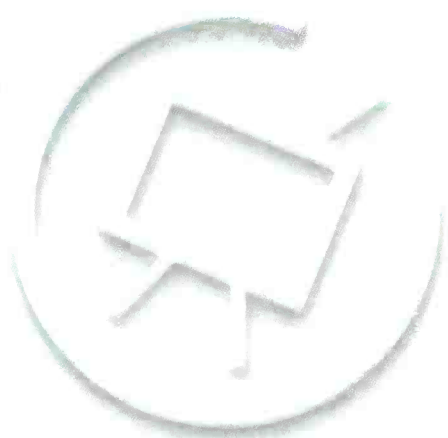
## Equipment list

- BlueLine Technology:
  - Automation suite
  - BlueMPEG video server
- Ross Video:
  - Talia video router
  - Synergy One production switcher
  - Ross CDK111 downstream keyers
- ParkerVision:
  - PVTV CR16 automation
  - Digital CameraMan
  - SHOT Director
- Thomson:
  - 1707 video cameras
  - OCP42 camera control units
- Avid:
  - iNEWS newsroom automation
  - Xpress DV and NewsCutter XP
  - LANshare EX storage
- 360 Systems:
  - Image Server 2000 storage
  - DigiCart
- Chyron Duet character generator
- Spencer Technology Newstore
- Mackie 32-8 digital audio mixer
- Videotek 12x1 analog switchers
- Leitch DPS575 frame
- Scientific-Atlanta and Motorola satellite receivers
- JVC color video monitors
- Ikegami b/w video monitors
- TSL UMD-S8C displays
- JVC D9 and GY-DV5000 VTRs
- DISC-Storage Systems DVD Jukebox
- Vinten Pro-Ped pedestals
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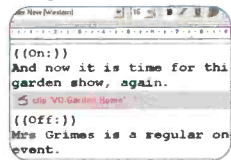


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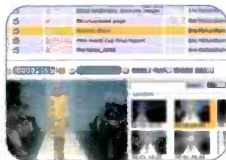
### Multichannel Ingest



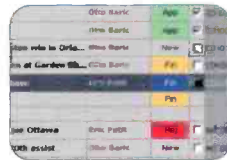
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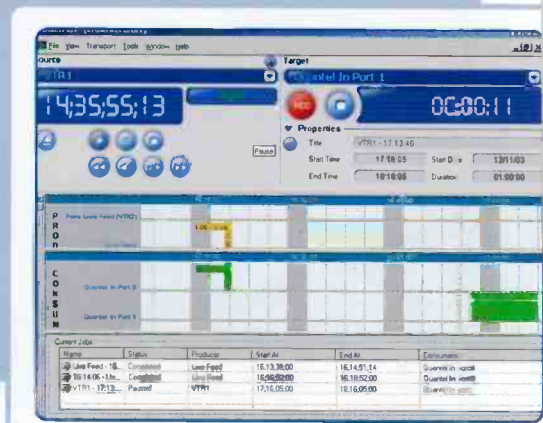
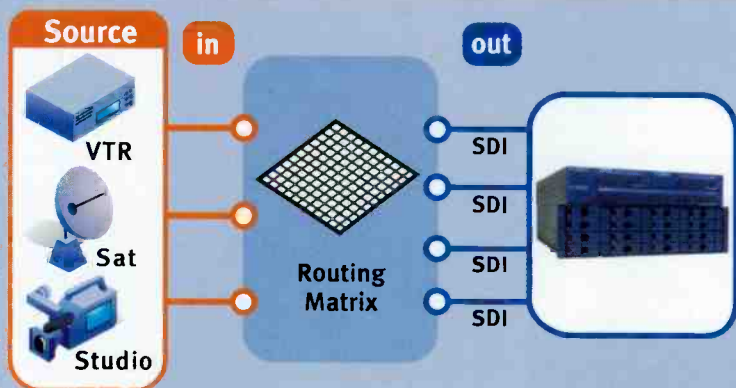
# Dalet *plus* News Suite

## A INGEST

Flexible Media Ingest > Immediate Previews

DaletPlus News Suite provides an intuitive scheduling template to automate recording of feeds and events. Users can preview incoming media in low resolutions, set markers, and enter notes - even while recording is in progress. High-resolution files (MPEG2, DV, DVCPRO) are automatically converted to lower resolution formats for quick browsing.

Without altering the original feed, multiple users can simultaneously preview ingest channels, log and track clips. Story creation is faster as source materials are available immediately from the desktop.



Editing and voiceover tools are designed specifically for journalists. Plug the camera into the firewire port, edit video while recording, add voiceovers/titles. One click sends material to air. Media is shared across the IP network - low resolution files are edited from the central server. There are no complicated features. Journalists can select and assemble material that will be edited by the craft editors.

## B Desktop Editing

Titling and Voiceover Tools for Journalists





# Dalet<sup>plus</sup> News Suite

One Simple User Interface Ingest, Edit, Schedule, Playout and Archive



The DaletPlus News Suite solution offers powerful workflow and production tools from one user-friendly interface. DaletPlus News Suite ingest, editing, playout and archiving functionality can be tailored to meet the needs of any newsroom. Developed on the proven DaletPlus media asset management platform, News Suite provides enterprise-wide content searching, browsing, and retrieval of media. Integrated text and video simplifies production and enhance newsroom workflow.



Desktop tools designed for fast editing, voiceover and titling with CG templates.

Name	In	Out	Duration	Keywords	Source
Trucks -	00:00:05:07	00:00:17:15	00:00:12:09		
Tires -	00:00:10:08	00:00:11:27	00:00:01:20		
Smoking -	00:00:01:00	00:00:10:14	00:00:09:15		
Hotels -	00:00:03:15	00:00:16:22	00:00:13:08		

The interface also includes a preview window showing a woman wearing headphones and speaking into a microphone, and a text editor window with a news article snippet about American fashion.

Integrated text and video production, search and retrieval in one common user interface.

# Workflow and Production

## **E** On Air

### Reliable OnAir Playout

Producers have precise control over the broadcast making it an ideal solution for even the most demanding newsroom environments. The DaletPlus OnAir module manages automated and A/B roll playout of video clips, text and graphics. Support for live events with router control, show tracking, and secondary device triggering. Last minute reordering of the playlist is bi-directional.



### Open Standards, Interfaces & Partnerships

DaletPlus News Suite is a standard IT-based system that allows broadcasters to free themselves from closed, expensive, proprietary solutions that limit scalability and productivity. It can be integrated with many 3rd party systems through a variety of industry-standard protocols including XML Bi-directional MOS (Media Object Server), ActiveX/OCX, RS422, GPI, XML, J2EE and VDCP or specific API control of a wide-range of video servers.



### **I** Automation

- A/B roll
- Real time live update from Rundown

### **II** Device Integration



- Prompter
- External CG
- Switchers
- Still Stores

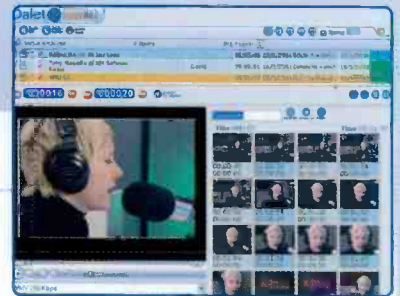
## **F** Multi-location Production

### Extending the Newsroom > Remote Personnel & Group Connectivity

DaletPlus extends newsroom production to remote bureaus and users. Through the DaletPlus InterWeb option, users in the field connected to MS Internet Explorer can upload digital files, enter metadata, and browse low-resolution proxies. Users can also create rough cuts, shot lists and render out high-resolution files.

### Archive Sharing

DaletPlus News Suite catalogs and tracks scripts, associated graphics and audio/video clips for fast and comprehensive search and retrieval. Users can simply browse the low-res search results right from their desktop. What used to take hours – retrieving archived materials – takes only moments with DaletPlus News Suite.



# An End-to-End Solution for Managing Television Newsroom



## C NewsWire

Tight Rundown Management

DaletPlus provides extensive controls for organizing and managing the rundown. This includes sub-rundowns, templates, specialized views, and last minute updating. Broadcasters can easily control CGs, teleprompters, video servers and other 3rd party devices. Advanced rights management enables multiple users to collaboratively program the same rundown.



## D Media Asset Management

Expert Asset Management > Faster Retrieval

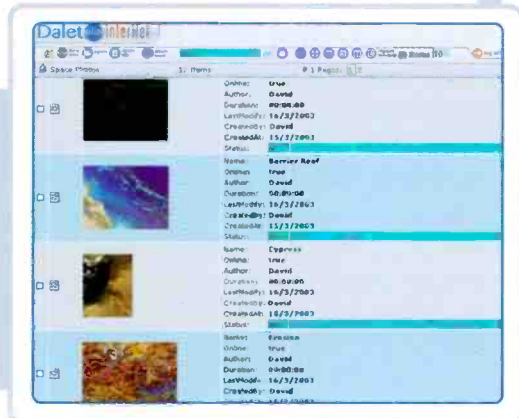
DaletPlus media asset manager centralizes and catalogs all content: text, audio, graphics, and video. DaletPlus asset manager forms can be easily customized to capture any detail such as name, air date, shot sheets, and licensing information. These forms can also associate various media materials into a single asset for easy search and retrieval of packages. Media metadata can be entered at any time. Regardless of where media is stored – online, near online or offline - metadata remains online and searchable at all times. Search and retrieval of media is incredibly fast and easy.

Collaboration Tools

Indexing / Rendering / Conversion

Media Asset Management

Enterprise Archive





## Canal Sur

The Canal Sur installation in Spain is one of Dalet's largest television and radio newsroom endeavors. DaletPlus is installed on 800 workstations. It facilitates the production of 30 television shows and 70 news radio spots per day. Through DaletPlus, Canal Sur television and radio journalists have shared and immediate access to centrally stored news materials and stories.



## Fashion Show Media Network

Fashion Show Media Network has implemented DaletPlus to manage media content and campaigns for its fashion retail complex, The Fashion Show, located on the world-famous Las Vegas Strip. DaletPlus simultaneously schedules, choreographs, and synchronizes multi-channel playout, video signal routing, audio, projection, lighting, and more.



## SWR, newsroom of the future

SWR, the second largest station of Germany's public broadcasting network ARD, has implemented a state-of-the-art TV digital newsroom. The Dalet newsroom supports the complete workflow and integrates video servers, character generators, still stores and an automation system providing one application interface to journalists.



## Weather Channel

The Weather Channel has chosen Dalet to power an Internet-based distribution system that allows affiliates to view customized weather updates and download broadcast quality audio weather forecasts.



## XM Satellite Radio

XM Satellite Radio is the first commercial digital satellite radio service offering 100 digital channels of music, news, and talk programming across the US. To take on the Herculean task of managing over 2 million titles, more than 250 Dalet workstations are simultaneously producing, scheduling and playing out content.

## About Dalet

Founded in 1990, Dalet is a leading developer of software solutions that facilitate the management of audio and video assets for broadcast, entertainment, government, education, corporations and non-profit organizations. From content acquisition to production to scheduling to broadcast, Dalet offers an integrated set of easy-to-use tools that simplify and enhance the process of getting to air. Producers and journalists become more productive with tools that allow them to easily search, assemble, and produce text, audio, and visual content – right at their desktops.

Operating worldwide, Dalet solutions are used in over 60 countries by 1,700 customers including ABC, ARD, BBC, Cadena Ser, Canadian Broadcasting Corp, Catalunya Radio, Deutsche Welle, EMAP, Emmis, Entercom, France Télévision, ITN, Journal, Lagardère Media, Macquarie University, MBC, Mediaset, National Public Radio (NPR), NDR, Radio France, Radio France International, SWR, The United States Senate, Universidad Autónoma de Barcelona, Voice of America, Washington and Lee University, WDR, Weather Channel and XM Satellite Radio.



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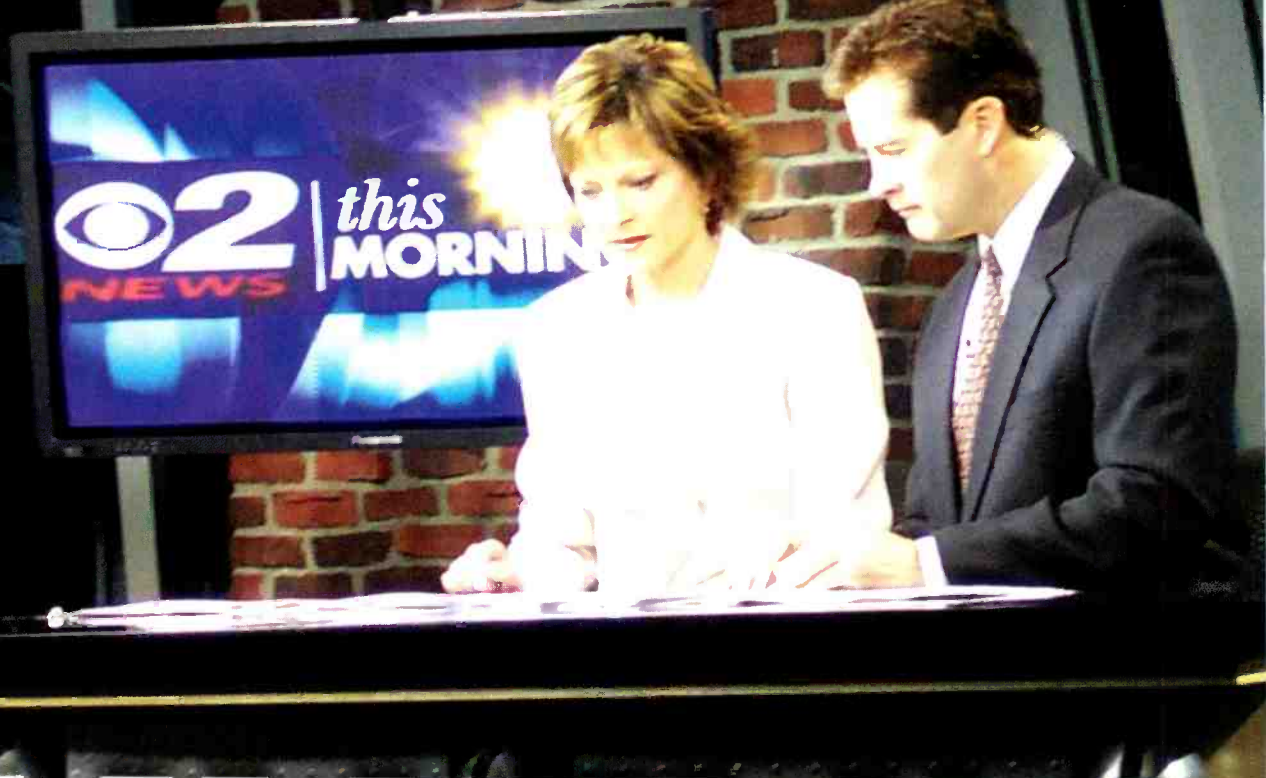
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# KUTV'S downtown move

BY TOM NORMAN, CPBE

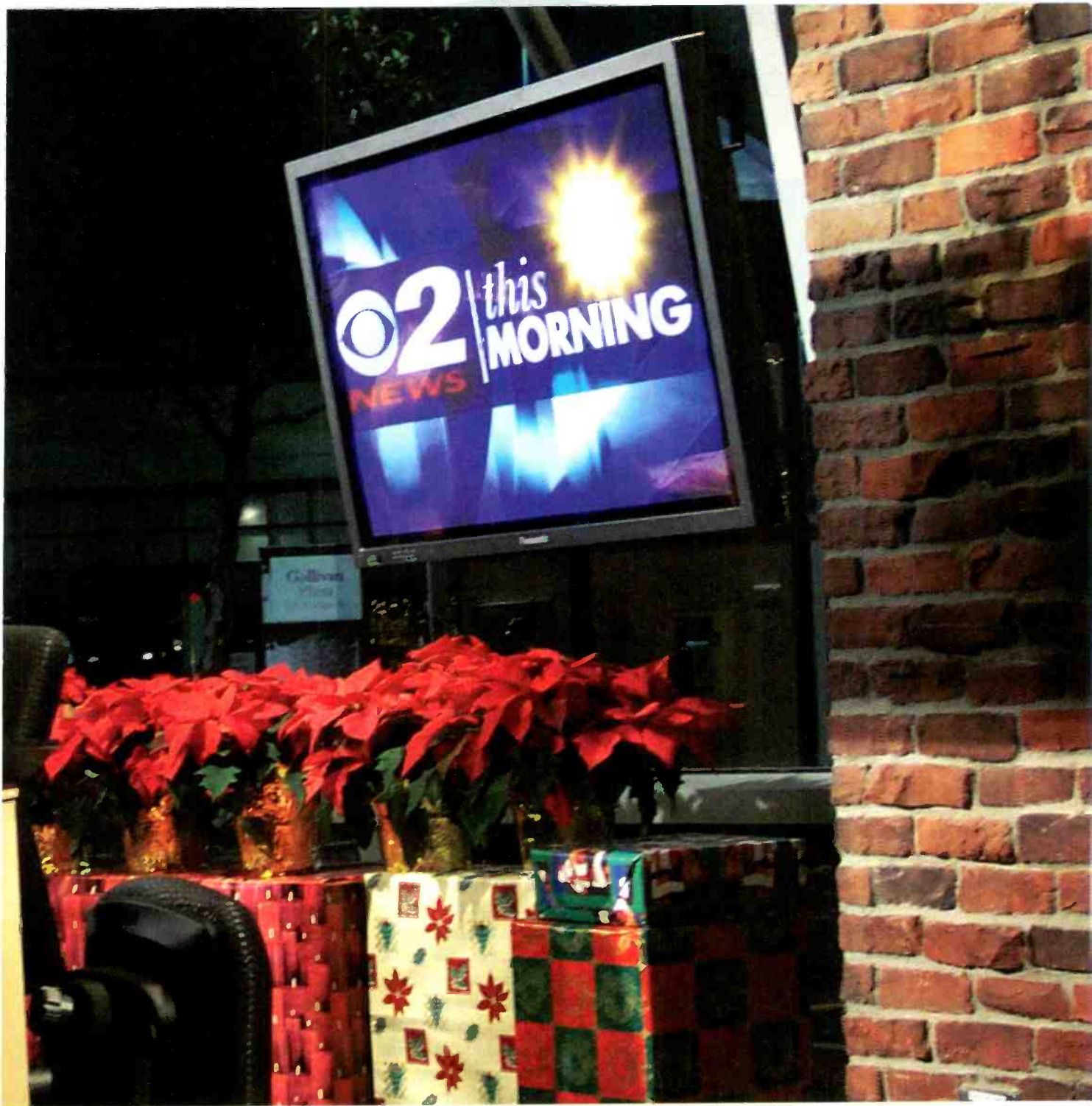
**W**hen KUTV-TV, a CBS-owned-and-operated station in Salt Lake City, UT, made the decision in 2003 to move from its outmoded facilities in West Valley, UT, to a new location, it was easy to see why. The station was bursting at the seams with the addition of new equipment for its

digital broadcasts. And, the new downtown location was in a beautiful, centrally located building just minutes away from the city's center.

It was important to involve an experienced systems integrator to handle every phase of the operation — from the design to the actual move — because the station had to continue

broadcasting even during the move. With a project like this, good planning would be key to a successful transition.

After evaluating a number of integrators, KUTV chose Harris Broadcast Communication Division's Studio Products and Systems business unit. Working with building management, architects, electricians, lighting con-



**In the new facility the anchor desk has Main Street as a backdrop, through windows constructed of bulletproof glass, so the public can walk by and see the studio in operation.**

sultants, general contractors and an equipment list, station engineers met with a team from the integrator to come up with a facility that would be eye-catching, functional and conducive to the delivery of a quality product to their Utah audience.

The new facility in the Wells Fargo Building required substantial recon-

struction. Remodeling the space required compression of several func-

tions into a much smaller space, including news, the news studio and the

production control room for news.

The new location was designed to

**Remodeling the space required compression of several functions into a much smaller space.**

include the Salt Lake City cityscape as backdrop to the news studio. Camera

2005  
TELEVISION  
SHOWCASE



**The feed room controls incoming ENG and SNG feeds for live and delayed remote news production. Feeds may be recorded in the room, or edited packages brought to the room on tape for playback during newscasts.**

shots of the anchor desk have Main Street as a backdrop, through new windows constructed of bulletproof glass. The public can now walk by and see the studios, the production control room with the monitor wall, and the newsroom in operation. Special gel curtains correct for the difference between indoor and outdoor light during daylight hours, and opaque curtains can be dropped into place when desired. All of this gives the station a feel of immediacy and connection with the public that was impossible in the station's former location.

The new facility is also equipped with outdoor curbside connections to allow camera shots to originate outdoors. The station now includes outdoor shots in every newscast. This new setup gives the station's weather talent an opportunity to interact with the public during their outdoor forecasts.

The first broadcast from the new lo-

cation was an outdoor debate between the incumbent mayor and his challenger that took place just outside the studios. The feedback from the public so far has been positive, with a corresponding increase in ratings.

The location includes access to the helicopter landing pad and antenna deck on the 25<sup>th</sup> floor, affording line of sight paths to virtually the entire valley. In addition to an ENG antenna

array located on the 25<sup>th</sup> floor balcony, microwave relays link several hilltops with the station, enhancing KUTV's ENG presence. The top deck of the parking structure next door is home to satellite antennas and a satellite shack housing receivers, IRDs and communications. All signals going to

and from the 25<sup>th</sup> floor and the satellite shack are carried via fiber, including IP telephone instruments.

The station was already using embedded audio in its high-definition master control program chain, with good results. This positive experience led to the decision to build the new SD plant using embedded technology. All routed audio is embedded upstream of the router, or is embedded

**The move was structured around an inflexible schedule and required careful planning.**

native to the source devices. It is embedded locally, as required, downstream for processing and monitoring. Master control utilizes embedded audio exclusively. Utah Scientific previously supplied an HD router and master control for the station. Satisfaction with this system was a significant fac-



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**A rack in the technical core area shows well-planned wiring paths, and wires color coded for varying signal types. Where practical, wiring is nested into the 4-inch space between racks, to improve access to equipment rear panels.**

tor in the station's decision to build the new SD plant around a 128x128 Utah-400 wideband router and master control.

Budget considerations demanded preservation of the existing analog videotape and server technologies. Thus, all legacy videotape and server sources and destinations utilize D/A and A/D signal conversion, as well as audio embedding and de-embedding. Evertz supplied the conversion, embedding, de-embedding and fiber optic transport technologies, in addition to designing a few new products for first use at KUTV. Among these is an AES distribution amplifier with a full-bandwidth analog audio stereo pair output. Also, Evertz supplied analog component-to-serial digital video converters with audio embedding, and the companion serial digital video-to-analog component video converters with audio de-embedding. The in-

stalled base of embedding and de-embedding instruments can be repurposed over the years as technologies within the system are changed. This would not have been possible if, for example, SDI and AES retrofits had been purchased for videotape machines.

The move was structured around an inflexible schedule, and required careful planning. The master control room and technical core facilities were built onto a mezzanine, a floor constructed halfway between the basement floor level and the ceiling 24 feet above it. This part of the plant lies beneath the street-level newsroom, news studio and production control room. Engineers and technicians designed and assembled as much of the plant as possible at Harris' facilities in Mason, OH. The systems were shipped with wire harnesses in place to Salt Lake City, then forklifted into

place on the mezzanine through a hole that had been left in the wall for this purpose. The wall was enclosed after the equipment was delivered.

As the time came for the master control room to move, a partnership between station engineers and integration personnel enabled orderly transport, test and configuration of the necessary pieces. Because of redundancy among servers, videotape facilities and satellite receiving systems, it became possible to move master control in two phases. Phase One moved standby equipment to the new facility and con-

**The new facility is also equipped with outdoor curbside connections to allow camera shots to originate outdoors.**

figured it for the new location on the Saturday following Thanksgiving, while the old master control continued to operate for one more day. Phase Two commenced when the new master control was on the air. During Phase Two, the balance of the master control equipment was moved, configured and made available for use. Utah Scientific engineers made several visits to help, configure and troubleshoot during the transition.

## Design team

### Harris:

Tom Norman, lead engineer  
Caryl Parry, engineer  
Tina Yontz, project manager  
Eob Bruser, installation supervisor  
Mark Everett and Tim Hudson, on-site engineering  
Mike Jones, Mike Butkewicz and Fick Emerson, installers

### KUTV:

Dave Phillips, general manager  
Dave Hudson, dir. of eng.  
Gpp Greene, eng. mgr, designer  
Scott Jones, news operations mgr.  
Bruce Mortenson, staff engineer  
Bob Thomas, Reid Haroldson, John Bradford and Jerry Huber, eng.  
Nick Van Haaster, console furniture designer

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**Remodeling the space in the Wells Fargo Building required KUTV-TV to compress several functions into a smaller space, including the production control room for news.**

While Phase Two was beginning, preparations were being completed to move the production control room the following weekend. The station rented a production truck and produced the news outdoors during the weekend while the production facilities were moved. The station integrator partnership during this move was key to its success. The new environment required some adjustment on the part of the people working in it, but adjustment was rapid and the transition was unnoticeable to the viewing public.

In addition to the Utah Scientific and Evertz core equipment, the facility utilizes a Ross Synergy 4 switcher that was in operation in the former location, and a new Euphonix MaxAir audio mixer. Miranda Kaleido gear provides multi-image displays via VGA splitters to Clarity flat plasma screens in the monitor wall, and to several 17-inch flat plasma displays located at the director, producer and audio operator positions. A Clear-Com Matrix intercom system is used in conjunction with legacy RTS TW gear.

The project team was able to work together to design and execute a highly

complex operation. The successful effort proved that a move of this complexity can be done in a timely manner and with a minimum of disruption

to the station's on-air product. **BE**

*Tom Norman, CPBE, is a systems engineer with Harris.*

## Technology at work

### Utah Scientific

MC-2020 MC switcher

Utah-400 digital router

12x12 HD routing switcher

Euphonix MAXAir digital audio console

Miranda K-2 processor

### Evertz

7745FS frame sync

500AMDA, AES audio DA

500VMDA, SDI DA

500ADA, analog video DA

7735CDM A/D converter

7735CEM-A4 D/A converter

7730ADC-A4 RGB-SDI A/D conv.

7730DAC-A4 SDI-RGB D/A conv.

7720AD SDI-AES audio de-embedder

Extron DA4 RGVBH, VGA DA

### Marshall

V-R82P Dual LCD monitor

V-R563P, triple LCD monitor

Symetrix GENx6 word clock generator

TV One LM-1501R 15-inch LCD monitor

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# Coverage holes

BY DON MARKLEY



The terrible truth is that you can build a beautiful transmitting plant using the latest state-of-the-art transmitters and antennas and still find areas where the signal is less than optimum. That is another way of saying that some of your viewers won't be viewing, causing them to complain to the front office. Even worse, they may mention the problem to advertisers. The result will inevitably be a reaction varying from management memos to loud discussions at staff meetings. As chief engineer, you have to determine what the problem may be and then determine if it is fixable.

## First things first

The first thing to do is check the transmitter plant itself. The problem probably doesn't lie there, but it's always a good idea just to verify that it's working properly. And, if the vast majority of your predicted service area is receiving good signals, the

problem probably doesn't lie with your antenna system, either. Transmitting antennas are so finely tuned that any failure will probably show up very quickly at the transmitter. The exception is an antenna with lots of power dividers, individual lines and pieces that can fail, such as a panel or

bat-wing type of antenna. There, failures can occur well down the power-division chain without showing up on the transmitter VSWR meter. But such failures aren't going to affect just the signal out on Moose Breath Road; they'll affect everything in the direction of Moose Breath Road and in some of the area on either side of that path. An antenna malfunction cannot create a hole in signal coverage. That phenomenon is caused by path blockage or terrain variation.

## Propagation study

Next, contact that oft-maligned helper, the station's consulting engineer. He should perform a Longley-Rice propagation study of the area involved to see if the problem is terrain-related. The study looks at the terrain all the way from the transmitter to the

## An antenna malfunction cannot create a hole in signal coverage.

individual receiving point. But the current method uses relatively large blocks of area and checks within those blocks for signal. If the consulting engineer finds a signal anywhere within the block, the entire block is considered to be receiving service. If problems seem to be occurring in small areas, have the consulting engineer perform the study with areas only a few tenths of a kilometer on a side. This is much the same as adding more pixels to a display — it offers more detailed results. If the study indicates that the signal in the problem area should be good, it's time to break out the meters and visit the area.

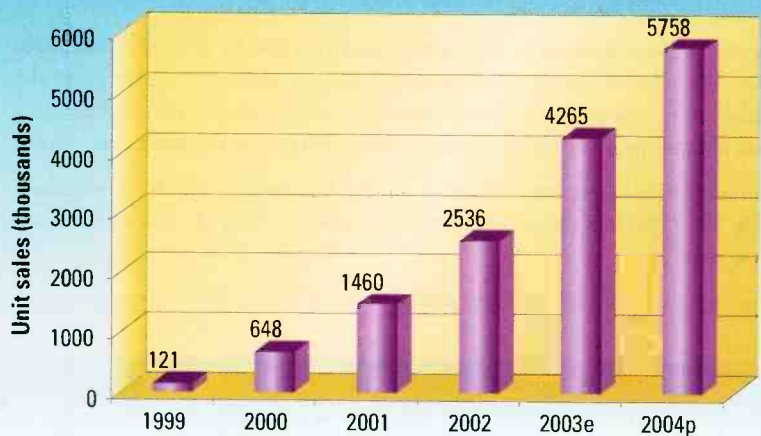
## On-site investigation

When you visit a site, pay particular attention to man-made obstacles such as buildings. An obvious example of such a problem area is the north side of Chicago. Similar to other cities, Chicago has an area of tall apartment and office buildings separated by concrete canyons. The signal quality down in the lower parts of those areas is poor, and can reasonably be cured only by (pardon the foul language) cable TV service. Besides blocking a signal's direct path, a large, flat-sided building can create horrendous multipath

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problems. For example, the Sears building in Chicago has long caused an apparent ghost in signals originating on the John Hancock building and being received northwest of the loop. The ghost is a reflection off the side of the Sears building, which is acting like a big billboard reflector.

If there is a problem, it probably isn't going to be limited to a few houses. But there are always exceptions, usually where homes are located in a comparatively low-lying area or on the wrong side of a steep hill. In hill country, there can be large areas, including cities, that simply are blocked from receiving the main signal. For years, analog broadcasters have treated these problems by using either boosters or translators. That isn't going to change with DTV. But just how DTV broadcasters will do it is still uncertain, pending rulemaking and the accumulation of more experience.

One approach to solving such a problem is using on-channel, synchronous transmitters. For example, Penn State Public Broadcasting has proposed using such transmitters to cover local communities that can't receive the direct signal from the main transmitter. For more information, check out the Axcera Web site at [www.axcera.com](http://www.axcera.com).

In fact, broadcasters have put a considerable amount of effort into investigating the use of several lower-power transmitter sites instead of one main site to cover the desired area. That may be a good solution for servicing hilly or mountainous areas. So far, though, the investigators haven't amassed enough experience to provide conclusive answers.

For more even terrain, ATV services are turning out to work well. As a general rule, if a station has had good analog service in an area, the digital signal will be good there as well. DTV service is turning out to be robust. A lot of the old fears that many broadcasters expressed concerning signals over the horizon, shadowing, etc. are turning out to be unwarranted. In other words, DTV is working well. In fact,

many stations are finding that their DTV service is better than their analog service ever was.

### Antenna problems?

If there is no apparent reason why the signal propagating in one or more directions from a station is not providing the desired service, it is possible that the transmitting antenna system, together with the structure on which it is mounted, isn't providing the desired performance. Unfortunately, a lot of stations try to save money by buying a new antenna without commissioning a study to

## Many stations are finding that their DTV service is better than their analog service ever was.

determine how it will perform in the total installation. There is no such thing as an omnidirectional antenna in a side-mounted configuration. But you can predict the effects of the tower and, as a result, attain a reasonably accurate analysis of the predicted coverage. If you haven't commissioned such a study, or if you have and the study reveals a problem, it is possible to do some measurements to confirm that the antenna is doing its job.

### Ground measurements

In previous articles, we have discussed measuring television signal strength. Here, the task isn't as much to determine the exact value of signal strength as to determine the antenna pattern — that is, the relative pattern of the transmitted signal. You can sometimes spot severe problems by using a field-strength meter on the ground. The procedure is to properly extend and adjust the meter's antenna, take measurements at a number of points within a small area, and average the measured values. You can repeat this procedure at a number of locations, all of which you should carefully select to be at the same distance from the antenna and to be relatively clear of obstacles. If you

suspect there's a nasty problem, such measurements may confirm its existence. The problem with such measurements is that it is extremely difficult, if not impossible, to separate the effects of terrain and path obstacles from the performance of the antenna itself. Don't expect this method to identify small changes or problems in antenna performance.

### Mid-air measurements

Measurements made from an airplane or helicopter, when properly performed and analyzed, can give a more accurate representation of an-

tenna performance. Most consulting engineers have their favorite methods of performing such measurements based on experience. There are a couple of firms that perform measurements from an airplane to analyze antenna performance. The author has seen the results of some such measurements that were fairly good, but he has also seen some that were useless. Don't simply take such measurements on your own. You can get much more meaningful results by working with the station's consulting engineer and the measurement firm. It's not difficult to obtain huge amounts of data. The real challenge is analyzing the results to provide answers to your questions.

### An imperfect world

Finally, you may find that there just isn't any way to get signals to a particular area. The station's management may not like this conclusion, but they will likely find it preferable to buying and installing a translator for four homes. **BE**

*Don Markley is president of D.L. Markley and Associates, Peoria, IL.*

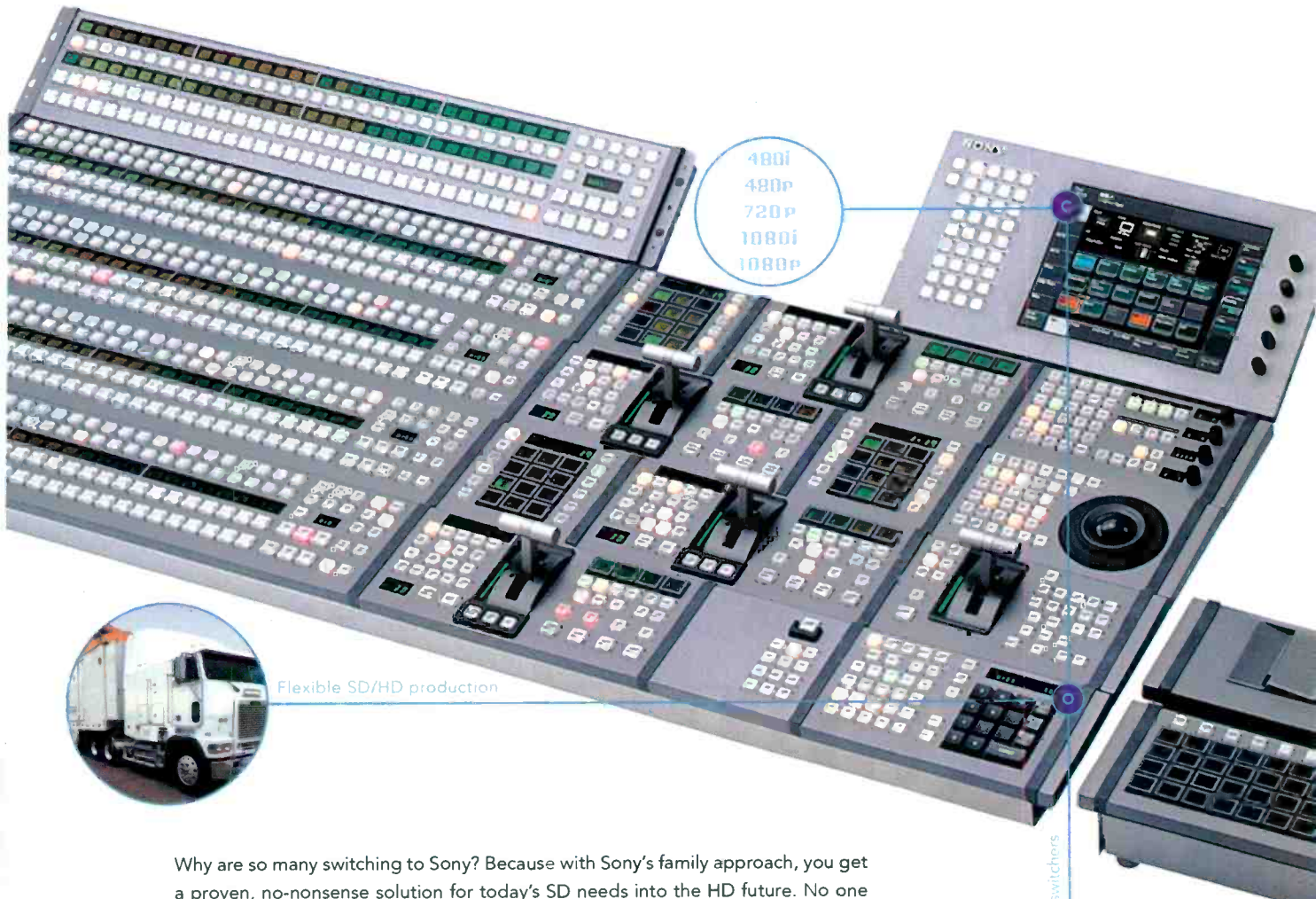


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The number of stations offering digital services, including HDTV, is steadily increasing.

# SPECIAL REPORT: High definition A view from the top

BY MICHAEL GROTTICELLI

**W**ith competition heating up, stations are "going digital" in a big way.

After years of complacency marked by stations begrudgingly installing digital transmitters to get on the air with a DTV signal, broadcasters now appear ready to spend on new technologies to build out their production systems and signal-distribution plants.

With the Summer Olympic games, a presidential election and a strengthening economy all encouraging factors in 2004, the motto for broadcasters and cable newsgathering organizations going into this year's NAB convention is, undeniably, "Go digital, or get left behind." In most cases, that also increasingly means the distribution of HDTV-format programs.

## **Budgets loosening**

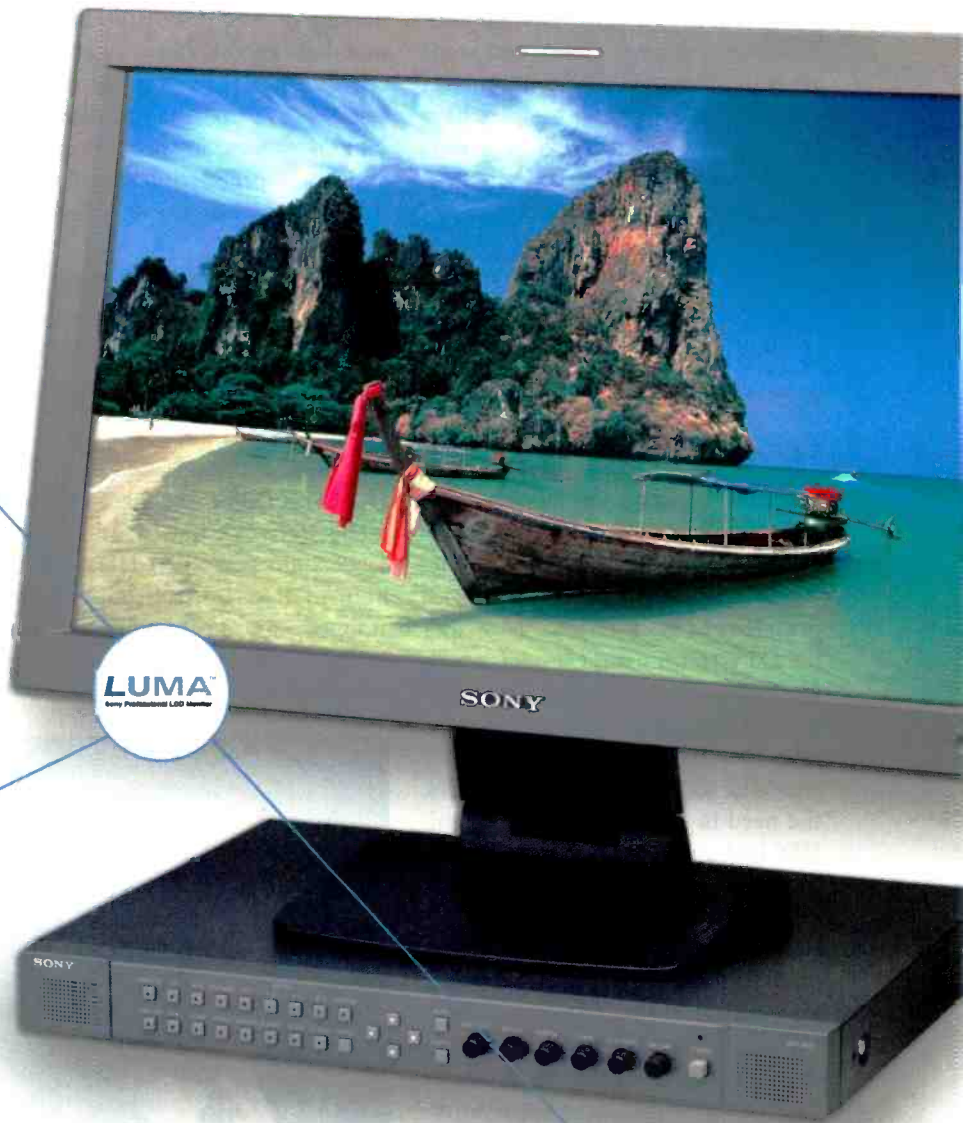
From the network level to the independent affiliate, from cable production to satellite distribution, real optimism for better times ahead has translated into increased spending on technology. That bodes well for manufacturers looking to sell new production and distribution technologies that facilitate streamlined

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workflows and, in some cases, create new revenue streams.

Now that most FCC-licensed stations have gone on the air with a DTV signal (about 1200 commercial and public stations at press time), and some are broadcasting HDTV programs on a regular basis, capital budgets have loosened up and technology investments are being made on the gear most critical to daily operations.

## For terrestrial broadcasters, the need to get digital (and transmit HDTV) is abundantly clear.

"For the last five years, we have been spending significant portions of our capital budget installing DTV transmitters, antennas, transmission line and towers," said Bob Seidel, CBS vice president of engineering. "Now that the DTV transmission systems are in place, it is time to focus on the transition of the plant infrastructure to high-definition television."

Indeed, for terrestrial broadcasters, the need to get digital (and transmit HD) is abundantly clear. According to the Consumer Electronics Association (CEA), there are now, or will soon be, roughly 23 HD channels available on cable and satellite, and approximately nine million homes equipped with HDTV sets. Broadcasters have to convert their plant infrastructure to handle SD/HD digital signals to remain competitive.

Aside from the need to install a serial digital signal routing infrastructure, most production executives agree that centralized, server-based systems are most attractive. They add that videotape is becoming less important as media organizations make the move to digital equipment upgrades in their news departments, satellite ingest areas and playout systems.

### ABC optimistic

At the ABC network, all 10 Walt Disney/network-owned stations are broadcasting in digital, although not

all pass through the prime-time HDTV schedule transmitted out of New York. Preston Davis, president of broadcast operations and engineering at ABC Television Network, said there's great reason for optimism regarding HDTV among his colleagues, and that this has translated into an increase in sports broadcasts and studio production. Chief among these efforts was the '03-'04 "Mon-

day Night Football" season in 720p HD (with Dolby Digital 5.1 sound).

The network had produced the 1999-2000 season in HD with the help of Panasonic Broadcast, but stopped after consumers showed little interest in buying HD-capable sets. This scenario changed in 2003 with



**Preston Davis, president of broadcast operations and engineering at ABC Television Network**

a significant reduction in digital (and HDTV) set prices and the availability of spots and entertainment programming from broadcast and cable networks such as ABC, CBS, HDNet,

ESPN, HBO, Discovery, NBC, PBS, Showtime and TNT, to name a few.

In terms of the progress of the DTV transition, Davis said he's optimistic on two fronts: compelling content and digital set sales. "I'm optimistic on the SD business because Disney is a great content company, and all indications are that content is going to be a significant requirement in any broadcast portfolio," he said. "I'm also bullish about HDTV. I think that if you had asked me a year ago, if I thought we would see as much HDTV programming as we currently do, if I thought that the price of an HDTV set would be as low as it currently is, and if I thought there would be as much cable carriage as there is today, I probably would have said, 'No.' So, we're further ahead than I thought we would be a year ago."

As another encouraging sign, Davis said he has more money to spend this year for technology purchases than he has had the past two years due to a recently improving ad market. "There's been comfortable — I wouldn't say 'significant' — growth in the capital money that's available to rebuild the network's facilities."

The network is in the process of building an HD "integration control room" at its headquarters in New York City, where a variety of shows will be shot and edited with native 720p HD equipment. This will be in addition to the existing control room that the network uses to insert commercials into live remote sports and entertainment broadcasts.

The new control room would accommodate native feeds from HDTV studio cameras and HD graphics systems. "We're trying to figure out a strategy that limits our financial exposure but is still able to service the needs of our sports, news and entertainment departments," Davis said.

This HD program island will require native 720p switchers, cameras, tape machines, graphics, routers and upconverters, which are all on the network's shopping list for this year's NAB.

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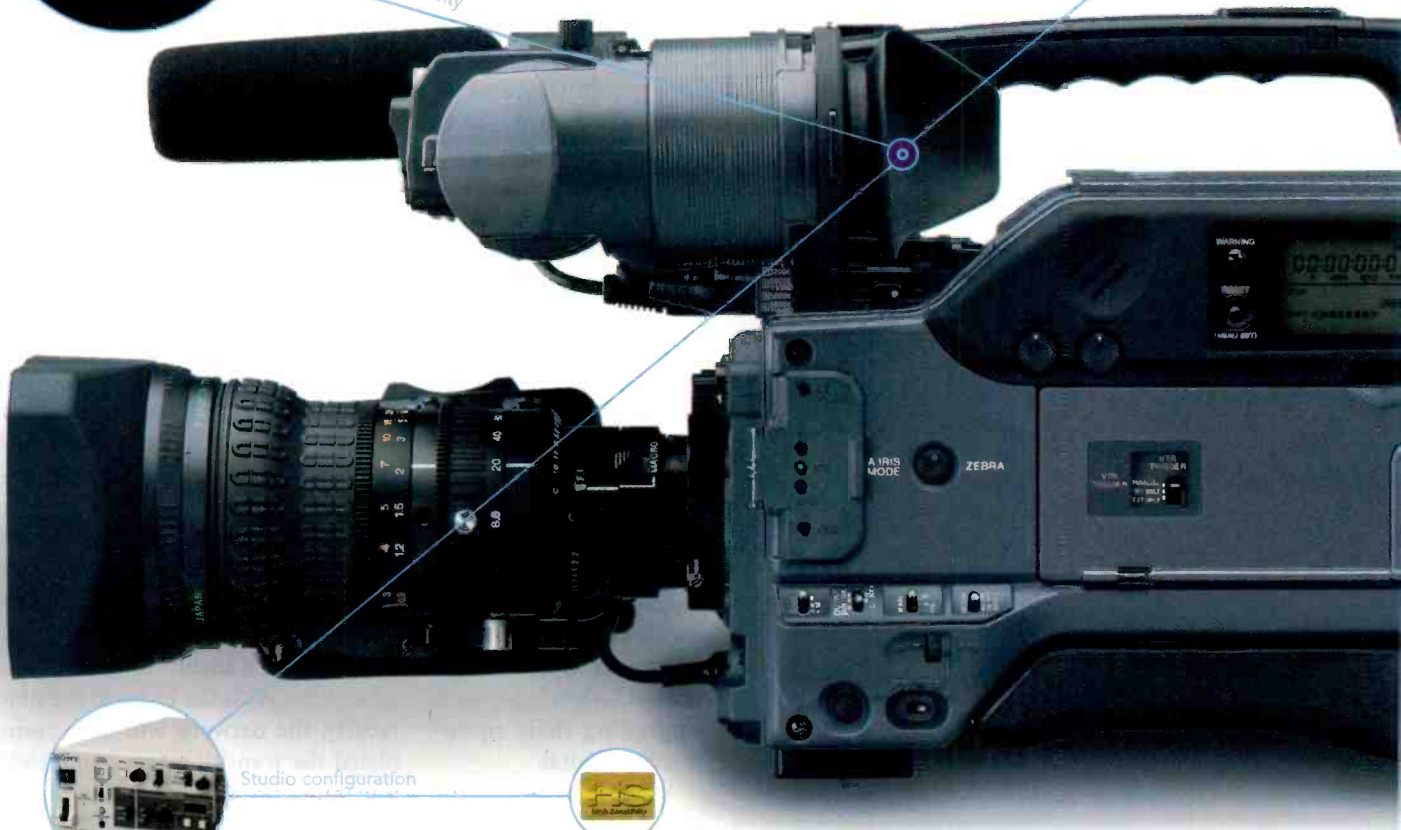
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The network will also be looking for a broad range of convergence solutions that integrate information technology and traditional broadcast hardware over a wide- or local-area networked infrastructure. Digital newsroom computer systems will also attract the ABC network's attention this year.

### **McGraw Hill Broadcasting confident**

Ron Jennings is director of engineering at San Diego-based McGraw-Hill Broadcasting, whose station group includes WRTV-TV in Indianapolis, KMGH-TV in Denver, KGTV in San Diego, and KERO-TV in Bakersfield, CA. Jennings said his company is in the process of upgrading its newsroom operations with new iNEWS newsroom computer systems from Avid Technology, as well as several nonlinear editing systems, a shared storage system and tapeless playout technology from Thomson Grass Valley. The Grass Valley purchase order alone is worth over \$3 million.

Jennings is confident that must-carry agreements will be sorted out and enable his stations to reach the nearly 80 percent of American consumers who watch their DTV through a local cable TV provider. This past season, McGraw's four ABC affiliate stations broadcast "Monday Night Football" in HD to its viewers to a great response.

"Over-the-air 'free TV' is still a good idea," Jennings said. "I am somewhat encouraged by some of the decisions made (or at least discussions) by the FCC with regards to cable must-carry of DTV, some movement by local cable companies wanting to carry our DTV signal, and the makeup of the TV receivers. Overall, I see a good future for over-the-air TV. [Broadcast TV] is a mature business now. [The era of] increasing our profits by double digits every year is no doubt gone, but it's still a very good business."

"The goal for my company, and for any station," Jennings said, "is to consolidate as many common functions as possible, not only at the station level, but across the group. Also, local agreements between news stations for use of helicopter platforms and shared live capabilities, I feel, are inevitable."

### **Cable jumps in**

On the cable-production side, Gordon Castle, senior vice president of technology at CNN, said media companies have to "Jump in there and get started," when it comes to upgrading their equipment to digital.

"While it is true that the technology continues to be refined and integration/interoperability issues are improving, this transition takes time and

there are many steps of improvement that can be realized now," he said. "In making these changes, it is important



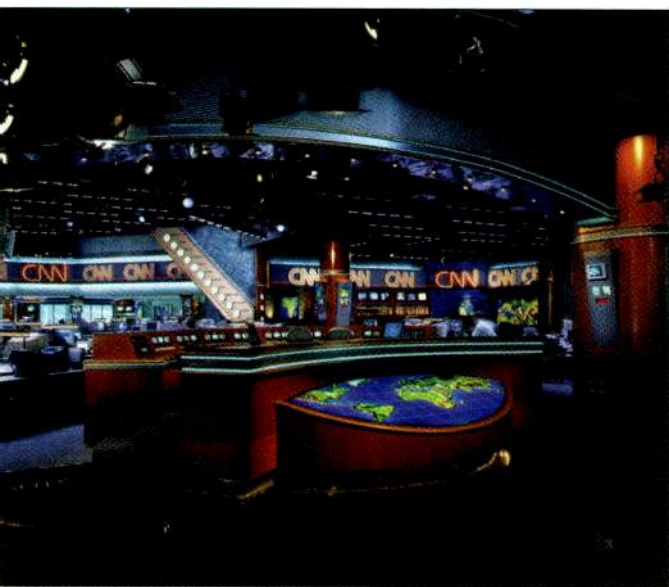
**Gordon Castle, senior vice president of technology at CNN.**

to focus on workflow opportunities and to use this transition as a time to think about the changing business goals for the future."

With capital budgets in place to support this work, CNN has been at the forefront of new media technology investment for some time. Castle said that 2004 is a significant year in the conversion of CNN to an "integrated production environment" (IPE), which will initially result in the transition of the Atlanta news hub. IPE is the name for a project that is moving the cable news giant away from linear videotape to an integrated, file-based environment leveraged by sophisticated media management.

For the last several years, CNN has been replacing aging videotape machines with playback servers, server-based editing, media-management software and a highly advanced digital archive. With the move to the new facility, the network will have completed the transition to a completely integrated production infrastructure based on a collection of MPEG-based recording, editing, playback and digital archive systems. These systems will use IT-style middleware and metadata that takes advantage of the Material eXchange Format (MXF).

At NAB, Castle said CNN representatives will be looking for cost-effective



**CNN Atlanta's newly completed hub is the first of the cable giant's facilities to transition away from linear videotape to an integrated, file-based environment.**

"Our capital budgets are larger than last year, and they are sufficient to meet our needs," he said.



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technology for HD routing, SD switchers and monitoring, stereo and multi-channel audio, automation for real-time production, field editing and contribution equipment, and ENG acquisition.

The next steps in its transition will include the integration of laptop editing into the field. "In addition to editing systems, we are also expanding our file-based contribution," he said, "allowing a journalist in any part of the world

### Turner turns to IT

Media-asset-management (MAM) tools remain near the top of the shopping list at Turner Studios and its separate network operations division. Clyde D. Smith, senior vice president for broadcast engineering research and development, quality assurance, and metrics, said that Turner's new digital facilities have made extensive use of broadcast IT technology to

**"It is counter-intuitive to install standard-definition equipment when the industry is clearly going to HD."**

to transfer files or provide video streams over a variety of networks."

Additional areas of focus for technical changes and improvement include control rooms and graphics systems. The goal is to improve quality, start the transition to HD production and simplify production workflows, he said, adding that by the end of 2004, the cable news network will transition many of its wide-area video paths to computer-based networks that leverage scalable video streaming and fast file-transfer protocols.



**Clyde D. Smith, senior vice president for broadcast engineering research and development, quality assurance, and metrics at Turner Studios.**

streamline production.

Turner Studios employs a heavy dose of networking and storage systems for its graphics, audio and editorial personnel, who use sophisticated software tools to automatically manage audio libraries and exchange graphics and clips between disparate authoring platforms.

Network operations is moving into an "ingest once for repeated use" environment with the rollout of the broadcast-inventory manager and the application of automated data-storage libraries. The group has also put a lot of effort into monitoring signal quality and control of SNMP-compliant products.

"Years ago, managers and supervisors got feedback from the operators who worked hands-on with the physical media," Smith said. "Today, in the file-based systems we use, the complexity provides a layer of isolation and the operators have less direct feel for the changes in media volumes, quality and system performance. The only way to assure reliability and quality is to proactively monitor systems."

High-definition production tools, particularly for sports production, as well as SANs, high-speed data networking and automated data storage libraries, are also key to its HD infrastructure in support of Turner's new TNT HD network.

### CBS shows the flag

As part of its normal capital-replacement process, the CBS network has been installing multiformat, dual-mode equipment capable of producing both SD and HD signals. This includes dual-mode cameras, routers, production switchers and tape machines. Seidel said he'll be coming to the NAB2004 convention looking at technologies that support the "broadcast flag" initiative and other vertical-interval (VANC) metadata, such as audio and captioning information.

"Even if you don't use the dual-mode HD capability at the start," Seidel said, "it is cheap insurance for future-proofing your plant. Plus, it is counter-intuitive to install standard-definition equipment when the industry is clearly going to HD."

CBS has 175 affiliated stations out



**Bob Seidel, CBS vice president of engineering**

of 207 on the air in DTV, covering 97 percent of U.S. DMAs. Many of these stations have been originating their commercials from server-based technology as well as recording syndication programs on servers. At NAB2004, they will be looking at receiving and distributing commercials using similar IT solutions.

There's little doubt that CBS is optimistic about the DTV future. After years as the sole pioneer of HDTV



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sports broadcasts, the network has been joined by others and is seeing some of the fruits of its labor in positive consumer feedback and nominal yet measurable ratings.

"DTV represents a totally new platform, which gives the broadcasters options to offer traditional content as well as new services," Seidel said. "The local

broadcaster is still the most effective producer and distributor of local and network content. Having the local broadcast stations on the cable and satellite services has and will continue to add value to those distribution chains."

**All together now**

CNN's Castle said he too is very

optimistic about the outlook for the news business and where the industry in general is headed. "This is a strong industry in the middle of some very exciting changes," he said. "These changes allow us to improve our systems and at the same time expand our reach. New workflows and technology will allow us to take advantage of new and growing markets more efficiently while still allowing us to maintain our strong brand as a television news and information provider."

**"DTV...gives the  
broadcasters options to  
offer traditional content  
as well as new  
services."  
Bob Seidel, CBS**

These executives all agree that the underlying issue is that everyone must go digital... and fast.

"The worst thing you can do is wait until the last minute and do a crash project to convert the entire station," he said. "Any station or network that installs standard-definition equipment is throwing money away. Much of the HDTV equipment has reached the pricing level of SD equipment. Start converting your production facility to HDTV today."

ABC's Davis concurs. "If your station is analog today, there's no question you should go digital or you are going to miss out on opportunities that others are already taking advantage of or are about to." **BE**

*Michael Groticelli regularly reports on the professional video and broadcast technology industry.*

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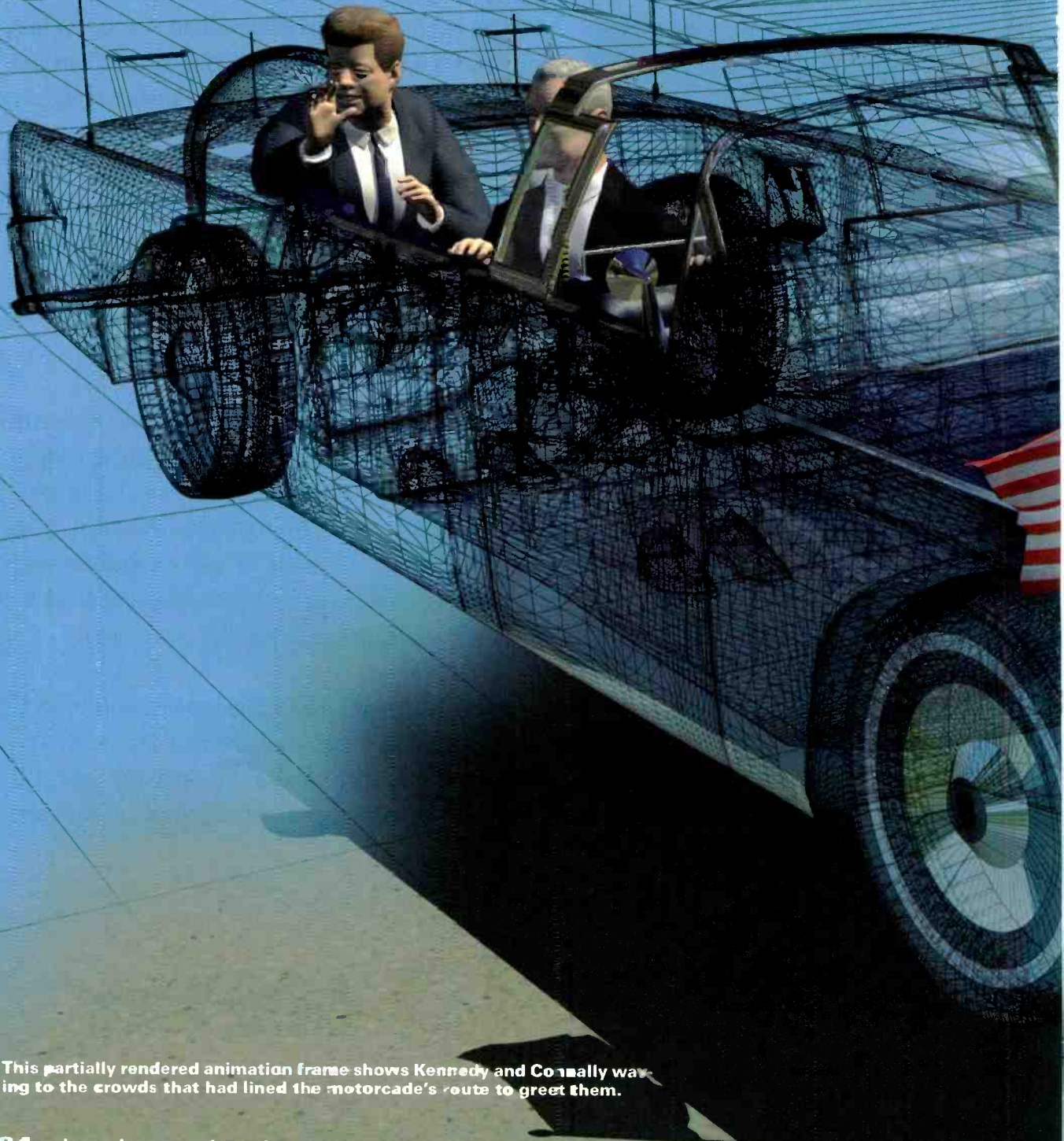
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# Reconstructing the JFK assassination




This partially rendered animation frame shows Kennedy and Connally waving to the crowds that had lined the motorcade's route to greet them.



BY L.T. MARTIN

## Inside the animation



**O**n Thursday evening, Nov. 20, 2003, ABC aired the news special “Peter Jennings Reporting: The Kennedy Assassination — Beyond Conspiracy.” The program featured Dale Myers’ elaborate recreation of the Nov. 22, 1963, events in Dealey Plaza. Rarely has 3-D computer animation been used more effectively to enlighten more people on a more important topic.

When the network aired the two-hour, prime-time special, it was seen by more than 11 million viewers. The following Sunday night, the BBC2

broadcast the piece on its “Current Affairs” program, and it set a 20 percent share record when 4.9 million people tuned to the UK broadcast. Moreover, the Banff Television Foundation elected to show the “Beyond Conspiracy” news special at its History Congress trade conference in France in December.

In making the program, executive producers Mark Obenhaus and Tom Yellin gathered input from numerous people connected with the assassination and the ensuing investigation. They interviewed more than 70 friends and relatives of both Lee Harvey

Oswald and his killer Jack Ruby, along with officials from the CIA, FBI, the Dallas Police, the Warren Commission and even the Russian KGB.

### Seeing is believing

But senior producer Richard Brick, who is also vice president of Springs Media, the production company that co-produced the special with Peter Jennings Productions, knew that the best way to dispel the myriad questions that have proliferated around the assassination of John F. Kennedy would be to let the audience see for themselves the relative position of all



**This fully rendered animation frame shows President Kennedy and Governor Connally in the presidential limousine as it passed the Texas School Book Depository. The animation does not include the other occupants of the limousine.**

the elements involved with the tragic events of 40 years ago. So he contacted Dale K. Myers, an Emmy-winning 28-

ant for the critically acclaimed 1993 BBC/Frontline documentary "Who Was Lee Harvey Oswald?" but had also

**Myers had, by 1995, produced a geometrically accurate representation of the Texas School Book Depository and the landmarks surrounding Elm Street.**

year veteran of radio and television who had not only served as an on-camera expert and technical consult-

already spent a decade working on a 3-D computerized reconstruction of the events in Dealey Plaza.

### **A decade in the making**

Back in 1990, Myers had purchased a NewTek Video Toaster with a 24-bit display card. Three years later, he started using version 1.0 of LightWave 3D software to create a 3-D model of the assassination based on the famous 8mm film shot by Abraham Zapruder. By aligning wire-frame models that matched each frame of the only real-time visual record of the event, Myers had, by 1995, produced a geometrically accurate representation of the Texas School Book Depository and the landmarks surrounding Elm Street, which the president's limousine had been driving down. But, since he was limited at that time to an Amiga 2000 computer with a 286 processor, Myers' first 3-D model was necessarily limited in its detail, with only primitive figures representing the relative positions of JFK and Texas Governor John B. Connally.

### **More rendering power**

In 2003, ABC News approached Myers to provide his Dealey Plaza recreation for its special honoring the 40<sup>th</sup> anniversary of the JFK assassination. Already working on a face lift to his original version using LightWave 3D's 7.5 software, Myers accelerated the process by employing a 3DBOXX platform from BOXX Technologies. Myers used this platform, which boasts dual hyperthreaded Intel Xeon 3.06 processors with 4GB RAM and a 3Dlabs Wildcat4 7210 graphics board, to perfect the project as he had originally conceived it.

In addition to LightWave 3D, Myers used Adobe Photoshop to create texture maps for realistic surfaces and AfterEffects to blend wire-frame models with solid objects and to create the final composites.

### **Maps and busts**

To ensure the accuracy of their three-dimensional layout of the area, Myers and his technical director Jon Tindall acquired a survey map of Dealey Plaza prepared by Drommer & Associates for the House Select Committee on Assassinations in

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1978. They based their model of the Texas School Book Depository on blueprints provided by Burson, Hendricks & Walls for the Dallas County Depository restoration project in 1978. Myers and Tindall crafted the presidential limousine, a

sculptor Mark Stuckey to create life-size clay busts of President Kennedy and Governor Connally so he could pay particular attention to their relative seating positions. Then, he covered the surface contours of each man's casting with a grid that became

to generic models of human bodies that he had rigged for animation.

## One of the benefits of Myers' 3-D recreation was its ability to reproduce the exact geometric relationship between Kennedy and Connally.

1961 Lincoln convertible, after the original body draft from The Hess & Eisenhardt Company.

For clarity, Myers elected not to include models of the Kennedy and Connally wives, and he commissioned

the basis for importing three-dimensional data points into the 3DBOXX using a digital probe. With LightWave, he connected these data points and made accurate virtual models of both men's heads, and then connected them

### Reference and comparison

One of the benefits of Myers' 3-D recreation was its ability to reproduce the exact geometric relationship between Kennedy and Connally. The perspective of Zapruder's camera offered a simple digitized enhancement of the 8mm film. Myers used key landmarks in the plaza, such as the R.L. Thornton Freeway and the Fort Worth Turnpike road signs, to determine the triangulation of LightWave's virtual camera based on a camera's six degrees of freedom: X, Y, Z, heading, pitch and bank. He compared this with virtual recreations of many other assassination photographers,



With a digital probe, animator Dale Myers imports data points from a grid on a bust of JFK into his animation system.



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**This partially rendered animation frame shows a bird's-eye view of the presidential limousine, the relative positions of Kennedy and Connally, and the path of the bullet that struck them.**

including Phil Willis, Wilma Bond, Hugh Betzner, Jr. and Charles Bronson, to verify its accuracy. Other pre- and post-assassination films from Marie Muchmore and Orville Nix added to the rich fund of source material.

### Events in motion

Then, Myers began inserting the exact path of the limousine and its occupants. Zapruder's camera was a wind-up Bell & Howell Zoomatic that shot an average of 18.3fps. Since the final version of the animation had to run at video's 30fps, the digital video format would provide a sample rate nearly twice that of the original film (1.64 digital frames for every frame of film). This meant that, although there would not be a one-to-one relationship between Zapruder's original and Myers' 3-D animation, the digital sequence would actually be smoother.

### Synchronization, alignment and key frames

As Myers matched the speed of the limousine model moving down Elm Street to the images revealed by the Zapruder film, the crime-scene recreation proceeded with a clarity and flexibility unrivaled by any other

investigation. Using lampposts that were triangulated into the position they were in in 1963, Myers employed spline-motion paths to bring the Lincoln convertible into line with the original film.

To minimize errors, Myers used the clearest frames of the Zapruder film for positioning JFK and Connally inside the car. Generally, he placed key-frame

positions at half-second intervals throughout the recreation, although he employed tighter keying patterns using between one- and five-frame intervals during Zapruder frames 220 through 238, and 312 through 330.

### Stunning results

Now Myers could present the ABC viewers with a 3-D virtual animated model that they could view from any angle. Unlike Zapruder's film, the computer has the ability to lock its virtual camera onto a target without the imperfections a handheld or tripod mounted camera would produce. The

result, as seen in "Peter Jennings Reporting: The Kennedy Assassination — Beyond Conspiracy," was a clear and accurate view of the assassination of President Kennedy. To verify the computer reconstruction's validity, the show's producers employed Z-Axis, a forensic consulting group known for creating computer models used in litigation, to vet Myers' animation.

## The result was a clear and accurate view of the assassination of President Kennedy.

Even seeing these events recreated in a TV news special probably won't settle all questions, but Dale Myers' has provided evidence that should go a long way toward quelling the storm of conspiracy theories generated by the events of Nov. 22, 1963.

According to "Beyond Conspiracy"'s senior producer, Richard Brick, the ABC network already has the rights to re-run their news special. Let's hope that they do. **BE**

*L. T. Martin is an industry writer and post-production consultant living in the Los Angeles area.*

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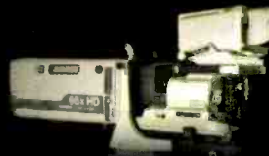
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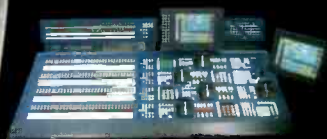
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# NAB preview



**T**he NAB show has and always will provide a place for broadcasters from around the world to gather and learn more about their industry. Not only does it provide the opportunity to see new technology firsthand, but it also offers attendees the chance to get together and have questions answered on technology and policy.

Every year the *Broadcast Engineering* staff provides a guide full of comprehensive coverage to help our readers make the most of this chaotic event. This manual is meant to serve as your ultimate resource for getting a winning hand at NAB2004! First, we announce the winners of our third annual Excellence Awards competition. These facilities will be recognized at NAB for their achievement as a network facility, automation facility, new facility, audio facility, RF facility or new studio.

Next, our exhibit hall map will help you find your way through the hundreds of booths and new products. Vendors from around the world will be displaying new solutions and updated favorites, giving broadcasters the chance to shop for a wide range of new technologies. You'll hit the jackpot every time if you use our map to find your way through the maze of booths.



Our FASTtrack section will save you time and make navigating NAB easier than getting a royal flush. This listing in the magazine is organized to help attendees find their way right to the vendors they are interested in — whether they are looking for transmitters or routers. Vendors are divided into categories, and then listed geographically for easy reference.

Finally, our DTV Marketplace showcases this year's greatest listing of products ever! Browse over 65 pages of product descriptions and photos to build your ultimate shopping list. Whatever you're looking for at this year's NAB, our staff wishes you the best of luck in finding it!

**BE**

---

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Exhibit hall map .....	109-132
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The 3<sup>rd</sup> Annual **Broadcast** Engineering

# EXCELLENCE AWARDS

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- Top systems integrators and networks
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See us at NAB, Booth C3836



# 3<sup>rd</sup> annual Broadcast Engineering EXCELLENCE AWARDS

Entries for the 2004 *Broadcast Engineering* Excellence Awards were announced in the December 2003 *Digital Reference Guide*. That issue contained stories about 23 of the world's top broadcast and production facilities.

This year's winners were selected based on voting by readers who visited the *Broadcast Engineering* Web site at [www.broadcastengineering.com](http://www.broadcastengineering.com). Award plaques will be presented at this year's NAB convention to the companies that officially entered the facility into the contest.

Be sure to look for the *Broadcast Engineering* Excellence Award in your favorite vendor or system integrator's booth. The award recognizes leading-edge design and system integration.

*Bruce Dick*

**editorial director**



## And the winners are:

### For Network Automation ..... 98

Winner: PBS Ingest Suite by Omneon and CEI

Runner-up: Starz Encore by OmniBus Systems

### For Station Automation ..... 100

Winner: WTW-TV  
by Sundance Digital

Runner-up: WLVT-TV  
by Microfirst Automation

### For New Studio Technology - Network .... 102

Winner: Fox News  
by The Systems Group

Runner-up: CNN  
by The Systems Group

### For New Studio Technology - Station ..... 104

Winner: Georgia Public Broadcasting  
by Silicon Graphics

Runner-up: CSTV-TV  
by Janson Design Group

### For RF/Cable/Satellite ..... 106

Winner: WGBH-TV  
by Microwave Radio Communications

Runner-up: WNED-TV  
by Thales Broadcast & Multimedia

### For Newsroom Technology - Station ..... 108

Winner: Südwestrundfunk (SWR)  
by Silicon Graphics

### For Audio ..... 108

Winner: Cumulus Media  
by Wheatstone



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# Network Automation

## Winner: PBS Ingest Suite by Omneon and CEI



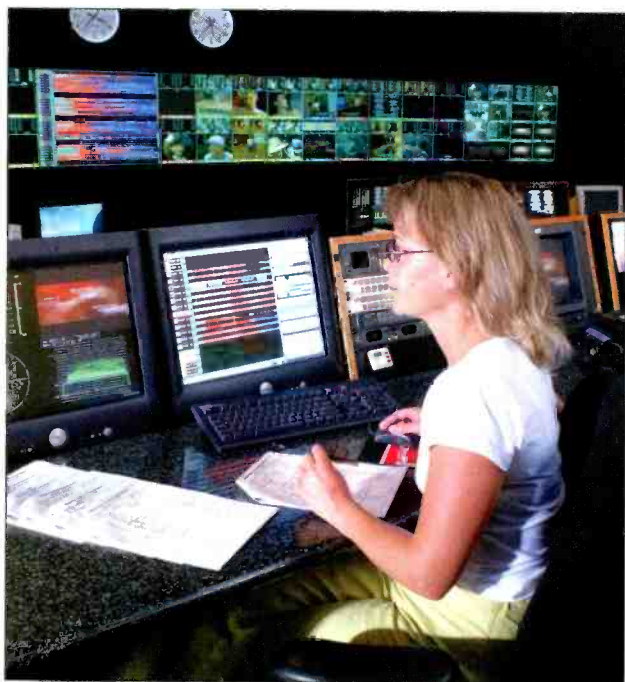
Focused on establishing discrepancy-free program feeds, PBS teamed with systems integrator CEI to develop a comprehensive solution based on a new workflow concept. Together, they designed an ingest suite that did more than reduce errors. The server-based system inspired further enhancements, which provide reliable and money-saving program-delivery solutions.

PBS and CEI decided to examine the benefits of moving the packaging of programs upstream. To achieve their goal of discrepancy-free program feeds, the team decided to build a prototype ingest suite. To this end, the design process began in earnest on an SD/HD-capable solution.

Key technology: Mirrored Omneon video servers totaling 9TB storage, ADIC Scalar 10K LTO-1 tape archive, Front Porch Digital DIVArchive with 860TB managed storage, Harris Automation, Dolby-E hardware, Clarity 67-inch Lion LCD display, Miranda Imagestore and Kaleido-K2 display processor

BE

## Runner-up: Starz Encore by OmniBus Systems



Key technology: OmniBus Colossus automation system, OmniBus Archive interface with Avalon preview, NVISION SDI transmission router, Pro-Bel return router, Pinnacle playout primary and backup, Pinnacle ingest servers, Pinnacle DekoCast, Evertz delay and closed captioning, Dolby E decoder and AC3, Leitch sync generator, Leitch reference DA, Tektronix monitors, Wohler 5.1 audio monitors, Sony picture monitors and ingest VTRs, Barco monitor cubes, Videotek test and measurement equipment

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# Station Automation

## Winner: WTTW-TV by Sundance Digital



WTTW-TV's analog master control and associated tape room facility from the 1960s had undergone several rebuilds in the past. However, it needed to be re-purposed for other operations, so the station decided to build a new broadcast facility. WTTW decided to use its employees in the electronic maintenance and design group, and built the facility without the help of a systems integrator. Engineering managers researched equipment, tactics and budgets and developed an overall system design, while vendors selected equipment and furnished implementation ideas.

Key technology: SeaChange Broadcast MediaCluster, Sencore stream server, Thomson Trinitex video router, Thomson Venus audio router, Thomson Jupiter control system, Thomson Saturn master control switcher, 360 Systems Digicart II, Miranda Kaleido-K2 monitors, Sundance Digital FastBreak automation system

**BE**

## Runner-up: WLVT-TV by Microfirst Automation



Key technology: DSR-4000 IRDs, Panasonic AJ-D960 DVCPRO50 VTRs, Sony BVW-75 Betacam VTRs, Pinnacle MediaStream decoders, Miranda Oxtel ImageStores, NVISION router controller, Leitch AgileVision

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# New Studio Technology-Network

Winner: Fox News  
by The Systems Group



Fox News brought in The Systems Group to implement a "21<sup>st</sup> century operations suite" as part of a turnkey production facility. The addition of the studio allowed Fox News to expand its current programming to include live audience production. This suite of control and production operations rooms includes production control, audio control and a voice-over booth; a tape and server playback area; satellite equipment room; and a glass-walled street-level studio in the Rockefeller Center district of New York City.



The facility incorporates some of the latest in multiviewer monitoring, hybrid audio mixing and network-connected production systems technology.

Key technology: Thomson XttenDD production switcher, Thomson LDK-230 digital cameras, Accom Dveous DVE, Quantel Picturebox still store, Miranda Kaleido-K2, TSL USC-21 system controller, Clarity Lion UX 67" display, Calrec Sigma 100 audio mixer, Fujinon studio and ENG lenses, Radamec camera robotics

BE

Runner-up: CNN  
by The Systems Group



Key technology: Thomson Trinitix 256x256 SDI video router, Thomson Venus analog audio router, Thomson Grass Valley 4000 three-M/E production switchers, Yamaha O2R digital audio mixer, Vinten Quattro studio pedestals, Telex KP32 intercom key panels, Sony HDC950 cameras, Sony PVM and BVM video monitors

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# New Studio Technology-Station

## Winner: Georgia Public Broadcasting by Silicon Graphics

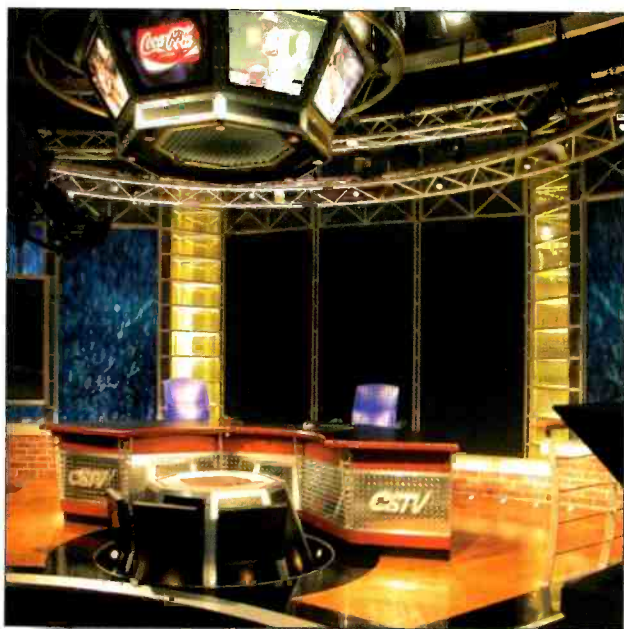


Georgia Public Broadcasting (GPB) needed to transition their infrastructure to an open digital format. Therefore the Silicon Graphics architecture needed to meet not only broadcast playout requirements, but also the common data management, shared storage and archiving infrastructure that the station envisioned for both its broadcast and non-broadcast data. GPB also wanted to build a highly reliable centralized storage environment that would support both their Internet service and broadcast operation.

Key technology: SGI Media Server, SGI Origin 300 servers, SGI CXFS shared file system, Hitachi Data Systems 9980V storage, Masstech Group MassStore storage, Masstech Group Mass Proxy transcoder, ADIC Scalar robotic tape library, Harris automation, Brocade 2Gb Fibre Channel switches

**BE**

## Runner-up: CSTV-TV by Janson Design Group



Key technology: Sony BVP-E1 triax studio cameras, Vinten pedestals, Jimmy Jib, Pinnacle FXDeko II and Deko1000 character generators, Pinnacle Thunder XL DDR, Telex Adam CS matrix intercom, Soundcraft Series V audio console, Sennheiser wireless microphones, Leitch terminal gear, Tektronix test and measurement, Venaca S3 archive system, TBC consoles

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# RF/Cable/Satellite

## Winner: WGBH-TV by Microwave Radio Communications



WGBH-TV maintains a full-duplex 7GHz inter-city microwave link between WGBH in Boston and its sister station WGBY-TV in Springfield, MA, 100 miles away. The link is used for program exchange and also handles network traffic such as e-mail and Web access for WGBY. In 2001, Microwave Radio Communications (MRC) upgraded these systems. The company proposed specified variable-rate modems at each end as the baseband interface and at each repeater site to re-clock the data. These modems met the bandwidth and interface requirements the station was looking for.

Key technology: MRC DAR radios, MRC variable-rate modems, TANDBERG Television E5720 MPEG encoders, TANDBERG Television TT1260 MPEG decoders **BE**

## Runner-up: WNED-TV by Thales Broadcast & Multimedia



Key technology: Thales DCX Paragon transmitter, Tektronix RFA 300 measurement set, Sencore IRD 3384 receiver/decoder, Leader LV5152DA HD monitor, Wohler ATSC-3 5.1 channel audio monitor, Barco HDM5049 HD monitor, Dielectric NTSC/DTV combiner, DeltaStar TUC-05-16/80H-R panel antenna **BE**



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# Newsroom Technology-Station

Winner: Südwestrundfunk (SWR)  
by Silicon Graphics



As one of the first German public broadcasting stations, SWR serves more than 14 million viewers from three broadcast sites in the cities of Mainz, BadenBaden and Stuttgart. SWR recently built a new studio and implemented a tapeless digital newsroom. This newsroom will allow the 50-person news team in Mainz to streamline its operations for distributed news production and play to air.

The new tapeless digital newsroom is based on IT technologies and centered on networking for computers and storage.

Key technology: SGI Media Server with RAID-3, SGI Origin 300 server with SGI TP9400, Dalet OpenMedia newsroom system, SGT Media Manager/DBOS news automation, Pinnacle Liquid blue NLEs

BE

## Audio

Winner: Cumulus Media  
by Wheatstone



With five stations broadcasting from two different facilities within the city limits of Nashville, TN, it was time for Cumulus Media to consolidate all of its operations under one roof. Cumulus built clusters, or "pods," instead of linear rows of studios. Each air studio is grouped with its program director's office. Keeping each station's personnel together helps preserve its individual personality, and placing the program director in the cluster keeps him close to his people and the heart of the broadcast.

The facility also has a glass-enclosed live performance studio with its own separate control room. The room will serve as both a radio and a TV studio.

Key technology: Scott Studios automation, Wheatstone D-9 TV digital television console, Wheatstone G-5 digital audio radio console, Wheatstone BRIDGE digital audio network router, European Cabinetry furniture

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See PAG at Booth C8235, page 7



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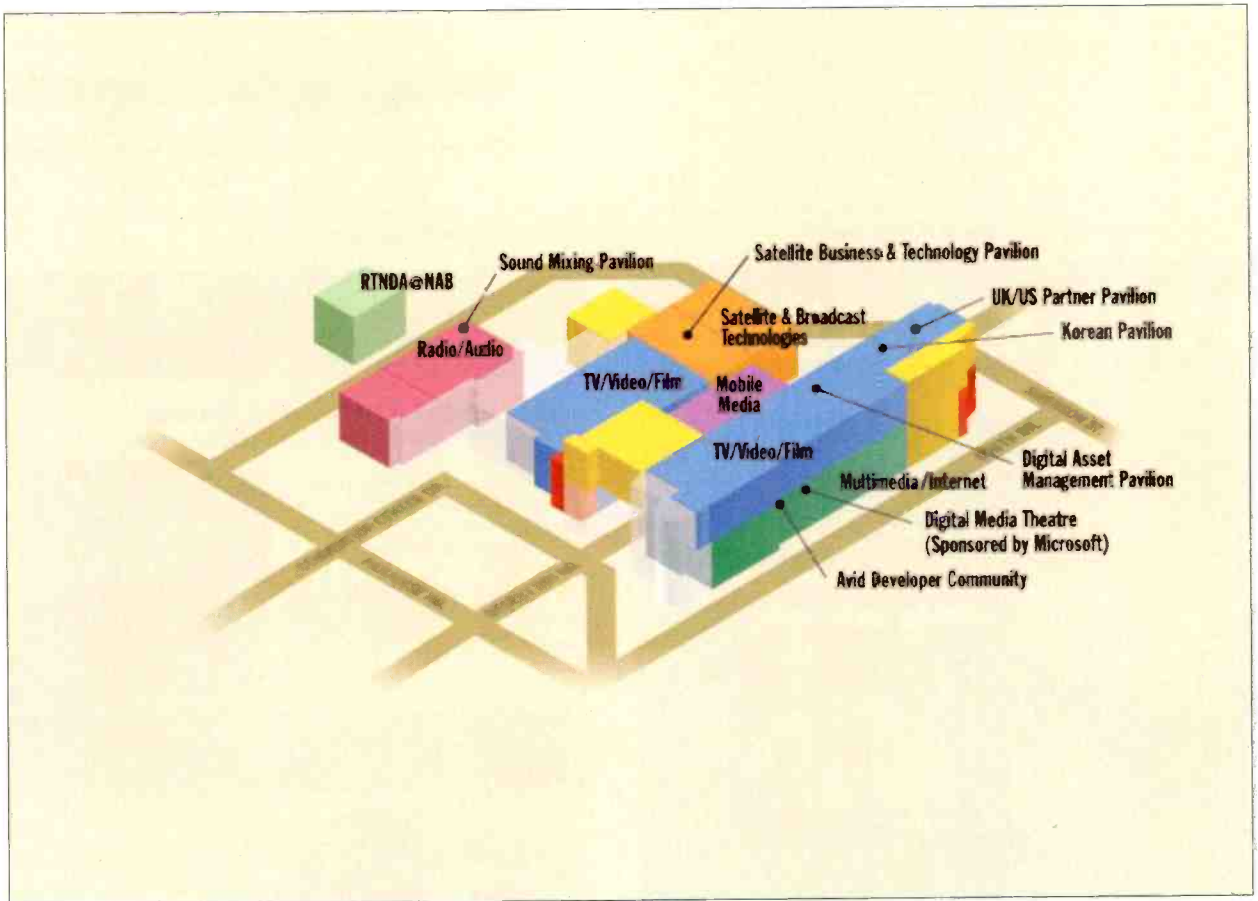
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## NAB2004 Exhibit Hours

### LAS VEGAS CONVENTION CENTER

Mon. (April 19) .....	9 a.m. - 6 p.m.
Tues. (April 20) .....	9 a.m. - 6 p.m.
Wed. (April 21) .....	9 a.m. - 6 p.m.
Thurs. (April 22) .....	9 a.m. - 4 p.m.

### LAS VEGAS HILTON

Mon. (April 19) .....	10 a.m. - 4:30 p.m.
Tues. (April 20) .....	10 a.m. - 5:30 p.m.
Wed. (April 21) .....	10 a.m. - 4:30 p.m.

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Information current as of February 9, 2004

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Map#	Company	Booth
1	DPA Microphones	N2536
2	RI2	N2116

■ See Lectrosonics at Booth N3316, page 5

## wireless microphones and IFB

See and hear the latest  
in digital, hybrid and  
analog technology



**Booth N3316**  
**LECTROSONICS**  
in the LVCC North Hall

■ See Quartz at Booth SU9812, page 9

## Introducing Xenon

### The Signal Processing Router

Multi-format Routing plus optional plug-ins

- Initial plug-in functions include
- Channel Branding
- Master Control
- Embedded Audio Processing



### HD Master Control



**New HD Master Control**  
Many new features for NAB including:

- Two internal logo stores
- 16 Channel Audio
- Dolby E Processing

**Booth # SU9812** Quartz®

888.638.8745 | sales@quartzus.com | www.quartzus.com

■ See Teletream at Booth SU7183, page 9

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one™

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- send from any ENG laptop
- in selectable broadcast quality

TELESTREAM

www.telestream.net



↑ TO THE HILTON ↑

**RADIO**



↓ TO MAIN ENTRANCE ↓

■ See Telestream at Booth SU7183, page 9

**now delivered directly from laptops!**



- delivered in minutes
- over standard or wireless IP
- to any server or edit system

**NEWSROOM**

**NAB Booth SU7183**

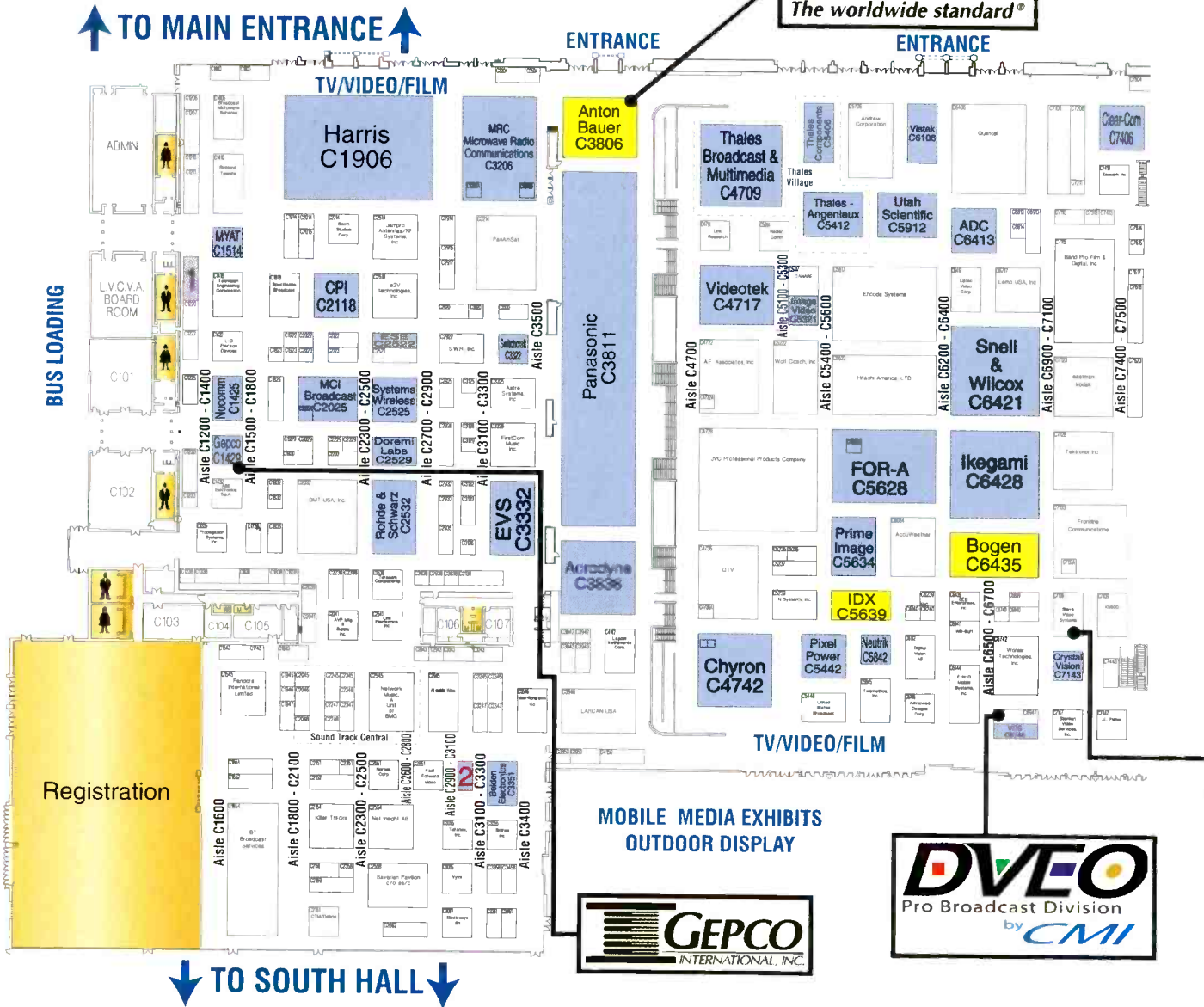


**TELESTREAM**

# LVCC Central Hall

NAB Exhibit Hours, April 19-22, 2004  
 Mon. - Wed. .... 9 a.m. - 6 p.m.  
 Thurs. .... 9 a.m. - 4 p.m.

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■ See Anton/Bauer at Booth C3806, page 6

THERE SHOULD ALWAYS BE CHOICES.  
 IT MAKES IT EASIER TO FIND THE BEST.





Map#	Company	Booth
1	Active Power	C1217
2	Multidyne Electronics	C3151
3	Videssence	C8625
4	Horita	C10318
5	DSC Laboratories	C10006

Right: See Anton/Bauer at Booth C3806, page 6

See Anton/Bauer at Booth C3806, page 6

THE POWER BEHIND THE BEST CAMERAS  
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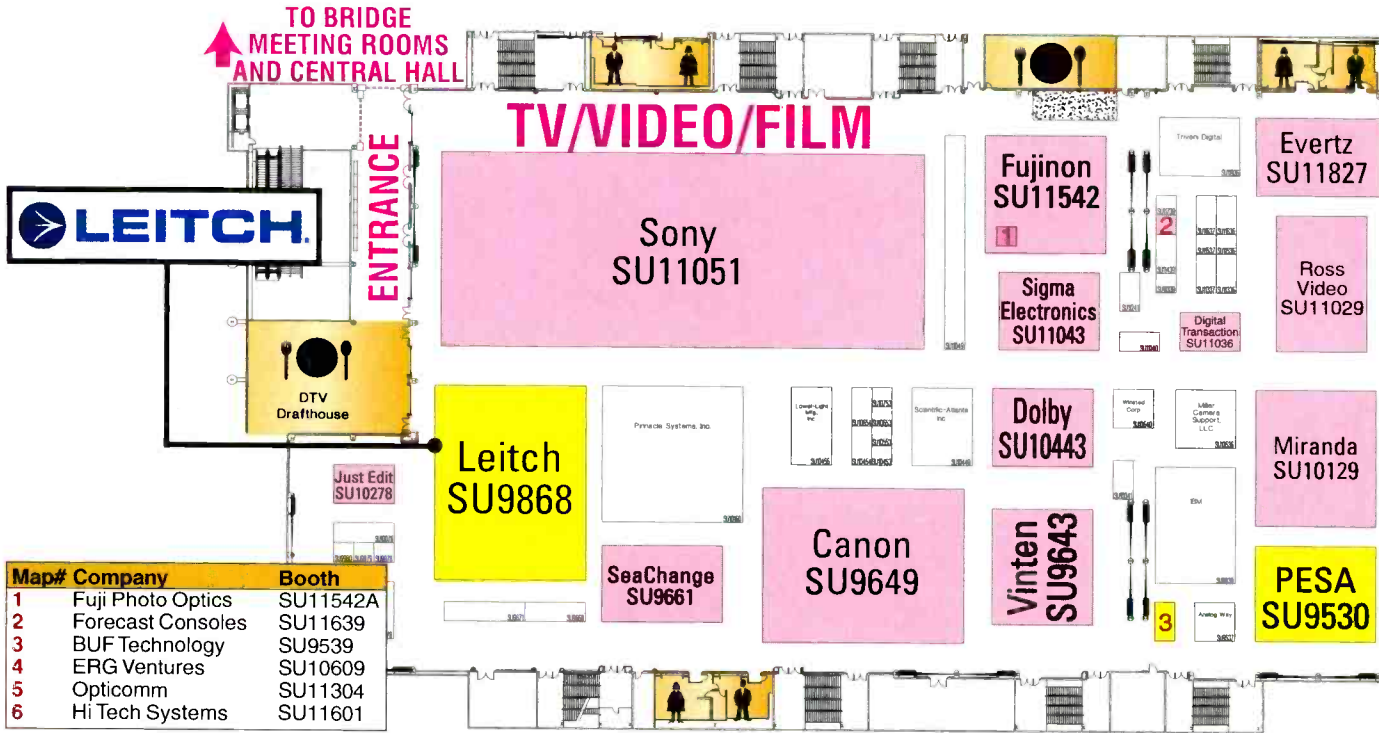
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- AVAILABLE ON ALL DIGITAL BATTERIES



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See Leitch at Booth SU9868, page 8

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(interface and conversion)

NEO™

6800+<sup>+</sup>

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OPUS HD

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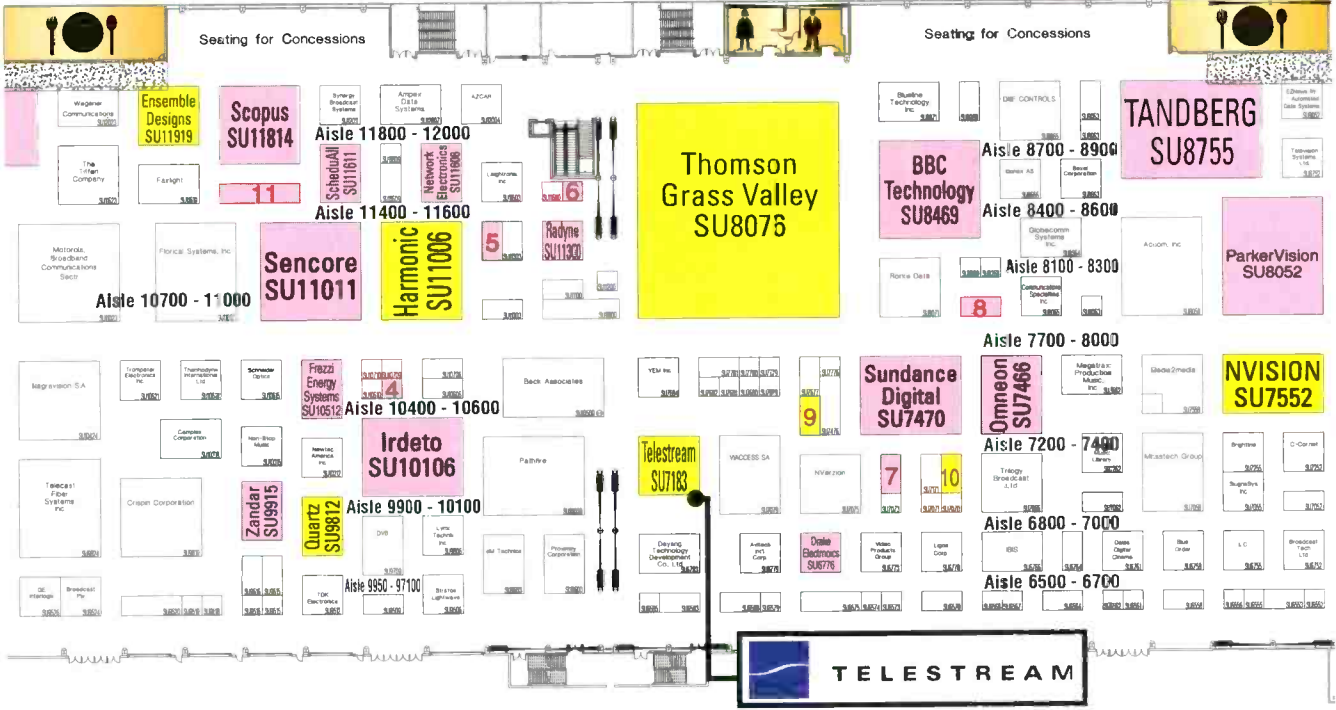
NEXIO

**In Booth#SU9868**

**LEITCH**

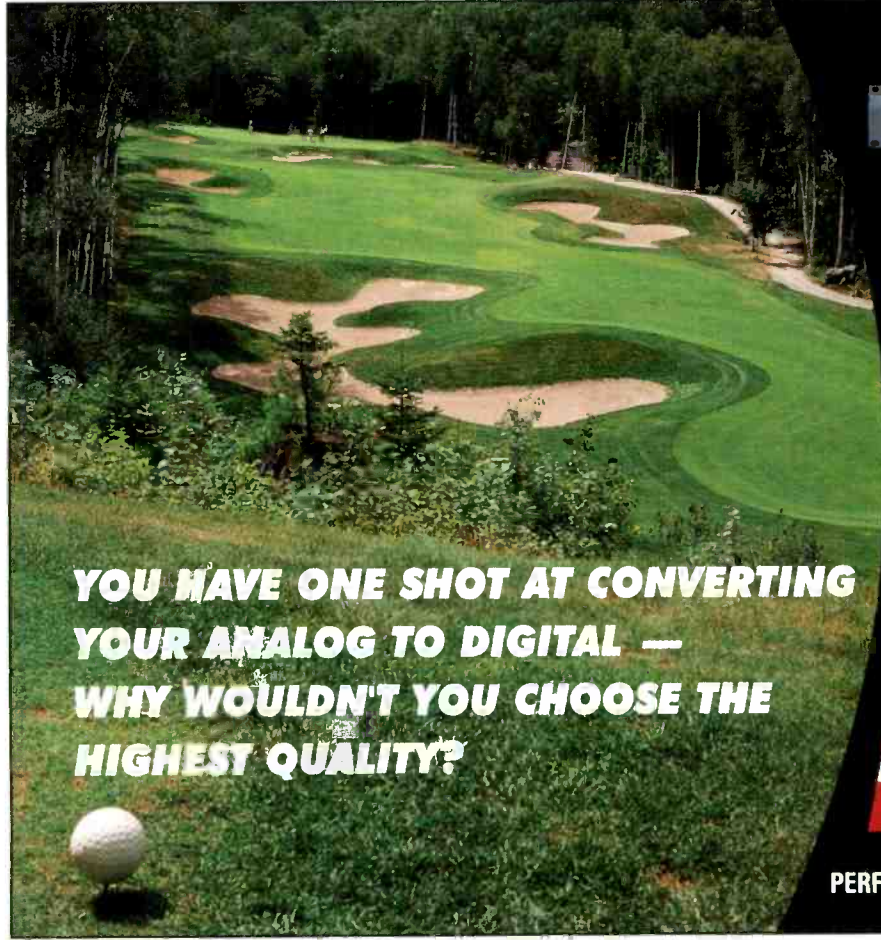
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8	TBC Consoles	SU8068
9	FORTEL DTV	SU7477

Map#	Company	Booth
10	SAV	SU7170
11	Marshall Electronics	SU11614



SOUTH HALL UPPER LEVEL  
CONTINUES ON PAGE 10

See Fortel at Booth SU7477, page 9



**YOU HAVE ONE SHOT AT CONVERTING  
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WHY WOULDN'T YOU CHOOSE THE  
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- Analog to Digital Converters
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# South Hall, upper level

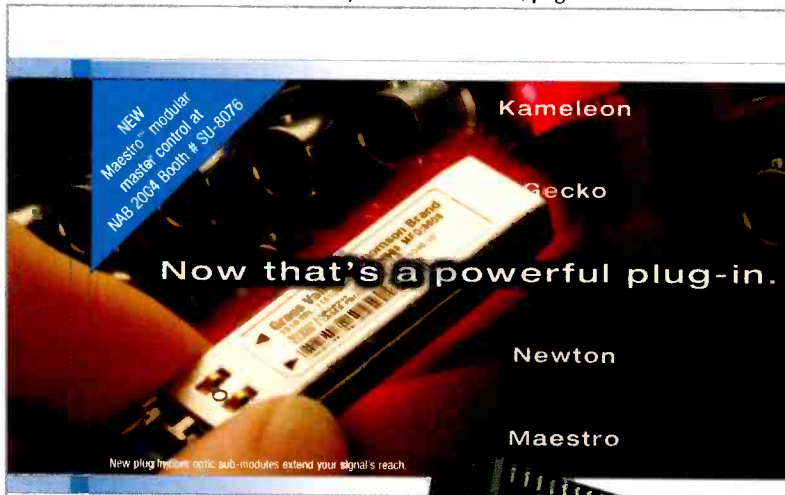
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SOUTH HALL UPPER LEVEL CONTINUES ON PAGE 9



See Thomson Grass Valley at Booth SU8076, page 9



Grass Valley™ signal processing products pack more power in a module than anyone else. Take for example:

- Our new line of Kameleon™ Fiber optic HD distribution modules with up to 16 coaxial outputs on a single DA with plug in fiber I/O to extend the reach of your signal.
- Our new line of four-channel Gecko™ modules that process four signals at once.
- Industry-leading Teranex® SD and HD format conversion technology embedded in a space-saving Kameleon module.
- Full-featured Maestro™ SD/HD branding and master control modules in only 2 to 3 slots.
- The Kameleon SD and HD Multi-function module that provides a complete audio and video processing system on a single module – now augmented by new low-cost application-specific versions.

**Demand more from your systems. We do.**

To learn more, please visit  
[www.thomsongrassvalley.com/modular](http://www.thomsongrassvalley.com/modular). Or contact your local Grass Valley sales representative.

**Go ahead.  
Demand more of your system.**



*Our Newton™ control system handles all the modules in a signal path at once with simultaneous four-function control of signal parameters.*



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# South Hall, lower level

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SOUTH HALL LOWER LEVEL  
CONTINUES ON PAGE 12

See *NVISION* at Booth SU7552, page 9

## Looking for a Router or Master Control Switcher?

If you're in the market for a router or master control switcher, be sure to stop by our booth and check out these exciting new products.

**NV5128-MC Multi Channel Master Control Switcher**  
*New HD Version Now Available*

**NV8256-Plus Expandable Digital Video Router**  
*With Our Patented Redundant Crosspoint Option*

**NV5128 Multi Format Compact Router**  
*Now With Expanded HD Capability*

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*512x512 AES, Expandable to 2048x2048 AES*



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Booth # SU7552

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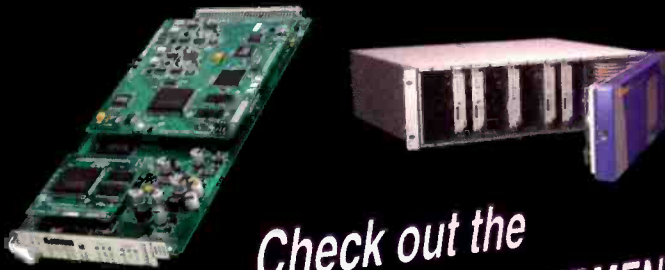
Walkway to North Hall

SOUTH HALL LOWER LEVEL  
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■ See Ensemble Designs at Booth SU11919, page 9

**SD Frame sync and proc amp, for video & audio, digital & analog**  
**Proc Control Panel for quick level adjustments**  
**HD Frame Sync and proc amp**



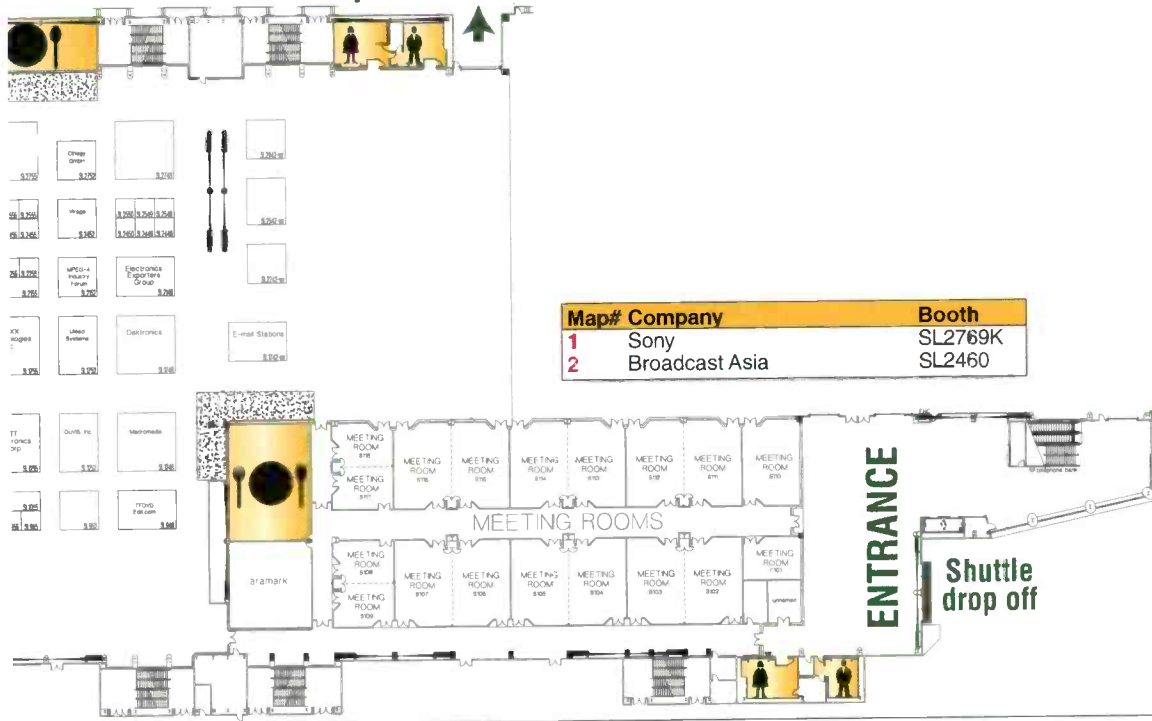
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**BEST BROADCAST EQUIPMENT**  
 for signal ingest and acquisition



**AVENUE™**



Walkway to North Hall



Map#	Company	Booth
1	Sony	SL2769K
2	Broadcast Asia	SL2460

See Ensemble Designs at Booth SU11919, page 9

BrightEye cool 5.5" converters with audio, video and fiber I/O  
 8 channel audio handler and mux  
 SNMP monitoring

**ENSEMBLE**  
 DESIGNS

**NAB Booth SU 11919**

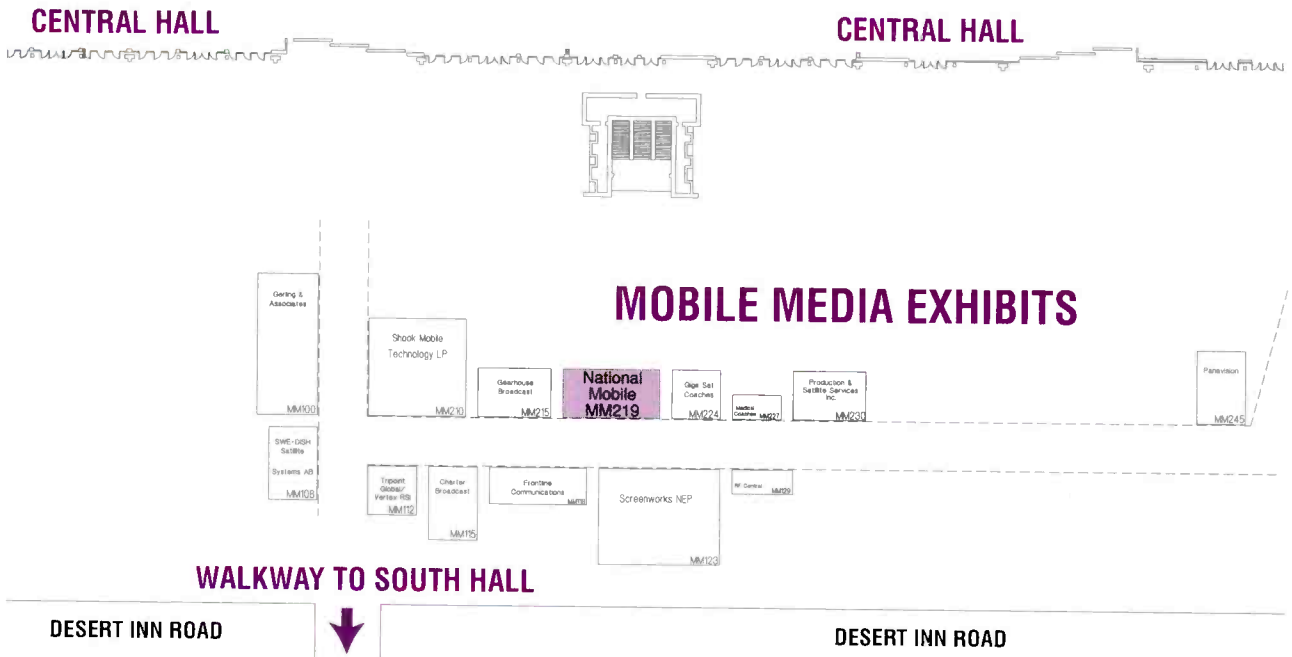
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**I Spy**  
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 It's BrightEye!

**ENSEMBLE**  
 DESIGNS

Digital, Analog & Optical I/O

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See Konan at Booth SL2159, page 12

## DAM without Konan is like...

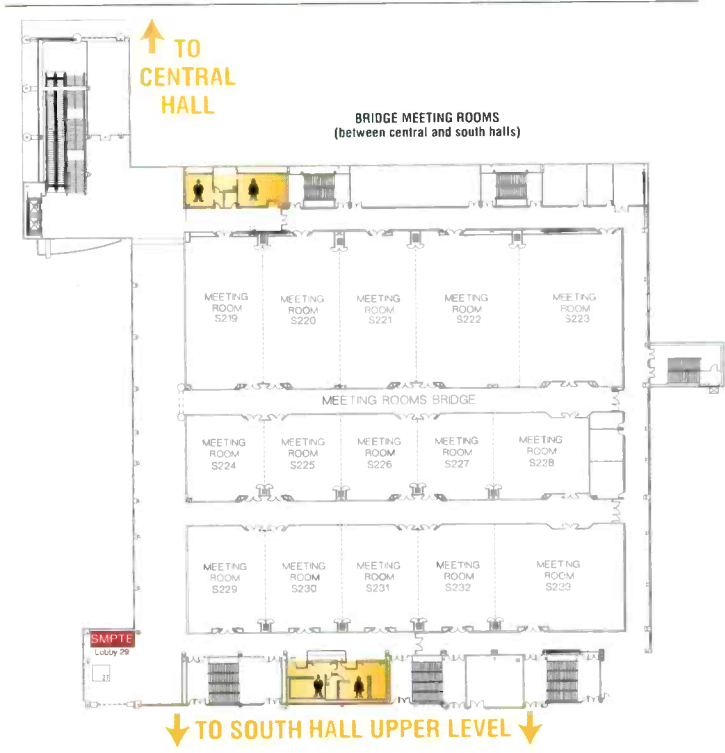
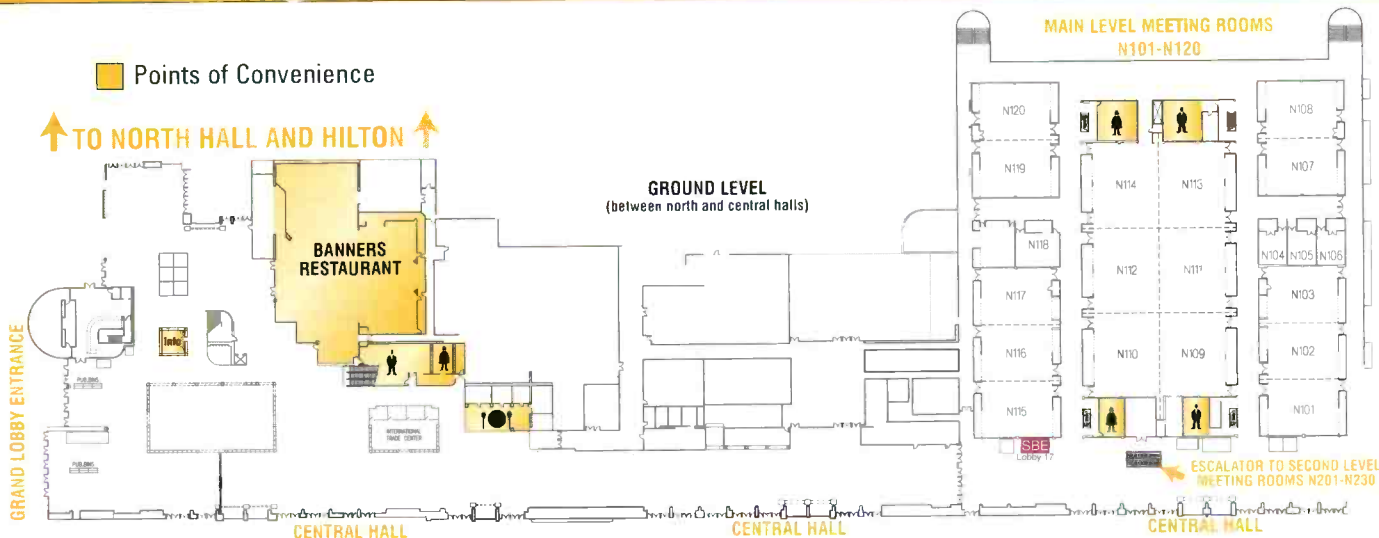
1. Las Vegas without Casino
2. Juliet without Romeo
3. "Twins" without Danny Devito
4. "The Matrix" without Neo
5. Book covers without Fabio...

# SL2159



got lost? find DAM here.

# Meeting rooms



See Harmonic at Booth SU11006, page 9

What can you REALLY do with 19.39 Mbps?



Visit us at #SU11006 to find out more.



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See Broadcast Engineering at Booth C11213, page 7

## Broadcast Engineering

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See Broadcast Engineering at Booth C11213, page 7

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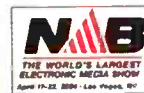


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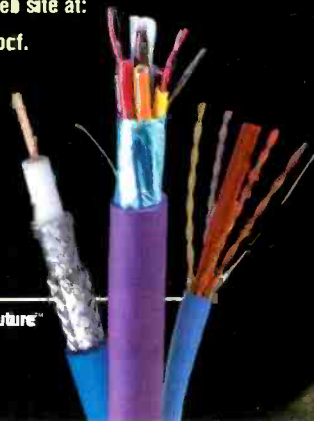


  
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# The FASTtrack

## Audio routing, distribution

Ward-Beck Systems .....	C1914
ISIS Group .....	C2039
<b>ESE</b> .....	<b>C2522</b>
Audio Accessories .....	C2928
<b>Multidyne Video &amp; Fiber Optic Systems</b> .....	<b>C3151</b>
DK Audio .....	C3843
<b>Videotek</b> .....	<b>C4717</b>
Sonifex .....	C5236
<b>Image Video</b> ....	<b>C5321</b>
<b>Utah Scientific</b> ...	<b>C5912</b>
Patch Amp .....	C6140
<b>ADC</b> .....	<b>C6413</b>
Wohler Technologies ..	C6742
Keywest Technology ...	C6839
<b>Crystal Vision</b> .....	<b>C7143</b>
Burst Electronics .....	C7614
Whirlwind .....	C7819
Riedel Communications ...	C11210
Aphex Systems .....	N1009
Henry Engineering.....	N1100
Symetrix .....	N1610
Broadcast Electronics .....	N1902



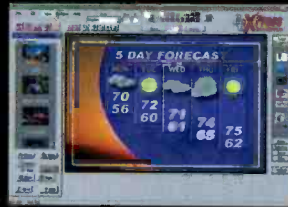
<b>STAGETEC (Salzbrenner Stagetec Mediagroup)</b> .....	<b>N2034</b>
RDL Radio Design Labs .....	N2126
AudioArts Engineering .....	N2802
<b>Wheatstone</b> .....	<b>N2802</b>
Logitek Electronic Systems .....	N3307
Sierra Automated Systems .....	N3705
Klotz Digital America .....	N4216
MSoft .....	SL3431
Gefen .....	SL5857
Laird Telemedia .....	SL5860
<b>Axon Digital Design</b> .....	<b>SU7548</b>
Communications Specialties .....	SU8065
<b>Thomson Broadcast and Media Solutions</b> .....	<b>SU8076</b>
<b>Thomson Grass Valley</b> .....	<b>SU8076</b>
DNF Controls .....	SU8965
<b>Quartz Electronics</b> .....	<b>SU9812</b>
<b>Dolby Laboratories</b> .....	<b>SU10443</b>
Comprehensive Video Group .....	SU10753
<b>Ross Video</b> .....	<b>SU11029</b>
<b>Sigma Electronics</b> .....	<b>SU11043</b>
<b>Network Electronics</b> .....	<b>SU11606</b>
<b>Scopus Network Technologies</b> .....	<b>SU11814</b>
<b>Evertz</b> .....	<b>SU11827</b>
<b>Ensemble Designs</b> .....	<b>SU11919</b>

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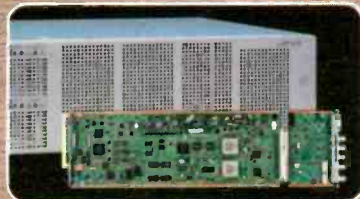
SDI, 1080i, 720p, 24p... whatever the format, FOR-A is there.

## HD/SD Multi Bit Rate products line-up



### Digital Video Switcher **1M/E HANABI**

More compact, but yet maintaining the same know-how of HANABI 2M/E model, the new 1M/E HANABI offers two types of control panels for live and edit applications.



### Frame Synchronizer **UFH-70FS**

Key frame synchronizer module for HD/Universal Frames is capable for the synchronization for HD-SDI or SDI signals. Conventionally installed into the various UFH frames depending on the system requirements.



### RCG Solution / Virtual Studio System **digiStorm**

Joint development of FOR-A and Brainstorm Multimedia is compatible with wide range of virtual studios and real-time computer graphics.



### Digital Super Keyer **DSK-70HS**

Compact and lightweight multi-format digital super keyer supports both HD and SD signal formats using one line input channel and one line input channel.



### Routing Switcher **RS-HD Series**

It provides dependable and versatile signal routing support for HD/HD or SD/Video based systems. Easily control routing setups and switchers via RS-BIS series remote control units.



### Character Generator **3D-VWS**

It is an advanced and versatile character generator with picture capability. One source multi-use was implemented by adopting OpenGL technology.



### Digital Color Corrector **DCC-70HS**

Compact digital color corrector offers superior 4-bit/444 component signal processing circuitry and the ability to control Black, White and Gamma (RGB) levels individually or as a group.



### Video Stabilizer **IVS-700HS**

Uses a moving image processor to electrically correct the image shaking occurring in cameras. It can correct just the unintentional unsteadiness while maintaining the panning or tilt movements of the camera.

## And More...

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## Automation, including news and master control

Masterclock .....	C1735
<i>Harris</i> .....	<i>C1906</i>
<i>EVS</i> .....	<i>C3332</i>
<i>Image Video</i> .....	<i>C5321</i>
<i>Pixel Power</i> .....	<i>C5442</i>
Encoda Systems .....	C5617
Quantel .....	C6406
<i>Video Design Software (VDS)</i> .....	<i>C6748</i>
RCS .....	C6813
Quantel .....	C7106
<i>Sierra Video Systems</i> .....	<i>C7139</i>
OmniBus Systems .....	C7634
<i>Pro-Bel</i> .....	<i>C8123</i>
Spencer Technologies .....	C9123
MATCO .....	C9443
Adtec Digital .....	C10917
RCS .....	N1622
Broadcast Electronics .....	N1902
ENCO Systems .....	N2426
Prophet Systems Innovations .....	N3312
Sierra Automated Systems .....	N3705
Klotz Digital America .....	N4216
<i>Leitch</i> .....	<i>R716</i>
<i>Sony Electronics</i> .....	<i>SL2769K</i>
vizrt .....	SL3424
vizrt .....	SL3436
<i>Dalet Digital Media Systems</i> .....	<i>SL3842</i>
<i>Inscriber</i> .....	<i>SL4718</i>
Ultimate .....	SL4749
<i>Avid</i>	
<i>Technology</i> .....	<i>SL4761</i>
Chief	
Manufacturing .....	SL5218
VertigoXmedia .....	SL5836
Trenton Technology .....	SL5252
Blue Order .....	SU6759
ENCO Systems .....	SU6764
Avitech International .....	SU6779
Masstech Group .....	SU7058
<i>Broadcast Software</i>	
<i>Solutions</i> .....	<i>SU7173</i>
<i>Telestream</i> .....	<i>SU7183</i>
<i>Sundance Digital</i> .....	<i>SU7470</i>
<i>NVISION</i> .....	<i>SU7552</i>
<i>MicroFirst</i> .....	<i>SU7828</i>
<i>ParkerVision</i> .....	<i>SU8052</i>
<i>Videoframe</i> .....	<i>SU8648</i>
Pharos Communications .....	SU8963
DNF Controls .....	SU8965
<i>BUF Technology</i> .....	<i>SU9539</i>
Proximity .....	SU9600
<i>Quartz Electronics</i> .....	<i>SU9812</i>
Crispin .....	SU9819
<i>Leitch</i> .....	<i>SU9868</i>
Pathfire .....	SU10000
<i>Irdeto Access</i> .....	<i>SU10106</i>
<i>Just Edit</i> .....	<i>SU10278</i>
Floral Systems .....	SU11017
<i>Ross Video</i> .....	<i>SU11029</i>
<i>Digital Transaction Group</i> .....	<i>SU11036</i>
<i>Sony Electronics</i> .....	<i>SU11051</i>



<i>Fujinon</i> .....	<i>SU11542</i>
Leightronix .....	SU11603
eyeheight .....	SU11809
Triveni Digital .....	SU11936
AZCAR .....	SU12004

## Cable TV equipment

ISIS Group .....	C2039
Broadata Communications/ Physical Optics .....	C3133
Herman Electronics .....	C3247
<i>EVS</i> .....	<i>C3332</i>
<i>Thales Broadcast &amp; Multimedia</i> .....	<i>C4709</i>
<i>Prime Image</i> .....	<i>C5634</i>
Keywest Technology .....	C6839
Allen Osborne Associates .....	C7748
Egripment .....	C9433
<i>Horita</i> .....	<i>C10318</i>
Comtech EF Data .....	C11534
Patriot Antenna Systems .....	C12039
Symetrix .....	N1610
SkyStream Networks .....	SL2484
Focus Enhancements .....	SL3501
Matrox Electronic Systems .....	SL4031
VertigoXmedia .....	SL5836
Avitech International .....	SU6779
VLACCESS .....	SU7079
<i>Telestream</i> .....	<i>SU7183</i>
<i>SeaChange International</i> .....	<i>SU9661</i>
DVB .....	SU9709
<i>Zandar Technologies</i> .....	<i>SU9915</i>
<i>Irdeto Access</i> .....	<i>SU10106</i>
Nagravision .....	SU10424
Scientific-Atlanta .....	SU10449
<i>Harmonic</i> .....	<i>SU11006</i>
Motorola, Broadband Communications Sector .....	SU11023
<i>Hi-Tech Enterprises</i> .....	<i>SU11303</i>
<i>Opticomm</i> .....	<i>SU11304</i>
<i>Network Electronics</i> .....	<i>SU11606</i>
<i>Scopus Network Technologies</i> .....	<i>SU11814</i>
Triveni Digital .....	SU11936

## Camera support, robotics, virtual sets

<i>Image Video</i> .....	<i>C5321</i>
<i>FORA</i> .....	<i>C5628</i>
Telemetrics .....	C5845
Bogen .....	C6435
Innovision Optics .....	C7618
<i>Sachtler Corporation of America</i> .....	<i>C7628</i>
Allen Osborne Associates .....	C7748
Glidecam Industries .....	C8843
Cool-Lux .....	C10033
Spider Support Systems .....	C10036
vizrt .....	SL3424
vizrt .....	SL3436
Focus Enhancements .....	SL3501
Orad Hi-Tec Systems .....	SL4724
Laird Telemedia .....	SL5860
<i>ParkerVision</i> .....	<i>SU8052</i>
Radamec .....	SU9643
<i>Vinten/Radamec</i> .....	<i>SU9643</i>

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# Managed monitoring for broadcast and distribution



- Efficient solution to display analog, digital & High Definition video, audio, alarms, network load and computer generated data.
- Autonomous or multi-screen display to monitor up to 60 windows simultaneously.
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Chapman/Leonard Studio Equipment .....	SU9668
Camplex .....	SU10318
Miller Camera Support .....	SU10536

## Cameras, lenses, accessories

Tron-Tek .....	C2158
Link Research .....	C2541
Teranex .....	C3055
<b>Microwave Radio Communications</b> .....	<b>C3206</b>
<b>Anton/Bauer</b> .....	<b>C3806</b>
<b>Panasonic Broadcast</b> .....	<b>C3811</b>
JVC Professional Products Company .....	C4728
<b>Thales-Angenieux</b> .....	<b>C5412</b>
<b>IDX System Technology</b> .....	<b>C5639</b>
Telemetrics .....	C5845
<b>Ikegami Electronics</b> .....	<b>C6428</b>
Bogen .....	C6435
Lemo .....	C6717
Band Pro Film & Digital .....	C7115
Eastman Kodak Company .....	C7123
Winemiller Communications .....	C7133A
Innovision Optics .....	C7618
Rockwell Scientific .....	C8047
<b>PAG</b> .....	<b>C8235</b>
ARRI .....	C9128
Cool-Lux .....	C10033

<b>Sony Electronics</b> .....	<b>SL2769K</b>
Wolfvision .....	SL5221
Da-Lite Screen Company .....	SL5353
<b>ParkerVision</b> .....	<b>SU8052</b>
Bexel .....	SU8663
<b>Canon</b> .....	<b>SU9649</b>
<b>Miranda Technologies</b> .....	<b>SU10129</b>
Camplex .....	SU10318
ProSource/BMI .....	SU10606
Century Optics, a Division of Schneider Optics .....	SU10615
<b>Sony Electronics</b> .....	<b>SU11051</b>
<b>Hi-Tech Enterprises</b> .....	<b>SU11303</b>
<b>Fujinon</b> .....	<b>SU11542</b>
<b>Evertz</b> .....	<b>SU11827</b>
AZCAR .....	SU12004

## CGs, prompters, captioning

Mirror Image Teleprompters .....	C2248
<b>Multidyne Video</b> <b>&amp; Fiber Optic Systems</b> .....	<b>C3151</b>
QTV .....	C4736
<b>Pixel Power</b> .....	<b>C5442</b>
Listec Video .....	C6417
Burst Electronics .....	C7614
BDL-Autoscript .....	C8039
Spencer Technologies .....	C 9123
<b>Horita</b> .....	<b>C10318</b>



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Introducing the new 8.4" diagonal ERG HDM-EV80D HD monitor with extremely accurate color. Its HD innovations include four inputs and one output, which allow it to be used with multiple cameras. The monitor's DC output and cost effectiveness make it ideal for rack mounting while its compact, rugged design and low power consumption make it perfect for location shooting. No matter how you use it, the monitor will capture your imagination. Experience the new HDM-EV80D at NAB 2004, Booth #SU10609. [www.erg-ventures.com](http://www.erg-ventures.com), [erg@erg-ventures.co.jp](mailto:erg@erg-ventures.co.jp), US: 1-949-509-6558, Japan: 81-3-3760-8161

**ERG HD Monitors**

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This year at NAB 2004, MRC demonstrates the latest advances in airborne, portable, ENG, SNG, and public safety applications. Product showings will include REPORTER™, STRATA™, QuikVue™, CodeRunner™, TwinStream™, and DAR Plus™ radio systems, along with the latest flyaway satellite systems by Advent and CML.

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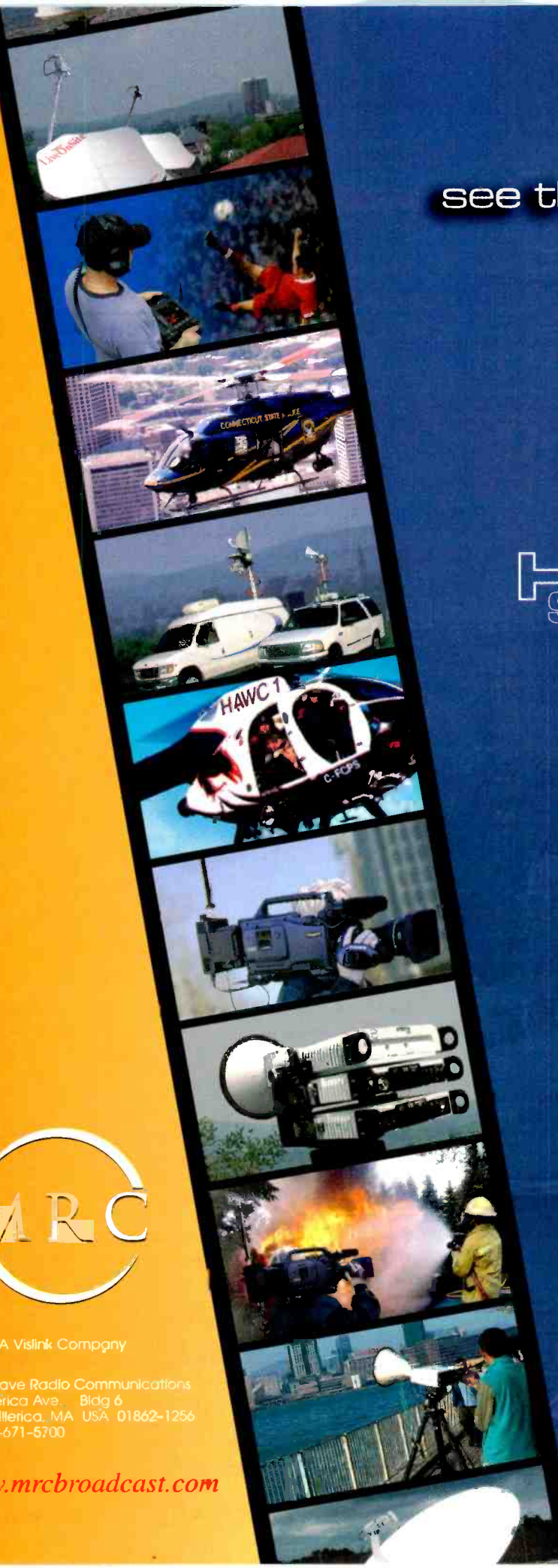
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Adtec Digital .....	C10917
ENCO Systems .....	N2426
vizrt .....	SL3424
vizrt .....	SL3436
Focus Enhancements .....	SL3501
<b>Discreet</b> .....	<b>SL3547</b>
XOrbit Software .....	SL4002
<b>Inscriber</b> .....	<b>SL4718</b>
Compix Media .....	SL5521
VertigoXmedia .....	SL5836
SoftNI .....	SL5260B
ENCO Systems .....	SU6764
<b>Broadcast Software Solutions</b> .....	<b>SU7173</b>
Astro Systems .....	SU7831
Cavena Image Products .....	SU9063
SoftNI .....	SU9671
<b>Miranda Technologies</b> .....	<b>SU10129</b>
Pinnacle Systems .....	SU10160
Mirror Image Teleprompters .....	SU10653
eyeheight .....	SU11809
<b>Evertz</b> .....	<b>SU11827</b>

## Consulting services, technical engineering

A.F. Associates .....	C4722
Andrew .....	C5706
PatchAmp .....	C6140
Mager Systems .....	N2431
Digital Voodoo .....	SL2748
XOrbit Software .....	SL4002
SGI (Silicon Graphics) .....	SL4755
VertigoXmedia .....	SL5836
Pixel Instruments .....	SU7476
<b>MicroFirst</b> .....	<b>SU7828</b>
BBC Technology .....	SU 8469
DVB .....	SU 9709
Crispin .....	SU 9819
Pinnacle Systems .....	SU10160
<b>Harmonic</b> .....	<b>SU11006</b>
Triveni Digital .....	SU11936
AZCAR .....	SU12004

## Film equipment, duplication, distribution equipment

<b>ESE</b> .....	<b>C2522</b>
<b>EVS</b> .....	<b>C3332</b>
Modulation Sciences .....	C3943
Digital Vision .....	C6142
Quantel .....	C6406
<b>Snell &amp; Wilcox</b> .....	<b>C6421</b>
Quantel .....	C7106
Band Pro Film & Digital .....	C7115
da Vinci .....	C9117
ARRI .....	C9128
Cool-Lux .....	C10033
Focus Enhancements .....	SL3501
<b>Discreet</b> .....	<b>SL3547</b>
Video Accessory .....	SL5871
<b>Telestream</b> .....	<b>SU7183</b>

<b>Thomson Broadcast and Media Solutions</b> .....	<b>SU8076</b>
<b>SeaChange International</b> .....	<b>SU9661</b>
Scientific-Atlanta .....	SU10449
<b>Network Electronics</b> .....	<b>SU11606</b>
<b>Evertz</b> .....	<b>SU11827</b>

## Graphics, animation products

Weather Central .....	BH100
<b>Panasonic Broadcast</b> .....	<b>C3811</b>
<b>Chyron</b> .....	<b>C4742</b>
<b>FOR-A</b> .....	<b>C5628</b>
AccuWeather .....	C6034
Quantel .....	C6406
<b>Video Design Software (VDS)</b> .....	<b>C6748</b>
Quantel .....	C7106
<b>Sierra Video Systems</b> .....	<b>C7139</b>
Burst Electronics .....	C7614
Baron Services .....	C8610
da Vinci .....	C9117
Spencer Technologies .....	C9123



Weather Central .....	C9617
BOXX Technologies .....	SL1755
Digital Voodoo .....	SL2748
vizrt .....	SL3424
vizrt .....	SL3436
Focus Enhancements .....	SL3501
<b>Discreet</b> .....	<b>SL3547</b>
<b>AJA Video</b> .....	<b>SL3654</b>
Artbeats .....	SL4105
Orad Hi-Tec Systems .....	SL4724
Ultimate .....	SL4749
SGI (Silicon Graphics) .....	SL4755
<b>Avid Technology</b> .....	<b>SL4761</b>
Realviz .....	SL5655
VertigoXmedia .....	SL5836
<b>SAV Systemes Audiofrequence Videonique</b> .....	<b>SU7170</b>
<b>Broadcast Software Solutions</b> .....	<b>SU7173</b>
Accom .....	SU8058
e-mediavision .....	SU8641
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# 62x9.5AIF OB

“Selecting Thales Angenieux's 62X OB Lens was a no brainer. The lens has great glass and



Token Creek  
Mobile Television  
Madison, WI

provides the perfect focal length we needed at a great price. After evaluating competitive lenses in this range, the Thales Angenieux 62X OB was the

clear choice,” said John Salzwedel, Owner of Token Creek Mobile Television.



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Digital 60 X 9.5AIF.HD OB  
Digital 72 X 9.5AIF.HR OB  
Digital 70 X 9.5AIF.HD OB

“We have been using Thales Angenieux's 62X OB for over a year now with outstanding results...and most importantly, our clients are very pleased with the performance of the lenses,” concluded Mr. Salzwedel.

**angenieux**

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## Intercom, IFB products

Television Engineering .....	C1418
<b>Systems Wireless .....</b>	<b>C2525</b>
Broaddata Communications/ Physical Optics .....	C3133
<b>Multidyne Video &amp; Fiber Optic Systems .....</b>	<b>C3151</b>
Herman Electronics .....	C3247
Modulation Sciences .....	C3943
<b>Clear-Com Intercom Systems .....</b>	<b>C7406</b>
Telex Communications .....	C9106
Riedel Communications .....	C11210
Comrex .....	N2722
Sierra Automated Systems .....	N3705
Klotz Digital America .....	N4216
Location Sound .....	N4322
JK Audio .....	N4616
<b>Drake Electronics .....</b>	<b>SU6776</b>
<b>Opticomm .....</b>	<b>SU11304</b>
<b>Evertz .....</b>	<b>SU11827</b>

## Lighting equipment

<b>Anton/Bauer .....</b>	<b>C3806</b>
Bogen .....	C6435
K5600 .....	C7439
Innovision Optics .....	C7618
Allen Osborne Associates .....	C7748
<b>Dielectric Communications .....</b>	<b>C7806</b>
<b>Videssence .....</b>	<b>C8625</b>
ARRI .....	C9128
Dedotec .....	C9728
Cool-Lux .....	C10033
Sabre Towers .....	N418
Dialight .....	N2834
Alcorn McBride .....	SI.5226
LightTech Group .....	SU7050
Westcott (F.J. Westcott) .....	SU7781
<b>Frezzi Energy Systems, Division of Frezzolini .....</b>	<b>SU10512</b>
ProSource/BMI .....	SU10606

## Microphones, accessories

<b>Systems Wireless .....</b>	<b>C2525</b>
Herman Electronics .....	C3247
Bogen .....	C6435
Lemo .....	C6717
Wireworks .....	C7113
Allen Osborne Associates .....	C7748
Whirlwind .....	C7819
Riedel Communications .....	C11210
Independent Audio .....	N1300
RDL Radio Design Labs .....	N2126
<b>DPA Microphones .....</b>	<b>N2536</b>
<b>Sennheiser Electronic .....</b>	<b>N2812</b>
<b>Lectrosonics .....</b>	<b>N3316</b>
Audio-Technica .....	N3712
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<b>Azden .....</b>	<b>N4016</b>
Location Sound .....	N4322
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Keywest Technology .....	C6839
<i>Sierra Video Systems</i> .....	C7139
<i>Crystal Vision</i> .....	C7143
<i>Pro-Bel</i> .....	C8123
Spencer Technologies .....	C9123
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RGB Spectrum .....	SL4711
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<i>Audiofrequency Videonique</i> .....	SU7170
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<i>Sony Electronics</i> .....	SU11051
<i>Hi-Tech Enterprises</i> .....	SU11303
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## Recording media

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Global Media Resource .....	C3128
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Pioneer Electronics .....	C9622
<i>Sony Electronics</i> .....	SL2769K
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Focus Enhancements .....	SL3501
<i>Avid Technology</i> .....	SL4761
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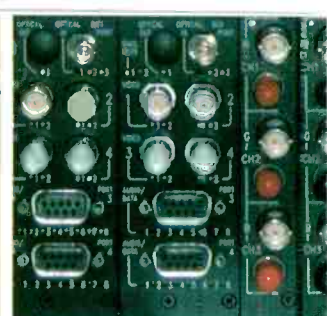
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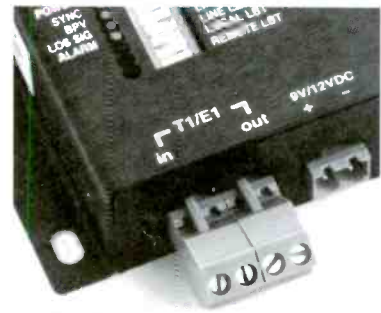
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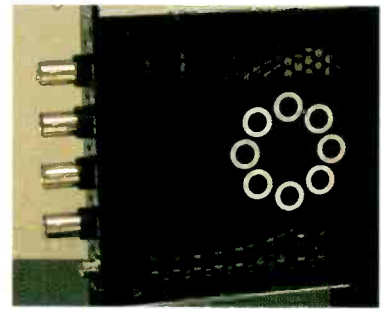
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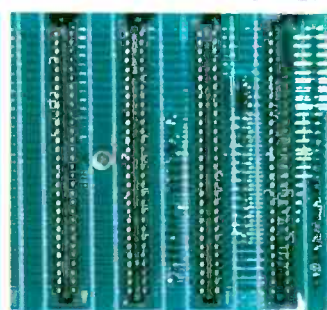
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<b>Scopus Network Technologies</b> .....	<b>SU11814</b>
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<b>ESE</b> .....	<b>C2522</b>
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RTI-Research Technology International .....	C4150
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<b>Snell &amp; Wilcox</b> .....	<b>C6421</b>
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<b>Crystal Vision</b> .....	<b>C7143</b>
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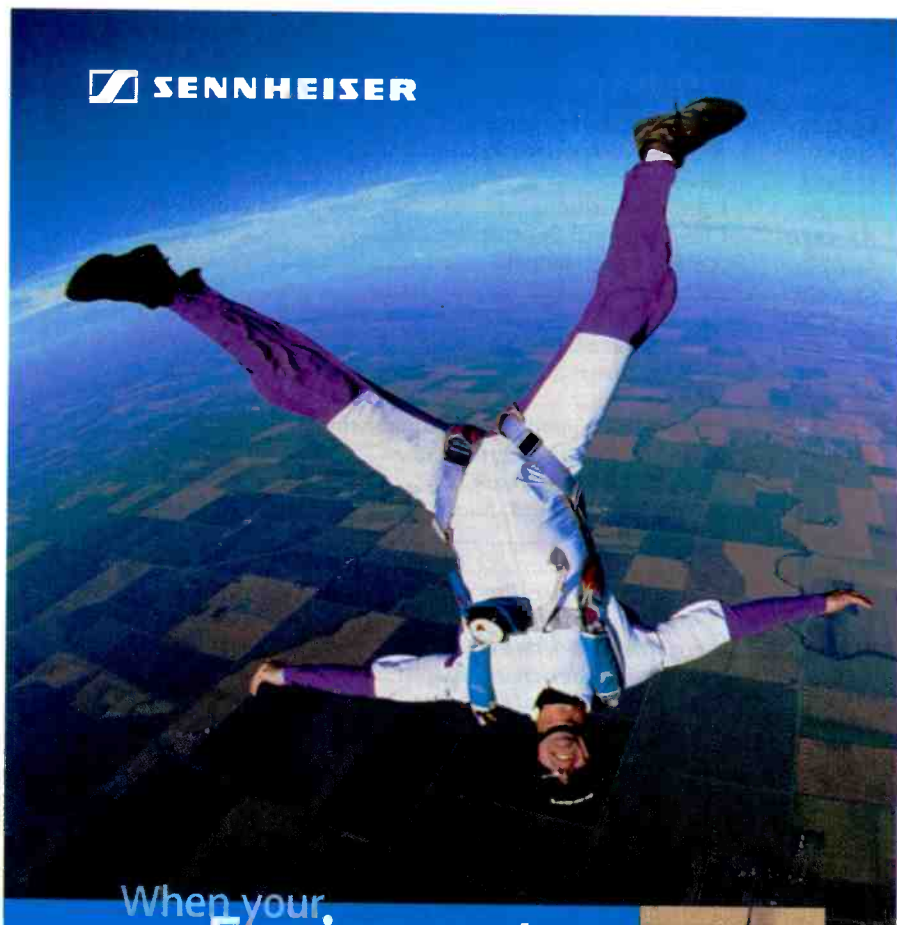
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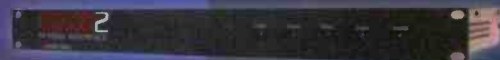
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# The FASTtrack

<i>Radyne ComStream-Tiernan</i> .....	<i>SU11300</i>
<i>Opticomm</i> .....	<i>SU11304</i>
<i>Scopus Network Technologies</i> .....	<i>SU11814</i>
Wegener Communications .....	SU12023

## Video editing systems

<i>ESE</i> .....	<i>C2522</i>
<i>EVS</i> .....	<i>C3332</i>
<i>Panasonic Broadcast</i> .....	<i>C3811</i>
JVC Professional Products Company .....	C4728
<i>Pixel Power</i> .....	<i>C5442</i>
Quantel .....	C6406
<i>Ikegami Electronics</i> .....	<i>C6428</i>
Quantel .....	C7106
<i>Leitch</i> .....	<i>R716</i>
BOXX Technologies .....	SL1755
Focus Enhancements .....	SL3501
<i>Discreet</i> .....	<i>SL3547</i>
<i>AJA Video</i> .....	<i>SL3654</i>
IPV Limited .....	SL4000
Adobe Systems .....	SL4730
SGI (Silicon Graphics) .....	SL4755
<i>Avid Technology</i> .....	<i>SL4761</i>
Aurora Video Systems .....	SL5542
Canopus .....	SL5805
Laird Telemedia .....	SL5860
Editware .....	SU7820
Astro Systems .....	SU7831
Accom .....	SU8058
<i>Thomson Broadcast and Media Solutions</i> .....	<i>SU8076</i>
Brick House Video .....	SU8546
<i>Leitch</i> .....	<i>SU 9868</i>
Pinnacle Systems .....	SU10160
<i>Sigma Electronics</i> .....	<i>SU11043</i>
<i>Sony Electronics</i> .....	<i>SU11051</i>

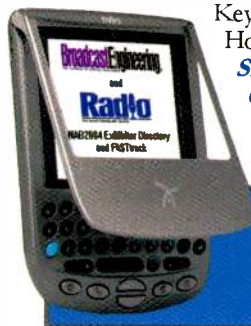
## Video routing

Ward-Beck Systems .....	C1914
ISIS Group .....	C2039
Fast Forward Video .....	C2851
<i>Multidyne Video &amp; Fiber Optic Systems</i> .....	<i>C3151</i>
<i>Videotek</i> .....	<i>C4717</i>
<i>Image Video</i> .....	<i>C5321</i>
<i>FOR-A</i> .....	<i>C5628</i>
<i>Utah Scientific</i> .....	<i>C5912</i>
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<i>Horita</i> .....	<i>C10318</i>
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<i>Leitch</i> .....	<i>R716</i>
Vela .....	SL1780
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Gefen .....	SL5857
Video Accessory .....	SL5871
<i>SAV Systemes Audiofrequence Videonique</i> .....	<i>SU7170</i>
<i>Telestream</i> .....	<i>SU7183</i>
<i>Axon Digital Design</i> .....	<i>SU7548</i>
<i>NVISION</i> .....	<i>SU7552</i>
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Communications Specialties .....	SU8065
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<i>Thomson Grass Valley</i> .....	<i>SU8076</i>
BBC Technology .....	SU8469
e-mediavision .....	SU8641
Pharos Communications .....	SU8963
DNF Controls .....	SU8965
<i>PESA Switching Systems</i> .....	<i>SU9530</i>
<i>SeaChange International</i> .....	<i>SU9661</i>
Quartz Electronics .....	SU9812
<i>Leitch</i> .....	<i>SU9868</i>
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Scientific-Atlanta .....	SU10449
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Comprehensive Video Group .....	SU10753
<i>Ross Video</i> .....	<i>SU11029</i>
<i>Sigma Electronics</i> .....	<i>SU11043</i>
<i>Hi-Tech Enterprises</i> .....	<i>SU11303</i>
Leightronix .....	SU11603
<i>Network Electronics</i> .....	<i>SU11606</i>
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# HD CHAMPIONS!



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UK Patent 2,330,475  
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# The FASTtrack

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<i>Thomson Broadcast and Media Solutions</i> .....	<i>SU8076</i>
<i>Thomson Grass Valley</i> .....	<i>SU8076</i>
BBC Technology .....	SU8469
Pharos Communications .....	SU8963
DNF Controls .....	SU8965
Crispin .....	SU9819
<i>Leitch</i> .....	<i>SU9868</i>
Pinnacle Systems .....	SU10160

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Advanced Designs .....	C6146
Allen Osborne Associates .....	C7748
Baron Services .....	C8610
vizrt .....	SL3424
vizrt .....	SL3436
<i>Irdeto</i>	
<i>Access</i> .....	<i>SU10106</i>
Triveni Digital .....	SU11936
Weather Central .....	BH100

## Wire, cable, connectors

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<i>Switchcraft</i> .....	<i>C3322</i>
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Andrew .....	C5706
Neutrik .....	C5842
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<i>ADC</i> .....	<i>C6413</i>
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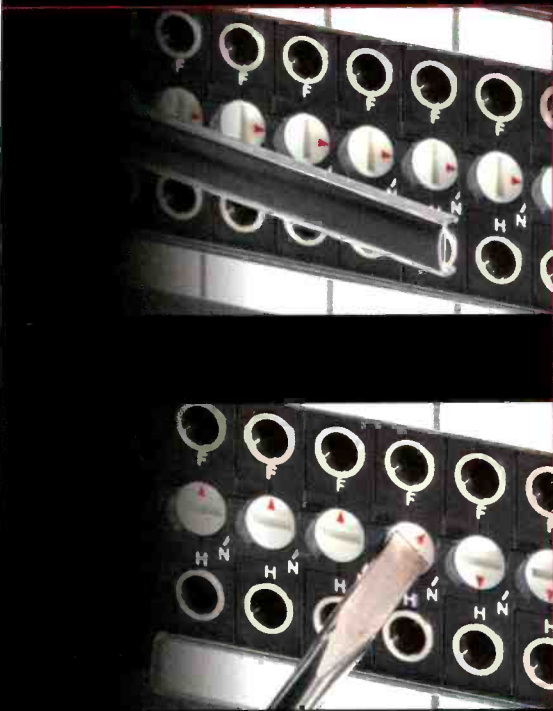
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## The EZ Norm Series

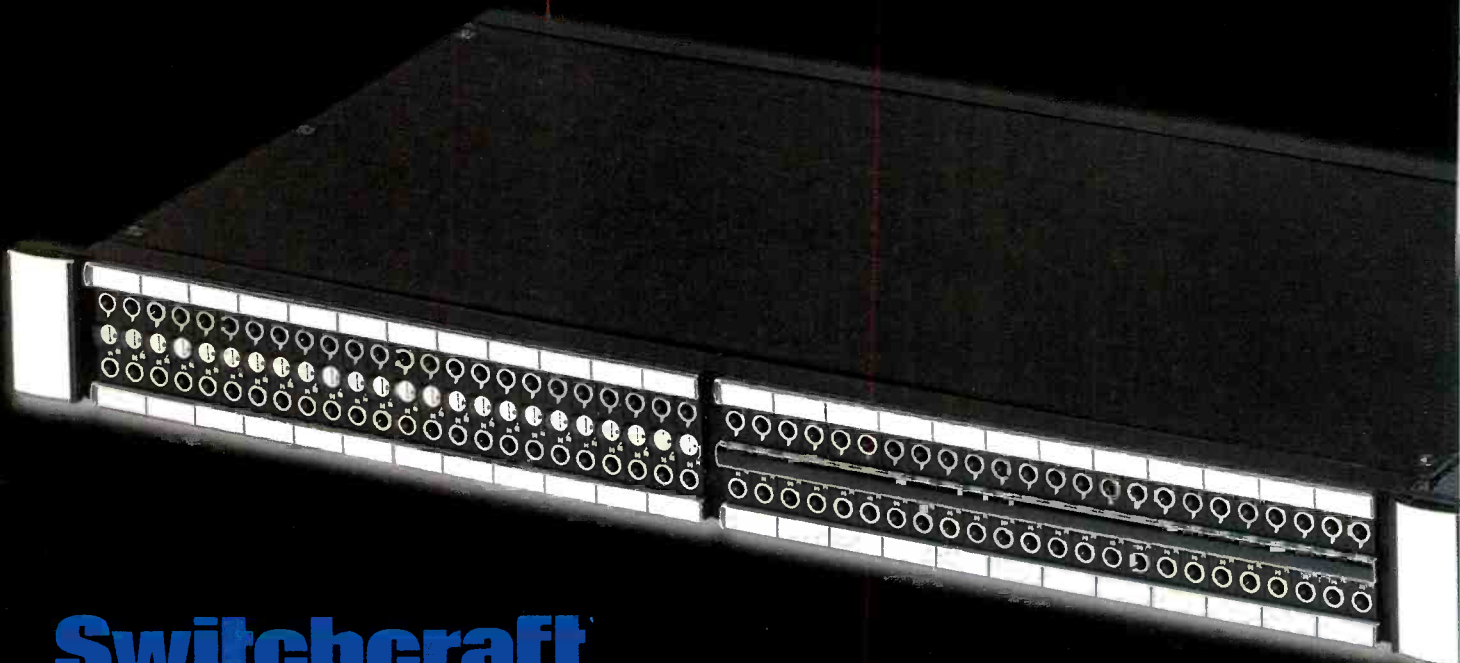
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# DTV marketplace



**A**s always, *Broadcast Engineering* is here to guide you through the maze of products and new technologies that will be displayed at NAB this year. The products are divided into categories for easy reference, and our unique table of contents lists page numbers so you can turn directly to the product category of your choice. The listings include contact information and booth numbers to make finding vendors easy — before, during and after the show. (Issue advertisers are listed in blue.)

With more than 60 pages of new products, this year's show coverage is larger than ever. So, read on and place your bets for the latest and most up-to-date technology you can get at NAB2004!



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# DTV marketplace

## Audio accessories

### LOUDSPEAKER

#### Television Systems SLS-1P

Self-powered loudspeaker system is 1RU high; can be placed freestanding or in rack; rear panel has two balanced audio inputs; front panel has headphone jack.

877-591-2108; [www.televisionssystem.com](http://www.televisionssystem.com)

**Booth: SU8762**



### STEREO MONITORING SYSTEM

#### Genelec Triple Play

Consists of two Genelec 1029A two-way, bi-amplified active monitors and a Genelec 7050A LSE active subwoofer; has in-room flat frequency response; each component features an integrated active balanced crossover, driver protection circuit and dedicated amplifier; can produce peak acoustic levels of more than 110dB SPL @1 meter.

508-652-0900; [www.genelec.com](http://www.genelec.com)

**Booth: N4012**

### MICROPHONE AMPLIFIER

#### Solid State Logic Xlogic SuperAnalogue

Provides four of XL 9000 K series microphone pre-amps in a 1U rack-mounting unit with optional remote control; suited to working in speech applications where high signal gains and remote gain control are important.

212-315-1111; +44 1865-842300; [www.solidstatellogic.com](http://www.solidstatellogic.com)

**Booth: N2412**



### CONSOLE

#### Solid State Logic C200

Provides dedicated 'knob per function' control surface; suitable where hands-on access to a large number of controls is needed; offers in-line versatility and the provision of both snapshot and dynamic automation; special mobile configuration also available for compact studio or mobile installations.

212-315-1111; +44 1865 842 300; [www.solidstatellogic.com](http://www.solidstatellogic.com)

**Booth: N2412**

### WIRELESS RECEIVER

#### Anchor Audio UHF-6400

64 user-selectable UHF channels; delivers diversity reception with two independent RF sections for interference-resistant UHF band operation; features factory-set, squelch control; an LED digital display enables easy reading in real world situations; has a DC out jack that can charge the microphone if rechargeable batteries are installed.

800-262-4671; [www.anchoraudio.com](http://www.anchoraudio.com)

**Booth: N3027**



### DIGITAL BROADCAST CONSOLE

#### Solid State Logic C100

Designed for on-air and live-to-tape production applications; both the console operation and underlying technology have been designed for freelance-friendly, reliable operation.

212-315-1111; +44 1865 842 300; [www.solidstatellogic.com](http://www.solidstatellogic.com)

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## MULTICHANNEL COMPRESSOR

### Solid State Logic Xlogic multichannel compressor

Unit features separate five-channel and LFE channel compression controls allowing separate treatment of LFE signals; circular "Max" display shows which channel is contributing the most to the side chain; separate trim controls for L, C, R and S channels provide different thresholds for each input.

212-315-1111; +44 1865 842 300; [www.solidstatellogic.com](http://www.solidstatellogic.com)

**Booth: N2412**

## AUDIO TRANSPORT PLATFORM

### Riedel Artist Matrix

Has multiple audio sources, analog and digital; can be monitored on a standard Riedel control keypanel; individual select and level control creates broadcast mixes.

818-563-4100, +49 3067 826 10; [www.riedel.net](http://www.riedel.net)

**Booth: C11210**



## FIELD MIXER

### Azden FMX-20

Battery-operated (single 9V) mixer can be attached directly to a camera with provided Velcro or belt-worn using three-position belt clip; includes special circuitry for an improved signal-to-noise ratio, a three-step LED array for signal monitoring, and a 12V DC input for externally powering the mixer.

516-328-7500; [www.azdencorp.com](http://www.azdencorp.com)

**Booth: N4016**



## UHF RECEIVER

### Azden 511DRH

Features 63 user-selectable UHF frequencies in the 794- to 806MHz band, as well as twin LED indicators that show antenna reception and signal strength and LED indicators for audio signal strength; channel selection and power on/off are front-panel mounted while the rear panel has the XLR balanced and 1/4" unbalanced output connectors.

516-328-7500; [www.azdencorp.com](http://www.azdencorp.com)

**Booth: N4016**



## PRODUCTION BAG

### IDX System Technology Universal Production Bag

Uses lightweight, high-grade materials; features include see-through mesh pockets for finding small accessories, four removable and user-configurable inside padded pouches, outside pockets and flat pockets, and carpeted removable interior base for easy cleaning.

310-891-2800; [www.idx.tv](http://www.idx.tv)

**Booth: C5639**



## DIGITAL WIRELESS MIC SYSTEM

### Lectrosonics 700 series

Offers a combination of CD-quality audio with response to 20kHz, a digital RF link operating on standard UHF frequencies, and advanced encryption for applications requiring a high level of security; ideal for demanding studio and stage environments.

505-892-4501; [www.lectrosonics.com](http://www.lectrosonics.com)

**Booth: N3316**

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## DIGITAL AUDIO NETWORK ROUTER Wheatstone Bridge Router

Design consists of seven inches rack-mount digital routing cages, each capable of handling 512 simultaneous audio channels on its backplane; features bidirectional fiber-optic or CAT-5 interlocation connectivity, all-digital domain AES switching, analog or digital inputs, both analog and AES digital outputs, and serial control and display with Wheatstone consoles.

252-638-7000; [www.wheatstone.com](http://www.wheatstone.com)

**Booth: N2802**

## AUDIO OPTION FOR VTM SERIES Videotek VTM Option 9

Provides integrated audio monitoring and analysis on a high-resolution XGA output for use with a standard PC monitor; features four analog stereo inputs, four AES/EBU inputs and 16 channels of embedded audio as well as Dolby E and AC3 inputs for both HD and SD video.

610-327-2292; [www.videotek.com](http://www.videotek.com)

**Booth: C4717**



## DIGITAL AUDIO MIXING CONSOLE Wheatstone D-9

Features 5.1 digital surround, a host of mix-minus clean feed outputs, individual channel bus-minus outputs, six-band digital equalization, digital dynamic processing and integrated routing; is 25 inches front to back, making it ideal for remote truck installations.

252-638-7000; [www.wheatstone.com](http://www.wheatstone.com)

**Booth: N2802**

## SCALABLE TDM DIGITAL AUDIO ROUTER Nvision NV7512

Supports analog as well as digital audio signals; is linearly expandable to offer 2048x2048 channels; MADI-format multichannel digital I/O also is featured; analog inputs and outputs are converted to and from digital using high-performance 24-bit converters; ideal for broadcasters and post facilities that need to manage large numbers of mixed-format audio signals.

530-265-1000; [www.nvision1.com](http://www.nvision1.com)

**Booth: SU7552**

## DIGITAL MIXING CONSOLE SALZBRENNER STAGETEC MEDIAGROUP AURUS

Features an analog-style surface with full instant control to the mixing functions achieved by implementing space-saving dual encoders in the channel strips; features up to 96 assignable channel strips and approximately 300 audio channels, various console automation functions and connectivity for two master consoles with individual project handling.

+49 9545 440 0; [www.stagetec.com](http://www.stagetec.com)

**Booth: N2034**



## FIBER OPTIC LINK Communications Specialties Pure Digital Fiberlink 7220 series

Transmits high-resolution RGB (up to WXGA) and stereo audio over one single-mode or multimode fiber optic strand; supports HDTV resolutions of 480p, 720p and 1080p (RGBHV format); requires no adjustments, equalization or de-skewing.

631-273-0404; [www.commspecial.com](http://www.commspecial.com)

**Booth: SU8065**



## AUDIO DELAY FOR LIP SYNC CORRECTION Pixel Instruments AD-3000

Built-in pitch corrector allows rapid delay change without introducing unwanted artifacts; inputs and outputs are stereo analog, AES/EBU digital (balanced) and SMPTE digital (unbalanced); accepts any input sample rate from 25kHz to 48kHz, and the output sample rate can be derived from an internal crystal oscillator, or can be frequency locked to the digital input.

408-871-1975; [www.pixelinstruments.tv](http://www.pixelinstruments.tv)

**Booth: SU7476**

## WORKSTATION ENCO Systems DADtv

Supports four stereo inputs and four stereo outputs; inputs are capable of handling two streams of digital or analog audio, supports a wide range of interface options including PBUS, serial, GPI and IP access, as well as a wide selection of user interfaces from tactile button boxes to touchscreen to job/shuttle controllers.

248-827-4440; [www.enco.com](http://www.enco.com)

**Booths: N2426, SU6764**

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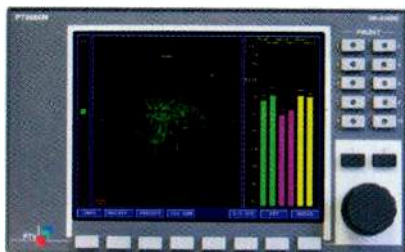
## DIGITAL ROUTING SYSTEM

### SALZBRENNER STAGETEC MEDIAGROUP NEXUS

Designed for routing-center and broadcasting-complex networking, remote trucks and sound reinforcement, provides for audio-format conversion, A/D and D/A converter systems, audio processing, data transmission, routing interface, multichannel metering and power-amplifier control; spanning distances of up to 70km can be achieved without any deterioration in audio quality or clock deviations.

+49 9545 440 0; [www.stagetec.com](http://www.stagetec.com)

**Booth: N2034**



## MULTITRACK AUDIOMETER

### DK-Audio PTO660M

Comes with up to 32 channels; combines DK-Audio's proprietary JellyFish surround display with a rotary control knob on the front panel, enabling it to act as the master volume control for speakers in both surround and stereo configurations; an internal switching matrix and new software allows users to change presets to their own specifications; 10 presets are directly available from the front plate.

+45 4485 025 5; [www.dk-audio.com](http://www.dk-audio.com)

**Booth: C3843**



## AUDIO ROUTER

### Logitek Electronic Systems Audio Engine

Includes standard X-Y channel selection, intercom operation, mixing and metering capability, IP control, and physical and virtual controllers; features EQ and dynamics processing of individual channels; 64-channel bidirectional audio feeds of distances up to 10 miles; can perform a number of processing functions.

800-231-5870; [www.logitekaudio.com](http://www.logitekaudio.com)

**Booth: N3307**



## SHOTGUN MICROPHONE

### Azden SGM-1000

Combines wide frequency response with low noise and phantom power; features a switchable low-frequency roll-off filter to reduce proximity effects and low-frequency room noises, a power on/off switch and an industry-standard low-impedance XLR connector; can be powered by either externally supplied phantom power (12-48V) or an internally mounted single "AA" alkaline battery.

516-328-7500; [www.azdencorp.com](http://www.azdencorp.com)

**Booth: N4016**



## POWERED SPEAKER SYSTEM

### Azden APS 25

Features two audio inputs for modular, user-installable, wireless mic receivers - VHF (30 channels available), UHF (63-channel switchable) or infrared (two channels available); two other inputs for a wired microphone and a wired line output device such as a CD player/

516-328-7500; [www.azdencorp.com](http://www.azdencorp.com)

**Booth: N4016**



## BROADCAST CONSOLE

### Euphonix System 5-B

Flexible, modular surface and I/O design; multiple-CPU-based system runs low-level VX Works OS for reliability; features eight knobs and 100mm touch sensitive moving fader per channel; TFT displays are located at the top of each channel for metering, EQ dynamics, and pan graphs and routing; features SnapShot Recall of all console settings; has 48 layouts for different surface configurations.

650-855-0400; [www.euphonix.com](http://www.euphonix.com)

**Booth: N3616**

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**Colledia™.** The first truly comprehensive software tool for the entire media production process. Enabling BBC News to migrate to a fully integrated news production environment. Ready to be your media creation and broadcast management solution.

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[www.bbctechnology.com](http://www.bbctechnology.com)

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# DTV marketplace

## AES DIGITAL AUDIO SIGNAL MANAGEMENT SERIES

### Sigma Electronics OctaStream family

Includes the DA5320 mixer and subframe router, the DA5315 variable delay compensator and DATC comparator for setting variable delay, the DA5325 sample rate converter for selectable conversion of sample rates, and the SG5605 AES and DATC reference generator for tracking audio channels.

866-569-2681; [www.sigmaelectronics.com](http://www.sigmaelectronics.com)

**Booth: SU11043**



## CONSOLE UPGRADE

### Studer V3.3 software

Offers improved snapshot facilities in static mode, an "undo" function for snapshot recall, snapshot crossfades over any interval up to 100 seconds and protection against accidentally changing patched connections; Vista 6 and Vista 7 benefit from multiple-operator facility option; and a clipboard library allowing individual settings or whole channels to be stored.

818-920-3212; [www.studer.ch](http://www.studer.ch)

**Booth: N1018**

## HEADSET

### Riedel MAX

Includes a rotating gooseneck, electric condenser or dynamic microphones and PTT-buttons integrated in a connecting lead.

[www.riedel.net](http://www.riedel.net)

**Booth: C11210**



## HEADPHONES

### Sennheiser HD650

Combine flat frequency response (10-39,500Hz/-10dB) with natural dynamics; include an upgraded cable; offers reduced distortion in the high frequencies; features hand-selected, matched transducers with tight tolerances (+/-1 dB); computer-optimized magnet systems for minimizing harmonic and intermodulation distortion; neodymium ferrous magnet systems for high efficiency.

860-434-9190; [www.sennheiserusa.com](http://www.sennheiserusa.com)

**Booth: N2812**



## LAVALIER MICROPHONE

### Audio-Technica AT898

Subminiature cardioid condenser microphone offers switchable low-frequency roll-off to reduce sensitivity to vocal popping, low-frequency ambient noise, room reverberation and mechanically coupled vibrations.

330-686-2600; [www.at.us.com](http://www.at.us.com)

**Booth: N3712**



## BROADCAST CONSOLE

### Studer Vista 6

Features a simplified center section; includes additional monitoring and talkback functions; a comprehensive clean feed (n-1) system is standard; has a reverse bus interrogation to enable the operator to instantly view the n-1 setup; may be supplied with a 'blank bay,' which may be used for fitting third-party intercom systems, remote controls or a workstation TFT screen and controls.

818-920-3212; [www.studer.ch](http://www.studer.ch)

**Booth: N1018**



## SHOTGUN MICROPHONE

### Audio-Technica AT897

Short, lightweight shotgun microphone operates on an internal AA battery or phantom power (9-48V, 2 mA); low-frequency roll-off switch reduces unwanted sounds.

330-686-2600; [www.at.us.com](http://www.at.us.com)

**Booth: N3712**

## AUDIO CONSOLE NETWORK

### Calrec Hydra

Audio console networking and microphone pre-amping system; enables Calrec digital consoles to share I/O resources.

+44 142 284 2159; [www.calrec.com](http://www.calrec.com)

**Booth: N1012**



## AUDIO CONSOLE

### Calrec Alpha 100

All-digital audio console for live production and on-air use; the Alpha 100-OB is purpose designed for mobile broadcast facilities.

+44 1422 842 159; [www.calrec.com](http://www.calrec.com)

**Booth: N1012**



## AUDIO CONSOLE

### Calrec Zeta 100

Digital mixer available in three standard frame sizes: 24, 32 and 48 faders; has DSP allocation for up to 56 channels; accommodates DSP, digital and analog I/O.

+44 142 284 2159; [www.calrec.com](http://www.calrec.com)

**Booth: N1012**



## LOUDNESS METER UPGRADE

### Dolby LM100

Upgrade includes enhanced loudness measurement, logging features and error reporting; event log monitors several input statuses, alarms and error conditions.

415-558-0200; +44 1793 842 100; [www.dolby.com](http://www.dolby.com)

**Booth: SU10443**



## AUDIO MIXER

### Evertz 7720AM-AES4

Accepts four AES/EBU digital stereo audio inputs and routes them to any of four AES outputs; does channel swapping, over mixes, mix downs and on-air breakaways.

905-335-3700; [www.evertz.com](http://www.evertz.com)

**Booth: SU11827**

## ROUTER

### Logitek Electronic Systems Audio Engine

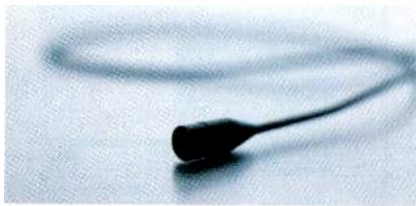
Upgrade to Version 3 firmware; implements direct routing capabilities of new audio cards; provides more stand-alone router functions; expands mix-minus buses to 24; now provides eight stereo mix buses.

800-231-5870; [www.logitekaudio.com](http://www.logitekaudio.com)

**Booth: N2931**



# THE RIGHT



## MICROPHONE

### DPA Microphones 4071-BM

Body-worn microphone has a maximum sound pressure level (SPL) of 144dB before clipping; can be used with the DAD6024 adapter and DAK4071-F accessory kit for miniature microphones; omnidirectional microphone inherently cuts down wind and pop noise, keeping the proximity effect low; features a fixed soft boost grid, giving the microphone a 5dB boost between 4kHz to 6kHz.

+45 4814 2828; [www.dpamicrophones.com](http://www.dpamicrophones.com)

**Booth: N2536**

## AUDIO LEVELER

### Ward-Beck Systems ALFA

Card-based system designed to maintain a target level at the ingest or playout point of the program chain; based on the DA305 digital audio processing amplifier of the Serialboxx family; offers up to eight AES channels of control in a 1RU frame and 20 channels of control in a 2RU frame; control can be preset for automatic level adjustment to predetermined levels or dynamic adjustment via a physical control panel.

416-335-5999; [www.ward-beck.com](http://www.ward-beck.com)

**Booth: C1914**

## SURROUND SOUND SYSTEM

### Harris NeuStar DTV

Transports audio over the existing stereo backbone and automatically converts it to surround sound at the receiver; MultiMerge component converts all incoming audio to 5.1 surround sound regardless of its original format; the NeuStar-5225 component enables 5.1 surround sound to be produced and transported over the existing stereo background; the Powerlift component maintains consistent volume; system uses proprietary Neural technology to reduce artifacts in compressed data formats, allowing bandwidth savings of up to 30 percent.

513-459-3400; +44 1189 648 000; [www.broadcast.harris.com](http://www.broadcast.harris.com)

**Booth: C1906**

## TELEVISION AUDIO PROCESSOR

### Modulation Sciences MSI-3300

Multifunction unit combines analog-to-AES3 and AES3 (with automatic speed detection)-to-analog conversion with high-quality gain riding and a transmission audio processor; conditions audio for transmission in a variety of media, including cable modulators, satellite uplinks and fiber modulators.

800-826-2603; [www.modsci.com](http://www.modsci.com)

**Booth: C3943**

## AUDIO INTERFACES

### Sonifex RB-DSS10

24-bit 96kHz-capable 1RU interface; produces an AES/EBU and S/PDIF level digital audio output from 10 selectable AES/EBU or S/PDIF digital input signals; the unit will route the selected audio signal, as well as routing remote signal inputs through the remote connector to the selected input source, for starting external audio equipment such as a CD player; features a front-panel headphone socket with volume control for monitoring.

207-773-2424; +44 1933 650 700; [www.sonifex.co.uk](http://www.sonifex.co.uk)

**Booth: C5236**

## Automation

## BROADCAST MONITORING SYSTEM

### Encoda Systems

#### Operational Broadcast Monitoring

Designed to rapidly identify and correct possible failures and errors on transport streams on an entire network and specific channels through all stages of transmission; ideal for a multichannel environment.

303-237-4000; [www.encodasystems.com](http://www.encodasystems.com)

**Booth: C5617**



## PROGRAM DISPLAY ON TIMING WORKSTATION

### Floral MediaTimer Desktop

Upgrade to MediaTimer allows programs stored on high-resolution server to be viewed on a remote timing workstation; obviates dedicated video monitor.

352-372-8326; [www.floral.com](http://www.floral.com)

**Booth: SU11017**

## DESKTOP MANAGER

### Pharos Studio Playtime

Enables broadcasters to emulate on-air the look and feel of Internet Web pages; ideal for the live studio gallery or playout center that needs to deliver a complex presentation while taking in live feeds to air; reduces operational workflow and production costs for live events; edit timeline forms the basis of a unique toolset for the creation and delivery of "broadcast publishing channels."

+44 1189 502 323; [www.pharos-comms.com](http://www.pharos-comms.com)

**Booth: SU8963**

*Color indicates advertiser*

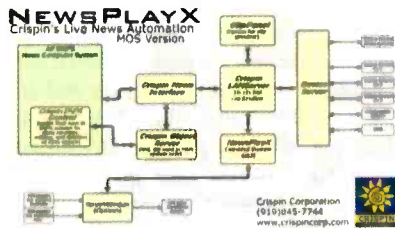
## DESKTOP MANAGEMENT

### Pharos Pilot MCR

Enables full desktop management of broadcast systems; integrates with the established Pilot RT networked-based matrix control system; allows users to configure new device control displays; two new panels for Pharos Pilot will be introduced: Intercom Conference Call Manager interfaces to most intercom systems, including Clearcom, Trilogy and Drake; and Router Labels allow operators to label signal routing configurations from the touchscreen and display these throughout the system.

+44 1189 502 323; [www.pharos-comms.com](http://www.pharos-comms.com)

**Booth: SU8963**



## LIVE NEWS PLAYBACK SYSTEM

### Crispin NewsPlayX

Works in conjunction with most news automation systems including: Avid's iNews, AvStar, NewStar, MOS interface with AP's ENPS, and other industry news systems; translates the rundown and executes the playback while controlling video servers, switchers, tape machines and many other devices; maps the news system rundown to different server channels to allow back-to-back video transition overlapping.

919-845-7744; [www.crispincorp.com](http://www.crispincorp.com)

**Booth: SU9819**

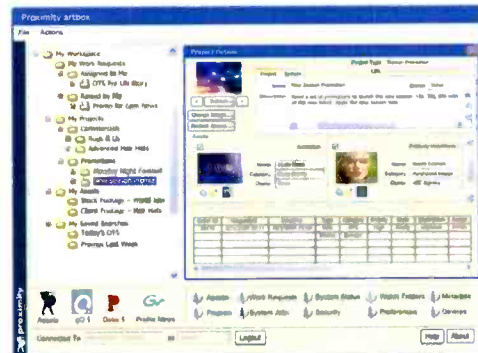
## PACKAGE PLAYOUT

### Pharos Playtime

Enables broadcasters to emulate on-air the look and feel of Internet Web pages; edit timeline forms the basis of a unique toolset for the creation and delivery of broadcast media publishing channels; allows a scheduler to create television channels that would otherwise require extensive post-production.

+44 118-950-2323; [www.pharos-comms.com](http://www.pharos-comms.com)

**Booth: SU8963**



## CONTENT MANAGEMENT SYSTEM

### Proximity Artbox

Integrates format conversion, storage, workflow management, and search and retrieval of artwork (video, graphics, script or audio) into a single device; supports multiple devices and formats; the content management module stores artwork in its native format; enables producers and journalists to associate multiple pieces of artwork that exist across multiple devices with a single story.

646-452-5820; [www.proximitygroup.com](http://www.proximitygroup.com)

**Booth: SU9600**



# AUDIO

# DTV marketplace

## ARCHIVE SYSTEM

### Konan DoCruzer

Provides search functions including multi-language search; enables real-time search in large-volume search environment; multi-volume support function removes the limit on storage capacity; features index compression technology to require fewer hard disks; capable of 2GB/hour search, and indexing 20 million Web pages a day.

+82 2 3489 1000; [www.konantech.co.kr](http://www.konantech.co.kr)

**Booth: SL2159**



## IP-BASED CONTENT DELIVERY AND SCHEDULING SYSTEM

### Panasonic BB-S700PD media player and BB-SMG700 media server

Team with Panasonic "6" series plasma displays; features network management, media distribution, individual or group of plasmas schedule creation and with locally or remotely controlled playback, data encryption, and terminal management.

201-392-4127; [www.panasonic.com/broadcast](http://www.panasonic.com/broadcast)

**Booth: C3811**

## PROGRAM INSERTION MONITOR

### Sencore DPI montior

Provides an analysis of each ad message sent and received; provides SCTE 35 message syntax analysis, in detail, for each DPI message sent; monitors up to eight ASI transport streams simultaneously, and logs SCTE 3 activities for 25 programs per transport stream; displays, in real-time, the bit rates of the different components (PIDs) present in the MPEG-2 transport stream.

800-SENCORE; [www.sencore.com](http://www.sencore.com)

**Booths: SU11011, C10343**

## CONTENT MANAGEMENT APPLICATION

### Leitch MediaNet

Fully integrated content management application that provides a unified view of server content whether on the local or a remote server system; equipped with powerful search and sort tools; allows users to execute smart asset mining of content and metadata and provides heightened security and content management across multiple NEXIO server domains.

859-371-5533; [www.leitch.com](http://www.leitch.com)

**Booth: SU9868**

## VIDEO CONTENT MANAGER

### JUST EDIT VSN NETSARER

Video clips are organized in categories without file paths; features a searcher that will find keywords in video titles and descriptions; allows users to preview videos in low-resolution MPEG-4 video.

+34 9373 499 70; [www.vsn-tv.com](http://www.vsn-tv.com)

**Booth: SU10278**

## PLAYOUT AND VIDEO SERVER

### JUST EDIT VSN MATIC

Automates a master control room 24 hours a day; can record and playback videos from hard disk in MPEG-2 or DV25, controlling video mixers and VTRs; integrates with other VSN modules; is compatible with several NLE native media files.

+34 9373 499 70; [www.vsn-tv.com](http://www.vsn-tv.com)

**Booth: SU10278**

## DESKTOP NEWS APPLICATION

### Pathfire News

Content arrives automatically on Pathfire servers and minimizes the need to schedule and monitor satellite feeds; enables simultaneous access for multiple users; drag-and-drop functionality allows users to select, preview and dub content; seamless integration with leading downstream gear; search local and network archives for packages, scripts and metadata.

770-619-0801; [www.pathfire.com](http://www.pathfire.com)

**Booth: SU10000**

## DESKTOP MEDIA DISTRIBUTION

### Pathfire Digital Media Gateway

Encodes video and attaches scripts; delivers a package to single or multiple stations; content managed as digital (MPEG) files; content arrives automatically on Pathfire servers; enables users to search and preview content, manipulate files, and create media lists; minimizes the need to schedule and monitor satellite feeds; reduces the need for tape and streamlining workflow.

770-619-0801; [www.pathfire.com](http://www.pathfire.com)

**Booth: SU10000**

## BROADCAST PROCESS CONTROL ARCHITECTURE

### Pharos control platform

Comes with four device drivers; supported by no less than 20 interface drivers; Linux based; can be updated remotely using telnet or locally with a USB-interfaced keyboard; 1U front-panel display shows local configuration and control, status information, and the status of all currently loaded drivers and system alarms.

+44 1189 502 323; [www.pharos-comms.com](http://www.pharos-comms.com)

**Booth: SU8963**

## REMOTE NEWSROOM SYSTEM

### Associated Press SNAPfeed

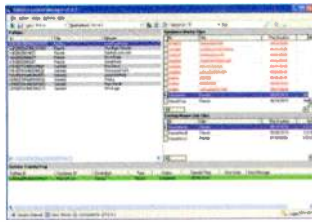
Allows field journalists to transmit video from remote locations to the newsroom using a laptop PC; supports a wide variety of connections, including dial-up, broadband and satellite; simultaneous feeds can be sent to the station from multiple remote users.

202-736-1100; +44 2074 827 812; [www.enps.com](http://www.enps.com)

**Booth: SL2775**

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#### **DELIVERY INTERFACE**

### **Sundance Digital Pathfire Content Manager**

Interfaces with Pathfire's Automation Connect gateway to manage the transfer of new media from Pathfire's cache server to the facility's transmission server; also updates the Sundance media database with the metadata available from Pathfire, including frame-accurate segment timings.

972-444-8442; [www.sundancedigital.com](http://www.sundancedigital.com)

**Booth: SU7470**

#### **NEWSROOM AUTOMATION SYSTEM**

### **Sundance Digital NewsLink V2.0**

Adds device drivers for cameras, audio consoles and video switchers to its existing lineup of server, editor and graphic system controls to facilitate automating the live newscast; manual rundown manager is now available for facilities without a MOS-compliant newsroom computer system, or to serve as a "life boar" in the event of an NRCS crash.

972-444-8442; [www.sundancedigital.com](http://www.sundancedigital.com)

**Booth: SU7470**



#### **CONTROL SYSTEM**

### **DNF Controls Flex Control Network**

Uses modular, Ethernet-based, distributed control technology to deliver flexible real-time machine control; simplifies control between multiple control points.

818-898-3380; [www.dnfcontrols.com](http://www.dnfcontrols.com)

**Booth: SU8965**

#### **AUTOMATION SYSTEM**

### **Encoda Systems D-series Version 4**

Based on open source, standards-based Linux version 2.6, an integrated open source SQL-compliant database and non-proprietary hardware technology; offers support for an off-the-shelf server hardware platform and the ability to handle real-time environments to the level required in a frame-accurate broadcasting environment.

303-237-4000; [www.encodasystems.com](http://www.encodasystems.com)

**Booth: C5617**



#### **AUTOMATION SOLUTION**

### **JUST EDIT VSN NETPLAYER**

Uses the same playback engine as VSN Matic; operates with two channels on the same payout; can acquire a second redundant payout to configure it with the main payout and on-air video server using clustering technology.

+34 9373 499 70; [www.vsn-tv.com](http://www.vsn-tv.com)

**Booth: SU10278**

#### **INTELLIGENT CONTROL AND MONITORING SYSTEM**

### **Snell & Wilcox RollCall**

Enhancements include RollSNMP, which enables RollCall to monitor SNMP status information from the products of other vendors; RollMap which offers a global view of the operation infrastructure; and RollPod, topology control architecture that enables virtual products to be created easily from disparate elements of a broadcast infrastructure.

408-260-1000; [www.snellwilcox.com](http://www.snellwilcox.com)

**Booth: C6421**



# FOR YOUR

# DTV marketplace

## AUTOMATION SOLUTION

### Digital Transaction Group AIRO

Designed for master control automation and broadcast transmission control of single- and multichannel broadcasting operations in assisted, unassisted or unattended operations.

512-837-3737; [www.dgtv.com](http://www.dgtv.com)

**Booth: SU11036**

## PROGRAMMABLE CONTROLLER

### MicroFirst MPC-3200

Has a real-time, multi-tasking pre-emptive operating system (the WinMOS) that mimics WIN32 API calls; features include onboard input and control facilities, with a 20-line by 24-character back-lit LCD display and a 15-key sealed-membrane keypad; can execute downloaded event schedules.

201-651-9300; [www.microfirst.com](http://www.microfirst.com)

**Booth: SU7828**

## NETWORKED-MANAGED VIDEO SYSTEM CONTROLLER

### Leightronix TCD/IP

New features include integrated digital messaging, drag-and-drop scheduling, and a Web control interface; provides automated program playback, unattended recording and video/audio signal routing; capable of controlling VCRs, DDRs, DVD players, broadcast servers, robotic videocassette changers and video/audio routing switchers.

517-694-8000; [www.leightronix.com](http://www.leightronix.com)

**Booth: SU11603**



## PRODUCTION CONTROL SYSTEM

### Ross Video OverDrive v 1.0

Enables touch-screen control over devices used in productions such as news, sports or live events; OverDrive integrates with the Synergy SD and MDX series of production switchers, leveraging powerful control interfaces over video servers, VTRs, DDRs, audio mixers, robotic cameras, routers and still stores.

613-652-4886; [www.rossvideo.com](http://www.rossvideo.com)

**Booth: SU11029**

## CONTROL SYSTEM

### Pro-Bel Procion

PC-based control system providing functionality to design user interfaces; fully compatible with all existing Pro-Bel router control systems; operates from a single configuration database.

631-549-5159, + 44 1189 866 123; [www.pro-bel.com](http://www.pro-bel.com)

**Booth: C8123**



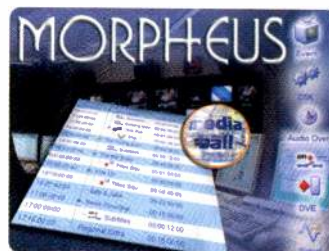
## MASTER CONTROL SYSTEM

### Pro-Bel TX500

Provides solutions from a simple mixer to a multichannel master control system with multi-level audio support for surround sound.

631-549-5159, + 44 1189 866 123; [www.pro-bel.com](http://www.pro-bel.com)

**Booth: C8123**



## AUTOMATION SYSTEM

### Pro-Bel Morpheus

Manages systems from single channels up to the most complex multichannel environments; features the MediaBall concept, which provides a way to handle secondary events such as interactive TV.

631-549-5159, + 44 1189 866 123; [www.pro-bel.com](http://www.pro-bel.com)

**Booth: C8123**



## DIGITAL TAPELESS NEWSROOM

### Video Technics VT NewsFlow

Incorporates automated ingest/playout servers, NLE studio editors, low-res media browsers and editors, and centralized media storage for instant accessibility of media anywhere on a network; users can work simultaneously from a common pool of digital media; browse, log or edit material in real-time even as it is being captured.

404-327-8300; [www.newsflow.tv](http://www.newsflow.tv)

**Booth: C9125**

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## GRAPHICS AUTOMATION SOFTWARE

### vizrt viz content pilot

Automates the creation and playout of real-time 2-D and 3-D graphics; centralizes, manages, controls, inputs and delivers content; Active X module for newsroom systems.

212-560-0708; [www.vizrt.com](http://www.vizrt.com)

**Booth: SL3436**

## PLAYOUT AND CONTROL AUTOMATION SYSTEM

### Harris ADC-25

Offers the functionality of the ADC-100 in a cost-effective package for small-market stations; enables users to schedule and control programming on a wide range of playout devices; can be expanded to a full-scale playout and control system with additional modules.

513-459-3400; [www.broadcast.harris.com](http://www.broadcast.harris.com)

**Booth: C1906**



## MONITORING AND CONTROL SOFTWARE

### BBC Technology Colledia Control 4.5

Allows a single operator to remotely manage broadcast equipment; provides manufacturer-agnostic support while retaining consistent user interface.

+44 2077 654 748; [www.bbctechnology.com](http://www.bbctechnology.com)

**Booth: SU8469**



FLORICAL  
SYSTEMS

## AUTOMATED JOIN-IN-PROGRESS

### Florical Auto JIP

New feature on AirBoss facilitates joining a program in progress; makes all necessary timing calculations to properly cue video servers and updates as-run log.

352-372-8326; [www.florical.com](http://www.florical.com)

**Booth: SU11017**

## WORKFLOW AUTOMATION SYSTEM

### Harris Media Ingest

Part of Harris' Resource Suite automation system; provides advanced features such as batch capture (tape to disk), scene recognition and proxy creation.

513-459-3400; +44 118 964 8000; [www.broadcast.harris.com](http://www.broadcast.harris.com)

**Booth: C1906**

## NEWS PRODUCTION SYSTEM

### DaletPlus News Suite

Provides real-time access to and editing of video, audio, wires, stills, feeds and CGs over a standard IT network; supports MPEG-2, DV and DVCPRO; controls CGs, teleprompters, video servers and other newsroom devices; users can edit, write scripts and manage rundowns from their desktop; built-in newsroom workflow provides controlled access and task assignment functionality.

212-825-3322; +33 1 40 38 01 39; [www.dalet.com](http://www.dalet.com)

**Booth: SL3842**



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[www.sigmaelectronics.com](http://www.sigmaelectronics.com)



# IMAGE



## GRAPHICS AUTOMATION SYSTEM

### Pinnacle Systems DekoCast Traffic Integration

Allows broadcasters to schedule highly complex graphics playout with a single automation event; introduces a controllable mechanism for quality assurance of scheduled on-air graphics without master control intervention; on-air promotion can be scheduled as needed during programming; can be run within customers' existing automation systems; template based.

650-526-1600; [www.pinnaclesys.com](http://www.pinnaclesys.com)

**Booth: SU10160**



## NEWSROOM AUTOMATION SYSTEM

### Inscriber Inca AutoCG

Allows for the broadcast of multi-layer graphics, clocks, logos and real-time, clip-to-clip transitions on a single channel; changes within the news service provider are automatically reflected in its interface, with new content being created instantly; in "unattended" mode, it will automatically broadcast new content.

519-570-9111; [www.inscriber.com](http://www.inscriber.com)

**Booth: SL4718**



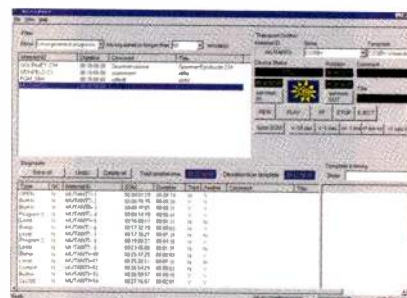
## INTEGRATED REPLAY SYSTEM

### BUF Technology Sport

Complete stand-alone instant replay system with built-in hard disk video recorder for sports instant replay, live events and an inexpensive server alternative; hours of record time at 4:2 compression, adjustable to 20:1; broadcast-quality RS-170A composite and Y/C video I/O; replays are up and ready to play instantly; highlights can be easily created and ready at any time.

858-451-1350; [www.buftek.com](http://www.buftek.com)

**Booth: SU9539**



## USER INTERFACE MODULE

### Crispin RapidPrep

Used to quality control programs that were automatically recorded from satellite feeds; marks the segments of the program to create accurate timing information for use by RapidPlayX in program playback; pulls program data from the Assetbase, allowing the user to time shows; controls almost all video servers, as well as Crispin's new Low Rez video server.

919-845-7744; [www.crispincorp.com](http://www.crispincorp.com)

**Booth: SU9819**

## AUTOMATION ARCHITECTURE

### OmniBus Systems G3 Technology Foundation

Employs standard IT protocols; based on a "componentware" architecture; shifts the emphasis in the creation of new broadcast automation systems from applications to specific tasks; allows broadcasters to control and configure both OmniBus automation and selected broadcast equipment; G3 tools enhance a broadcaster's original investment in OmniBus technology.

704-319-2231; [www.omnibus.tv](http://www.omnibus.tv)

**Booth: C7634**

## ING SYSTEM

### Panasonic DVCPRO P2 series

Features full compatibility with DVCPRO; includes high-speed file transfer, laptop field editing without requirement for proxy videos and compatibility with off-the-shelf data storage drives for archiving; offers resistance to environmental stress; features P2 solid-state memory card.

201-392-4127; [www.panasonic.com/broadcast](http://www.panasonic.com/broadcast)

**Booth: C3811**

## Cameras



## CAMERA LIGHT

### Kino Flo Kamio 6

Offers a soft-light alternative for cinematographers working with studio cameras or compact Steadi-Cam rigs; its design combines a two-stage matte box with Kino Flo True Match ring light system; is flicker-free and can run off the camera battery or AC power.

818-767-6528; [www.kinoflo.com](http://www.kinoflo.com)

**Booth: C9139**

## GRATICULE GENERATOR

### Eyeheight safeEyesHD

Provides guide markers for all common television and film formats; safe-action and safe-caption areas are clearly shown by the use of cursor lines, user-selectable shading or black areas; SDI graticule markers are also provided for those not transmitting in HD.

+44 1923 256 000; [www.eyeheight.com](http://www.eyeheight.com)

**Booth: SU11809**

## MULTIFORMAT SEQUENTIAL CHARGER

### IDX System Technology JL-2Plus

New high-impact molded case reduces its weight to 2lbs; performance has been improved by 15 percent, resulting in faster charge times; offers a built-in 60W power supply.

310-891-2800; [www.idx.tv](http://www.idx.tv)

**Booth: C5639**

## DIGITAL WIRELESS CAMERA SYSTEM

### Link Research LinkXPR

Features reverse video using COFDM; reverse video allows a cameraman to see the live picture from a second camera or to see the position of results and scores overlay graphics in sports broadcasts.

+44 1923 200 900; [www.linkres.co.uk](http://www.linkres.co.uk)

**Booth: C4714**

## HD/SDI DIGITAL CINEMA CAMERA MUX

### Telecast Fiber Systems CopperHead Cine

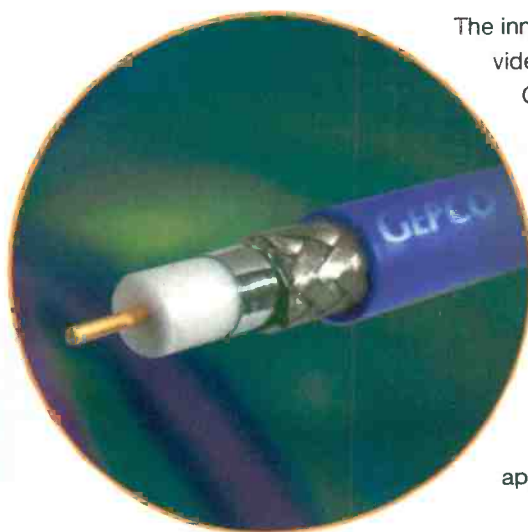
Includes all of the features of the HD/SDI CopperHead, with four additional return audio channels, for HD and 24p production; optimized for use in digital cinematography applications; new version is nearly half as wide as the original, improving camera balance without sacrificing functionality.

508-754-4858; [www.telecast-fiber.com](http://www.telecast-fiber.com)

**Booth: SU9824**

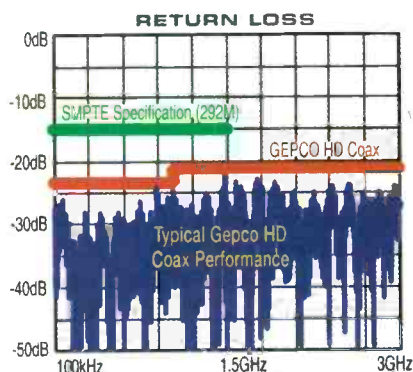
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[broadcastengineering.com](http://broadcastengineering.com) 181

[www.gepeco.com](http://www.gepeco.com) email: [gepeco@gepeco.com](mailto:gepeco@gepeco.com)

800.966.0069



## DIGITAL BATTERY Anton/Bauer Dionic

Weighs 1.7lbs; can be safely added to any inventory of existing Anton/Bauer batteries; can be charged on any Interactive 2000 or TITAN series charger; automatically compensates for load and environmental conditions; time and state of charge indications are integrated into a single, full-time display.

203-929-1100; [www.antonbauer.com](http://www.antonbauer.com)

**Booth: C3806**

## HD/SD CAMERA VIEWFINDER ARM VFGadgets

Fully adjustable for any broadcast video camera with a 24mm front handle bracket mount viewfinder system; can be used with or without an ARRI or Panavision leveler arm for studio or field configurations; works with Sony HD and SD cameras; weighs just 0.4kg.

416-686-1452; [www.vfgadgets.com](http://www.vfgadgets.com)

**Booth: C3950**

## ROBOTIC ELEVATING PEDESTAL Telemetrics ECM-PT

Designed to be mounted on a ceiling or wall or used on a Telemetrics camera trolley system to enable remote vertical camera positioning; provides 26.6 inches of vertical height adjustment at the rate of two inches per second, with a payload capacity of 50lbs.

201-848-9818; [www.telemetricsinc.com](http://www.telemetricsinc.com)

**Booth: C5845**

## 2.4GHZ VIDEO/AUDIO TRANSMITTER VFGadgets AValonRF TX630

Offers a single broadcast-quality video channel with no delay and two broadcast-quality audio channels; optional features include two-way wireless data link to a DX series receiver, talkback audio channel, alarm/motion sensor interface and telemetry inputs; NTSC and PAL versions available.

416-686-1452; [www.vfgadgets.com](http://www.vfgadgets.com)

**Booth: C3950**



## HD ENG/EFP ZOOM LENS Fujinon HA18x7.6BERM/BERD

Designed to complement 2/3-inch high-definition video cameras; works well for handheld HD production; has improved optical characteristics, such as reduced chromatic aberrations, minimized flare and minimized focus breathing; equipped with exclusive GO- Technology that enables the optimization of all optical components in the composition of the lens.

847-945-8923; [www.fujinon.com](http://www.fujinon.com)

**Booth: SU11542**



## IRSD/IASD LENS Canon J22ex7.6B

First in Canon's new e-IFxs broadcast lens series; incorporates lead-free glass; equipped with an informational display and control paddle, e-IFxs series users can customize the enhanced digital functions and take advantage of new features such as Focus Preset, Zoom Track, AUX1 and AUX2 switches for quick access to user-assignable functions, and precise user-settable zoom and focus curves.

516-328-5000; [www.canonbroadcast.com](http://www.canonbroadcast.com)

**Booth: SU9649**

## CAMERA SYSTEM NSI Cam Pac

Improved version of the full-featured broadcast-quality remote control camera system; provides all the functionality of a high-end broadcast camera and control unit when used in conjunction with NSI's MC5 remote control system.

800-SPEC-NSI; [www.nsystems.com](http://www.nsystems.com)

**Booth: C5239**



**LI-ION TIME BATTERY  
PAG L95**

Available in PAGlok or Anton-Bauer compatible formats, user is able to choose between extended battery cycle life or extended capacity; incorporates PAG's accurate power and time display that automatically evaluate environmental conditions and updates its reading after changes in load; contains nine safety mechanisms and is compliant with current air transportation regulations.

818-760-8265; [www.pagusa.com](http://www.pagusa.com)

**Booth: C8235**



**DUAL BATTERY MOUNT  
PAG Power Plate**

Available with either an Anton-Bauer, PAGlok or V-Mount connector; fits two PAGlok batteries, providing combined capacity and a higher current-draw capability; Power Plate and two L95 batteries combined are similar in weight to a Ni-Cd SuperPack battery, but will provide 190 watt-hours, almost three times the power; the Power Plate incorporates the PAG Power Circle, a built-in charge-status indicator for the combined power of both batteries.

818-760-8265; [www.pagusa.com](http://www.pagusa.com)

**Booth: C8235**

**LCD MONITOR**

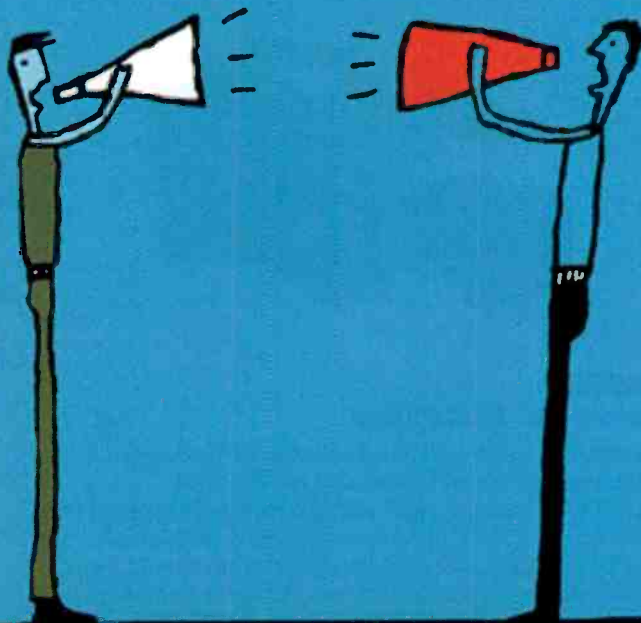
**Glidecam L7-Pro**

Daylight viewable, with a 16:9/4:3 switchable active matrix; use as a remote viewing monitor on the base platform of either the Glidecam V-16, V-20 or Gold series professional camera stabilizers; weighs 1.8 pounds; powered by an external 12 volts DC 600mA battery or power supply; use directly on top of camera as an oversized viewfinder or attach it anywhere.

800-600-2011; [www.glidecam.com](http://www.glidecam.com)

**Booth: C8843**

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## CONVERTIBLE CAMERAS

### Panasonic AW-E650 1/2-inch 3-CCD and AW-E350 1/3-inch 3-CCD

Indoor and outdoor pan/tilt heads are controlled by dedicated controllers and RS-232C or RS-422A interfaces; control panels run up to five pan/tilt heads and lenses, and advanced controllers handle up to five systems; accessories include the AW-PH400 pan/tilt head, the AW-RP400 pan/tilt controller, the AW-EX500 signal converter box and the AW-EX100 additional card box.

201-392-4127; [www.panasonic.com/broadcast](http://www.panasonic.com/broadcast)

**Booth: C3811**



## CAMERA

### Panasonic AJ-SPX800

Combines 2/3-inch 3-CCD camera with 24fps/30fps progressive and 60 fields interlace DVCPRO and DVCPRO50 format P2 card recording; images are stored on a P2 card using MXF file format; features three 2/3-inch 520,000-pixel, IT CCDs; equipped with an advanced 12-axis matrix color correction system; provides up to 80 minutes record capacity at DVCPRO resolution with 4G P2 cards and 40 minutes record capacity on five 4G P2 cards.

201-392-4127; [www.panasonic.com/broadcast](http://www.panasonic.com/broadcast)

**Booth: C3811**

## CAMERA

### Panasonic AJ-SDC905

Dual-mode DVCPRO50 has IEEE 1394 I/O to assure the lossless transfer of 50 Mb/s digital video for NLE; features three 2/3" 520,000-pixel IT CCDs; is equipped with 12-bit A/D DSP circuits; is outfitted with a Super Gain function with a maximum gain of 48dB and a time-accumulate Digital Super Gain; offers as standard a pre-recording function that permits it to capture spontaneous scenes.

201-392-4127; [www.panasonic.com/broadcast](http://www.panasonic.com/broadcast)

**Booth: C3811**

## DVCPRO CAMERA

### Panasonic AJ-SDC615

Offers high-sensitivity 520,000-pixel 2/3-inch 3-CCDs and an IEEE-1394 interface; switchable between 16:9 and 4:3 aspect ratios; has a maximum record time of 66 minutes and incorporates two channels of 48kHz/16-bit digital audio; features four built-in user scene files and three user-customizable function buttons.

201-392-4127; [www.panasonic.com/broadcast](http://www.panasonic.com/broadcast)

**Booth: C3811**



## CAMERA

### Ikegami HDK-79EX HD camera

Compact, portable HD camera weighs just under 12lbs; integral fiber adapter makes camera compatible with any Ikegami fiber base station.

201-368-9171; [www.ikegami.com](http://www.ikegami.com)

**Booth: C6428**



## CAMERA

### Ikegami DNS-201W Editcam II

Hard-disk-based camera brings features such as retroloop, time-lapse recording and random-access editing to field production.

201-368-9171; [www.ikegami.com](http://www.ikegami.com)

**Booth: C6428**

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### PAN/TILT HEAD

**Mark Roberts Motion Control  
Ulti-Head**

Pan/tilt remote head for motion control; carbon-fiber adjusting tubes allow quick assembly and fast camera change; can be mounted on crane, tripod, or Panther dolly.

+44 1342 334 700; [www.mrmoco.com](http://www.mrmoco.com)

**Booth: C7826**



### CAMERA-STABILIZATION SYSTEM **Sachtler Artemis**

Artemis SDI Pro's connection cable is able to handle high-data transfer; offers dual-dynamic balance, including a third battery that can be independently adjusted; focus remote receivers can be mounted on both sides to improve the camera's center-of-gravity balance; Artemis Cine/HD system (shown above) features three video lines so operators can use HD RGB video cameras without downconverters.

516-867-4900; [www.sachtler.com](http://www.sachtler.com)

**Booth: C7628**

### BOX LENSES

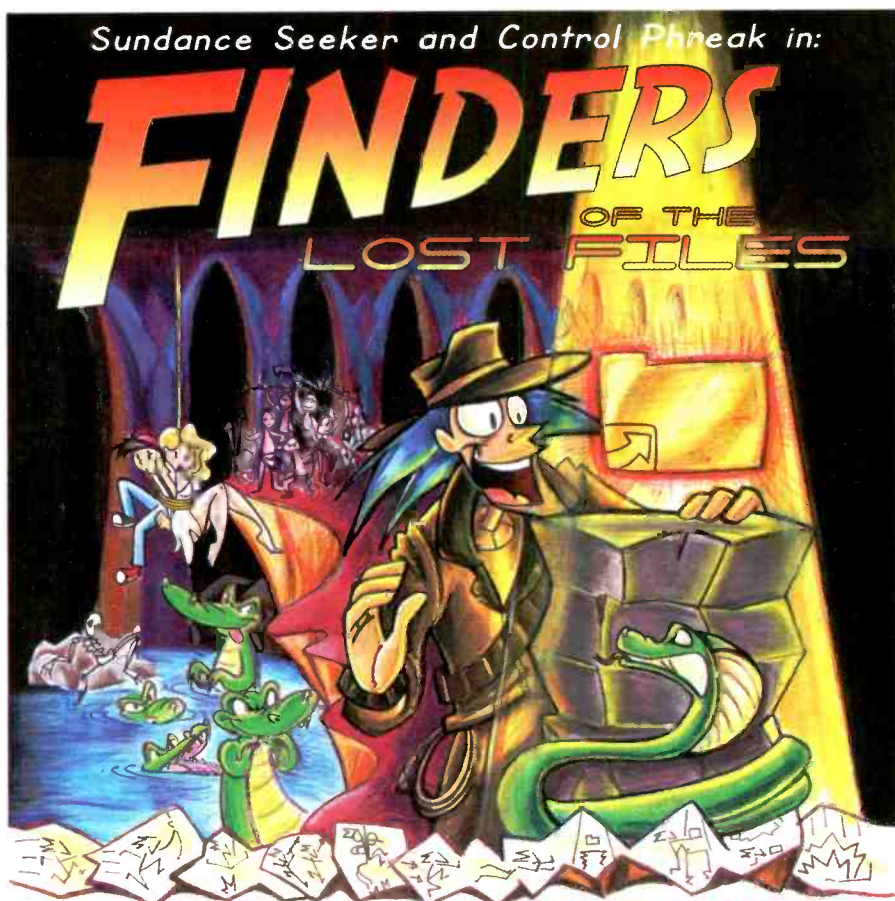
**Thales Angenieux  
70X HD**

New series of box-type lenses, including 70X HD remote broadcast/sports lens, feature a unique advanced display system.



973-812-3858; [www.angenieux.com](http://www.angenieux.com)

**Booth: C5412**



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## PEDESTAL

### Vinten/Radamec Quattro S

Small-base studio pedestal is designed for multi-camera studio applications; offers a four-stage telescopic column to enable eye line shots on or off a raised platform; triangular column design provides torsional stiffness to minimize unwanted rotational movement; small steering ring including tactile direction indicators and low-friction wheels allow omnidirectional tracking.

845-268-0100; [www.vinten.com](http://www.vinten.com); [www.radamecbroadcast.co.uk](http://www.radamecbroadcast.co.uk)

**Booth: SU9643**



## PAN-AND-TILT HEAD

### Vinten-Radamec Vector 450 and 900

Added features include a retractable carry handle and an LCD multifunction display offering a counterbalance readout, a permanent 24-hour clock, and a stopwatch for easy setup and repositioning; features extended tilt capacity of  $\pm 90^\circ$  for capturing action directly below the cameraman; new counterbalance mechanism allows much lighter movement.

845-268-0100; [www.vinten.com](http://www.vinten.com); [www.radamecbroadcast.co.uk](http://www.radamecbroadcast.co.uk)

**Booth: SU9643**

## HDTV CMOS IMAGE SENSOR

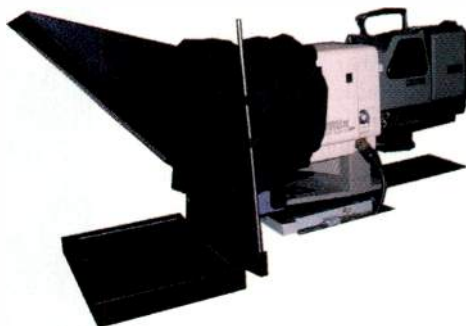
### Rockwell Scientific ProCamHD 3560

Next generation of HDTV CMOS image sensors to replace CCD imagers; selectable data output rate — 12-bit data at 150MHz, or 24-bit data at 75MHz; offers increased frame rates — up to 60fps progressive or 120fps interlaced at full 2.1 megapixel resolution; utilizes color sub-sampling to achieve lower-resolution images (and higher frame rates) at the same optical size.

805-373-4545; [www.rockwellscientific.com](http://www.rockwellscientific.com)

**Booth: C8047**

## CGs, prompters, captioning



## FLAT-PANEL LCD TELEPROMPTER

### Telescript FPS-180

18-inch teleprompter designed for studio and large venue productions utilizing full-sized studio and ENG cameras; incorporates a special "rod-mount" system for studio cameras and pedestals that easily installs on-site; features a high-bright, high contrast display with patented anti-reflective, anti-glare AR glass.

201-767-6733; [www.telescript.com](http://www.telescript.com)

**Booth: C10006**



## LAYERING MIXER

### Chyron C-Mix HD

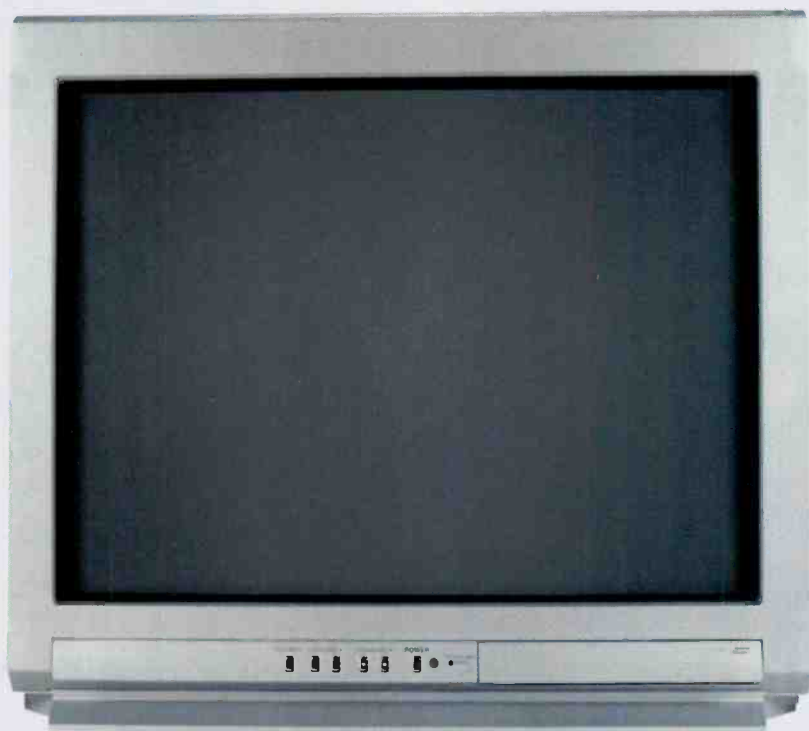
Features simultaneous SD and HD outputs; includes four SD video and key inputs as well as a background layer, an SD mixer and an HD upconverter; the four video and key sources can come from a Chyron product or any other device with SD outputs, when used with Lyric software, the mix information becomes part of the CG message timeline.

631-845-2000; [www.chyron.com](http://www.chyron.com)

**Booth: C4742**

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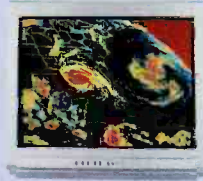
06:21:42.04

13:47:00.11

NETWORK



WEATHER / TRAFFIC



KIDS ENTERTAINMENT



EDUCATION



PAID PROGRAMMING



LOCAL ACCESS



NETWORK



KIDS ENTERTAINMENT



EDUCATION



# from time to time.



20:35:07.29

01:18:44.15

## NETWORK



## SYNDICATED PROGRAMMING



## EDUCATION



## PAID PROGRAMMING



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## DiviCom® MV 100

- Highest performing standard definition (SD) encoder in the industry delivers beautiful digital video at ultra low bit-rates.
- Advanced noise reduction technology improves picture quality and further reduces bit-rate.
- Platform for the future supporting MPEG-2 as well as MPEG-4/AVC and Windows Media 9 (VC9).



## DiviCom MV 450

- Flexible, low bit-rate, high definition (HD) digital video encoder delivers an exceptional HD experience.
- Provides standards-based HD digital program insertion (DPI).
- Supports up to two Dolby E passthroughs and 4:2:2.



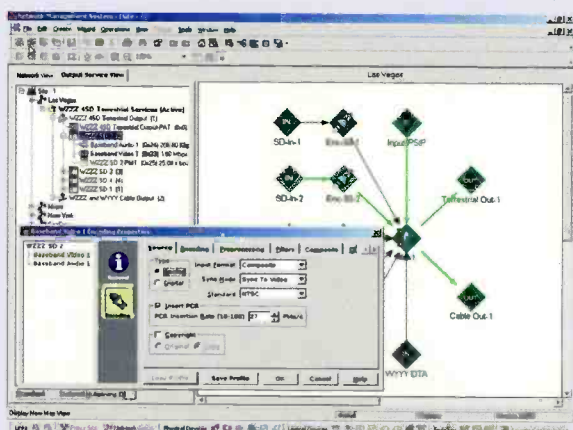
## DiviTrackXE™

- Third generation closed-loop statistical multiplexer maximizes channel carrying capacity while preserving picture quality.
- Supports a mix of SD and HD VBR and CBR encoders along with data in the same pool.
- Offers a variety of input/output options to integrate with virtually any environment.



## Broadcast Network Gateway (BNG)

- Gigabit Ethernet output enables efficient IP-based transport of HD and SD digital video to carrier headends.



## NMX Digital Service Manager™

- Manages video infrastructure as a series of services rather than discrete hardware and software components.
- Enables seamless change in system mode according to time-of-day and day-of-week.
- Interfaces with third party conditional access, PSI/SI and automation systems.
- Supports a wide range of redundancy designs and automatically reprovisions the infrastructure, ensuring the highest levels of service reliability and availability.
- Permits centralized and distributed service management.



**GRAPHICS PROCESSOR**  
**Panasonic AV-CGP300**

Offers real-time rendering of broadcast-quality 3-D graphics in 1080i, 720p and 480i resolutions; runs under 3-D graphic software applications from vizrt and Kaydara; provides real-time rendering of up to 40,000 polygons per field and 533M pixels per second fill rate; incorporates two SDI inputs, plus dual Program/Preview SDI outputs for Video and Key.

201-392-4127; [www.panasonic.com/broadcast](http://www.panasonic.com/broadcast)

**Booth: C3811**



**CG**  
**Broadcast Software Solutions CGXPress+**

Features Xpress animation; performs quick crawls, continuous crawls, time and temperature, logos and EAS; provides the ability to network and animate logos, all in a 1RU chassis.

800-273-4033; [www.broadcastsoftware.tv](http://www.broadcastsoftware.tv)

**Booth: SU7173**

**CLOSED CAPTIONING SYSTEM**  
**ENCO Systems enCaption**

Neural network-based speech-recognition engine; is speaker-independent; provides closed caption services on any live programming.

248-827-4440; [www.enco.com](http://www.enco.com)

**Booths: N2426, SU6764**



**CG SOFTWARE**  
**Compix Media News Scroll**

Can be used with Compix Media CG; simultaneously displays three different types of information: real-time clock, logo and news-item scroll.

310-320-8937; [www.compixmedia.com](http://www.compixmedia.com)

**Booth: SL5521**

**CHANNEL BRANDING PROCESSOR**  
**Miranda Imagestore HDTV**

Has an integrated automated character generator plus easy-to-use gallery graphics preparation and data interfacing software; expandable HD processor that provides capabilities ranging from logo insertion to fully featured master control switching and channel branding graphics.

514-333-1772; [www.miranda.com](http://www.miranda.com)

**Booth: SU10129**

**CG SYSTEM**  
**vizrt viz trio**

Generates real-time 3-D animations and transitions; has multi-layer graphics control; acts as stand-alone or integrated CG system; supports MOS.

212-560-0708; [www.vizrt.com](http://www.vizrt.com)

**Booth: SL3436**

**CAPTIONING SOFTWARE**  
**CPC MacCaption**

Imports, formats and time stamps caption text, as well as encoding the text as closed captions onto all video formats; does not require a hardware encoder; offers intuitive, icon-driven software for easy use; offers improvements to caption positioning and synchronization with dialogue, and drag-and-drop DV and MPEG closed-caption encoding.

800-977-6678; [www.cpcweb.com](http://www.cpcweb.com)

**Booth: C10332**



**GRAPHICS CONTROL INTERFACE**  
**Inscriber Inca RTX**

Interfaces directly with video hardware to enable broadcasters to create live custom applications that incorporate split screens, multiple zones, continuous crawls and live data; allows for the display of text, graphics, video and animations on overlapping layers; also features real-time element transitions, real-time organic dissolves, rendered 3-D mesh effects and software codec video support.

519-570-9111; [www.inscriber.com](http://www.inscriber.com)

**Booth: SL4718**

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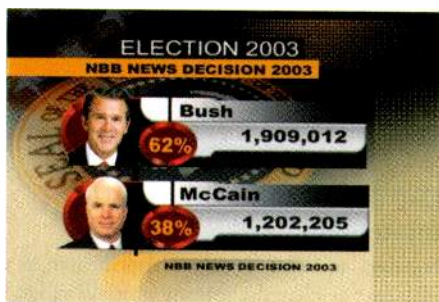
## CG

### Pinnacle Systems Deko Version 3.0

New features for clip playback on Deko platforms include clip transitions, clip layers and motions, and clip resizing; clip transitions provide intelligent playback tools; incorporates new Deko HT function for high-resolution textures; new audio tools allow sound effects to be attached to an object; flexible audio control enables the effect to be word- or character-based if the object is a layer with text.

650-526-1600; [www.pinnaclesys.com](http://www.pinnaclesys.com)

**Booth: SU10160**



## GRAPHICS SYSTEM

### Inscriber Inca Studio

Provides multiple layers of independently controlled graphics, clocks, logos, real-time element transitions, real-time organic dissolves, and page-formatted rolls and crawls; multichannel effects are achieved on a single channel, freeing switcher rails once occupied by numerous CGs, DDRs, logo generators and other equipment.

519-570-9111; [www.inscriber.com](http://www.inscriber.com)

**Booth: SL4718**

## WIRELESS SCROLL CONTROL

### BDL-Autoscript scroll control

Discreet hand-held device includes story select buttons and a GPI facility to control other devices, such as a weather map; new ActiveX controller enables a prompter to be managed and scrolled from any newsroom client; provides optional ability to scroll two prompters in synchronization at different locations using a network/Internet connection.

516-799-3869; [www.bdlautoscript.com](http://www.bdlautoscript.com)

**Booth: C8039**

## Graphics

## STILL-IMAGE ANIMATION SOFTWARE

### Canopus Imagine 2.0

New features include multiple image support, advanced soundtrack capabilities and a project wizard to streamline production; allows editors to pan, zoom, rotate and skew, and combine all of these movements to create cinematic effects that are not bound by two dimensions.

408-954-4500; [www.canopus.com](http://www.canopus.com)

**Booth: SL5805**

## CONTENT CREATION

### Curious Software Curious gFx Pro and Curious gFx Pro+

Eight-bit and 16-bit, respectively; offer a paint engine for moving images, a new roto-matte system and a range of features for wire and rig removal or content restoration; all of those features are fully integrated into a resolution-independent layered compositing and effects system.

+44 2074 280 288; [www.curious-software.com](http://www.curious-software.com)

**Booth: SL563**

## PLUG-INS

### VDS GenArts Sapphire plug-ins

Synapse is VDS' plug-in product designed to support After Effects plug-ins on Quantel's generationQ range; Sapphire plug-ins offer a collection of more than 175 image processing and synthesis effects; are resolution-independent and include multi-processor support for faster rendering.

631-249-4399; [www.videodesignsoftware.com](http://www.videodesignsoftware.com)

**Booth: C6748**



## HD/SD GRAPHICS SYSTEM

### Chyron HyperX

Uses next-generation high-speed bus architecture with advanced 3-D rendering engine technology; coupled with Chyron's Lyric software, it is designed to provide both HD or SD content creation, playout and real-time animations in a cost-effective package.

631-845-2000; [www.chyron.com](http://www.chyron.com)

**Booth: C4742**

## REAL-TIME HD CLIP SERVER

### Chyron Clyps HD

Offers uncompressed HD video and key, in and out; designed for a graphics environment; has up to 1.3TB of storage, enabling up to 180 minutes of lower third animations or 60 minutes of full-frame video; includes an intuitive GUI with browsing and database functionality.

631-845-2000; [www.chyron.com](http://www.chyron.com)

**Booth: C4742**

## ELECTION GRAPHICS SYSTEM

### VertigoXmedia Election Graphics System

Allows operators to create broadcast-ready graphics directly from the desktop, drop those graphics into pre-defined templates, link them to live data sources and insert them into playlists - without having to write software code.

514-397-0955; [www.vertigoxmedia.com](http://www.vertigoxmedia.com)

**Booth: SL5836**

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Some of our consoles were featured on the covers of Broadcast Engineering in 2003



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Booth # SU11639**

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# DTV marketplace

## TELESTRATOR SYSTEM

### e-mediavision POINT

Suited to live productions, allowing the user to instantly draw freehand, place animated arrows and recall previously saved graphics and animation; upgrades include Hollo screen with touch-screen capability.

+44 2087 552 014; [www.e-mediavision.com](http://www.e-mediavision.com)

**Booth: SU8641**



## CHARACTER GENERATOR

### Pixel Power Clarity family

Extended to include a multichannel CG combined with integrated still store and clip player; features up to four output channels; includes keyframeable animation, integrated multichannel video and audio clip player and four live DVE inputs; available in a single- or dual-channel HD configuration, or a single HD channel can be combined with dual SD channels.

954-943-2026; [www.pixelpower.com](http://www.pixelpower.com)

**Booth: C5442**

## MASTER CONTROL EFFECTS AND GRAPHICS

### Utah Scientific SqueezeMAX

Versatile dual-channel video effects with built-in graphics display capabilities; for on-air squeezeback effects, logo insertion and other channel branding operations; available for stand-alone use or integrated with the company's MC-2020.

801-575-8801; [www.utahscientific.com](http://www.utahscientific.com)

**Booth: C5912**



## DECODER CARD

### Visual Circuits Gemini

Combines MPEG-2 or MPEG-4 for SD or HD hardware decoding with a 32-bit graphics accelerator; multiple outputs allow SD and HD video to co-exist; independent and scalable video or graphics regions can be combined on-screen with adjustable transparency and blending effects; simultaneously process high-resolution, 32-bit graphics with video whether still or full-motion, SD or HD.

800-250-5533; [www.visualcircuits.com](http://www.visualcircuits.com)

**Booth: SL3501**



## GRAPHICS SYSTEM

### AccuWeather Galileo 2.1

Upgraded version features auto-updating capability that allows for the most up-to-the-second weather information during urgent situations; includes additional compelling graphics capability; has a new KeyFrame manager function that enables the user to view all elements in a show's timeline.

814-235-8600; [www.accuweather.com](http://www.accuweather.com)

**Booth: C6034**

## FILM-RECORDER SOFTWARE

### CELCO Fury and Firestorm software

Upgraded software for Fury and Firestorm digital film recorders; includes new GUI, DI color-management tools and film-recorder operation and calibration tools.

909-481-4648; [www.celco.com](http://www.celco.com)

**Booth: C2142**



## GRAPHICS SOFTWARE

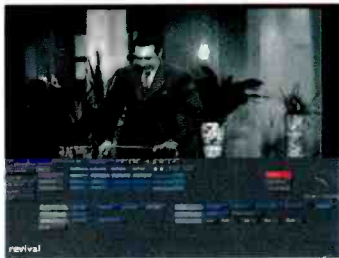
### Bauhaus Software Mirage 1.2

Paint, animation and effects software; provides a diverse toolset and a centralized workflow; serves any resolution from HDTV to Web; available for Windows and Mac.

210-212-7530; [www.bauhaussoftware.com](http://www.bauhaussoftware.com)

**Booth: SL5518**

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## RESTORATION SYSTEM

### da Vinci Systems Revival Plus

Upgrade to Revival; adds primary color controls, an imported session list with selected scenes, a preset "look" library, and an automated video-parameter toolset.

954-688-5600; [www.davsys.com](http://www.davsys.com)

**Booth: C9117**

## NEWS/GRAPHICS PRODUCTION SYSTEM

### Pinnacle Systems DekoVIA

Integrates template-based Deko automation into news workflow; enables journalists and editors to select and populate Deko graphics directly within their script; system automatically conforms the graphics for layout.

650-526-1600; [www.pinnaclesys.com](http://www.pinnaclesys.com)

**Booth: SU10160**



## FILM SCANNER AND DATACINE

### Thomson Grass Valley Spirit 4K

Supports 35mm, Academy 35mm, three-perf, four-perf, eight-perf (VistaVision), standard and Super 16mm; native 2K scanning in real time, true 4K scanning at up to 7.5fps.

530-478-3000; [www.thomsongrassvalley.com](http://www.thomsongrassvalley.com)

**Booth: SU8076**

## HD COMPOSITING SYSTEM

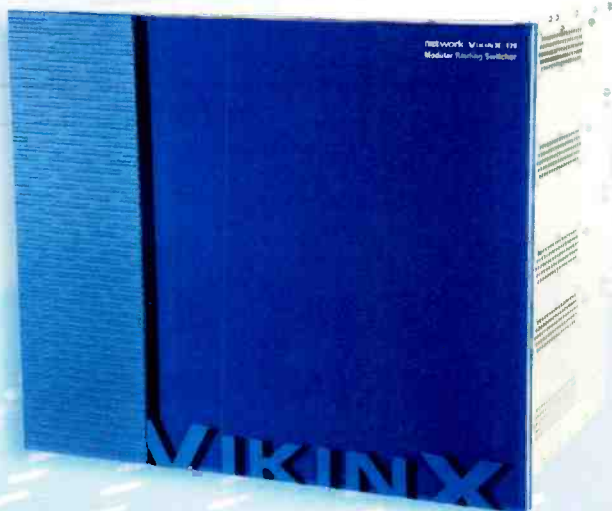
### Ultimatte HD

Provides real-time HD matte compositing for HD and digital cinema 24p/psf image standards; fully linear matting system produces realistic composites even when the foreground contains smoke, shadows, soft edges, and other translucent and transparent qualities.

818-993-8007; [www.ultimatte.com](http://www.ultimatte.com)

**Booth: SL4749**

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E-mail: [ussales@network-electronics.com](mailto:ussales@network-electronics.com)  
11075 South State Street, Suite 27  
Salt Lake City, Utah 84070

Visit us at NAB. Booth SU11606

**VIKINX<sup>®</sup>**

### VIKINX.128 Modular Routing Switcher

- High density 9RU frame
- Low power consumption
- 32x32 module cards
- Easy upgradeability
- SD and HD in the same video frame
- Dual redundant load sharing power supply
- Dual redundant system controller SysCon128
- Independent control of two 64x64 sub-matrixes
- No active components on rear panel
- All active components hot-swappable and front loaded
- Serial interface and TCP/IP LAN connectivity
- Panel bus with TCP/IP LAN connectivity
- SNMP agent, WEB interface
- Extensive surveillance and alarming, event log
- Flash power down memory
- 2 independent vertical interval trigger inputs
- Comprehensive 3<sup>rd</sup> party interface opportunities
- Interacts with THOR Router Management System

**ROUTERS • FIBER OPTIC TRANSPORT • SIGNAL PROCESSING**

[www.network-electronics.com](http://www.network-electronics.com)

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## Intercoms



### DIGITAL MATRIX SYSTEM

#### Clear-Com Eclipse

6RU frame holds up to 208 ports; can connect up to four frames into one 832-port system; features intelligent linking between systems, dual redundant processors, 24-bit resolution with audio frequency response of 30Hz to 22kHz (+/-3dB), individual crosspoint level adjustment in 0.5dB increments, and eight GPI inputs and relays.

510-496-6666; [www.clearcom.com](http://www.clearcom.com)

### MATRIX PLATFORM

#### Riedel Artist-S

Consists of a fiber-based network infrastructure with each 1RU frame; provides 32 intercom ports; supports up to 512 ports.

818-563-4100; [www.riedel.net](http://www.riedel.net)

**Booth: C11210**



### WIRELESS INTERCOM SYSTEM

#### Drake FreeSpeak

Full-duplex, digital wireless intercom comprises cell controller card, antenna splitter and active antennas; each antenna supports up to five belt-pack users.

800-542-3332; [www.drake-uk.com](http://www.drake-uk.com)

**Booth: SU6776**

### ENHANCED CONTROL KEYBOARD

#### Riedel announcer's console

Features include split-headphone or stereo cue feed and microphone switching, talkback outputs, and multiple IFBs.

818-563-4100; [www.riedel.net](http://www.riedel.net)

**Booth: C11210**

### WIRELESS INTERCOM SYSTEM

#### Kroma Telecom Wircom TW7000

Intercom system uses digital enhanced cordless telephony (DECT) standard for high fidelity and security; up to 4x4 matrix of base station modules and belt-packs.

+34 9166 145 14; [www.kromatelecom.com](http://www.kromatelecom.com)

**Booth: C3136**



### WIRELESS INTERCOM SYSTEM

#### Systems Wireless HME Pro 850

Features frequency-agile operation, frequency scanning for interference-free operation, and a PC interface for system setup and monitoring; belt-packs feature automatic power output selection and a PDA interface for remote programming; 850 base station features interfaces for two-wire, four-wire, AUX I/O and page outputs.

703-471-7887; [www.systemswireless.com](http://www.systemswireless.com)

**Booth: C2525**

## Lighting



### DUAL-HEAD SUPER-SUN GUN KIT

#### Frezzi SSGK2-200

At a distance of 10 feet, the Frezzi Super Sun Gun 200 produces up to two times the output of a 400W par HMI fixture with a wide angle lens; kit includes two light heads, two Barn Door accessories, two lamps (200W MSR/HMI lamp), two AC ballasts with auto voltage selection (30V DC ballast also available), two soft boxes and transport case.

800-345-1030; [www.Frezzi.com](http://www.Frezzi.com)

**Booth: SU10512**

*Color indicates advertiser*



### HMI KIT

#### Frezzi MRAK-NP1

Power consumption of 10W; provides daylight equivalent of a 50W color-corrected quartz tungsten lamp; run-time of more than two hours with the Frezzi NPX-2 13.2V battery; kit includes a 10W Micro-Sun Gun HMI, one NPX-2 13.2W 2.4 Ah battery pack with belt loop, shoulder strap, one overnight charger, and camera mounting stud with shoe mount.

800-345-1030; [www.Frezzi.com](http://www.Frezzi.com)

**Booth: SU10512**



### LIGHT

#### Kino Flo ParaBeam

24-inch by 24-inch ParaBeam can light a four-person news desk from approximately 15 feet away; sweeps back the darkness in the foreground without washing out the background on the set; with a simple rotation of the fixture, it can focus on just one of the four subjects.

818-767-6528; [www.kinoflo.com](http://www.kinoflo.com)

**Booth: C9139**

## SWITCHERS AND BRANDING TOOLS



### MX-AIR

#### Video Audio Switcher

- > 8 SDI inputs expandable
- > Up to 4 DSK's
- > Logo insertion
- > De-embedders on inputs
- > Embedders on outputs
- > 8x2 AES/EBU inputs expandable
- > Audio follow & break away
- > 2 voice-over



### KRONOSS

#### Digital Clock, Logo & Text Inserter

### LG50

#### Digital Logo Generator



### DSK2000

#### Digital Keyer



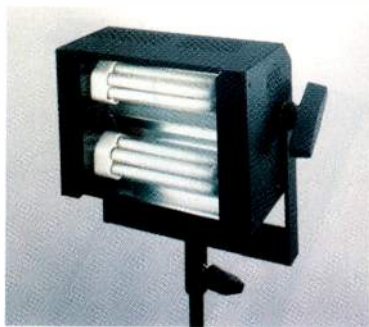
See you at NAB, booth #SU7170

Tel: +33 1 53 38 22 00 - e-mail: [sales@sav-broadcast.com](mailto:sales@sav-broadcast.com) - Web: [www.sav.tv](http://www.sav.tv)

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## STUDIO LIGHTING

### Videssence Baby Base

84W instrument features light output from a lightweight compact housing; adjustable mounting yoke allows rotation for ease of focus and may be locked into place; comes with two 42W Triple Tube high color rendering fluorescent lamps; units may be ordered in dim and non-dim configurations; integral dimming control is provided for the 0-10 Analog Dimming option.

626-579-0943; [www.videssence.tv](http://www.videssence.tv)

**Booth: C8625**

## Microwave, fiber optic, telco



## FIBER-OPTIC TRANSPORT PLATFORM

### Network Electronics Flashlink

Provides signal processing and signal distribution; features N-Box, new housing that offers a modular and flexible solution for applications where space is limited or only card is needed; four N-Boxes can be mounted on a 1RU shelf.

800-420-5909; [www.network-electronics.com](http://www.network-electronics.com)

**Booth: SU11606**

## ANALOG VIDEO MULTIPLEXER

### Telecast Fiber Systems DiamondBack II

Transmits multiple video, audio, data and intercom channels, including audio and data signals received from the company's Adder multiplexer line; incorporates up to eight video and 16 audio channels on a single fiber; each of the eight video channels supports NTSC, PAL, SECAM or composite video formats.

508-754-4858; [www.telecast-fiber.com](http://www.telecast-fiber.com)

**Booth: SU9824**



## TRANSMITTER/RECEIVER

### MRC STRATA

Digital COFDM microwave transmitters and receivers are configurable for analog, digital or switchable analog/digital service; can also be swapped between ENG, mobile, airborne or fixed applications; includes the TXU transmitter unit, TCU control unit and HPU high power unit, can save several system configurations, which is helpful for setting either analog or digital configurations, frequency, channel offset, and modulation schemes.

978-671-5700; [www.mrcbroadcast.com](http://www.mrcbroadcast.com)

**Booth: C3206**



## FIBER OPTIC TRANSMISSION SYSTEM

### Communications Specialties Pure Digital Fiberlink 7130 series

Provides transmission of 15MHz wideband composite video using 10-bit video processing and four independent audio channels over a single fiber; designed to work with either single-mode or multimode fiber; audio channels may be used for either two channels of stereo or four independent channels.

631-273-0404; [www.commspecial.com](http://www.commspecial.com)

**Booth: SU8065**



## FIBER OPTIC TRANSPORT SYSTEM

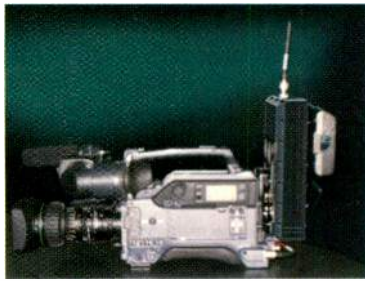
### Multidyne RGB-5000

Provides a long-haul, transport solution for high-resolution RGB or VGA video sources via one fiber; provides the capability for the separation of a video signal source and the monitor; systems are available to transport RGB video as well as audio, keyboard and mouse control; provides a total analog bandwidth of up to 500 MHz.

516-671-7278; [www.multidyne.com](http://www.multidyne.com)

**Booth: C3151**

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**PORTABLE MODULE FOR VIDEO CAMERAS**  
**BMS Carry-Coder II**

Performs wireless digital transmission of audio and video signals; offers 4:2:2/4:2:0 MPEG-2 encoding and a low-delay, COFDM digital demodulation and RF amplification in a compact package; can be used in a backpack configuration or plugged directly on to the back of most professional video cameras.

800-669-9667; [www.bms-inc.com](http://www.bms-inc.com)

**Booth: C1406**



**CAMERA LINK**  
**BMS Digital ENG**

Pairs a BMS News-Coder with its new BPA-10CC, 10W power amplifier; system includes MPEG-2 encoding COFDM digital modulation and RF amplification; can be used from fixed, portable or mobile environments and enables non-line-of-sight transmission.

800-669-9667; [www.bms-inc.com](http://www.bms-inc.com)

**Booth: C1406**



**MODEM**  
**Nucomm Analog Coder 2**

Modem enables digital transmission of two simultaneous video programs over existing analog ENG equipment; occupies 12MHz channel in the 2GHz band.

908-852-3700; [www.nucomm.com](http://www.nucomm.com)

**Booth: C1425**

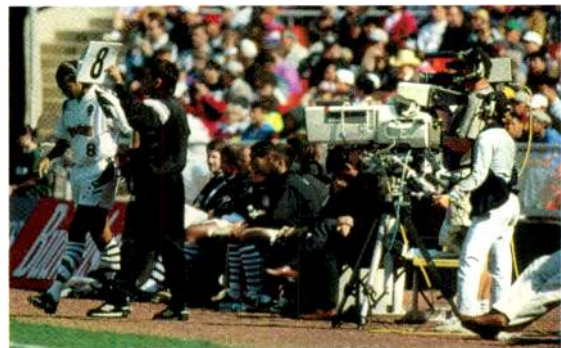


**MICROWAVE TRANSCEIVER**  
**Nucomm Channel Master**

Dual-band portable microwave transmitter/receiver; offers MPEG-2/COFDM and analog modulation in a lightweight case; switchable between 2- and 7GHz bands.

908-852-3700; [www.nucomm.com](http://www.nucomm.com)

**Booth: C1425**



**VIDEO DELIVERY NETWORK**  
**Intelsat all-digital fiber-based video delivery network**

Intelsat Video PoPs in New York, Los Angeles, Washington D.C., Denver and San Francisco, with fiber interconnects into additional North American destinations, will enable sports programmers to order delivery of the coverage of a sports event — be it in MPEG-2 SDTV or HDTV — from the sports venue, all the way to its headquarters in full digital transmission, without once having to be decoded.

202-944-8223; [www.intelsat.com](http://www.intelsat.com)

**Booth: C11539**

**MULTIPLEXER**  
**Opticomm DVX-5400**

Transmits four channels of uncompressed serial digital video across one laser; uses time division multiplexing (TDM) to eliminate the need for one laser per channel of video; each packet of four channels can be transmitted at the same bandwidth with its own place in the time continuum.

858-450-0143; [www.opticomm.com](http://www.opticomm.com)

**Booth: SU11304**

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## MULTIPLEXER

### Opticomm DVX-6400

Multiplexer transmits up to four channels of uncompressed HDTV with a pipeline of up to 1.485Gb/s per channel over one fiber; utilizes Multiple Division Multiplexing to send multiple high-bandwidth uncompressed channels over the same fiber; available as a stand-alone or is Multiverse-compatible, enabling multi-channel solutions over a single fiber.

858-450-0143; [www.opticomm.com](http://www.opticomm.com)

**Booth: SU11304**

## HANDHELD RECEIVER/DECODER

### MRC Quikvue

Digital COFDM receiver and decoder supports low-delay mode; compatible with MRC's CodeRunner 2, STRATA transmitter or REPORTER; operates at 1.99- to 2.5GHz, 2.3- to 2.7GHz, or 6.4- to 7.1GHz; features high-resolution built-in LCD color monitor; decodes MPEG-2; can output ASI, SDI and NTSC composite signals simultaneously; measures signal strength of the COFDM transmission and allows operators to monitor its "cliff effect" to minimize sudden dropouts.

978-671-5700; [www.mrcbroadcast.com](http://www.mrcbroadcast.com)

**Booth: C3206**

## New media, streaming products



## ENCODER CARD

### IPV SVPC|card

Real-time MPEG-1 or MPEG-2 compliant encoder and simultaneous SMPTE time code acquisition card; generates simultaneous streams from dual SDI feeds, each combining video, audio and time code; a separate LTC input is provided as a secondary or master time code source.

+44 1223 477 000; [www.ipv.com](http://www.ipv.com)

**Booth: SL4000**

## VIDEO DISTRIBUTION SYSTEM

### Canopus MediaEdge2

Offers MPEG-4 support; uses the company's MPEG compression technology to deliver professional-level video over LAN-based networks; supports video-on-demand, live broadcast, streaming media applications and pre-programmed playback.

408-954-4500; [www.canopus.com](http://www.canopus.com)

**Booth: SL5805**

## CONTROL PANELS

### Network Electronics CP-MDP

Provide TCP/IP interconnectivity to allow control over the Internet; incorporates the Expandable Panel Concept and customized surface design; features 64 configurable tri-color buttons with easy exchangeable labels; features 320x240 QVGA display capable of black-and-white or color, 16 GPI ports/16 GPO ports.

800-420-5909; [www.network-electronics.com](http://www.network-electronics.com)

**Booth: SU11606**

## ENCODER

### IPV nSpectreSDI

Real-time, low-bit-rate encoder and SMPTE time code acquisition unit; features two or four digital input channels, real-time low-bit-rate MPEG-1 video compression, MPEG Layer II audio compression, frame-accurate time code insertion, and remote Web-based configuration and status monitoring.

+44 1223 477 000; [www.ipv.com](http://www.ipv.com)

**Booth: SL4000**

## EMBEDDED ACCESS-CONTROL SYSTEM

### Irdeto Access Irdeto Inside

Allows both enforced collection of subscriber access fees or, in the case of free-to-air services, geographical restriction of content distribution in order to comply with content-licensing agreements; is easily upgradeable to full conditional access at a later date through the addition of a smart card.

858-668-4800; [www.irdetoaccess.com](http://www.irdetoaccess.com)

**Booth: SU10106**

## CONDITIONAL-ACCESS SYSTEM

### Irdeto Access Irdeto Chip on Board

Enables niche content providers to distribute Common Interface Conditional Access Modules (CI-CAMs) with an embedded Irdeto Access smart card; the CI-CAMs will work in any compliant STB and are ideal for allowing an auto-expiring "free trial" viewing period as well as a normal subscription.

858-668-4800; [www.irdetoaccess.com](http://www.irdetoaccess.com)

**Booth: SU10106**

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at [www.broadcastengineering.com](http://www.broadcastengineering.com)

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### HD DECODER

#### Vela CineView HD LE

PCI-based; supports all ATSC HD standards; enables frame-accurate playback of 4:2:0 in both SD and HD profiles and supporting data rates up to 80Mb/s; offers audio support for AAC, AC3, MPEG and Dolby digital; features commands such as pause, fast forward, slow motion and rewind, as well as VTR/machine control.

727-507-5300; [www.vela.com](http://www.vela.com)

**Booth: SL1780**



### WIRELESS IP TRANSMISSION APPLICATION

#### Telestream MAPone

Improves time-to-air by enabling journalists to transmit news stories directly from ENG laptops to a central news facility; transmits from leading news laptop systems via any IP network based on the Windows Explorer environment; personal media organization tools provided include automatic indexing to simplify search/retrieval and archiving to removable DVD or CD.

877-257-6245; [www.telestream.net](http://www.telestream.net)

**Booth: SU7183**

**NAB 2004  
SOUTH HALL - UPPER LEVEL  
BOOTH: SU 8068**

**STARFIRE MULTIMEDIA CONSOLE**

**Broadcast Furniture**

- Production Control
- Master Control
- Network Operations

MASTER CONTROL CONSOLE

*creating space for new technology...*

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1-888-console

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[broadcastengineering.com](http://broadcastengineering.com) 203

# DTV marketplace

## MPEG ENCODER/DECODER

### Axon Digital Design MPE04/MPD04

Use the MPEG-4 or MPEG-2 encoding and decoding schemes; have composite and SDI inputs and outputs for video, as well as analog and AES/EBU inputs and outputs for the audio.

+31 1351 166 66; [www.axon.tv](http://www.axon.tv)

**Booth: SU7548**

## HD PCI DECODER

### Optibase VideoPlex HD

Enables playback of HD MPEG-2 video streams; supports all 18 ATSC formats; supports multiple HD video standards such as 1080i or 720p, various audio formats and standard frame rates including 24fps; available with a software development kit designed for easy integration into a multitude of digital video applications.

650-230-2400; [www.optibase.com](http://www.optibase.com)

**Booth: SL2463**

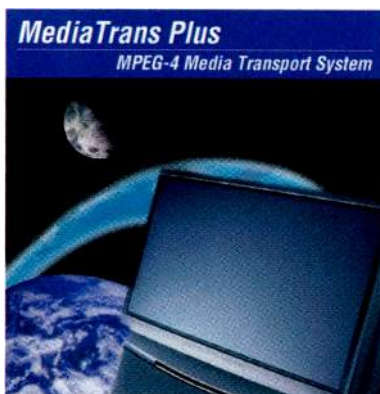
## ENCODER

### Ligos MediaRig

Kit consists of a software application paired with Ligos' PCI board for ingest and output of digital NTSC/PAL formats; when installed on a standard Windows PC, the system becomes a fully compliant ATSC/DVB encoder; features support for Dolby Digital two-channel audio, static PSIP and PSI/SI control tables and closed captioning; performs remote management of multiple encoders and is available in single or dual-stream configurations.

415-249-0100; [www.ligos.com](http://www.ligos.com)

**Booth: SU6770**



## MPEG-4 VIDEO STREAMING

### Floral MediaTrans Plus

Delivers video and audio signals over one or two existing telco, broadband, digital cable or satellite T1 lines; alternative to microwave transmission.

352-372-8326; [www.floral.com](http://www.floral.com)

**Booth: SU11017**

## ANALOG/DIGITAL VIDEO CAPTURE CARD

### ViewCast Osprey-300

Adds a standard IEEE-1394 card to create full DV control capability, allowing users to transfer DV material into an editing system in its native DV format, while maintaining original source quality; features OHCI compliance for a broad range of popular applications; incorporates a PCI-X bus interface for compatibility with the latest PC technologies and high-performance/high-bandwidth data transfer.

972-488-7200; [www.viewcast.com](http://www.viewcast.com)

**Booth: SL3621**

## STREAMING VIDEO ENCODERS

### ViewCast Niagara

Family is now available with MPEG-4 capability; open, standards-based encoding program enables better management and editing of video applications, while introducing select control options for protecting intellectual property; systems bundled with Dicas' "mpegable Broadcaster" encoding and transcoding software for MPEG-4 encoding.

972-488-7200; [www.viewcast.com](http://www.viewcast.com)

**Booth: SL3621**



## NETWORKING SYSTEM

### Harris NetVX

New Gigabit Ethernet interface capable of high-speed file transfer and transporting 64 real-time bidirectional video service; features packet-based architecture; allows video, audio and data to be transported over ATM or IP networks, including E-3 and DS-3 microwave networks, simultaneously; upgradeable system supports standard telecommunications protocols.

513-459-3400; [www.broadcast.harris.com](http://www.broadcast.harris.com)

**Booth: C1906**

## Nonlinear editors

## EDIT CONTROLLER

### Accom Axial/MX

Edit controller runs on the same software platform as the Axial 3000; capable of editing in all SD and HD formats including 24p; for both Axial 3000 and the new Axial/MX; Version 5.1 software features many upgrades and improvements including eight-channel audio edit capabilities.

650-328-3818; [www.accom.com](http://www.accom.com)

**Booth: SU8058**

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## MEDIA INTEROPERABILITY

### Sony XDCAM interoperability

Content captured on Sony's XDCAM professional disc system will now be compatible with Avid's native MPEG IMX (30-, 40- and 50Mb/s) and DVCAM nonlinear editing systems, including NewsCutter and Media Composer; initial support for XDCAM-format content will allow users to transfer high-resolution A/V clips across IP networks at high speed; metadata compatibility will also be provided through Sony's and Avid's support of the Material eXchange Format (MXF) media file format.

Sony: 800-686-SONY; [www.sony.com/professional](http://www.sony.com/professional)

Avid: 978-640-6789; [www.avid.com](http://www.avid.com)

**Booths: SU11051 (Sony); SL4761 (Avid)**

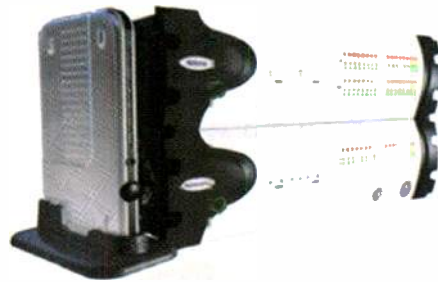
## HD NONLINEAR EDITING SYSTEM

### Canopus

Includes an HD-SDI card and the new EDIUS professional video editing software; delivers real-time HD capabilities, mixed SD and HD editing on the timeline, and the company's advanced HD codec technology.

408-954-4500; [www.canopus.com](http://www.canopus.com)

**Booth: SL5805**



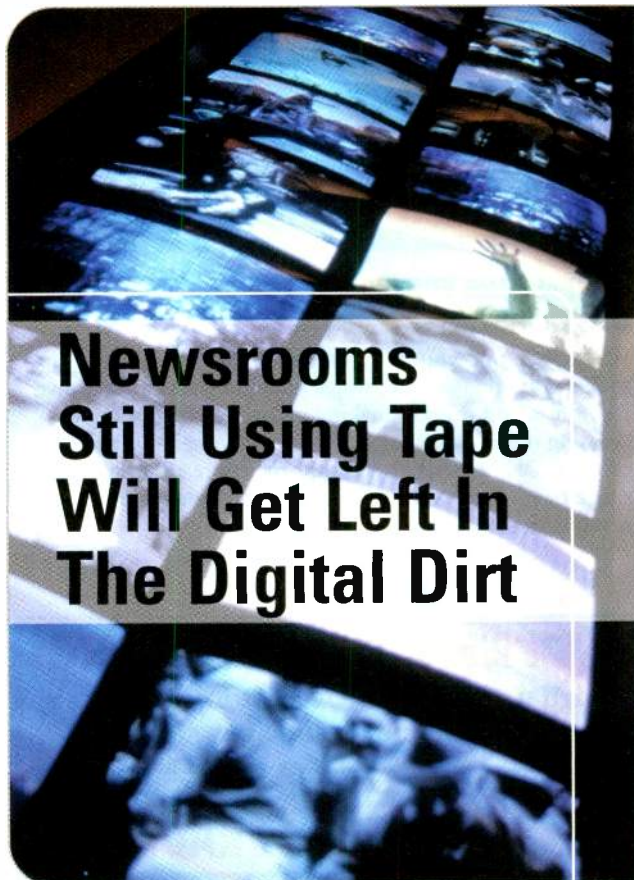
## EDITING SYSTEMS

### Avid film/video post production

Will introduce enhancements to all products in the DNA family; new editing features and expanded networking and workflow capabilities for next-generation Avid DS Nitris, Media Composer Adrenaline and Avid Xpress Pro with Mojo systems; HD option for the Media Composer Adrenaline system will allow it, Avid DS Nitris systems and Avid Unity Media Network to share high-quality HD media in post production.

978-640-6789; [www.avid.com](http://www.avid.com)

**Booth: SL4761**



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motrox  
Digital Video Solutions



[www.newsflow.tv](http://www.newsflow.tv)

# DTV marketplace

## HD NONLINEAR EDITING SYSTEM

### Leitch VelocityHD

Features an enhanced version of the same intuitive software interface as its multi-stream standard-definition VelocityQ NLE.

859-371-5533; [www.leitch.com](http://www.leitch.com)

**Booth: SU9868**



## USB2.0/FIREWIRE DOCKING STATION

### HHB

Accepts the PORTADRIVE's removable HD caddy via a slot in the front panel to delivery fast file transfer with Mac and PC-based post-production systems; features a universal power supply for operation anywhere in the world; comes with both USB and FireWire cables for connection to DAW's.

860-434-9190; [www.hhb.co.uk](http://www.hhb.co.uk)

**Booth: N2812**



## FILM FINISHING SYSTEM

### Nucoda Film Master V2

Enables users to perform multiple functions, from editing and conforming to grading and effects; users also can include titles and deliver multiple formats to any device via LAN, SAN, or single- and dual-link HD-SDI; includes a full range of tools for SD, HD and data file mastering, such as unlimited layer-based color correction, real-time 2K playback and integrated 3-D color cube technology.

+44 2077 635 763; [www.nucoda.com](http://www.nucoda.com)

**Booth: SL2148**

## HD/SD DUST AND SCRATCH REMOVAL SYSTEM

### IMAGICA cinecure

Windows-based digital image processing system specifically designed for removing unfavorable flaws in digital imagery; is designed to be fast because it executes all processing in system memory; only the problematic frames are digitized, saving time and effort.

310-306-4180; [www.imagica-la.com](http://www.imagica-la.com)

**Booth: SL3718**

## HD VIDEO PRODUCT FOR MACINTOSH

### Aurora Video Systems ReaktorHD

Allows users to monitor video on low-cost LD monitors while taking advantage of RT Extreme within Final Cut Pro; features one HD/SDI input, two independent HD/SDI outputs, RS-422 deck control, and composite S-video and component video outputs; audio I/O will include four channels of 24-bit AES inputs, six channels of 24-bit AES outputs, and up to eight channels of SDI embedded digital audio inputs and outputs.

586-726-5320; [www.auroravideosys.com](http://www.auroravideosys.com)

**Booth: SL5542**

## MULTI-STREAM NLE

### Leitch VelocityQ 2x4

Combines Velocity software interface with the Quattrus multi-stream real-time hardware, for an integrated, advanced multi-layer NLE solution; both models feature real-time playback of four streams of video in any combination of compressed or uncompressed and up to six graphics streams; features Q3DX2 dual-channel 3-D DVE.

859-371-5533; [www.leitch.com](http://www.leitch.com)

**Booth: SU9868**



## HD REAL-TIME EDITING SYSTEM

### DVS CLIPSTER

Works with uncompressed material in any resolution - up to 2K - on one timeline; stores video material in its native resolution and format, making pre-converting or compressing unnecessary; enables productive real-time editing of up to 2K in RGB 10 bit; clips of any resolution, color space or bit depth can be mixed on the timeline; output resolution is variable.

+49-511-67 80 70; [www.dvs.de](http://www.dvs.de)

**Booth: SL4713**

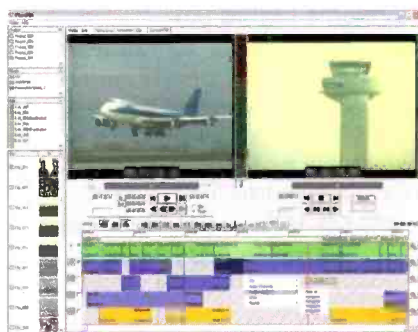
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# BEYOND THE HEADLINES

at [www.broadcastengineering.com](http://www.broadcastengineering.com)

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**NONLINEAR EDITING SYSTEM**  
**EVS Broadcast CleanEdit**

Nonlinear editing in news configuration allows multiple formats to co-exist within an edit; end-to-end workflow includes voice-over recording; playout is available instantly and can be controlled by station automation.

973-575-7811; [www.evs.tv](http://www.evs.tv)

**Booth: C3332**



**NONLINEAR EDITOR**  
**AJA Io-LD**

Designed to work with SDI digital systems; provides an audio/video interface to Final Cut Pro on Mac OS X desktop systems; supports full 10-bit uncompressed video on both digital and analog inputs and outputs; can be used in a desktop configuration or mounted in an optional 1RU mounting bracket.

800-251-4224; [www.aja.com](http://www.aja.com)

**Booth: SL3654**

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[www.visualcircuits.com](http://www.visualcircuits.com)



## NONLINEAR EDITOR

### AJA Io-LA

Part of the Io family; designed for analog component or composite system; 10-bit video available on all analog inputs and outputs; can be used in a desktop configuration or mounted in an optional 1RU mounting bracket; offers full support for Apple Final Cut Pro on Mac OS X.

800-251-4224; [www.aja.com](http://www.aja.com)

**Booth: SL3654**

## DESKTOP EDITING SYSTEM

### Pinnacle Systems VortexEdit

Enhanced features include support for MPEG-2 I 30-, 40-, and 50Mb/s editing, in addition to DV; other enhancements include automatic scene detection and scene splitting, as well as audio-level monitoring on capture; provides added network connectivity between news systems and news sites.

650-526-1600; [www.pinnaclesys.com](http://www.pinnaclesys.com)

**Booth: SU10160**



## EDITING ENHANCEMENTS

### Pinnacle Systems Vortex

Incorporates DekoVIA template functionality; supports MPEG-2 I 30-, 40-, and 50Mb/s editing, as well as DV; VortexEdit application for automatic scene detection, scene splitting and audio-level monitoring on capture; provides added network connectivity; Vortex File Transfer Utility (FTU) enables users to browse assets on multiple Vortex systems and incorporate the desired remote clips into the current story; system also incorporates Sports Logger application for easy and rapid logging of key sports events.

650-526-1600; [www.pinnaclesys.com](http://www.pinnaclesys.com)

**Booth: SU10160**

## EDITING SYSTEM

### Pinnacle Systems Liquid 5.6

Extensive upgrade to Liquid blue and Liquid silver video editing systems; supports Liquid blue for multiformat broadcast environments, Liquid chrome for real-time post settings and Liquid silver for MPEG-2 post editing; offers integrated DVD authoring directly from the Liquid 5.6 timeline; features an enhanced MPEG encoder and MXF support.

650-526-1600; [www.pinnaclesys.com](http://www.pinnaclesys.com)

**Booth: SU10160**

## FIELD EDITOR

### Sony XPRI Mobile

Windows-based nonlinear field editing software application runs on most laptop PCs, and can be used with the XDCAM professional disc system to create an end-to-end production chain; transfers proxy data captured by the XDCAM system at 20x real time; compatible with the XPRI MetaStation desktop editor; edits high-resolution DVCAM and MPEG IMX content from the XDCAM system at 30Mb/s.

800-686-SONY; [www.sony.com/professional](http://www.sony.com/professional)

**Booth: SU11051**



## NONLINEAR EDITING AND FINISHING SYSTEM

### Discreet smoke 6 SD for IBM Linux

Works with Linux operating system; offers advanced conforming and 3-D capabilities; features OpenGL graphics, uncompressed SD video I/O, and a choice of Discreet's stone Fibre Channel storage arrays; offers the option for fully redundant hardware RAID 5 solutions; features multiformat capture and playback including PAL and NTSC, real-time 4:4:4 editing, and unlimited vertical timeline editing.

514-393-1616; [www.discreet.com](http://www.discreet.com)

**Booth: SL3547**

## DESKTOP EDITOR

### Sony XPRI MetaStation

Compatible with XPRI Mobile field editing software application; enables engineers in the studio to reproduce timelines created in the field by importing a compatible EDL, including effects and titles; can be used with the XDCAM professional disc system for improved production workflow; transfers proxy data captured by the XDCAM system at 50x real time; edits high-resolution DVCAM and MPEG IMX content from the XDCAM system at 30-, 40- and 50Mb/s.

800-686-SONY; [www.sony.com/professional](http://www.sony.com/professional)

**Booth: SU11051**

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## Production switchers, video effects, keyers



### DIGITAL VIDEO EFFECTS SYSTEM

#### Accom Abekas Dveous/MX

Can work as a dual twin or quad twin system in standard definition (525 or 625) or, in high definition (720, 1035 or 1080 at all known frame rates) with a simple setting change; features include UltraWarp, SurfaceFX, SuperShadow, TimeFrame Effects Editor, reTouch color correctors, OrbitalFX, Supermatte, SpiralFX, Target FrameStore, Wide range Defocus, Solid Builder.

650-328-3818; [www.accom.com](http://www.accom.com)

**Booth: SU8058**

### DIGITAL SWITCHER

#### Eyeheight irisHD

HD-SDI digital switcher with up to eight inputs; features include full 10-bit mixing with programmable mix times and automatic or manual transitions; incorporates an input synchronizer and an internal wipe generator providing all commonly used wipe patterns; available with up to eight downstream keyers.

+44 1923 256 000; [www.eyeheight.com](http://www.eyeheight.com)

**Booth: SU11809**



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this logo.

[www.broadcastengineering.com](http://www.broadcastengineering.com)

### A/B VISION SWITCHER

#### Eyeheight vistaHD

Ultra-compact A/B vision switcher supports 24-, 25- and 30Hz frame rates (interlaced, progressive scan and split-frame) to SMPTE 272 specification; supports 1080i/50, 1080i/60, 1080i/59.94, 1080p/24 and 1080p/23.98 standards; up to four systems can be housed in 1RU.

+44 1923 256 000; [www.eyeheight.com](http://www.eyeheight.com)

**Booth: SU11809**

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# DTV marketplace



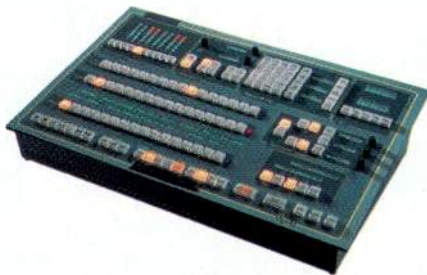
## MULTIFORMAT SWITCHER

### Sony MFS-2000

Designed for broadcast, corporate and educational, live and post-production applications, as well as mobile news units; available in 1- or 1.5M/E configurations; three control panels are offered; processor is packaged in a compact 3RU frame; features pre-set pattern effects with a variety of pattern modifiers for easy operation.

800-686-SONY; [www.sony.com/professional](http://www.sony.com/professional)

**Booth: SU11051**



## DIGITAL MASTER CONTROL SWITCHER

### Leitch Opus

Feature-rich in a multi-channel, multiformat SD/HD environment; provides dual-channel effects/squeezes, audio processing capabilities, keys, audio overs and quick selects, and supports both HD and SD signals.

859-371-5533; [www.leitch.com](http://www.leitch.com)

**Booth: SU9868**



## VIDEO AND AUDIO SWITCHER

### SAV MX-AIR

2U digital switcher specifically designed for on-air switching; features include eight SDI inputs, video and audio follow (embedded or separate), ME and key effects, up to three DSKs and three logo generators; can be controlled through a computer connected via serial port, Ethernet or remote keyboard.

+33 1533 822 00; [www.sav.tv](http://www.sav.tv)

**Booth: SU7170**



## HD/SD MASTER CONTROL SWITCHER PANEL

### Miranda PresStation

Multichannel HD/SD master control switcher panel operates with Miranda's Oxtel series Imagestore channel branding processors to provide channel branding graphics capabilities; can control clip ployout, dual 3-D DVEs, automated character generation and four layers of animation/clock insertion.

514-333-1772; [www.miranda.com](http://www.miranda.com)

**Booth: SU10129**

## RACK-MOUNT SDI SWITCHER

### Brick House Video VTB-2D

Single-layer dual-channel (key and fill) SDI downstream keyer; composite input option, allowing the user a maximum of eight SDI and eight composite inputs, thus in effect a 16-channel switcher.

+44 2380 676 026; [www.brickhousevideo.com](http://www.brickhousevideo.com)

**Booth: SU8546**

## PORTABLE SDI SWITCHER

### Brick House Video VTB-1DS

Has been upgraded with a new front panel and numerous features, including switchable program/preview composite monitoring and variable genlock timing; unit is now also available as a 1U stand-alone rack-mount version.

+44 2380 676 026; [www.brickhousevideo.com](http://www.brickhousevideo.com)

**Booth: SU8546**



## SWITCHER

### ISIS Group S-8400

Can be an analog or digital 8x4 audio/video switcher; features gen-locking sync generator and a color bar generator; includes video and audio D/A converters, an audio tone generator and program bus tallies; has source ID generators; the main 2RU control panel is available with or without an intercom base station that can be interfaced to most third-party intercom systems and belt packs.

530-477-2984; [www.isis-group.com](http://www.isis-group.com)

**Booth: C2039**

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## HD/SD SWITCHER

### FOR-A Hanabi HVS-1000HS

One-M/E version of the two-M/E Hanabi HVS-3000HS digital HD or SD switcher; 2RU unit supports 1080i, 24p, 720p, and SD formats; two switcher types are available - the HVS-1000EQU and HVS-1000LOU; DVE card includes eight inputs, and can be configured for up to 16 inputs; four still pictures can be stored in frame memory.

714-894-3311; [www.for-a.com](http://www.for-a.com)

**Booth: C5628**



## HD SWITCHER

### Thomson Grass Valley 1-M/E Kayak HD

Compact, 3RU-high switcher supports 1080i and 720p HD native productions; 16 inputs, four keyers, 10 auxiliary busses; switchable to SDI 525 (NTSC) and 625 (PAL).

530-478-3000; [www.thomsongrassvalley.com](http://www.thomsongrassvalley.com)

**Booth: SU8076**



## HD SWITCHER

### FOR-A Hanabi HVS-3000H

Includes optional multichannel DVE; 3RU high; can take up to two DVE cards; six independent key layers (three per M/E) available; four control panels can be interfaced to one main unit to setup productions from multiple locations.

714-894-3311; [www.for-a.com](http://www.for-a.com)

**Booth: C5628**

## VIDEO SWITCHER

### Quartz Electronics QMC-HD

Handles up to 16 audio channels; optional internal Dolby E decoders; optional logo store/keyer now supports two HD logos, animated logos and audio clip storage.

888-638-8745; [www.quartzus.com](http://www.quartzus.com)

**Booth: SU9812**

## HD PRODUCTION PACKAGE

### Thomson Grass Valley HD production kit package

Includes LDK 6000 km II camera, Kayak HD 1-M/E switcher, Concerto series router, Kameleon media processing system and PVS 3000 Profile XP Media Platform.

530-478-3000; [www.thomsongrassvalley.com](http://www.thomsongrassvalley.com)

**Booth: SU8076**



## BRANDING AND MASTER CONTROL

### Thomson Grass Valley Maestro

Includes SD and HD Maestro MC modules, touch-screen control panel, Kameleon media processing system frame, PVS 3000 Profile XP Media Platform; supports SD, HD, AES, embedded audio, analog audio and Dolby E; stores hundreds of logos, animations, audio clips; up to eight audio channels; flexible keying.

530-478-3000; [www.thomsongrassvalley.com](http://www.thomsongrassvalley.com)

**Booth: SU8076**

## INTEGRATED PRODUCTION SYSTEM UPGRADE

### Broadcast Pix Studio Version 2 software

Version 2 adds camera control, animations for the CG, a second DDR channel and a Pinnacle 3D DVE; standard features in Version 2 include StudioMemory for recalls that combine all of the system's tools, and ShowBuilder for offline pre-production of shows; ProPack option adds animated graphics to the Inscribe CG and a second channel of clip store to the DDR, and doubles clip storage.

781-221-2144; [www.broadcastpix.com](http://www.broadcastpix.com)

**Booth: SU9524**

## SPORTS INGEST SYSTEM

### IBIS SprinTx ServerLoad Sport

Enables live highlights of a sporting event to be captured and packaged at the desktop in real time, along with all relevant metadata; can be used with any sport requiring one or more feeds; tags can be added to highlights to permit replay in slow motion (server dependent).

+44 1483 280 208; [www.ibis.tv](http://www.ibis.tv)

**Booth: SU6766**

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# DTV marketplace

**Satellite/cable/encoding**



## MOBILE PRODUCTION UNIT

### National Mobile Television HD4

NMT's first true multiformat HD facility; interior square footage in excess of 640 square feet; designed to eliminate jamming and the need for the trailer to be on a completely level surface; side of the trailer is expanded and retracted by use of actuators mounted below the expansion to push and pull the side; equipment in use includes Grass Valley and Solid State Logic.

914-682-2111; [www.nmtv.com](http://www.nmtv.com)

**Booth: C1906**

## LOW-COST MODULAR VIDEO DECODERS

### Broadcast Technology DTVD3010, 3020 and 3030

Modules enable general video monitoring and signal acquisition prior to MPEG encoding/remuxing/acquisition and prior to upconversion for analog cable systems; all three modules take MPEG-2 DVB ASI inputs; outputs include analog composite video and analog audio; SDI video with embedded or AES/EBU audio; and analog composite video, analog audio, and SDI video with embedded or AES/EBU audio.

+44 1264 332 633; [www.btl.uk.com](http://www.btl.uk.com)

**Booth: SU6752**



## ANTENNA SYSTEM

### Patriot Antenna Systems Flyaway antenna system

Consists of two-piece solid metal reflector and a pre-assembled tripod base; sturdy boom accommodates many outdoor units; features good sidelobe and cross-polarization performance; repeatability is maintained with precision registration of the two reflector segments and the feed support structure.

800-470-3510; [www.sepatriot.com](http://www.sepatriot.com)

**Booth: C12039**



## OFFSET ANTENNA

### Patriot Antenna Systems 3.8 and 3.0 m

Motorized Kingpost with 180 degrees H to H, or Az/EI motorizable kingpost mount; extra support rigs for added rigidity in wind; long focal length; installation without crane; sub-reflector option for Ku-Band low cross pol applications; various Tx/Rx and Rx-only feed options.

800-470-3510; [www.sepatriot.com](http://www.sepatriot.com)

**Booth: C12039**



## HIGH-POWER AMPLIFIER

### MITEQ MT3200

Compact, cabinet-mount TWT amplifier available for C-, X-, or Ku-band applications at 400W; available for transportable, as well as fixed, applications.

630-759-9500; [www.mcl.com](http://www.mcl.com)

**Booth: C11529**



## HIGH-POWER AMPLIFIER

### MITEQ MT4000

Compact, cabinet-mount 4RU dual depressed-collector TWT amplifier available for C- or Ku-band applications at 750W; or DBS-band applications at 500W.

630-759-9500; [www.mcl.com](http://www.mcl.com)

**Booth: C11529**

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## MULTISERVICE CONDITIONAL-ACCESS MODULE (CAM)

### Broadcast Technology DTCA3000

Designed for use in digital television head-ends receiving multiple services off-air for service acquisition; digital television head-end monitoring of outgoing multiple service transport streams; allows multiple television services to be decrypted using a single professional CAM and smart card.

+44 1264 332 633; [www.btl.uk.com](http://www.btl.uk.com)

**Booth: SU6752**



## SATELLITE BROADCAST VAN

### Frontline Communications ENG-350HT

Van has lightweight, aluminum raised-roof structure that provides safe and stable platform for ENG and DSNG; air conditioning, ample headroom and rack space.

727-573-0400; [www.frontlinecomm.com](http://www.frontlinecomm.com)

**Booths: C7133, MM118**

## MULTI-CODEC SOFTWARE

### Broadcast International CodecSys

New platform employs real-time artificial intelligence systems to manage libraries of standard and specialized codecs to change codecs or codec settings on the fly; codecs can be changed on a scene-by-scene or even frame-by-frame basis; optimizes video and audio compression to reduce bandwidth requirements or improve quality without increasing bandwidth; enables 50 percent to 75 percent reductions in bandwidth compared to single-codec solutions.

801-562-2252; [www.brin.com](http://www.brin.com)

**Booths: SL3418, C10946**

## HDTV ENCODER

### Scientific-Atlanta PowerVu D9050

Offers bandwidth-efficient compression for either pure HD streams or in combination with SD programming; includes PreSightPlus technology to achieve optimum statistical multiplexing performance; for contribution purposes, the unit offers high-quality 4:2:2 encoding.

770-236-7853; [www.sciatl.com](http://www.sciatl.com)

**Booth: SU10449**

## ENCODER

### Scopus CODICO E-1800

HD encoder provides multiformat, 1080i, 720p and 480p support; 4:2:2 and 4:2:0 encoding at up to 45Mb/s; audio multiplexing and MPEG-2 and Dolby Digital (AC3) encoding.

609-987-8090; [www.scopus.net](http://www.scopus.net)

**Booth: SU11814**

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## ENCODER

### Scopus CODICO E-9000

Serves as a universal platform for MPEG-4, Windows Media 9, SD and HD encoding formats; provides migration path from MPEG-2 to new codecs.

609-987-8090; [www.scopus.net](http://www.scopus.net)

**Booth: SU11814**

## HD PCI DECODERS

### DVC Digital Video Computing VideoPlex HD

Extension of Optibase's line of video playback systems; designed to enable playback of HD MPEG-2 video streams; decoders support all 18 ATSC formats, as well as multiple HD video standards such as 1080i or 720p, various audio formats and standard frame rates, including 24fps.

+49 8152 930 10; [www.digitalvideo.de](http://www.digitalvideo.de)

**Booth: C2588**

## PROGRAM RECEIVER

### Scientific-Atlanta PowerVu D9850 release 3

Designed for programmers and cable systems; enhanced features include ASI transport input for monitoring, SDI output with embedded audio for professional re-encoding, AES-3 high-quality digital audio output, and support of up to 50Mb/s of IP data.

770-236-7853; [www.sciatl.com](http://www.sciatl.com)

**Booth: SU10449**

## HDTV DECODER

### Digital Vision BitLink

Features MPEG-2 MP@HL and MP@ML, support for up- and downconversions, up to four digital PCM and analog audio pairs, and pass-through of Dolby Digital; transport stream input options include ASI and QPSK/8PSK/16QAM demodulator.

818-769-8111; [www.digitalvisionusa.com](http://www.digitalvisionusa.com)

**Booth: C6142**



## MPEG-2 ENCODER

### Harmonic DiviCom MV 100

Ultra-low bit-rate compression; multi-pass "LookAhead" CBR/VBR encoding; advanced filtering and processing; supports DiviTrackXE statistical multiplexing.

800-828-5521; [www.harmonicinc.com](http://www.harmonicinc.com)

**Booth: SU11006**



## RECEIVER/DECODER

### Scopus CODICO IRD-2900

Graphical front-panel display; front-end options include ASI transport-stream input and output, IP inputs, four QPSK L-band inputs and four pairs of balanced outs.

609-987-8090; [www.scopus.net](http://www.scopus.net)

**Booth: SU11814**



## ON-AIR SERVER

### SeaChange Broadcast MediaCluster

Contains up to 35TB; provides fault resilience, multichannel I/O and standards-based IP network performance; uses 24 drives per server chassis in clusters comprising of three to seven nodes; stores and plays media encoded at 8- to 30Mb/s.

978-897-0100; [www.schange.com](http://www.schange.com)

**Booth: SU9661**

## IPDS EARTH STATION

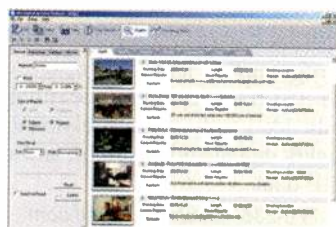
### Thrane & Thrane TT-6810

Part of the network structure required for the Inmarsat Packet Data Service; access point to the terrestrial users who wish to communicate with IPDS terminals.

+45 3955 880 0; [www.tt.dk](http://www.tt.dk)

**Not attending**

## Storage



## DIGITAL ASSET-MANAGEMENT SYSTEM

### Konan DigitalArchive

Allows users to easily retrieve specific frames from the storage server; asset-management solution features screen capturing, indexing, archiving, text and image searching, and MPEG streaming functions.

+82 2 3489 1000; [www.konantech.co.kr](http://www.konantech.co.kr)

**Booth: SL2159**



## BROADCAST VIDEO SERVER

### 360 Systems Image Server 2000

Provides MXF support and uses Gigabit Ethernet for fast file transfers over DSL telecom lines; offers frame-accurate head and tail trimming, with time code windows for in and out points; can also be used to segment long-form program material; can rapidly build, edit, name and save playlists; protocols that work with the server include VDCP, "P2" and Odetics.

818-991-0360; [www.360systems.com](http://www.360systems.com)

**Booth: C9606**



## FOCUS Enhancements FireStore FS-2

Has the full complement of A/V inputs and outputs; features flexible record options including loop record, retro cache record, retro disk record and user definable time-lapse recording; create and playback custom sequences; control from a variety of industry-standard protocols; includes a removable drive bay with a 120GB IDE disk drive.

408-866-8300; [www.focusinfo.com](http://www.focusinfo.com)

**Booth: SL3501**



## VIDEO PLAYER

### Sencore VP 3340

Has multiple HDTV outputs; provides users with the ability to downconvert and upconvert video; supports 1080i, 720p, 480p and 480i formats; decode MPEG-2 transport stream with video at MP@HL; has a large storage capacity for long stream playout capabilities.

800-SENCORE; [www.sencore.com](http://www.sencore.com)

**Booths: SU11011, C10343**

*Color indicates advertiser*



### PLAY-TO-AIR SYSTEM

#### SeaChange Broadcast MediaLibrary

Embodies the Broadcast MediaCluster; availability exceeds 99.999% and scales to 24TB of centralized storage that supports any media file format and devices (editors, VTRs, servers, etc.) throughout television operations.

978-897-0100; [www.schange.com](http://www.schange.com)

**Booth: SU9661**

### PRODUCTION SYSTEM

#### Quantel sQ server

Based on the IT/broadcast bilingual sQ server with its integrated, scalable range of timeline editing applications.

770-649-9071; [www.quantel.com](http://www.quantel.com)

**Booth: C6406**



### TRANSMISSION SERVER

#### Leitch NEXIO transmission server, NXMTS

Supports multiple SD/HD compression formats, as well as an ASI interface; provides the ability to record, process and playback MPEG transport streams; the transmission server can be integrated with the shared storage system or used as an edge server in a remote location; offers applications such as ingest, clipsync, delay and playlist; can be integrated with third-party automation.

859-371-5533; [www.leitch.com](http://www.leitch.com)

**Booth: SU9868**

*Color indicates advertiser*

**MARCH 2004**



### PRODUCTION SERVER

#### Accom Abekas 6000

Allows mix and match of SD and HD channels in the same server with I-frame compression for frame-accurate editing; retains identical functionality between SD and HD channels; new features include improved networking with Gigabit Ethernet option, Fibre channel option with increased transfer speeds, updated content management panel (for PC or MAC) and "Jump to Time of Day" time code feature.

650-328-3818; [www.accom.com](http://www.accom.com)

**Booth: SU8058**

### DIGITAL VIDEO RECORDER

#### Leitch NEO VR

Packaged on a single module, fully integrated into Leitch's advanced NEO platform and controlled by the NEO-VR command center s/w application; features dual fixed onboard high-capacity hard drives and an array of interfaces for audio, video, time code and control.

859-371-5533; [www.leitch.com](http://www.leitch.com)

**Booth: SU9868**



### HD FORMAT SUPPORT

#### Omneon SPECTRUM

Capable of supporting multiple HD formats simultaneously, including MPEG, HDCAM, and DVCPro-100; allows broadcasters to deploy a server infrastructure for HD and SD playback and gain the flexibility to add channels or services; current Omneon customers can add new HD services, including DVCPro-100, to their existing media server implementations.

866-861-5690; [www.omneon.com](http://www.omneon.com)

**Booth: SU7466**

# ClarityHD

## Unparalleled Graphics Flexibility

The power of dedicated hardware & the convenience of Windows

Single and dual channel HD

Supports all HD resolutions and frame rates

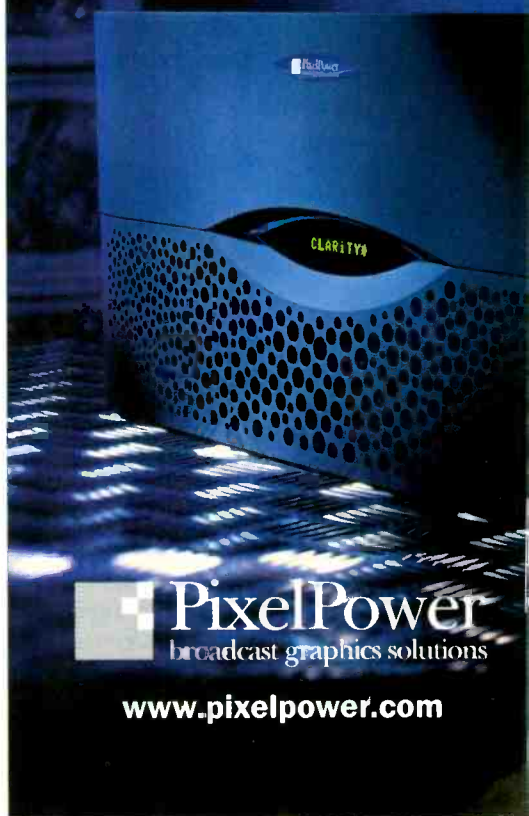
Configurable HD/SD switchable and HD+SD simultaneously

Unlimited layering of text, stills & cells in any channel

Full featured CG with animated text effects

Embedded still store with optional web-based browser

Interfaces with all common automation systems



**PixelPower**  
broadcast graphics solutions

[www.pixelpower.com](http://www.pixelpower.com)

# DTV marketplace

## UNCOMPRESSED SD RECORDING SOLUTION

### Accom APR/ClipStore

Comes standard with over an hour of uncompressed video, key and audio recording capacity within a 3RU chassis; feature set includes interfacing with a network of graphics rendering computers and film printers, NetPanel browser-based user interface, and Windows Media 9 export encoding.

650-328-3818; [www.accom.com](http://www.accom.com)

**Booth: SU8058**



## DISK STORAGE

### Huge Systems HMV-320R

Redundant disk storage product capable of sustaining 10-bit, 1080i HD content from five disk drives; utilizing SCSI Ultra 320 technology.

818-991-1188; [www.hugesystems.com](http://www.hugesystems.com)

**Booth: SL3433**

## STORAGE DEVICE

### Exavio ExaMax

Configured for multi-stream broadcast and post-production applications; a video-smart network device that improves the performance of existing storage products for high-definition, digital film and multi-stream compressed files.

408-382-5353; [www.exavio.com](http://www.exavio.com)

**Booth: SL5141**

## NETWORK-ATTACHED STORAGE (NAS) SOLUTION

### Ciprico DiMeda 1700

High-performance custom embedded software with the latest serial ATA drive technology; provides broadcasters with a compact, affordable solution ideal for a wide variety of video editing applications.

800-727-4669; [www.ciprico.com](http://www.ciprico.com)

**Booths: SL4730; C9125**

## SPORTS CONTROLLER

### DNF Controls DMAT-O

Offers slow-motion instant replay and highlight-list creation/playback for Odetics protocol-based video servers.

818-898-3380; [www.dnfcontrols.com](http://www.dnfcontrols.com)

**Booth: SU8965**



## MULTICHANNEL DDR

### FOR-A LDR-4

120GB hard drive can record 30 hours of DV-quality material per channel; provides camera input of up to four channels and simultaneous record and playback, so that up to four channels can record a live event and any of them can be played back simultaneously; remote control available via RS-422; features time lapse recording, automatic detection of video loss, and on-screen titling generation/display (up to eight characters per channel).

714-894-3311; [www.for-a.com](http://www.for-a.com)

**Booth: C5628**

## MULTI-SLOT P2 DRIVE

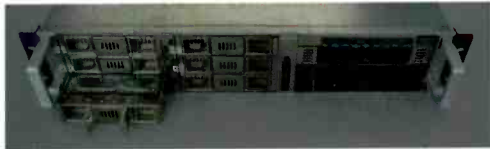
### Panasonic AJ-PCD10

Developed for rapid ingest of DVCPRO or DVCPRO50 resolution video into NLE or server systems; enables direct access to the content in the P2 cards; material can accessed almost instantaneously; fits in a standard PC-type 5.25-inch bay drive enclosure; supports five P2 card slots; offers high-speed USB 2.0 interface to connect to the host computer.

201-392-4127; [www.panasonic.com/broadcast](http://www.panasonic.com/broadcast)

**Booth: C3811**

*Color indicates advertiser*



## TAPELESS ARCHIVE SYSTEM

### ISIS Group OpenStore

Provides instant access to digitized archives of all transmissions; pre-defined loops ensure that old files are overwritten; transmissions of configured recording capacity are available online in the user's network; available with MPEG-1, -2, or -4 compression; data rates may be between 100kb/s and 15Mb/s; features analog and digital video input and analog stereo audio.

530-477-2984; [www.isis-group.com](http://www.isis-group.com)

**Booth: C2039**



## RECORDER

### Panasonic AJ-SPD850

Part of the DVCPRO P2 series; features five P2 card slots; provides up to 80 minutes record capacity at DVCPRO resolution with 4G P2 cards and at DVCPRO50 studio quality, provides 40 minutes record capacity on five 4G P2 cards; features USB 2.0 and Ethernet ports; offers IEEE-1394 and SDI with embedded audio as system options.

201-392-4127; [www.panasonic.com/broadcast](http://www.panasonic.com/broadcast)

**Booth: C3811**

## STORAGE SUBSYSTEM

### Exavio ExaVault

Comprised of a Linux-based controller, ExaView management software and scalable storage arrays from 3TB (1RU) to more than 120TB; seamlessly integrates with NASs and SANs.

408-382-5353; [www.exavio.com](http://www.exavio.com)

**Booth: SL5141**

## MULTIFORMAT DIGITAL VTR

### Panasonic AJ-SD93

Facilitates 4:2:2 quality video transfers at 50 Mb/s over IEEE-1394 to NLEs; has optional analog and SDI inputs and outputs; can record onto small, medium or large DVCPRO cassettes; has a maximum record time of 184 minutes; can play back DV and DVCAM tapes; features on-screen display setup menu; video monitor and audio monitor outputs.

201-392-4127; [www.panasonic.com/broadcast](http://www.panasonic.com/broadcast)

**Booth: C3811**

## VIDEO AND DATA STORAGE APPLICATION

### Maxell DVD-R Plus series

Has a 4.7GB capacity; supports 8X write speeds; has a pre-recorded shelf and archival life of more than 50 years; discs are write-compatible with almost any manufacturer's general-purpose DVD-R drives and recorders; after recording, the discs are read-compatible with DVD-ROM, DVD-Video and DVD-Audio players.

858) 503-3300; [www.maxell.com](http://www.maxell.com)

**Booth: C8228**

## DIGITAL VIDEO RECORDER

### Fast Forward Video OMEGA Deck

Single or dual-channel, SCSI-hard-disk-based broadcast DVR; analog component and composite video I/O; optional SDI; output switchable between component and RGB.

800-755-8463; [www.ffv.com](http://www.ffv.com)

**Booth: C2851**

**Introducing Xenon**

**The Signal Processing Router**  
Multi-forma: Routing **plus** optional plug-ins

Initial plug-in functions include

- Channel Branding
- Master Control
- Embedded Audio Processing

**See Xenon at NAB  
Booth # SU9812**

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888.638.8745 | [sales@quartzus.com](mailto:sales@quartzus.com) | [www.quartzus.com](http://www.quartzus.com)

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[broadcastengineering.com](http://broadcastengineering.com) 217

## STORAGE

### Silicon Graphics SGI InfiniteStorage solutions

Offers choice of NAS and SAN storage architectures; enables all operating system clients to share access to content; using an IP-based infrastructure, broadcast material can be shared at 25x real-time rates and film resolution material can be accessed throughout the production workflow as data at real-time rates; has two versions - InfiniteStorage for Production and InfiniteStorage for Broadcast.

650-960-1980; [www.sgi.com](http://www.sgi.com)

**Booth: SL4755**



## VIDEO SERVER

### Doremi Labs MCS-HD

HD video server has four independent, shared-storage channels; two play channels, two record channels; selectable compression rates; VTR-like front panel.

818-562-1101; [www.doremilabs.com](http://www.doremilabs.com)

**Booth: C2529**



## SERVER

### Pinnacle Systems MediaStream

Allows connection between archive systems, additional servers, WANs and LANs; now offers industry-standard high-speed connectivity with Gigabit Ethernet connection, as well as enhanced SD-to-HD upconversion; provides simultaneous SD and HD output as a standard feature; offers tight integration with Liquid; features MXF support, MPEG-2 I-frame editing and MPEG-2 IBP import/export.

650-526-1600; [www.pinnaclesys.com](http://www.pinnaclesys.com)

**Booth: SU10160**

## CONTROL SYSTEM MODULE

### DNF Controls Flex Control Network module

New VTR control module provides basic control features including record, play, stop, rewind, fast-forward, jog, shuttle, slo-mo, loop play and search-to-time; supports shared control, with control of one to eight VTRs from one Flex Control CP20 control panel; control can be individual or ganged.

818-898-3380; [www.dnfcontrols.com](http://www.dnfcontrols.com)

**Booth: SU8965**

## MEDIA ASSET MANAGEMENT SYSTEM

### DaletPlus Media Library

Turnkey solution allows users to easily ingest, catalog, share and archive media over a standard network; allows for the repurposing of source materials without loss of quality; material can be cataloged, stored and distributed in multiple formats, including HD, DV, DVCPRO and MPEG-2; features fault-tolerant architecture; utilizes high-density, removable media such as CDs and DVDs.

212-825-3322; [www.dalet.com](http://www.dalet.com)

**Booth: SL3842**



## CONTROL SYSTEM

### DNF Controls DC30

Uses modular, Ethernet-based, distributed control technology to deliver flexible, real-time machine control; simplifies control between multiple control points and multiple devices; enables operators to add and remove devices and control points quickly and easily as required.

818-898-3380; [www.dnfcontrols.com](http://www.dnfcontrols.com)

**Booth: SU8965**

## VIDEO SERVER

### QuVIS Studio series

Includes the Acuity HD, Acuity 2K and Acuity 4K; QPE technology enables native real-time playback of a 2K image from a 4K master; supports SD, HD and digital intermediate working at 2K and above; features an optional format conversion module that provides broadcast-quality downconversion to HD and SD; supports 12 digital and two analog audio channels, including independent audio channel editing capabilities.

785-272-3656; [www.quvis.com](http://www.quvis.com)

**Booth: SL1252**



## VIDEOTAPE

### Sony DigitalMaster DVCAM

Reduces the rate of dropouts by 50 percent or more and causes 90 percent fewer errors compared to miniDV tape; features a dual layer of 100 percent magnetic material to deliver a 2dB increase in the carrier-to-noise ratio, and 30 percent more DLC coating; comes in a variety of lengths, including 32-, 40-, 64-, 124- and 184-minute cassettes.

800-686-SONY; [www.sony.com/professional](http://www.sony.com/professional)

**Booth: SU11051**



## RECORDER

### Sony HDCAM SR

Works with the new HDC-F950 camera and the BCT-SR series of digital videocassettes; new SRW-1 field recorder and SRW-5000 studio recorder can record either RGB 4:4:4 or component 4:2:2 HD video at approximately 440Mb/s; capture full detail of the Common Image Format 1920(H) x 1080(V) sampling structure without pre-filtering or sub-sampling.

800-686-SONY; [www.sony.com/professional](http://www.sony.com/professional)

**Booth: SU11051**

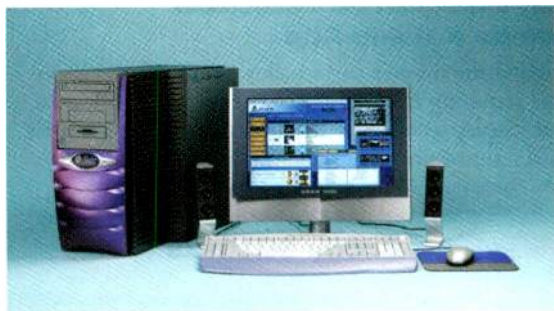
## OPTICAL DISC SYSTEM

### Sony XDCAM

Facilitates high-speed transfer of material from the field to the television station for nonlinear editing; a single professional-grade disc holds about 90 minutes of 25Mb/s material, 45 minutes shot at 50Mb/s, 55 minutes at 40Mb/s and 75 minutes at 30Mb/s; uses blue-laser optical media for increased data density; rewritable 12cm media has a storage capacity of 23.3GB per disc.

800-686-SONY; [www.sony.com/professional](http://www.sony.com/professional)

**Booth: SU11051**



## ASSET MANAGEMENT SOLUTIONS

### Adams Systems ADAM 1000

Support SD and HD processing and storage; digital asset-management system and media engine integrated as a networked desktop solution.

408-526-0500; [www.adamsystems.com](http://www.adamsystems.com)

**Booth: SL5814**

## ASSET MANAGEMENT

### Avid workgroups and asset management

Enhancements to workgroup and digital media asset management offerings will be introduced; new features for the Avid Unity MediaManager system include expanded full-resolution media browsing, comprehensive logging and multiple-site searching; also on display will be the alienbrain product family recently acquired from NXN Software.

978-640-6789; [www.avid.com](http://www.avid.com)

**Booth: SL4761**

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MARCH 2004

## DDR

### DVS HDStation

New DDR replaces the HDStationPlus and HDStationRGB; works under the Windows file system instead of a proprietary file format; files are immediately accessible by any network client; several disk recorders can access the high-resolution data stored on the central server in real time.

818-846-3600; [www.dvs.de](http://www.dvs.de)

**Booth: SL4713**

## ARCHIVE SOLUTION

### Crispin ArchiveManager

Provides end-to-end real-time video content cataloging, storage and retrieval of real-time video content for playback and editing; serves as an affordable DVD-RAM archive solution for safe asset storage on individual cartridge or robotic jukeboxes; can stand alone or be integrated with automation.

919-845-7744; [www.crispincorp.com](http://www.crispincorp.com)

**Booth: SU9819**

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## Studio, facility support

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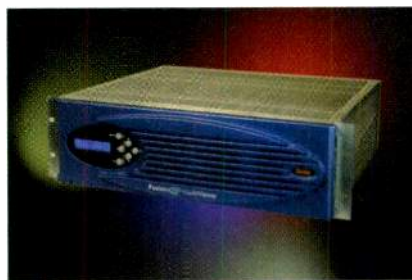
## DISPLAY SYSTEM

### Barco iPresent

Capable of showing a multitude of video and graphical windows; produces smooth transitions from one display wall layout into another; projection modules support 3200K color temperature to match studio lighting; offers wide viewing angles for maximal flexibility of camera positions; controller optimized to support dynamic moving and scaling of windows.

770-218-3211; [www.barco.com](http://www.barco.com)

**Booth: SL3936**



## VIDEO DISPLAY PROCESSORS

### Zandar FusionPro

Supports a range of plug-in processor cards; enables users to combine input formats in one system and display them on plasma, LCD or projection screens; new HD-SDI processor card accepts 720p and 1080i formats; features dual redundant, hot-swappable power supplies and front-loading cards.

321-939-0457; [www.zandar.com](http://www.zandar.com)

**Booth: SU9915**

# DTV marketplace

## MONITORING MODULE

### Zandar StudioPro

Can be combined with the FusionPro 3RU modular rack to provide an integrated and intuitive interface for the setup, operation and maintenance of the virtual monitor wall; enables graphically enhanced displays, the inclusion of logo or bitmap files, and the display of clocks; generates alerts to connected users via SNMP of alarm conditions, which are also logged to file and visually indicated.

321-939-0457; [www.zandar.com](http://www.zandar.com)

**Booth: SU9915**



## HD MONITOR

### Marshall Electronics V-R65P-HD

Portable 6.5-inch monitor weighs less than 2lbs.; offers a flexible input configuration without the need of special adapter boxes; standard inputs include active loop-through on each connection for HD-SDI/SDI (SMPTE 259M, SMPTE 292M) and composite video with PAL/NTSC automatic recognition; features a multiformat connector for HD or SD analog component signals (SMPTE 274M).

800-800-6608; [www.lcdracks.com](http://www.lcdracks.com)

**Booth: SU11614**

## MPEG-2 STREAM MANIPULATION PRODUCT

### Leitch Digital Turnaround Processor (DTP)

Allows broadcasters to overlay graphics/logos on pre-compressed HD and SD streams; remotely encoded DTV signal can be localized with logo overlays, crawls, and time and temperature; content owners can derive additional revenue from their national content by localizing it; original MPEG stream picture quality is preserved to the greatest extent possible.

859-371-5533; [www.leitch.com](http://www.leitch.com)

**Booth: SU9868**

## MONITORING MODULE

### Zandar remote panel

Remote panel for FusionPro and DX multiviewers; desktop console offers local serial connection capabilities for the control of multiple systems; allows for straightforward user selection of layouts, full-screen spot displays and other functions.

321-939-0457; [www.zandar.com](http://www.zandar.com)

**Booth: SU9915**



## GPI/TALLY INTERFACE

### Pixel Instruments DG-1200

Interprets pre-programmed GPI and/or tally outputs from the switcher; generates delay control pulses to steer up to five AD-3100 audio synchronizers to eliminate lip sync errors; can respond to tally signals alone or tally input can be gated with GPI start-and-stop signals from the switcher; video delay of the DVE may be switched in and out of the program path several times in a short time.

408-871-1975; [www.pixelinstruments.tv](http://www.pixelinstruments.tv)

**Booth: SU7476**

## DISPLAY MONITOR

### Pro-Bel Vutrix

Incorporates video scaling and processing technology.

+44 1189 866 123; [www.pro-bel.com](http://www.pro-bel.com)

**Booth: C8123**

## MULTI-IMAGE DISPLAY PROCESSOR

### Miranda Kaleido-AIto

Designed for simpler and smaller monitoring environments requiring fewer inputs; uses the same high-quality image display technology as the Kaleido-K2 processor; features auto-sensing SDI/analog inputs and display clocks/timers, UMDs, tallies, and audio metering.

515-333-1772; [www.miranda.com](http://www.miranda.com)

**Booth: SU10129**

## TALLY SOFTWARE

### Television Systems TallyMan

Tally and UMD control software runs on PCs connected to TSL dedicated-hardware platforms (parallel I/O units) or on a TSL system controller.

877-591-2108; [www.televisionssystem.com](http://www.televisionssystem.com)

**Booth: SU8762**

## MANAGEMENT AND SHARING SOFTWARE

### Studio Network Solutions SANmp

Multi-platform software allows workstations with different operating systems to access information from a storage area network at the same time; does not require a server or Ethernet connection; ability to integrate Mac OS and Windows workstations regardless of what systems are being run.

877-537-2094; [www.studionetworksolutions.com](http://www.studionetworksolutions.com)

**Booth: SL1762**

## REMOTE MONITORING SOFTWARE

### Thomson Grass Valley NetCentral IV

Upgraded software uses SNMP and Syslog; links any electronic document with device alerts; "agents" run monitored products, "manager" monitors products.

530-478-3000; [www.thomsongrassvalley.com](http://www.thomsongrassvalley.com)

**Booth: SU8076**



## IMAGE STABILIZER FOR-A IVS-70HS

Supports 1080i and 720p HD formats, as well as SD 480i, 525/60 and 625/50 signals; features 4:2:2 processing and image enhancement circuitry; electronically corrects existing videotapes as well as live shots automatically; compatible with digital component I/O; corrects unwanted motion while maintaining camera pan-and-tilt movements; includes NTSC and PAL support.

714-894-3311; [www.for-a.com](http://www.for-a.com)

**Booth: C5628**



## DIGITAL COLOR CORRECTOR FOR-A DCC-70HS

Digital I/O system offers balanced, differential, or sepia color enhancement of all types of video signals; supports SD and HD signals; offers 14-bit, 4:4:4 component signal processing circuitry and the ability to control black, white and gamma (RGB) levels individually or as a group; processes signals in the 1080i and 720p HD formats.

714-894-3311; [www.for-a.com](http://www.for-a.com)

**Booth: C5628**



## HD MONITOR

### ERG Ventures HDM-EV80D

8.4-inch, rack-mounted HD monitor offers enhanced color and gamma adjustment functions, additional framing markers and a memory preset function; HD/SD inputs can be intermingled; offers four input options and a DC output to simplify wiring two monitors consecutively from one DC unit; features front-panel volume adjustment.

+81 3376 081 61; [www.erg-ventures.co.jp/e](http://www.erg-ventures.co.jp/e)

**Booth: SU10609**



## HD/SD LCD MONITOR

### Astro Systems DM-3005

Supports HD-SDI, HD analog YPbPr and SD-SDI inputs at 1080i, 1080sf, 1080p, 720p, and 480i; front-panel buttons allow for easy adjustment of chroma, brightness and contrast; vertical display of the image can be flipped upside down for mounting convenience; color temperature can be selected for application needs, with precise marker identification for special formats and needs.

818-848-7722; [www.astro-systems.com](http://www.astro-systems.com)

**Booth: SU7831**

*"Omneon is the one server that fits our tight budget, meets all our requirements today and supports us as our needs change."*

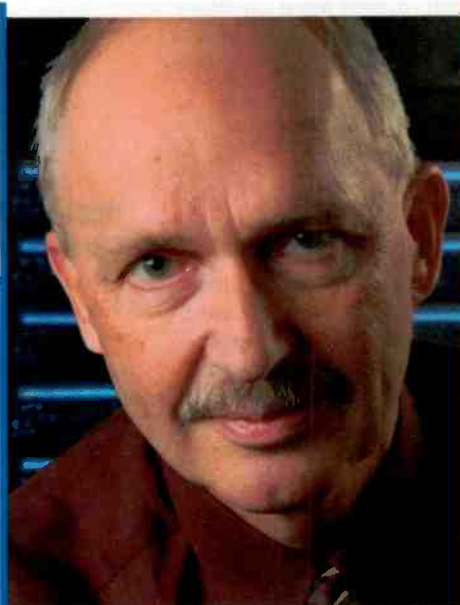
**Helge Blucher**

Vice President  
Detroit Public Television

With Omneon SPECTRUM™ media servers, Detroit Public TV implemented a solution that works across their entire operation, was configured precisely to their needs, and can expand in smart, manageable increments—all without replacing the original system and in many cases, without taking the system off-line.

To learn more about the unique advantages of an Omneon SPECTRUM media server system visit [www.omneon.com](http://www.omneon.com).

NAB2004  
Booth SU7466



It's not just  
what you serve.

It's who.

  
**OMNEON**  
VIDEONETWORKS

## PCI-X BOARD

### DVS Centaurus

Replaces the video I/O boards SDStationOEM and HDStationOEM; designed for handling uncompressed SD, HD and 2K video streams; supports all popular formats, color spaces, frame rates and resolutions up to 2048x1556 pixels.

818-846-3600; [www.dvs.de](http://www.dvs.de)

**Booth: SL4713**



## MULTICHANNEL AUDIO MONITOR AND CONVERTER

### Wohler AMP2-S8MDA

Features dual-mode HD/SD-SDI inputs; provides two SDI inputs on BNCs that can accept either an HD-SDI or an SD-SDI input; also features eight tri-color LED bargraphs for professional level metering, front panel group and channel selection with an intuitive user interface, and an AMP series self-powered speaker system; eight channels of analog and AES audio out demuxed from the HD/SD-SDI inputs.

650-589-5676; [www.wohler.com](http://www.wohler.com)

**Booth C6742**



## LCD RACK MOUNT MONITOR

### Marshall Electronics V-R191P-SDI

Has 16.7 colors, CRT style viewing angles and a bright 450-cd/m2 luminance display; includes direct access controls and selections, plus multi-format input capability for SDI, composite, Y/C, and scalable; can display 16:9 or 4:3 images; is HD ready for 720P or 1080i viewing with an optional HDSDI adapter (BC-0909-DA).

800-800-6608; [www.lcdracks.com](http://www.lcdracks.com)

**Booth: SU11614**

## LCDS

### Clarity Visual Systems Bobcat

Offers WXGA resolution and cabinet depth of less than four inches; accommodates VGA, DVI, composite and S-video inputs; glass faceplate designed to reduce glare and reflectivity; includes an optional touch screen, integrated computer mount and multiple bezel color options.

503-570-0700; [www.clarityvisual.com](http://www.clarityvisual.com)

**Booth: SL2163**



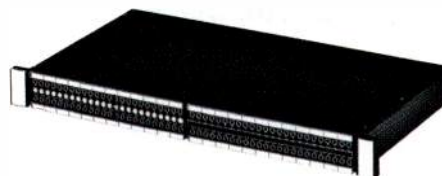
## LCD MONITOR

### Marshall Electronics V-R171P-SDI

17-inch monitor has CRT style viewing angles and a bright 450 cd/m2 luminance display; includes multiformat input capability for SDI, composite, Y/C and scalable WXGA; features a built-in digital-to-10-bit analog converter plus three individual tally lamps; can display 16:9 or 4:3 images; is HD ready for 720P or 1080i viewing with an optional HDSDI adapter.

800-800-6608; [www.lcdracks.com](http://www.lcdracks.com)

**Booth: SU11614**



## PATCHBAY

### Switchcraft EZ Norm Patchbay

Change the normalizing configuration of an audio patchbay by turning a cam mechanism with a standard screwdriver; normals can be changed from full to half to none in one process; opaque designation strips allow the cam to be hidden from view; backpanel options include PPT punchdowns, EDAC style connectors, and three-pin style.

773-792-2700; [www.switchcraft.com](http://www.switchcraft.com)

**Booth: C3322**



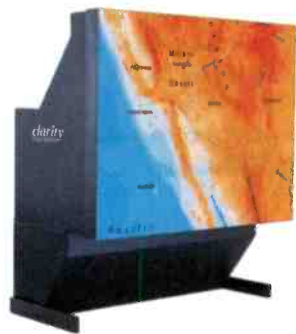
## HIGH-DEFINITION PCI DECODERS

### Optibase VideoPlex HD

Designed to enable playback of high-definition MPEG-2 video streams; supports all 18 ATSC formats; supports multiple HD video standards such as 1080i or 720p, various audio formats and standard frame rates including 24fps; available for shipment with either DVI or SDI outputs.

800-451-5101; [www.optibase.com](http://www.optibase.com)

**Booth: SL2463**



## LCDS

### Clarity Visual Systems Lion and Puma

Feature Clarity's new electronics engine; include the UNGA resolution and also support the native XGA resolution; accommodate up to 12 inputs; include multi-lamp configurations for fail-safe operation, 30-inch cabinet depths with minimal or no rear clearance requirements, and full front or rear access to all components for easy serviceability.

503-570-0700; [www.clarityvisual.com](http://www.clarityvisual.com)

**Booth: SL2163**

## MULTI-SOURCE DISPLAY PROCESSOR

### Leitch NEO SuiteView

Capable of rendering multiple video and computer signals in real time to high-resolution computer monitors, plasma displays or projection display systems; fully integrated with Leitch's Command Control System (CCS); allows users to create a customized, systemwide monitoring solution for 24-hour operation.

859-371-5533; [www.leitch.com](http://www.leitch.com)

**Booth: SU9868**

## INTEGRATED SYSTEMS SOLUTIONS

### T-Systems Media&Broadcast

Offers turnkey studio solutions and modern, PC-based processes; offers broadband transmission services and integrated studio solutions, including remote broadcast, satellite solutions, streaming media solutions, digital TV and distribution networks.

+49 7618 806 2392; [www.t-systems-mediabroadcast.com](http://www.t-systems-mediabroadcast.com)

**Booth: C9613**

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**MARCH 2004**

## DIGITAL LIVE TELEVISION CONSOLE

### Wheatstone D-5.1

Features any combination of analog and AES sources, two hot key sources per fader, complete recall of every control parameter, talkback to any output, and 5.1 surround inputs, outputs and monitors; internal signal routing puts any source to any fader; operations controls are designed for news.

252-638-7000; [www.wheatstone.com](http://www.wheatstone.com)

**Booth: N2802**

## QUAD 8VSB FREQUENCY-AGILE DEMODULATOR

### Videotek DDM-800

Capable of receiving HD and SD 8VSB DTV signals and converting them to standard DVB-ASI output format; the base unit has the flexibility to add up to three additional, independent DTV receiver/demodulators via optional modules; the MPEG-2 ASI output streams can then be locally processed, multiplexed, passed to a data distribution network or sent over cable facilities via QAM modulators.

610-327-2292; [www.videotek.com](http://www.videotek.com)

**Booth: C4717**



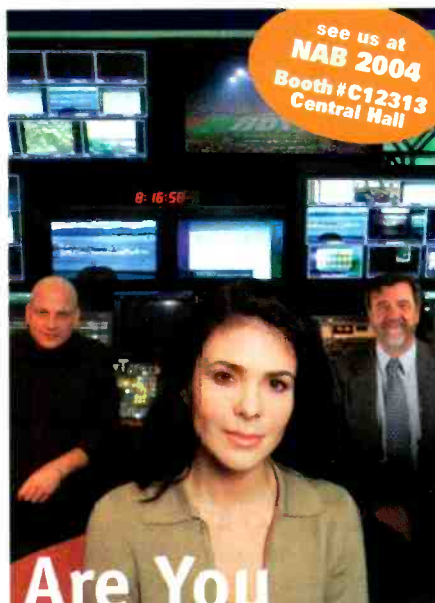
## TIMING GENERATOR WITH GENLOCK

### Gennum GS4911

Generates clocks and timing signals that are low in jitter and synchronized; the chip is pre-programmed for the most common audio, video and graphic standards and is user-programmable for other standards, up to a maximum of 165MHz clock.

905-632-2999; [www.gennum.com](http://www.gennum.com)

**Booth: C8119**



## Are You HDTV Ready?

The viewers at home sure are. Broadcasters now face the daunting challenge of modernizing their broadcasting infrastructure to deliver digital.

One design, consulting and integration firm is leading the way. Venue Services Group's roster of top broadcast engineering professionals are experts in HD integration and infrastructure, delivering everything from the first all-HDTV sports broadcast to the world's first native 720p mobile truck.

When your organization is ready for HDTV modernization, call on the leaders with real HDTV experience since 1998.

## RECENT PROJECTS

HD 4 Mobile Unit (NMT) used for ABC's Monday Night Football

Fox Sports Net New England control room and studio

HDTV Retrofit Cabling Infrastructure -- Fenway Park

Technology Consultant for the NFL



Venue Services Group

914-682-2111 [www.vsg.tv](http://www.vsg.tv)



VSG is a wholly owned subsidiary of National Mobile Television.  
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## CONSOLE SYSTEM

### Forecast Consoles MASTERail 2.0

New version of MASTERail, the modular-based console system that is easily modified to match a facility's ever-changing equipment.

800-735-2070; [www.forecast-consoles.com](http://www.forecast-consoles.com)

**Booth: SU11639**

## MODULAR FRAME

### Broadcast Technology PC GUI

Allows low-cost remote control of individual 3000 series frames; the GUI represents each module visually, including all status and alarm LEDs for low-cost management without need for an SNMP control system; all 3000 series modules can be configured from the GUI.

+44 1264 332 633; [www.btl.uk.com](http://www.btl.uk.com)

**Booth: SU6752**



## DOLLY

### Panther Classic dolly

Hybrid between the Evolution dolly and its predecessor the Super Panther III offerse new accessories, such as the Cable Head for Panther Broadcast's Pixy crane, which provides the operator with a simple, mechanical two-axis remote head; allows smooth manual pan-and-tilt with no electrical power needed; Multi Mount can carry 45lbs.

+49 8961 390 033; [www.panther.tv](http://www.panther.tv)

**Booth: C8235**



## BROADCAST RESOURCE MANAGEMENT SOFTWARE

### ScheduALL VisuALL 4.42

Includes greater control over existing modules such as personnel time management, asset library management and project-based reports; enhancements in the Developer's Toolkit give users greater control of screen layouts and improved troubleshooting ability, as well as providing added security and control features.

800-334-5083; [www.scheduall.com](http://www.scheduall.com)

**Booth: SU11611**

## DIGITAL VIDEO MONITOR

### Videoframe Interface series VNODES

Three new interfaces introduced; series includes interfaces for the Grass Valley TEN-XL router, Snell & Wilcox RollNet device and SwitchPak switcher.

530-477-2000; [www.videoframesystems.com](http://www.videoframesystems.com)

**Booth: SU8648**



## DIGITAL VIDEO MONITOR

### Videoframe SDI VNODE

Monitors digital video and embedded audio; can integrate into SNMP-based systems; has a wide range of software interfacing options, implemented protocols and 100Base-T Ethernet.

530-477-2000; [www.videoframesystems.com](http://www.videoframesystems.com)

**Booth: SU8648**

## SYSTEMS INTEGRATION SERVICES

### A.F. Associates (AFA)

Services include design and integration of turnkey systems for broadcast, cable and satellite clients; able to offer expanded technology resources through the acquisition of the former Sony Systems Integration Center; the Systems and Technology organization offers complete design and construction services and support, as well as mission-critical field service and network management.

201-767-1200; [www.afassoc.com](http://www.afassoc.com)

**Booth: C4722**

## VIRTUAL MONITOR WALL

### Avitech Media Command Center

Capable of handling 120 video sources on a single display and up to 960 video sources in a single system; output resolution can vary from 800x600 to 1600x1200.

877-284-8324; [www.avitechvideo.com](http://www.avitechvideo.com)

**Booth: SU6779**

## VIDEO CHARACTER INSERTER

### ESE ES-452

Inserts SMPTE/EBU time and user bits into video; reads 1/20 to 10x play speed, bidirectional; switchable background mask; keyed or transparent display.

310-322-2136; [www.es-web.com](http://www.es-web.com)

**Booth: C2522**

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## DIGITAL VIDEO/AUDIO MONITOR

### Videoframe A/V VNODE

Monitoring and I/O device with a wide range of software interfacing options, implemented protocols and 100Base-T Ethernet; integrates into SNMP-based systems.

530-477-2000; [www.videoframesystems.com](http://www.videoframesystems.com)

**Booth: SU8648**

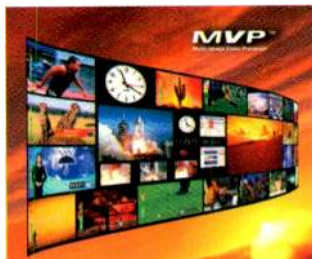
## EDITING CONSOLE

### Forecast Consoles MASTERail NLE

Incorporates the MASTERail technology to provide all the benefits of MASTERail's modular-based console system.

800-735-2070; [www.forecast-consoles.com](http://www.forecast-consoles.com)

**Booth SU11639**



## MULTI-VIDEO DISPLAY PROCESSOR

### Evertz MVP

HD, SD and composite analog inputs on the same BNC; multiple scalings of any input displayed across single, dual or multiple displays; VistaLINK enabled (SNMP).

905-335-3700; [www.evertz.com](http://www.evertz.com)

**Booth: SU11827**

## SDI-TO-DVI ADAPTER

### Gefen Ex-tend-it

Adapter converts SD and HD (SDI and HD-SDI serial digital video) to digital visual interface for DVI displays; supports PAL, NTSC, 720p, 1080p and 1080i formats.

800-545-6900; [www.gefen.com](http://www.gefen.com)

**Booth: SL5857**

## VIDEO MONITOR

### Kroma Telecom BM6010

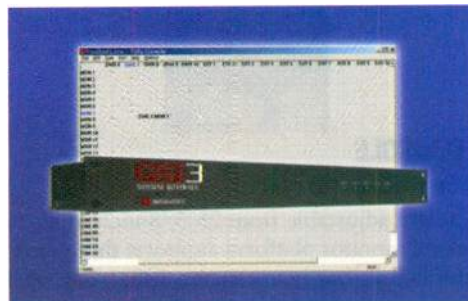
Ten-inch color monitor has two component video inputs and two SDI connectors with passive loop-through; displays 4:3, 16:9, underscan, delay H+V, blue only.

+34 9166 145 14; [www.kromatelecom.com](http://www.kromatelecom.com)

**Booth: C3136**

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## TALLY INTERFACE

### Image Video GSI-3 Tally Interface

Tally interface for production switchers; under-monitor display inputs; provides tally routing and expansion up to 240x240.

416-750-8872; [www.imagevideo.com](http://www.imagevideo.com)

**Booth: C5321**



## MULTI-IMAGE DISPLAY SYSTEM

### Image Video VxV-16

Combines up to 16 multiformat video sources on any high-resolution display; Inputs are software selectable for composite or digital formats.

416-750-8872; [www.imagevideo.com](http://www.imagevideo.com)

**Booth: C5321**



## UNDER-MONITOR DISPLAY

### Image Video RDU-1710

1RU high and 0.9-inch deep display has 160x160 dot resolution; can display two lines up to 32 characters per line; Western, Chinese, Japanese and Arabic character sets.

416-750-8872; [www.imagevideo.com](http://www.imagevideo.com)

**Booth: C5321**



## STUDIO CONSOLE TBC Consoles "Bone"

Desktop height adjustable from 25-5/8-inch to 39-1/8-inch; recessed monitor platform supports three-inch by 21-inch monitors; two-bay base cabinet, 10RU/bay, open back, laminate riser.

888-266-7653; [www.tbconsoles.com](http://www.tbconsoles.com)

**Booth: SU8068**

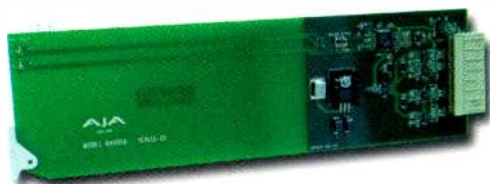


## STUDIO CONSOLE Winsted LCD 3 Rack Mount series

Console has low 39-inch profile and offers 21 inches of rack space; allows operators to see over monitors as they work; 10-inch-deep top modules; zero-clearance corners.

800-447-2257; [www.winsted.com](http://www.winsted.com)

**Booth: SU10640**



## DISTRIBUTION AMPLIFIER AJA RH10DA

1x8 relocking DA for both SDI and HD-SDI inputs; automatically switches between SD and HD modes.

800-251-4224; [www.aja.com](http://www.aja.com)

**Booth: SL3654**

## TBCs, frame syncs, conversion equipment



## TRI-LEVEL HD SYNC MODULE Sigma Electronics HD402

New option for the TSG-470 and TSG-470D (shown above) master sync and test pattern generator; provides three simultaneous additional reference outputs for NTSC, PAL and HDTV formats, all clock-locked together and timeable with respect to the master clock; outputs are independently selectable for reference format and relative timing.

866-569-2681; [www.sigmaelectronics.com](http://www.sigmaelectronics.com)

**Booth: SU11043**

## DIGITAL VIDEO PRODUCT LINE Sigma Electronics DV5000 series

Incorporates Sigma Electronics' DATC, OctaStream, OctaBus and the S5000 signal management frame; holds up to 10 modules and allows full, unrestricted access to all modules; series includes the DV5515 frame synchronizer and latency control module, incorporating memory sufficient to delay HD video for up to 10Hzx25Hz frames; also includes the DV5505, a DA with one SDI input and eight SDI outputs at a serial data rate of 270Mb/s.

866-569-2681; [www.sigmaelectronics.com](http://www.sigmaelectronics.com)

**Booth: SU11043**

## AUDIO/VIDEO DELAY Prime Image D1 Pipeline

Features up to 10 seconds variable delay standard with up to 20 seconds additional delay available; has 10-bit video processing; primary and auxiliary/alternate video inputs and 24-bit audio processing; has AES/EBU audio, digital or analog; includes four auxiliary/alternate audio inputs; audio can be switched with or independent of video; fits in standard 2U-high rack space; has a built-in synchronizer.

408-867-6519; [www.primeimageinc.com](http://www.primeimageinc.com)

**Booth: C5634**

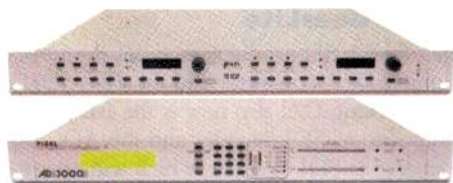
## DIGITAL PROCESSING SYNCHRONIZER Leitch DPS-575

Can be used for digital noise reduction, bidirectional analog-to-digital transcoding, linear keying, SDI audio embedding/de-embedding, and time base correcting in broadcast, cable and telco facilities, as well as in mobile production environments.

859-371-5533; [www.leitch.com](http://www.leitch.com)

**Booth: SU9868**





## UNIVERSAL 10-BIT SYNCHRONIZER

Pixel Instruments VS-5200

Comes with multiformat inputs and outputs and a built-in heterodyne TBC; serial digital, composite analog, component analog and Y/C selectable inputs are provided and simultaneous outputs in the same formats are standard; allows user to transcode from any format to any format; has one or two independent channels in a 1RU chassis.

408-871-1975; [www.pixelinstruments.tv](http://www.pixelinstruments.tv)

**Booth: SU7476**



## VIDEO CONVERTERS

**Ensemble Designs BrightEye**

Interface to the full range of SD video formats: SDI, analog component, analog composite and Y/C (S-video); offers fiber-optic I/O choices; NTSC and PAL standards are supported with automatic input sensing and switching; all analog I/O is performed at 12 bits of resolution.

530-478-1830; [www.ensembledesigns.com](http://www.ensembledesigns.com)

**Booth: SU11919**



## 10-BIT DUAL-CHANNEL IMAGE PROCESSOR

Genum GF9350

Handles conversions of all SD, HD and graphics signals, including motion adaptive de-interlacing of HDTV 1080i signals; the unit's dual-channel architecture allows for alpha blending, squeezeback, logo insertion and mix effects, in addition to applying flawless processing simultaneously to both inputs.

905-632-2999; [www.genum.com](http://www.genum.com)

**Booth: C8119**



## SIGNAL INTEGRATION SYSTEM

**Ensemble Designs Avenue**

1RU or 3RU frame; allows any combination of HD video, SD video, DVB-ASI and audio modules in the same frame; modules include embedders, synchronizers, converters, routers, sync gens and protection switches.

530-478-1830; [www.ensembledesigns.com](http://www.ensembledesigns.com)

**Booth: SU11919**

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**Website: [www.idx.tv](http://www.idx.tv)**

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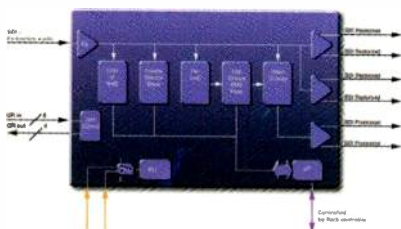
## INFRASTRUCTURE SYSTEM

### Snell & Wilcox IQ Modular

Expanded infrastructure system adds converters, synchronizers, DAs, routers and audio modules, all capable of operating in either SD or HD; all new modules have built-in signal integrity protection to guarantee that the output of each IQ Modular product is continuous, even when the input fails.

408-260-1000; [www.snellwilcox.com](http://www.snellwilcox.com)

**Booth: C6421**



## SIGNAL INTEGRITY MONITOR

### Axon Digital Design SIM10

Designed for the Synapse modular range; checks the integrity of the SDI signal and gives a monitor output that shows any reported errors, as well as indication of several metadata values; the four reclocked outputs make the card an ideal input card to a central router with direct connection to a routed monitor wall.

+31 1351 166 66; [www.axon.tv](http://www.axon.tv)

**Booth: SU7548**

## ASPECT RATIO CONVERTER

### Digital Vision DVNR511

Provides seamless conversion of picture formats typically required when mixing 4:3 and 16:9 program material in widescreen digital TV, satellite, cable or terrestrial networks; features an integral frame synchronizer, scene change and 3:2 film phase output, six-channel audio embedder, and broadcast-quality adaptive PAL/NTSC decoding.

818-769-8111; [www.digitalvisionusa.com](http://www.digitalvisionusa.com)

**Booth: C6142**

## MULTIFORMAT SYNC CHANGEOVER UNIT

### Videotek VSX-11D

Operates in concert with two standard sync generators of any format; monitors the quality of the signals produced by both sync generators; in the event either sync generator has a failed signal; the unit automatically switches its outputs to the generator that is correctly producing synchronization signals.

610-327-2292; [www.videotek.com](http://www.videotek.com)

**Booth: C4717**

## HD/SD CONVERTERS

### Ross Video GearLite

New range of HD/SD products includes the DAC-9213 multi-definition D/A converter and the SRA-9201 multi-definition reclocking DA; also new is the ADC-8035 dual analog composite-to-SDI decoder and the ADC-9033 universal analog-to-SDI decoder, which will accept SD composite, component or Y/C analog input and produce a broadcast-quality serial digital output.

613-652-4886; [www.rossvideo.com](http://www.rossvideo.com)

**Booth: SU11029**

## DUAL SDI FRAME SYNCHRONIZER

### Brick House Video Neptune

Comprises two independent SDI framestore synchronizers in a 1RU chassis; designed with standard 10-bit SDI inputs and a range of analog and digital input options; also includes SDI and composite analog (monitoring) outputs; can operate as a stand-alone unit or be genlocked to station reference.

+44 23-8067-6026; [www.brickhousevideo.com](http://www.brickhousevideo.com)

**Booth: SU8546**

## A/V SYNCHRONIZER

### Fortel DTV FS-516

Transcode, synchronize and process a variety of source types: NTSC, PAL or SDI with analog, AES, embedded or Dolby audio; create SDI with embedded or AES audio out.

800-530-5542; [www.fortelDTV.com](http://www.fortelDTV.com)

**Booth: SU7477**

## NTSC DECODER

### Fortel DEC-510

Modular card provides optimal conversion from NTSC to SDI using QuadraComb filtering.

800-530-5542; [www.fortelDTV.com](http://www.fortelDTV.com)

**Booth: SU7477**



## COLOR CORRECTOR AND LEGALIZER

### Crystal Vision CoCo104

Features an auxiliary output that can be connected to a monitor to allow previews of any adjustments; can wipe horizontally or vertically between the processed and unprocessed signal; overall gamma is used to lighten or darken the picture without crushing the blacks or the whites; also allows independent adjustment of red, green and blue gamma.

+44 1223 497 049; [www.crystalvision.tv](http://www.crystalvision.tv)

**Booth: C7143**

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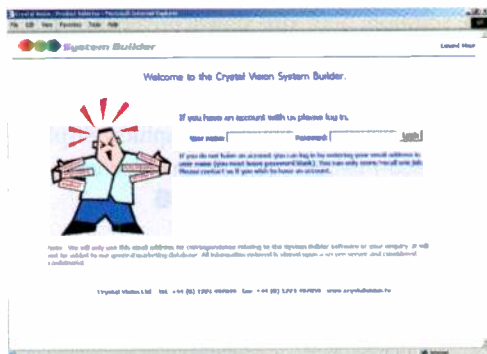
## MULTI-FUNCTION BOARD

### Crystal Vision SYNNER144

Combined synchronizer, tracking audio delay and embedder/de-embedder; audio and video can be timed to the local syncs and be embedded or de-embedded all within a single board; audio is delayed by the same amount as the video delay to avoid lip sync errors; is compatible with Dolby E; has analog and digital audio monitoring, and analog video monitoring.

+44 1223 497 049; [www.crystalvision.tv](http://www.crystalvision.tv)

**Booth: C7143**



## WEB-BASED SOFTWARE TOOL

### Crystal Vision System Builder

Run from a standard Internet Web browser; product selector helps users configure their systems by walking them through a series of screens where they select everything they need; choose an interface or keying product, in one of three ways.

+44 1223 497 049; [www.crystalvision.tv](http://www.crystalvision.tv)

**Booth: C7143**

## MULTI-FUNCTION BOARD

### Crystal Vision DEC105S

Combines a 10-bit composite PAL/NTSC or Y/C-to-SDI decoder with an SDI synchronizer; offers both SDI and analog inputs; accepts jittery or damaged signals; automatically switches to a tolerant 8-bit decoder when a non-stable signal is received; has a maximum of four SDI outputs, and loop-throughs for the composite and black and burst inputs.

+44 1223 497 049; [www.crystalvision.tv](http://www.crystalvision.tv)

**Booth: C7143**

## FORMAT CONVERTER

### Doremi Labs XDVI

Multiformat converter converts video between different computer scan rates, HD-SDI and standard-definition video; features DVI, SDI and HD-SDI inputs and outputs.

818-562 1101; [www.doremilabs.com](http://www.doremilabs.com)

**Booth: C2529**

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**MARCH 2004**

## HD COMPRESSION CODEC

### Evertz PKG7770MFC

Compresses one SMPTE 292M serial digital video signal and up to four AES channels of embedded or external audio into one SMPTE 305M-compliant output stream.

905-335-3700; [www.evertz.com](http://www.evertz.com)

**Booth: SU11827**

## SCAN CONVERTER

### Magni Systems MCP-601-A

Converts DVI and VGA signals from PCs to analog composite and component video signals; supports resolutions from 640x480 to 1600x1200.

800-237-5964; [www.magnisystems.com](http://www.magnisystems.com)

**Booth: SU8525**

## SCAN CONVERTER

### Magni Systems MCP-501-D

Converts DVI and VGA signals from PCs to SDI-601 digital video signals; supports resolutions from 640x480 to 1600x1200.

800-237-5964; [www.magnisystems.com](http://www.magnisystems.com)

**Booth: SU8525**



## ANALOG TO DIGITAL CONVERTER

### ISIS-Group SC-108

Converts from composite NTSC or PAL to 270Mb/s SDI; main processor board features eight independently configurable channels of composite NTSC or PAL to SDI conversion; offers a range of configuration options via the RS-232 port, uses the Hyper-terminal capabilities of a laptop or desktop computer or the optional GUI configuration tool.

530-477-2984; [www.isis-group.com](http://www.isis-group.com)

**Booth: C2039**

## FORMAT CONVERTER

### Teranex Volare 220

Offers format conversion (SD and HD), MPEG artifact removal and noise and grain reduction; 2RU high, PixelMotion de-interlacing; 3:2 insertion and deletion.

877-283-7263; [www.teranex.com](http://www.teranex.com)

**Booth: C3055**

## FORMAT CONVERTER

### Teranex XM

Modular converter uses array processing technology to perform up- and downconversion of source feeds to support a customer's format infrastructure.

877-283-7263; [www.teranex.com](http://www.teranex.com)

**Booth: C3055**

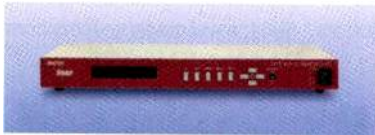


## UPCONVERTER AJA RH10UC

Converts SDI to HD-SDI with full 10-bit broadcast quality; supports SMPTE 259 SDI inputs and provides two equalized input loop outputs and four SMPTE 292 HD-SDI outputs; selectable output modes include 4:3 pillarbox, 14:9 with sidebars, 16:9 letterbox zoom and full (anamorphic).

800-251-4224; [www.aja.com](http://www.aja.com)

**Booth: SL3654**



## FRAME RATE CONVERTER Astro Systems SC-2055

Multi-rate line doubler/frame rate converter can accept HDTV, SDTV, DVI and analog signals and interlace them into a progressive video signal, as well as converting them to frame rate information; features 3:2 and 2:2 pull-down function for film/CG imagery; also includes original animation search feature, as well as image compensation.

818-848-7722; [www.astro-systems.com](http://www.astro-systems.com)

**Booth: SU7831**

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## Test & measurement

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## CHANNELIZER Sencore SLM 1456

Provides an analysis of each ad message sent and received, and logs all activity to insure digital signal measurements; includes testing capabilities with audible tone, leakage level adjustment and adjustable threshold.

800-SENCORE; [www.sencore.com](http://www.sencore.com)

**Booths: SU11011, C10343**

## MPEG ANALYZING PLATFORM

### Sencore MAP 1853

Allows the creation of transport streams for generating test files; is capable of playing and recording simultaneously multiple transport streams for test generation purpose; has the capability to multiplex, in real time, multiple elements; offers detailed real-time MPEG-2 analysis of a transport stream at the ASI maximum bit rate of 212Mb/s.

800-SENCORE; [www.sencore.com](http://www.sencore.com)

**Booths: SU11011, C10343**

## DVSTATION MONITORING PLATFORM MODULE

### Pixelmetrix DigiCipher II

Provides OQPSK and QPSK modulation quality monitoring in one solution; performs downconversion, demodulation and a comprehensive suite of RF, modulation, transport stream and content validation tests; features a combination of real-time signal measurements with user-configurable alarm thresholds and graphical displays.

866-749-3587; [www.Pixelmetrix.com](http://www.Pixelmetrix.com)

**Booth: C9146**



## DISPLAY AND ANALYSIS TOOL

### Pixelmetrix DVScope

Supports all SDTV and HDTV serial digital video formats, DVScope provides all the functions of an advanced SDI test and monitoring system; the system consists of different components: DVScope SDI, the base system consisting of a 1U rack-mount PC with an SDI interface; DVScope View, a digital waveform monitor and signal analyzer; DVScope Gen, a full-motion SDI test pattern and sequence generator.

866-749-3587; [www.Pixelmetrix.com](http://www.Pixelmetrix.com)

**Booth: C9146**



## MULTI SDI MONITOR

### Leader Instruments

For HD/SD-SDI signals; features an XGA TFT color LCD in an adjustable tilt front panel; tests 14 HD-SDI and SD-SDI formats with digital processing compliant to SMPTE 259M; SMPTE 292M and SMPTE 296M; input format, colorimetry and trilevel or black burst external reference inputs are automatically detected.

714-527-9300; [www.leaderusa.com](http://www.leaderusa.com)

**Booth: C4142**

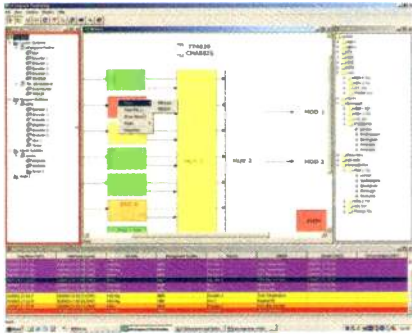
## HD ONSCREEN MONITOR

### Videotek VTM-440 HD/SD

Supports HD-SDI, SD-SDI and analog composite; ideal for applications that do not require HD/SD eye pattern analysis; A/B looping video inputs are provided for flexibility when integrating into existing signal paths; all popular HD and SD signal formats are supported with auto-detect capability; the XGA and DVI outputs each support loop-through capability.

610-327-2292; [www.videotek.com](http://www.videotek.com)

**Booth: C4717**



## NETWORK-MONITORING SYSTEM

### TANDBERG TV nCompass 3.0

Software monitors the health of MPEG services across a video network; inspects actual service at probe points and compares with required transmission.

407-380-7055; [www.tandbergtv.com](http://www.tandbergtv.com)

**Booth: SU8755**

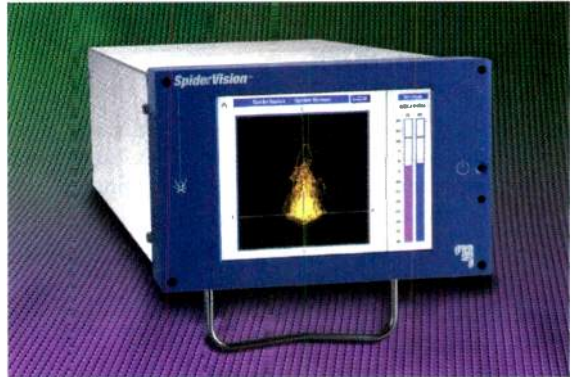
## AUDIO ANALYZER

### Rohde & Schwarz UVP

Digital audio interfaces up to a 192kHz sampling rate; features expanded measurement bandwidths; can perform several measurement functions simultaneously.

800-833-9200; [www.rsd.de](http://www.rsd.de)

**Booth: C2532**



## AUDIO MONITORING SYSTEM

### Modulation Sciences SpiderVision

Comprehensive display SpiderMesh accurately depicts mono, stereo, surround and 5.1 compatibility on a single, full-color screen in an easy-to-read mesh pattern; SpiderVector delivers a simplified "central tendency" of SpiderMesh displayed as two vectors — front and surround.

800-826-2603; [www.modsci.com](http://www.modsci.com)

**Booth: C3943**

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NAB Booth SL3654

**AJA**

800.251.4224  
530.274.2048  
Grass Valley, California  
[www.aja.com](http://www.aja.com)



## Full 10-bit broadcast quality

**RH10UC**—SDI to HD-SDI upconverter with motion adaptation and genlock

**RH10UDC**—SDI/HD-SDI universal up, down, and cross converter, plus SD/HD framesync

**RH10MD**—HD-SDI to SDI downconverter and HD distribution amplifier

**RH10DA**—1x8 reclocking DA for SDI and HD-SDI, auto-input selection

**HD10C2**—SDI/HD-SDI dual rate D/A mini-converter

**HD10CDL**—Dual link D/A mini-converter

# DTV marketplace

## TUNER MODULE

### Pixelmetrix DVStation

Provides QAM modulation quality monitoring as well as transport stream monitoring in one system solution; the module pair performs QAM signal demodulation and a comprehensive suite of continuous RF, modulation, transport stream and content validation tests.

866-749-3587; [www.Pixelmetrix.com](http://www.Pixelmetrix.com)

**Booth: C9146**

## WAVEFORM RASTERIZER

### Tektronix WVR600

Supports mixed analog and digital, video and audio; fitted with alarm and logging capabilities; uses Flex Vu technology and comprehensive error alarms and logging.

800-426-2200; [www.tektronix.com](http://www.tektronix.com)

**Booth: C7128**

## DIGITAL PROCESSING ENGINE

### Hamlet Flexiscope

HD capability; has a flexible architecture with low-power consumption; includes a high-quality 3.5-inch TFT display.

+44 1494 729 728; [www.hamlet.co.uk](http://www.hamlet.co.uk)

**Booth: C3243**

## TV transmitters



## FLYWHEEL UPS

### Active Power CleanSource

65- to 4000kVA systems protect broadcast networks, transmitters and microwave uplinks from power disturbances; stored energy is instantly converted to electricity for powering the critical load during short power fluctuations; UPS transfers to a stand-by generator for continuous power during prolonged outages; shields transmitter tubes against faulty power and automatically switches to bypass during "crowbar" events.

512-836-6464; [www.activepower.com](http://www.activepower.com)

**Booth: C1217**

## UHF GYSEL POWER COMBINER

### MYAT iDT Star

Integrated system offers substantial advantages over hybrid power combiners by eliminating expensive phased lines and complex switching schemes needed to maintain output during faults; substantially better fault tolerance than hybrids, allowing users to maintain greater signal strength and often perform on air maintenance if a transmission component fails.

201-767-5380; [www.myat.com](http://www.myat.com)

**Booth: C1415**

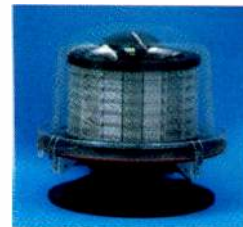
## DATACASTING SYSTEM

### Harris Dataplus

Network-agnostic datacasting system offers content providers the ability to use unused digital bandwidth for new services for media-rich data such as public safety information, educational material, advertising to remote locations and multimedia on demand to large numbers of receivers without expensive Internet connections.

513-459-3400; [www.broadcast.harris.com](http://www.broadcast.harris.com)

**Booth: C1906**



## LED FLASHING RED BEACON

### Dialight L864

Marks obstacles that pose hazards to aircraft navigation; designed to replace 300mm incandescent obstruction lighting fixtures; mounts onto standard bolt patterns; lens design provides 360-degree visibility; operate in flashing or steady-state mode; creates no EMI/RFI; weather- and corrosion-resistant lamp assembly and housing resist shock and vibration; is available in both 120 and 240 VAC versions.

732-919-3119; [www.dialight.com](http://www.dialight.com)

**Booth: N2834**



## MULTICHANNEL SLATE

### Harris Streamslate

Allows a user to specify the monitored PIDs, which will be replaced with a slate when it is absent from the incoming stream; reduces the probability of customers having blank screens; slates can vary in size, content and bandwidth — all user definable; maintains valid PMT and PAT tables, ensuring that content is properly decoded by the receiving device.

513-459-3400; [www.broadcast.harris.com](http://www.broadcast.harris.com)

**Booth: C1906**

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## CONDITIONING POWER SYSTEM

### Staco Energy Products FirstLine

Protects against 98 percent of all power problems; provides protection from voltage fluctuations, brownout conditions, harmonics and transient surges; completely isolates the connected load from the primary AC supply, protecting it from voltage sags, high-voltage spikes, transients, and frequency variations; can be configured for 208, 400 or 480 VAC applications.

937-253-1191; [www.stacoenergy.com](http://www.stacoenergy.com)

**Booth: C1211**

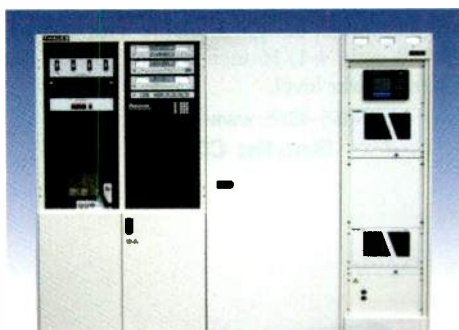
## HDTV ENCODER

### Tiernan Radyne-Com Stream THE15A

Provides compliant ATSC or MPEG-2 transport streams; when operating under the MPEG-2 profile, transport stream rates of up to 108Mb/s are available; supports one HDTV service in 1080i, 720p or 480p; video input is a 1.5Gb/s SD, per SMPTE-292M; video encoding process provides motion estimation across all picture areas; factory configurable for 4:2:2/4:2:0.

602-437-9620; +44 1420-540-233; [www.radynecomstream.com](http://www.radynecomstream.com)

**Booth: SU11300**



## MSDC-IOT UHF DIGITAL TRANSMITTER

### Thales Broadcast & Multimedia DCX Paragon

Available in oil- and liquid-cooled versions for both NTSC and DTV operation; for high-power UHF stations; can be twice as efficient as a conventional IOT and four times as efficient as a solid-state transmitter; has increased reliability because it uses Soft Arc Technology instead of a crow bar.

413-998-1116; [www.thales-bm.com](http://www.thales-bm.com)

**Booth: C4709**

## ANTENNA SYSTEMS SERVICES

### Radian

Services include designing, manufacturing, and installing guyed and self-supported towers and antenna systems for television broadcast systems; can manufacture and install towers to the maximum allowed height of 2049 feet.

905-212-8200; [www.radiancorp.com](http://www.radiancorp.com)

**Booth: C5014**

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**MARCH 2004**



## VHF TRANSMITTER

### Thales Broadcast & Multimedia VHF Optimum

Features a new fully integrated cabinet design that houses the entire transmitting system and its cooling devices; the cabinet can house an analog or digital, air-cooled or liquid-cooled transmitter; architecture is easily upgradeable from NTSC to DTV.

413-998-1116; [www.thales-bm.com](http://www.thales-bm.com)

**Booth: C4709**



## UNINTERRUPTIBLE POWER SYSTEM

### MGE UPS Systems EPS8000

Provides online backup at power ratings up to 800kVA; excellent engine generator compatibility assures smooth operation for transmitters while providing protection from crowbar events; features an informative graphic interface.

714-557-1636; [www.mgeups.com/us](http://www.mgeups.com/us)

**Booth: S21869**

## CIRCUIT ASSEMBLIES

### L-3 Communications Electron

Designed for CEA and IOT tubes; input cavity has been redesigned to improve reliability and performance; features an optimized system gain and input VSWR; input and output assemblies can be supplied separately; cavities are compatible with most "build-up" style tubes supplied by other tube OEMs.

570-326-3561; [www.edd.tw.l-3com.com](http://www.edd.tw.l-3com.com)

**Booth: C1422**



## UHF ANTENNA

### Dielectric TFU-WB

Designed for bandwidth requirements of up to 30 channels; typical configuration is a directional array with a directivity of 1.9 times; available in high-power (20- to 80kW) and low-power (5- to 20kW) with configurations of eight to 32 bays; is supplied with a full radome and can be used in top- or side-mounted configurations.

207-655-4555; [www.dielectric.com](http://www.dielectric.com)

**Booth: C7806**

## IOT

### Thales TH 792 and TH 792 CD

Available in both standard and depressed-collector versions; delivers 84kW NTSC and 35kW 8VSB; features high efficiency and up to 60 percent for the depressed-collector (CD) model.

703-838-9685; [www.thalesgroup.com](http://www.thalesgroup.com)

**Booth: C5412**



## ANALOG TRANSMITTERS

### L-3 Communications Electron Devices CEA 80

Modified version of the Constant Efficiency Amplifier tube; works in common mode; performance is equal to an IOT; gain, linearity, sync compression; is capable of 55 percent efficiency in analog service.

570-326-3561; [www-edd.tw.l-3com.com](http://www-edd.tw.l-3com.com)

**Booth: C1422**

## FILTER

### Dielectric high-power harmonic filter

Uses waffle iron technology for high-power handling, high isolation in a compact design; available with coaxial input sizes of 3-1/8-inch, 4-1/16-inch and 6-1/8-inch depending on the system power level.

207-655-4555; [www.dielectric.com](http://www.dielectric.com)

**Booth: C7806**

## DEPRESSED-COLLECTOR IOTS

### Acrodyne Industries (AI) Quantum

De-ionized water-cooling eliminates hazards associated with circulating oil systems; glycol is eliminated from the cabinet environment; uses plug-in style MSDC IOTs, both three- and five-stage; supports global standards: analog (NTSC/PAL/SECAM) and digital (ATSC and DVB-T).

888-881-4447; [www.acrodyne.com](http://www.acrodyne.com)

**Booth: C3836**



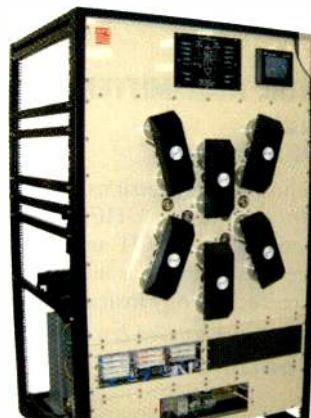
## ANTENNAS

### MCI Broadcast UHF and VHF antennas

Both antennas are broadband; UHF bandwidth is from 470MHz to 860MHz; can combine more than one channel into a single antenna; provides the ability to combine both NTSC and DTV signals into one antenna or more than one station can use the same antenna.

866-329-3394; [www.mcibroadcast.com](http://www.mcibroadcast.com)

**Not attending**



## LOW-POWER UHF ANTENNA

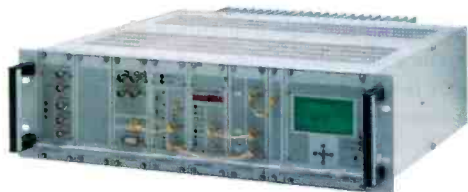
### RFS super-turnstile antenna

Omni-directional, super-turnstile batwing antenna features low profile; the fully radomed antenna supports the entire UHF band (470- to 860MHz).

203-630-3311; [www.rfsworld.com](http://www.rfsworld.com)

**Booth: C8617**



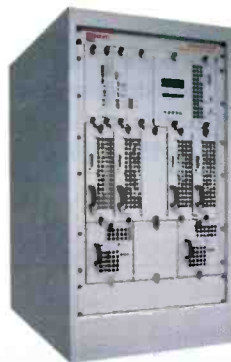


**DIGITAL MODULATOR**  
**Screen Service Italia**  
**"Dual-mode" digital modulator**

Software enables users to switch between analog and digital transmission with no alignment or tuning at all; can be switched manually or by means of a dry-contact switch, by remote control and/or by a command inserted into the feeding transport stream.

+39 0303 582 225; [www.screen.it](http://www.screen.it)

**Booth: N4312**



**LOW-POWER DIGITAL/ANALOG TRANSMITTER**  
**Axcera Innovator LX**

Features modular LDMOS amplifiers that cover the entire UHF band with no retuning; common components allow station owners to minimize spare parts stock; all Innovator LX models can be upgraded to high power with nearly 100 percent reuse; available in both analog and digital models.

724-873-8100; [www.axcera.com](http://www.axcera.com)

**Booth: C8606**

**DIGITAL MSDC IOT TRANSMITTER**  
**Harris PowerCD**

Cool Fuel filtering and correction system enhances transmitter efficiency and allows for increased output power; monitors all available powers, voltages, currents, flows, pressures and temperatures through a network-enabled GUI; GUI allows for remote control and monitoring via a standard Web browser or SNMP network manager.

513-459-3400; [www.broadcast.harris.com](http://www.broadcast.harris.com)

**Booth: C1906**



**UHF POWER AMPLIFIER**  
**CPI-Eimac K3 MSDC IOT**

Simplified to three stages but achieves 58 percent efficiency; low-pressure, low-flow oil cooling eliminates problems associated with DI water systems.

650-592-1221; [www.eimac.com](http://www.eimac.com)

**Booth: C2118**

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— Paul Byers, Dir. Eng. & Ops. WQED

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- Dynamic Logging, Error Checking, and Alarming
- 24/7/365 Technical Support
- Interface to any Traffic System

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# DTV marketplace

## HIGH-POWER VHF DIGITAL/ANALOG TRANSMITTER **Axcera Innovator HX**

Features an advanced control system, broadband amplifiers and combiners that cover the entire operating band, high-gain, hot-swappable power modules, and reliable linear power supplies; available for both DTV and analog operation and in internally and externally diplexed configurations.

724-873-8100; [www.axcera.com](http://www.axcera.com)

**Booth: C8606**

## ROUTER

### **FOR-A CS-HD1602**

Distributes HD signals with embedded audio in the 1RU frame; its 16x2 HD-SDI routing matrix architecture enables switching and signal distribution of HD digital video signals with eight channels of embedded audio; can be used for both simple-cut switching and as a backup router in emergency situations; HD signals supported include 1080/59.94i and 60i, and 720/59.94p and 720/60p.

714-894-3311; [www.for-a.com](http://www.for-a.com)

**Booth: C5628**

## Video routing



## CONTROL PANEL

### **Crystal Vision SW808**

1U panel controls its 8x8 routing switch; has a dedicated button for the eight sources and eight destinations, each with an associated input present LED, switch changes can be set up and actioned simultaneously; up to 16 salvos can be stored and recalled; labels can be inserted under the keycaps to name inputs and outputs.

+44 1223 497 049; [www.crystalvision.tv](http://www.crystalvision.tv)

**Booth: C7143**



## SWITCHERS

### **ISIS-Group INNOVATION**

Sizes range from 8x4 to 32x32, with video only, video with analog, or video with digital audio to fit a user's application; handles multiple video formats including VGA through QXGA; redundant power supplies available; includes front-loading "hot-swap" board replacement and steel frames; features HD15 connectors for fast installation.

530-477-2984; [www.isis-group.com](http://www.isis-group.com)

**Booth: C2039**



## ROUTER

### **ISIS-Group broadcast router**

16x2 and housed in a 1RU rugged steel frame; features optional analog or digital audio with local and/or remote control; an RS-232 serial interface port is a standard feature; allows interface to many third-party controllers.

530-477-2984; [www.isis-group.com](http://www.isis-group.com)

**Booth: C2039**

## ROUTING SWITCHERS

### **Leitch Panacea**

Capable of routing all signal formats from analog to HD; provides affordable, compact routing for a wide range of applications; compact routing for monitoring applications in sizes from 12x1 to 256x1.

859-371-5533; [www.leitch.com](http://www.leitch.com)

**Booth: SU9868**

## CONTROL MODULE

### **Broadcast Technology DTCC3000**

Enables system control of all the modules in the frame and automated redundancy switching without need for an external system controller; allows SNMP-based control systems to manage multiple frames as part of an overall control system.

+44 1264 332 633; [www.btl.uk.com](http://www.btl.uk.com)

**Booth: SU6752**

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## HD-SDI VIDEO ROUTER

### Network Electronics HD128M

Provides a compact frame, fully hot-swappable architecture, built-in dual redundant power supply and fully redundant controller functions; control features include TCP/IP control interface and TCP/IP interconnectivity with VikinX.128 control panels, SNMP agent and comprehensive surveillance of the router's vital parameters.

800-420-5909; [www.network-electronics.com](http://www.network-electronics.com)

**Booth: SU11606**



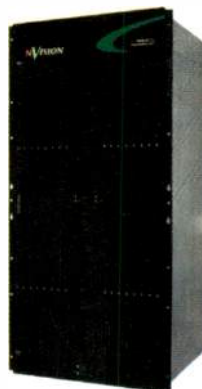
## MULTIFORMAT ROUTER

### NVISION NV5128

Now expandable to 128-by-128 HD signals to fulfill the I/O requirements of medium-size facilities; supports all commonly used digital and analog formats; automatic cable equalization is provided for up to 100 meters of cable; signals are relocked at all standard HD-SDI and SDI data rates.

530-265-1000; [www.nvision1.com](http://www.nvision1.com)

**Booth: SU7552**



## HD-CAPABLE MASTER CONTROL/ROUTING SWITCHER

### NVISION NV5128-MC

Designed for TV stations migrating from an analog to an SD/HD infrastructure; supports both 1080i and 720p operation; features built-in squeezeback and logo generation, three general-purpose video keyers, and an eight-channel audio path.

530-265-1000; [www.nvision1.com](http://www.nvision1.com)

**Booth: SU7552**

## EXPANDABLE LARGE-FORMAT DIGITAL VIDEO ROUTER

### NVISION NV8256

Now available with A-to-D and D-to-A converters; features a new high-density 256-by-256 crosspoint module; expanded beyond 256-by-256, a second module is added, increasing the size of the crosspoint array to 512-by-256; if a second 512-by-256 frame is added and the two frames are interconnected, the resulting system is 512-by-512.

530-265-1000; [www.nvision1.com](http://www.nvision1.com)

**Booth: SU7552**

## ROUTER MANAGEMENT SYSTEM

### Network Electronics THOR master software

New features include icon-based drag-and-drop multi-level control surface, categories allowing to group input and outputs, VikinX.128 panel configurator, access control with different access groups and levels, lock and protect of crosspoints, and site manager allowing administration of multiple sites from GUI.

800-420-5909; [www.network-electronics.com](http://www.network-electronics.com)

**Booth: SU11606**

## ANALOG I/O OPTION

### Utah Scientific UTAH-400

All UTAH-400 switchers now can be ordered with analog I/O modules; the eight-channel option modules are fully compatible with the other SD, HD and AES I/O options for the UTAH-400, allowing the analog ports to be freely added to any UTAH-400 digital routing switcher.

801-575-8801; [www.utahscientific.com](http://www.utahscientific.com)

**Booth: C5912**

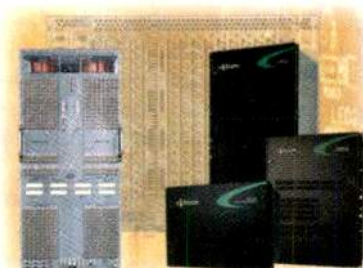
## ROUTER CONTROL SYSTEM

### NVISION NV990

Designed to be used in conjunction with the NVISION NV900 router control system; the NV990 operates as a hot standby, providing full control system backup; both units are a low-cost alternative to the NV9000 router control system.

530-265-1000; [www.nvision1.com](http://www.nvision1.com)

**Booth: SU7552**



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**MARCH 2004**

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## ROUTING SWITCHER

### Sierra Video Systems 32VS

Available as a 32x32 composite video and stereo audio matrix; features front-panel power supply monitoring; standard front control system allows for salvo execution, adjustable audio gain, and attenuation on each input and output; can store the assigned names of all I/O destinations for easy reference at the front panel.

530-478-1000; [www.sierravideo.com](http://www.sierravideo.com)

**Booth: C7139**



## DIGITAL ROUTING SWITCHER

### Sierra Video Systems Shasta 1602HD-LS

Capable of switching HD video with embedded audio without pops or clicks; can be depopulated to 4x2 or 8x2 configurations; features include route locking, manual chop, tally and adjustable fade in a 1RU frame; built with an auto-timer feature that automatically time-aligns inputs within a 2H window.

530-478-1000; [www.sierravideo.com](http://www.sierravideo.com)

**Booth: C7139**

## REDUNDANT CROSSPOINT OPTION

### Utah Scientific UTAH-400

144x144 high-density digital routing switcher is now available with a built-in redundant crosspoint module; redundancy feature controlled by the UTAH-400's signal presence detection capabilities, allowing the system to sense an internal failure and seamlessly switch over to the redundant circuit paths.

801-575-8801; [www.utahscientific.com](http://www.utahscientific.com)

**Booth: C5912**

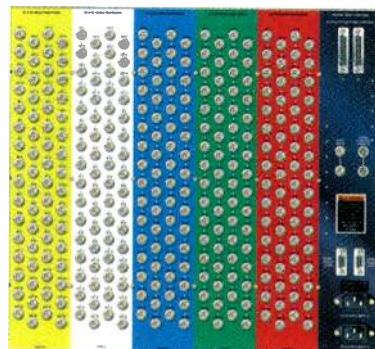
## VIDEO ROUTERS

### Ross Video Talia NK series

Compact and available in sizes of 16x16 or 32x32, and in a full range of signal formats, including serial digital, analog video, AES/EBU, analog audio and data routing; ships with a powerful Web-based configuration system.

613-652-4886; [www.rossvideo.com](http://www.rossvideo.com)

**Booth: SU11029**



## ROUTING SWITCHER PRODUCT LINE

### Multidyne routing switcher product line

Integrates with core fiber optic transport systems, DAs, test equipment, CGs, loss detectors and XLR interface panels; matrix sizes range from 5x1 to 1024x1023; systems are available to support composite video, component video, SDI, HD-SDI, TDM, audio, AES/EBU, RS-422 and DVB/ASI.

516-671-7278; [www.multidyne.com](http://www.multidyne.com)

**Booth: C3151**

## VIDEO ROUTER

### Broadcast Technology DTVS3000

An 8x8 video switch that can be used to switch any input to any output, ensuring fully reliable systems (same service on the same cable); this module ensures no loss of service when used in conjunction with the 3000 control system and is designed to accompany the control card in fully redundant solutions.

+44 1264 332 633; [www.btl.uk.com](http://www.btl.uk.com)

**Booth: SU6752**



## TRANSPARENT FIBER OPTIC ROUTING SWITCHERS

### Multidyne ORS series

Transparently switches fiber optic transport regardless of format, data rates and transmission direction; system supports analog, digital, SDI, HD-SDI, AES/EBU, and telecom formats and data rates; replicates and simulcasts any input to multiple receivers; available in rack-mountable 32x32, 64x64 and 80x80 configurations.

516-671-7278; [www.multidyne.com](http://www.multidyne.com)

**Booth: C3151**

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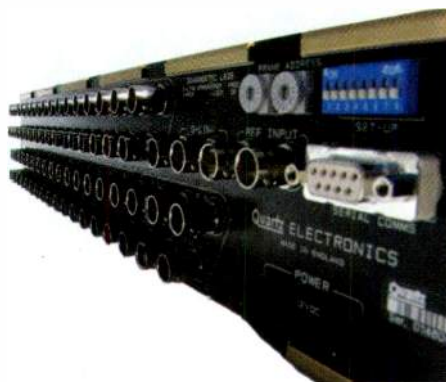
## VIDEO/AUDIO SWITCHER

### Kroma Telecom XP3000

1RU high, 19-inch wide module switches up to 48x2 video and audio signals; crosspoints can be configured as separate video and audio or audio follows video.

+34 9166 145 14; [www.kromatelecom.com](http://www.kromatelecom.com)

**Booth: C3136**



## VIDEO ROUTERS

### Quartz Electronics Topaz

Family of compact, low-cost routers in 16x16 and 32x32 sizes; handles SDI, HD-SDI as well as analog video and audio; can stand alone or integrate into larger system.

888-638-8745; [www.quartzus.com](http://www.quartzus.com)

**Booth: SU9812**

## VIDEO ROUTING SWITCHER

### PESA Premiere

Small, expandable switcher available in matrix sizes based on 8x4, 12x8, 16x8 and 16x16; accommodates composite, Y/C, RGB and RGBHV video, and stereo audio.

800-328-1008; [www.pesa.com](http://www.pesa.com)

**Booth: SU9530**



## ROUTER CONTROL OVER INTERNET

### PESA Cliicontrol

Internet router control system operates over Ethernet via TCP/IP; communicates directly to the PESA 3500PRO or Ocelot control system via RS-232.

800-328-1008; [www.pesa.com](http://www.pesa.com)

**Booth: SU9530**

## PROTOCOL CONVERTER

### PESA UCI2000

1RU protocol translator available for the Grass Valley Encore, SMS7000, and Ditech, Philips, and Sony routing systems; operates in master or slave mode.

800-328-1008; [www.pesa.com](http://www.pesa.com)

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**MARCH 2004**

## Wire, cable, connectors



## DATA CONNECTOR

Neutrik USA Chassis Connectors "AA" series

Features a larger surface contact and gold plating at the contact mating area; has a drop-in replacement for comparable "A" series part numbers; compatibility includes panel cutout and PCB layout; comes available in 12 standard three-pin female horizontal and vertical PC mount versions only.

732-901-9488; [www.neutrikusa.com](http://www.neutrikusa.com)

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## COMPOSITE CABLES

### Belden Access Control Banana Peel

Innovations include the elimination of the overall jacket and the use of color coding and application printing on the four cables; available in plenum-rated and riser-rated versions; rated at 750C, 300V and approved to NEC Article 800; individual cable jackets are sequentially marked at two-foot intervals and the cables are available in 1000-foot put-ups.

1-800-BELDEN-4; [www.belden.com](http://www.belden.com)

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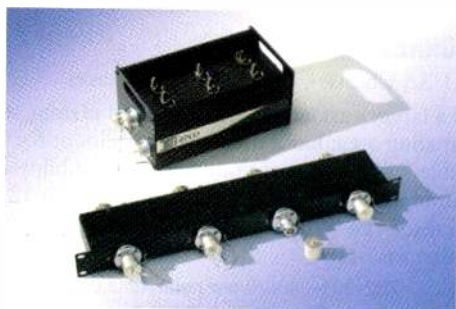
## HYBRID COMPONENT DISTRIBUTION RACK

### Gepco HDR

Single-space rack chassis for break-out from hybrid fiber camera connectors to discrete electrical and fiber connectors; the camera interconnect is transmitted over separate single-mode distribution fiber and Gepco HDP221 series electrical cables, to a second HDR rack, which allows for the individual components to recombine back into Lemo SMPTE 304M connectors for interfacing with standard hybrid fiber camera cables.

800-966-0069; [www.gepco.com](http://www.gepco.com)

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## HYBRID FIBER BREAKOUT BOX

### Gepco HBB

Hybrid fiber connectors break out to two ST connectors on a recessed, protective metal top plate; allows for a quick and robust break-out to a standard format connector that can be interfaced with existing single-mode fiber tie-lines; each optical or hybrid connector has a metal dust cap with chain to provide protection from the elements.

800-966-0069; [www.gepco.com](http://www.gepco.com)

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## AUDIO CABLE

### Whirlwind E Snake

Comprises E Snake Frame (ESF) and E Snake Control software; ESF motherboard can accept up to four input cards and up to four output cards.

800 733-9473; [www.whirlwindusa.com](http://www.whirlwindusa.com)

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## CONNECTOR

### ADC Telecommunications format-reversible ProAx

Comes in U.S. and four European (Fischer and Lemo 4A, 3T and 4E) versions for remote trucks and internationally televised events; connectors can be format reversed between U.S. and global formats in seconds; fits standard U.S. triax cables, as well as global metric 8mm, 11mm and 14mm cables; like other ProAx connectors, features a field repairable center conductor to eliminate the need to restring o-rings that protect the signal path against moisture.

952-917-0231; [www.adc.com](http://www.adc.com)

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### PATCHING SYSTEM

#### ADC Telecommunications Pro Patch programmable series

Programmable patching system enables users to change normaling and grounds quickly and easily; new high-density (2x48) system fits in a 1RU panel; modular design allows individual front jack access for circuit and ground configurations without having to take the entire panel offline or removing it from the rack; available in several termination options including EDAC/ELCO three-pin, 56-pin, 90-pin and AMP "champ" 50-pin connectors in both an eight-connector version for audio and a four-connector version for intercom systems.

952-917-0231; [www.adc.com](http://www.adc.com)

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### FIBER PANEL

#### ADC Telecommunications Fiber Normal Through Panel

New fiber panel is designed to provide patch by exception and normal through functionality, similar to copper-based patch panels; rather than requiring a fiber jumper to be in place at all times, all fiber "in" and "out" connections are on the rear of the panel, with a normal through connection between the "in" and "out" ports; patch and monitoring capabilities are accessed on the front of the panel; 3RU panel provides 24 "in" and "out" fiber pairs.

952-917-0231; [www.adc.com](http://www.adc.com)

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### BNC CONNECTORS

#### ADC Telecommunications notched BNC

New notched BNC series enables operators to visually determine when BNC connectors are not properly latched to BNC jacks; especially helpful where high-density coax panels with dense terminations at the rear of racks are used, making it difficult to see; available for HD RG59, HD RG6 and HD RG179 style cables; when used with ADC jackfields, notches are visible in the 12 and 6 o'clock position.

952-917-0231; [www.adc.com](http://www.adc.com)

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### SINGLE-PAIR AUDIO CABLES

#### Gepco 61801EZ

Available in 20 different colors; includes a new riser-rated PVC jacket; has 10 new jacket color options including lime green, tan, royal blue, plum, and chrome; features stranded, tinned-copper conductors that facilitate quick soldering or punch-down, and a high-grade polyethylene dielectric; each pair is shielded with an easy-to-strip, bonded foil shield with drain wire.

800-966-0069; [www.gepco.com](http://www.gepco.com)

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### DIGITAL AUDIO CABLE

#### Belden 1802B

Paired- AES/EBU Digital Audio Cable; dual-twisted pair 24 AWG stranded (7x32) tinned copper conductors, Datalene insulation, each pair 100% Beldfoil shield plus 24 AWG tinned copper drain wire, PVC jacket in Zip-Cord construction.

765-983-5200; [www.belden.com](http://www.belden.com)

**Booth: C3351**

### RGB COAX

#### Gepco RGBSC260TS

Miniature plenum rated RGB coax snake, five coax cables in a single jacket, superior flexibility compared to conventional hi-temperature cable, extra-small diameter coaxials facilitate easy termination to 15pin High Density D-sub connectors or BNC type connectors for component breakout, ideal for projection systems and VGA cables.

510-814-7000; [www.rgb.com](http://www.rgb.com)

**Booth: SL4711**

### DIGITAL AUDIO CONNECTOR

#### Neutrik NC3FXCC

New 3-pin cable connector designed especially for digital audio signals, highly efficient and reliable; the XLR design features a coaxial ground spring and a coaxial hex crimp ferrule at the cable entrance for reliable contact between the shield and the connector shell.

732-901-9488; [www.neutrikusa.com](http://www.neutrikusa.com)

**Booth: C5842**



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## Archive systems

BY JOHN LUFF

I remember well the archive system in the first television station I worked in (WEWS, Cleveland). The news department stored reels of film in metal cans on metal shelves, with file cards denoting the can's contents. I am sure someone had a record of what was spliced onto each reel, but I would also bet that the records were only accurate part of the time.

In our slightly more modern age, archive systems take on a distinctly different connotation. Though much of the long-term archive of the televi-

sion business still is stored in film cans, and on quad tape reels kept in deep, cold storage mines, the industry is interested in an all-electronic data archive of media content. By borrowing the technology used in the mainframe computer industry for decades we are embracing a mature technology for a "new" application.

**In our slightly more modern age, archive systems take on a distinctly different connotation.**

There are several things an archive must do to be useful. It must store the contents of the program with high reliability, and for long periods of time. It must also allow the content to be retrieved with a minimum of fuss. It must provide sufficient write and read speed to work for the intended purpose. And the capacity must be either sized to hold a known mass of content, or at least be expandable to achieve long-term usefulness. This article will look only at long-term robotic archive. It is important to think of storage in terms of deep archive, nearline storage or archive, and online media. Nearline hard-disk storage is a form of archive, but it is outside the intent of this article. Think of

speed is somewhat limited. This can be overcome by using more transports to achieve sufficient throughput. Data tape can store content faster, but because it must be searched linearly, it is slower to retrieve short pieces of content. Data tape requires a physically larger machine, and the volumetric efficiency of the storage (bytes per cubic furlong) is lower due to the compact size of the DVD medium. DVD archives tend to be used more often for short-form content (commercials), since they suffer no serious penalty when storing short items. This is in part due to the short time to load a disk, seek the right track and write a short burst of data. Tape archives are slower at this kind of operation since the setup time to seek linearly down a tape is much longer, and the amount of time saved in writing is insignificant with commercials. As a result, tape archives tend to be used for long-form content. As bit rates continue to fall (as they will with H.264 codecs), and write speeds on DVD improve,

### Linear data tape vs. DVD archive

DVD will likely penetrate further into the turf of tape archives.

### Software management

Both must be managed by software. In some cases it might be a full-blown asset-management system, and in other cases simply an archive manager that uses expert rules to determine where content is kept. For instance, if the traffic system does not show a need for a commercial for weeks, the archive manager might be programmed to scavenge the spot from the online storage and move it to archive until it is close to the time when it is next needed. If it is needed in three days and never again, the content might be held in a nearline disk storage subsystem where it can be retrieved quickly without tying up space on an archive from which it will be soon purged.

A full-blown asset-management system would contain the same ability to



**The Pennsylvania Public Television Network in Hershey, PA, runs its archive system using Sony's Petasite tape-based library management system.**

move content to the most appropriate location based on knowledge of its use, but also would have more metadata about the content and its usage. It might use the same archive manager as the "data mover," while retaining



control over the decisions on where to put the content. It would also have a full record of how content is interrelated, like versions of a program with different interstitials or editorial decisions necessary for usage in other release mediums.

Capacity is sometimes thought to be expandable infinitely. Envision a tape archive with cabinets or silos that can move physical media from multiple storage locations to a set of I/O drives. One might be able to add cabinets to some arbitrary size in the future. However, that clearly is only possible so long as the specific model is still in production. It is thus wise to think of the most likely final size of a nearline or deep archive at the time of initial implementation to avoid the possibility of technology precluding expansion later.

### The decision tree

There are some advantages to expanding with little disruption to the system. Adding storage later may require some downtime while mechanical systems are connected and software is updated to allow access to new storage locations.

Not so obvious is the "infinitely expandable" storage system. By that I mean a deep archive out of the electronically accessible system ... i.e. on shelves. So long as the content is registered in the system most software will allow content to be moved out of the robot. When it is needed the software will call for the correct media, which the human mind can fetch for the machine making the decisions. I mentioned at the beginning of the article that content must be retrieved with a minimum of "fuss." Well, part of the planning process includes a decision about using human labor and metal shelving in an "automated" library. Just part of the decision tree, but one that might take a system with a planned five-year life and extend it far into the future.

Both types of archive mechanics are suitable for specific applications. Make

sure you list everything you know about your intended use before listening to sales pitches. Consider the number and length of items, required access times, number of items added and purged in any unit of time, bit rates and write speeds needed, size of archive in items and bytes, etc. Once

you have a clear picture, vendors will be happy to explain how they can fit into your intended usage. **BE**

*John Luff is senior vice president of business development for AZCAR.*



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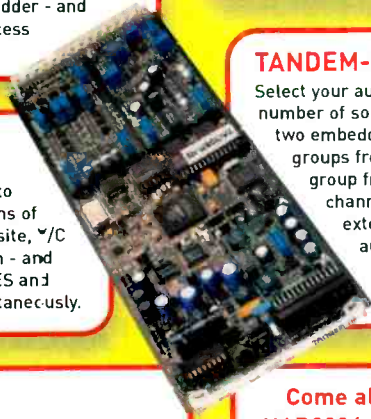
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# Comprehensive transport-stream monitoring

BY ALEXANDER WOERNER

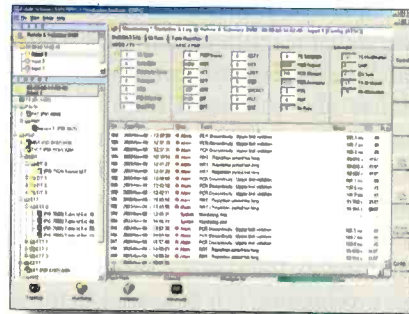
**A**fter transitioning to digital many broadcasters are currently in the process of adding an active electronic programming guide using dynamic program and system information protocol (PSIP) data. Most of the PSIP generators now offer interfacing to traffic and automation systems. Reasons for diligent service announcements by PSIP metadata include the FCC-mandated closed captioning, the broadcast flag (or correctly called re-distribution descriptor) and different multiplex profiles being maintained during the course of a day (i.e. HD during peak hours and several SD off peak). New ways to enhance the attractiveness of over-the-air (OTA) television are directed channel change and data broadcasting requiring announcement by PSIP.

All of these factors contribute to an increasing complexity of broadcast MPEG-2 transport stream multiplex

scalable to the number of transport streams. It can be used at a transmitter location, a playout center, a central or regional distribution hub, or a cable headend. The 19-inch-wide and one-unit-high base features up to four transport stream inputs, which can be electronically configured to be DVB-ASI or SMPTE 310 as needed. Expansion units of the same size offer up to eight additional inputs. The new DVM400 comes as a portable version with integrated TFT display and optional transport stream generator.

The user interface provides a detailed overview of all the monitoring results for each signal. It includes drill-down analysis displays with service table decoding, extended PCR jitter analysis and record-on-trigger.

Highly integrated analyzer boards perform the basic transport stream analysis, each serving up to four inputs simultaneously. Processing power is shared between the four signals and



**Figure 1.** In the left upper window of the monitoring GUI, ("Site") shows the summarized status of all streams with color identification (red = failure; yellow = was failed before, now good; and green = no error). The left lower window ("Input") shows the details of the stream selected in the upper windows with each element colored depending on its error status.

## Highly integrated analyzer boards perform the basic transport stream analysis and serve up to four inputs simultaneously.

signals. A broadcaster would like to make sure that all media and metadata can be decoded properly by the DTV receiver or set-top box for continuous viewer enjoyment. The required transport stream monitoring equipment has to deal with their increasing complexity.

### One system for monitoring overview and stream details

The MPEG-2 monitoring system product family R&S DVM from Rohde & Schwarz is compact and

dynamically allocated to provide peak power to each of the four inputs and up to the maximum ASI data rate of 216Mb/s.

A 100baseT local Ethernet interconnects all analyzer boards with the system controller. Updated data of all transport streams are exchanged on a continuous basis. The system controller collects all pre-analyzed data, compares measurement values against given limits, provides data logging, displays the results and interfaces with SNMP for remote monitoring.

### Tailoring monitoring details

To avoid unnecessary alarms, it is crucial for a monitoring system to be capable of adapting all tests to the individual signals by adjusting measurement limits and excluding/including specific test elements. An indefinite number of monitoring configurations can be stored on the controller's hard disk. Every stream is assigned to one monitoring configuration, with different streams either sharing the same or using different configurations. They also include the basic stream standard, which can be ATSC, DVB or SCTE (for U.S. cable systems) allowing simultaneous monitoring of streams belonging to different distribution standards.

The R&S DVM monitors the well-known set of TR 101 290 (ETSI measurement guidelines) modified to the specific service tables of ATSC PSIP. Besides the usual table checks for MGT, STT, TVCT and EIT, further tests are included beyond the scope of TR 101 290. For example, the verification of the transport

stream ID is compared against a given number. This TS\_ID is a unique identifier assigned to every station by the FCC.

Another test verifies the bit rates of the elementary stream (video/audio/data) within upper and lower boundaries. Any unexpected appearance or loss of one of the services or multiplex elements or a change in type (i.e. from video to audio or data) is monitored, unless such modification is correctly announced by PSIP metadata. Verification checks are included for such tables announcing over-the-air supplemental services, for example DCC and LTST for directed channel change and DET for data broadcasting to ATSC A/90.

### Display guides the user through data zoo

The GUI (Figure 1 on page 244) provides instantaneous access to monitoring data of all stream inputs and can be operated either locally or through a LAN/WAN connection. The upper left window (titled "site") displays a hierarchical tree of all streams that are currently monitored. It can be customized with identifiable signal and folder names (i.e. "satellite feeds," "off-air," etc). The "Input" window shows a hierarchical representation of all elements of one selected stream, such as video and audio data, service tables and other metadata.

Both tree displays have a common scheme used to indicate the error status: red = failure; yellow = failed before, currently no error; green or not marked = no error. If a folder with several elements is collapsed, the remaining folder icon is marked with a color identification representing the summarized status of all elements within it.

The main monitoring window on the right side ("Statistics and Log") displays all monitoring errors. The upper portion shows error seconds per each error type while the lower one lists all errors by time in a continuous log.

The set of analyses offers the user guidance in interpreting the displayed data. Dependent on which error-indicating element is highlighted, further menu options are offered via a right-click of the mouse. For example, a log filter for the packet identifier (PID) of a marked element can be invoked displaying only events pertaining to packets of that specific PID in the log report.

### Monitoring made easier

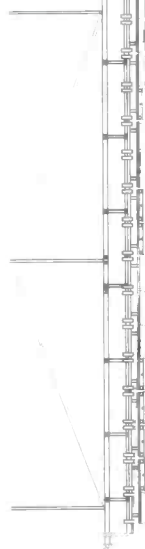
The monitoring system R&S DVM 100/120 can be used to verify a multitude of transport stream signals simultaneously. It offers a large number of detailed real-time checks that can be tailored to the individual characteristic of each signal. To keep a clear overview a specialized user interface not only unveils all monitoring details but also provides an in-depth analysis. The portable DVM 400 has an integrated TFT display and front panel keys for easy setup. **BE**

Alexander Woerner is manager of market development for Rohde & Schwarz.



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## THX certification

BY JOHN DAHL

**T**HX was born 20 years ago, out of filmmaker George Lucas' vision to improve the quality of sound throughout the film production chain. Still, there remains confusion about what THX does and how its certification programs add value to the production and presentation of entertainment content.

### A brief history

In 1982, Lucas hired an audio scientist, Tomlinson Holman, to develop specifications for Lucas' audio mixing facilities at Skywalker Ranch in northern California. Holman was given one year to study sound technologies and processes throughout the film production chain — from the movie set to the cinema — with the goal of improving cinematic sound production for Lucas' next film, "Star Wars Episode VI: Return of the Jedi."

During his year of research, Holman found that the technology in most professional mixing rooms and commercial cinema auditoriums hadn't seen improvements since the 1950s. In fact, the Hollywood studios hadn't built a professional audio mixing room since the end of World War II. The result? In most facilities, the quality of equipment and acoustics was so poor that it was impossible for filmmakers, re-recording mixers and sound designers to hear the detail in their sonic presentations.

After the Skywalker Sound audio facilities were completed, Lucas and Holman started to push the THX standards out to commercial cinemas and professional mixing rooms, as well as to home entertainment products.

### THX, Dolby and DTS

Two decades after THX was founded, it remains a popular mis-

conception among media professionals and consumers that THX, Dolby and DTS offer competing sound formats. Actually, this isn't the case. In fact, THX coexists with Dolby or DTS in thousands of professional recording and mixing facilities, cinemas, and home entertainment components. Dolby provides technology for encoding and decoding audio information on film, DVDs, music, and consumer and professional equipment. Meanwhile, THX sets standards for equipment performance and the physical design of professional mixing and presentation environments.

For broadcast media professionals, it provides specifications for the de-

and loudspeaker and monitor placement and performance. THX even sets guidelines for lighting levels and operator viewing angles within the room itself to ensure the content creator's vision is faithfully and consistently delivered.

### Standards for broadcast quality

With an increasing amount of multichannel programming material being created for broadcast, having a consistent monitoring environment is an advantage to editors, engineers and producers alike. In every THX certified environment, whether it's a commercial cinema, screening room, dubbing stage, mixing room or trans-

**The technology in most professional mixing rooms and commercial cinema auditoriums hadn't seen improvements since the 1950s.**

sign of multichannel recording, screening and mixing rooms. One of these certification programs is THX pm3, which stands for "professional multichannel mixing and monitoring." The program focuses on specifications for the design of professional studios that produce non-theatrical audio presentations, such as DVD and other 5.1 soundtracks, video games, and programs for television and multimedia distribution.

The certification creates a standardized environment at production facilities to make sure the quality and integrity of the audio and visual content is always delivered to audiences. The program defines and enforces standards for room acoustics, background noise and sound isolation,

fer suite, standards specify everything that might influence the monitoring accuracy. It specifies the audio bandwidth, linearity, distortion, signal/noise ratio and maximum output of the audio equipment, in addition to the placement and setup calibration of the visual equipment and the seating placement. The room acoustics are also specified for maximum allowable local and intrusive noise, appropriate high and mid-band reverberation, appropriate level and delay of first-arriving reflections, and control of bass modes. The visual environment is specified for monitor position and stray light control. For instance, in a small recording or mixing room, reverberation decay must stay within +/- 2dB in the middle oc-

taves, with an RT60 target of 2- to 4ms. The room must be free of first reflections from the front speakers that fall with 12ms or 12dB of the sound first arriving at the operator's location. The room must also be free of intrusive noise at NC25 or better.

The audio system components themselves must be chosen from a list of THX-approved products — which includes speakers from Mackie Designs, Genelec and JBL — and installed and calibrated to exact stan-

dards. System bass management and bass and LFE levels must meet precise requirements. The video monitors must be of broadcast quality and properly calibrated. Finally, the viewing environment must meet ITU and SMPTE requirements for light level and color as well as image position and size.

Over the last few years, pm3 rooms have been used to prepare many programs for television shows, from sitcoms to network movies-of-the-

week. The pm3 program provides media professionals a listening and viewing environment that is as transparent as possible. Editors and producers know that the visual detail and sonic presentation will be maintained when they transfer projects between THX pm3 certified facilities, allowing critical judgments to be made regardless of the room or facility. **BE**

*John Dahl is the technical product marketing manager for THX.*

## THX Digital Works: Mastering and QC services for DVD production

**W**hat does it mean when a DVD is marked "THX Certified"? Originally founded to master and certify film titles on the laserdisc format, the THX Digital Works division in Burbank, CA, works closely with filmmakers and

studios to ensure that DVD content remains true to the original color palette and sound presentation of the theatrical releases. The company provides project management and quality control (QC) services for DVD production. This past year, THX

Digital Works mastered and certified a number of DVD projects, including "T2: Extreme DVD" and "The Adventures of Indiana Jones" box set. THX engineers start by helping the filmmaker and/or DVD producer



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select the master elements that will be used in the DVD release when the originals are not available. If the studio has a release print or interpositive print available that's in "pretty good" shape, the engineers will work with the studio and/or director to decide which element will make a DVD that more closely matches the director's original vision.

Following the transfer to an HD master, THX technicians begin the certification process, applying a variety of QC services to ensure the visual images and soundtrack are not degraded during DVD production. They closely

monitor and set guidelines for the downconversion, remove dirt and scratches, review the compressed

and THX certification.

The goal of THX certification is to create a DVD presentation that's

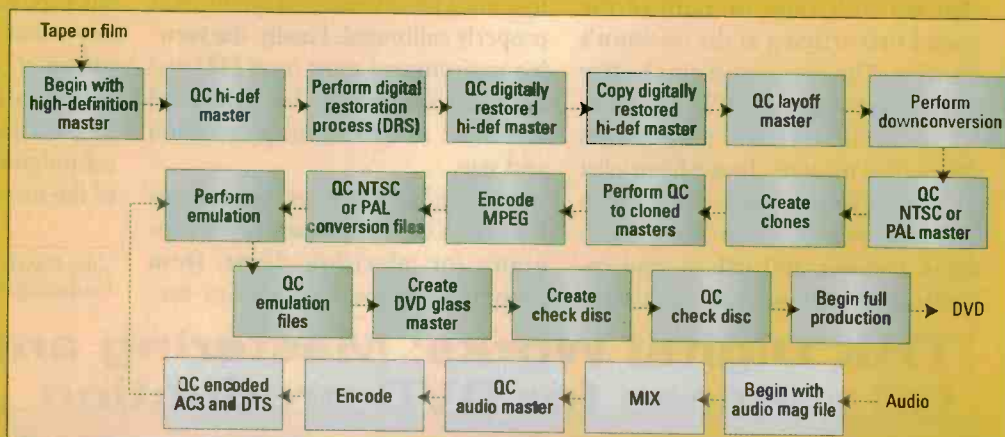
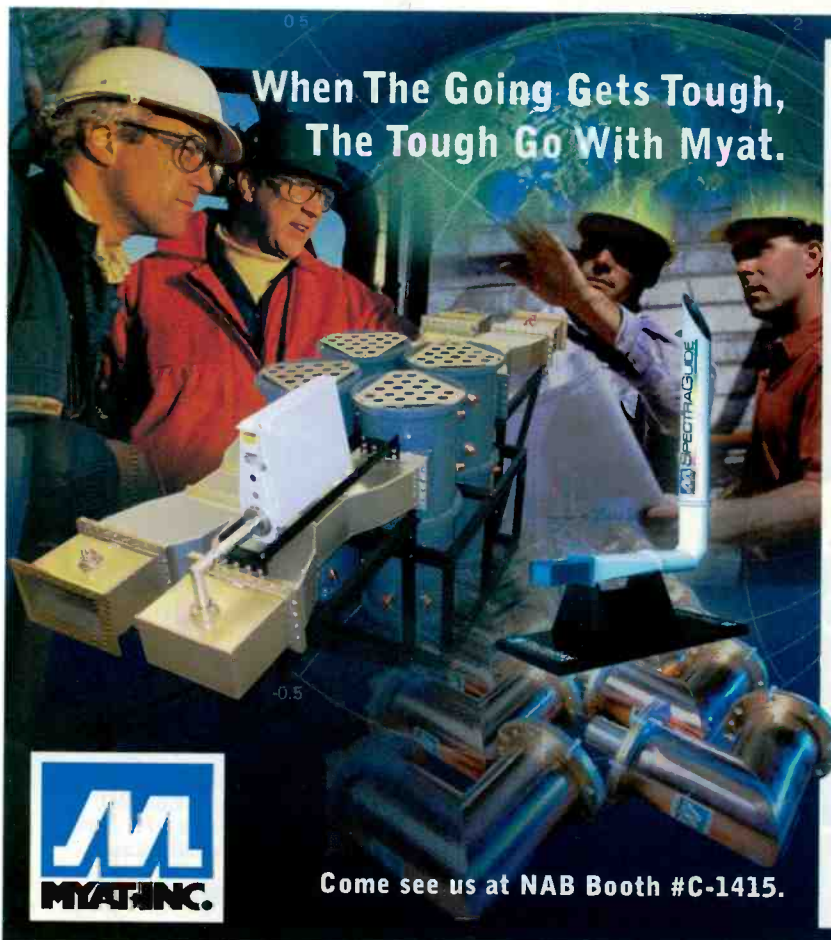


Figure 1. THX Digital Works engineers perform extensive quality testing to ensure that the DVDs produced remain as close to theater quality as possible.

video and audio, and carefully analyze the disc data through emulation. Figure 1 outlines the steps involved in a typical DVD production

faithful to the artist or content creator's vision in the mixing room. **BE**



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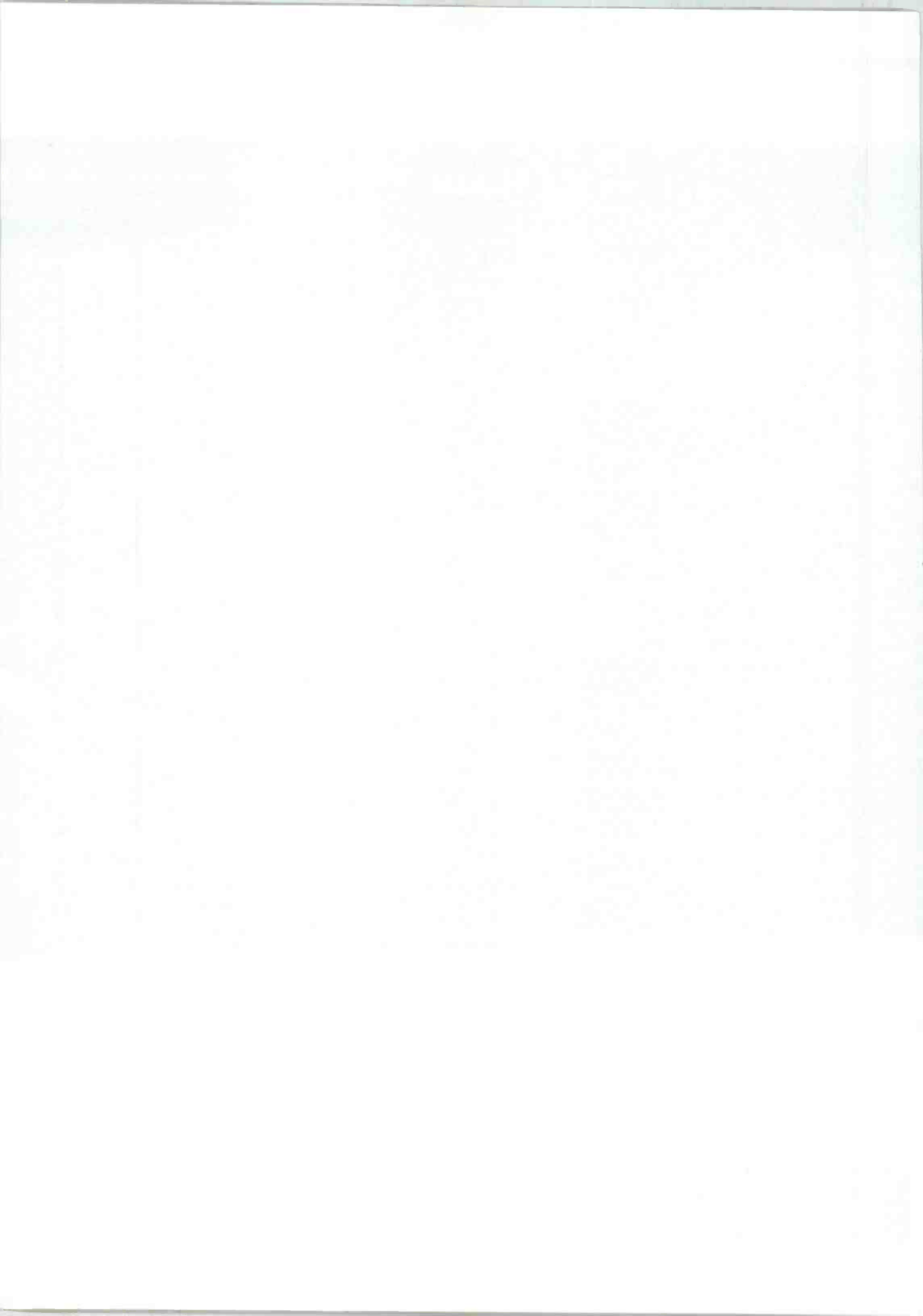
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# Introduction

## The ADC Difference

For over 50 years, ADC has lead the industry in audio, video, and data patching products, a tradition that continues today in its state-of-the-art manufacturing facilities. Designing, engineering, and manufacturing virtually all of its own components, ADC has established itself as a premier builder of these critical industry products.

All of ADC's products are designed for outstanding performance in real world situations. ADC engineers understand typical industry applications and create products to solve the difficult problems other manufacturers prefer to overlook.



View onto manufacturing floor at Shakopee facility

It is easy to find the desired ADC product using convenient, easy-to-follow ordering information charts. The charts display all of the options available and allow for the selection of an ordering number for the product and feature sets desired. If the configuration isn't available, contact ADC for information about custom-designed products.

The Internet is also a fast and convenient avenue for getting more information about ADC's high-quality products. Simply go to [www.adc.com](http://www.adc.com) and search for a desired ordering number, or browse our online products and services area where you can order specific part numbers.



ADC's state-of-the-art facility in Shakopee, MN

From our durable patchbays and jackfields to our precision jacks and connectors, consistent quality is the hallmark of everything ADC produces. And everything at ADC is built to last, from the corrosion-resistant nickel plating on our patch plugs, to the tough steel chassis of our patch panels. ADC anticipates common failure points and overcomes them using the best available materials. ADC's strict adherence to quality standards, and careful manufacturing, assures dependable, long-lasting products.



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# Introduction

## Products You've Been Waiting For

ADC is the leader in innovative patching products because it listens to the needs of its customers. As a result, new and exciting products have been developed to enhance the performance and durability of your broadcast infrastructure.

### Pro Patch™ Programmable Series

The ultimate bantam patch panel is now a reality. The new Pro Patch Programmable patching system (patent-pending) combines the ruggedness and reliability of a true WECO-compliant bantam jack with a precision DIP switch, enabling users to change normalling and grounds quickly and easily. Specifically designed for tough mobile environments, the ultra-lightweight Pro Patch Programmable panel weighs about six pounds and is only five-inches deep.



### ProAx™ Triaxial Camera Connectors

For years, the industry has been locked into connector designs that are difficult to terminate, and even more difficult to field repair. ADC's line of ProAx Triaxial Camera Connectors will change the way you think about this component forever. Field repairable center conductors eliminate the need to restrip. O-rings protect the signal path against moisture. The connectors have fewer parts to assemble and are compatible with the tooling you already own.



### Notched BNC

An idea whose time has come, the new notched BNC series (patent-pending) from ADC makes it easy to spot BNC connectors that are not properly latched to BNC jacks. This is especially helpful with high-density coax panels such as ADC's midsize video product offering where terminations are very tight, and in the back of dark racks.



### PPE Video Panels

The all-new PPE series standard and midsize panels are designed to offer ADC performance on a modest budget. The PPE series is offered with the same jack options as the full-featured PPV/PPV series.



### IEEE 1394a FireWire® Patch Panel

With the new IEEE 1394a FireWire patch panel, patching FireWire digital video signals is as easy as regular audio and video. The panels offer a 24-port passive interconnection for industry compatible six-pin IEEE 1394a connectors.



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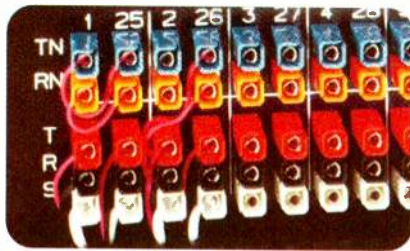


# Introduction

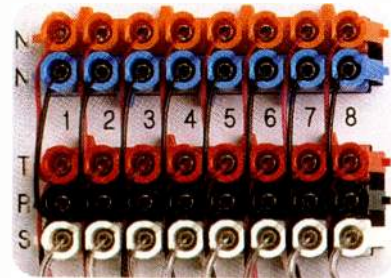
## Labor-Saving Quick Connect Punch Termination System

The original twisted pair QCP termination system set a new standard, making punchdown wiring fast and reliable. With the new QCP IV system, ADC introduces an even faster, more robust punchdown connector compatible with existing QCP tools. The new connectors come in 1x8 blocks insulated on both sides of the panel for better short protection. Because the connectors do not require the tool to be oriented before punching, the QCP IV system punches down instantly, saving you the laborious prewiring, soldering, and crimping required for connectorized panels.

Many ADC products come with a choice of QCP II or QCP IV. Both are a tremendous improvement over connectorized systems, but each has its advantages. QCP II allows greater density and individual replacement. QCP IV is a more durable connector and does not require orienting the tool before punching.



QCP II



QCP IV

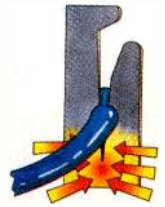
### Features

ADC's exclusive, patented QCP II and QCP IV split-cylinder punchdown termination system is faster and easier to install and more reliable than any other termination system, including solder.

- Dependable, durable, split-cylinder design holds up to three stranded or solid wires, 22 to 26 gauge (0.32 mm to 0.128 mm)
- No intermittents with gastight connections. Uniform split channel width holds each wire firmly, unlike telco punchdowns with V-shaped channels or soldered connections that use flux and may have unreliable solder joints
- Easy pre-lacing makes installation faster. Color-coding prevents wiring mistakes
- Labor-saving punch terminates and cuts wire in one simple motion. New QCP IV installs even faster because you don't have to orient the tool before punching
- Faster and easier changes in circuits or normals than soldered connector systems. Rated for up to 200 insertions/withdrawals
- QCP II terminations are individually mounted and insulated for easy repair or replacement
- QCP IV terminations are mounted in 1x8 blocks insulated on both sides of the panel. This design, plus the recessed conductors, eliminates shorts



QCP



Split Beam



# Introduction

## Best Jacks Available

When it comes to audio and video jack design, ADC makes them perform better, last longer and connect more reliably than anyone else. Our jacks and all of their working components are designed and manufactured in our own facilities under the strictest quality control. Every jack is identical and exceptional in quality and performance.

### Audio Jacks

**ADC audio jacks are built to perform and to last**



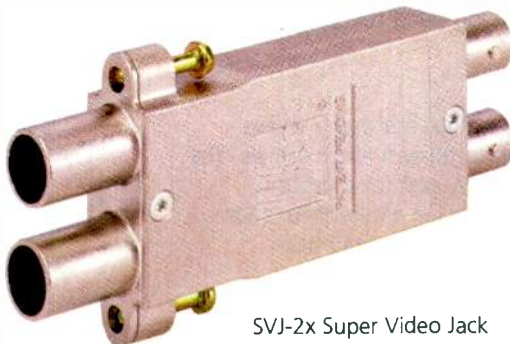
PJ339W Longframe Wire-Wrap Audio Jack  
(Exclusively used in prewired ADC Pro Patch Audio)

#### Features

- All ADC jacks are WECO-standard and military grade
- Absolutely reliable WECO Alloy #1 gold self-cleaning crossbar contacts wipe away debris with each use
- Solder-free wire-wrap tails prevent intermittents from cold solder joints or flux migration (prewired only)
- Solder-style jacks provide the option of do-it-yourself installation
- Tested to withstand tough applications, including vibration, temperature, moisture, and salt air corrosion
- Extended spring beams, computer-torqued screws, and precision-molded Ultem® insulators ensure consistent quality, long life, and reliability
- Durable precision diecast (bantam) or stamped steel (longframe) frames

### Video Jacks

**True 75 Ohm jacks for today's high bandwidth services**



SVJ-2x Super Video Jack

#### Features

- True 75 Ohm for excellent high-frequency performance
- Gold-plated components assure signal quality and tarnish resistance
- Sealed switch prevents contamination from dust, etc.
- All-solderless construction eliminates solder-related failures
- Closed-entry BNC center conductor prevents damage and provides reliable contact
- Two-piece center conductor prevents RFI and EMI radiation leakage
- Tough, diecast body will not rust or flex
- Precision-tooled parts for consistent quality
- Captive mounting screws will not fall out

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# Introduction

## Understanding Audio Normalling

Normalling creates a default circuit through the patch panel to connect equipment together in the arrangement you normally or most frequently use. When you plug in a patch cord, you break this "normal" circuit and create a temporary new circuit. Pro Patch™ lets you select from a variety of normalling options.

### Selectable Normals (UniPatch only)

Selectable normals allow the user to select any typical normal configuration by setting switches on an impedance-matched dip switch located on the bantam audio card.

### Normals Strapped (fully normalised)

In a fully normalised configuration, the normals of each jack in the top row are internally strapped to the normals of the jack below it with the tip (T), ring (R), and sleeve (S) contacts brought out to the rear panel terminations. To break this normal connection, you insert a patch cord into either jack.

### Half-Normalised

In a half-normalised configuration, the normals of the bottom jack are internally wired to the tip (T) and ring (R) connections of the top jack, and the tip, ring, and sleeve of both jacks are brought out to the rear terminations. Equipment is wired to the two jacks at the rear terminations, creating a normal circuit. Inserting a plug into the top jack monitors the circuit without breaking it, and inserting a plug into the bottom jack breaks the circuit.

### No Normals

A panel without normals has jacks that are open (no normal connection) until patched. When the patch cord is inserted, the signal flows through the cord and jack to or from the equipment connected to the jack at the rear terminations. No normal patch panels require looping plugs (u-links) or patch cords to complete the circuit.

### Normals Out

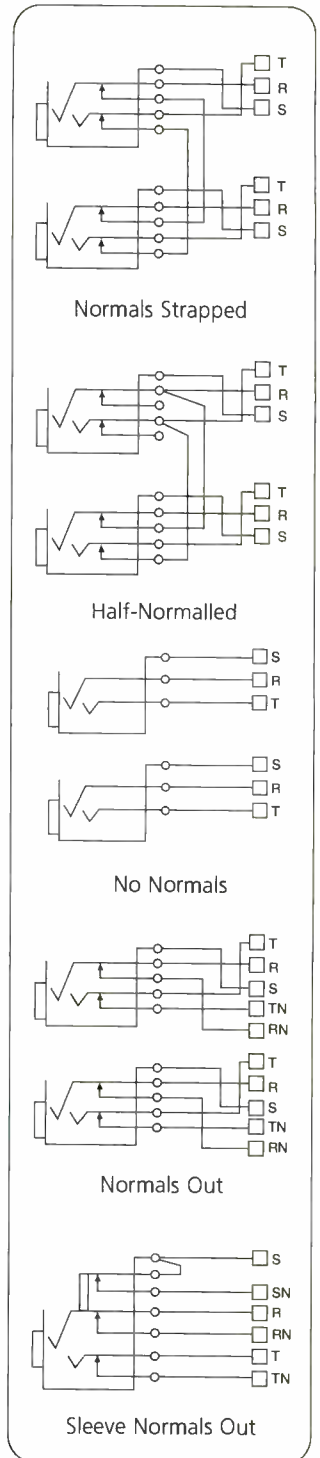
In this configuration normals are brought out to the rear terminations where you can strap them as you want them. Note that you cannot change the normalling on panels with internal normals because normalling is done at the jacks. Select the normals out option if you need the ability to change normals.

### Sleeve Normals Out

Sleeve normals out are the same as normals out except that a sleeve normal is switched inside the jack in addition to tip and ring normals. The sleeve normal is also brought out and is typically used for a ground connection. Making it switchable allows grounds for different functions to be separated to prevent ground loops that produce audio hum.

### Bussed Grounds

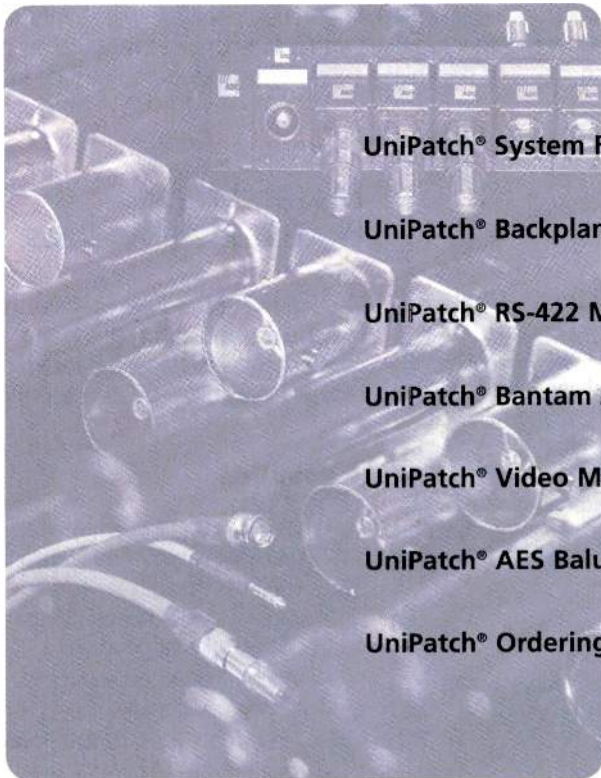
In a bussed-grounds configuration the ground connections of all jacks are brought out to the rear terminations and connected together. This provides a common ground for all jacks.







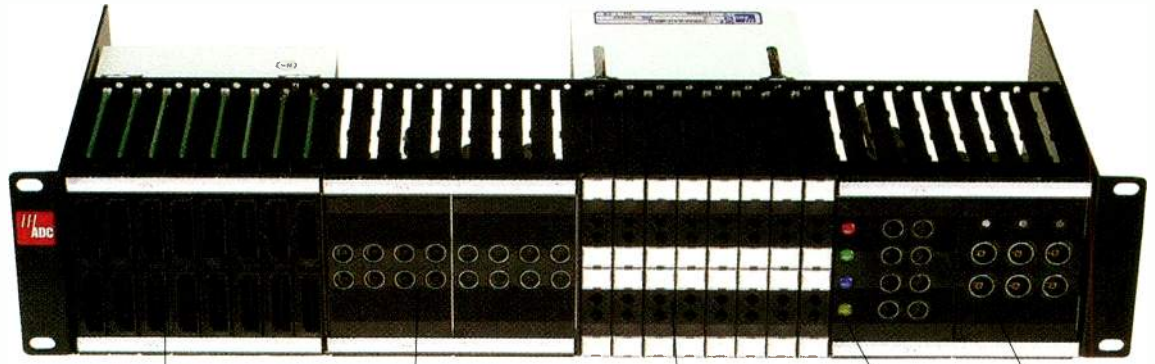
# UniPatch® System



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<b>UniPatch® Backplane Options</b>	<b>8</b>
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# UniPatch® System



RS-422 Data

Midsize Video

Bantam Audio

Video RGBS

RGB Video

Loaded UniPatch Chassis

The UniPatch® modular patching system with universal chassis allows you to combine data, audio, and video patching modules in a single two-rack-unit modular panel. Order a mix of jack and backplane modules to create a totally custom patching system, or order a preconfigured panel filled with bantam audio jacks or RS-422 data jacks. You can start with only a few modules and add or change modules as needed. The universal chassis with mix-and-match jack and backplane modules provides the ultimate in flexibility.

## Modular Chassis for Unprecedented Flexibility

### Features

- Jacks and backplanes have a modular design and fit into the rugged high-density card cage chassis. Just plug in a module to add more jacks or backplane connectors
- Modularity lets you start small and add modules and cards as needed
- Individual circuits are easily replaced without disturbing other circuits
- Backplanes available in high-density 64-circuit bantam audio, high-density 32-port data, standard-density 24-port data, and video options
- Gold-plated card edge connectors tested to withstand heavy use and vibration
- Shallow 7" deep chassis is perfect for mobile applications

## Mix-and-Match Plug-in Jack Modules

The following modules (details on following pages) may be assembled on site in mix and match combinations. Data and bantam modules may be ordered in a fully loaded preconfigured chassis.

### Features

- Category 3 compliant RS-422 modules for demanding professional data patching applications
- Bantam audio modules in user-selectable normalised configurations
- Video modules for analog, SD, HD, and analog component
- AES 110 Ohm to 75 Ohm coaxial baluns
- BNC bulkhead feedthroughs
- Category 5, 5e and 6 data patch



# UniPatch® Mix-and-Match Backplanes

Ten different backplane connector types are available, and because they come in modular units, they can be mixed and matched like the jack modules. Each backplane supports up to eight jack modules.

## Features

Available modules:

- Dsub9 connectors, 32-port, high-density (shown)  
24-port, standard-density (not shown)  
(32-port requires thin shell strain relief, sold separately, see page 15)
- DB-25 connectors
- Labor-saving QCP II Ultra Patch quick connect  
punchdown (see page 3 for QCP information)
- AMP Champ 50-pin receptacle
- EDAC 90-pin plug
- EDAC 3-pin plug
- QCP MKII for data 20x8
- QCP MKII for audio 12x8



VPRM-E90-W EDAC 90-Pin Plug  
Rear Module



VPRM-A50-W AMP 50-Pin Receptacle  
Rear Module



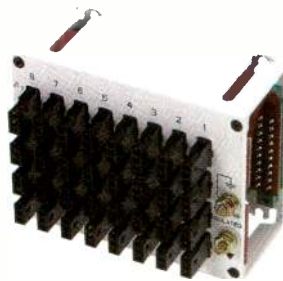
VPRM-BAN-MKII  
Bantam Rear Module  
(for audio)



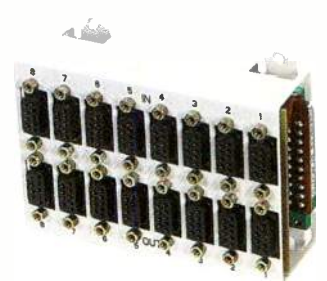
VPRM-D25-W DB-25 Rear Module



VPRM-MKII-W QCP II Rear Module (for data)



VPRM-BAN-E3 Rear Module (for audio)



VPRM-D9-W Dsub9 Rear Module

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# UniPatch® RS-422 Modules



The UniPatch® Category 3 compliant RS-422 module raises the standard in machine control patching with its quality and robust design. Now you can patch machine control data properly using reliable, durable, military-grade jacks rated for 30,000 insertion/withdrawal cycles. Each circuit switches all ten pins, making the module fully SMPTE 207M compliant. Compared to other systems employing light-duty RJ45 connectors rated at fewer than 750 insertion/withdrawal cycles or bantam jacks that do not switch all signal lines, the UniPatch RS-422 module is a significant advance in machine control patching.

## Features

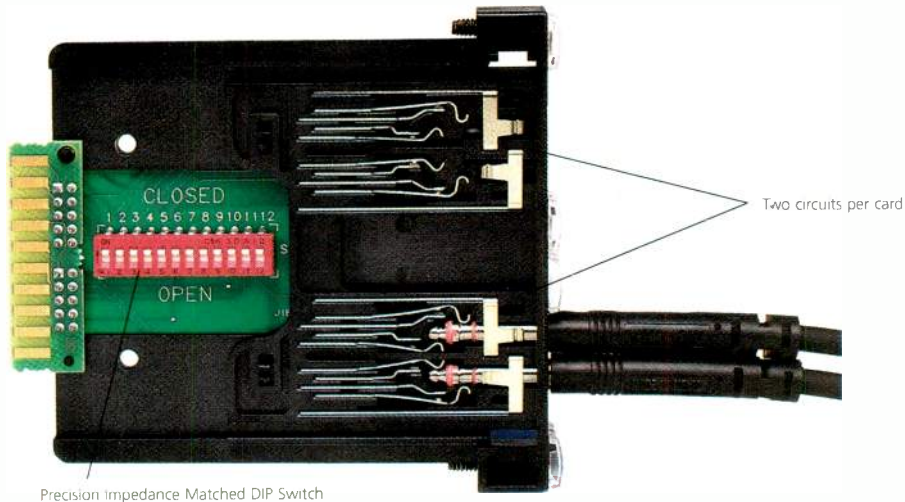
### A New Standard in Professional Data Patching

- Durable military-grade switch system rated for 30,000 insertions/withdrawals. Unlike RG45 systems, suitable for heavy daily professional use.
- Fully SMPTE 207M compliant circuits switch all ten pins, unlike bantam systems, which do not switch all ground pins, potentially causing problems
- Tough military-grade, gold-plated switch with long cantilever beam springs and unique self-wiping contacts ensures against premature wear and provides positive contact force
- RS-422 cards offer highest density available. Up to 32 modules in two rack units for 33 percent greater density
- Normalled or non-normalled cards available
- Modular termination options: DB-25, EDAC 90-pin plug, QCP II, Ultra Patch, Dsub9 standard-density, 24 per frame, or Dsub9 high-density, 32 per frame (requires thin shell strain relief)
- Keyed for proper patch cord orientation
- Category 3 compliant for 10Base-T data



# UniPatch® Bantam Audio Modules

The bantam audio jack modules for the UniPatch® system are perfectly designed for professional digital and analog audio applications. Up to 32 modules plug into the UniPatch chassis to provide a 64-circuit (128 jacks) configuration when fully loaded, matching typical router configurations. Each module contains two circuits and four WECO-standard precision bantam jacks designed for long life. High-performance switches allow flexible normalling and grounds for each circuit. Large .440" x .325" designations provide enough room for three lines of text.



## Features

### High-Density, Selectable Normals, and Excellent Reliability

- 33 percent higher density than conventional frame-type bantam bays. Up to 32 cards in a frame with 2 circuits (4 jacks) per card for a total of 64 circuits (128 jacks)
- 32-across spacing exactly matches typical router configurations and provides larger designation area
- Switch-selectable normals and grounds for each circuit: normals strapped (NS), half-normal (HN), bussed ground (BG), or no normals (NN)
- WECO-standard jacks meet or exceed MIL-STD-202 for mechanical durability as well as corrosion, salt spray, thermal shock, and moisture resistance, and vibration
- Precision-molded Ultem® housing and sturdy, integrated all metal springs rated for 10,000 insertions/withdrawals. Gold crossbar, self-cleaning contacts ensure a positive connection
- Modular termination options: QCP II, EDAC 3-pin plug, EDAC 90-pin plug, DB-25, AMP Champ 50-pin receptacle, or QCP IV with 4-foot umbilical Ultra Patch panel
- Snap-on designation holders accept individual labels without tools; conventional chassis-wide designation strips are also available. Large designations provide enough room for three lines of text
- Fully compliant 110 Ohm circuit board meets demanding AES specifications



# UniPatch® Video Modules

ADC offers a full line of UniPatch® video patching modules, making it easy to assemble a custom video patch panel for any application. Modules are available for analog, SD, HD, or component video. Included in the selection of jacks are the standard size SVJ series and midsize MVJ series Super Video Jacks for outstanding performance at high-definition data rates and beyond.

## Features

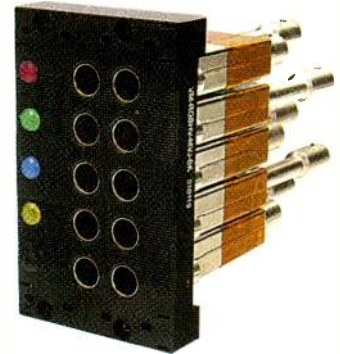
- Standard jacks mount 24 across, midsize jacks mount 32 across
- Standard-size, HD video modules contain SVJ-2x normalled-through Super Video Jacks with or without termination
- Standard size straight-through modules contain CJ2011N jacks without termination or CJ2020N-75 jacks with termination
- Midsize HD video modules contain MVJ-3 normalled-through Super Video Jacks with or without termination
- Midsize straight-through modules contain CJ3014/4014 jacks without termination or CJ3014N-75/4014N-75 jacks with termination
- New modules are available for analog component video in the following configurations: RGB, P,P<sub>B</sub>Y, RGBS, and RGBHV
- Large designations snap on without tools providing enough space for four rows of text



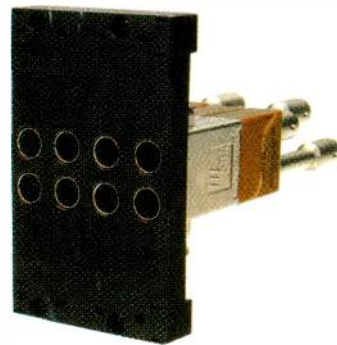
VM-2011-BK  
Standard Size Video Module  
also available with CJ2020N75  
terminated single jacks



VM-SVJ-BK  
Standard Size HD Video Module



VM-RGBHV-MVJ-BK  
RGBHV Video Module



VM-MVJ-BK  
Midsize HD Video Module



VM-RGB-MVJ-BK  
RGB, P,P<sub>B</sub>Y HD Video Module

All modules provided with colored inserts to allow the user to customize for any use.

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# UniPatch® AES Balun Modules

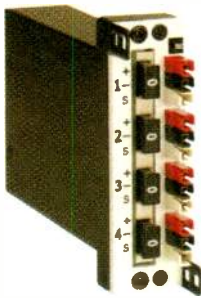
The new patent-pending AES 110 Ohm to 75 Ohm balun modules provide precision impedance matching for interfacing balanced twisted pair AES audio to unbalanced coaxial audio. Eliminate the nuisance of XLR soldering and the mess of baluns hanging from equipment. Replace them with this clean, simple solution.

## Features

- Mounts on side of equipment rack with velcro or can be rack mounted
- Modules contain four circuits for up to 64 circuits per 2 RU chassis
- Works with quick-to-install QCP punchdown termination modules or EDAC 3-pin plug
- 1 Vp-p plug-in pad is available for equipment that cannot accept high-input voltages. Plug-in pad feature allows each circuit to be tailored for 1 Vp-p operation in 1dB increments to -20dB
- New splitter module provides 2-in/4-out passive split/110 to 75 Ohm converter



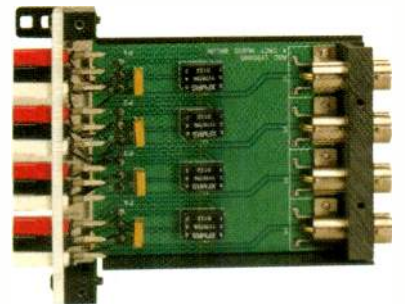
AM-411075-E3



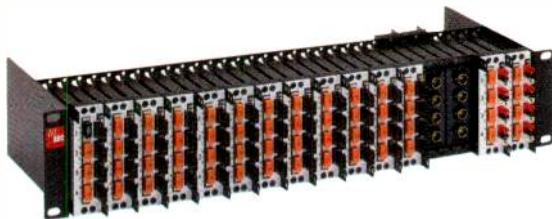
AM-411075-MKII



AM-2110-475-E3



Precision transformers, glass epoxy circuit board, true 75 Ohm BNC connectors



Front View



Rear View

UniPatch System fully loaded with 16 AES balun modules for 64 110-75 Ohm circuits (allows modules to be mounted either way)

For in-line baluns, see page 43



# UniPatch® System

## Ordering Information

Description	Ordering Number
<p><b>Empty Chassis</b></p> <p>Empty UniPatch chassis, black, supplied with VP-DES-343-32 kit            Empty UniPatch chassis, gray, supplied with VP-DES-343-32 kit</p>	<p>VP2232-BK            VP2232-G</p>
<p><b>Bantam Audio Complete Systems</b></p> <p>64-circuit loaded system QCP II, black*            64-circuit loaded system EDAC 3-pin plug, black*            64-circuit loaded system Dsub9, black*            64-circuit loaded system DB-25, black*</p>	<p>VP2232-BANQCP-BK            VP2232-BANE3-BK            VP2232-BAND9-BK            VP2232-BAND25-BK</p>
<p><b>RS-422 Data Fully Loaded Systems - normalled</b></p> <p>24-circuit Dsub9 normalled, gray            24-circuit Dsub9 normalled, black            32-circuit Dsub9 normalled, gray            32-circuit Dsub9 normalled, black            32-circuit DB-25 normalled, gray            32-circuit DB-25 normalled, black            32-circuit AMP 50-pin receptacle normalled, gray            32-circuit AMP 50-pin receptacle normalled, black            32-circuit EDAC 90-pin plug normalled, black            32-circuit EDAC 90-pin plug normalled, gray            32-circuit QCP II normalled, black            32-circuit QCP II normalled, gray</p>	<p>VP2224-D9-G            VP2224-D9-BK            VP2232-D9-G            VP2232-D9-BK            VP2232-D25-G            VP2232-D25-BK            VP2232-A50-G            VP2232-A50-BK            VP2232-E90-BK            VP2232-E90-G            VP2232-MKII-BK            VP2232-MKII-G</p>
<p><b>RS-422 Data Fully Loaded Systems - non-normalled</b></p> <p>24-circuit Dsub9 non-normalled, black            32-circuit Dsub9 non-normalled, black            32-circuit Dsub9 non-normalled, gray            32-circuit EDAC 90-pin plug non-normalled, black            32-circuit EDAC 90-pin plug non-normalled, gray            32-circuit QCP II non-normalled, black            32-circuit QCP II non-normalled, gray            32-circuit AMP 50-pin receptacle non-normalled, black            32-circuit AMP 50-pin receptacle non-normalled, gray            32-circuit DB-25 non-normalled, black            32-circuit DB-25 non-normalled, gray</p>	<p>VP2224-NND9-BK            VP2232-NND9-BK            VP2232-NND9-G            VP2232-NNE90-BK            VP2232-NNE90-G            VP2232-NNMKII-BK            VP2232-NNMKII-G            VP2232-NNA50-BK            VP2232-NNA50-G            VP2232-NND25-BK            VP2232-NND25-G</p>



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\* Normal configurations on bantam audio cards to be set by user.  
32-circuit Dsub9 systems require the use of a thin backshell kit.

The thin backshell Dsub9 provides strain relief for standard Dsub9 connectors. This shell kit is recommended on 32-circuit UniPatch RS-422 systems.

The backshell kits are found on page 15.



Dsub9 Thin Backshell Kit  
(does not include Dsub9 connector)





# UniPatch® System

## Ordering Information

Description	Required Chassis Space	Ordering Number
<b>AES Balun Modules</b>		
AES 110 Ohm to 75 Ohm, 4-circuit BNC to QCP II	2 spaces	AM-411075-MKII
AES 110 Ohm to 75 Ohm, 4-circuit BNC to EDAC 3-pin plug	2 spaces	AM-411075-E3
AES 110 Ohm to 75 Ohm, 4-circuit BNC to EDAC 3-pin plug, front facing	2 spaces	AM-411075-E3-FF
2:4 splitter balun module 110 Ohm to 75 Ohm	2 spaces	AM-2110-475-E3
Plug-in pad (replace "XX" with 01 to -20db)		SCAP-XX
<b>Audio Modules</b>		
Bantam audio, adjustable normals, 2-circuit, black	1 space	AM-BAN-BK
<b>Data Modules</b>		
RS-422 data, 10-pin, normals through, black	1 space	DM-422-BK
RS-422 data, 10-pin, normals through, gray	1 space	DM-422-G
RS-422 data, 10-pin, non-normalled, black	1 space	DM-422-NN-BK
RS-422 data, 10-pin, non-normalled, gray	1 space	DM-422-NN-G
Ethernet data, Cat 5 RJ-RJ coupler, black	4 spaces	DM-RJC5-BK
Ethernet data, blank adapter, black*	4 spaces	DM-6S-BK
<b>Universal Blank Modules</b>		
Blank module, black	1 space	DM-BLANK-BK
Blank module, gray	1 space	DM-BLANK-G
<b>Video Modules†</b>		
Standard, CJ2011N straight-through, 3-circuit, black	4 spaces	VM-2011-BK
Standard, CJ2011N straight-through, 3-circuit, gray	4 spaces	VM-2011-G
Standard, CJ2020N-75 terminated single, 3-circuit, black	4 spaces	VM-2020-BK
Standard, CJ2020N-75 terminated single, 3-circuit, gray	4 spaces	VM-2020-G
Standard, Super Video Jack SVJ-2x, 3-circuit, black	4 spaces	VM-SVJ-BK
Standard, Super Video Jack SVJ-2Tx, terminated, 3-circuit, black	4 spaces	VM-SVJT-BK
Standard, Super Video Jack SVJ-2x, 3-circuit, gray	4 spaces	VM-SVJ-G
Standard, Super Video Jack SVJ-2Tx, terminated, 3-circuit, gray	4 spaces	VM-SVJT-G
Midsized, Super Video Jack MVJ-3, 4-circuit, black	4 spaces	VM-MVJ-BK
Midsized, Super Video Jack MVJ-3T, 4-circuit, terminated, black	4 spaces	VM-MVJT-BK
Midsized, Super Video Jack MVJ-3, 4-circuit, gray	4 spaces	VM-MVJ-G
Midsized, Super Video Jack MVJ-3T, 4-circuit, terminated, gray	4 spaces	VM-MVJT-G
Midsized, MVJ-3, RGB+HV, black	4 spaces	VM-RGBHV-MVJ-BK
Midsized, MVJ-3T, RGB+HV, terminated, black	4 spaces	VM-RGBHV-MVJT-BK
Midsized, MVJ-3, RGB+HV, gray	4 spaces	VM-RGBHV-MVJ-G



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**Note:** Conventional XLR baluns listed on page 42.

\*Accepts (4) 6000 Series Multimedia Modules (sold separately). See pages 119-121 for 6000 Series Modules.

†Video circuits are supplied with designations and circuit indications.

**Ordering information continues on next page.**



# UniPatch® System

## Ordering Information

Description	Required Chassis Space	Ordering Number
<b>Video Modules</b> <i>(continued)</i>		
Midsized, MVJ-3T, RGB+HV, terminated, gray	4 spaces	VM-RGBHV-MVJT-G
Midsized, MVJ-3, RGB, P <sub>P</sub> Y HD module, black	4 spaces	VM-RGB-MVJ-BK
Midsized, MVJ-3T, RGB, P <sub>P</sub> Y HD module, terminated, black	4 spaces	VM-RGB-MVJT-BK
Midsized, MVJ-3, RGB, P <sub>P</sub> Y HD module, gray	4 spaces	VM-RGB-MVJ-G
Midsized, MVJ-3T, RGB, P <sub>P</sub> Y HD module, terminated, gray	4 spaces	VM-RGB-MVJT-G
Midsized, MVJ-3, RGB-S, black	4 spaces	VM-RGBS-MVJ-BK
Midsized, MVJ-3T, RGB-S, terminated, black	4 spaces	VM-RGBS-MVJT-BK
Midsized, MVJ-3, RGB-S, gray	4 spaces	VM-RGBS-MVJ-G
Midsized, MVJ-3T, RGB-S, terminated, gray	4 spaces	VM-RGBS-MVJT-G
Midsized, CJ3014/4014N, 4-circuit, black	4 spaces	VM-CJMID2-BK
Midsized, CJ3014/4014N-75, 4-circuit, terminated, black	4 spaces	VM-CJMID2-BK
Midsized, CJ3014/4014N, 4-circuit, gray	4 spaces	VM-CJMID2-G
Midsized, CJ3014/4014N-75, 4-circuit, terminated, gray	4 spaces	VM-CJMID2-G
BNC bulkhead feedthrough, 15-circuit, black	8 spaces	VM-BHFT-15BK
BNC bulkhead feedthrough, 15-circuit, gray	8 spaces	VM-BHFT-15G
<b>Rear Modules</b>		
Audio QCP II, 8-circuit for bantam audio applications		VPRM-BAN-MKII
Audio EDAC 3-pin plug, 8-circuit for audio applications		VPRM-BAN-E3
Audio EDAC 90-pin plug, 8-circuit		VPRM-BAN-E90
DB-9, 32-circuit Ultra Patch, 3-foot umbilical, white, for audio applications		VPRM-3DB9-W
Universal AMP 50-pin receptacle, 8-circuit, RS-422, white		VPRM-A50
Universal DB-25, 8-circuit, RS-422, white		VPRM-D25
Universal DB-9, 8-circuit, RS-422, white		VPRM-D9-W
Universal EDAC 90-pin plug, 8-circuit, RS-422, white		VPRM-E90-W
Universal QCP II, 8x10 circuit, white, for data applications		VPRM-MKII-W
Universal RJ45, 8-circuit, white		VPRM-RJ45
<b>UniPatch Accessories</b>		
Dsub9 thin backshell connector kit, 1 count		DB9-TSHELL1-KIT
Dsub9 thin backshell connector kit, 16 count		DB9-TSHELL16-KIT
Dsub9 thin backshell connector kit, 64 count		DB9-TSHELL64-KIT
Patch cord kit with two RS-422 ends, 10-pin black, no cable		PC-422-KIT
Bantam audio module extraction tool		VP-BAN-TOOL
Rear cable management kit (mounts in rear rack rails), black		PPI-EXT-BAR-BK
Rear cable management kit (mounts in rear rack rails), gray		PPI-EXT-BAR-G
<b>Replacement Designation Strip Kits**</b>		
Kit of 2 pieces, 17" x .640" full-length designation strips (includes window and mounting screws)		VP-DES-680-32
Kit of 128 windows, .440" x .343" designation windows for bantam modules		VP-DES-BAN
Kit of 16 windows, 2.01" x .343" designation windows for video modules		VP-DES-VIDEO
Kit of 4 pieces, 4.174" x .289" designation strips for bantam, video or data modules (includes windows and mounting screws)		VP-DES-343-4
Kit of 2 pieces, 17" x .289" designation strips for loaded bantam or data chassis (includes windows and mounting screws. Order two kits for loaded bantam systems)		VP-DES-343-32

\*\* See UniPatch Installation Guide ADCP-75-009 for additional information on selecting the correct designation kit for your UniPatch system. Designations are supplied with chassis and system configurations; kits are for replacement only

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# UniPatch® System

## Ordering Information

Description	Ordering Number
<b>UniPatch® Data Patch Cords</b>	
UniPatch RS-422 10-pin black 2'	PC-422-2BK
UniPatch RS-422 10-pin black 3'	PC-422-3BK
UniPatch RS-422 10-pin black 4'	PC-422-4BK
UniPatch RS-422 10-pin black 6'	PC-422-6BK
UniPatch RS-422 10-pin black 8'	PC-422-8BK
UniPatch RS-422 10-pin black 10'	PC-422-10BK
UniPatch RS-422 10-pin to RJ45, black 2'	PC-422-RJ45-2BK
UniPatch RS-422 10-pin to RJ45, black 3'	PC-422-RJ45-3BK
UniPatch RS-422 10-pin to RJ45, black 4'	PC-422-RJ45-4BK
UniPatch RS-422 10-pin to RJ45, black 6'	PC-422-RJ45-6BK
UniPatch RS-422 10-pin to RJ45, black 10'	PC-422-RJ45-10BK
<b>Traditional RS-422 Patch Panels</b>	
RS-422 2x12 non-normalled RJ45, black	PEM-9NCDA1-BK-NN
RS-422 2x12 non-normalled RJ45, putty	PEM-9NCDA1-NN
RS-422 2x24 non-normalled RJ45, black	S824-NN
RS-422 2x24 dual bantam to MKIV normalled	PPB3-5MKIVR422NS
RS-422 2x24 dual bantam to Dsub9 normalled	PPB3-5R422D9NS
RS-422 2x12 dual bantam to Dsub9 normalled	PPB3-5R422D9NS-12
<b>Traditional Data Patch Cords</b>	
RJ45-RJ45 1', blue	ADCPC-RRC6B-BL01
RJ45-RJ45 2', blue	ADCPC-RRC6B-BL02
RJ45-RJ45 3', blue	ADCPC-RRC6B-BL03
RJ45-RJ45 4', blue	ADCPC-RRC6B-BL04
Dual bantam to single RJ45, 36"	MPP-BCC-003
Dual bantam to dual RJ45, 36"	PAT-100900-003
Dual bantam to single RJ45, 72"	PAT-100904
Dual bantam to dual RJ45, 72"	PAT-100900-006



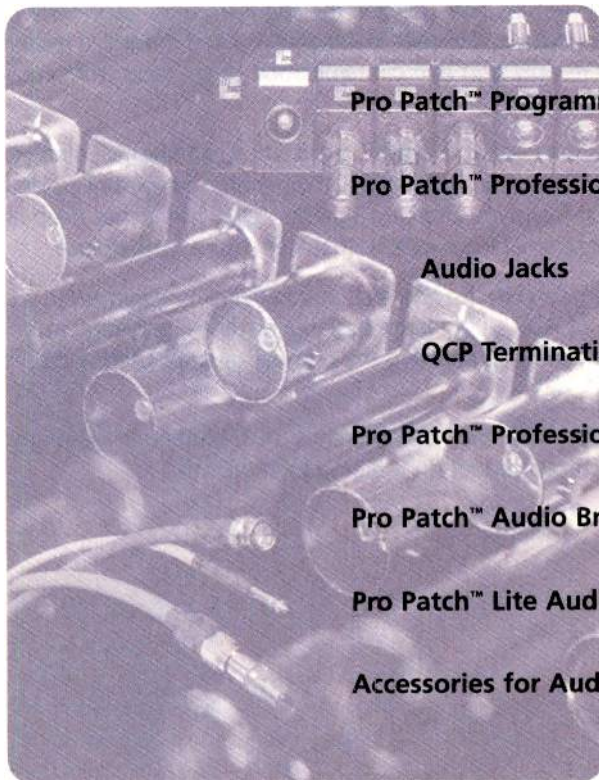
UniPatch Data Patch Cord

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# Pro Patch™ Professional Audio Patchbay Broadcast Jackfield



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<b>Pro Patch™ Professional Audio Patchbays Features</b>	<b>23</b>
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## Pro Patch™ Programmable Series High-Density Bantam Patching System



The new Pro Patch™ Programmable bantam modular system offers unprecedented reliability and flexibility in a convenient, space-saving size and lightweight package. Specifically engineered for every day use in demanding mobile trucks, the Pro Patch Programmable system is the only product in its class that passes stringent MIL-STD-202F standards for vibration and environmental requirements.

The Pro Patch Programmable system is a WECO-standard bantam module in a high-density (2 x 48) one-rack space panel. The modular design allows individual front jack access for circuit and ground configurations without having to take the entire panel off-line or removing it from the rack. Each modular bantam jack features gold crossbar contacts that provide self-cleaning action and maximize reliability. Jack modules are also individually sealed which prevents dust and contamination of the jacks from convection plenum action common in rack-mounted systems.

The Pro Patch Programmable series is available in several termination options including EDAC/ELCO 3-pin, 56-pin, 90-pin and AMP "champ" 50-pin connectors in both an eight-connector version for audio and a four-connector version for RTS/Clear-Comtype intercom systems. Only five inches deep and 6.2 pounds fully configured, the Pro Patch Programmable series is unmatched in the marketplace.

Using ADC's patent-pending escutcheon kit, the one rack unit panel can be converted to a 1.5 rack unit configuration. This allows the use of ADC's ultra-large designation strips, providing room for three lines of text – the largest designation on the market, reducing the number of strips used and saving valuable installation time.

With the introduction of the new Pro Patch high-density series, ADC continues to bring you the best performing, highest quality audio patching products in the broadcast market.



# Pro Patch™ Programmable Series

## High-Density Bantam Patching System

### Features:

- Industry's only bantam audio panel fully qualified to meet demanding military standards (MIL-STD 202F) for ruggedness, and MIL-J-641E for jack compliance
- High-density 2x48 WECO-compliant bantam jacks on 0.312-inch centers
- DIP switch selectable circuit normals and grounds
- Ultra-shallow five-inch depth
- Fully AES/EBU 110 Ohm digital and analog compliant
- Lightweight panels weigh only 6.2 pounds
- Modular design allows individual jack access/configuration without affecting other circuits
- Grounds can be configured on an individual circuit basis for lift, chassis, sleeve, and common ground
- Modules snap into place, tabs lock into chassis
- Circuit status icons allow users to identify circuit status with colored snap-in icons in eight colors
- Designation strips cover tabs to prevent unauthorized access to circuit configuration switches
- Converts to a 1.5 rack unit panel with a patent-pending escutcheon kit
- Largest designations on the market, 0.410-inch top and bottom for 1 rack unit, 0.680-inch top and bottom for 1.5 rack unit
- New 1.4-inch straddle designation strip kit uses one strip for two panels, cutting designation strip labor in half



EDAC 90-pin Chassis (Front View)



EDAC 90-pin Chassis (Rear View)



EDAC 90-pin Chassis with 1.5 Designation Strips



EDAC 56-pin Chassis (Rear View)

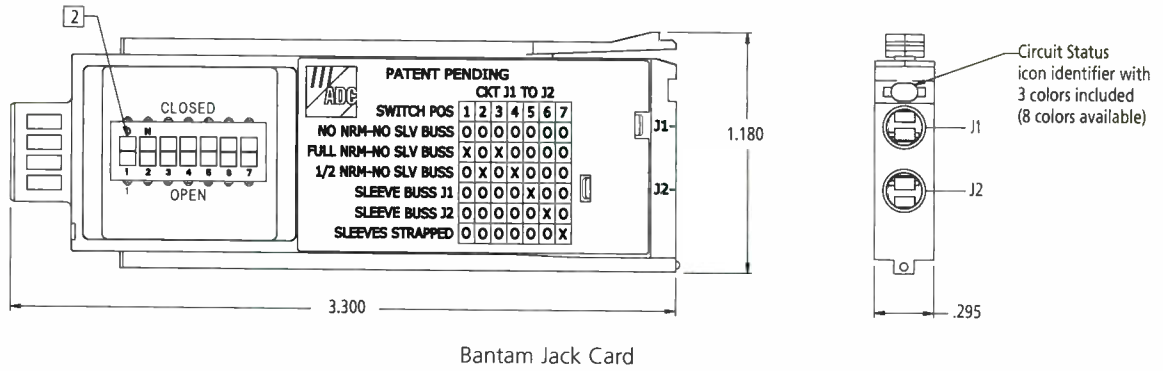


EDAC 3-pin Chassis (Rear View)



# Pro Patch™ Programmable Series

## High-Density Bantam Patching System



### Individual Jack Access

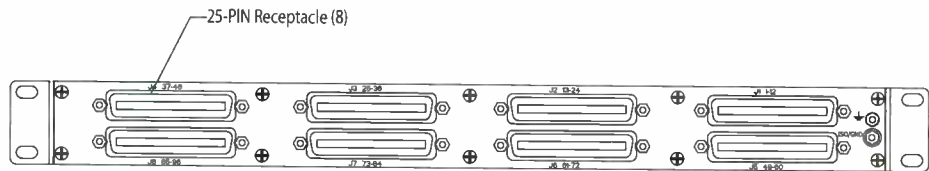
Each Pro Patch® Programmable bantam panel features 48 individual bantam jack cards. Cards contain an individual circuit pair of jacks, front panel circuit status snap-in icon, and seven-position sealed DIP switch for normals and grounds configuration. The gold-plated header card plugs and sockets contained in the chassis ensure maximum reliability.

To remove a jack, first remove the top and bottom designation strips, push down the locking tab on the jack module and slide the module out from the front of the chassis. It is not necessary to remove the entire panel from the rack, or the cover from the chassis. Unauthorized circuit changes are eliminated because switches are hidden from front panel view.

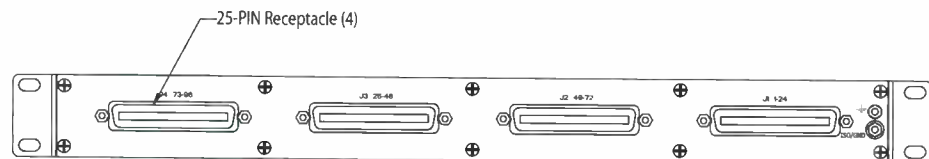
The Pro Patch Programmable bantam system is the only product in its class that passes demanding MIL-202 environmental testing for thermal shock, resistance from moisture contamination, plating corrosion from salt fog, and vibration to simulate long-term over-the-road use.



Pro Patch Programmable bantam panel allows individual front-panel jack access for normals and grounds without having to take the entire panel off-line. Special 7-position DIP switches allows configuration of the circuit normal and grounds without cumbersome jumpers or pins to lose. (See-through cover in photo is for demonstration purposes only.)



1 RU 48-Position Bantam/AMP 50-pin Audio Panel (Rear View)



1 RU 48-Position Bantam/AMP 50-pin Intercom Panel, with bussed grounds (Rear View)

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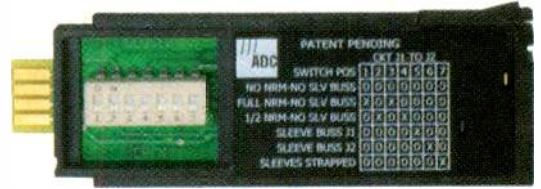


# Pro Patch™ Programmable Series

## High-Density Bantam Patching System



PPP1248-E90-NS



AM1-BAN



PPP1248-E90



PPP-15-CHAS-KIT

### Ordering Information

Description	Ordering Number
<b>Preconfigured Systems</b>	
<b>1RU 2x48</b>	
EDAC 90-pin, half-normalled	PPP1248-E90-HN
EDAC 3-pin, half-normalled	PPP1248-E3-HN
EDAC 56-pin, half-normalled	PPP1248-E56-HN
EDAC 90-pin, normals strapped	PPP1248-E90-NS
EDAC 3-pin, normals strapped	PPP1248-E3-NS
EDAC 56-pin, normals strapped	PPP1248-E56-NS
EDAC 90-pin, half-normalled, with connector kits	PPP1248-E90-HN-S
EDAC 3-pin, half-normalled, with connector kits	PPP1248-E3-HN-S
EDAC 56-pin, half-normalled, with connector kits	PPP1248-E56-HN-S
EDAC 90-pin, normals strapped, with connector kits	PPP1248-E90-NS-S
EDAC 3-pin, normals strapped, with connector kits	PPP1248-E3-NS-S
EDAC 56-pin, normals strapped, with connector kits	PPP1248-E56-NS-S
AMP 50-pin audio, half-normalled	PPP1248-A50-HN
AMP 50-pin audio, normals strapped	PPP1248-A50-NS
AMP 50-pin intercom, half-normalled, bussed ground	PPP1248-ICA50-HN
AMP 50-pin intercom, normals strapped, bussed ground	PPP1248-ICA50-NS
<b>Accessories</b>	
1 RU bantam audio module	AM1-BAN
Designation kits	
.440"	VP-DES-440
.680"	VP-DES-680-B
.1500"	VP-DES-1500-B
1.5 RU chassis conversion kit	PPP-15-CHAS-KIT

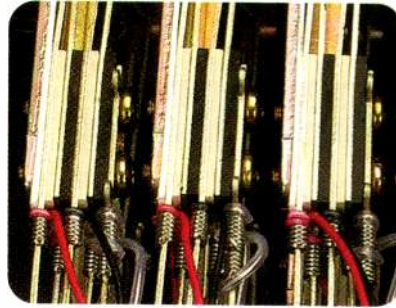
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# Pro Patch™ Professional Audio Patchbays

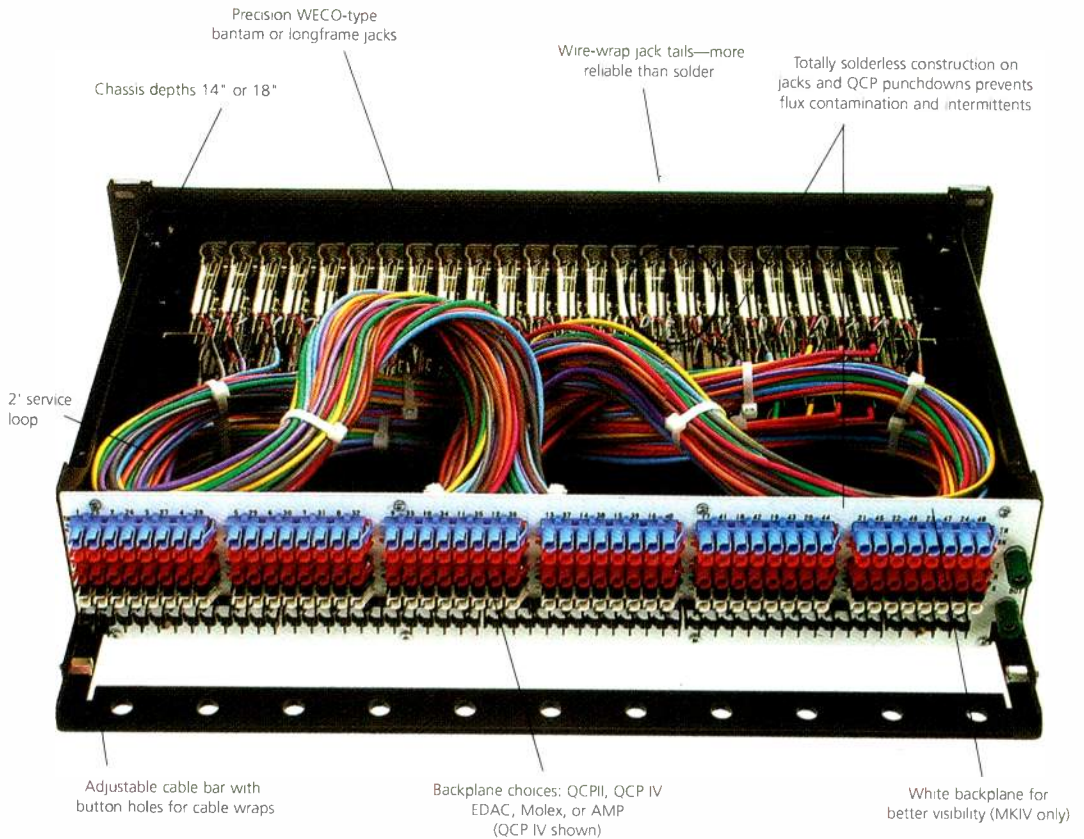
## Audio Patchbays and Jackfields

Pro Patch™ professional audio patchbays and broadcast jackfields feature an extensive selection of jacks, panel sizes, normalling options, and rear terminations. Each panel contains ADC's high-quality, WECCO-standard, frame-type jacks and includes a tough powder-coated chassis with built-in cable support and designation strips. Solderless internal wiring and terminations ensure completely dependable performance without intermittents. Termination options include the extremely reliable and quick-to-wire QCP II or QCP IV punchdown system as well as EDAC, AMP, and Molex connector options.



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# Pro Patch™ Professional Audio Patchbays

## Audio Patchbays and Jackfields

### Features

#### Analog or Digital Wiring

- Standard analog cable (PPA/PPB/PPS)
- Precision 110 Ohm digital audio cable (DAL/DAB)

#### Variety of Jack Options

- Standard longframe jacks (evenly spaced)
- High-density bantam jacks, regular or stereo spaced
- Stereo-spacing option places jacks in pairs

#### Standard or Custom Sizes

- 1 RU (1.75"/44.5 mm)
- 2 RU (3.5"/88 mm)
- Custom sizes available

#### Wide Selection of Terminations

- Patented QCP II or QCP IV punchdown connectors

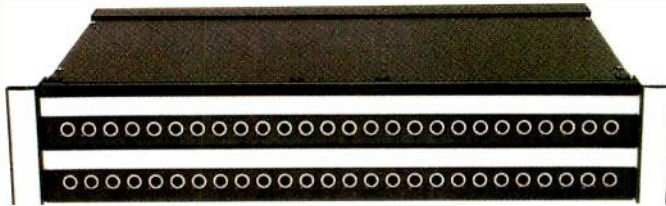
- EDAC/ELCO 90-, 56-, 38- and 3-pin plugs
- AMP 50-pin receptacle
- Molex 3-pin plug
- Ultra Patch panel with QCP IV, prewired umbilical (broadcast jackfields only)
- Stub end cut to length

#### Full Range of Normalising Options

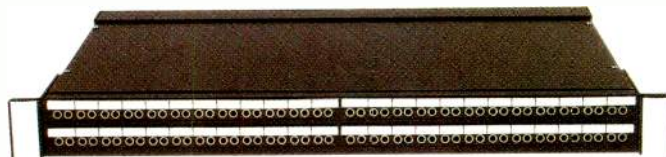
- No normals (requires looping plugs or cords for patch)
- Normals strapped (fully normalised)
- Half-normalised (monitor top row)
- Normals brought out
- Sleeve normals brought out
- Bussed grounds

Broadcast Products

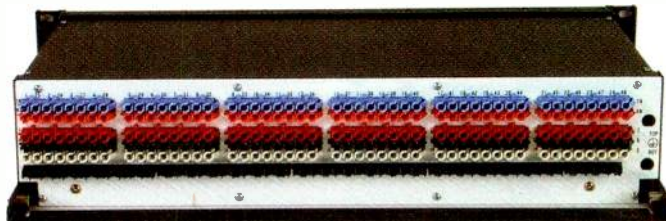
3 0 4 • 1 1 8 0 2 7 0



PPA3-14MKII26NO  
2 RU Longframe Evenly-Spaced 2x26 Patchbay



PPB1-14MKIVENSBG  
1RU Bantam Stereo-Spaced 2x48 Patchbay



PPA3-14MKIVNO  
2 RU Longframe Evenly-Spaced 2x24 QCP IV Patchbay (Rear View)



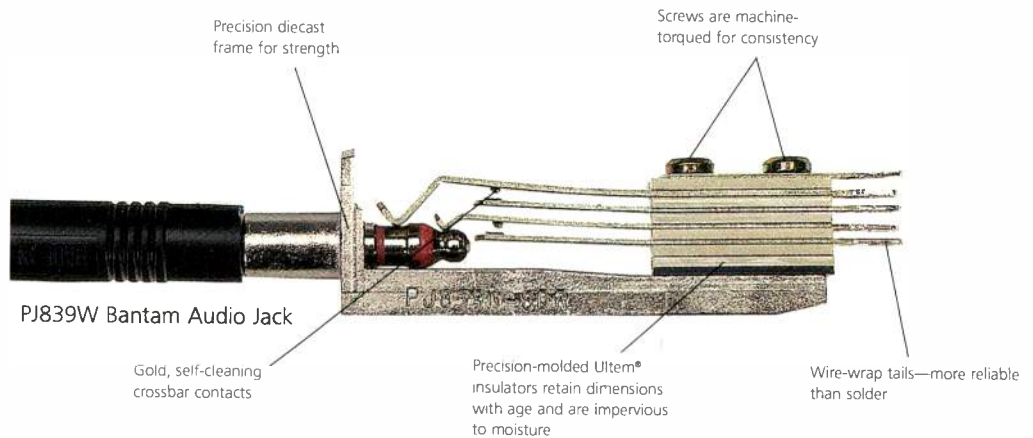
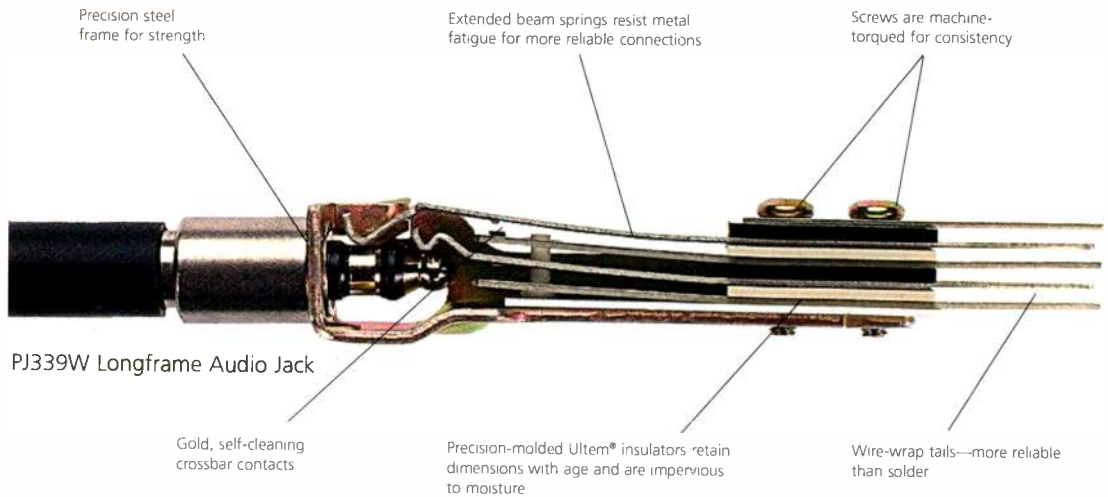
# Pro Patch™ Professional Audio Patchbays Audio Jacks

## ADC's Premium Quality Audio Jacks

The quality of an audio jack is visible in the details. For example, inside ADC's jacks, the gold, self-cleaning crossbar contacts are designed to wipe across each other at an angle that removes debris with every plug insertion. Extended spring beams provide greater resilience for long life and firm contact force. Precision-molded Ultem® insulators do not change dimensions even in tough environments, ensuring consistent spring torque and reliable performance.

### Features

- All patch panels use WECO-standard jacks that adhere to MIL-STD-202F specifications
- Absolutely reliable WECO alloy #1 gold, self-cleaning crossbar contacts wipe away debris with every insertion
- Solder-free wire-wrap tails prevent intermittents from cold solder joints or flux migration. Far more reliable than solder
- Tested to withstand tough mobile applications, including vibration, temperature (-55°C to 85°C), moisture, and salt air



Broadcast Products  
1-800-726-4266



# Pro Patch™ Professional Audio Patchbays

## QCP Termination System

### Time-saving QCP II and QCP IV Termination System

Innovative QCP connectors can really speed up an installation. No need to spend time prepping wires and laboriously soldering and crimping connector pins. Just insert the wire and punch. In one motion you have a reliable gastight connection, even with multiple wires. The unique patented design holds wire far more securely than telco-type punchdowns, preventing intermittents.

MKII panels use QCP II individual terminal insulators, which allow greater density and can be replaced individually. MKIV panels use QCP IV 1x8 terminal blocks insulated on both the front and back of the panel to prevent shorts.



QCP IV Connections

#### Features

ADC's exclusive, patented QCP II and QCP IV split-cylinder punchdown termination system is faster and easier to install and more reliable than any other termination system, including solder.

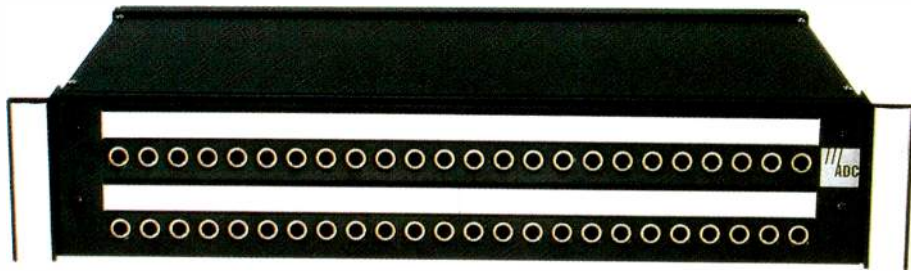
- Dependable, durable, split-cylinder design holds up to three stranded or solid wires, 22 to 26 gauge (0.32 mm to 0.128 mm)
- No intermittents with gastight connections. Uniform split channel width holds each wire firmly, unlike telco punchdowns with V-shaped channels or soldered connections that use flux and may have unreliable solder joints
- Easy pre-lacing makes installation faster. Color-coding prevents wiring mistakes
- Labor-saving punch terminates and cuts wire in one simple motion. New QCP IV installs even faster because you don't have to orient the tool before punching
- Faster and easier changes in circuits or normals than soldered connector systems. Rated for up to 200 insertions/withdrawals
- QCP II terminations are individually mounted and insulated for easy repair or replacement
- QCP IV terminations are mounted in 1x8 blocks insulated on both sides of the panel. This design, plus the recessed conductors, eliminates shorts



# Pro Patch™ Professional Audio Patchbays

Ready to meet any analog or digital audio patching requirement, Pro Patch professional audio patchbays offer an extensive selection of options. Models are available with standard or stereo-spaced longframe jacks, bantam jacks, and a variety of backplane connector types. MKII models come with QCP II, EDAC, or AMP backplane connectors and fixed cable support bars. MKIV models include QCP IV, EDAC, or AMP backplane connectors, adjustable cable support bars and a white backplane for easier circuit visibility. All models offer a wide choice of normals, a tough powder-coated chassis, and solderless internal wiring for outstanding reliability.

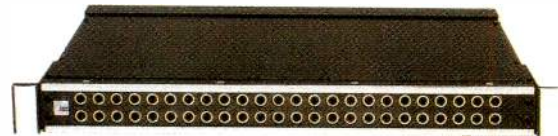
Broadcast Products  
1-800-726-4266



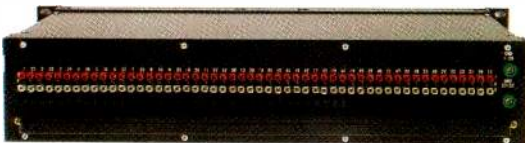
PPA3-14MKIVNO Longframe Evenly-Spaced 2x24 Patchbay



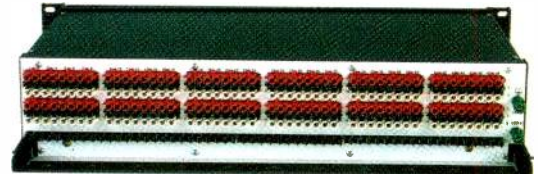
PPB3-14MKIVNS  
2 RU Stereo-Spaced Bantam 2x48 Patchbay



PPA1-14MKIVNS  
1 RU Longframe Evenly-Spaced 2x24 Patchbay



DAL3-14MKII26NS  
2 RU QCP II Digital Patchbay (Rear View)



DAB3-14MKIVNS  
2 RU QCP IV Digital Patchbay (Rear View)



DAB3-14MKIINS  
2 RU Stereo-Spaced  
Bantam/QCP II Digital Patchbay

# Pro Patch™ Professional Audio Patchbays

## Features

### Choice of Panel Sizes

- 1 RU high (1.75 inches/44 mm)
- 2 RU high (3.5 inches/88 mm)
- Depths of 14 inches (350 mm) or 18 inches (450 mm)
- Custom panel sizes available

### Longframe or Bantam Jacks

- Longframe jacks in 2x24 or 2x26 array stereo or evenly spaced
- Bantam jacks in 2x48 array stereo or regular spaced

### Wide Selection of Terminations

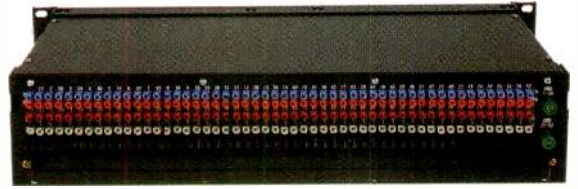
- QCP II or QCP IV punchdown connectors
- EDAC 3-, 38-, 56-, and 90-pin plugs
- AMP 50-pin receptacle
- Molex 3-pin plug

### Full Range of Normalling Options

- No normals
- Normals strapped (fully normalled)
- Half-normalled (monitor top row)
- Normals brought out
- Sleeve normals brought out
- Bussed grounds

### Digital Audio Cable

- Precision 110 Ohm digital audio cable meets and exceeds stringent AES requirements



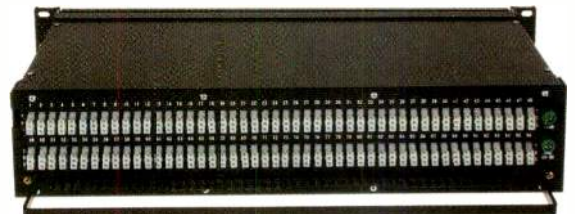
PPA3-14MKII26NO  
2 RU Longframe Evenly-Spaced 2x26 QCP II Patchbay (Rear View)



PPA3-14MKIIANS  
2 RU Longframe Evenly-Spaced 2x24 AMP 50-Pin Receptacle Patchbay (Rear View)



PPB1-14MKIIENSBG  
1 RU Bantam Stereo-Spaced 2x48 EDAC 90-Pin Plug Patchbay (Rear View)



PPB3-14MKIIBEHN  
2 RU Bantam Stereo-Spaced 2x48 EDAC 3-Pin Plug Patchbay (Rear View)



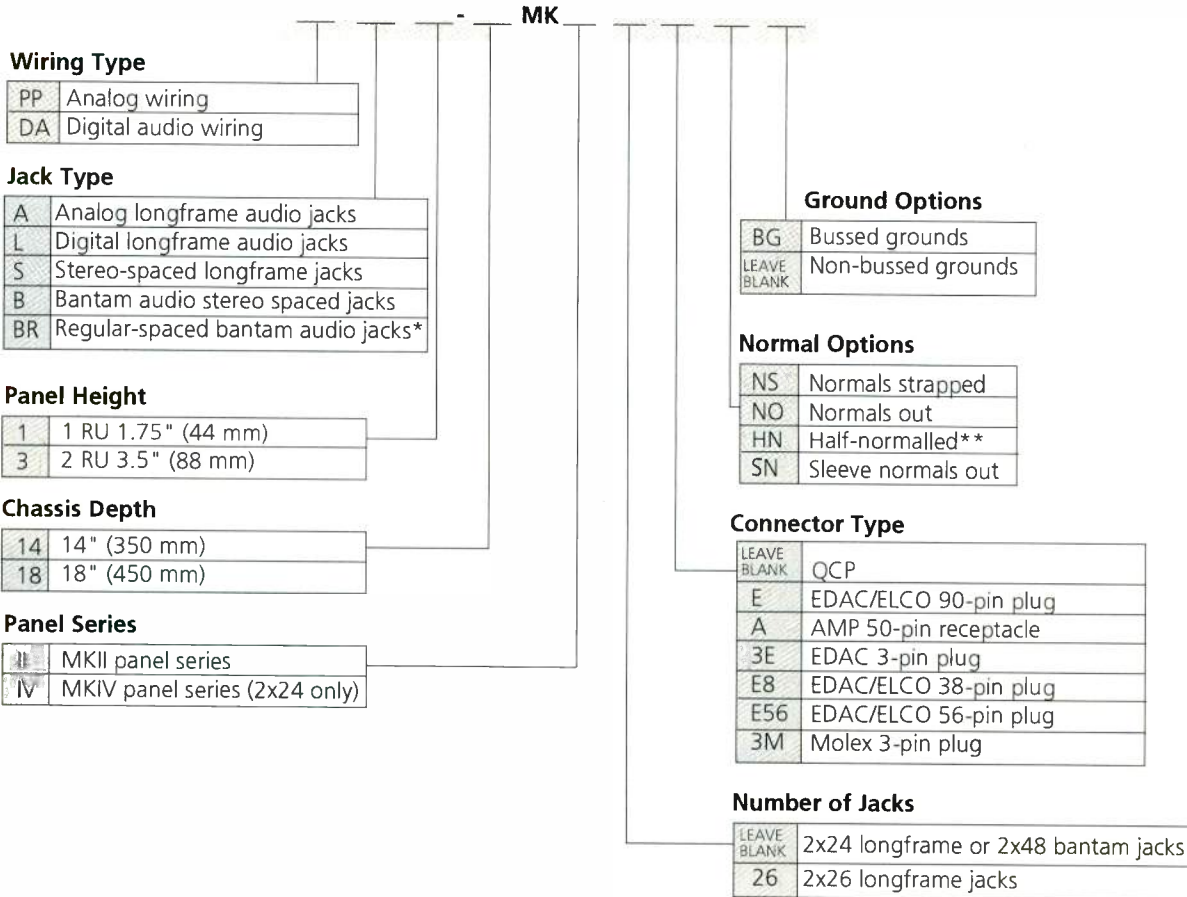
# Pro Patch™ Professional Audio Patchbays

## Pro Patch™ Patchbays Ordering Information

Broadcast Products

3704 • 1180270

### Ordering Number



**Example:** PPA3-14MKII26NOBG - Pro Patch 2 RU panel, 14" deep with QCP II punchdowns, 2x26 array of longframe jacks, normals out audio normaling, and bussed grounds.

**Note:** For mobile applications rear chassis support is recommended.

### Digital Audio

Precision 110 Ohm digital audio patch cords are listed on page 38.

Use 110 Ohm 1% resistors on normals of unstrapped jacks (normals out version only).

\* For information on this and other custom configurations, please contact ADC.

\*\*Half-normal not recommended for digital audio applications.





# Pro Patch™ Professional Audio Patchbays

Broadcast Products  
3/04 • 1180270

## Ordering Information

Description	Ordering Number
<b>Pro Patch Audio Patchbays</b>	
<b>Normals Out</b>	
1.75" 2x24 longframe, QCP II, 14" chassis *	PPA1-14MKIINO
3.50" 2x24 longframe, QCP IV, 14" chassis	PPA3-14MKIVNO
3.50" 2x26 longframe, QCP II, bussed grounds, 14" chassis**	PPA3-14MKII26NO
3.50" 2x26 longframe, QCP II, 18" chassis**	PPA3-18MKII26NO
3.50" 2x24 longframe, QCP IV, 18" chassis	PPA3-18MKIVNO
3.50" 2x48 bantam, QCP II, 14" chassis	PPB3-14MKIINO
3.50" 2x48 bantam, QCP II, 18" chassis	PPB3-18MKIINO
3.50" 2x48 bantam, QCP II, bussed grounds, 14" chassis	PPB3-14MKIINOBG
<b>Normals Strapped (Fully Normalled)</b>	
1.75" 2x24 longframe, QCP IV, 14" chassis	PPA1-14MKIVNS
1.75" 2x26 longframe, EDAC 90-pin plug, 14" chassis	PPA1-14MKII26ENS
3.50" 2x24 longframe, QCP IV, 14" chassis	PPA3-14MKIVNS
3.50" 2x24 longframe, QCP IV, 18" chassis	PPA3-18MKIVNS
3.50" 2x26 longframe, QCP II, 14" chassis**	PPA3-14MKII26NS
3.50" 2x26 longframe, EDAC 90-pin plug, 14" chassis	PPA3-14MKII26ENS
3.50" 2x24 longframe, AMP 50-pin receptacle, 14" chassis	PPA3-14MKIIANS
3.50" 2x48 bantam, QCP IV, 14" chassis	PPB3-14MKIVNS
1.75" 2x48 bantam, EDAC 90-pin plug, 14" chassis	PPB1-14MKIENS
3.50" 2x48 bantam, EDAC 90-pin plug, 14" chassis	PPB3-14MKIENS
<b>Half-Normals</b>	
1.75" 2x24 longframe, QCP IV, 14" chassis	PPA1-14MKIVHN
1.75" 2x26 longframe, QCP II, 14" chassis**	PPA1-14MKII26HN
1.75" 2x24 longframe, EDAC 90-pin plug, 14" chassis	PPA1-14MKII24EHN
3.50" 2x24 longframe, QCP IV, 14" chassis	PPA3-14MKIVHN
3.50" 2x24 longframe, QCP IV, 18" chassis	PPA3-18MKIVHN
3.50" 2x26 longframe, EDAC 90-pin plug, 14" MKII style chassis**	PPA3-14MKII26EHN
1.75" 2x48 bantam, EDAC 90-pin plug, 14" MKII style chassis	PPB1-14MKIIEHN
3.50" 2x48 bantam, QCP IV, 14" chassis	PPB3-14MKIVHN
3.50" 2x48 bantam, EDAC 90-pin plug, 14" chassis	PPB3-14MKIIEHN
<b>No Normals</b>	
1.75" 2x24 longframe, QCP IV, 14" chassis	PPA1-14MKIVNN
1.75" 2x24 longframe, EDAC 90-pin plug, 14" chassis	PPA1-14MKII24ENN
3.50" 2x48 bantam, QCP IV, 14" chassis	PPB3-14MKIVNN
<b>Sleeve Normals Brought Out</b>	
3.50" 2x24 longframe, QCP IV, 14" chassis	PPA3-14MKIVSN
3.50" 2x26 longframe, QCP II, 14" chassis**	PPA3-14MKII26SN

\* 1 RU 2x24 normals out panel only available in QCP MKII version.

\*\* 2x26 panels only available in QCP MKII versions.

**Note:** For mobile applications, rear chassis support is recommended. Order Pro Patch support bar kit (Ordering Number: SBK); mounts on rear rack rails to support rear of panel.

**Note:** Bussed ground option available on all panels; please contact ADC for details.



# Pro Patch™ Digital Audio Patchbays

## Ordering Information

Description	Ordering Number
<b>Pro Patch Digital Audio Patchbays*</b>	
1.75" 2x26 longframe, EDAC 90-pin plug, MKII series panel, normals strapped, 14" chassis**	DAL1-14MKII26ENS
1.75" 2x26 longframe, QCP II, normals strapped, 14" chassis**	DAL1-14MKII26NS
1.75" 2x24 longframe, QCP IV, normals strapped, 18" chassis	DAL1-18MKIVNS
3.5" 2x26 longframe, QCP II, normals strapped, 14" chassis**	DAL3-14MKII26NS
3.5" 2x24 longframe, EDAC 3-pin plug, normals strapped, bussed grounds, MKII series, 14" chassis	DAL3-14MKII3ENSBG
3.5" 2x24 longframe, QCP II, normals out, 14" chassis	DAL3-14MKIINO
3.5" 2x24 longframe, QCP II, normals strapped, 14" chassis	DAL3-14MKIINS
3.5" 2x24 longframe, QCP II, normals strapped, bussed grounds, 14" chassis	DAL3-14MKIINSBG
3.5" 2x24 longframe, QCP IV, normals strapped, 14" chassis	DAL3-14MKIVNS
3.5" 2x24 longframe, QCP II, normals strapped, bussed grounds, 18" chassis	DAL3-18MKIINSBG
3.5" 2x48 bantam, EDAC 90-pin plug, MKII series panel, normals out, 14" chassis	DAB3-14MKIENO
3.5" 2x48 bantam, EDAC 90-pin plug, MKII series panel, normals strapped, 14" chassis	DAB3-14MKIENS
3.5" 2x48 bantam, QCP II, no normals, 14" chassis	DAB3-14MKIINN
3.5" 2x48 bantam, QCP II, normals strapped, 14" chassis	DAB3-14MKIINS
3.5" 2x48 bantam, QCP II, normals strapped, bussed grounds, 14" chassis	DAB3-14MKIINSBG
3.5" 2x48 bantam, QCP IV, no normals, 14" chassis	DAB3-14MKIVNN
3.5" 2x48 bantam, QCP IV, normals strapped, 14" chassis	DAB3-14MKIVNS
3.5" 2x48 bantam, QCP IV, normals strapped, bussed grounds, 14" chassis	DAB3-14MKIVNSBG
3.5" 2x48 bantam, QCP IV, normals strapped, bussed grounds, 18" chassis	DAB3-18MKIVNSBG

\* Custom panel configurations are available. Please contact ADC.

\*\* 2x26 panels only available in QCP MKII versions.

**Note:** Precision 110 Ohm digital audio patch cords are found on page 38.

For mobile applications, rear chassis support is recommended. Order Pro Patch support bar kit (Ordering Number: SBK); mounts on rear rack rails to support rear of panel.

**Note:** Bussed ground option available on all panels; please contact ADC for details.



# Pro Patch™ Audio Broadcast Jackfields

ADC audio broadcast jackfields simplify the task of wiring rack-mounted panels by separating the jacks from the backplane. The jack panel mounts on the front of the rack, and the Ultra Patch termination panel mounts on the rear with an umbilical connecting the two. This arrangement makes the termination wiring more accessible so you don't have to reach into the rack to make connections. In addition, the totally solderless wiring of both panels provides more reliable connections than solder, ensuring dependable service.

Options available include panel sizes, longframe or bantam jacks, choice of normalling, standard or custom umbilical length, and QCP II, QCP IV, or EDAC rear panel connectors. AES digital audio versions are available with precision 110 Ohm low capacitance shielded twisted pair cable. MKII panels include fixed cable trays. MKIV panels have adjustable cable bars and white backplanes for better visibility.

## Features

### Choice of Panel and Umbilical Sizes

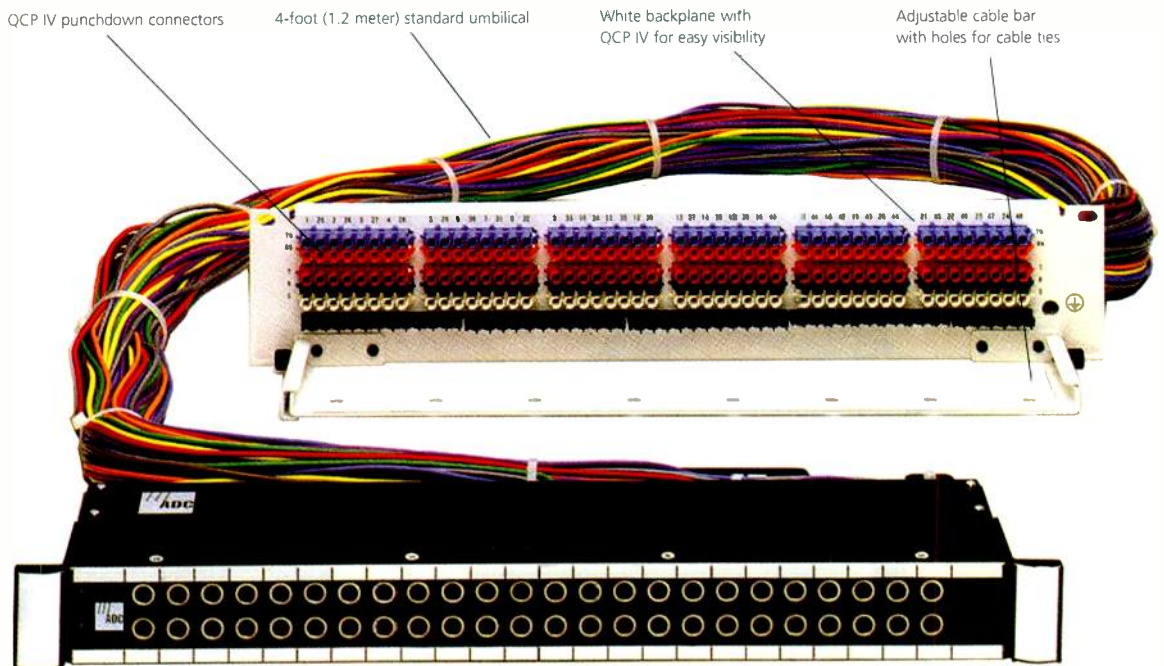
- 1 RU jack panel (1.75"/44 mm) with 2 RU (3.5"/88 mm) or 3 RU (5.25"/132 mm) Ultra Patch termination panel
- 2 RU jack panel (3.5"/88 mm) with 3 RU (5.25"/132 mm) Ultra Patch termination panel
- Standard 4-foot (1.2 meter) umbilical or custom lengths available

### Longframe or Bantam Jacks

- Longframe jacks in 2x24 or 2x26 array stereo or evenly spaced
- Bantam jacks in 2x48 array stereo or regular spaced

### Digital Audio Cable

- Precision 110 Ohm digital audio cable meets and exceeds stringent AES requirements



BJF103-4MKIV 1 RU Longframe/QCP IV Jackfield

Broadcast Products 3704 • 1180270

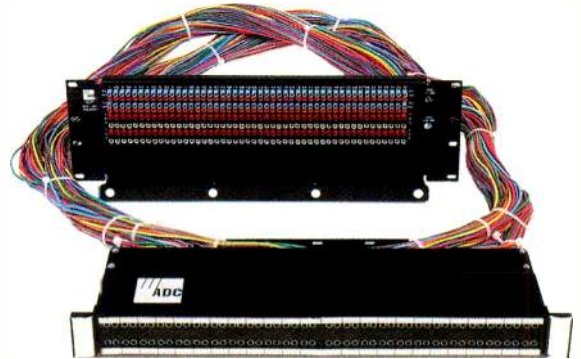


# Pro Patch™ Audio Broadcast Jackfields

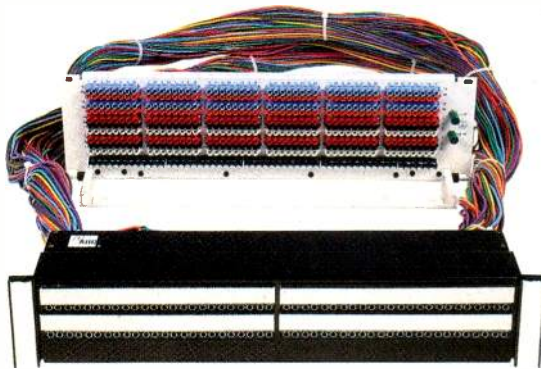
## Features

### Choice of Terminations

- QCP II or QCP IV punchdown connectors
- Stub end cut to length
- Adjustable strain relief cable bar included standard on Ultra Patch MKIV. Fixed tray on MKII



BJF303-4MKII  
1 RU Bantam/QCP II Jackfield

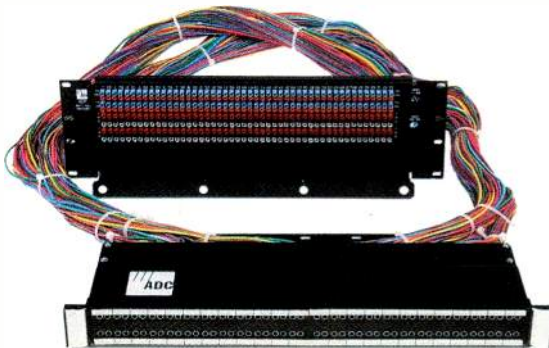


BJF403-4MKIV  
2 RU Bantam/QCP IV Jackfield

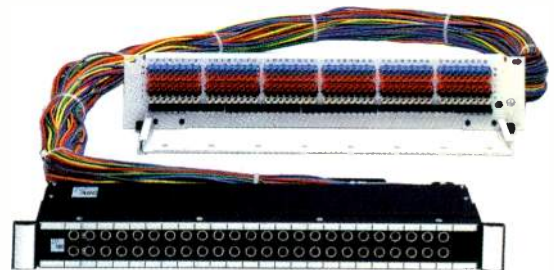
## Features

### Full Range of Normalling Options

- No normals
- Normals strapped (fully normalled)
- Half-normalled (monitor top row)
- Normals brought out
- Sleeve normals brought out
- Bussed grounds



DAB303-4MKII  
1 RU Bantam/QCP II Digital Jackfield



DAL107-4MKIV  
1 RU Longframe/QCP IV Digital Jackfield

Broadcast Products

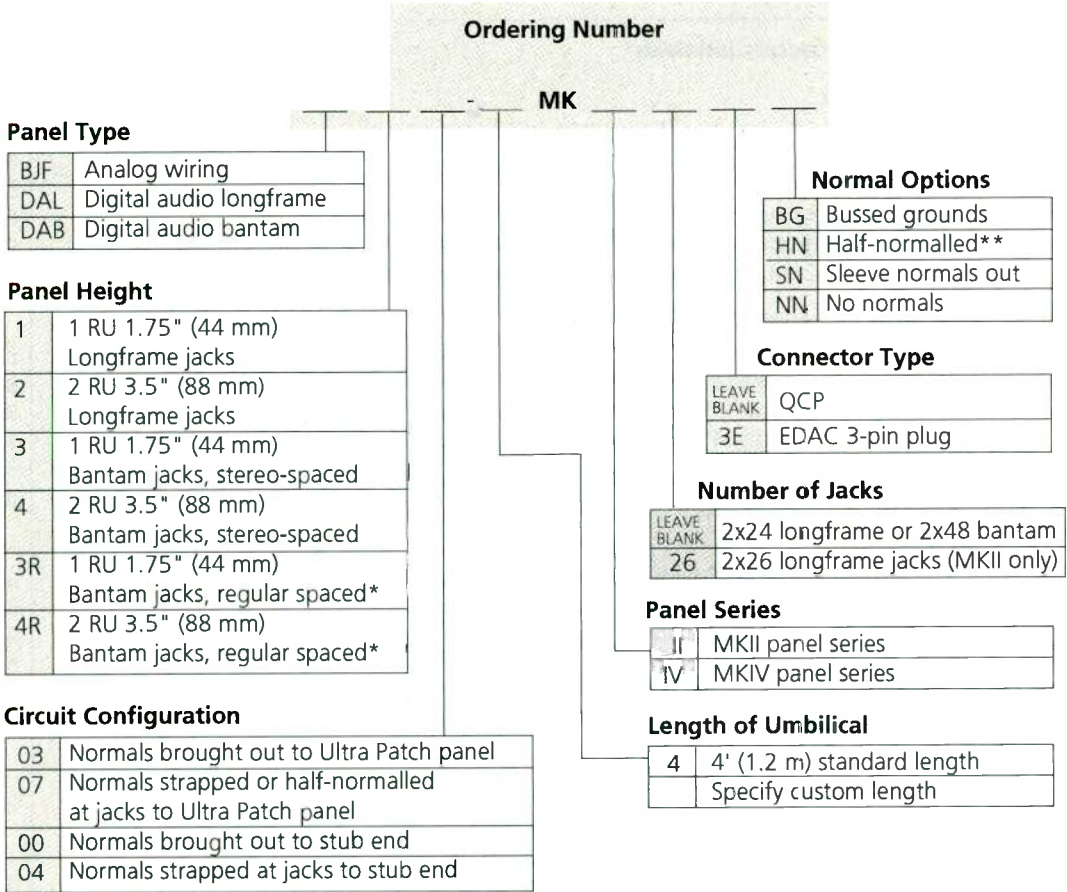
3 0 4 • 1 1 8 0 2 7 0



# Pro Patch™ Audio Broadcast Jackfields

## Pro Patch™ Audio Broadcast Jackfields Ordering Information

Broadcast Products  
3 / 0 4 • 1 1 8 0 2 7 0



\* For information on these and other custom configurations, please contact ADC.

\*\* Half-normal not recommended for digital audio.

**Note:** Use 110 Ohm 1% resistors on normals of unstrapped jacks. (Normals out versions only)



# Pro Patch™ Audio Broadcast Jackfields

## Ordering Information

Broadcast Products

3/04 • 1180270

Description	Ordering Number
<b>Pro Patch Broadcast Jackfields*</b>	
<b>Normals Out</b>	
1.75" 2x24 longframe, 4' umbilical, 3.5" QCP IV Ultra Patch	BJF103-4MKIV
1.75" 2x26 longframe, 4' umbilical, 3.5" QCP II Ultra Patch**	BJF103-4MKI26
3.50" 2x24 longframe, 4' umbilical, 3.5" QCP IV Ultra Patch	BJF203-4MKIV
3.50" 2x26 longframe, 4' umbilical, 3.5" QCP II Ultra Patch**	BJF203-4MKI26
1.75" 2x48 bantam, 4' umbilical, 5.25" QCP IV Ultra Patch	BJF303-4MKIV
3.50" 2x48 bantam, 4' umbilical, 5.25" QCP IV Ultra Patch	BJF403-4MKIV
<b>Normals Strapped (Fully Normalled)</b>	
1.75" 2x24 longframe, 4' umbilical, 3.5" QCP IV Ultra Patch	BJF107-4MKIV
1.75" 2x26 longframe, 4' umbilical, 3.5" QCP II Ultra Patch**	BJF107-4MKI26
3.50" 2x24 longframe, 4' umbilical, 3.5" QCP IV Ultra Patch	BJF207-4MKIV
3.50" 2x26 longframe, 4' umbilical, 3.5" QCP II Ultra Patch**	BJF207-4MKI26
1.75" 2x48 bantam, 4' umbilical, 3.5" QCP IV Ultra Patch	BJF307-4MKIV
3.50" 2x48 bantam, 4' umbilical, 3.5" QCP IV Ultra Patch	BJF407-4MKIV
<b>Half-Normals</b>	
3.50" 2x26 longframe, 4' umbilical, 3.5" QCP II Ultra Patch**	BJF207-4MKI26HN
3.50" 2x24 longframe, 4' umbilical, 3.5" QCP IV Ultra Patch	BJF207-4MKIVHN
1.75" 2x26 longframe, 4' umbilical, 3.5" QCP II Ultra Patch**	BJF107-4MKI26HN
1.75" 2x24 longframe, 4' umbilical, 3.5" QCP IV Ultra Patch	BJF107-4MKIVHN
1.75" 2x48 bantam, 4' umbilical, 3.5" QCP IV Ultra Patch	BJF307-4MKIVHN
3.50" 2x48 bantam, 4' umbilical, 3.5" QCP IV Ultra Patch	BJF407-4MKIVHN
<b>No Normals</b>	
3.50" 2x48 bantam, 4' umbilical, 3.5" QCP IV Ultra Patch	BJF407-4MKIVNN
<b>Sleeve Normals Brought Out</b>	
3.50" 2x24 longframe, 4' umbilical, 3.5" QCP IV Ultra Patch**	BJF203-4MKIVSN
3.50" 2x48 bantam, 4' umbilical, 5.25" QCP IV Ultra Patch	BJF403-4MKIVSN
<b>Pro Patch Broadcast Digital Audio Jackfields*</b>	
1.75" 2x48 bantam, 4' umbilical, 5.25" Ultra Patch, QCP II, normals out	DAB303-4MKII
1.75" 2x48 bantam, 4' umbilical, 3.5" Ultra Patch, QCP IV, normals strapped	DAB307-4MKIV
1.75" 2x48 bantam, 4' umbilical, 3.5" Ultra Patch, QCP II, normals strapped	DAB307-4MKII
1.75" 2x48 bantam, 4' umbilical, 3.5" Ultra Patch, QCP II, normals strapped, bussed grounds	DAB307-4MKIIBG
3.5" 2x48 bantam, 4' umbilical, 3.5" Ultra Patch, QCP II, normals out	DAB403-4MKII
3.5" 2x48 bantam, 4' umbilical, 3.5" Ultra Patch, QCP IV, normals out	DAB403-4MKIV
3.5" 2x48 bantam, 4' umbilical, 3.5" Ultra Patch, QCP IV, normals out, bussed grounds	DAB403-4MKIVBG
3.5" 2x48 bantam, 4' umbilical, 3.5" Ultra Patch, QCP IV, sleeve normalled	DAB403-4MKIVSN
3.5" 2x48 bantam, 4' umbilical, 3.5" Ultra Patch, QCP II, normals strapped	DAB407-4MKII
3.5" 2x48 bantam, 4' umbilical, 3.5" Ultra Patch, QCP II, normals strapped, bussed grounds	DAB407-4MKIINSBG
3.5" 2x48 bantam, 4' umbilical, 3.5" Ultra Patch, QCP IV, normals strapped	DAB407-4MKIV
3.5" 2x24 longframe, 4' umbilical, 3.5" Ultra Patch, QCP II, normals out	DAL203-4MKII
3.5" 2x24 longframe, 4' umbilical, 3.5" Ultra Patch, QCP IV, normals out	DAL203-4MKIV
3.5" 2x24 longframe, 4' umbilical, 3.5" Ultra Patch, QCP II, normals strapped	DAL207-4MKII
3.5" 2x24 longframe, 4' umbilical, 3.5" Ultra Patch, QCP IV, normals strapped	DAL207-4MKIV
3.5" 2x24 longframe, 4' umbilical, 3.5" Ultra Patch, QCP II, no normals	DAL207-4MKIINN
1.75" 2x24 longframe, 4' umbilical, 3.5" Ultra Patch, QCP II, normals strapped	DAL107-4MKII
1.75" 2x24 longframe, 4' umbilical, 3.5" Ultra Patch, QCP IV, normals strapped	DAL107-4MKIV

\* Custom panel configurations are available; please contact ADC.

\*\* 2x26 panels only available in QCP MKII versions.



# Pro Patch™ Lite Audio Panels

## New Low-Cost Audio Panels



PPA1 1RU Stereo-Spaced Longframe 2x24 Panel (Rear View)

Durable cable bar with large holes for cable wraps

Offset lugs for common ground

Durable molded inserts

3 / 0 4 • : 8 0 2 7 0 Broadcast Products

Pro Patch™ Lite is ADC's new line of low-cost, do-it-yourself audio patch bays. For ADC quality on a budget, this is the answer. Features include a steel frame with sturdy molded insert for holding jacks, a removable steel strain relief cable bar, ADC's outstanding quality WECO-standard bantam or longframe jacks with solder tails ready to wire, and choice of normaling configurations. Models are available in one and two rack unit heights with designation strips and standard jack spacing.

### Features

#### Sturdy Construction

- Steel frame with durable molded insert for holding jacks
- Removable steel cable bar

#### Two Panel Sizes

- 1 RU (1.75"/44 mm)
- 2 RU (3.5"/88 mm)

#### Longframe or Bantam Jacks

- Longframe jacks, 2x24 or 2x26 array, WECO-standard with solder tails ready for wiring
- **Bantam** jacks, 2x48 array, WECO-standard with solder tails ready for wiring

#### Choice of Normals

- Normals out
- Pre-half-normalled, common ground
- Pre-normals strapped, common ground
- Sleeve normal

# Pro Patch™ Lite Audio Panels

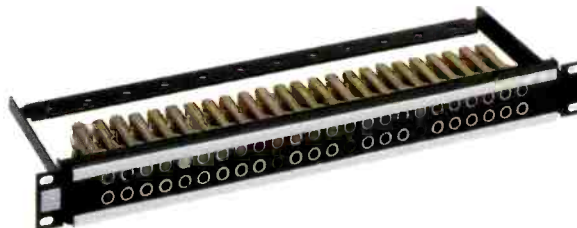
## Ordering Information

Description	Ordering Number
<b>Longframe Panels</b>	
1.75" 2x24 longframe jacks with solder lugs, loaded with 48 PJ339 jacks (see page 40) Half-normalled, common ground	PPA1
Normals strapped, common ground	PPA1-HN-CG
1.75" 2x26 longframe jacks with solder lugs, loaded with 52 PJ339 jacks (see page 40) Half-normalled, common ground	PPA1-26
Normals strapped, common ground	PPA1-26-HN-CG
1.75" 2x24 longframe solder jacks with offset ground lugs	PPA1-26-NS-CG
3.5" 2x24 longframe jacks with solder lugs, loaded with 48 PJ339 jacks (see page 40) Half-normalled, common ground	PPA1-L204*
Normals strapped, common ground	PPA3
3.5" 2x26 longframe solder jacks sleeve normal, loaded with 52 PJ242 jacks (see page 40)	PPA3-HN-CG
	PPA3-NS-CG
	PPA3-26-SN
<b>Bantam Panels</b>	
1.75" 2x48 bantam jacks with solder lugs, loaded with 96 PJ839 jacks (see page 40) Half-normalled, common ground	PPB1
Normals strapped, common ground	PPB1-HN-CG
3.5" 2x48 bantam jacks with solder lugs, loaded with 96 PJ839 jacks (see page 40) Half-normalled, common ground	PPB1-NS-CG
Normals strapped, common ground	PPB3
3.5" 2x48 bantam jacks with solder lugs, sleeve normals, loaded with 96 PJ824 jacks (see page 40)	PPB3-HN-CG
	PPB3-NS-CG
	PPB3-SN

For information on this and other custom configurations, please contact ADC.



PPB1  
1 RU Stereo-Spaced Bantam 2x48 Panel



PPA1-24-NS-CG  
1 RU Longframe 2x24 Panel

Broadcast Products  
3/04 • 1180270





# Accessories for Audio

Whatever the accessory you need for your audio patchbay, the quality source is ADC. Products available include patch cords, connectors and jacks, designation strip kits, and more.

## High-Performance Audio Patch Cords

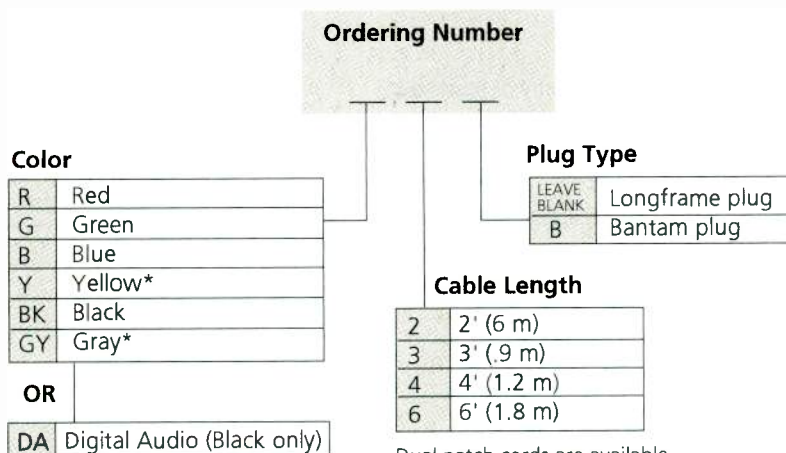
Pro Patch™ audio patch cords are engineered for flawless performance and durability. Nickel plating protects plugs against corrosion and ensures smooth insertion, and the exclusive dielectric compound between conductors provides low capacitance for the best signal performance. The flexible cord drapes neatly without kinking, and the plug is molded directly onto the cord for outstanding strain relief.



### Features

- Meets MIL-J641 and MIL-P642
- Precision WECO 310 (longframe) and bantam plugs assure proper jack performance
- Quad star construction for low noise performance
- Models for analog or digital audio
- Standard lengths from 2 feet (.6 m) to 6 feet (1.8 m). Other lengths available on request
- Colors include red, green, blue, or black. Some cords also available in yellow or gray
- Conversion patch cords for RS-422 to RJ45 are found on page 16. (Conversion patch cords for longframe to bantam, single to dual, are also available. Please contact ADC.)

## Audio Patch Cords Ordering Information



\* Non-standard colors. Please contact ADC for these and other non-standard colors.

Dual patch cords are available. Add a 2 after length. For example, R22 = Red 2' dual longframe.



# Accessories for Audio

## Longframe and Bantam Audio Plugs

Individual longframe and bantam plugs are available featuring low capacitance injection-molded insulators and precision-machined brass or nickel-plated conductors for smooth insertion and best signal performance. Wire connections are made via miniature screw terminals. These plugs provide the best fit and performance to match ADC patch panels.

### Ordering Information

Description	Ordering Number
<b>Longframe Plugs</b>	
Three-conductor longframe plugs (field installable)	
Single red	PJ051R
Single black	PJ051B
Single black, nickel-plated	PJ051B-MN
Looping plug - internal connections tie together corresponding tip, ring and sleeve conductors to allow looping of jack circuits	PJ4
Hole plugs to fill unused jack positions, black	PJ29
<b>Bantam Plugs</b>	
Three-conductor bantam plugs	
Single plug - attachable plug; two lugs, shell mounting screw and two lug attachment screws supplied	
Red	PJ777R
Black	PJ777B
Dual plug - attachable plug; four lugs, two shell mounting screws and four lug attachment screws supplied	
Red	PJ778R
Black	PJ778B
Looping plug	PJ746
Used to "loop" or patch adjacent jack circuits; plug conductors strapped internally; wired tip to tip, ring to ring and sleeve to sleeve	
Hole plugs for bantam panels to fill unused jack positions	
Red	PJ729R
Black	PJ729B
Single bantam circuit guard plugs to identify or block entry to critical circuits; does not actuate circuit	
Red	PJ925R
White	PJ925W
Black	PJ925B

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# Accessories for Audio

## Longframe and Bantam Audio Jacks

If anything differentiates ADC patching products from the competition it is the outstanding quality of our jacks. Consistent quality and durability are built into every jack we make. Our jacks meet WECCO and MIL-STD-202F standards and include gold, self-cleaning contacts, extended spring beams to prevent metal fatigue and poor contact, and precision-molded Ultem® insulators. For a closer look at the outstanding design of our audio jacks, see the overview on page 25.

### **PJ339 Single Longframe Jack (2 normally closed contacts)**

The PJ339 is a three-conductor, single, longframe jack with two normally closed contacts and solder tails. PJ339L has offset solder tails, and PJ339W is the wire-wrap version.



PJ339W Longframe Audio Jack

### **PJ242 Single Longframe Jack (3 normally closed contacts)**

The PJ242 is a three-conductor, single, longframe jack with three normally closed contacts and solder tails. PJ242W is the wire-wrap version.

### **PJ839 Single Bantam Jack (2 normally closed contacts)**

The PJ839 is a three-conductor, single, bantam jack with two normally closed contacts. The PJ839N-SDR comes with solder tails, and the PJ839WN is the wire-wrap version.



PJ839W Bantam Audio Jack  
Shown with Plug Inserted

### **PJ824 Single Bantam Jack (3 normally closed contacts)**

The PJ824 is a three-conductor, single, bantam jack with three normally closed contacts. The PJ824N comes with solder tails, and the PJ824WN is the wire-wrap version. (Note that these jacks extend beyond the periphery of a 1.75" 1 RU panel.)



# Accessories for Audio

## Longframe and Bantam Audio Jacks

### Ordering Information

Description	Ordering Number
<b>Longframe Jacks</b>	
<b>3-conductor</b> – 2 normally closed contacts, solder tails, frame style A, stack height .531" (13.49 mm), WECO 239A equivalent	PJ339
<b>3-conductor</b> – 2 normally closed contacts, solder offset lug, frame style A, stack height .531" (13.49 mm)	PJ339L
<b>3-conductor</b> – 2 normally closed contacts, wire-wrap, frame style A, stack height .578" (14.68 mm)	PJ339W
<b>3-conductor</b> – 3 normally closed contacts, solder tails, frame style C, stack height .687" (17.45 mm), WECO 242C equivalent	PJ242
<b>3-conductor</b> – 3 normally closed contacts, wire-wrap, frame style C, stack height .687" (17.45 mm), WECO 242C equivalent	PJ242W
<b>Bantam Jacks</b>	
<b>3-conductor</b> – rear-mount bantam jack, 2 normally closed contacts, solder tails, stack height .602" (15.29 mm)	PJ839N-SDR
<b>3-conductor</b> – rear-mount bantam jack, 2 normally closed contacts, wire-wrap, stack height .675" (17.15 mm)	PJ839WN
<b>3-conductor</b> – rear-mount bantam jack, 3 normally closed contacts, solder tails, stack height .756" (19.20 mm)	PJ824N
<b>3-conductor</b> – rear-mount bantam jack, 3 normally closed contacts, wire-wrap, stack height .750" (19.05 mm)	PJ824WN

For printed circuit board jacks, see page 43.

# Accessories for Audio

## Audio Accessories

ADC manufactures accessories for use with our audio patch panels. These include connectors, adapters, tool kits, designation strip kits, patch cord holders, optional cable support bars, and more.

### Humbucker

Common mode hum caused by differences in ground potential is often found in long video cables, incoming and outgoing lines, and separate power distribution systems. The ADC Humbucker eliminates 99.6 percent of a 10 Volt p-p 50/60 Hz ground-induced hum in a 200-foot (61 m) RG59 coaxial cable run. The actual amount of hum reduction depends on cable length, cable type, ground loop potential, and ground loop frequency.



HUM-1

### Designation Strip Kits

ADC produces designation strip kits for all of our patch panels. For details about kits available for your particular model, please contact the Technical Assistance Center.

### Audio Baluns (also see page 14)

High-quality audio baluns are available for 110 Ohm twisted pair to 75 Ohm coaxial matching. Matches BNC to male or female XLR connectors.



### QCP and EDAC Tools and Accessories

Individual punchdown tools and complete tool kits are available for both QCP II and QCP IV connections. The same punchdown tool works for both types, but the tips are different. EDAC connector kits are also available.



### Pro Patch™ Cord Holder

The Pro Patch cord holder accepts up to 75 video or audio patch cords and mounts on the wall or in a rack. (Note: does not hold CVPC-type patch cords.)





# Accessories for Audio

## Ordering Information

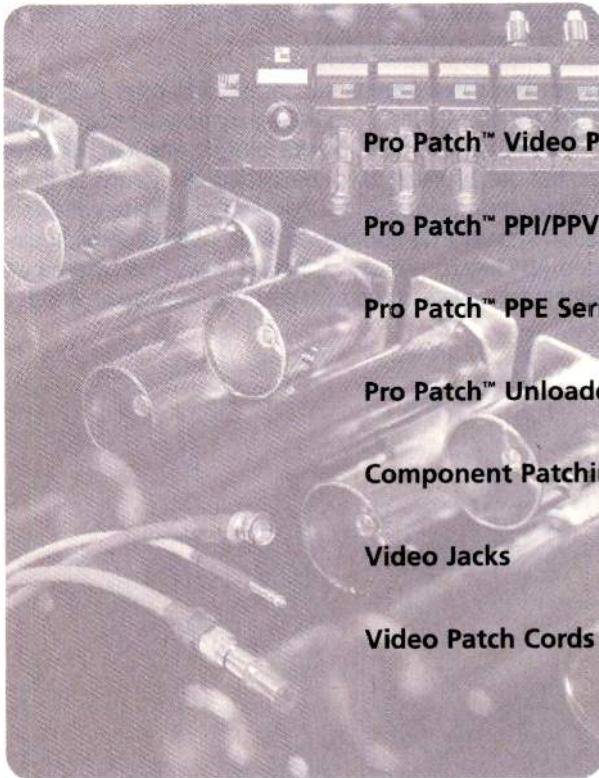
Description	Ordering Number
<b>Humbucker</b>	HUM-1
<b>Audio Baluns, 110 Ohm to 75 Ohm</b>	
BNC to female XLR	BAL-XLR-BNC-F
BNC to male XLR	BAL-XLR-BNC-M
BNC 1 Vp-p to female XLR	BAL-XLR-1VBNC-F
<b>QCP Tools</b>	
Impact tool for MKII panels, with tip*	QB-2
Tool for MKIV panels, with tip*	QB-4
Replacement tip for QB-2	QB-2T
Longer replacement tip for QB-2	QB-2LT
Replacement tip for QB-4	QB-4T
Manual tool for MKII panels	Q115
Manual tool for MKIV panels	QDF-114
<b>QCP Mark II Replacement Kit</b>	
Kit includes instructions and the following: 99 QCP contacts, 25 red, black and white insulators, 12 blue and orange insulators	QRK-25
<b>QCP Mark IV Replacement Kit</b>	
2 red, white, black, blue and orange QCP IV (8x1) punchdown assemblies	QRK-25-MKIV
<b>Sleeving Kit</b>	
Kit includes 100 pieces of 2.5" (6.35 cm) clear PVC	SLVG-1
<b>EDAC Tools and Receptacle Connector Kits</b>	
Kit for EDAC 90-pin, includes 1 shell, 90 crimp-type pins, and hood	EDAC-90P-SHELL
Kit for EDAC 56-pin, includes 1 shell, 56 crimp-type pins, and hood	EDAC-56P-SHELL
Kit for EDAC 38-pin, includes 1 shell, 38 crimp-type pins, and hood	EDAC-38P-SHELL
Kit for EDAC 3-pin, includes 1 shell and 3 crimp-type pins	EDAC-3P-SHELL
Tool for crimping EDAC connector pins	EDAC-CRIMP-TOOL
EDAC pin removal tool	EDAC-EXTRACTION-TOOL
<b>Pro Patch™ Cord Holder</b>	
Holds up to 75 video or audio patch cords (bantam or longframe); mounts on a wall or in a rack; 14"W x 3"D (35.56 x 7.62 cm). Note: does not hold CVPC-type patch cords	PPH
<b>Printed Circuit Board Audio Jacks</b>	
PCB longframe jack, 3 conductor standard	AJ238-1
PCB threaded longframe jack, 3 conductor with nut and washer	AJ238-1T
PCB longframe right angle jack, 3 conductor	AJ339-1
PCB threaded longframe right angle jack, 3 conductor with nut and washer	AJ339-1T
<b>Printed Circuit Board XLR Receptacle</b>	
PCB mount female XLR receptacle with screws	PCFC-3
<b>Molex Kits</b>	
Molex kit, 3-pin receptacle	MOLEX-3F-SHELL
Molex kit, 3-pin plug	MOLEX-3P-SHELL

\* QCP II and QCP IV tools are identical but the replaceable tips are different.

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# P

Products & Services



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<b>Pro Patch™ PPE Series Video Panels</b>	<b>50</b>
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<b>Component Patching System (CAPS)</b>	<b>54</b>
<b>Video Jacks</b>	<b>56</b>
<b>Video Patch Cords</b>	<b>62</b>

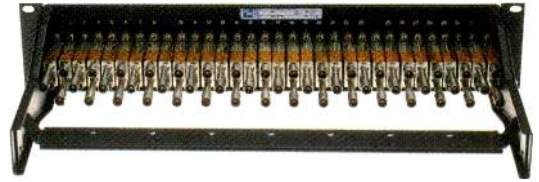


## Pro Patch™ Video Panels

### Panel construction to meet your need and budget

Pro Patch™ video panels are available in a wide variety of panel configurations, jack types and even color options.

**The PPI series standard size panels** feature a solid aluminum faceplate backed by a molded ABS jack insert. Panels have silk-screened port indicators on the rear of the panel to quickly identify jack ports, and ADC's exclusive snap-over designation system that prevents cards and windows from coming loose from the panel as is common with other systems. Panels are available in black or gray.



PPI2232RS-MVJ-BK  
2 RU Midsize 2x32 Super Video Jack Panel  
(Rear View)

**PPI series midsize and PPV series standard size panels** are the ideal solution when you need a rugged, full-featured panel that will stand up to the most demanding professional applications. These tough, attractive panels feature a rugged epoxy powder-coated steel weldment chassis with a durable molded ABS jack insert. The panels feature rear silk screening for port identification and an adjustable rear cable support bar for superior strain relief, and ADC's exclusive snap-over designation system that prevents cards and windows from coming loose from the panel as is common with other systems. The durable steel frame ensures against bent, cracked or broken rack ears, and the molded ABS inserts prevent stripped screws and cracked inserts common with phenolic panel inserts. The molded inserts are also available in a variety of colors to help segregate signal types such as AES audio, SDI video and HD video within a common facility. Panels are available in black or gray. PPI and PPV series panels are covered by an industry-exclusive 15 year\*\* warranty against defects.

**The all-new PPE series standard and midsize panels** are designed to offer ADC performance on a modest budget. The tough, attractive panels feature a rugged epoxy powder-coated steel faceplate with a durable molded ABS jack insert. The PPE series panels do not provide any rear silk screening for port identification or cable support bars, but are available with the same jack options as the full-featured PPI/PPV series panels. Designation strips are provided with clear slide-in acetate windows, upgradeable to ADC's exclusive snap-over designation system. The durable steel faceplate ensures against bent, cracked or broken rack ears, and the molded ABS inserts prevent stripped screws and cracked inserts common with phenolic panel inserts. PPE panels are covered by a one-year warranty against defects, upgradeable to 15-years (contact ADC for details).

\*\*SVJ, MVJ, and CJMID jacks





# Pro Patch™ Video Panels



PPV2226RS-SVJ - 2 RU Standard Size 2x26 Super Video Jack Panel

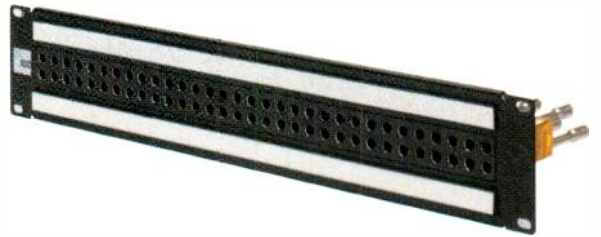
## Features

### Variety of Jacks

- HDTV Super Video Jacks for rated to 2.4+ GHz
- Analog and SD jacks rated to 750 MHz
- Analog and HDTV straight-through jacks rated to 2.4 GHz
- Many jack types available: single or dual, self-normalizing or straight-through, non-terminating or 75 Ohm terminating, and standard spacing

### Choice of Panel Sizes

- 1 RU, 2 RU or 3 RU high or custom sizes
- Standard jack panels in 2x24, 2x26, 3x26, or 4x26 arrays
- Midsize jack panels in 2x32 or 3x32 arrays
- Most panels available in black or gray
- Colored inserts available on many panels (contact ADC for details)



PPE2232-MVJT-BK  
(Front)



PPE2232-MVJT-BK  
(Rear)

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# Pro Patch™ PPI/PPV Series Video Panels

## PPI Midsize and PPV Standard Size Panels

### Features

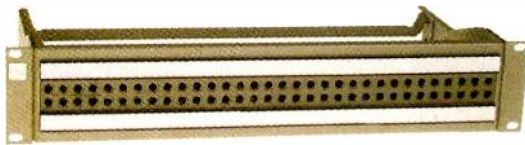
#### Tough Professional Construction

- Steel chassis with strong epoxy powder-coated steel weldments
- Adjustable steel strain relief cable bar with holes for cable ties
- Highest quality, widest bandwidth, longest lasting jacks available. True 75 Ohm impedance
- Molded jack inserts come in a variety of colors and are much stronger than phenolic inserts; screws don't break panels
- Designation **strip** holders for labeling jacks



Colored molded jack inserts\*

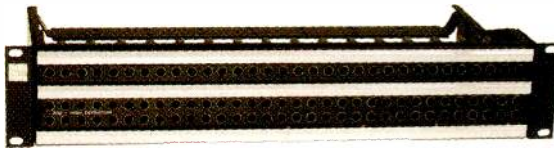
\*Colored inserts available only in certain configurations. Contact ADC for details.



PPI2232RS-CJMID  
2 RU Midsize 2x32 Super Video Jack Panel



PPI1232RS-CJMID  
1 RU Midsize 2x32 Straight-Through Jack Panel



PPI2332RS-MVJ-MON-BK  
2 RU Midsize 3x32 Super Video Jack Panel



Installation of BNCs using BT2000 installation tool. Also shows extra-wide cable support bar with holes for cable wraps

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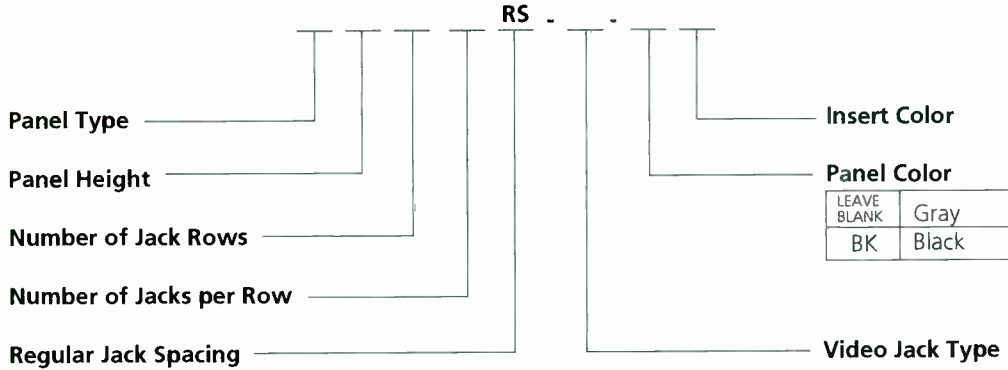


# Pro Patch™ PPI/PPV Series Video Panels

## Pro Patch™ PPI/PPV Series Panels with Standard and Midsize Jack

The information below explains the ordering numbers contained in the charts on this page and the next. Custom configurations are available; please contact ADC.

### Ordering Number



LEAVE BLANK	Gray
BK	Black

### Ordering Information

Description	Ordering Number <sup>1,2</sup>
<b>PPI/PPV Panels, SVJ-2 Standard Size</b> <b>Dual Self-Normalling Super Video Jacks</b> 1.75" 2x24 SVJ-2 jacks, gray 1.75" 2x26 SVJ-2 jacks, gray 3.50" 2x24 SVJ-2 jacks, black 3.50" 2x24 SVJ-2 jacks, gray 3.50" 2x26 SVJ-2 jacks, black 3.50" 2x26 SVJ-2 jacks, gray	PPV1224RS-SVJ PPV1226RS-SVJ PPV2224RS-SVJ-BK PPV2224RS-SVJ PPV2226RS-SVJ-BK PPV2226RS-SVJ

Ordering information continues on next page.

<sup>1</sup> PPI panels with standard size jacks do not have rear cable support and are not available with colored insert options. PPI midsize and PPV standard size have rear cable support and are available with colored inserts.

#### Insert Color

<sup>2</sup> To indicate required insert color, add letters from chart below to the end of the ordering number.

Examples: PPV1224RS-SVJT-BL = gray PPV panel with blue inserts; PPV1224RS-SVJT-BKBL = black PPV panel with blue inserts

LEAVE BLANK	Same as panel color
R	Red
G	Green
BL	Blue
Y	Yellow
O	Orange
V	Violet
W	White



# Pro Patch™ PPI/PPV Series Video Panels

## Ordering Information

Description	Ordering Number*
<b>PPI/PPV Panels, SVJ-2T Standard Size Dual Self-Normalling Super Video Jacks with 75 Ohm Termination</b> 1.75" 2x24 SVJ-2Tx jacks, gray 1.75" 2x26 SVJ-2Tx jacks, gray 3.50" 2x24 SVJ-2Tx jacks, black 3.50" 2x24 SVJ-2Tx jacks, gray 3.50" 2x26 SVJ-2Tx jacks, black 3.50" 2x26 SVJ-2Tx jacks, gray	PPV1224RS-SVJT PPV1226RS-SVJT PPV2224RS-SVJT-BK PPV2224RS-SVJT PPV2226RS-SVJT-BK PPV2226RS-SVJT
<b>PPI/PPV Panels, CJ48/CJ52 Standard Size Straight-Through Video Jacks</b> 3.50" 2x24 48 single CJ2011N jacks, gray 3.50" 2x26 52 single CJ2011N jacks, gray 5.25" 2x26 CJ2011N jacks, 2x26 SJ2000N jacks, gray	PPI2224RS-CJ48 PPI2226RS-CJ52 PPI3426RS-CJ52-N
<b>PPI/PPV Panels, CJ48/CJ52 Standard Size Straight-Through Video Jacks with 75 Ohm Termination</b> 3.50" 2x24 48 single CJ2020N-75 jacks, gray 3.50" 2x24 52 single CJ2020N-75 jacks, gray	PPI2224RS-CJ48T PPI2224RS-CJ52T
<b>PPI Panels, MVJ-3 Midsize Dual Self-Normalling Super Video Jacks</b> 1.75" 2x32 MVJ-3 jacks, gray 1.75" 2x32 MVJ-3 jacks, black 2.63" 2X32 MVJ-3 jacks, black 3.50" 2x32 MVJ-3 jacks, gray 3.50" 2x32 MVJ-3 jacks, black 3.50" 3x32 MVJ-3 jacks with monitor, black	PPI1232RS-MVJ PPI1232RS-MVJ-BK PPI15232RS-MVJ-BK PPI2232RS-MVJ PPI2232RS-MVJ-BK PPI2332RS-MVJ-MON-BK
<b>PPI Panels, MVJ-3T Midsize Dual Self-Normalling Super Video Jacks with 75 Ohm Termination</b> 1.75" 2x32 MVJ-3T jacks, gray 1.75" 2x32 MVJ-3T jacks, black 2.63" 2X32 MVJ-3T jacks, black 3.50" 2x32 MVJ-3T jacks, gray 3.50" 2x32 MVJ-3T jacks, black 3.50" 3x32 MVJ-3T jacks with monitor, black	PPI1232RS-MVJT PPI1232RS-MVJT-BK PPI15232RS-MVJT-BK PPI2232RS-MVJT PPI2232RS-MVJT-BK PPI2332RS-MVJT-MONT-BK
<b>PPI Panels, CJ Series Midsize Straight-Through Jacks</b> 1.75" 2x32 midsize, straight-through, gray 1.75" 2x32 midsize, straight-through, black 3.50" 2x32 midsize, straight-through, gray	PPI1232RS-CJMID PPI1232RS-CJMID-BK PPI2232RS-CJMID
<b>PPI Panels, CJ Series Midsize Straight-Through Jacks, with 75 Ohm Termination</b> 3.50" 2x32 midsize, straight-through, 75 Ohm terminated, gray 3.50" 2x32 midsize, straight-through, 75 Ohm terminated, black	PPI2232RS-CJMIDT PPI2232RS-CJMIDT-BK

<sup>1</sup> PPI panels with standard size jacks do not have rear cable support and are not available with colored insert options. PPI midsize and PPV standard size have rear cable support and are available with colored inserts.

### Insert Color (PPI midsize and PPV standard only).

<sup>2</sup> To indicate required insert color, add letters from chart below to the end of the ordering number.

Examples: PPV1224RS-SVJT-BL = gray PPV panel with blue inserts; PPV1224RS-SVJT-BKBL = black PPV panel with blue inserts

LEAVE BLANK	Same as panel color
R	Red
G	Green
BL	Blue
Y	Yellow
O	Orange
V	Violet
W	White

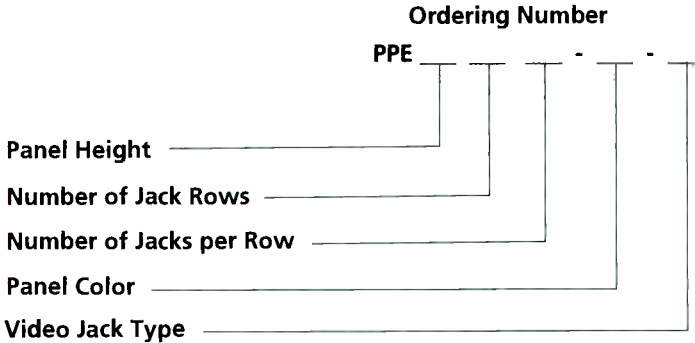
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# Pro Patch™ PPE Series Video Panels

## Pro Patch™ PPE Panels

The information below explains the ordering numbers contained in the charts on this page and the next. Custom configurations are available; please contact ADC.



### Ordering Information

Description	Ordering Number
<b>PPE Panels, SJ2000N Standard Size Dual Self-Normalling Jacks</b> 1.75" 2x24, SJ2000N jacks, black 1.75" 2x26, SJ2000N jacks, black 3.50" 2x24, SJ2000N jacks, black 3.50" 2x26, SJ2000N jacks, black	PPE1224-N-BK PPE1226-N-BK PPE2224-N-BK PPE2226-N-BK
<b>PPE Panels, SJ2000N-75 Standard Size Dual Self-Normalling Jacks with 75 Ohm termination</b> 1.75" 2x24 SJ2000N-75 jacks, 75 Ohm terminated, black 1.75" 2x26 SJ2000N-75 jacks, 75 Ohm terminated, black 3.50" 2x24 SJ2000N-75 jacks, 75 Ohm terminated, black 3.50" 2x26 SJ2000N-75 jacks, 75 Ohm terminated, black	PPE1224-75N-BK PPE1226-75N-BK PPE2224-75N-BK PPE2226-75N-BK
<b>PPE Panels, SVJ-2 Standard Size Dual Self-Normalling Super Video Jacks</b> 1.75" 2x24 SVJ-2 jacks, black 1.75" 2x26 SVJ-2 jacks, black 3.50" 2x24 SVJ-2 jacks, black 3.50" 2x26 SVJ-2 jacks, black	PPE1224-SVJ-BK PPE1226-SVJ-BK PPE2224-SVJ-BK PPE2226-SVJ-BK
<b>PPE Panels, SVJ-2T Standard Size Dual Self-Normalling Super Video Jacks with 75 Ohm Termination</b> 1.75" 2x24 SVJ-2T jacks, 75 Ohm terminated, black 1.75" 2x26 SVJ-2T jacks, 75 Ohm terminated, black 3.50" 2x24 SVJ-2T jacks, 75 Ohm terminated, black 3.50" 2x26 SVJ-2T jacks, 75 Ohm terminated, black	PPE1224-SVJT-BK PPE1226-SVJT-BK PPE2224-SVJT-BK PPE2226-SVJT-BK

MVJ/SVJ/CJ PPE Series panels are upgradeable to the 15-year warranty; contact ADC for details. Panels can be ordered without designation strips; contact ADC for details. Other configurations are available; contact ADC for details.



# Pro Patch™ PPE Series Video Panels

## Ordering Information

Description	Ordering Number
<b>PPE Panels, MVJ-3 Midsize Dual Self-Normalling Super Video Jacks</b> 1.75" 2x32 MVJ-3 jacks, black 2.63" 2x32 MVJ-3 jacks, black 3.50" 2x32 MVJ-3 jacks, black 7.00" 6x32 MVJ-3 jacks, black	PPE1232-MVJ-BK PPE15232-MVJ-BK PPE2232-MVJ-BK PPE4632-MVJ-BK
<b>PPE Panels, MVJ-3T Midsize Dual Self-Normalling Super Video Jacks with 75 Ohm Termination</b> 1.75" 2x32 MVJ-3T jacks, 75 Ohm terminated, black 2.63" 2x32 MVJ-3T jacks, 75 Ohm terminated, black 3.50" 2x32 MVJ-3T jacks, 75 Ohm terminated, black 7.00" 6x32 MVJ-3T jacks, 75 Ohm terminated, black	PPE1232-MVJT-BK PPE15232-MVJT-BK PPE2232-MVJT-BK PPE4632-MVJT-BK
<b>PPE Panels, CJ Series Standard Size Single Straight-Through Jacks</b> 1.75" 2x24 CJ2011N jacks, black 1.75" 2x26 CJ2011N jacks, black 3.50" 2x24 CJ2011N jacks, black 3.50" 2x26 CJ2011N jacks, black	PPE1224-CJ48-BK PPE1226-CJ52-BK PPE2224-CJ48-BK PPE2226-CJ52-BK
<b>PPE Panels, CJ Series Standard Size Single Straight-Through Jacks with 75 Ohm Termination</b> 1.75" 2x24 CJ2020N-75 jacks, 75 Ohm terminated, black 1.75" 2x26 CJ2020N-75 jacks, 75 Ohm terminated, black 3.50" 2x24 CJ2020N-75 jacks, 75 Ohm terminated, black 3.50" 2x26 CJ2020N-75 jacks, 75 Ohm terminated, black	PPE1224-CJ48T-BK PPE1226-CJ52T-BK PPE2224-CJ48T-BK PPE2226-CJ52T-BK
<b>PPE Panels, CJ Series Midsize Single Straight-Through Jacks</b> 1.75" 1x32 CJ3014N/CJ4014N jacks, black 1.75" 2x32 CJ3014N/CJ4014N jacks, black 2.63" 2x32 CJ3014N/CJ4014N jacks, black 3.50" 2x32 CJ3014N/CJ4014N jacks, black	PPE1132-CJM-BK PPE1232-CJM-BK PPE15232-CJM-BK PPE2232-CJM-BK
<b>PPE Panels, CJ Series Midsize Single Straight-Through Jacks with 75 Ohm Termination</b> 1.75" 1x32 CJ3014N-75/CJ4014N-75 jacks, 75 Ohm terminated, black 1.75" 2x32 CJ3014N-75/CJ4014N-75 jacks, 75 Ohm terminated, black 2.63" 2x32 CJ3014N-75/CJ4014N-75 jacks, 75 Ohm terminated, black 3.50" 2x32 CJ3014N-75/CJ4014N-75 jacks, 75 Ohm terminated, black	PPE1132-CJT-BK PPE1232-CJT-BK PPE15232-CJT-BK PPE2232-CJT-BK

MVJ/SVJ/CJ PPE Series panels are upgradeable to the 15-year warranty; contact ADC for details. Panels can be ordered without designation strips; contact ADC for details. Other configurations are available; contact ADC for details.

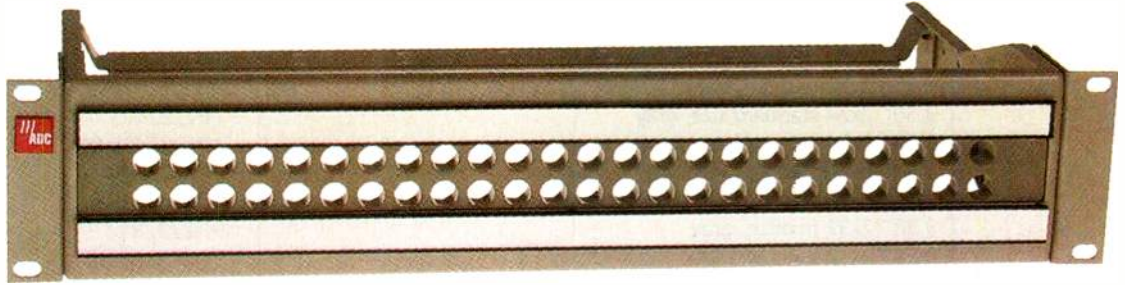
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## Pro Patch™ Unloaded Video Panels

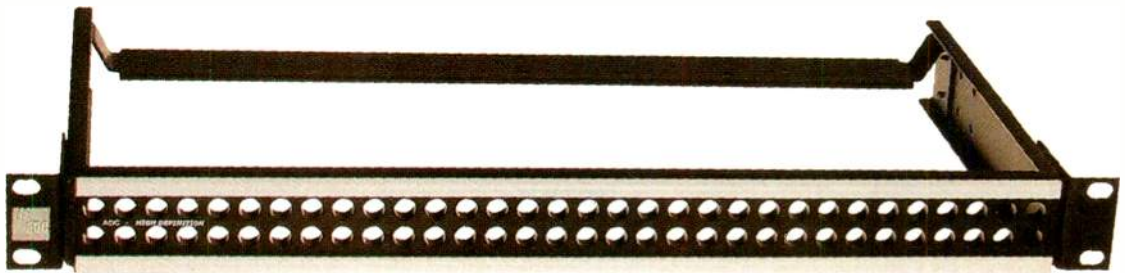
Create your own custom panel with ADC's complete line of unloaded video panels. Use the panel chassis and jack combination you want and assemble it yourself. You'll have ADC quality and reliability with your own personal design.



PPV2224RS  
2 RU Standard Size 2x24 Unloaded Panel

### Features

- Pro Patch™ PPI midsize and PPV standard size series unloaded video panels come in 1 RU and 2 RU models. They feature a tough steel weldment chassis with molded ABS jack insert and a strong, adjustable steel cable support bar with holes for cable ties
- Pro Patch™ PPI standard size jack series unloaded video panels come in low profile 1 RU and 2 RU models. They feature a solid, milled, and drilled aluminum faceplate with molded ABS jack-mount insert. No cable management included
- Panels are available for standard size jacks in 2x24, 2x26, and 3x26 arrays. For midsize jacks, panels are available in 2x32 and 3x32 arrays. When ordering jacks, alternating short and long jack bodies is for ease of cabling



PPI1232RS-BK  
1 RU Midsize 2x32 Unloaded Panel

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# Pro Patch™ Unloaded Video Panels

## Ordering Information

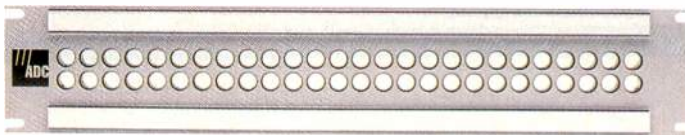
Description	Ordering Number
<b>Unloaded (Empty) PPI Midsize/PPV Standard Size Video Panels</b>	
1.75" 2x32 midsize, gray	PPI1232RS
1.75" 2x32 midsize, black	PPI1232RS-BK
3.50" 2x24 standard size, gray	PPV2224RS
3.50" 2x24 standard size, black	PPV2224RS-BK
3.50" 2x26 standard size, gray	PPV2226RS
3.50" 2x26 standard size, black	PPV2226RS-BK
3.50" 2x32 midsize, gray	PPI2232RS
3.50" 2x32 midsize, black	PPI2232RS-BK
<b>Unloaded (Empty) PPI Standard Size Video Panels</b>	
1.75" 2x24 standard size, gray	PPI1224RS
1.75" 2x24 standard size, black	PPI1224RS-BK
1.75" 2x26 standard size, gray	PPI1226RS
1.75" 2x26 standard size, black	PPI1226RS-BK
3.50" 2x24 standard size, gray	PPI2224RS
3.50" 2x24 standard size, black	PPI2224RS-BK
3.50" 2x26 standard size, gray	PPI2226RS
3.50" 2x26 standard size, black	PPI2226RS-BK
3.50" 3x26 standard size, gray	PPI2326RS
3.50" 3x26 standard size, black	PPI2326RS-BK

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PPI1224RS  
1 RU Standard Size 2x24 Unloaded Panel



PPI2226RS  
2 RU Standard Size 2x26 Unloaded Panel

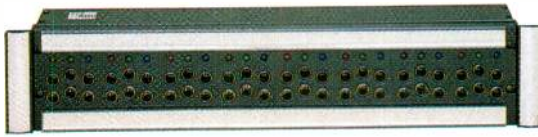


# Component Patching System (CAPS)

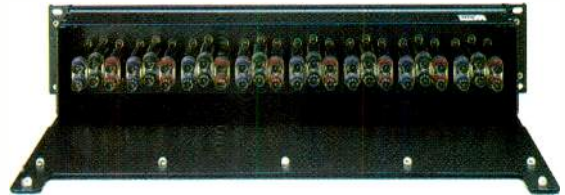
The CAPS Component Patching System for analog or digital component video provides the ideal combination of modular flexibility, durability, and preconfigurability all in one system. The steel 2 RU modular panel with cable tray can be preconfigured with a full complement of jacks, or you can order an empty panel and add easily installed jack modules as needed. Modules and preconfigured panels are available in a variety of configurations. Also, see the UniPatch® modular system beginning on page 11.



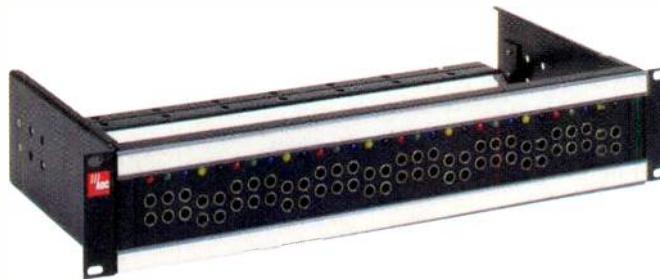
CV-M-N  
RGB Module



CV-8-N  
2 RU 8 RGB Group Patchbay



2 RU CV-8-N (Rear View)



CV-6-MHV-3T Component Patching System

## Features

- 2 RU epoxy powder-coated steel panel, including top cover and cable tray with cable wrap holes for superior strain relief
- Order panel preconfigured, or order an empty panel and add modules as needed
- Jack groups for RGB, RGB + Sync, or RGB + horizontal and vertical sync
- Standard and midsize jacks of all kinds: dual self-normal, straight-through singles, straight with termination, and super (high-definition) dual self-normal
- Horizontal and vertical designation strip holders included



# Component Patching System (CAPS)

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## Ordering Information

Description	Ordering Number
<b>Loaded Patchbays</b>	
8 RGB group panel	
SJ2000N jacks	CV-8-N
SJ2000N-75 jacks	CV-8-N75
6 RGB + Sync group panel	
SJ2000N jacks	CV-6-NS
SJ2000N-75 jacks	CV-6-N75
10 RGB + Sync group panel (jacks grouped vertically)	
SVJ-2T jacks	CV-10-S-SVJT
CJ2011 single jacks	CV-10-S-CJ2011
8 RGB group panel	
CJ2011N single jacks	CV-8-CJ2011
6 RGB + horizontal and vertical sync	
MVJ-3T midsize jacks	CV-6MHV-3T
<b>Modular Patchbays</b>	
Chassis - 3.5" x 19" (8.89 x 48.26 cm)	
accommodates up to 8 RGB group modules	CV-CM
One RGB group module	
SJ2000N jacks	CV-M-N
SJ2000N-75 jacks	CV-M-N75
Blank module	CPPV-B
<b>Panels without Jacks</b>	
8 RGB group panel	CV-8-NJ
6 RGB + Sync group panel	CV-6-NJ
<b>RGB Video Patch Cords</b>	
Black, three-conductor cable, standard size plugs	
2 ft./.61 m	CVPC-2
3 ft./.93 m	CVPC-3
4 ft./1.2 m	CVPC-4
6 ft./1.83 m	CVPC-6

Custom panel configurations are available; please contact ADC.

## Ordering Information

Description	Ordering Number
<b>Time Delayed Patchbay</b>	
For patching of timed analog video circuits;	
requires use of 3' patch cord only	
2x24, delayed compensated patchbay,	
3.5" x 19" (8.89 x 48.26 cm), utilizes SJ1000N-75	PV-24MKII
RGB 8-circuit time delay patchbay	CPPV-8



# Video Jacks and Accessories

It may sound bold to say we have the best video jacks in the world, but we can say it with confidence. Just take a look inside one of our Super Video Jacks and you'll see why. Our jacks are loaded with features that make them work more reliably and last far longer than other jacks.

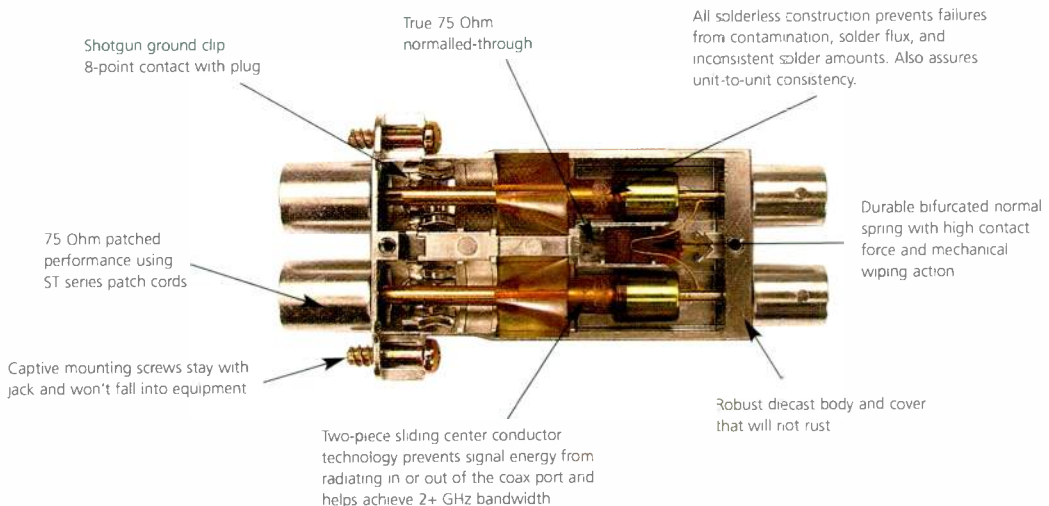
To achieve SMPTE 292M high-frequency performance and minimize signal radiation in or out, ADC standard size jacks feature a unique, patented, two-piece sliding center conductor. Also, the center conductor employs a special closed-entry design to resist insertion of a damaged connector or a test probe, preventing damage. The precision, gold-plated components preserve signal quality and resist oxidation and tarnish. Long-beam bifurcated springs ensure against spring metal fatigue, and a shotgun ground clip provides multiple contact points for a solid connection when a plug is inserted. Most importantly, our jacks provide true 75 Ohm performance when normalled or patched with ADC's patented ST series patch cords, protecting high-frequency signals from losses due to impedance mismatch.

Every component of an ADC video jack is carefully designed and solidly constructed without solder for the highest reliability. You'll feel the quality in the firm contact force every time you insert a plug.

## Features

- True 75 Ohm for excellent high-frequency performance when normalled or patched with ADC ST series patch cords
- Gold-plated components assure signal quality and tarnish resistance
- Sealed switch prevents external contamination
- All-solderless construction eliminates solder-related failures
- Long-beam bifurcated springs provide firm contact and prevent spring fatigue
- Closed-entry BNC center conductor prevents damage and provides reliable contact
- Two-piece center conductor prevents RFI radiation leakage
- Shotgun ground clip contacts plug at multiple points
- Tough diecast body will not rust or flex
- Captive mounting screws will not fall out
- Precision-tooled parts for consistent quality
- Meet MIL-STD-202F for environmental and mechanical reliability

## SVJ-2Tx Super Video Jack Interior View

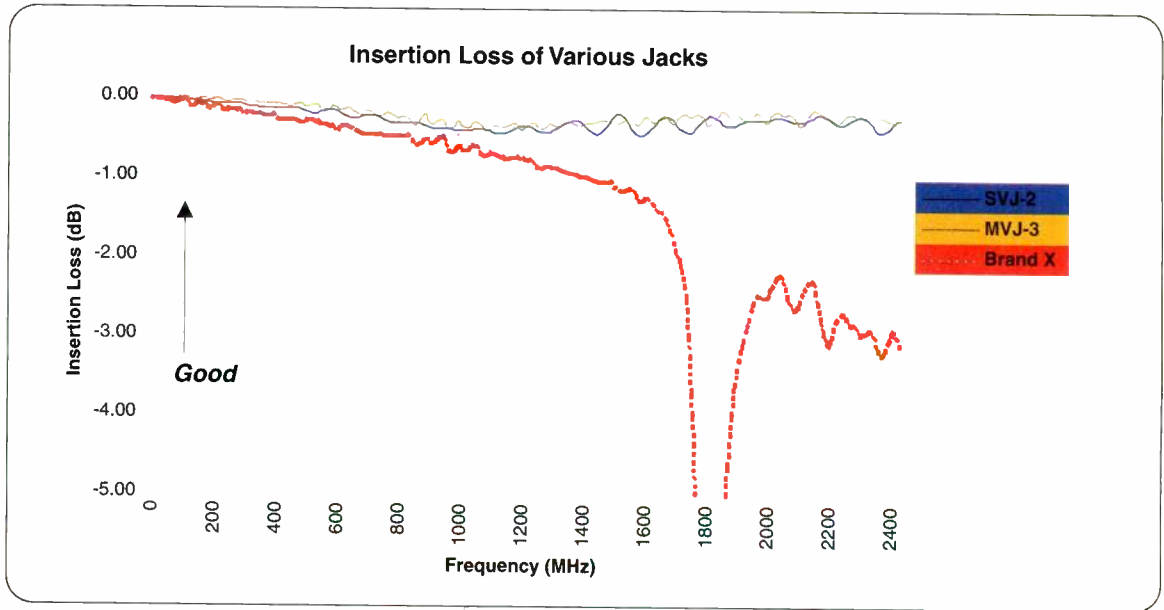


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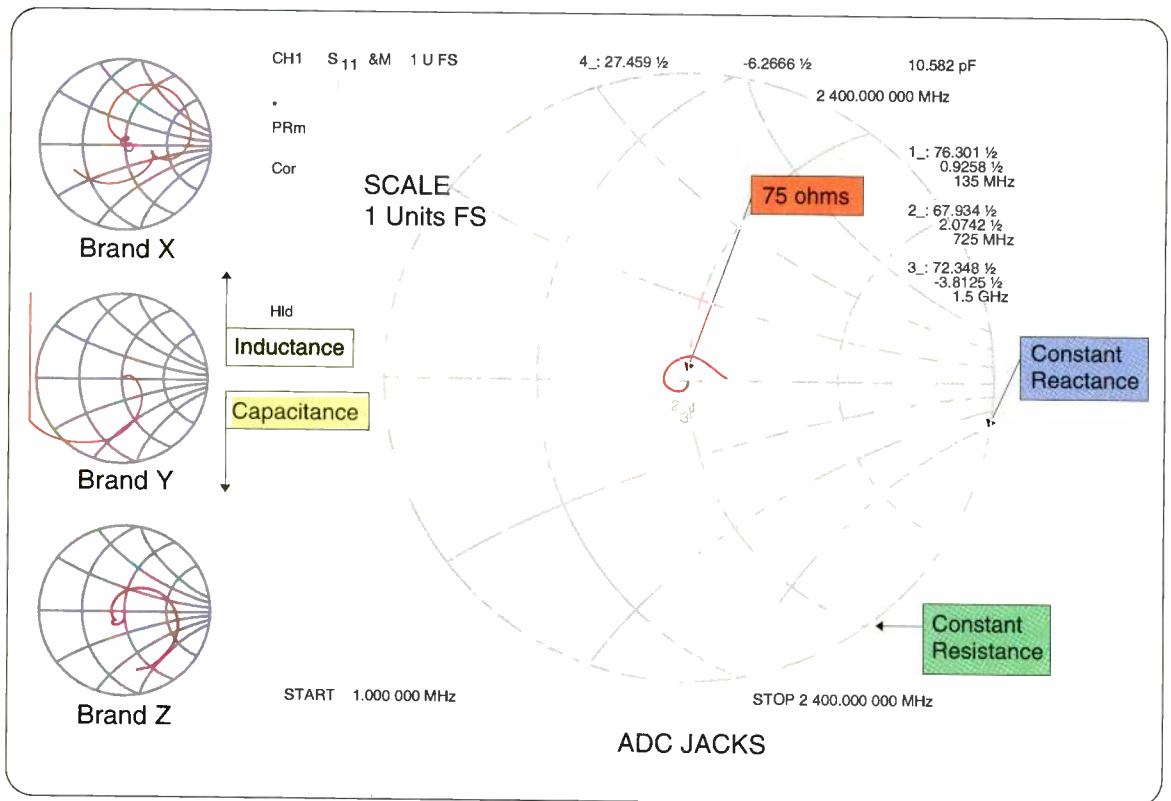


# Video Jacks and Accessories

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Insertion loss for ADC's Super Video Jacks stays less than .5 dB to 2.4 GHz.



ADC's Super Video Jacks maintain 75 Ohm impedance throughout the band. Competitive jacks spiral out of control.



# Video Jacks and Accessories

## Standard Size Analog/SD Video Jacks

For analog and serial digital video applications at 270/360 Mbits, ADC's improved SJ2000 is a logical choice. With a frequency response of 750 MHz, the SJ2000 has been redesigned for improved reliability and reduced cost for systems that do not require the advanced performance of ADC's super jacks. For a dual jack with monitor, see the VJ-2000.

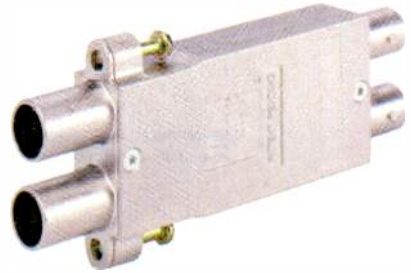


SJ2000/SJ2000N-75  
Standard Size Video Jack

## Standard Size HD Super Video Jacks

The new SVJ-2x standard size to BNC self-normalizing Super Video Jack family features performance matched for data rates up to and including HDTV in the full uncompressed 1.485 Gbits/second rate. The SVJ-2x combines the unique features of:

- 2.4 GHz bandwidth for the demanding HD data rates
- Sealed switch prevents internal contamination
- True 75 Ohm performance for a zero bit-error rate
- RFI shielding prevents radiation
- 2x26 or 2x24 mounting in one or two rack spaces
- Unique captive mounting screws



SVJ-2/SVJ-2T  
Standard Size Super Video Jack

The SVJ-2x family is designed for use in high data rate applications including uncompressed HDTV, L- and lower S-Band satellite, D1 digital video and all lower data rate video transmission methods.

## Standard Size Straight-Through Video Jacks

For applications requiring independent ground such as tie line panels, the straight-through CJ2011N and the self-terminating CJ2020N-75 jacks are the logical choice. The CJ2011N and CJ2020N-75 jacks mount on standard .625" centers and have a rated bandwidth up to 2.4 GHz for analog and HDTV video applications.

NOTE: The single terminating jacks cannot be installed directly adjacent to switching jacks due to interference with the terminating resistor housing. Leave one empty space between the CJ2020N-75 and switching jacks.



CJ2011N  
Straight-through Standard Size Video Jack



CJ2020N-75  
Straight-through Standard Size Video Jack  
with 75 Ohm Termination



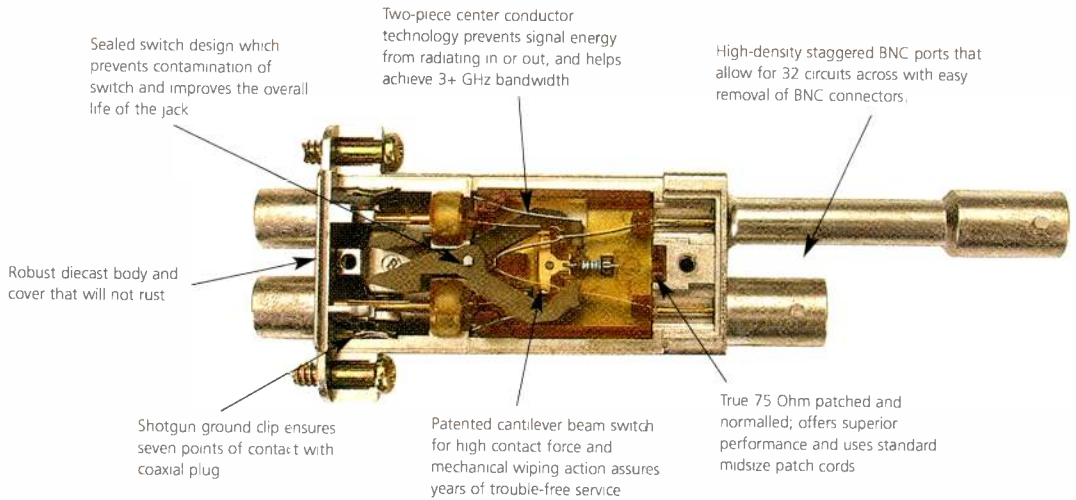
# Video Jacks and Accessories

## Midsized Video Jacks

Midsized video jacks have several advantages over standard size jacks in performance and size. All standard size video jacks observing WECO standards are, by definition, not 75 Ohm in the patched state (with the exception of ADC's SVJ-2 standard size Super Video Jack). The physical relationship of the center conductor diameter and the coaxial port diameter creates an impedance violation that causes the video impedance to drop to 58 Ohm in the patched state. In midsized video jacks, the physical relationship has been optimized, providing a constant impedance of 75 Ohm in either the normalled-through mode or the patched mode. This impedance advantage can make a considerable difference in the elimination of bit errors in digital signals especially if the circuit is routed through several patches.

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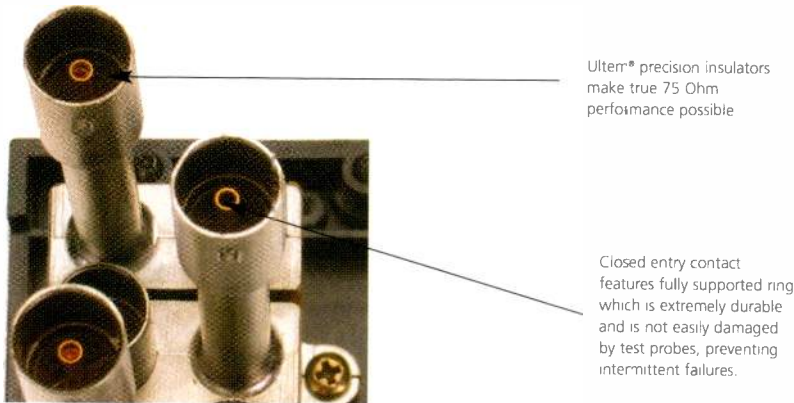
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MVJ-3 Midsized Super Video Jack Interior View

## Video Jacks Offer Outstanding Performance Features

ADC video jacks feature precision insulators for true 75 Ohm performance. Closed-entry center contacts are designed to resist damage from damaged plugs or test probes.



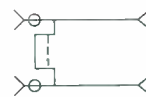
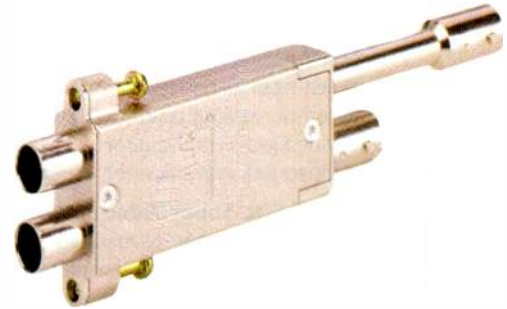
# Video Jacks and Accessories

## MVJ-3 HD Super Video Jack

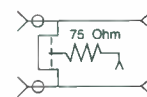
The new MVJ-3 midsize to BNC self-normalling Super Video Jack family features performance matched for data rates up to and including HDTV in the full uncompressed 1.485 Gbits/second rate. This premium jack includes a host of outstanding features highlighted in the interior view shown on the previous page.

### Features

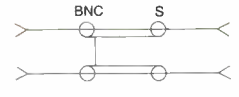
- 3.0+ GHz bandwidth
- Sealed switch
- 75 Ohm performance
- RFI shielding
- 2x32 mounting in one or two rack spaces
- Unique captive mounting screws
- Meet MIL-STD-202F for environmental and mechanical reliability



MVJ-3



MVJ-3T



MVJ-3NN

Midsize Super Video Jack

## Straight-through Midsize Video Jacks

For applications requiring independent ground such as tie line panels, the straight-through CJ3014N and CJ4014N are the logical choice. The CJ3014N/CJ4014N jacks mount on standard .520" horizontal/.500" vertical spacing on center and have a rated bandwidth up to 2.4 GHz for analog, serial digital, and HDTV video applications. For applications requiring self-terminating jacks, the CJ3014N-75 and the CJ4014N-75 are available.

The short body CJ3014N/3014N-75 and long body CJ4014N/4014N-75 are designed to be mounted in 32-across configurations. The short and long bodies allow a staggered mounting pattern to provide access to the BNC connectors. A BNC insertion tool such as the BT2000 is recommended for BNC installation.



CJ4014N/CJ3014N

Straight-through Midsize Video Jack



CJ3014N-75 / CJ4014N-75



# Video Jacks and Accessories

## Ordering Information

Description	Ordering Number
<b>Standard Size Jacks</b>	
Single video jack, straight-through, non-terminated	CJ2011N
Single video jack, short body, straight-through, terminated	CJ2020N75
Dual self-normalling jack, gold-plated body, non-terminated	SJ2000G
Dual self-normalling jack, gold-plated body, 75 Ohm terminated	SJ2000G-75
Dual self-normalling jack, non-terminated	SJ2000N
Dual self-normalling jack, 75 Ohm terminated	SJ2000N-75
Dual video jack with monitor	VJ2000N
Dual video jack with monitor, 75 Ohm terminated	VJ2000N-75
<b>Standard Size Super Video Jacks</b>	
Super Video Jack, non-terminated	SVJ-2x
Super Video Jack, 75 Ohm terminated	SVJ-2Tx
<b>Midsized Jacks</b>	
Single Video Jack, short body, straight-through, non-terminated	CJ3014N
Single Video Jack, short body, 75 Ohm terminated	CJ3014N-75
Single Video Jack, long body, straight-through, non-terminated	CJ4014N
Single Video Jack, long body, 75 Ohm terminated	CJ4014N-75
<b>Midsized Super Video Jacks</b>	
Dual self-normalling Super Video Jack, non-terminated	MVJ-3
Dual self-normalling Super Video Jack, 75 Ohm terminated	MVJ-3T
Dual non-normalled Super Video Jack, non-terminated	MVJ-3NN
<b>Termination and Looping Plugs</b>	
Standard size 75 Ohm termination plug, nickel	CP1040N
Midsized 75 Ohm termination plug, nickel	CP1501N
Standard size looping plug, gold	CP1063G
Standard size looping plug, nickel	CP1063N
Midsized looping plug, gold	CP1500GR
Midsized looping plug, nickel	CP1500NR
<b>Conversion Plugs and Adapters</b>	
Standard size plug to BNC adapter	CP1051N
Standard size plug to BNC adapter, gold	CP1051G
Standard size monitor plug to BNC adapter	CP1051MN
Midsized plug to BNC adapter	MBNC-3
Standard size receptacle to midsized receptacle adapter	CAX-ADPT-1
Midsized plug to standard size receptacle adapter	CAX-ADPT-2
Standard size plug to midsized receptacle adapter	CAX-ADPT-3
<b>Coaxial Patch Plugs</b>	
Standard size solder plug for RG59	PGS-100016
Standard size solder plug for 735	CP1041N
Standard size solder plug for 735, gold	CP1041G
Midsized solder plug for RG59	CP1540N
Midsized crimp plug for RG59	CP1540N-CRIMP
Midsized crimp plug for RG59, gold	CP1540G-CRIMP
Midsized solder plug for 735	PGS-100018
<b>Circuit Guard Plugs</b> sold in bags of 25 X = color of plug: BLACK, RED, BLUE, GREEN, YELLOW	
Standard size	CJP-S-X
Midsized	CJP-M-X



CP1051N  
Standard Size Conversion Plug



CP1040N  
Termination Plug



CP1540N  
Midsized Plug



CAX-ADPT-1  
Standard to Midsized  
Conversion Adapter



CAX-ADPT-2  
Midsized to Standard  
Conversion Plug



CAX-ADPT-3  
Standard to Midsized  
Conversion Plug



MBNC-3  
Midsized Plug  
to BNC Adapter

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# Video Patch Cords

ADC offers two lines of high-quality video patch cords: the patented ST series capable of handling uncompressed high-definition digital video and the VX™ series for analog and serial digital video. The ST series features a patented true 75 Ohm design that virtually eliminates bit errors. Both series are made of the highest quality materials and provide excellent performance.

## ST Series Highest Performance HD Video Patch Cords

The digital television revolution is stretching the limits of the physical plant technology designed for analog video. Cable and connectors not optimized for the digital environment can seriously degrade the digital signal being transported. The problem is that all WECO-standard jacks and patch cords exhibit an impedance violation of between 58 and 62 Ohm in the patched state. This becomes a major source of attenuation and bit errors in serial digital and high-definition video signals.

ADC's ST standard size patch cords feature a patented design that provides a true 75 Ohm interface in the patched state when used with ADC's SVJ-2 Super Video Jack family. The STS series maintains the WECO interface for maximum industry compatibility and provides a "nominal" 75 Ohm interface when used with jacks other than the SVJ-2 Super Video Jack. This design reduces or eliminates attenuation and bit errors in serial digital and high-definition video signals, especially in the uncompressed mode.

### Features

- Patented design provides a 75 Ohm interface in the patched state
- Standard size compatible with all WECO .090 standard video jacks
- Performance matched for uncompressed HDTV signals (1.485 Gbit/s)
- Gastight crimp design. 100 percent solderless construction assures quality
- Precision-molded Ultem® insulators for truer impedance match and greater unit-to-unit consistency compared to machined Teflon®
- HD-rated 1505F cable with matte finish
- Full-molded strain relief defeats abuse
- Gold-plated center conductors
- Available in red, green, blue, black, orange, yellow, violet, and white in 2-foot (.6 m) to 6-foot (1.8 m) lengths



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# Video Patch Cords

## Ordering Information

Description	Ordering Number			
	2 ft./ .61m	3 ft./ .93m	4 ft./1.22m	6 ft./1.83m
<b>ST Series High-Definition Video Cords</b>				
<b>ST Standard Size Plug to Standard Size Plug</b>				
Red	R2V-ST5	R3V-ST5	R4V-ST5	R6V-ST5
Green	G2V-ST5	G3V-ST5	G4V-ST5	G6V-ST5
Blue	B2V-ST5	B3V-ST5	B4V-ST5	B6V-ST5
Black	BK2V-ST5	BK3V-ST5	BK4V-ST5	BK6V-ST5
Orange	O2V-ST5	O3V-ST5	O4V-ST5	O6V-ST5
Yellow	Y2V-ST5	Y3V-ST5	Y4V-ST5	Y6V-ST5
Violet	V2V-ST5	V3V-ST5	V4V-ST5	V6V-ST5
White	W2V-ST5	W3V-ST5	W4V-ST5	W6V-ST5
<b>ST Standard Size Plug to BNC</b>				
Red	R2V-ST5-B	R3V-ST5-B	R4V-ST5-B	R6V-ST5-B
Green	G2V-ST5-B	G3V-ST5-B	G4V-ST5-B	G6V-ST5-B
Blue	B2V-ST5-B	B3V-ST5-B	B4V-ST5-B	B6V-ST5-B
Black	BK2V-ST5-B	BK3V-ST5-B	BK4V-ST5-B	BK6V-ST5-B
Orange	O2V-ST5-B	O3V-ST5-B	O4V-ST5-B	O6V-ST5-B
Yellow	Y2V-ST5-B	Y3V-ST5-B	Y4V-ST5-B	Y6V-ST5-B
Violet	V2V-ST5-B	V3V-ST5-B	V4V-ST5-B	V6V-ST5-B
White	W2V-ST5-B	W3V-ST5-B	W4V-ST5-B	W6V-ST5-B
<b>ST Midsize Plug to Midsize Plug</b>				
Red	R2V-STM	R3V-STM	R4V-STM	R6V-STM
Green	G2V-STM	G3V-STM	G4V-STM	G6V-STM
Blue	B2V-STM	B3V-STM	B4V-STM	B6V-STM
Black	BK2V-STM	BK3V-STM	BK4V-STM	BK6V-STM
Orange	O2V-STM	O3V-STM	O4V-STM	O6V-STM
Yellow	Y2V-STM	Y3V-STM	Y4V-STM	Y6V-STM
Violet	V2V-STM	V3V-STM	V4V-STM	V6V-STM
White	W2V-STM	W3V-STM	W4V-STM	W6V-STM
<b>ST Midsize Plug to BNC</b>				
Red	R2V-STM-B	R3V-STM-B	R4V-STM-B	R6V-STM-B
Green	G2V-STM-B	G3V-STM-B	G4V-STM-B	G6V-STM-B
Blue	B2V-STM-B	B3V-STM-B	B4V-STM-B	B6V-STM-B
Black	BK2V-STM-B	BK3V-STM-B	BK4V-STM-B	BK6V-STM-B
Orange	O2V-STM-B	O3V-STM-B	O4V-STM-B	O6V-STM-B
Yellow	Y2V-STM-B	Y3V-STM-B	Y4V-STM-B	Y6V-STM-B
Violet	V2V-STM-B	V3V-STM-B	V4V-STM-B	V6V-STM-B
White	W2V-STM-B	W3V-STM-B	W4V-STM-B	W6V-STM-B

**Note:** Standard patch cord colors are red, green, blue, and black. These color cords are available in the standard lengths shown above; please contact ADC for additional custom lengths.

For patch cords in orange, yellow, violet, and white, please contact ADC for leadtime, lengths available and order minimums.

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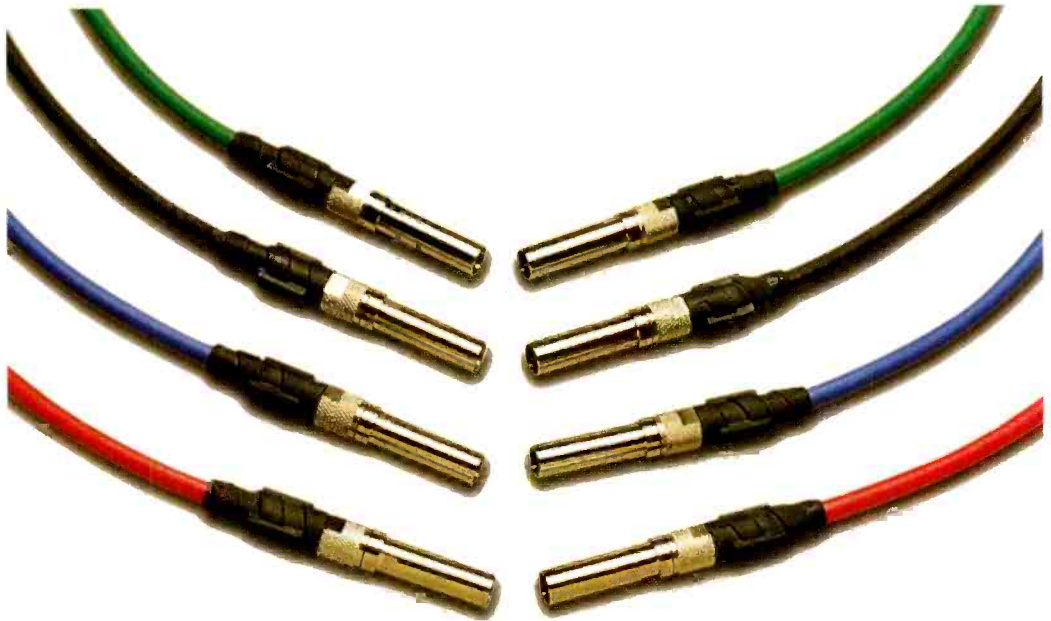
## Video Patch Cords

### VX™ Series Analog and Digital Video Patch Cords

ADC's VX™ standard and midsize video patch cords feature an all-new plug design that optimizes impedance performance during the patched state. The VX series patch cords are the ideal choice for all analog and serial digital video formats up to 360 Mbps. For high-definition applications requiring data rates in excess of 360 Mbps, the ST series is recommended. The VX series features common plug components with the patented ST series high-definition patch cords.

#### Features

- Gastight crimp design. 100 percent solderless construction assures quality
- Full-molded strain relief defeats abuse
- Gold-plated center conductors
- Precision-molded Ultem® insulators for truer impedance match and greater unit-to-unit consistency vs. machined Teflon®
- Available in red, green, blue, black, orange, yellow, violet, and white in 1-foot (.3 m) to 6-foot (1.8 m) lengths
- HD-rated 1505F cable with matte finish





# Video Patch Cords

## Ordering Information

Description	Ordering Number			
	2 ft./.61m	3 ft./.93m	4 ft./1.2m	6 ft./1.83m
<b>VX™ Series Analog/SD Video Patch Cords</b>				
<b>Standard Size Plug to Standard Size Plug</b>				
Red	R2VX	R3VX	R4VX	R6VX
Green	G2VX	G3VX	G4VX	G6VX
Blue	B2VX	B3VX	B4VX	B6VX
Black	BK2VX	BK3VX	BK4VX	BK6VX
Orange	O2VX	O3VX	O4VX	O6VX
Yellow	Y2VX	Y3VX	Y4VX	Y6VX
Violet	V2VX	V3VX	V4VX	V6VX
White	W2VX	W3VX	W4VX	W6VX
<b>Standard Size Plug to BNC</b>				
Red	R2VX-B	R3VX-B	R4VX-B	R6VX-B
Green	G2VX-B	G3VX-B	G4VX-B	G6VX-B
Blue	B2VX-B	B3VX-B	B4VX-B	B6VX-B
Black	BK2VX-B	BK3VX-B	BK4VX-B	BK6VX-B
Orange	O2VX-B	O3VX-B	O4VX-B	O6VX-B
Yellow	Y2VX-B	Y3VX-B	Y4VX-B	Y6VX-B
Violet	V2VX-B	V3VX-B	V4VX-B	V6VX-B
White	W2VX-B	W3VX-B	W4VX-B	W6VX-B
<b>BNC to BNC</b>				
Red	R2VX-B/B	R3VX-B/B	R4VX-B/B	R6VX-B/B
Green	G2VX-B/B	G3VX-B/B	G4VX-B/B	G6VX-B/B
Blue	B2VX-B/B	B3VX-B/B	B4VX-B/B	B6VX-B/B
Black	BK2VX-B/B	BK3VX-B/B	BK4VX-B/B	BK6VX-B/B
Orange	O2VX-B/B	O3VX-B/B	O4VX-B/B	O6VX-B/B
Yellow	Y2VX-B/B	Y3VX-B/B	Y4VX-B/B	Y6VX-B/B
Violet	V2VX-B/B	V3VX-B/B	V4VX-B/B	V6VX-B/B
White	W2VX-B/B	W3VX-B/B	W4VX-B/B	W6VX-B/B

**Note:** Standard patch cord colors are red, green, blue, and black. These color cords are available in the standard lengths shown above; please contact ADC for additional custom lengths.

For patch cords in orange, yellow, violet, and white, please contact ADC for leadtime, lengths available and order minimums.

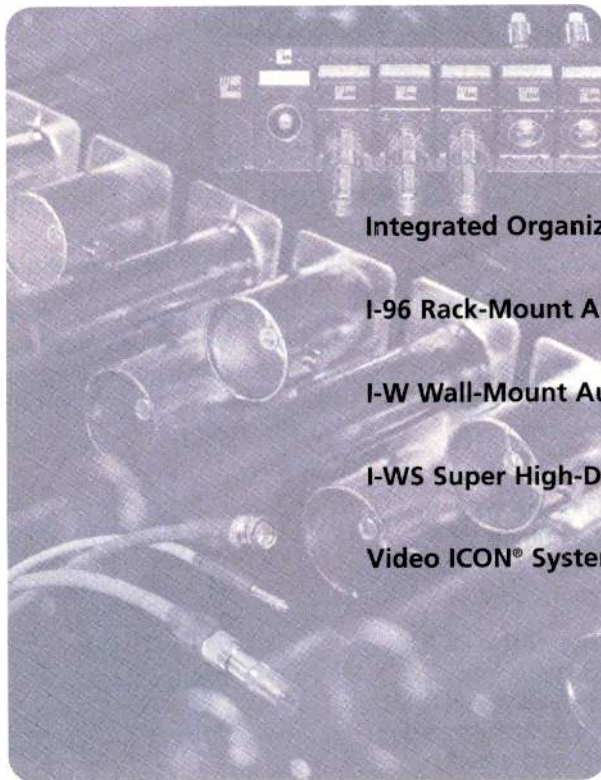
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## ted Cable

## Organization Network (i



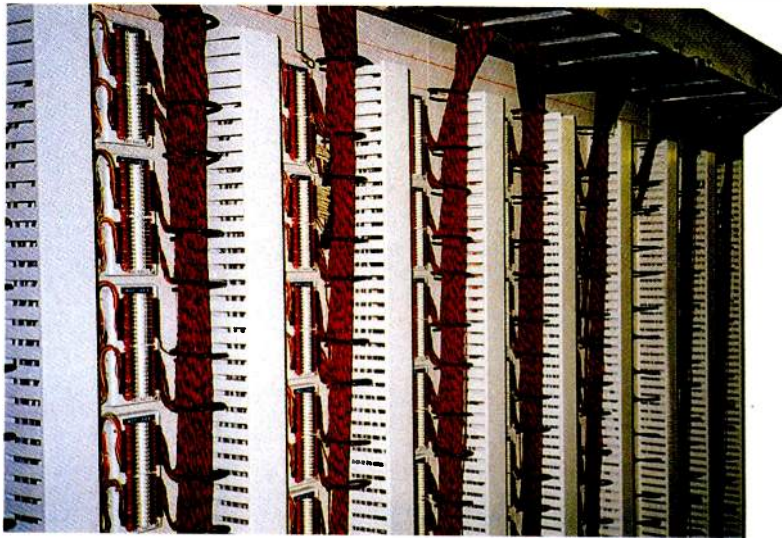
<b>Integrated Organization Network (ICON®)</b>	<b>67</b>
<b>I-96 Rack-Mount Audio Cable Management System</b>	<b>71</b>
<b>I-W Wall-Mount Audio Cable Management System</b>	<b>74</b>
<b>I-WS Super High-Density Wall-Mount Audio System</b>	<b>75</b>
<b>Video ICON® System</b>	<b>77</b>



# Integrated Cable Organization Network (ICON®)

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A Fully Functional ICON® Twisted Pair System

## Clean, Simple, Secure, Cable Management

Integrated Cable Organization Network (ICON®) brings clean, simple order to any professional audio/video production.

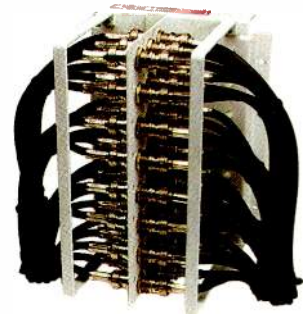
The ICON system pulls all of your audio and video cabling together into a neatly organized central termination and distribution point where interconnections are easily managed.

Compared to point-to-point cabling, this system saves time and money, reduces the number of cables and cable disorganization at the equipment, and allows you to change connections quickly.

ICON systems use fast-installing and reliable QCP II or QCP IV punchdown connectors. Input connections punchdown on one side of the unit, output connections on the other side, and jumpers to interconnect them punch down on the back.

Other connector types are also available.

ADC has ICON systems to suit any application. For small jobs, we make compact rack- and wall-mount units. For facility-wide management, we offer large rack- and wall-mount systems that can grow as your facility grows.



VIW-24 Video ICON® 24-connector Wall-Mount Bulkhead Panel



# Integrated Cable Organization Network (ICON®)

## ICON® Models for Every Application

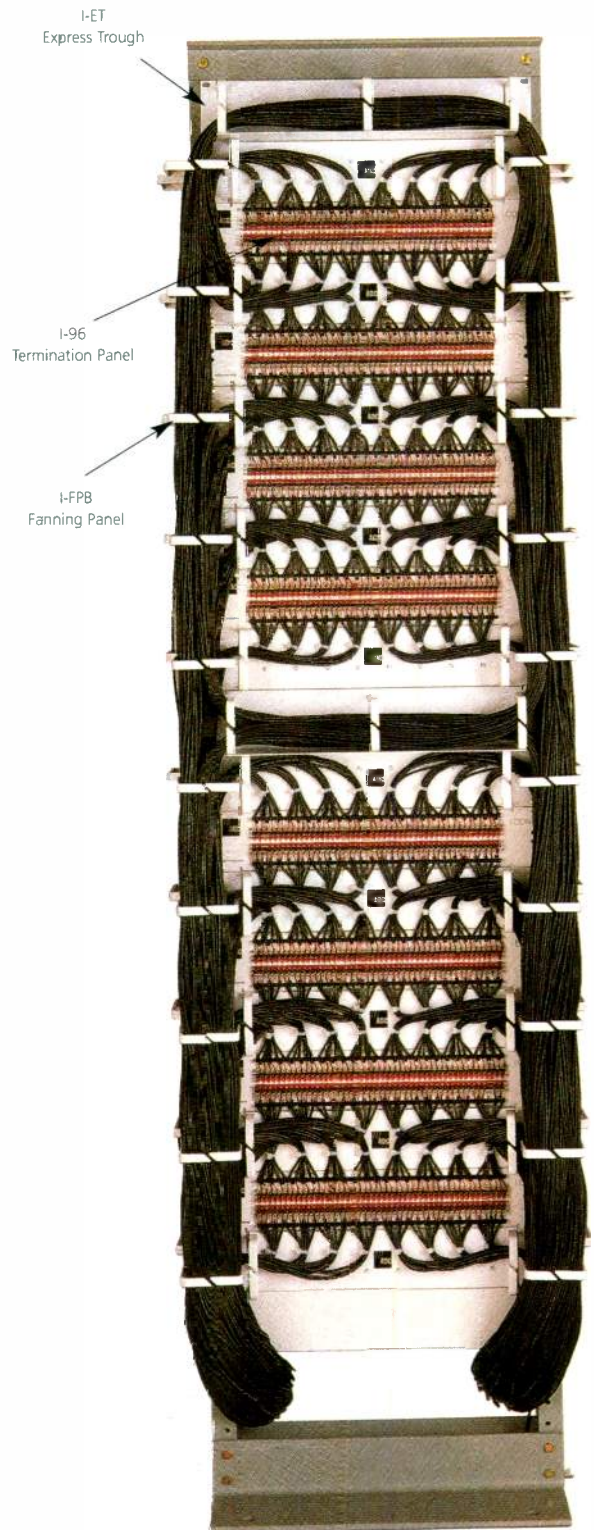
Whether your facility has abundant floor space to accommodate a rack-based ICON system or you need to fit the system into tight spaces by mounting it on the wall, ADC makes a cable management system to meet your requirements:

- I-96 series audio rack-mount system for 19-inch equipment racks
- I-W series audio wall-mount system
- I-WS space-saving super high-density audio wall-mount system
- VI Video ICON rack-mount system for 19- and 23-inch equipment racks
- VIW Video ICON wall-mount system
- Cable management hardware, such as fanning panels and cable bars and rings, are available for each ICON system to ensure all cabling is routed neatly and securely

## Labor-saving, Flexible, and Reliable QCP Audio Connections

ICON audio cable management systems feature ADC's proven punchdown cable termination system for fast, efficient, and secure interconnections. QCP offers these advantages:

- Reduced installation time with fast, easy punchdown terminals
- Reliable gastight connections because of patented QCP split-cylinder design
- Reusable contacts allow easy circuit changes without disturbing adjacent contacts
- Color-coded and numbered contacts prevent wiring mistakes



Fully Loaded I-96 Rack-Mount System with Fanning Panels and Express Troughs. Handles 768 balanced audio pairs

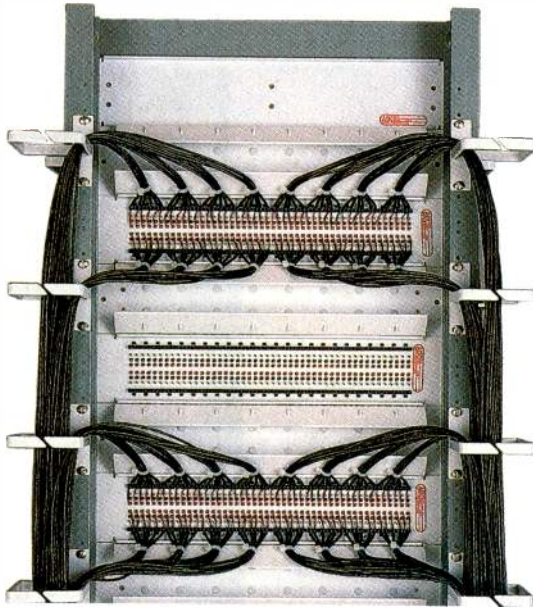
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# Integrated Cable Organization Network (ICON®)

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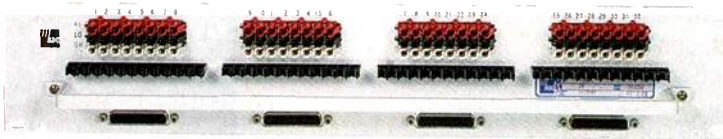


I-96 System  
(Rear View)

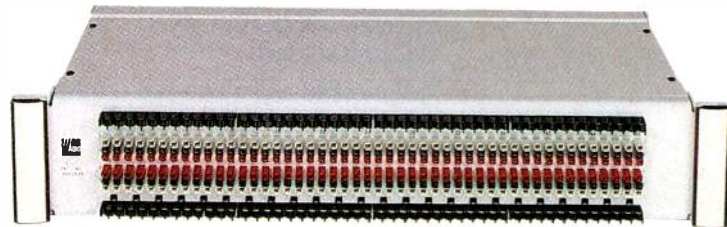
The ICON® I-96 high-density rack-mount audio cable management system installs in a standard 19-inch (48 cm) EIA equipment rack and is engineered for easy access to front and rear connections. The rack-mounted QCP II or QCP IV punchdown panels are quick to connect, and the feedthrough design allows changing of cross-connection jumpers on the front without disturbing connections on the rear. Multiple I-96 panels can be installed for up to 768 circuits in a fully loaded 7-foot rack.



I-116-D9F  
1 RU Dsub9 Feedthrough Rack-Mount Control Panel Breakout Panel



I-DB25  
2 RU QCP IV/DB-25 Rack-Mount Panel



I-96-E  
2 RU QCP II/EDAC 90-Pin Plug Rack-Mount Panel



I-96-AMP  
2 RU AMP 50-Pin Receptacle Panel (Rear View)



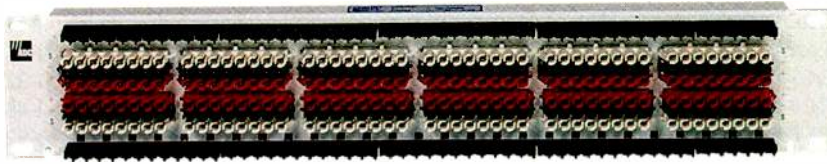


# Integrated Cable Organization Network (ICON®)

## Modular Rack-Mountable Components

The system is built around rack-mountable modular components that you can assemble in different combinations to create the system you require:

- The I-96 QCP II or QCP IV punchdown connection panel terminates and cross-connects 96 balanced audio circuits in 2 RU
- The I-FPB or I-FPD fanning panel dresses and provides strain relief for cables above or below the I-96 panel. Models are available in 1 RU and 2 RU
- Rack-mounted cable troughs and rings are available in various configurations to guide cables in the rack or along rack rails
- I-96 connectors available include QCP II, QCP IV, AMP 50-pin receptacle, and EDAC 90-pin plug



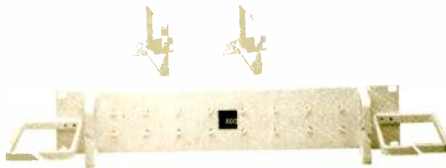
I-96B-MKIV  
2 RU QCP IV Panel



I-VR  
Vertical Ring



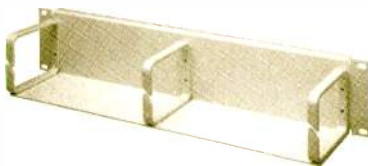
I-96B-MKIV  
Rear View Showing Jumpers



I-FPB  
Fanning Panel



I-96S 3 RU QCP II Hinged Termination Panel



I-ET  
Express Trough



I-FL  
Fanning Panel



I-FPD  
Fanning Panel

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# ICON® I-96 Rack-Mount Audio Cable System

## Ordering Information

Description	Ordering Number
<b>QCP Panels - EIA Rack-Mount 19"/48 cm</b>	
2 RU panel QCP II cross-connects, 96 balanced audio circuits	I-96
2 RU panel QCP IV cross-connects, 96 balanced audio circuits	I-96-MKIV
2 RU QCP II to ELCO/EDAC 3-pin plug, cross-connects, 96 audio circuits	I-96-3E
2 RU QCP II to AMP 50-pin receptacle, cross-connects, 96 audio circuits	I-96-AMP
2 RU QCP II to EDAC 90-pin plug, cross-connects, 96 audio circuits	I-96-E
2 RU QCP II with rear jumpers, cross-connects, 96 audio circuits	I-96B
2 RU QCP IV with rear jumpers, cross-connects, 96 audio circuits	I-96B-MKIV
2 RU QCP IV hinged left, cross-connects, 96 audio circuits, black	I-96S-MKIV-BK
3 RU QCP II for 23" rack, cross-connects, 96 audio circuits	I-96S
1 RU panel Dsub9 receptacles, 1x16	I-116-D9F
2 RU hinged panel QCP II cross-connects, 96 balanced audio circuits	I-96S-19B
1 RU panel QCP IV cross-connects, 32 balanced audio circuits	I-32-DES-W
2 RU panel QCP II cross-connects, 48 balanced audio circuits	I-48
2 RU panel QCP II to AMP 50-pin receptacle, 52 circuits	I-52-AMP
1 RU panel QCP II to EDAC 90-pin plug, 52 circuits	I-52-E
1 RU panel QCP IV cross-connects, 16 balanced audio circuit and 1 video bulkhead feedthrough	I-CS-V8
<b>Fanning Panels - EIA Rack-Mount 19"/48 cm</b>	
1 or 2 RU panel with cable rings for routing cables horizontally. Used with multiple racks with I-FL (listed below) mounted between racks to route cables vertically and provide additional strain relief	I-FPD
1 or 1 RU panel with rings for horizontal or vertical cable routing Includes 2 rings to vertically route cables in the rear; to be used with a standalone channel rack	I-FPB
<b>Vertical Cable Ring/Spacers</b>	
Functions as a spacer mounted between channel racks and routes cabling from both the front and the rear of I-FPBs	I-FL
Ring for vertical cable routing; mounts on front or rear rack rails	I-VR
<b>Express Troughs - EIA Rack-Mount 19"/48 cm</b>	
2 RU express trough for horizontal cable routing between racks	I-ET-3
3 RU express trough for horizontal cable routing between racks	I-ET-5
4 RU express trough for horizontal cable routing between racks	I-ET-7

All products listed above are white unless otherwise noted.

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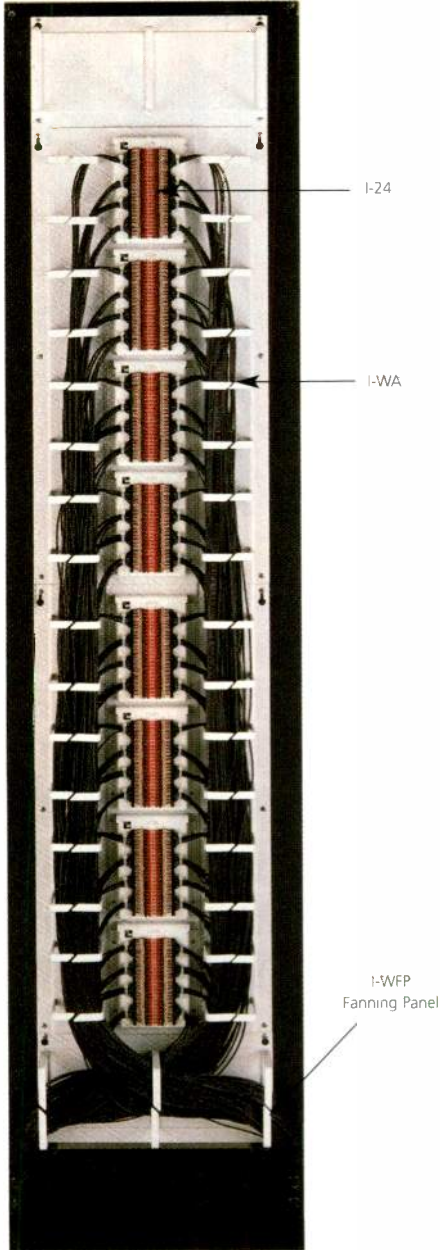
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# ICON® I-W Wall-Mount System

The ICON® I-W is a wall-mount audio cable management system ideally suited for use where floor space is at a premium but wall space is available. The convenient front-facing design mounts flat against the wall and provides two appearances of each circuit on the QCP II or QCP IV punchdown terminal blocks. Cabling to and from your equipment punches down on the right side array of contacts, and cross-connections to these circuits are made on the left side array of contacts. This makes it easy to change cross-connections without disturbing equipment wiring.

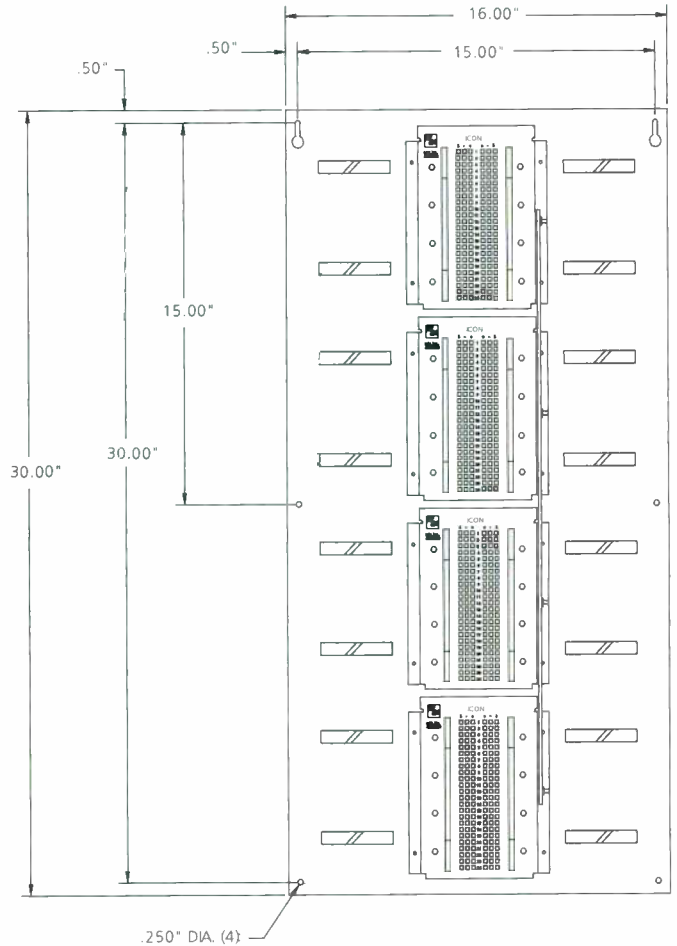
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I-W System handles 192 balanced audio pairs in 16-inches by 5-feet

### An I-W system is assembled from the following components:

- I-WA or I-WB wall-mount frame holds four I-24 QCP terminal blocks
- I-24 QCP termination block terminates or cross-connects 24 balanced audio circuits



I-W-MKII Frame Dimensions

**Note:** MKIV dimensions are different. See page 171 for dimensions.



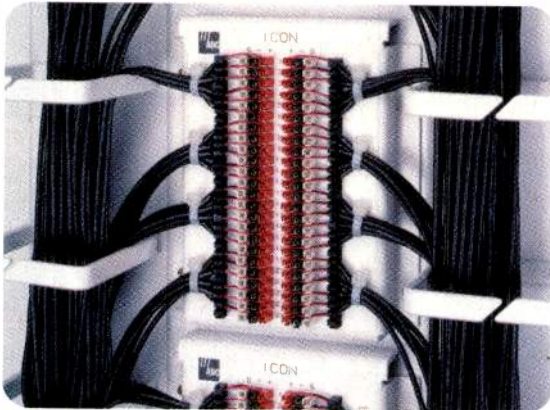
# ICON® I-W Wall-Mount System

## Expandable Component Design

Components for the I-W system come in units that allow you to start with a modest system and expand the number of circuits as you need more. A single I-W frame integrates four I-24 QCP terminal blocks for 96 balanced audio circuits in a wall unit 31-inches high (79 cm) by 16-inches wide (41 cm). Two I-W frames can be stacked for a total of 192 circuits in just over 5-feet of vertical wall space.

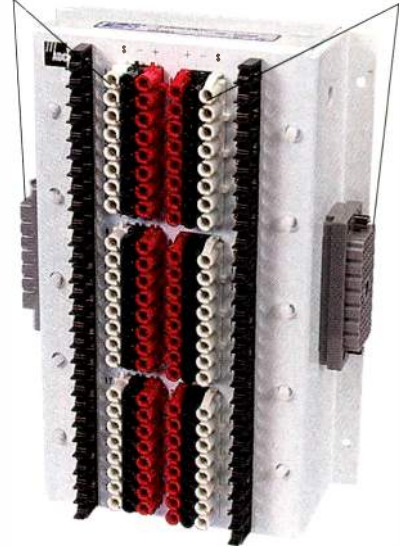
### Features

- Other termination block sizes and connectors are available, including 12-, 24-, 32-, 48-, and 52-circuits as well as QCP II, QCP IV, AMP 50-pin receptacle, and EDAC 90-pin plug
- I-WFP fanning panel mounts above or below the I-W frame to dress cables
- I-WFP-Ring cable rings for guiding cables
- Rack-mounting kit holds two I-24 termination blocks as an alternative to wall-mounting

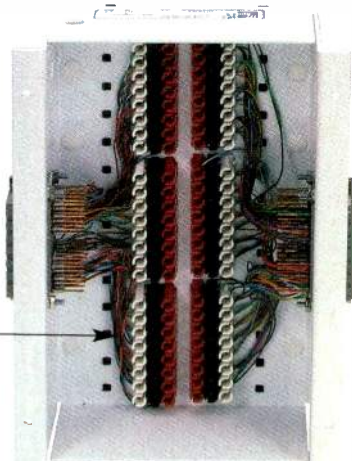


I-24A  
QCP II Termination Block

Inputs enter at left      Outputs exit on right



I-24E90-MKIV  
QCP IV to EDAC 90-Pin Plug Termination Block



Jumpers connect inputs to outputs

I-24E90-MKIV  
QCP IV to EDAC 90-Pin Plug Termination Block  
(Rear View)

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# ICON® I-W Wall-Mount System

## Ordering Information

Description	Ordering Number
<b>Wall-Mount Frames</b>	
Wall-mount frame with four I-24A QCP II blocks for terminating or cross-connecting 96 balanced audio circuits 31"x16" (79 cm x 41 cm)	I-WA
I-WA with QCP IV connectors 38.5" x 16" (97.8 x 40.70 cm)	I-WA-MKIV
I-WA with QCP IV to ELCO/EDAC 90-pin plugs 38.5" x 16" (97.8 x 40.70 cm)	I-WA-E90-MKIV
I-WA with I-24B QCP II blocks that have floating shield terminations	I-WB
I-WB with QCP IV blocks 38.5" x 16" (97.8 x 40.70 cm)	I-WB-MKIV
I-WB with QCP II to AMP 50-pin receptacles	I-WB-AMP
<b>QCP Termination Block</b>	
Terminates and cross-connects 24 balanced audio circuits; each circuit appears on two arrays (left and right) of QCP II on each block and are jumpered on the rear of the block; shield terminals are multed together and brought out to an insulated terminal post on the side of the block to allow grounding of the system to a common point. Dimensions are 7" x 6" x 1" (17.78 x 15.24 x 2.54 cm).	I-24A
I-24A with floating shield terminals, and no grounding terminal on side	I-24B
I-24A with no rear jumpers and no grounding terminal on side	I-24C
Same as I-24A except 27 circuits	I-27A
Dimensions 7.5" x 5.9" x 1" (19 cm x 15 cm x 2.54 cm)	
Same as I-24A except uses improved MKIV QCP termination. Terminates and cross-connects 24 balanced audio circuits on two arrays (left and right) on each block and is jumpered on rear of block; shield terminals are multed together and brought out to an insulated terminal post on side of block. Dimensions: 8.75" x 5.9" x 1" (22.2 cm x 15 cm x 2.54 cm)	I-24A-MKIV
Same as I-24A-MKIV except with floating shield terminals and no grounding terminal on side. Dimensions: 8.75" x 5.9" x 1" (22.2 cm x 15 cm x 2.54 cm)	I-24B-MKIV
Same as I-24A-MKIV except with no rear jumpers and no grounding terminal on side. Dimensions: 8.75" x 5.9" x 1" (22.2 cm x 15 cm x 2.54 cm)	I-24C-MKIV
Same as I-24A-MKIV except 16 circuits. Dimensions: 6.35" x 5.9" x 1" (16.13 cm x 15 cm x 2.54 cm)	I-16A-MKIV
<b>Fanning Panel</b>	
Mounts above, between or below I-WA or I-WB frames to route cabling between frames. 7.5"x16" (19 cm x 41 cm)	I-WFP
<b>Cable Ring</b>	
Cable ring for use with I-WFP mounts on the wall above, between, or below frames or fanning panels. 4.5"D x 5.5"W	I-WFP-RING
<b>Rack-Mounting Kit</b>	
Holds two I-24s in a standard 19" (48 cm) rack	I-24R

**Note:** "A" denotes no rear jumpers  
 "B" denotes strapped rear jumpers  
 "C" denotes strapped rear jumpers, common sleeve

**Note:** MKIV dimensions are different. See page 171 for dimensions.

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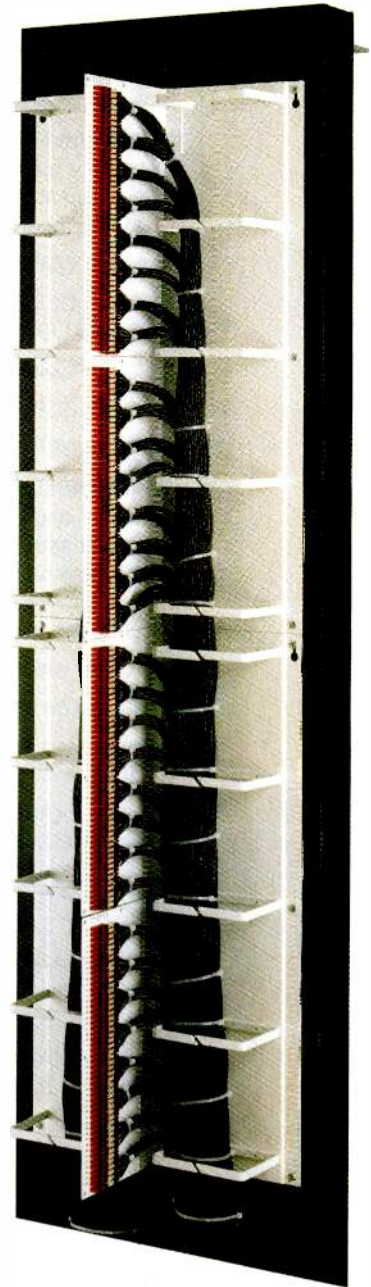
# I-WS Super High-Density Wall-Mount System

The ICON® I-WS is a super high-density wall-mount cable management system engineered for maximum space efficiency. The I-WS system terminates or cross-connects up to 192 balanced audio circuits in a 31.0 x 17.9-inch (79.0 x 45.5 cm) QCP II frame or in a 34.6 x 17.9-inch (87.9 x 45.5 cm) QCP IV frame. The I-WS frame holds two 96-circuit QCP II or QCP IV punchdown panels mounted on edge, 90 degrees relative to the wall to provide access to connections on both sides, an extremely space-efficient arrangement. Cabling from your equipment connects on the left side of the panel, and the feedthrough design allows cross-connect access to those circuits on the right side without affecting the equipment wiring. Two I-WS frames can be stacked to achieve 384 balanced audio pairs in only 62-inches of vertical wall space.

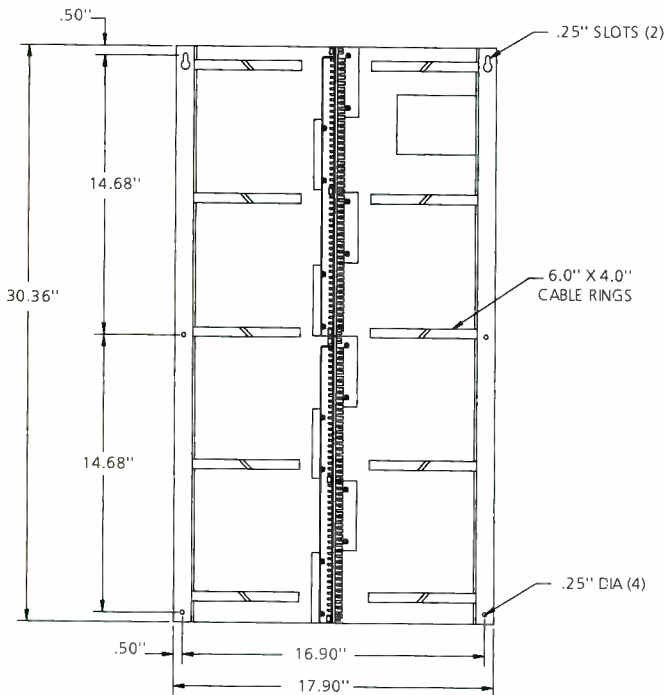
## I-WS System Components

The I-WS system consists of the following main components. You can start with a single frame and panels and expand to additional frames as needed.

- I-WS wall-mount frame holds two I-WS-PANEL assemblies and includes vertical cable rings and fanning strips terminating a total of 192 circuits
- QCP II or QCP IV 96-circuit punchdown terminal block panel mounts in the I-WS-PANEL
- I-WSET express trough mounts above or below I-WS frame and routes cables horizontally



Two stacked I-WS frames  
Provides 384 balanced audio pairs  
in 62-inches of vertical wall space



I-WS Frame MKII Dimensions

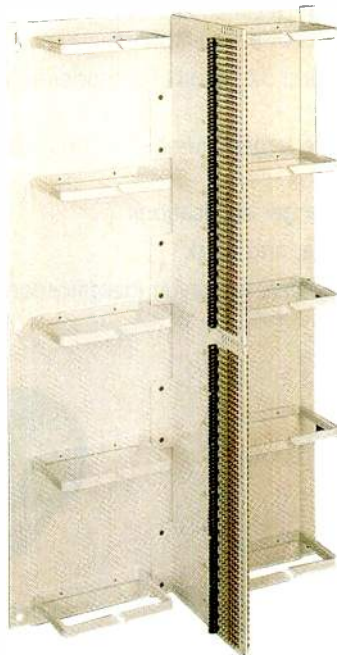
**Note:** MKIV dimensions are different. See page 171 for dimensions.

# I-WS Super High-Density Wall-Mount System

## Ordering Information

Description	Ordering Number
<p><b>I-WS Super High-Density Wall-Mount System</b></p> <p>I-WS wall-mount frame includes I-WS-PANEL with QCP II or QCP IV connector blocks mounted 90° from the wall. Terminates or cross-connects 192 balanced audio circuits.</p> <p>I-WS dimensions: 31" x 17.9" (79 cm x 45.5 cm)            MKIV dimensions: 34.6" x 17.9" (87.9 x 45.5 cm)</p> <p>I-WS-PANEL mounts on the I-WS frame and holds the QCP blocks.</p> <p>Express trough mounts above, between, or below I-WS and routes cabling horizontally between frames.</p> <p>Dimensions: 7.5" x 17.9" (19 cm x 45 cm)</p>	<p>I-WS            I-WS-MKIV            I-WS-PANEL            I-WSET</p>

**Note:** MKIV dimensions are different. See page 171 for dimensions.



I-WS  
Super Density Wall-Mount Frame



I-WSET  
Express Trough



# Video Integrated Organization Network (ICON®)

## The Video ICON® Cable Management

The Video ICON cable organizational network system makes installations of coaxial cable cleaner and identification of cables simpler. These panels are perfect for any application where video cables need to be gathered, such as making connections between racks or organizing cables for inputs to and outputs from a router.

ADC offers a wide variety of these durable powder-coated steel video distribution panels, featuring the outstanding quality and true 75 Ohm performance of our BNC bulkhead feedthrough connectors. These connectors are rated at 3 GHz performance, making them suitable for analog, SD, or HD video signals. Panels are available in 1 RU and 2 RU models as well as a wide range of wall-mount sizes with as few as eight and as many as 96 circuits.

## Durable Rack-Mounted Bulkhead Panels

The ICON VI series is a complete line of 19-inch (48 cm) rack-mounted bulkhead video cable management panels starting from the small 12-circuit VI-12 panel to the full-sized VI-48 with 48 bulkhead BNC circuits. Each panel is made of the same strong powder-coated steel and uses high-quality 3 GHz BNC bulkhead connectors suitable for HDTV.

- VI-12 and VI-16 2 RU panels handle 12 or 16 circuits for small applications, such as organizing monitor outputs or the inputs and outputs of a small router
- VI-24 and VI-32 2 RU panels provide 24 and 32 circuits for moderately-sized applications, such as feeding cables to a 32-input router
- The VI-132 (2x32) 1 RU panel provides the largest number of inputs and outputs in the smallest space
- VI-48 2 RU panel handles 48 circuits for larger applications
- Colors available include white, putty white, and black
- Some models include designation strip holders for circuit identification



Exclusive ADC closed-entry center pin resists damage



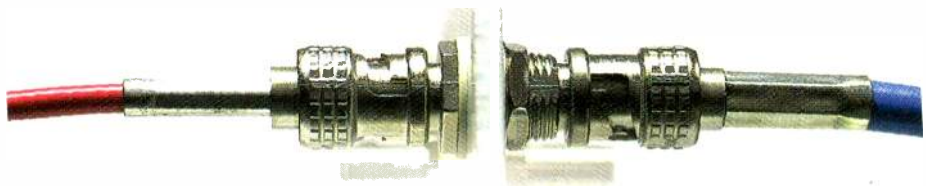
Conventional center pins prone to damage



2 RU VI-12-PTY



2 RU BNC-BLK-48-75 Ohm



Video ICON® Bulkhead Connectors

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# Video Integrated Organization Network (ICON®)

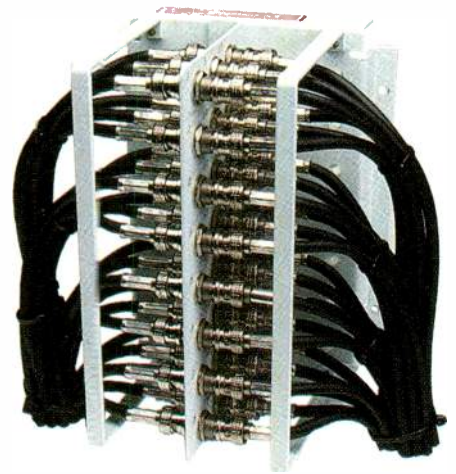
## Wall-Mount Bulkhead Panels

For facilities where rack space is at a premium but wall space is readily available, ADC offers the VIW Video ICON® wall-mount video bulkhead panel series. These tough powder-coated steel panels mount on the wall and provide from eight to 96 video bulkhead connectors for managing cables between racks or between studios. Top-quality 3 GHz bulkhead BNCs ensure the best video performance from analog to HDTV transmission rates.

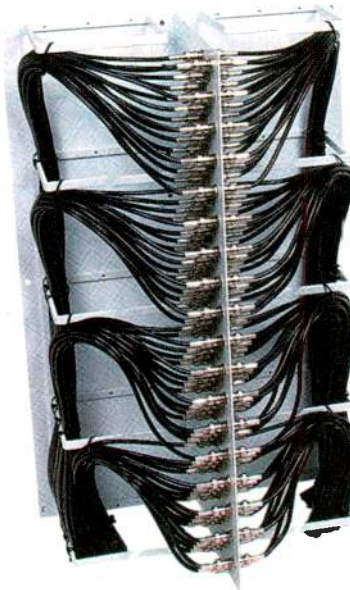
- VIW-8 (1x8) and VIW-408 (4x8) for small applications
- VIW-424 (4x24), VIW-64 (2x32), and VIW-72 for intermediate size applications. The VIW-64 is ideal for managing cables for a 64-input router matrix
- VIW-96 (3x32) for larger uses, such as organizing inputs and outputs for a large router matrix
- Cable support bars or rings included on most models



VIW-8  
8-Connector Bulkhead  
Wall-Mount Panel



VIW-24  
24-Connector Bulkhead  
Wall-Mount Panel



VIW-64  
64-Connector Bulkhead  
Wall-Mount Panel



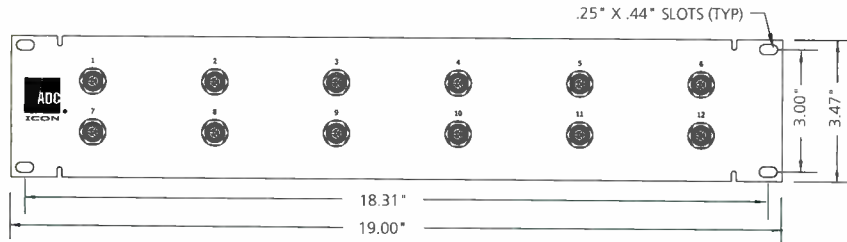
# Video ICON® Bulkhead Panels

ADC offers a wide variety of bulkhead panels featuring our exclusive impedance matched true 75 Ohm bulkhead connector.

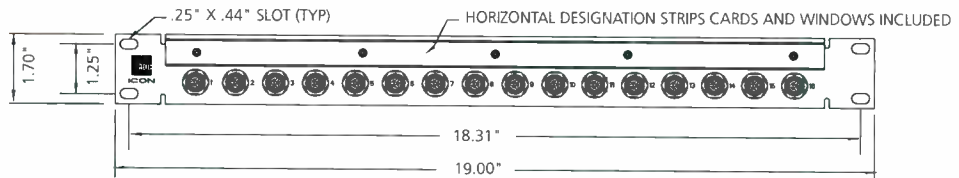
## Features:

- Rack-mount versions in 19" (48.26 cm) or 23" (58.42 cm) 1 RU or 2 RU heights
- Models from 12 to 48 circuits with or without cable trays
- Wall-mount systems from 8 to 96 circuits

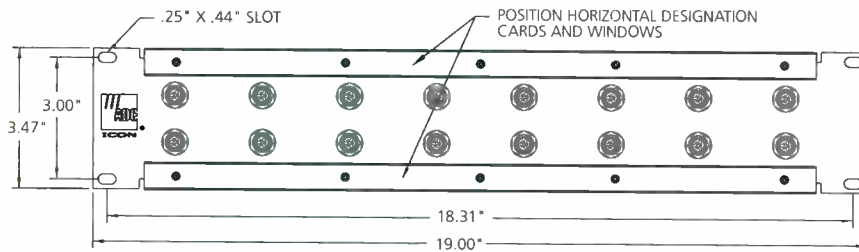
## 19" (48.26 cm) Panels



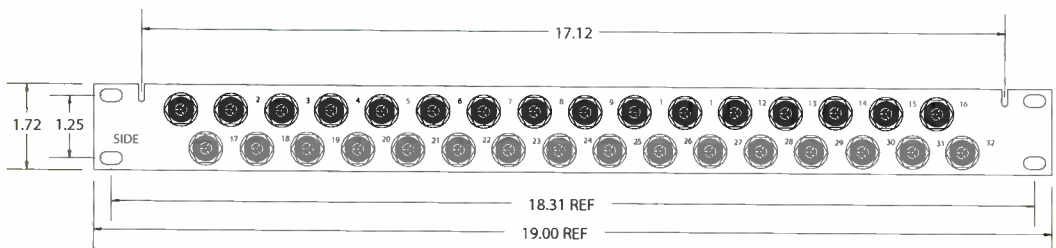
VI-12-W 12-Circuit 2 RU BNC Bulkhead Panel



VI-116-DES-W 16-Circuit 1 RU BNC Bulkhead Panel



VI-16-PTY 16-Circuit 2 RU BNC Bulkhead Panel



VI-132 32-Circuit 1 RU BNC Bulkhead Panel

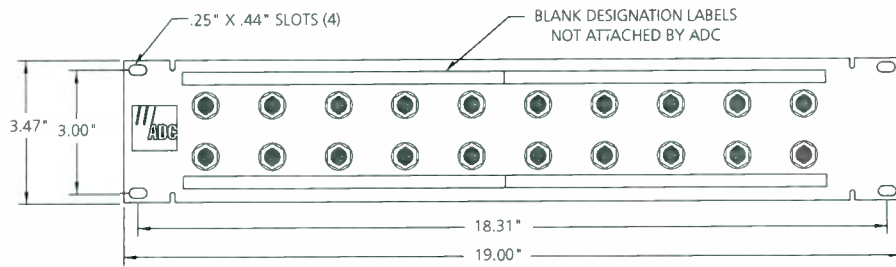
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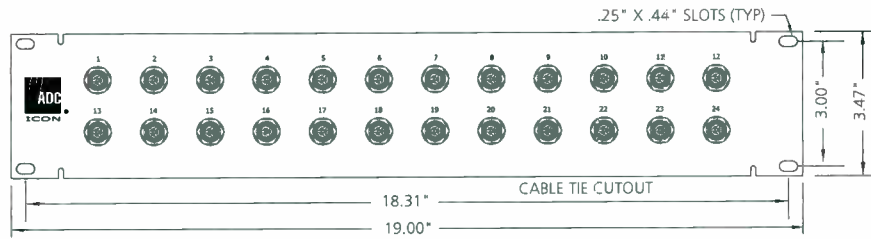
# Video ICON® Bulkhead Panels

19" (48.26 cm) Panels

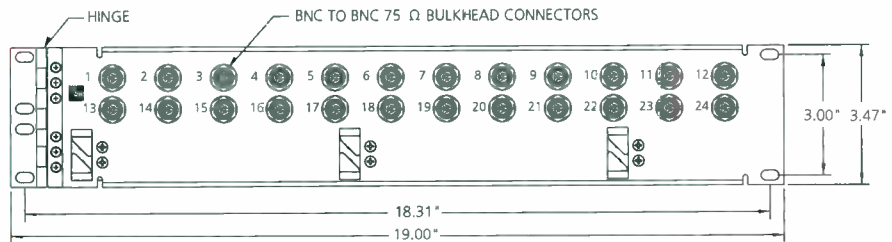
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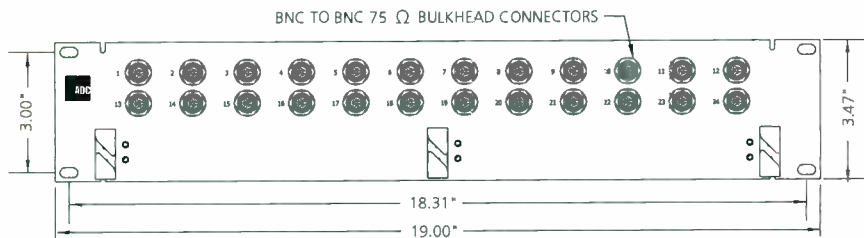
VI-20-PTY



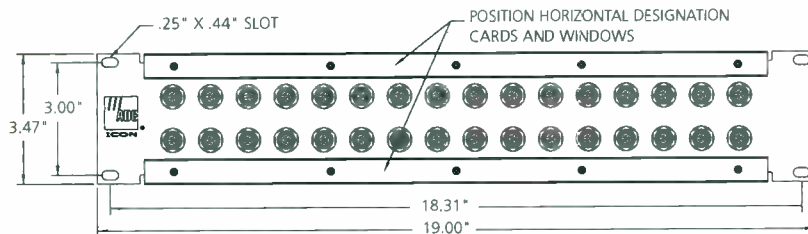
VI-24-PTY



VI-24S



VI-24VHR-BK

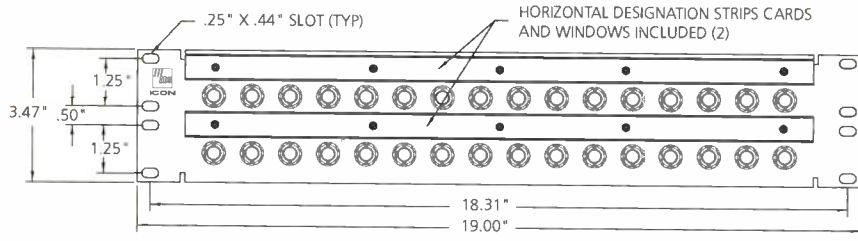


VI-32-BK

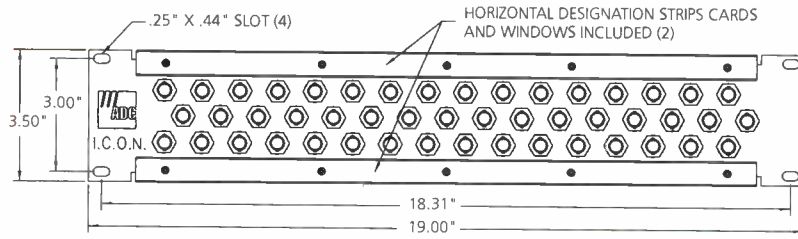


# Video ICON® Bulkhead Panels

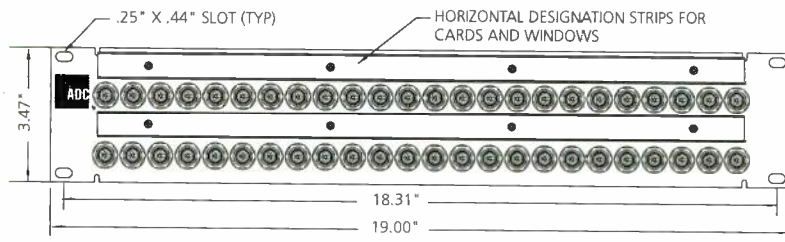
## 19" (48.26 cm) Panels



VI-32-DES-W

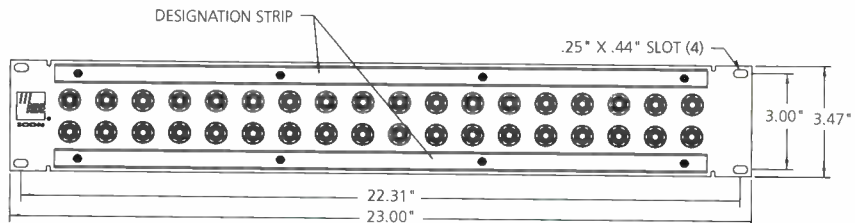


VI-48-BK



VI-48-19-TTDES-BK

## 23" (58.42 cm) Panels



VI-36-23-DES-PTY

Broadcast Products 3104 • 1180270

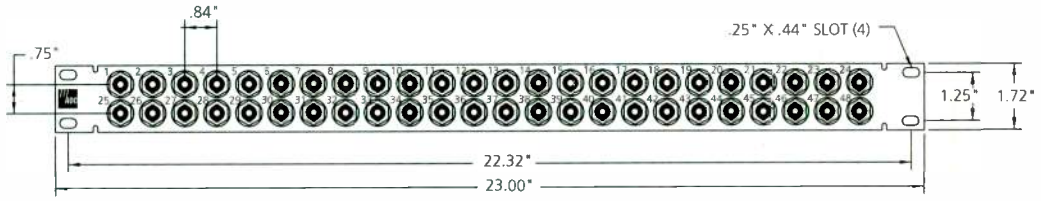


# Video ICON® Bulkhead Panels

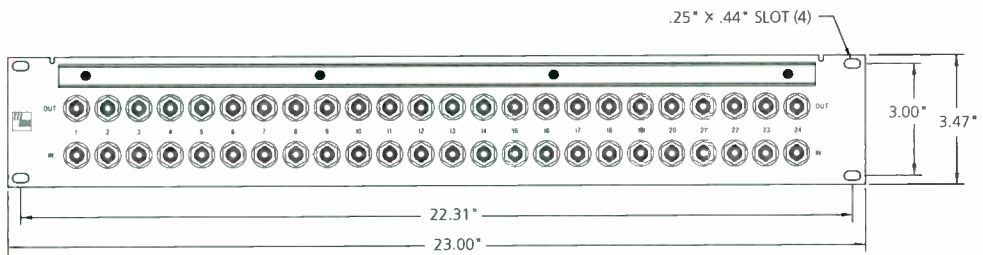
23" (58.42 cm) Panels

Broadcast Products

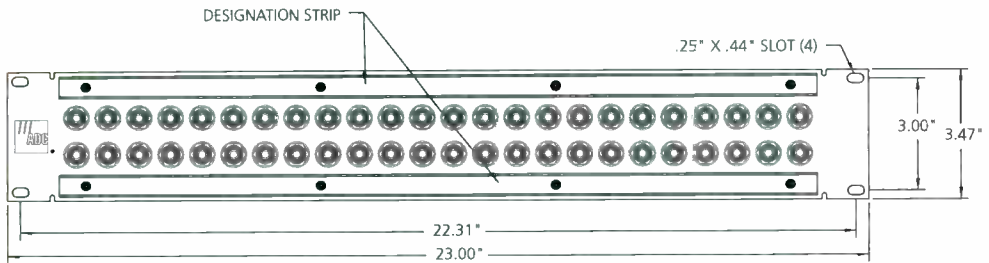
3/04 • 1180270



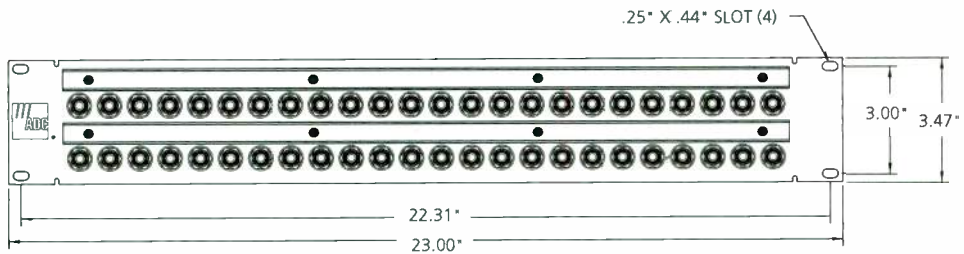
VI-148-23-PTY



BNC-BLK-48-CL



VI-48-23-DES-BK

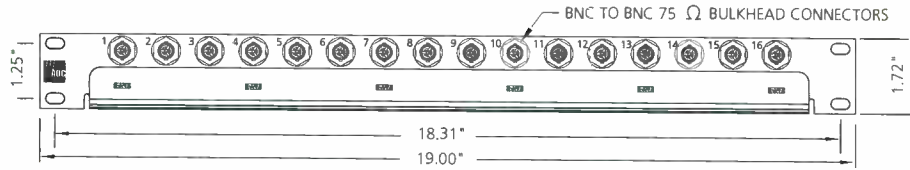


VI-48-23-TT-DES-BK

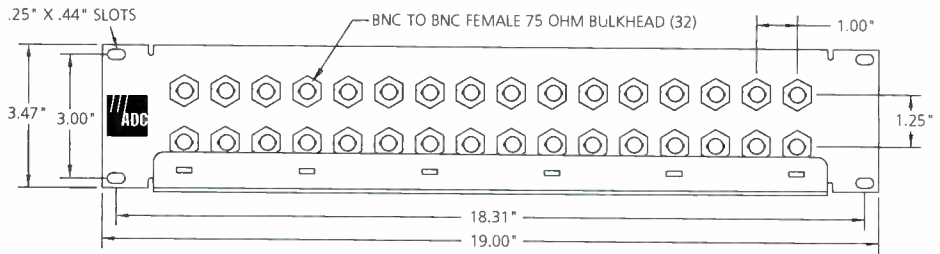


# Video ICON® Bulkhead Panels

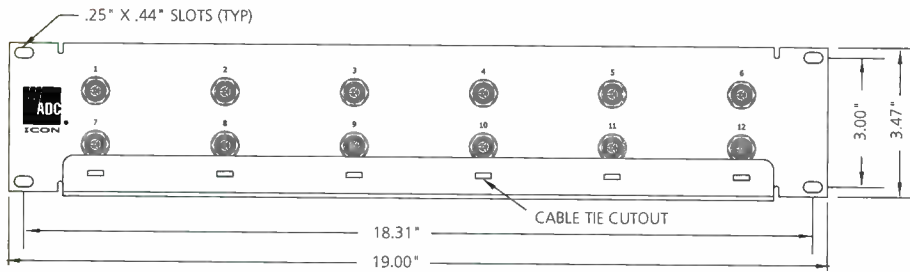
## 19" (48.26 cm) Panels with Cable Tray



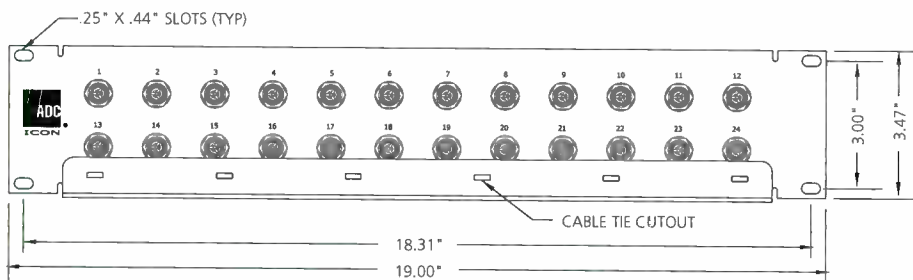
VI-132-TR-BK



BNC-BLK-32-TR75



VI-12-TR-W



VI-24-TR-W

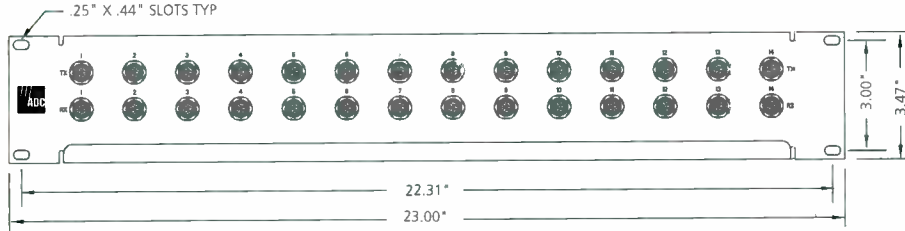
3/04 • 1180270 Broadcast Products



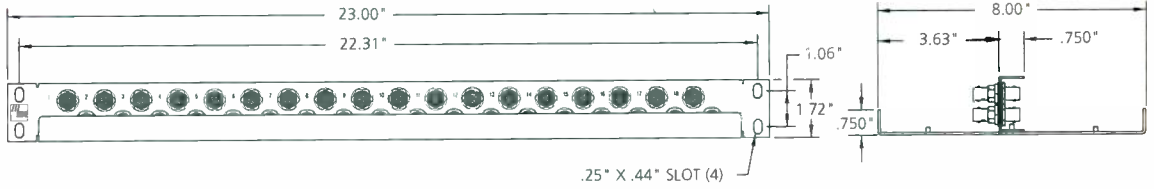
# Video ICON® Bulkhead Panels

23" (584.2 mm) Panels with Cable Tray

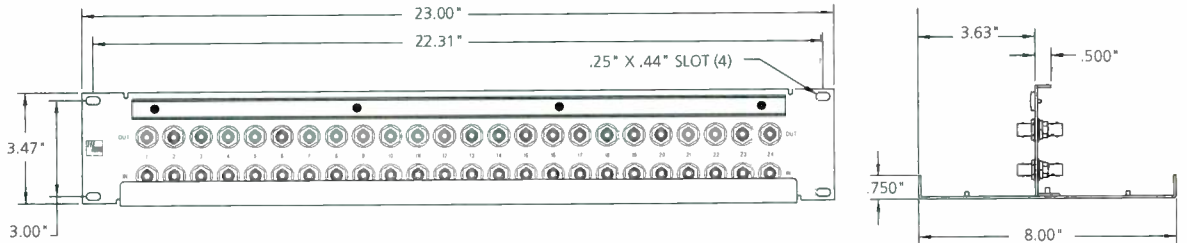
1 1 8 0 2 7 0 Broadcast Products



VI-28-BBG



BNC-BLK-36-TR-1U-B

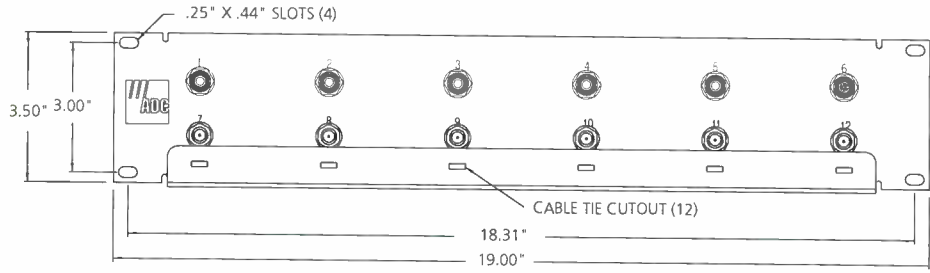


BNC-BLK-48-TR-2U-B

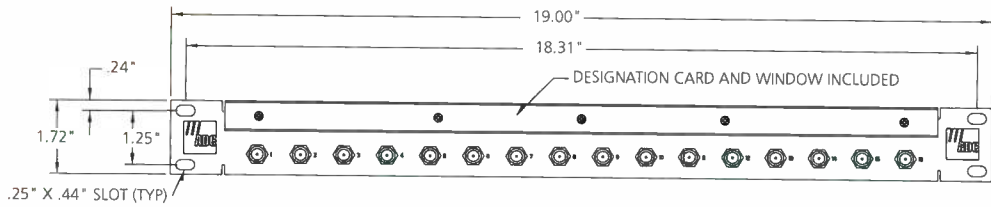


# Video ICON® F Connector Bulkhead Panels

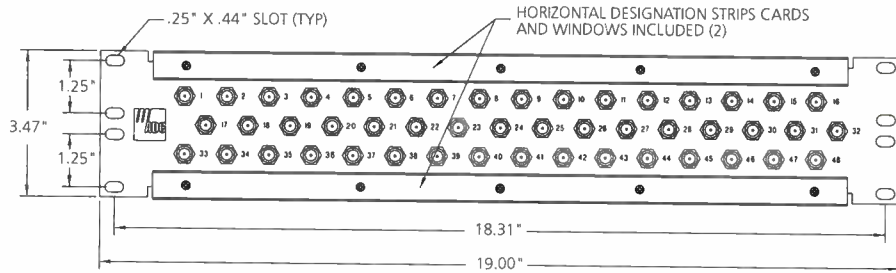
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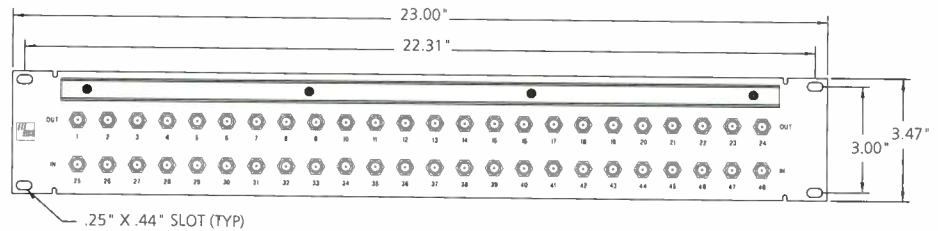
VI-12-BNC-F-W



VI-16F-19-PTY



VI-48F-19-PTY



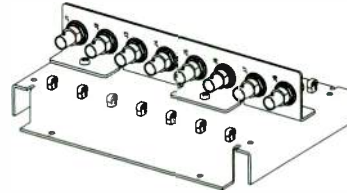
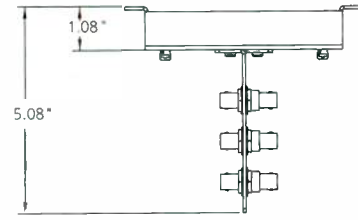
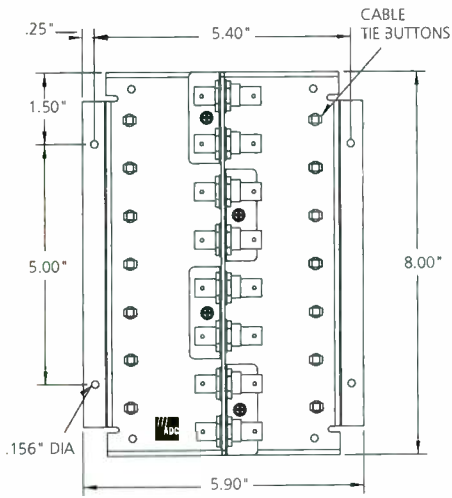
VI-48F-23-PTY



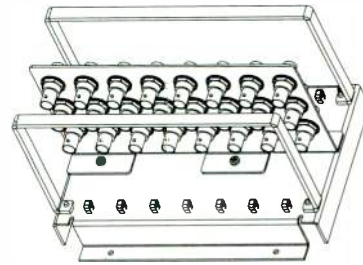
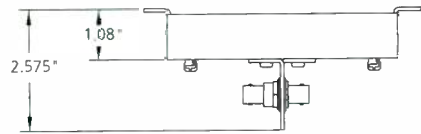
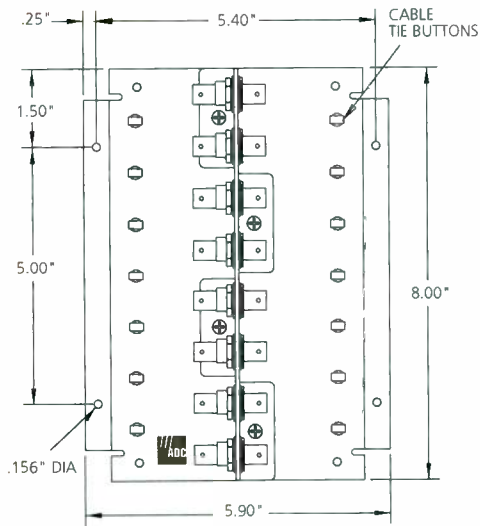


# Video ICON® Wall-Mount Panels

3 / 0 4 • 1 1 8 0 2 7 0 Broadcast Products



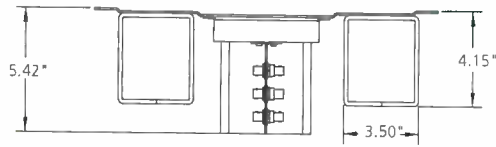
VIW-8



VIW-24



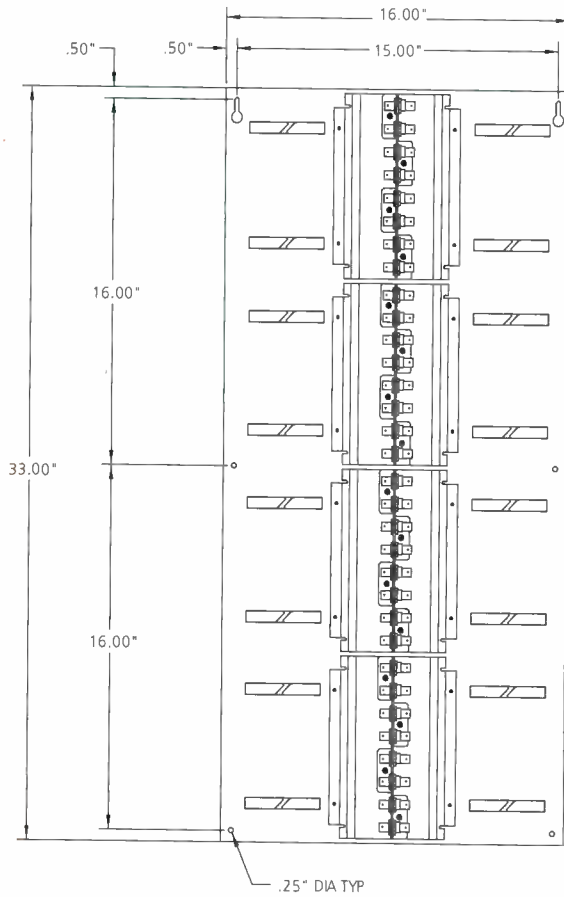
# Video ICON® Wall-Mount Panels



VIW-424



VIW-408

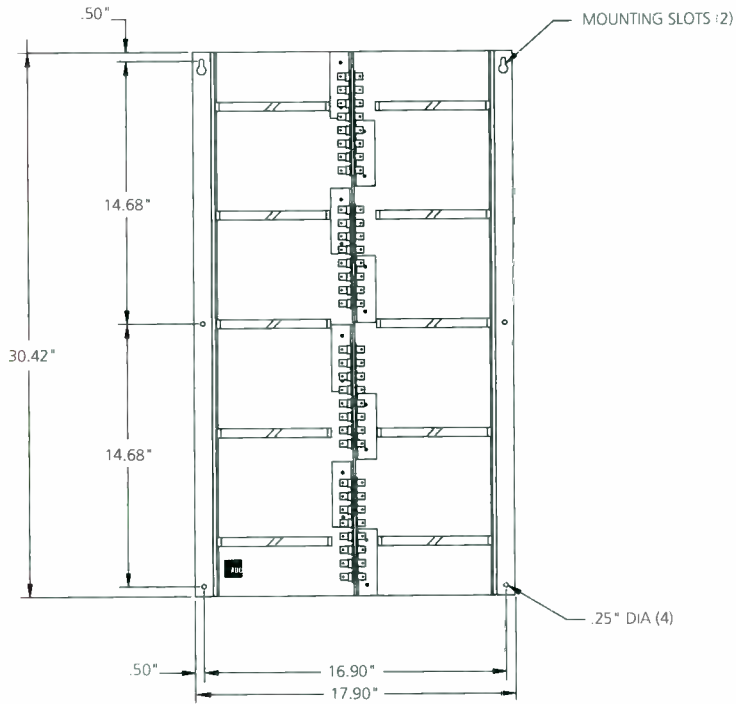
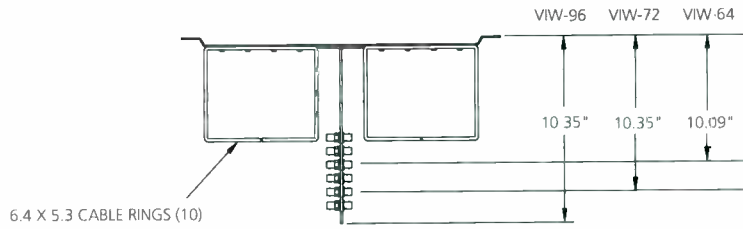


Video ICON VIW-424/408 Wall-Mount Panel Dimensions

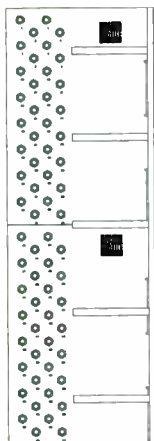
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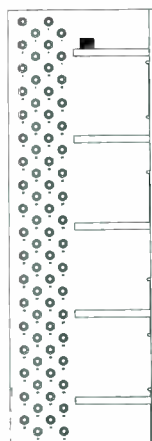
# Video ICON® Wall-Mount Panels



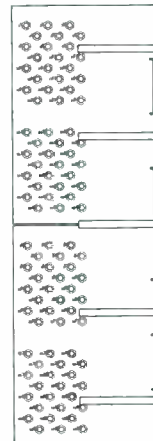
Video ICON VIW-64/72/96 Wall-Mount Panel Dimensions



VIW-64



VIW-72



VIW-96



# Video ICON®

## ICON Video BNC Bulkhead Panels

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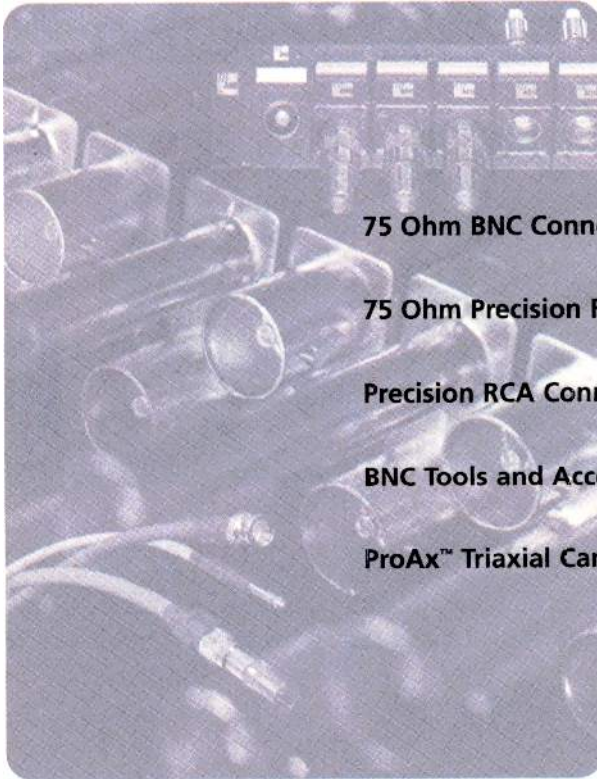
### Ordering Information

Description	Number of Circuits	Ordering Number
<b>75 Ohm 19" Rack Mount BNC Bulkhead Panels</b>		
2 RU 2x6, putty	12	VI-12-PTY
2 RU 2x6, white	12	VI-12-W
1 RU 1x16 with designation strips, white	16	VI-116-DES-W
2 RU 2x8 with designation strips, putty	16	VI-16-PTY
2 RU 2x10 with designation strips, putty	20	VI-20-PTY
2 RU 2x12, putty	24	VI-24-PTY
2 RU 2x12 with vertical and horizontal rings, black	24	VI-24VHR-BK
2 RU 2x12 hinged left with rings, white	24	VI-24S
2 RU 2x16 with designation strips, black	32	VI-32-BK
2 RU 2x16 with designation strips, putty	32	VI-32-PTY
2 RU 2x16 with upper and lower designation strips, white	32	VI-32-W
2 RU 2x16 with lower and middle designation strips, white	32	VI-32-DES-W
2 RU 3x16 with designation strips, black	48	VI-48-BK
2 RU 3x16 with designation strips, putty	48	VI-48-PTY
2 RU 3x16 with designation strips, white	48	VI-48-W
2 RU 2x24 with designation strips, black	48	VI-48-19-TTDES-BK
2 RU 2x24 with designation strips, gray	48	VI-48-19-TTDES-G
1 RU 2x16 empty BNC panel for ADC bulkhead BNCs	32	VI-132-PNL-BK
1 RU 2x16 breakout panel with BNC cable ends	32	VI-132-XX*-BK
<b>75 Ohm 23" Rack Mount BNC Bulkhead Panels</b>		
2 RU 2x18 with designation strips, putty	36	VI-36-23-DES-PTY
1 RU 2x24, putty	48	VI-148-23-PTY
2 RU 2x24 with upper designation strips, putty	48	BNC-BLK-48-CL
2 RU 2x24 with upper and lower designation strips, black	48	VI-48-23-DES-BK
2 RU 2x24 with upper and middle designation strips, black	48	VI-48-23-TTDES-BK
2 RU 2x24 with designation strips, gray	48	VI-48-23-TTDES-G
2 RU 2x24 with designation strips, white	48	VI-48-23-TTDES-W
<b>75 Ohm 19" Rack Mount BNC Bulkhead Panels with Cable Tray</b>		
2 RU 2x6 with cable tray, white	12	VI-12-TR-W
2 RU 2x12 with cable tray, white	24	VI-24-TR-W
1 RU 2x16 with cable tray, black	32	VI-132-TR-BK
1 RU 2x16 with cable tray, white	32	VI-132-TR-W
2 RU 2x16 with cable tray, putty	32	BNC-BLK-32-TR75
<b>75 Ohm 23" Rack Mount BNC Bulkhead Panels with Cable Tray</b>		
2 RU 2x14 with cable tray, putty	28	VI-28-BBG
2 RU 2x18 with cable tray, black	36	BNC-BLK-36-TR-1U-B
2 RU 2x18 with cable tray, putty	36	BNC-BLK-36-TR-1U-P
2 RU 2x24 with cable tray, black	48	BNC-BLK-48-TR-2U-B
2 RU 2x24 with cable tray, putty	48	BNC-BLK-48-TR-2U-P
<b>75 Ohm Wall-Mount BNC Bulkhead Panels</b>		
1x8 wall mount bulkhead panel	8	VIW-8
3x8 wall mount bulkhead panel	24	VIW-24
24-circuit bulkhead panel	32	VIW-408
64-circuit bulkhead panel	64	VIW-64
72-circuit bulkhead panel	72	VIW-72
96-circuit bulkhead panel	96	VIW-424
96-circuit bulkhead panel	96	VIW-96
<b>75 Ohm F81 Connector Rack Mount Bulkhead Panels</b>		
2 RU 1x6 BNC, 1x6 F81 connector with tray, white	12	VI-12-BNC-F-W
1 RU 19" 1x16 F81 connector panel with designation strip, putty	16	VI-16F-19-PTY
2 RU 19" 3x16 F81 connector panel with designation strip, putty	48	VI-48F-19-PTY
2 RU 23" 2x24 F81 connector panel with designation strip, putty	48	VI-48F-23-PTY

\*XX denotes cable length



# Connectors and Accessories



<b>75 Ohm BNC Connectors</b>	<b>93</b>
<b>75 Ohm Precision F Connectors</b>	<b>93</b>
<b>Precision RCA Connectors</b>	<b>93</b>
<b>BNC Tools and Accessories</b>	<b>100</b>
<b>ProAx™ Triaxial Camera Connectors</b>	<b>104</b>



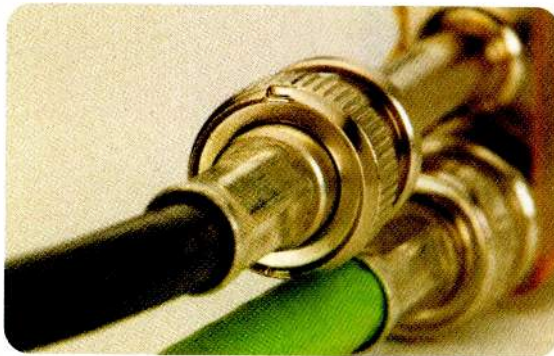
## Connector Products

### 75 Ohm BNC Connectors



ADC's BNC connectors are the most reliable and universally accepted method of terminating coaxial cable in the market today. Outstanding electrical performance (up to 3 GHz) is achieved by unique design elements in the industry's truest 75 Ohm connector. Precision-molded insulators with locking gold-plated center conductors ensure true 75 Ohm characteristic impedance. Innovative features result in significant reduction of impedance mismatch throughout the network and improved transmission reliability in digital applications.

An idea whose time has come, the new notched BNC series (patent-pending) from ADC makes it easy to spot BNC connectors that are not properly latched to BNC jacks. This is especially helpful with high-density coax panels such as ADC's midsize video product offering where terminations are very tight, and in the back of dark racks.



#### Features

- Designed to exceed the rigorous demands of today's telecom and broadcast environment including SMPTE 259, 274, and 292M standards
- Outstanding electrical performance up to 3 GHz
- Gold-plated, locking center conductor
- True 75 Ohm characteristic impedance end-to-end
- Compatible with hex, square, and 12-point crimp tools and select competitive crimp tools and die sets
- Tarnish-resistant, nickel-plated body and bayonet
- Sizes for multiple cable types
- Meets or exceeds MIL-C-39012 requirements



# Connector Products

## 75 Ohm Precision New ADC F Connectors



ADC's high-performance F connectors are designed for demanding digital applications where a high-quality, high-performance F connector is required. These connectors provide superior return loss (-30 dB to 3 GHz) and are the perfect choice for use in digital head-ends, satellite down links, and high performance customer premises applications.

### Features

- All-crimp two-piece design goes together like a BNC
- Combines the superior electrical performance of a BNC with the superior RF performance of an F connector
- True-75 Ohm design for performance up to 3 GHz
- Crimp-on center pin provides outstanding connection rather than relying on the copper center conductor of the cable
- Gold-plated locking center pin just like a BNC connector
- Diamond-knurled crimp hub and long .500" crimp sleeve provides higher pull-off force than typical F connector types
- Long 3/8" wrench flats make for a more comfortable and easier connector to thread
- Precision machined parts for greater unit to unit consistency
- Exclusive molded Ultem® center conductor insulator provides a truer impedance match over PVC and Teflon types
- Same strip and crimp dimensions as our standard BNC plugs
- Cable sizes for RG59, RG187, and RG6 available
- Termination plugs in 1% and precision .1% available

## Precision RCA Connectors



The venerable RCA connector is still the universally accepted method of terminating coaxial cable for audio and video signals in Prosumer-type products such as video decks, DVDs, video projectors and HD monitors. ADC's new precision RCA connectors are designed for demanding professional environments, offering a performance-driven product with outstanding mechanical and electrical characteristics, as well as easy BNC-type assembly. Precision-molded insulators with locking

gold-plated center conductors ensure nominal 75 Ohm characteristic impedance. Innovative features such as ADC's proprietary geometrically molded insulator design result in a significant reduction of impedance mismatch and improved transmission reliability for digital applications. ADC's RCA connectors use the same strip and crimp tools as ADC BNC and F connector products, making installation easy and fast.

### Features

- Outstanding electrical performance up to 2 GHz
- 50 microinch gold-plated, locking internal center conductor crimps to cable
- Exclusive closed-entry center pin contact RCA pin/receptacle
- Nominal 75 Ohm characteristic impedance end-to-end
- Easy preparation and installation; installs just like a standard BNC with BNC tooling
- Compatible with hex, square, and 12-point crimp tools and select competitive crimp tool and die sets
- Tarnish-resistant, nickel-plated body; 50 microinch gold-plated center pin
- Sizes for multiple cable types
- Meets or exceeds MIL-STD-202F requirements

Broadcast Products

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# 75 Ohm BNC, F, and RCA Connectors

## Ordering Information

Below is an ordering guide that will help you select the BNC, F, and RCA connectors that best meet your needs. Simply select the connector type, diameter, crimp area and cable type to determine the correct ADC ordering number.

Ordering Number	Connector Type	Cable Outer Jacket Diameter				Center Conductor Outside Diameter				
		Inch Range		MM Range		AWG (USA)	Inch Range		MM Range	
		Lower	Upper	Lower	Upper		Lower	Upper	Lower	Upper
BNC-1	Straight Plug	0.235	0.245	5.97	6.22	20	0.030	0.033	0.76	0.83
BNC-2	Straight Plug	0.220	0.242	5.59	6.15	23	0.022	0.025	0.56	0.62
BNC-3	Straight Plug	0.127	0.127	3.23	3.23	26	0.015	0.018	0.38	0.44
BNC-4	Straight Plug	0.305	0.305	7.75	7.75	20	0.030	0.033	0.76	0.83
BNC-5	Straight Plug	0.270	0.270	6.86	6.86	20	0.030	0.033	0.76	0.83
BNC-6	Straight Plug	0.199	0.212	5.05	5.38	20	0.030	0.033	0.76	0.83
BNC-7	Straight Plug	0.155		3.94		24	0.019	0.022	0.48	0.55
BNC-8	Straight Plug	0.275		6.99		18	0.038	0.040	0.97	1.02
BNC-9	Straight Plug	0.275	0.305	6.99	7.75	18	0.038	0.040	0.97	1.02
BNC-10	Straight Plug	0.280		7.11		18	0.038	0.040	0.97	1.02
BNC-11	Straight Plug	0.265		6.73		23	0.022	0.025	0.56	0.62
BNC-12	Straight Plug	0.150		3.81		25	0.017	0.019	0.43	0.47
BNC-13	Straight Plug	0.146		3.71		24	0.019	0.022	0.48	0.55
BNC-14	Straight Plug					26				
BNC-15	Straight Plug	0.193	0.232	4.90	5.89	24	0.019	0.022	0.48	0.55
BNC-16	Straight Plug	0.103	0.110	2.62	2.79	26	0.015	0.018	0.38	0.44
BNC-17	Straight Plug	0.271	0.271	6.88	6.88	20	0.030	0.033	0.76	0.83
BNC-19	Straight Plug	0.125		3.18		24	0.019	0.022	0.48	0.55
BNC-20	Straight Plug	0.249		6.32		18	0.038	0.040	0.97	1.02
BNC-22	Straight Plug	0.149		3.78		25	0.017	0.019	0.43	0.47
BNC-25	Straight Plug	0.400		10.16		14	0.064		1.63	
BNC-2E	Straight Plug	0.177		4.50		23	0.024		0.61	
BNC-2F	Straight Plug	0.310	0.326	7.87	8.28	16	0.051		1.30	
BNC-2E	Straight Plug	0.077		1.96		26	0.018		0.46	
BNC-29	Straight Plug	0.292	0.308	7.41	7.83	18	0.040		0.97	
BNC-30	Straight Plug					26				
BNC-RA-1	Right Angle Plug	0.235	0.245	5.97	6.22	20	0.030	0.033	0.76	0.83
BNC-RA-2	Right Angle Plug	0.220	0.242	5.59	6.15	23	0.022	0.025	0.56	0.62
BNC-RA-3	Right Angle Plug	0.127	0.127	3.23	3.23	26	0.015	0.018	0.38	0.44
BNC-RA-4	Right Angle Plug	0.305	0.305	7.75	7.75	20	0.030	0.033	0.76	0.83
BNC-RA-7	Right Angle Plug	0.155		3.94		24	0.019	0.022	0.48	0.55
BNC-RA-8	Right Angle Plug	0.275		6.99		18	0.038	0.040	0.97	1.02
BNC-BH-1	Bulkhead Jack	0.235	0.245	5.97	6.22	20	0.030	0.033	0.76	0.83
BNC-3HJ-8	Bulkhead Jack	0.275		6.99		18	0.038	0.040	0.97	1.02
NC-BHJ-1	Bulkhead Jack	0.146		3.71		24	0.019	0.022	0.48	0.55
CF-1	F Style	0.235	0.245	5.97	6.22	20	0.030	0.033	0.76	0.83
CF-5	F Style	0.270	0.270	6.86	6.86	20	0.030	0.033	0.76	0.83
CF-8	F Style	0.275		6.99		18	0.038	0.040	0.97	1.02
CF-13	F Style	0.146		3.71		24	0.019	0.022	0.48	0.55
CRCA-1	RCA Style	0.235	0.245	5.97	6.22	20	0.030	0.033	0.76	0.83
CRCA-5	RCA Style	0.270	0.270	6.86	6.86	20	0.030	0.033	0.76	0.83
CRCA-8	RCA Style	0.275		6.99		18	0.038	0.040	0.97	1.02
CRCA-13	RCA Style	0.146		3.71		24	0.019	0.022	0.48	0.55



# 75 Ohm BNC, F, and RCA Connectors

In addition to the .042" square pin crimp, all connectors listed are compatible with a 12-point method of crimping or .042" hex crimp. All ADC BNC connector plugs use the same crimp dimensions and crimp tools for the same cable type.

Bulk packaging in quantities of 100 is available (package includes 100 connector bodies, 100 center pins, and 100 crimp sleeves bagged separately). For bulk packaging add "B" to the end of the ordering number. Example: BNC-13B.

Cable Dielectric		Outside Diameter		Connector Crimp Areas				Crimp Die	Cable Type	Ordering
Inch Range		MM Range		Hex Flats	Distance	Center Pin		Ordering Number	Ordering Number	Number
Lower	Upper	Lower	Upper	Inch	MM	Inch	MM			
0.140	0.150	3.56	3.81	0.255	6.48	.042	1.07	WD-1, WD-2, WD-3, WD-5	734A/D, 734AP, 9259, 1505A, 9100, VPM2000, CV752, FM59, RCCH, 9167, M8023	BNC-1
0.140	0.150	3.56	3.81	0.255	6.48	.042	1.07	WD-1, WD-2, WD-3, V/D-5	RG59 RG59EU, 9209, 8279, 8241, VJ59U	BNC-2
0.077		1.96		0.178	4.52	.042	1.07	WD-2	735A, NT735	BNC-3
0.185	0.198	4.70	5.03	0.324	8.23	.042	1.07	WD-1	728, 8281, 8281B, 8281F, VP618PE, VP618V, CV752, CAMPLEX 1	BNC-4
.0144		3.66		0.324	8.23	.042	1.07	WD-1	1187A, HEC-2, F59HEC2	BNC-5
0.135	0.140	3.43	3.56	0.255	6.48	.042	1.07	WD-1, WD-2, WD-3, V/D-5	1506A, 1824A, VPM2000TS, VPM2000TK, CV7559-PLEN	BNC-6
0.095		2.41		0.178	4.52	.042	1.07	WD-2	E218, 7538, 0222, CV755M, RCC	BNC-7
0.180		4.57		0.278	7.06	.042	1.07	WD-4, WD-5	1694A, 9248, 9058, VSD2001, VSD2001TS, RG65D, 1.0/4.8, M8024	BNC-8
0.180	0.198	4.57	5.03	0.324	8.23	.042	1.07	WD-1	1189A	BNC-9
0.180		4.57		0.255	6.48	.042	1.07	WD-1, WD-2, WD-3, WD-5	1595A, RG65D-PLEN	BNC-10
0.142		3.61		0.324	8.23	.042	1.07	WD-1	9268, S-HEC 89, 6605	BNC-11
0.099		2.51		0.178	4.52	.042	1.07	WD-2	186E, 8218, 7537, RGB250	BNC-12
0.090		2.29		0.178	4.52	.042	1.07	WD-2	185EA, RGBS250, VDM250, VDM230, DSM1 (3,4,5) M8025	BNC-13
				0.178	4.52	.042	1.07	WD-2	BT-3002	BNC-14
0.122		3.10		0.255	6.48	.042	1.07	WD-1, WD-2, WD-3, WD-5	9209, 82241 2041, V618M59TK, RG59-PLEN	BNC-15
0.050	0.070	1.52	1.78	0.178	4.52	.042	1.07	WD-2	8216, 9239, 83269, RGBSC260TS	BNC-16
0.185	0.198	4.70		0.324	8.23	.042	1.07	WD-1	8828I, VP618TK, CV752-PLEN	BNC-17
0.078		1.98	5.03	0.178	4.52	.042	1.07	WD-2	LL79301	BNC-19
0.182		4.62		0.278	7.06	.042	1.07	WD-4, WD-5	8228, 82120	BNC-20
0.098		2.49		0.178	4.52	.042	1.07	WD-2	1167A, 14188, RGB	BNC-22
0.280		7.11		0.278	7.06	.068	1.73	WD-6	7731A, 5906, VHD1100, 89292	BNC-25
0.110		2.79		0.178	4.52	.042	1.07	WD-2	0.6/2.8	BNC-26
0.225		5.72		0.278	7.06	.042	1.07	WD-4	7330, 7855A, VHD7000	BNC-27
0.120		3.05		0.178	4.52	.042	1.07	WD-2	LL92833	BNC-28
0.180		4.57		0.324	8.23	.042	1.07	WD-1	5740, 5741, L-5CFB	BNC-29
				0.178	4.52	.042	1.07	WD-2	SFYZ-75-2-1	BNC-30
0.140	0.150	3.56	3.81	0.255	6.48	.042	1.07	WD-1, WD-2, WD-3, WD-5	734, 9259, 1505A, 9100, VPM2000, M8023	BNC-RA-1
0.140	0.150	3.56	3.81	0.255	6.48	.042	1.07	WD-1, WD-2, WD-3, WD-5	RG59, 9209, 8279	BNC-RA-2
0.077		1.96		0.178	4.52	.042	1.07	WD-2	735, NT735	BNC-RA-3
0.185	0.198	4.70	5.03	0.324	8.23	.042	1.07	WD-1	82813, 8281F, VP618PE, VP618M	BNC-RA-4
0.095		2.41		0.178	4.52	.042	1.07	WD-2	8218, 1855A, 7538, M8025	BNC-RA-7
0.180		4.57		0.278	7.06	.042	1.07	WD-4	1594A, VSD2001, M8024	BNC-RA-8
0.140	0.150	3.56	3.81	0.255	6.48	.042	1.07	WD-1, WD-2, WD-3, WD-5	734A/D, 734AP, 9259, 1505A, 9100, VPM2000, CV752, FM59, RCCH, 9167, M8023	BNC-BHJ-1
0.180		4.57		0.278	7.06	.042	1.07	WD-4	1694A, VSD2001, M8024	BNC-BHJ-8
0.090		2.29		0.178	4.52	.042	1.07	WD-2	186E, 1855A, RGBSC250, M8025	BNC-BHJ-13
0.140	0.150	3.56	3.81	0.255	6.48	.042	1.07	WD-1, WD-2, WD-3, WD-5	734, 1505A, VPM2000, 734A1P, VE61859M	CF-1
0.144		3.66		0.324	8.23	.042	1.07	WD-1	1187A, HAC-2, F-HEC59	CF-5
0.180		4.57		0.278	7.06	.042	1.07	WD-4	1694A, VSD2001, VSD2001TS, 9058	CF-8
0.090		2.29		0.178	4.52	.042	1.07	WD-2	1855A, RGBS250, VDM250D, VDM230	CF-13
0.140	0.150	3.56	3.81	0.255	6.48	.042	1.07	WD-1, WD-2, WD-3, WD-5	734, 1505A, VPM2000, 734A1P, VE61859M	CRCA-1
0.144		3.66		0.324	8.23	.042	1.07	WD-1	1187A, HAC-2, F-HEC59	CRCA-5
0.180		4.57		0.278	7.06	.042	1.07	WD-4	1694A, VSD2001, VSD2001TS, 9058	CRCA-8
0.090		2.29		0.178	4.52	.042	1.07	WD-2	1855A, RGBS250, VDM250D, VDM230	CRCA-13



# 75 Ohm BNC Connectors

For all types of digital applications, ADC's true 75 Ohm BNC connector products ensure outstanding electrical performance, improved transmission, and enhanced reliability. ADC offers a complete line of straight, right angle, and bulkhead connectors, complemented by adapters, terminating plugs, and accessories.

- True 75 Ohm characteristic impedance through the entire connector
- Outstanding electrical performance to 3 GHz
- Tarnish-resistant, nickel-plated body and bayonet
- Compatible with select competitive crimp tools and die sets
- Sizes for multiple cable types
- Meets or exceeds all requirements in MIL-C-39012

## Straight BNC Plug Connectors

### Features

- Designed to exceed the rigorous demands of today's broadcast environment, including SMPTE 259, 274, and 292M standards
- Gold-plated, locking center conductor
- .625" crimp sleeve for greater pull-off force
- 100 percent guided mating
- Compatible with telco 12-point crimp tools
- Strip lengths common between sizes and types (except for Belden 7731/CommScope 7530, RG11 Cable)



## Right Angle BNC Plug Connectors

### Features

- Right angle design alleviates stress associated with bending cable
- Provides increased density
- Improves overall cable management
- Bulk packaging available
- Center conductor pins and crimp sleeves are fully interchangeable with ADC's straight plugs for same cable type



## Bulkhead Jack Connectors

### Features

- Easier, more reliable termination; gold-plated locking center conductor ensures proper alignment during termination
- 100 percent guided mating
- Exclusive closed-entry contact prevents center conductor damage from non-standard BNCs or test probes
- Eliminates one termination point when used as a bulkhead connector

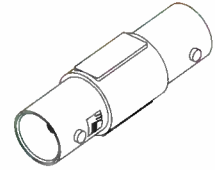


# 75 Ohm BNC Connectors

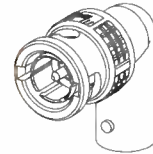
## BNC Adapters and Bulkheads

### Features

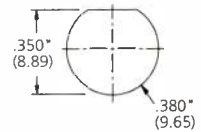
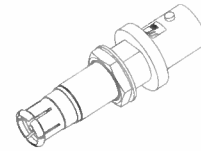
- Improved performance – true 75 Ohm character impedance
- Outstanding electrical performance to 3 GHz
- Bulkhead feedthrough available with or without panel isolation
- Meets the performance requirements of MIL-A-55339 for radio frequency coaxial adapters
- Gold-plated, closed-entry contact center conductor to prevent damage during test or mating plug termination



BNC-STRT-ADP  
Straight Adapter



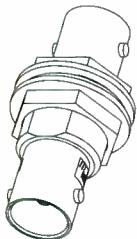
BNC-RA-ADP  
Right Angle Adapter



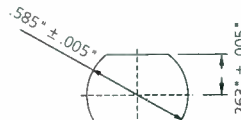
BHT-MF

### Ordering Information

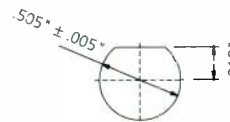
Description	Ordering Number
BNC straight adapter	BNC-STRT-ADP
BNC right angle adapter	BNC-RA-ADP
Bulkhead feedthrough, for .505"/.585" cutout	BHT1
Bulkhead feedthrough, for .440"/.505" cutout	BHT-I2
Bulkhead feedthrough with panel isolation washers	BHT-I1
Bulkhead male to female	BHT-MF



BHT-I1



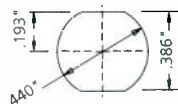
RECOMMENDED PANEL CUTOUT  
WITH INSULATING WASHER  
(MAX THICKNESS .250)



RECOMMENDED PANEL CUTOUT  
WITHOUT INSULATING WASHER  
(MAX THICKNESS .250)



BHT-I2



RECOMMENDED PANEL CUTOUT  
WITHOUT ISOLATION WASHER  
(MAX PANEL THICKNESS: .250)



RECOMMENDED PANEL CUTOUT  
WITH ISOLATION WASHER  
(MAX PANEL THICKNESS: .250)

## BNC Terminating Plugs

### Ordering Information

Description	Ordering Number
BNC terminating plug, precision .1% 75 Ohm resistor	BNC-TP2
1% 75 Ohm resistor	BNC-TP1



BNC-TP2 Precision .1%  
Terminating Plug

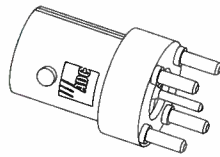


# 75 Ohm BNC Connectors

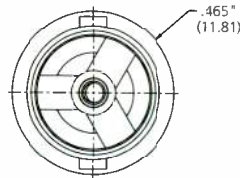
## PCB Mount BNC Connectors

### Ordering Information

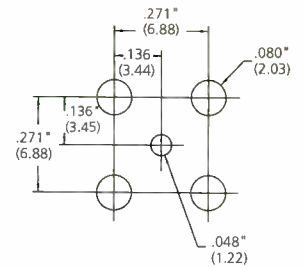
Description	Ordering Number
BNC PC mount straight staked	BNC-PC-V1
BNC PC mount threaded right angle	BNC-PC-RTRA
BNC PC mount threaded straight	BNC-PC-STRT
BNC PC mount right angle screw mount	BNC-PC-RRA
BNC PC mount right angle screw mount with screw	BNC-PC-RRA-1



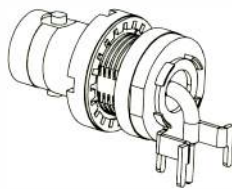
BNC-PC-V1



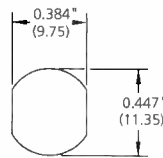
Hole Cutout



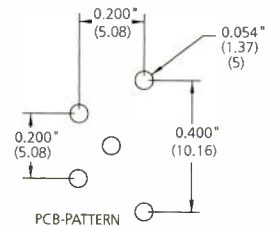
Mounting Template



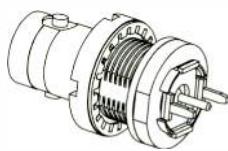
BNC-PC-RTRA



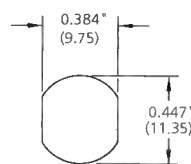
Hole Cutout



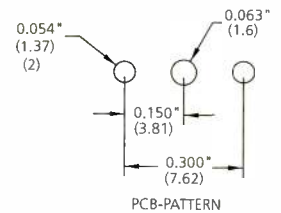
Mounting Template



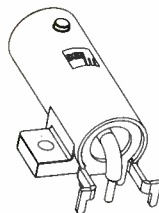
BNC-PC-STRT



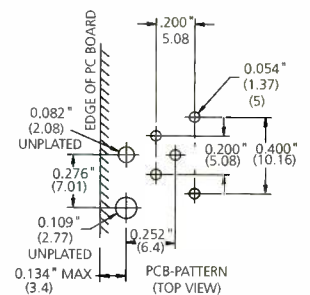
Hole Cutout



Mounting Template



BNC-PC-RRA



Mounting Template

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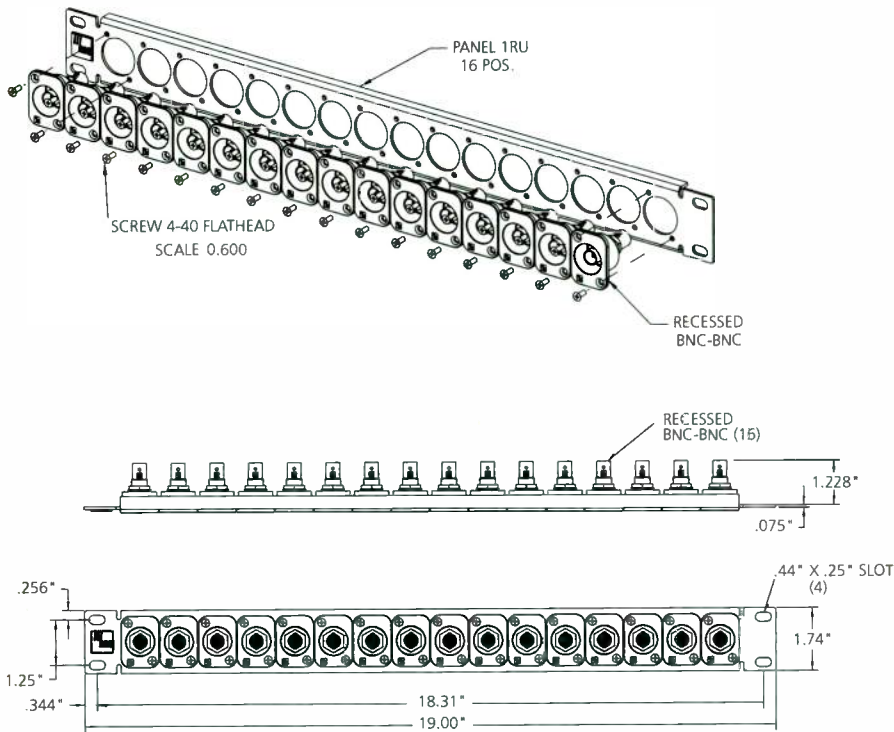
# 75 Ohm BNC Connectors

## Recessed BNC Panels and Connectors

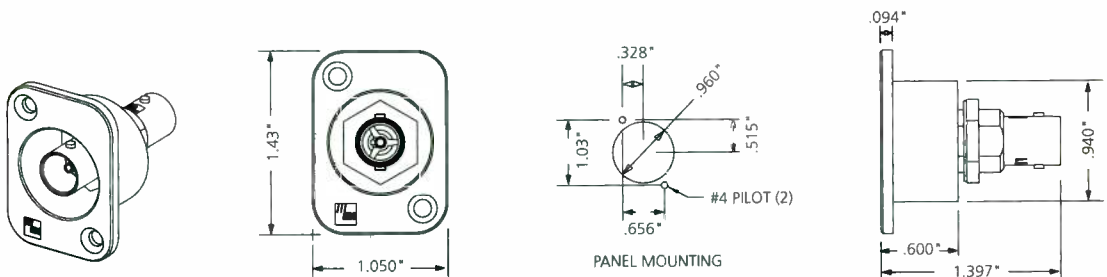
### Ordering Information

Description	Ordering Number
16-position empty, 1 RU, black - for BHFT-R-X	BHFT-PNL-16-BK
16-position empty, 1 RU, gray - for BHFT-R-X	BHFT-PNL-16-G
Recessed BNC, 75 Ohm feedthrough	BHFT-R-X*
Recessed RCA connector	RCA-R-X*
Recessed S-video connector	SV-R-X*

\* Replace X in ordering number with desired color. (G=green, R=red, B=black, BL=blue, W=white, Y=yellow)



BHFT-PNL-16-BK



BHFT-R-X

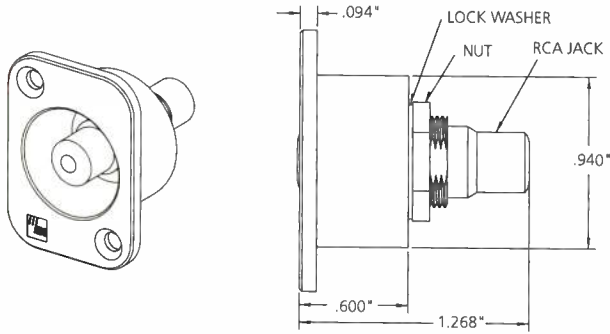
Broadcast Products

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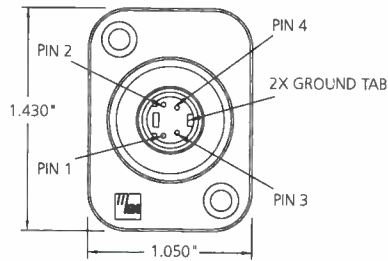
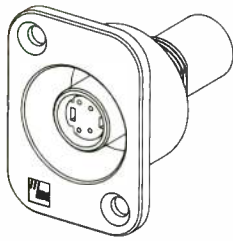


# 75 Ohm BNC Connectors

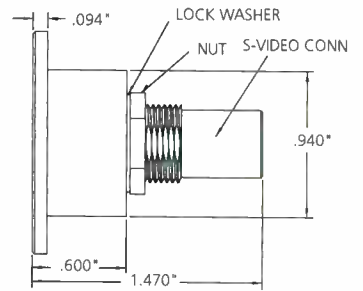
## Recessed Components



RCA-R-X



SV-R-X



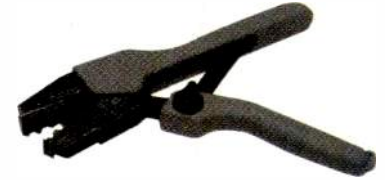
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# 75 Ohm BNC Connectors

## BNC Crimping Tool

### Features

- Durable ergonomic handle provides greater comfort
- Fully adjustable for preloading to maintain die set alignment
- Exceptional life, rated for 100,000 crimp cycles
- Available in two handle sizes
- Highest mechanical advantage in the industry, reduces fatigue during crimping



BNC Crimping Tool  
WT-2

### Ordering Information

Description	Ordering Number
Crimp tool with ergonomic handle for ADC die sets	WT-2
Crimp tool with long ergonomic handle for ADC die sets	WT-3
BNC insertion tool with 12" handle	BT2000
BNC insertion tool with 24" handle	BT2000-24



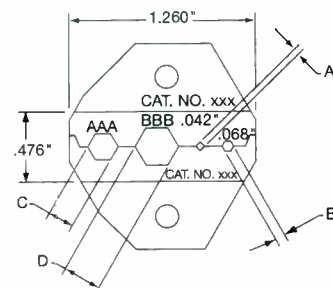
BNC Insertion Tool  
BT2000

## BNC Die Sets

### Ordering Information

Ordering Number Die Set	A Center Wire	B Center Wire	C Crimp Sleeve	D Crimp Sleeve
WD-1	.042"/1.07 mm	.068"/1.73 mm	0.255"/6.48 mm	0.324"/8.23 mm
WD-2	.042"/1.07 mm	.068"/1.73 mm	0.178"/4.52 mm	0.255"/6.48 mm
WD-3	.042"/1.07 mm	.068"/1.73 mm	0.197"/5.00 mm	0.255"/6.48 mm
WD-4	.042"/1.07 mm	.068"/1.73 mm	0.197"/5.00 mm	0.278"/7.06 mm
WD-5	.042"/1.07 mm	.068"/1.73 mm	0.255"/6.48 mm	0.278"/7.06 mm
WD-6	.068"/1.73 mm		0.384"/9.76mm	
WD-1-SER*	.042"/1.07 mm	.068"/1.73 mm	0.255"/6.48 mm	0.324"/8.23 mm
WD-2-SER*	.042"/1.07 mm	.068"/1.73 mm	0.178"/4.52 mm	0.255"/6.48 mm

\* SER units feature a unique serial number that imprints on the crimp sleeve. This is useful for tracking tooling or installation quality.



Die Set Dimensions



# 75 Ohm BNC Connectors

## Hand Crimp Tool

### Ordering Information

Hand Crimp Tool Ordering Number	Connector Ordering Number	Die Set Ordering Number	Station Dimensions	
			Center Conductor	Crimp Sleeve
WT-2 Ergonomic Handle	BNC-1/BNC-RA-1/CF-1	WD-1, WD-2, WD-3, WD-5	.042"/1.07 mm	0.255"/6.48 mm
	BNC-2/BNC-RA-2	WD-1, WD-2, WD-3, WD-5	.042"/1.07 mm	0.255"/6.48 mm
	BNC-3/BNC-RA-3	WD-2	.042"/1.07 mm	0.178"/4.52 mm
WT-3 Long Ergonomic Handle	BNC-4/BNC-RA-4	WD-1	.042"/1.07 mm	0.324"/8.23 mm
	BNC-5/CF-5	WD-1	.042"/1.07 mm	0.324"/8.23 mm
	BNC-6	WD-1, WD-2, WD-3, WD-5	.042"/1.07 mm	0.255"/6.48 mm
	BNC-7/BNC-RA-7	WD-2	.042"/1.07 mm	0.178"/4.52 mm
	BNC-8/BNC-RA-8/BNC-BHJ-8/CF-8	WD-4, WD-5	.042"/1.07 mm	0.278"/7.06 mm
	BNC-9	WD-1	.042"/1.07 mm	0.324"/8.23 mm
	BNC-10	WD-1, WD-2, WD-3, WD-5	.042"/1.07 mm	0.255"/6.48 mm
	BNC-11	WD-1	.042"/1.07 mm	0.324"/8.23 mm
	BNC-12	WD-2	.042"/1.07 mm	0.178"/4.52 mm
	BNC-13/BNC-BHJ-13/CF-13	WD-2	.042"/1.07 mm	0.178"/4.52 mm
	BNC-15	WD-1, WD-2, WD-3, WD-5	.042"/1.07 mm	0.255"/6.48 mm
	BNC-16	WD-2	.042"/1.07 mm	0.178"/4.52 mm
	BNC-17	WD-1	.042"/1.07 mm	0.324"/8.23 mm
	BNC-19	WD-2	.042"/1.07 mm	0.178"/4.52 mm
	BNC-20	WD-4	.042"/1.07 mm	0.278"/7.06 mm
	BNC-22	WD-2	.042"/1.07 mm	0.178"/4.52 mm
	BNC-25	WD-6	.042"/1.07 mm	0.384"/9.76 mm
BNC-26	WD-3, WD-4	.042"/1.07 mm	0.197"/5.00 mm	
BNC-27	WD-4	.042"/1.07 mm	0.278"/7.06 mm	
BNC-28	WD-2	.042"/1.07 mm	0.178"/4.52 mm	
BNC-29	WD-1	.042"/1.07 mm	0.324"/8.23 mm	

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# 75 Ohm BNC Connectors

## Cable Stripper Tool Kit

### Ordering Information

Description	Connector Type	Ordering Number
<b>Complete Manual Stripper Tool Kit</b> Includes stripper cassette, memory and tool	BNC-3, BNC-7, BNC-12, BNC-13	STC-13B
	BNC-1, BNC-2, BNC-6, BNC-10	STC-12B
	BNC-4, BNC-5, BNC-8, BNC-9, BNC-11, BNC-17	STC-11B

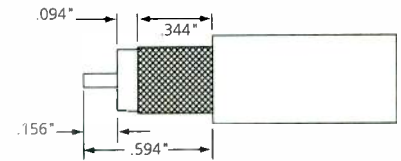


STC-12B

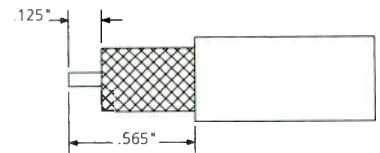
## Individual Tools

### Ordering Information

Description	Connector Type	Ordering Number
<b>Stripper Cassette</b> Replacement cutting blades for the manual Stripper Tool	All, except BNC-25	CCS-BLK
<b>Memory for Manual Stripper Tool</b> Determines how deep each blade on the stripper cassette will cut into cable. Can be adjusted for most cable types.	BNC-4, BNC-5, BNC-8, BNC-9, BNC-11	CCS-1
	BNC-1, BNC-2, BNC-6, BNC-10	CCS-2
	BNC-3, BNC-7, BNC-12, BNC-13	CCS-3
<b>Empty Tool Handle</b> Requires memory and stripper cassette	All, except BNC-25	STC-1



BNC, F, and RCA Plug Strip Length (All BNC Plug Connectors except BNC-25)



BNC Plug Strip Length For BNC-25

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# 75 Ohm BNC Connectors

## Connection Tool Kit

### Ordering Information

Description	Ordering Number
<b>Connection tool kit for BNC connectors</b> Includes: <ul style="list-style-type: none"> <li>• Crimp tool (WT-2)</li> <li>• BNC crimp die set for 735, RG59 and 734 cables (WD-2)</li> <li>• Stripping tool with cassette for 735/0222 cables (STC-13B)</li> <li>• Stripping tool with cassette for RG59/734 cables (STC-12B)</li> <li>• Cable termination tray (LCA-000009)</li> <li>• Insertion/withdrawal tool for BNC connector (BT2000)</li> <li>• Carrying case</li> </ul>	BNC-TOOL-1



BNC-TOOL-1

## Accessories

### Ordering Information

Description	Ordering Number
Hex nut for .505" bulkhead connectors	TPC-1B
Locking washer for .505" bulkhead connectors	TPC-1C
Insulating shoulder washer for .505" bulkhead connectors	HDW-101611
Hex nut for .440" bulkhead connectors	BNC-HN440
Locking washer for .440" bulkhead connectors	BNC-LW440
Insulating shoulder washer for .440" bulkhead connectors	BNC-IW440
2.5 mm x 5 mm Phillips pan head screw for BNC-PC-RRA	SA1089-00

Broadcast Products

3/04 • 1180270



# ProAx™ Triaxial Camera Connectors



Broadcast Products  
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## Introduction

For years, the industry has been locked into connector designs that are difficult to terminate, and even more difficult to field repair. ADC's line of ProAx™ Triaxial Camera Connectors will change the way you think about this component forever. These connectors have innovative features such as field repairable center conductors that eliminate the need to restrip, O-rings that protect the signal path against moisture, fewer parts to assemble, and compatibility with the tooling you already own.

## Field Repairable

Triax connectors can really take a beating – especially in field applications where dirt, sand and moisture are everywhere. When the female center conductor breaks, or the male latches are worn, the entire assembly must be cut off and reterminated.

Using a two-piece center conductor and housing assembly that can easily be replaced in the field without having to restrip and reterminate the entire connector, the patented ADC ProAx allows you to simply replace a damaged portion of the connector with common tools. When a repair is needed, the outer shell and insulator can be removed; next you simply unscrew the center conductor housing and replace the center conductor assembly, reversing the process to assemble. Absolutely no stripping or crimp tools are required.

## Gender-Reversible

With ADC's ProAx connectors, gender parts can be swapped back and forth between males and females in only a few seconds. This process eliminates common problems such as when you've just run a thousand feet of triax only to discover the male is where the female should be. Simply trade the male for the female and continue with your project.

## Format Reversible

With ADC's U.S. and four European (Fischer™, Lemo 4M connectors, Lemo 3T connectors and Lemo 4E connectors) versions, O.B. vans and internationally televised events no longer mean headaches for camera technicians. ADC's patented ProAx connectors can be format reversed between U.S. and global formats in only seconds. Plus, ADC's ProAx connectors are designed to fit standard U.S. triax cables as well as global metric 8mm, 11mm and 14mm cables.

Global Female Jack  
(Fischer™ compatible)



Global Male Plug  
(Fischer™ compatible)



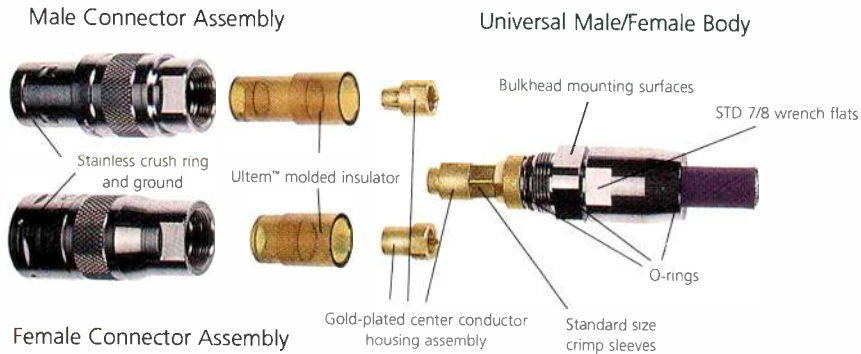
# ProAx™ Triaxial Camera Connectors

## Applications

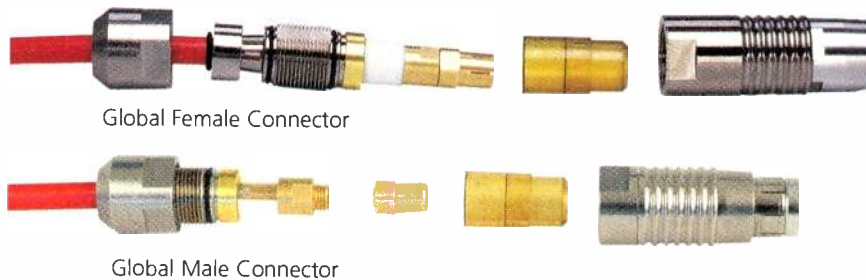
High-Definition Digital Ready True 75 Ohm Impedance

The ADC ProAx™ connector line is designed for maximum bandwidth for serial digital and high-definition digital applications while maintaining a true 75 Ohm impedance. All critical path components are gold-plated for outstanding durability and connectivity.

## US Standard Connectors (Kings® Compatible)



## Global Connectors (Fischer™ Compatible Shown)



## Solid Outer Shield Ground

The solid outer braid ground in the ProAx connectors maintains the ground no matter what the conditions. This eliminates camera shutdown from intermittent grounds, as well as the need for special conductive gaskets between the male and female connectors.

## Sturdy Construction

Each female ProAx connector is made of machined brass with a stainless steel crush ring to assure maximum crush strength. The assembly will not go out of round under normal mobile application wear and tear.

## Patented Panel-Mount System

Each ProAx connector can be either cable-mounted or panel-mounted with our patented mounting kit. The mounting kit securely fastens the male or female connector to a steel plate that is attached to standard panels. Two different mounting options are available: a unique 45° and the standard 90° straight. ADC's angled 45° mounting option reduces the weight of the cables on the connectors, providing less strain on the connectors than the traditional 90° mounting. Mounting yokes are available separately for custom metalwork applications.

## Compatibility

ProAx connectors are engineered to be compatible with other industry triaxial connectors from Kings Electronics Co., Inc., W.W. Fischer SA, and LEMO SA, as well as standard industry tools and dies.

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# ProAx™ Triaxial Camera Connectors

## Ordering Information

Description	Ordering Number
<b>U.S. Standard Triax Camera Connectors, Female</b>	
.475" outer diameter cable	TCJ-A12
.360" outer diameter cable	TCJ-B38
.520" outer diameter cable	TCJ-C12
.410" outer diameter cable	TCJ-D38
.315" outer diameter cable	TCJ-E38
.246" outer diameter cable	TCJ-F14
<b>U.S. Standard Triax Camera Connectors, Male</b>	
.475" outer diameter cable	TCP-A12
.360" outer diameter cable	TCP-B38
.520" outer diameter cable	TCP-C12
.410" outer diameter cable	TCP-D38
.315" outer diameter cable	TCP-E38
.246" outer diameter cable	TCP-F14
<b>U.S. Standard Triax Camera Connector Repair Kits and Tools</b>	
Repair kit	
Front, female	TRK-FF
Front, male	TRK-FM
Outer, female	TRK-FOS
Gender change kit	
Male to female kit	TRK-GCF
Female to male kit	TRK-GCM
Retermination kit, rear,	
Size A	TRK-RAD
Size B	TRK-RBEF
Size C	TRK-RC

Description	Fischer 1051 Equivalent	LEMO 4M Equivalent	LEMO 3T Equivalent	LEMO 4E Equivalent
<b>Global Standard Triax Camera Connectors</b>				
Female jack				
8mm outer diameter cables	GTCJ-G8	BTCJ-G8	LTCJ-G8	NTCJ-G8
11mm outer diameter cables	GTCJ-H11	BTCJ-H11	LTCJ-H11	NTCJ-H11
14mm outer diameter cables	GTCJ-K14	BTCJ-K14	LTCJ-K14	NTCJ-K14
Male plug				
8mm outer diameter cables	GTCP-G8	BTCP-G8	LTCP-G8	NTCP-G8
11mm outer diameter cables	GTCP-H11	BTCP-H11	LTCP-H11	NTCP-H11
14mm outer diameter cables	GTCP-K14	BTCP-K14	LTCP-K14	NTCP-K14
<b>Global Standard Triax Camera Connector Accessories and Repair Kits</b>				
Retermination kit, rear				
8mm outer diameter cables	GTRK-RG	BTRK-RG	LTRK-RG	NTRK-RG
11mm outer diameter cables	GTRK-RH	BTRK-RH	LTRK-RH	NTRK-RH
14mm outer diameter cables	GTRK-RK	BTRK-RK	LTRK-RK	NTRK-RK
Repair kit				
Front, female	GTRK-FF	BTRK-FF	LTRK-FF	NTRK-FF
Front, male	GTRK-MM	BTRK-MM	LTRK-MM	NTRK-MM
Front, outer shell kit, female	GTRK-FOS	BTRK-FOS	LTRK-FOS	NTRK-FOS
Front, outer shell kit, male	GTRK-MOS	BTRK-MOS	LTRK-MOS	NTRK-MOS
Gender change				
Male to female	GTRK-CGF	BTRK-CGF	LTRK-CGF	NTRK-CGF
Female to male	GTRK-CGM	BTRK-CGM	LTRK-CGM	NTRK-CGM
Universal weather boot				
Female	GTCJ-BOOT			
Male	GTCP-BOOT			
Cap	GTC-CAP			

Ordering information continues on the next page.

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# ProAx™ Triaxial Camera Connectors

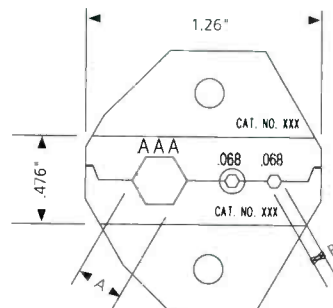
## Ordering Information

Description	Ordering Number
<b>Universal Mounting Kit and Accessories</b>	
Straight panel mount kit, universal; mounts in TRP-2 rack mount	
Black	TCM-KIT-BK
Gray	TCM-KIT-G
45 degree panel mount kit, universal	
Black	TCM45-KIT-BK
Gray	TCM45-KIT-G
Yoke clamp for male ProAx plug	TCP-Y
Yoke clamp for female ProAx jack	TCJ-Y
Universal triax installation tool kit	TRK-TKIT
Die set A,D,H .384" x .400", 9.75mm x 10.16mm	TD-AD
Die set B,E,F .255" x .400", 6.47mm x 10.16mm	TD-BEF
Die set C .429" x .400", 10.89mm x 10.16mm	TD-C
Die set G .278" x .400", 7.06mm x 10.16mm	TD-G
Die set K .476" x .400", 12.09mm x 10.16mm	TD-K
Tool crimp, long-handled Pressmaster	WT-3
Wire stripping gauge, ProAx Triax	TRIAX-GAUGE
Empty 2 RU panel for TCM kits (mounting kits and connectors sold separately)	
Black	TRP-2-BK
Gray	TRP-2-G
Empty 1 RU panel for 10 connectors - requires connectors and yoke kit, sold separately	
Black	TRP-1-BK
Gray	TRP-1-G
Universal Triax adapter, adapts male to male, male to female, US to global, requires male/female parts	UTA-1
Universal Triax adapter, includes all triax (male and female) formats, with case	UTA-1-KIT
Blank mounting plate	
Black	TRP-2BLANK-BK
Gray	TRP-2BLANK-G
Module with (2) 75 Ohm BNC feedthrough	
Black	TRP-2BNCFT-2-BK
Gray	TRP-2BNCFT-2-G
Module with (1) 75 Ohm BNC feedthrough	
Black	TRP-2BNCFT-BK
Gray	TRP-2BNCFT-G
2 RU mounting plate for BHFT-R-X-BLACK (see page 98)	TRP-2RBNC-BLANK-BK
2 RU mounting plate for BHFT-R-X-GRAY (see page 98)	TRP-2RBNC-BLANK-G

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Universal Triax Adapter  
UTA-1



Die Set Dimensions

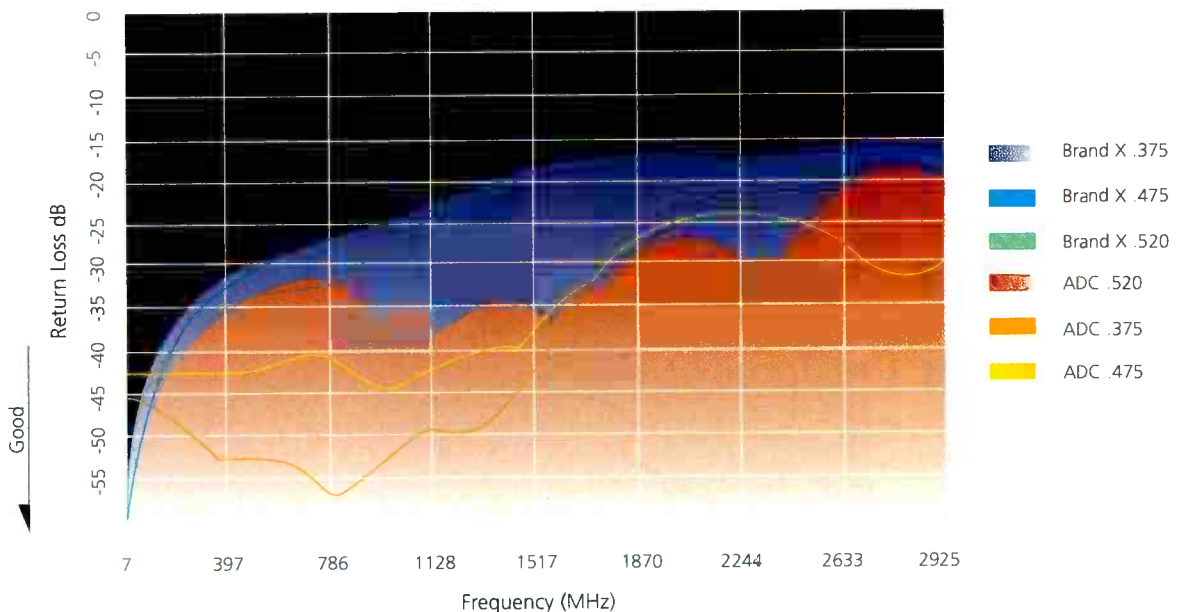


# ProAx™ Triaxial Camera Connectors

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Kings Group	Kings Crimp Die	ADC Group	ADC Crimp Die	Die Set Dimensions			Cable Part Number
				Center Conductor	Crimp Sleeve	Die Width	
70	KTH-2040	A12	TD-AD	.068" 1.73 mm	.384" 9.75 mm	.400" 10.15 mm	Belden 8233, 8233A, 7803A CommScope 7820, 7827 Gepco VT61811, VT61811PEF Nemal 1810 West Penn 1150, 3811
73	KTH-2002	B38	TD-BEF	.068" 1.73 mm	.255" 6.48 mm	.400" 10.15 mm	Belden 1856A, 1856B, 1857A, 9267 Clark Wire & Cable TV7559 CommScope 7811, 7812, 7814 Gepco VT61859, LVT61859, LVT61859S Manhattan M8021 Nemal 1835 West Penn 5994
74	KTH-2041	C12	TD-C	.068" 1.73 mm	.429" 10.9 mm	.400" 10.15 mm	Belden 1858A, 9192, 9232 Clark Wire & Cable TV7511 CommScope 7825, 7826 Gepco LVT61811 Manhattan M8022 Nemal 1820, 1825 West Penn 1165
NONE	KTH-2040	D38	TD-AD	.068" 1.73 mm	.384" 9.75 mm	.400" 10.15 mm	Belden 1859A Gepco VT61811TK West Penn 253811
76	KTH-2002	E38	TD-BEF	.068" 1.73 mm	.255" 6.48 mm	.400" 10.15 mm	Belden 8232, 8232A CommScope 7810 Nemal 1840 West Penn 3815, 5992
78	KTH-2002	F14	TD-BEF	.068" 1.73 mm	.225" 5.7 mm	.400" 10.15 mm	Belden 88232 West Penn 253815
KTH-1000		WT-3					Hand Crimp Tool





# ProAx™ Triaxial Camera Connectors

## ProAx Global Triax Connector Matrix

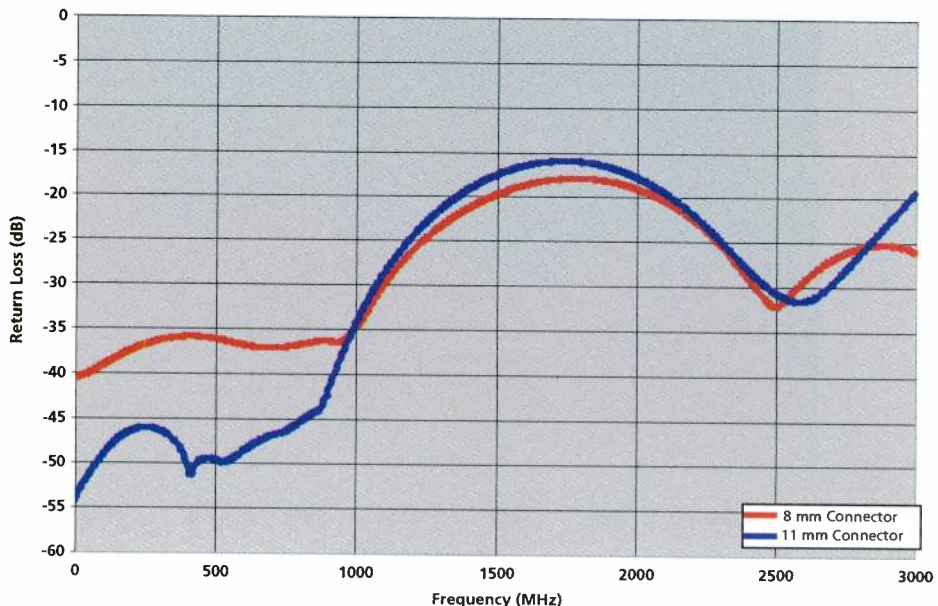
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ADC Cable Group	Cable Manufacturer and Part Number	Connector Manufacturer and Connector Number	
		Fischer Equivalent SE & KE Series	Lemo Equivalent Redel F Series
G8	<b>8mm (3/8") Cable Size</b>		
	Intercond RX 75/55 N.E.K. 23860 Draka Triax 8 1.0s/4.5s	1051 A004-5 1.0/4.5/8.7 1051 A004-5 1.0/4.5/8.7 1051 A004-5 1.0/4.5/8.7	
	Bedeas Superflex 8 1.0Ls/4.5s Belden 9267 Fujikura 4.8/1.0 EFTXF Hirakava Triax 4.8/1.0 Tufret Draka Triflex 8 1.0Ls/4.5s Filotex SFP:A2 Video Fixe Filotex SFP:A2 Video Mobile	1051 A004-5 1.0/4.5/9.4 1051 A004-5 1.0/4.5/9.4 1051 A004-5 1.0/4.5/9.4 1051 A004-5 1.0/4.5/9.4 1051 A004-5 1.0/4.5/9.4 1051 A004-5 1.4/4.5/9.4 1051 A004-5 1.4/4.5/9.4	T75.FTCC86C (Group 2) T75.FTCC86C (Group 2) T75.FTCC86C (Group 2) T75.FTCC90C (Group 3) T75.FTCC90C (Group 3) T75.FTCC86C (Group 2) T75.FTCC86C (Group 2) T75.FTCC90C (Group 3) T75.FTCC90C (Group 3)
	Bedeas Std. 8 1.0s/4.5s	1051 A004-5 1.0/4.5/8.7	

H11	<b>11mm (1/2") Cable Size</b>		
	Belden 9192 Belden 9232 Filotex SPF:B2 Video Fixe Filotex SPF:B2 Video Mobile	1051 A004-4 T1895/13.6 1051 A004-4 T1895/13.6 1051 A004-4 T1895/13.6 1051 A004-4 T1895/13.6	T75.FTCC14C (Group 7) T75.FTCC14C (Group 7) T75.FTCC14C (Group 7) T75.FTCC14C (Group 7)
	Bedeas Standard 11 1.4s/6.6s Bedeas Superflex 11 1.4Ls/6.6s BIW 91307 Intercond RX 75/56 N.E.K. 63990 Draka Triax 11 1.4s/6.6s Draka Triflex 11 1.4Ls/6.6s	1051 A004-5 1.4/6.6/11.3 1051 A004-5 1.4/6.6/11.3 1051 A004-5 1.4/6.6/11.3 1051 A004-5 1.4/6.6/11.3 1051 A004-5 1.4/6.6/11.3 1051 A004-5 1.4/6.6/11.3 1051 A004-5 1.4/6.6/11.3	T75.FTCC11C (Group 4) T75.FTCC11C (Group 4) T75.FTCC11C (Group 4) T75.FTCC11C (Group 4) T75.FTCC11C (Group 4) T75.FTCC11C (Group 4) T75.FTCC11C (Group 4)
	Draka Triax 11/1 1.4s/6.6s	1051 A004-5 1.4/6.6/12.6	

Note: Cross reference information is our best estimate and not guaranteed. Information is subject to change without notice. For information on the ADC K14 series (14mm cables), please contact ADC.

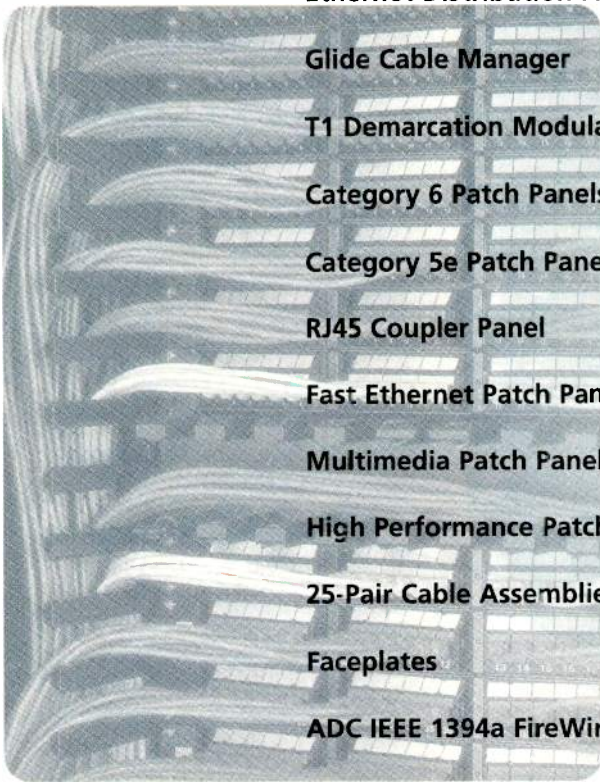
### ADC Global Triax Connectors







# Ethern **D** nectivity



<b>Ethernet Distribution Frame</b>	<b>111</b>
<b>Glide Cable Manager</b>	<b>112</b>
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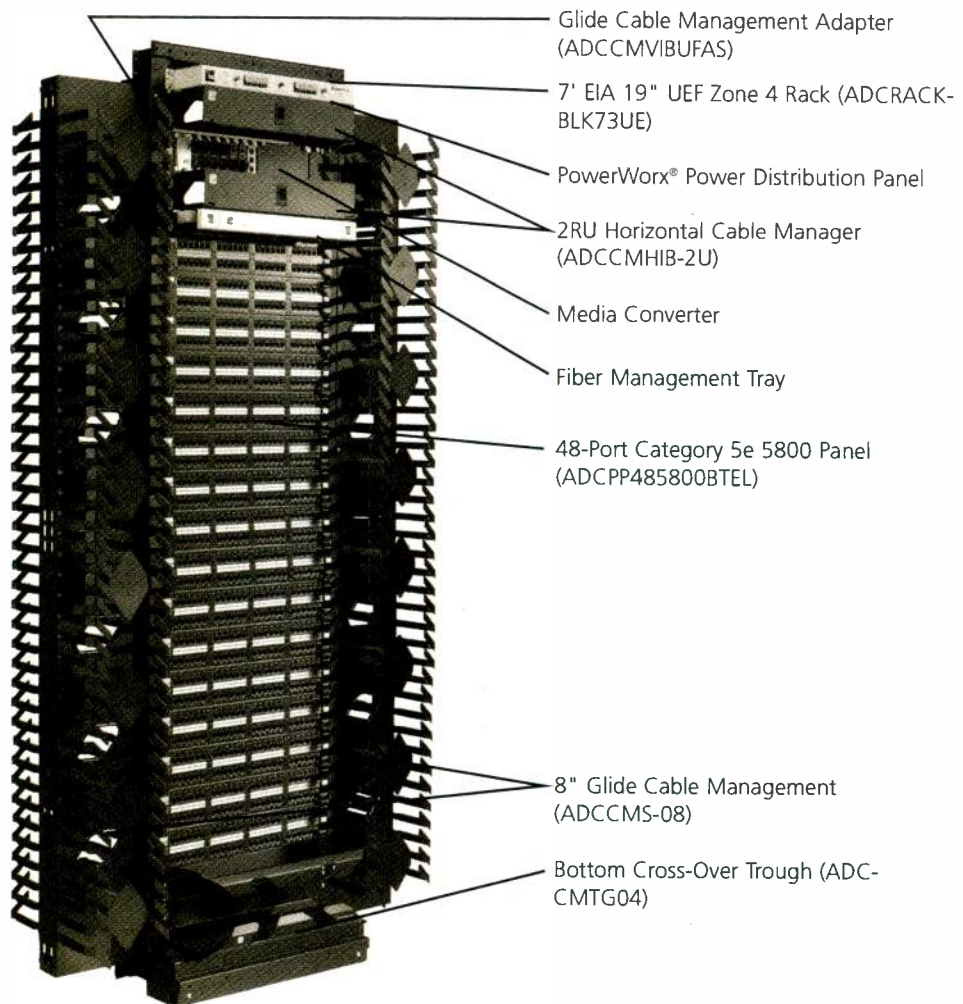


# Ethernet/Data Connectivity

## Ethernet Distribution Frame

ADC's Ethernet Distribution Frame (EDF) forms a central patching location between active Ethernet network elements. By creating a centralized craft interface for adds, upgrades, and rearrangements on Ethernet equipment, the EDF enables change without service disruptions. This central patching location provides a logical and easy-to-manage infrastructure due to two design characteristics:

- All network elements have permanent equipment cable connections that are, once terminated, never handled again.
- All changes, circuit rerouting, upgrades, maintenance and other activities are accomplished using semi-permanent patch cords on the front of the EDF cross-connect bay.



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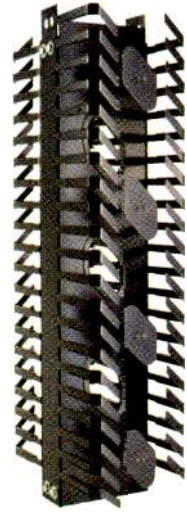


# Ethernet/Data Connectivity

## Glide Cable Manager

### Features

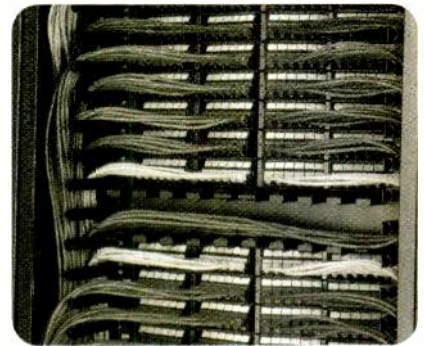
- Integrated front, rear, horizontal, and vertical cable management
- Patented rib cage design eliminates horizontal support trays and bars
- Supports up to 912 ports on a single rack
- Built-in bend radius protection ensures network integrity
- Designed for quick and easy moves, adds, and changes
- Optional slack managers available for 8-, 10-, and 12-inch widths
- Fits standard EIA rack with three-inch channel
- Used for single rack or as inter-rack unit
- Optional crossover troughs and horizontal cable managers available
- Optional EIA-standard horizontal support bars available



Glide Cable Manager with Slack Managers

### Ordering Information

Description	Ordering Number
<b>Glide cable manager, vertical mount –</b> <i>to equip both sides of a 7-foot rack, order two Glide Cable Manager units</i>	
6", front only, without slack manager	ADCCMVIB06F-2
6", front only, with slack manager	ADCCMVIBS06F-2
6", without slack manager	ADCCM-06
8", without slack manager	ADCCM-08
10", without slack manager	ADCCM-10
12", without slack manager	ADCCM-12
8", with slack manager	ADCCMS-08
10", with slack manager	ADCCMS-10
12", with slack manager	ADCCMS-12
Crossover trough, 2 RU	ADCCMTG02
Crossover trough, 4 RU	ADCCMTG04
<b>Black metal covers</b>	
41" x 6", four per pack	ADCCMVIBC06B4
41" x 8", four per pack	ADCCMVIBC08B4
41" x 10", four per pack	ADCCMVIBC10B4
41" x 12", four per pack	ADCCMVIBC12B4



Glide Cable Manager Shown in Cabinet



Cover in Black Metal

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# Ethernet/Data Connectivity

## Glide Cable Manager

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### Ordering Information

Description	Ordering Number
<b>Glide cable manager, cabinet mount – ships 4 per pack</b> 6" x 10 RU 6" x 20 RU	ADCCMVIB-CB10-4 ADCCMVIB-CB-4
<b>Glide cable manager, cabinet mount, with cable retention – ships 4 per pack</b> 3" x 20 RU 6" x 20 RU	ADCCMVIB-3CB20-4 ADCCMVIB-6CB20-4

Notes: Equips standard 7' cabinet with front or rear cable management.  
Order two 4-packs to equip front and rear of cabinet.



Installation Drawing  
for Glide Cable Manager,  
Cabinet Mount

### Ordering Information

Description	Ordering Number
<b>Crossover troughs</b> 2 RU, black 4 RU, black, 23" rack 4 RU, black	ADCCMTG02 ADCCMTG04-23 ADCCMTG04
<b>Horizontal cable managers</b> 2 RU 3 RU 4 RU With slack managers, 3 RU With slack managers, 4 RU	ADCCMHIB-2U ADCCMHIB-3U ADCCMHIB-4U ADCCMHIBS-3U ADCCMHIBS-4U
<b>Rear cable management bar, 19"</b> 1" extension	ADCCMRSB
<b>Rear cable management bar, 19"</b> 4" extension	ADCCMRSB-4



Glide Cable Manager,  
Cabinet Mount



2 RU Crossover Trough



4 RU Crossover Trough



Horizontal  
Cable Manager

### Ordering Information

Description	Ordering Number
<b>Equipment racks</b> 7' with 3" channel, black 7' with 3" channel, mill finish 7' UEF, black*	ADCRACKBLK73 ADCRACKMF73 ADCRACKBLK73UE
<b>Glide UEF adapter</b>	ADCCMVIBUFAS

\*Requires Glide UEF adapter



# Ethernet/Data Connectivity

## T1 Demarcation Modular Patch Panels

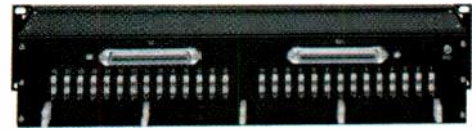
ADC modular T1 demarcation patch panels feature RJ48X or RJ48C wiring with a variety of rear termination options. The T1 demarcation patch panels offer the end users a familiar RJ interface by which the T1 signal can be accessed via industry standard RJ45 patch cables.

### Features

- Bantam nonintrusive T1 signal monitoring (MPP-N28BA1 only)
- RJ48X (T1 loopback) or RJ45C (no loopback) wiring
- Variety of rear termination options (wire-wrap, 64-pin, 50-pin)
- Category 3 performance
- Variety of mounting options (19- or 23-inch rack mounting, wall mounting)
- Compatible with industry standard RJ45 patch cords



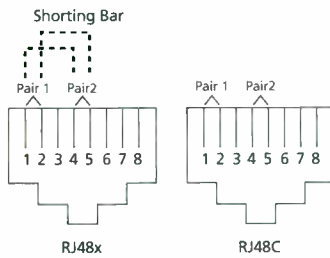
MPP-N28BA1 (front)



MPP-N28BA1 (rear)



MPP-CXFBA1 (front)



RJ48X has a shorting bar between transmit and receive pins 1, 2 and 4, 5 to allow for T1 signal loopback when no patch cord is present. The RJ48C has no shorting bar.

### Ordering Information

Port Count	Wiring	Rear Termination	EIA Mounting	Ordering Number
28 (with bantam monitoring ports)	RJ48X	64-pin or wire-wrap	2 RU x 19" or 23"	MPP-N28BA1
28	RJ48X	Wire-wrap	1 RU x 19" or 23"	MPP-GDXBA1
28	RJ48X	64-pin	1 RU x 19"	MPP-DXZBA0
14	RJ48X	Wire-wrap, front access	Wall mount, 3.5" x 19"	MPP-CXZXF4
8	RJ48X	Wire-wrap, front access	Wall mount, 3.5" x 14"	MPP-CXZXF3
5	RJ48X	Wire-wrap, front access	Wall mount, 3.5" x 9.9"	MPP-CXZXF2
28	RJ48C	Wire-wrap	1 RU x 19" or 23"	MPP-GDXBA2
24	RJ48C shielded	50-pin shielded	1 RU x 19"	MPP-CXFBA1-S
24	RJ48C	50-pin	1 RU x 19"	MPP-CXFBA1
32	RJ48C	50-pin	1 RU x 19"	MPP-CXZXB2A



# Ethernet/Data Connectivity

## Category 6 Patch Panels

### Features

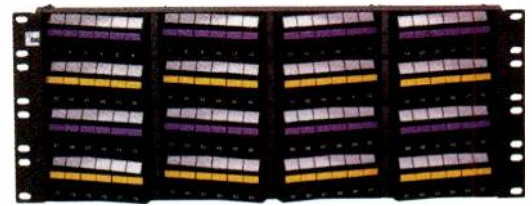
- Category 6 performance
- Universal T568A and T568B wiring
- Backward compatible in component, link, and channel
- Patented angle-right/angle-left port rotation feature reduces cable strain, reduces cable congestion, and enforces improved cable management with orderly flow of patch cords
- Color-coded, gas-tight 110 IDC provides sound connections for terminating stations, equipment, or tie cables
- Supports 10Base-T and 100Base-T Ethernet 1000Base-T Ethernet, token ring, up to 155 Mbps ATM, and proposed 1000Base-TX
- Supports any next generation applications designed for TIA/EIA Category 6 transmission requirements



24-Port Patch Panel



48-Port Patch Panel



96-Port Patch Panel



Rear View,

### Ordering Information

Description	Port Count	Wiring Configuration	Rack Units	Ordering Number
6000CHC patch panels	24	T568A/B	1	ADCPP24C6
	48	T568A/B	2	ADCPP48C6
	96	T568A/B	4	ADCPP96C6

### DIMENSIONS (W X H)

- 1 RU 19.0" x 1.75" (48.26 x 4.45 cm)
- 2 RU 19.0" x 3.50" (48.26 x 8.89 cm)
- 4 RU 19.0" x 7.0" (48.26 x 17.78 cm)

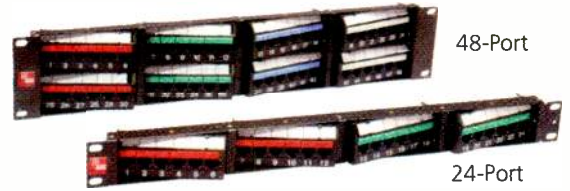


# Ethernet/Data Connectivity

## Category 5e Patch Panels

### Features

- Exceeds Category 5e requirements
- Durable construction for maximum performance
  - Steel frame with black corrosion-resistant finish
  - High-impact UL 94 V-O polycarbonate used for all plastic parts
  - Modular 8-pin, 4-pair jacks
- Advanced features of 5000E include:
  - Patent-pending angle-right/angle-left ports
  - Color-coded icons for quick port identification
- Includes labeling for front and rear
- Supports 10Base-T, 100Base-T, and 1000Base-T Ethernet, token ring, 155 Mbps ATM
- Supports network speeds up to 1000 Mbps



5000E Patch Panels

### Ordering Information

Description	Port Count	Wiring Configuration	Rack Units	Ordering Number
5000E patch panels	24	T568B	1	ADCPP245EB110
	24	T568A	1	ADCPP245EA110
	48	T568B	2	ADCPP485EB110
	48	T568A	2	ADCPP485EA110
	96	T568B	4	ADCPP965EB110
	96	T568A	4	ADCPP965EA110

### DIMENSIONS (W X H)

- 1 RU** 19.0" x 1.75" (48.26 x 4.45 cm)
- 2 RU** 19.0" x 3.50" (48.26 x 8.89 cm)
- 4 RU** 19.0" x 7.0" (48.26 x 17.78 cm)

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# Ethernet/Data Connectivity

## RJ45 Coupler Panel

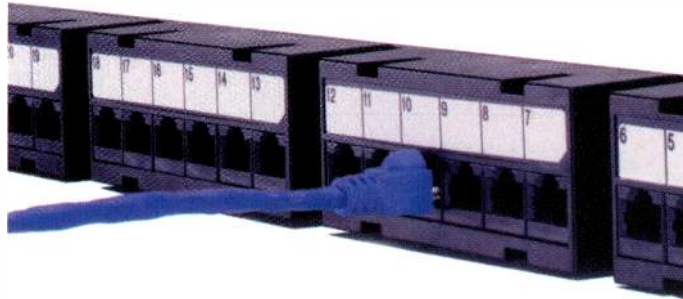
ADC's RJ45 coupler panel provides feed-through data and voice connectivity on the front and rear for Category 5e and 6 applications. Connectivity on the front of the panel accommodates standard RJ45 patch cords. Connectivity for hubs, routers and other active equipment on the back of the panel is also designed for RJ45 patch cords – creating a convenient connection field for data applications. Includes port labeling for front and rear. Width is 48.26 cm (19-inch).

### Ordering Information

Description	Port Count	Category	Rack Units	Ordering Number
RJ45 coupler panel,	24	6	1	ADCPP24606
	48	6	2	ADCPP48606
	24	Shielded 6	1	ADCPP24RJ6-S
	24	Shielded 5e	1	ADCPP24RJ5E-S



RJ45 Coupler Panel  
(Front View)



RJ45 Coupler Panel  
(Rear View)

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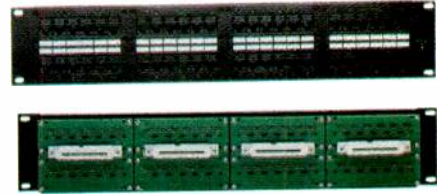


# Ethernet/Data Connectivity

## Fast Ethernet Patch Panels

### Features

- Durable, quality construction for maximum performance
- Saves time in moves, adds, and changes
- Features secure and convenient 25-pair connections on the rear
- Modular 8-pin, 4-pair jacks on the front
- 5100 pin-out is 1,2-3,6
- 5800 has all pairs wired
- Includes write-on labels on front
- 5100 supports 10Base-T and 100Base-T Ethernet
- 5800 supports 10/100 and 1000Base-T Ethernet
- Optional icons speed circuit identification



5100 Patch Panel, 48-Port

The first step to integrate Fast Ethernet traffic into a twisted pair network is to terminate both station side and equipment side connections on high performance ADC patch panels.

For the Ethernet switching system, 5100 and 5800 patch panels provide convenient 25-pair (50-pin) female RJ21x connections on the rear, with rugged 8-pin modular jacks on the front. Port identification is accomplished with write-on port labels and optional icons.

### Ordering Information

Description	Pin-Out	Port Count	Rear Connector	Rack Units	Ordering Number
5100 patch panel	1,2-3,6	24	RJ21x	2	ADCPP245100TEL
5100 patch panel	1,2-3,6	48	RJ21x	2	ADCPP485100TEL
5800 patch panel, T568B	1-8	24	RJ21x	1	ADCPP245800BTEL
5800 patch panel, T568B	1-8	48	RJ21x	2	ADCPP485800BTEL

### DIMENSIONS (W X H)

- 1 RU** 19.0" x 1.75" (48.26 x 4.45 cm)
- 2 RU** 19.0" x 3.50" (48.26 x 8.89 cm)



# Ethernet/Data Connectivity

## Multimedia Patch Panels



Multimedia Patch Panels Feature Single Circuit Access

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### Features

- Category 6 performance
- Front or rear loading, single-circuit access saves time in moves, adds, and changes
- The highest density panel available
- Build each patch panel for twisted pair, fiber, and coax applications using any mix of 6000 modular jacks and 6000 media adapters
  - Jacks and media adapters installed and removed in single circuits
  - For Category 6 and Category 5e modular jack applications
  - Singlemode and multimode fiber applications using LX.5<sup>®</sup>, SC, duplex SC, and ST<sup>®</sup> media adapters
  - Handles applications for BNC, F-adapter, RCA-adapters, and S-Video adapters
- Creates angle-right/angle-left or conventional flat panel profile
- Simple installation and removal of individual jacks/adapters allows for rapid change-over and minimized downtime
- Supports 10Base-T, 100Base-T, and 1000Base-T Ethernet, token ring, up to 155 Mbps ATM, and proposed 1000Base-TX
- Includes port numbers or row identification and write-on panel labels
- Jacks and adapters install without panel faceplates or pairing of jacks/adapters
- Available in standard and high-density port sizes
  - Standard sizes – 24-ports/1 RU, 48-ports/2 RU, 96-ports/4 RU
  - High-density sizes – 32-ports/1 RU and 72-ports/2 RU



48-Port Panel with Angled 6000 Modular Jacks and Flat 6000 BNC Media Adapters



24-Port Panel with Flat 6000 Modular Jacks

### Ordering Information

Description	Port Count	Rack Units	Ordering Number
<b>6000 multimedia patch panel chassis</b>	24	1	ADCPP246SUM
	32	1	ADCPP326SUM
	48	2	ADCPP486SUM
	72	2	ADCPP726SUM2U
	96	4	ADCPP966SUM
<b>6000 multimedia 3" recessed patch panel chassis</b>	24	1	ADCPP246SUMR3

Note: Order modular jacks and media adapters separately.

### DIMENSIONS (W X H X D)

<b>1 RU</b>	19.0" x 1.75" x 0.50"	(48.26 x 4.45 x 1.27 cm)
<b>2 RU</b>	19.0" x 3.47" x 0.50"	(48.26 x 8.81 x 1.27 cm)
<b>4 RU</b>	19.0" x 6.97" x 0.50"	(48.26 x 17.70 x 1.27 cm)



# Ethernet/Data Connectivity

## Multimedia Patch Panels – 6000 Modular Jacks and Icons

### Features

- Exceeds Category 5e and Category 6 component performance requirements
- Exceeds Category 5e and Category 6 link and channel requirements
- Backward compatible in component, link, and channel
- Supports 10Base-T and 100Base-T Ethernet, 1000Base-T Ethernet, token ring, up to 155 Mbps ATM, and proposed 1000Base-TX
- Supports any next generation applications designed for TIA/EIA Category 6 transmission requirements
- Available in flat profile or angled version for bend radius protection in T568A and T568B wiring schemes
- Includes one jack with color-coded 110 IDC connections and clear stuffer cap
- Universal T568A/B wiring

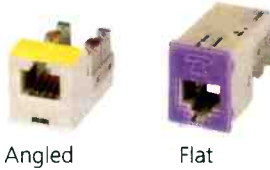
### 6000 Modular Jacks

#### Ordering Information

Description	Jack Type	Wiring Configuration	Category	Ordering Number
<b>6000 modular jacks</b>	Angled	T568A/B	6	ADCJA6XX*
	Angled	T568A/B	5e	ADCJA5XX*
	Flat	T568A/B	6	ADCJF6XX*
	Flat	T568A/B	5e	ADCJF5XX*
<b>Blank inserts</b> (Ships 10 per pack)				ADC6SADUMBKXX*

\*Replace the XX in the ordering number with choice of color, below.

- 00 = Electrical Ivory
- 01 = Office White
- 02 = Black



Angled

Flat

### Icons

#### Ordering Information

Description	Ordering Number
<b>Icons for angled modular jacks</b> (Ships 25 per pack)	
Blank	ADC6SICNPXX*
Data	ADC6SICNDXX*
Voice	ADC6SICNVXX*

#### Ordering Information

Description	Ordering Number
<b>Icons for flat modular jacks and patch panels</b>	
Blank	ADCICBXX*
Data	ADCICDXX*
Voice	ADCICVXX*

\*Replace the XX in the ordering number with choice of color, below.

- 03 = Red
- 04 = Green
- 05 = Blue
- 08 = Orange
- 09 = Yellow
- 10 = Purple
- 11 = Brown



Icon

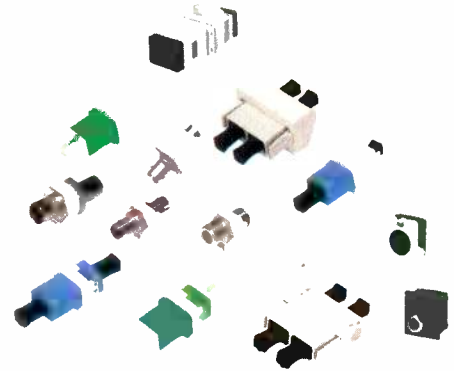


# Ethernet/Data Connectivity

## Multimedia Patch Panels – 6000 Media Adapters

### Features

- Fully supports fiber, coax, RCA and S-Video application
- Available in angled or flat profiles
- Blank inserts available to fill unused ports on 6000 multimedia patch panels



6000 Media Adapters

### Ordering Information

Description	Ordering Number
<b>Flat media adapters</b>	
Singlemode LX.5 <sup>®</sup>	ADC6SADUMSMLX5XX*
Multimode LX.5 <sup>®</sup>	ADC6SADUMMMLX5XX*
Singlemode SC	ADC6SADUMSMSCXX*
Singlemode duplex SC	ADC6SADUMSMDSCXX*
Multimode SC	ADC6SADUMMMSCXX*
Multimode duplex SC	ADC6SADUMMMDSCXX*
Singlemode ST <sup>®</sup>	ADC6SADUMSMSTXX*
Multimode ST <sup>®</sup>	ADC6SADUMMMSTXX*
BNC	ADC6SADUMBNCXX*
F-adapter	ADC6SADUMFCNXX*
RCA-adapter	ADC6SADUMRCAFXX*
S-Video	ADC6SADUMSVHSFXX*
<b>Angled media adapters</b>	
Singlemode LX.5 <sup>®</sup>	ADC6SADANSMLX5XX*
Multimode LX.5 <sup>®</sup>	ADC6SADANMMLX5XX*
Singlemode SC	ADC6SADANSMSCXX*
Singlemode duplex SC	ADC6SADANSMDSCXX*
Multimode SC	ADC6SADANMMSCXX*
Multimode duplex SC	ADC6SADANMMDSCXX*
Singlemode ST <sup>®</sup>	ADC6SADANSMSTXX*
Multimode ST <sup>®</sup>	ADC6SADANMMSTXX*
<b>Blank inserts</b> (Ships 10 per pack)	ADC6SADUMBKXX*

\*Replace the XX in the ordering number with choice of color, below.

- 00 = Electrical Ivory
- 01 = Office White
- 02 = Black

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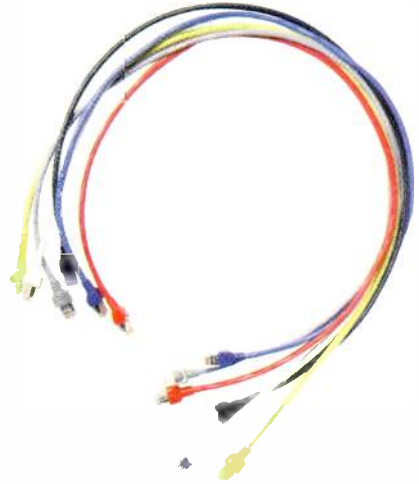


# Ethernet/Data Connectivity

## High Performance Patch Cords

### Features

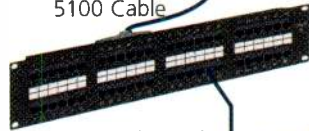
- Exceeds Category 5e requirements as well as ISO/IEC 11801 Telecommunications Standards
- Insert and remove patch cord without pulling back strain relief boot
- Every patch cord is tested to guarantee quality
- High-performance plugs preserve signal integrity and minimize crosstalk
- Fully supports data rates up to 1000 Mbps
- Wide variety of lengths and colors promotes simple, inexpensive installation and easy identification.
- Strain-relief boot limits bend radius and increases durability



Fast Ethernet Hub



5100 Cable



5100 Patch Panel

Patch Cord



5000E Patch Panel

Horizontal Cable



Work Station

### Ordering Information

Description	Category	Color	Ordering Number
Patch cord, with boots	6	White	ADCPC-66CHB-WTXX*
	6	Gray	ADCPC-66CHB-GYXX*
	6	Blue	ADCPC-66CHB-BLXX*
Patch cord, with boots	5e	White	ADCPC-RRC6B-WTXX*
	5e	Gray	ADCPC-RRC6B-GYXX*
	5e	Blue	ADCPC-RRC6B-BLXX*

\*Replace the XX in the ordering number with desired length in feet: 03, 05, 07, 10, 15, 20, 25 or 50 feet. Custom colors and lengths available; please contact ADC.

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# Ethernet/Data Connectivity

## 25-Pair Cable Assemblies

### Features

- Convenient 25-pair/50-pin RJ21x connections
- Connectors available in:
  - 180° exit angle
  - Hydra terminated with twelve numbered RJ45 plugs
- Exceeds Category 5 PowerSum requirements
- Supports 10Base-T and 100Base-T Ethernet



The 25-pair cable assemblies are Category 5 PowerSum telco cables that provide precise connectivity between Fast Ethernet switches and 5100 or 5800 Patch Panels.

With the convenience and precision of RJ21x connectors, 25-pair cable assemblies easily handle even high density Fast Ethernet switch configurations. In addition, the durable connectors feature a lock-down system that eliminates intermittency often associated with other telco cables.

### RJ21x/RJ21x

#### Ordering Information

Description	Connector 1	Connector 2	Ordering Number
25-pair cable assemblies	Straight Exit 180°	Straight Exit 180°	ADCPC-T3T3-5100-XX*

\*Replace the XX in the ordering number with desired length in feet: 05, 10, 15, 20, 25, 30, 35, 40, 45, or 50 feet.

### RJ21x/Hydra

#### Ordering Information

Description	Connector 1	Connector 2	Ordering Number
25-pair cable assemblies	Straight Exit 180°	Hydra, longest to shortest plug: 1-12	ADCPC-T3H1-5100-XX*
	Straight Exit 180°	Hydra, longest to shortest plug: 12-1	ADCPC-T3H2-5100-XX*
	Straight Exit 180°	Hydra, plugs same length	ADCPC-T3H3-5100-XX*

Note: Hydra connectors consist of 12 RJ45 plugs pinned 1,2-3,6.

\*Replace the XX in the ordering number with desired length in feet: 06, 10, or 15 feet.



# Ethernet/Data Connectivity

## Faceplates

### Features

- Patent-pending design provides unique appearance for outlets
- Used for twisted pair, fiber, and coax applications
- Patent-pending fingertip access for easy removal and installation of designation windows
- Designed for use with 6000 modular jacks and 6000 media adapters
- For Category 6, and Category 5e modular jack applications
- For singlemode and multimode fiber applications using LX.5®, SC, duplex SC, and ST® media adapters
- Supports applications requiring BNC, F-adapters, RCA-adapters and S-Video adapters
- Accepts angled or flat jacks and media adapters
- Jacks and media adapters can be loaded from the front or the rear of the faceplate (front loading only on 1 to 3-port faceplate)
- All jacks and media adapters totally interchangeable on the faceplate
- Includes one faceplate, fingertip access designation windows, designation cards, and screws

### Ordering Information

Description	Jack/Adapter Type	Port Count	Ordering Number
<b>Faceplate – Single gang</b> Dimensions: 4.53" x 2.76" x 0.31" (11.51 x 7.01 x 0.79 cm)	Flat	1 to 3	ADC6SFPUM031XX*
<b>Faceplate – Single gang</b> Dimensions: 4.53" x 2.76" x 0.31" (11.51 x 7.01 x 0.79 cm)	Angled or Flat	1 to 4	ADC6SFPUM041XX*
<b>Faceplate – Single gang</b> Dimensions: 4.53" x 2.76" x 0.31" (11.51 x 7.01 x 0.79 cm)	Flat	1 to 6	ADC6SFPUM061XX*
<b>Faceplate – Double gang</b> Dimensions: 4.53" x 4.60" x 0.31" (11.51 x 11.68 x 0.79 cm)	Angled or Flat	1 to 8	ADC6SFPUM082XX*
<b>Faceplate – Double gang</b> Dimensions: 4.53" x 4.60" x 0.31" (11.51 x 11.68 x 0.79 cm)	Flat	1 to 12	ADC6SFPUM122XX*

\*Replace the XX in the ordering number with choice of color, below.

00 = Electrical Ivory    01 = Office White    02 = Black

### Designer Faceplates

#### Ordering Information

Description	Ordering Number
<b>Designer faceplates –</b> includes screws. Accepts flat media adapters and modular jacks	
Single gang	ADC6SFPDC1XX
Double gang	ADC6SFPDC2XX
Insert	ADC6SFPUM03DXX

\*Replace the XX in the ordering number with choice of color, below.

00 = Electrical Ivory  
01 = Office White  
02 = Black



#### Ordering Information

Description	Ordering Number
<b>Surface mount outlets –</b> Accepts flat media adapters and modular jacks. Includes fingertip designation windows, cards, and double-sided tape	
2-ports	ADC6SSMUM02XX
4-ports	ADC6SSMUM04XX
6-ports	ADC6SSMUM062SAXX
12-ports	ADC6SSMUM12TRAXX

\*Replace the XX in the ordering number with choice of color, below.

01 = Office White    02 = Black





# Ethernet/Data Connectivity

## ADC IEEE 1394a FireWire® Patch Panel

### Features

- IEEE 1394a compatible six-pin connectors
- 400Mb/s bandwidth
- High-density, 24 ports in one rack unit
- Plated panel housing to facilitate superior shielding and grounding
- Designation and port numbering



ADC continues its leadership role in broadcast connectivity with the development of the new 1394a FireWire® patch panel. The panel accommodates 24 ports in one rack unit and mounts in standard 19-inch racks. The panel offers customers a passive interconnection solution for their digital video editing needs. Industry-compatible six-pin IEEE 1394a connectors on both the front and rear of the panel allow customers to interconnect cameras, servers, workstations, and non-linear editing suites via FireWire at 400Mb/s bandwidth. The result is increased flexibility and productivity without sacrificing performance and reliability.

### Ordering Information

Description	Dimensions	Ordering Number
One rack unit 24-port 1394a compatible FireWire patch panel	1.75" x 19" x 2.25" (4.45 x 48.26 x 5.75 cm)	VI-124-1394

Note: FireWire® is a registered trademark of the 1394 Trade Association

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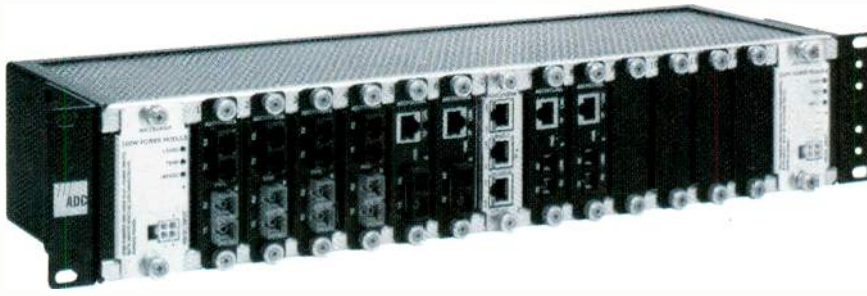
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# Media Converters

## OptEnet™ Media Converter Platform



### Features:

- Modular design enables line card diversity within the same chassis
- Extend central office interconnect between network elements when distances are greater than 100 meters
- Ethernet delivery solution from central office to customer premises
- Reduce capital expenses associated with expensive optical line cards in network elements
- Auto-negotiation features eliminate the need for optical line card upgrade in network elements
- Redundant -48Vdc power supplies
- Supports SNMP and Telnet communication protocols
- Daisy-chain communication interfaces
- Supports 10Base-T, 100Base-TX and 1000Base-T UTP conversion to singlemode fiber
- Multimode fiber to singlemode fiber conversions
- Medium Dependent Interface Cross-over (MDI-X) eliminates network collisions
- NEBS Level 3, UL and FCC standards compliant



# Media Converters

## OptEnet™ Media Converter Platform

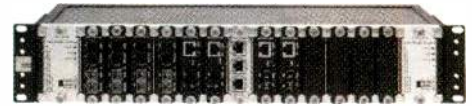
### Common Equipment

#### OptEnet™ Modular Chassis

The OptEnet chassis is a modular chassis, which enables multiple types of line cards to be deployed simultaneously within the same chassis.

#### Features

- Supports up to twelve OptEnet line cards
- All front access
- Accepts dual redundant power supplies
- 19 inches wide with 23-inch reverse mounting ears
- Two rack units high
- Optional SNMP and/or alarm functionality



OptEnet 12 Slot Modular Chassis

### Specifications

#### PHYSICAL

**Dimensions (HxWxD):** 3.5" x 17.5" x 5.75" (8.89 x 44.45 x 12.0 cm)  
**Weight (empty):** 8.5 lbs (3.86 kg)

#### ENVIRONMENTAL

**Operating Conditions:** 5°C to 40°C at 5% to 85% relative humidity  
**Short Term Conditions:** -5°C to 50°C at 5% to 90% relative humidity  
**Storage Conditions:** -40°C to 70°C at 10% to 95% relative humidity (no condensation)

#### Ordering Information

Description	Ordering Number
OptEnet modular chassis: 12-port	ADCCE1100A

### Power Supply Modules

The OptEnet chassis accepts power from DC sources. Dual power supplies are deployed within the chassis to provide redundant power to all line cards along the back plane.

#### Features

- -48Vdc (100 W) power supply
- +24Vdc (100 W) power supply
- Extended temperature versions available
- Power connection on the front panel
- Power and temperature status LEDs



OptEnet DC Power Supply Module

### Specifications

**DC Input Voltage:** -48Vdc, +24Vdc

#### Ordering Information

Description	Ordering Number
OptEnet +24Vdc power supply module	ADCCE2200A
OptEnet -48Vdc power supply module – extended temp	ADCCE2400A

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# Media Converters

## OptEnet™ Media Converter Platform

### Common Equipment

#### Communications Modules

If remote monitoring is required, a central processor unit (CPU) can be deployed within the OptEnet™ platform. An alarm card is available if only local alarm indications are required. The CPU and alarm card are optional. Only one of the two modules can be deployed in the chassis, so the network administrator must determine which alarm notification method is preferable.

#### CPU Features:

- Serial and Ethernet interface
- SNMP and Telnet communications protocols
- Compatible with all SNMP management platforms
- Daisy-chain up to four units, via one IP address
- Firmware upgrade via TFTP or serial
- Five simultaneous Telnet sessions

#### Alarm Card Features:

- Normally open and normally closed alarm contacts



OptEnet CPU



OptEnet Alarm Module

### Specifications

#### CPU Specifications

<b>Ethernet Interface:</b>	10Base-T, RJ45 connector
<b>COM IN Interface:</b>	RS-232 DCE, RJ45 connector
<b>COM OUT Interface:</b>	RS-232 DTE, RJ45 connector
<b>Communications Protocol:</b>	SNMP and ASCII

#### Alarm Module Specifications

<b>Power ON Indicator:</b>	Green
<b>Alarm Indicator:</b>	Red
<b>Contact Closures:</b>	Normally open and normally closed

### Ordering Information

Description	Ordering Number
OptEnet central processor unit	ADCCE3000A
OptEnet alarm module	ADCCE3100A



# Media Converters

## OptEnet™ Media Converter Platform

### Media Conversion Line Cards

#### Singlemode to Multimode Optical Converter Line Card

The OptEnet™ singlemode to multimode media converter line card is one of a family of line cards that can be deployed in the OptEnet modular chassis. The card is designed to convert optical signals transported on a singlemode link to an optical signal that can be transported on a multimode link. The card supports any protocol and data rate between 10 Mbps to 622 Mbps (OC-12).

#### Supported Data Rates

Signal Type/Protocol	Data Rate	Comments
Ethernet	10 Mbps	10BASE-FL
Fast Ethernet	100 Mbps	100BASE-FX
ATM/SONET/SDH	155 Mbps	OC-3
	622 Mbps	OC-12

#### Features

- Single circuit line card
- Duplex transmission
- Link status and power LED indications
- Optical connections on front panel
- Protocol independent
- Supports data rates 10 Mbps up to OC-12



OptEnet Singlemode to Multimode Optical Converter Module

### Specifications

#### ELECTRICAL

**Input Power:** 2.7 Watts maximum; normal operation

#### MECHANICAL

**Chassis Compatibility:** OptEnet modular chassis

**Fiber Optic Connectors:** SC

**Dimensions (HxWxD):** 1.14" x 8.07" x 7.4" (2.89 x 20.5 x 18.8 cm)

**Weight:** 0.27 lbs (122 g)

#### OPTICAL

##### Singlemode

**Wavelength:** 1274 to 1356 nm range

**Output Optical Power (XMT):** -15dBm minimum, -8dBm maximum

**Input Optical Power (RCV):** -8dBm minimum, -32dBm maximum

##### Multimode

**Wavelength:** 1270 to 1380 nm range

**Output Optical Power (XMT)**

**62.5/125µm:** -20dBm minimum, -14dBm maximum

**50/125µm:** -24dBm minimum, -14dBm maximum

**Input Optical Power (RCV):** -26dBm minimum, -14dBm maximum

### Ordering Information

Description	Ordering Number
OptEnet singlemode to multimode, 10-622 Mb/s line card	ADCPE6000A



# Media Converters

## OptEnet™ Media Converter Platform

### OptEnet™ 10/100 Mbps Ethernet Line Card

The OptEnet 10/100 Mbps Ethernet media converter line card is designed to convert optical signals to electrical signals. The line card has an auto negotiation feature allowing it to detect and synchronize with either a 10Base-T or 100BASE-TX signal. The card supports 10BASE-T and 100BASE-T data rates over UTP and 1310 nm optics (singlemode fiber).

#### Supported Protocols

Application	Data Rate	Media	Distance	Interface
10Base-T	10 Mbps	UTP Category 3, 4 or 5 (2-pair)	328 feet (100 m)	RJ45
100Base-TX	100 Mbps	UTP Category 5 (2-pair)	328 feet (100 m)	RJ45
100Base-LX	10/100 Mbps	1300 singlemode fiber	9.3 miles (15 km) (8/125µm)	SC

#### Features

- Supports 10Base-T, and 100Base-T
- Full and half duplex transmission (transmit and receive)
- Ethernet and fiber optic link indicators
- Auto negotiation over fiber and copper (ANSI/TIA 785)
- MDI-X – Auto-detects and corrects cross-over



OptEnet 100Base-LX Ethernet Line Card

#### Specifications

##### ELECTRICAL

**Input Power:** 1.75 Watts maximum; normal operation

##### MECHANICAL

**Chassis Compatibility:** OptEnet modular chassis  
**Fiber Optic Connectors:** SC  
**Dimensions (HxWxD):** 1.14" x 8.07" x 7.4" (2.89 x 20.5 x 18.8 cm)  
**Weight:** 0.27 lbs (122 g)  
**Electrical Interface:** RJ45  
**Optical Interface:** SC

##### OPTICAL

**Singlemode**  
**Wavelength:** 1270 to 1380 nm range  
**Output Optical Power (XMT) 8/125µm:** -15dBm minimum, -8dBm maximum  
**Input Optical Power (RCV):** -31dBm minimum, -7dBm maximum

#### Ordering Information

Description	Ordering Number
OptEnet 100BASE-LX (SC) line card	ADCP4200A



# Media Converters

## OptEnet™ Media Converter Platform

### Media Conversion Line Cards

#### OptEnet™ Gigabit Ethernet Line Card

The OptEnet 1000 Mbps media converter line card is designed to convert optical signals to electrical signals. The card supports 1000BASE-T data rates over UTP and 1310 nm optics (singlemode fiber).

#### Supported Protocols

Application	Data Rate	Media	Distance	Interface
1000Base-TX	1000 Mbps	UTP Category 5e (4-pair)	328 feet (100 m)	RJ45
1000Base-LX	1000 Mbps	1300 singlemode fiber	6.2 miles (10 km) (8/125µm)	SC

#### Features

- Supports Gigabit Ethernet
- Duplex transmission (transmit and receive)
- Ethernet and fiber optic link indicators
- MDI-X – Auto-detects and corrects cross-over



OptEnet 1000Base-LX  
Line Card

### Specifications

#### ELECTRICAL

**Input Power:** 2.2 Watts maximum; normal operation

#### MECHANICAL

**Chassis Compatibility:** OptEnet modular chassis  
**Fiber Optic Connectors:** SC  
**Dimensions (HxWxD):** 1.14" x 8.07" x 7.4" (2.89 x 20.5 x 18.8 cm)  
**Weight:** 0.27 lbs (122 g)  
**Electrical Interface:** RJ45  
**Optical Interface:** SC

#### OPTICAL

**Singlemode**  
**Wavelength:** 1270 to 1355 nm range  
**Output Optical Power (XMT)**  
**8/125µm:** -11dBm minimum, -3dBm maximum  
**Input Optical Power (RCV):** -22dBm minimum, -20dBm maximum

#### Ordering Information

Description	Ordering Number
OptEnet 1000BASE-LX (SC) line card	ADCP5100A



# Media Converters

## Work Area Media Converter



Work Area Media Converter



Media Converter shown with 6000 Modular Jacks in 6000 Faceplate.

### Features

- Reduces work area clutter by placing media conversion circuitry behind the faceplate.
- Eliminates external power adapter and fiber jumper in workstation applications.
- Improves protection of circuits by securing circuitry behind the faceplate.
- Streamlines installation and troubleshooting with built-in intelligence for optical link integrity and UTP link integrity indicators at work area.
- Supports 10Base-T and 100Base-TX UTP and 10Base-FL, 100Base-SX, and 100Base-FX multimode fiber with auto negotiation.

### Ordering Information

Description	Ordering Number
<b>Work Area Media Converter Kits</b> Mouse port power option 850 nm 1300 nm <i>Kit includes media converter, power adapter, 3' PS/2 jumper, and 3' blue RJ45 patch cord</i>	ADC6S1SXSTMM1XX* ADC6S1FXSTMM1XX*
Wall outlet power option 850 nm 1300 nm <i>Kit includes media converter, power adapter, AC/DC wall outlet power adapter, and 3' blue RJ45 patch cord</i>	ADC6S1SXSTMM2XX* ADC6S1FXSTMM2XX*
USB port power option 850 nm 1300 nm <i>Kit includes media converter and USB patch cord</i>	ADC6S1SXSTMM3XXYY** ADC6S1FXSTMM3XXYY**

#### Ordering notes:

- \* Replace XX in ordering number with choice of color for media converter below  
 00 = Electrical Ivory    02 = Black  
 01 = Office White
- \*\* To order USB port power cable, replace YY in ordering number with desired length in meters: 02, 05, 07, or 10. Replace XX in ordering number with choice of color for media converter

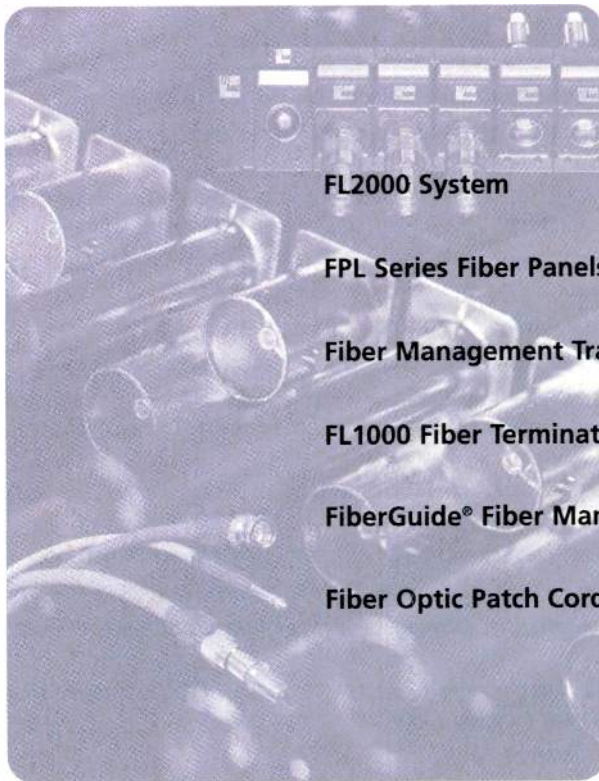
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# Fiber Connection and Management



<b>FL2000 System</b>	<b>135</b>
<b>FPL Series Fiber Panels</b>	<b>147</b>
<b>Fiber Management Tray</b>	<b>151</b>
<b>FL1000 Fiber Termination Products</b>	<b>157</b>
<b>FiberGuide® Fiber Management System</b>	<b>162</b>
<b>Fiber Optic Patch Cords</b>	<b>163</b>

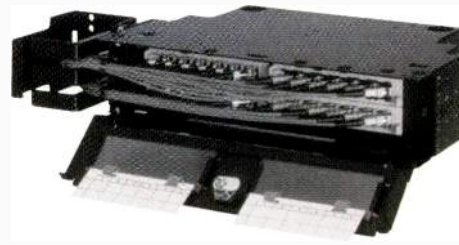


# FL2000 System

## Introduction



FL2000 Rack Mount Chassis



FL2000 Rack Mount Chassis (door open)

The economical and flexible FL2000 series of fiber optic products is ideal for small fiber counts and can be used in moderate fiber count applications as well by combining various panels. This leading fiber optic panel is now available in black.

### Features

- A complete line of modular panels developed for cabinet, rack and wall mounting
- Fully adaptable for large or small main distribution frame (MDF), intermediate distribution frame (IDF) or telephone closet (TC) applications
- Designed for 19" (48.26 cm) EIA rack or cabinet environment found in many broadcast networks; optional brackets are available to accommodate 23" (58.42 cm) or ETSI rack or cabinet mounting
- Provides termination, splicing and storage capabilities for in-building cables, outside plant cables and fiber optic terminal (FOT) equipment patch cords
- Modular design offers maximum flexibility to satisfy both current needs and future growth requirements
- A full line of options and accessories ensures compatibility with existing optical equipment
- FL2000 systems accommodate the Value-Added plug-in modules, adding flexibility and functionality to the optical transport systems. Splitters, wavelength division multiplexers (WDMs) and other optical components can be easily incorporated
- All FL2000 panels accommodate the modular FL2000 6pak plug-ins. 6paks are available in all connector styles and can be ordered as needed
- ADC's patented removable angled retainers allow easy access for single fiber maintenance
- FL2000 panels and feature superior vertical cable protection and management
- Rack mount panels are hinged on one side, allowing full access to the rear of the front plate and the interior of the panel
- Rack mount panels are equipped with mounting brackets to provide 5" (12.7 cm) recess mounting; mounting brackets are available for virtually any mounting application
- Rack mount panels can be wall mounted
- The new FL2000 splice wheel allows easy roll-up of pigtail and buffer tube lengths and superior bend radius protection
- The FL2000 splice deck is available to complete existing installations



# FL2000 System

## Rack or Cabinet Mount Termination/Splice Panels

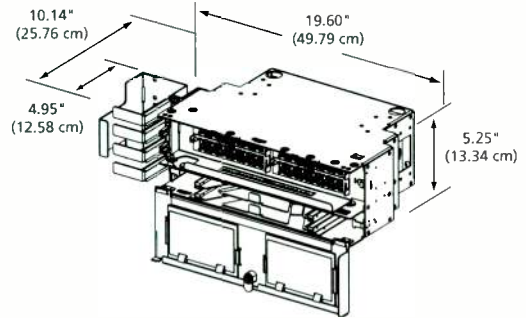
### Preconfigured Panels with Pigtails, Black

#### Features

FL2000 panels can also be shipped with 6paks and/or pigtails pre-installed at the factory.

- Reduce installation time
- Simplify ordering process

Use this configuration guide to determine the ordering number right for your application.



#### Ordering Number

FL2 - 1 2 3 0 4 5 6 7 8 - 9 10 11 12

#### Panel Type

C	Termination/Splice
---	--------------------

#### Number of Ports Loaded

#### Number of Splice Decks

#### Latch Type

0	Latch
1	Hole Plug
2	Screwdriver
5	K1 Lock
6	K2 Lock

#### Nominal Capacity Panel Height

A	12 position	3.5" (8.89 cm) (2 RU)
B	24 position	5.25" (13.34 cm) (3 RU)
D	48 position	8.75" (22.23 cm) (5 RU)
E	72 position	14.00" (35.56 cm) (8 RU)
F	96 position	17.50" (44.45 cm) (10 RU)

#### Pigtail or Adapter Type

A	Adapters only
P	6 fiber softwall bundle
H	6 fiber Maxi-Strip
R	12 fiber ribbon
K	12 fiber softwall bundle <sup>2</sup>
Y	12 fiber Maxi-Strip

#### Number of Cable Clamps

0	1 clamp (standard)
2	2 clamps

#### Connector Style

Multimode	
9	SC
D	Duplex SC
5	ST <sup>®</sup>
Y	LX.5 <sup>® 1</sup>
6	LC <sup>1</sup>
Singlemode	
2	Ultra PCFC
L	FC with zirconia adapter
F	FC 8° angled polish
7	Ultra PCSC
N	SC with zirconia adapter
J	SC 8° angled polish
E	Duplex SC
4	Ultra PCST
P	ST <sup>®</sup> with zirconia adapter
K	E-2000 8° angled polish
X	LX.5 <sup>® 1</sup>
8	LC <sup>1</sup>
1	FC Hybrid (FC connector on front; SC connector on back of bulkhead)
3	ST <sup>®</sup> Hybrid (ST <sup>®</sup> connector on front; SC connector on back of bulkhead)

#### Splice Type

0	None or N/A
M	Mechanical (Wheel)
W	Heat Shrink Fusion (Wheel)
1	Bare Fusion (Deck)
2	Heat Shrink Fusion (Deck)
3	Mechanical (Deck)
7	Raychem Universal (Deck)
8	Nortel (Deck)

#### Splice Type<sup>2</sup>

M	Mechanical (Wheel)
N	Nortel (Wheel)

#### Mounting Style<sup>3</sup>

A	19" (48.26 cm) standard (19.6" [49.78 cm] overall)
B	19" (48.26 cm) maximum (19" [48.26 cm] overall)
C	19" (48.26 cm) flush mount
D	23" (58.42 cm) centered
E	23" (58.42 cm) with oversized VCG
F	ETSI flush mount

- <sup>1</sup> LX.5<sup>®</sup> and LC connectors and adapters double the capacity of the panel by terminating two fibers at each adapter.
- <sup>2</sup> For use with LX.5<sup>®</sup> and LC.
- <sup>3</sup> Mounting kit shipped unattached if other than standard mounting style.



# FL2000 System

## Rack or Cabinet Mount Termination Panels

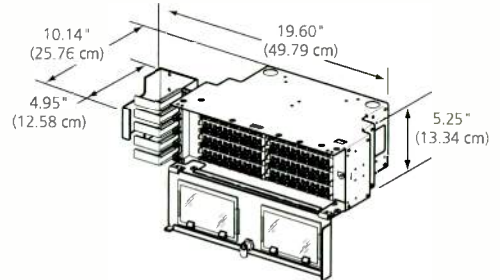
### Preconfigured Panels with Pigtails, Black

#### Features

FL2000 panels can also be shipped with 6paks and/or pigtails pre-installed at the factory.

- Reduce installation time
- Simplify ordering process

Use this configuration guide to determine the ordering number right for your application.



#### Ordering Number

FL2 - **1** **2** **3** **0** **4** **5** **6** **7** **0** - **0** **9** **10** **11** **12**

**Panel Type**  
R Termination only

Nominal Capacity	Panel Height
A 12 position	1.75" (4.45cm) (1 RU)
B 24 position	3.5" (8.89 cm) (2 RU)
C 36 position	5.25" (13.34 cm) (3 RU)
D 48 position	5.25" (13.34 cm) (3 RU)
E 72 position	8.75" (22.23 cm) (5 RU)
F 96 position	10.5" (26.67 cm) (6 RU)

**Connector Style**

Multimode	
9	SC
D	Duplex SC
5	ST <sup>®</sup>
Y	LX.5 <sup>®1</sup>
6	LC <sup>1</sup>
Singlemode	
2	Ultra PCFC
L	FC with zirconia adapter
F	FC 8° angled polish
7	Ultra PCSC
N	SC with zirconia adapter
J	SC 8° angled polish
E	Duplex SC
4	Ultra PCST
P	ST <sup>®</sup> with zirconia adapter
K	E-2000 8° angled polish
X	LX.5 <sup>®1</sup>
8	LC <sup>1</sup>
1	FC Hybrid (FC connector on front; SC connector on back of bulkhead)
3	ST <sup>®</sup> Hybrid (ST <sup>®</sup> connector on front; SC connector on back of bulkhead)

**Number of Ports Loaded**

**Pigtail or Adapter Type**

A	Adapters only
P	6 fiber softwall bundle
H	6 fiber Maxi-Strip
R	12 fiber ribbon
K	12 fiber softwall bundle <sup>2</sup>
Y	12 fiber Maxi-Strip

**Mounting Style<sup>3</sup>**

A	19" (48.26 cm) standard (19.6" [49.78 cm] overall)
B	19" (48.26 cm) maximum (19" [48.26 cm] overall)
C	19" (48.26 cm) flush mount
D	23" (58.42 cm) centered
E	23" (58.42 cm) with oversized VCG
F	ETSI flush mount

**Latch Type**

0	Latch
1	Hole Plug
2	Screwdriver
5	K1 Lock
6	K2 Lock

**Number of Cable Clamps**

0	1 clamp (standard)
2	2 clamps

<sup>1</sup> LX.5<sup>®</sup> and LC connectors and adapters double the capacity of the panel by terminating two fibers at each adapter.

<sup>2</sup> For use with LX.5<sup>®</sup> and LC

<sup>3</sup> Mounting kit shipped unattached, if other than standard mounting style.

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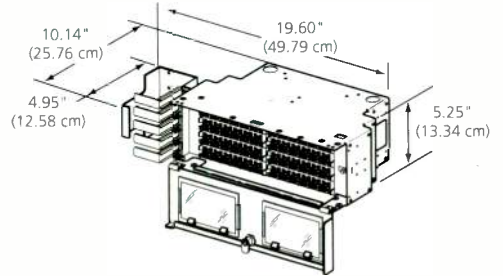
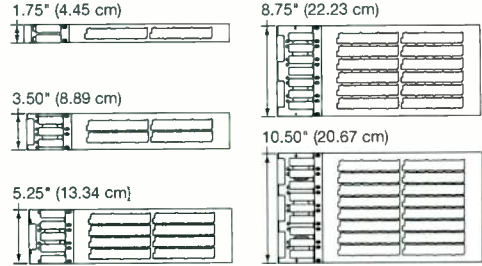
# FL2000 System

## Empty Panels

### Rack or Cabinet Mount Termination Panels

#### Features

- Mounting
  - 19" (48.26 cm) EIA rack or cabinets, standard 5" (12.7 cm) recess
  - Wall mounting option available
  - Other mounting kits available  
Please see pages 143-146
- Hinged on left front side<sup>1</sup>; allows full access to rear of front plate and interior of panel
- FL2000 6pak adapter plug-ins ordered separately
- Constructed of high strength aluminum
- Equipped with removable metal doors with Plexiglas windows
- Designation labels included with each panel
- Complete line of accessories including locks for security



<sup>1</sup> Right hinged also available

#### Ordering Information

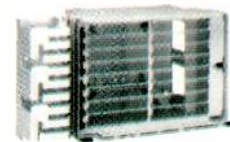
Description	Panel Height	Ordering Number
<b>Rack or Cabinet Mount Panel, black</b> <i>Includes vertical cable management trough</i>		
12 fiber capacity	1.75" (4.45 cm)	FL2-12RPNL-B
24 fiber capacity	3.50" (8.89 cm)	FL2-24RPNL-B
36 fiber capacity	5.25" (13.34 cm)	FL2-36RPNL-B
48 fiber capacity	5.25" (13.34 cm)	FL2-48RPNL-B
72 fiber capacity	8.75" (22.23 cm)	FL2-72RPNL-B
96 fiber capacity	10.50" (26.67 cm)	FL2-96RPNL-B
<b>Accessories</b>		
<b>Wall mount bracket, black</b> - needed for 12 fiber capacity panel only		FL2-ACC008
<b>Cable clamp kit</b> - One per cable recommended Outer diameter .2" to .8" Outer diameter .7" to 1.0" Cable Clamp kit for 12 fiber capacity panel only		FL2-ACC007 FL2-ACC021 FL2-ACC033
<b>Bonding/grounding kit</b>		FL2-ACC006



24 Fiber Capacity



72 Fiber Capacity



96 Fiber Capacity

Mounting kits sold separately, see pages 143-146



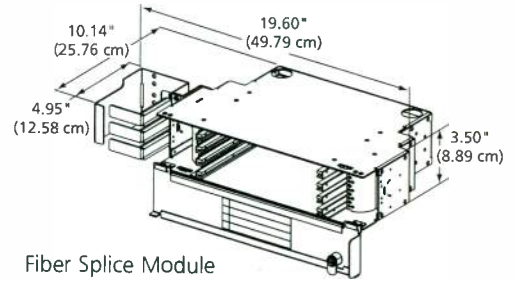
# FL2000 System

## Empty Panels

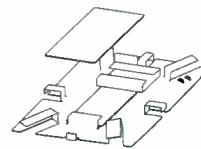
### Rack or Cabinet Mount Splice Panels

#### Features

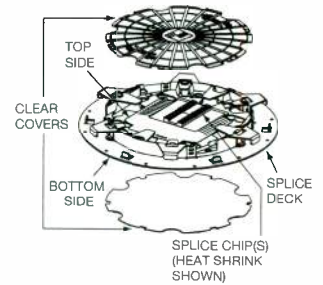
- Offers combination of splicing protection and associated fiber/pigtail storage
- Splice panel can be mounted in conjunction with any FL2000 termination panel or as a stand-alone splice panel
- Occupies same footprint and offers same mounting options as FL2000 termination panels
- Accepts the new ADC splice wheel for efficient management of fiber cable and splice protection
- Accepts the traditional ADC splice deck



Fiber Splice Module  
(48 Fiber Capacity  
Module Shown)



Splice Deck with  
Splice Chip (Black)



Splice Wheel with  
Splice Chip (Black)

#### Ordering Information

Description	Panel Height	Ordering Number
<b>Splice Panel for Splice Wheel, black</b> (Accepts splice wheel only) 48 fiber capacity 96 fiber capacity 144 fiber capacity	3.5" (8.89 cm) 7" (17.78 cm) 8.75" (22.23 cm)	FL2-48SPNL2-B FL2-96SPNL2-B FL2-144SPNL2-B
<b>Splice Wheel with Splice Chip</b> Heat shrink fusion Mechanical Nortel		FST-DRS12-HS FST-DRS12-MT FST-DRS24-NT
<b>Splice Panel for Splice Deck for Existing Installations, black</b> (Also accepts splice wheel) 48 fiber capacity 96 fiber capacity 144 fiber capacity	3.5" (8.89 cm) 7" (17.78 cm) 8.75" (22.23 cm)	FL2-48SPNL-B FL2-96SPNL-B FL2-144SPNL-B
<b>Splice Deck with Splice Chip for Existing Installations</b> Heat shrink fusion Mechanical Bare fusion Nortel QPAK		FL2-RSPLCE-HS-B FL2-RSPLCE-MT-B FL2-RSPLCE-FT-B FL2-RSPLCE-NT-B
<b>Cable Clamp Kit (kit of 1)</b> Outer diameter .2" to .8" Outer diameter .7" to 1.0"		FL2-ACC007 FL2-ACC021

Mounting kits sold separately, see pages 143-146

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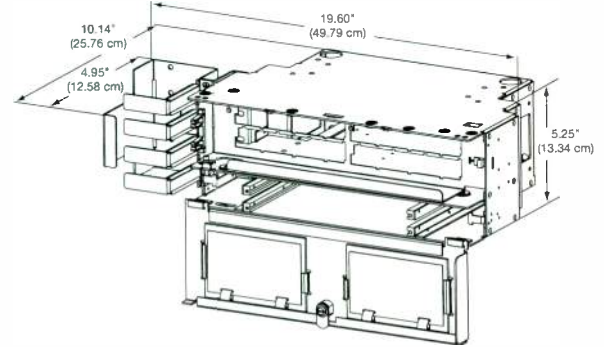
# FL2000 System

## Empty Panels

### Rack or Cabinet Mount Termination/Splice Panels

#### Features

- Mounting
  - 19" (48.26 cm) EIA racks or cabinets, standard 5" (12.7 cm) recess
  - Wall mounting option available
  - Other mounting kits available. Please see pages 143-146
- Hinged on left front side<sup>1</sup> for complete access to interior of termination section
- Ability to quickly and easily configure, utilizing the 6pak assemblies (ordered separately)
- Complete line of accessories including locks for security
- Uses ADC splice wheels or splice decks



Termination/Splice Panel

<sup>1</sup> Right hinged also available

#### Ordering Information

Description	Panel Height	Ordering Number
<b>Termination/splice Panel, black</b>		
12 position	3.5" (8.89 cm)	FL2-12TS350-B
24 position	5.25" (13.34 cm)	FL2-24TS525-B
48 position	8.75" (22.23cm)	FL2-48TS875-B
72 position	14" (35.56 cm)	FL2-72TS140-B
96 position	17.5" (44.45 cm)	FL2-96TS175-B
<b>Splice Wheel with Splice Chip</b>		
Heat shrink fusion		FST-DRS12-HS
Mechanical		FST-DRS12-MT
Nortel		FST-DRS24-NT
<b>Splice Deck with Splice Chip</b>		
Heat shrink fusion		FL2-RSPLCE-HS-B
Mechanical		FL2-RSPLCE-MT-B
Bare fusion		FL2-RSPLCE-FT-B
Nortel		FL2-RSPLCE-NT-B

Mounting kits sold separately, see pages 143-146



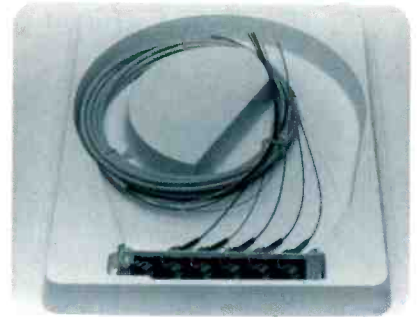
# 6pak Connector Plug-Ins

With Adapters and Pigtails

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## Features

- Available with pre-terminated 3 meter (9.84') or 5 meter (16.4') pigtails
- Pigtails consist of a single outer jacket containing six color-coded 900 μm fibers
- One end of pigtail terminated to chosen connector style and installed into the 6pak plug-in adapters
- ADC recommends specific breakouts for panel and wall mount box products
- Saves installation time



FL2000 6pak plug-in with SC adapters and pigtails

## Multimode Pigtails and Adapters

**Ordering Number**

FL2 - 6P    B    C    6

Multimode Connector Style	
5	ST <sup>®</sup>
9	SC
A	FC
D	Duplex SC
Y	LX.5 <sup>®1</sup>
6	LC <sup>1</sup>

Fiber Size	
B	Multimode 62.5/125
C	Multimode 50/125

Length (in meters)	
03W	3 m (9.84') pigtail for wall mount boxes
05R	5 m (16.4') pigtail for rack mount panels

Note: 6paks are putty in color  
<sup>1</sup> LX.5<sup>®</sup> and LC 6paks are loaded with 12 fiber pigtails

## Singlemode Pigtails and Adapters

**Ordering Number**

FL2 - 6P    S    6

Singlemode Connector Style	
E	Duplex SC
2	Ultra PCFC
4	Ultra PCST
7	Ultra PCSC
F	PCFC 8° angled polish
J	PCSC 8° angled polish
K	E-2000 angled polish
X	LX 5 <sup>®1</sup>
8	LC <sup>1</sup>
Q	PCSC 9° angled polish
1	FC Hybrid (FC connector on front; SC connector on back of bulkhead)
3	ST <sup>®</sup> Hybrid (ST <sup>®</sup> connector on front; SC connector on back of bulkhead)

Length (in meters)	
03W	3 m (9.84') pigtail for wall mount boxes
05R	5 m (16.4') pigtail for rack mount panels

Fiber Type	
C	Stranded
D	Maxi-Strip

Fiber Size	
S	Singlemode

Note: 6paks are putty in color  
<sup>1</sup> LX.5<sup>®</sup> and LC 6paks are loaded with 12 fiber pigtails





# 6pak Adapter Plug-Ins

For all FL2000 Termination Products

## Features

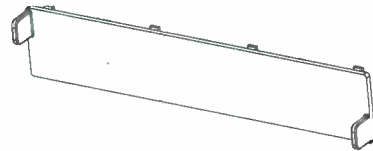
- Completely interchangeable between FL2000 panel and wall box products
- Can be ordered with all standard types of simplex and duplex single and multimode adapters and connectors
- Feature ADC's patented removable angled retainers which provide superior fiber management
- No tools required to install into FL2000 boxes or panels
- Can be ordered with adapters only, or for quick and easy installation, with pre-terminated 3 meter (9.84') or 5 meter (16.4') pigtails



6pak Plug-In (shown with singlemode duplex adapters)



6pak Plug-In (shown with multimode duplex adapters)



6pak Blank Plug-In



6pak Plug-In (shown with singlemode simplex adapters)



6pak Plug-In (shown with multimode simplex adapters)



6pak Plug-In (shown with singlemode LX.5° adapters)



6pak Plug-In (shown with multimode LX.5° adapters)

## Ordering Information

Description	Ordering Number
<b>Multimode</b>	
SC	FL2-6PMMSC
ST®	FL2-6PMMST
FC	FL2-6PMMFC
SC (duplex)	FL2-6PMMDSC
SC, zirconia	FL2-6PMMSC-Z
ST®, zirconia	FL2-6PMMST-Z
FC, zirconia	FL2-6PMMFC-Z
LX.5°	FL2-6PMM LX
LC	FL2-6PMM LC
<b>Singlemode</b>	
SC	FL2-6PSMSC
ST®	FL2-6PSMST
FC	FL2-6PSMFC
SC (duplex)	FL2-6PSMDSC
FC with 8° angled polish	FL2-6PSMAFC
SC with 8° angled polish	FL2-6PSMASC
SC, zirconia	FL2-6PSMSC-Z
ST®, zirconia	FL2-6PSMST-Z
FC, zirconia	FL2-6PSMFC-Z
E-2000, angled polish	FL2-6PSMAE-2
LX.5°	FL2-6PSMALX
LC	FL2-6PSMLC
Hybrid: FC front, SC back	FL2-6PSMFC/SC
Hybrid: ST® front, SC back	FL2-6PSMST/SC
<b>6pak blank plug-in</b>	FL2-6PBLNK



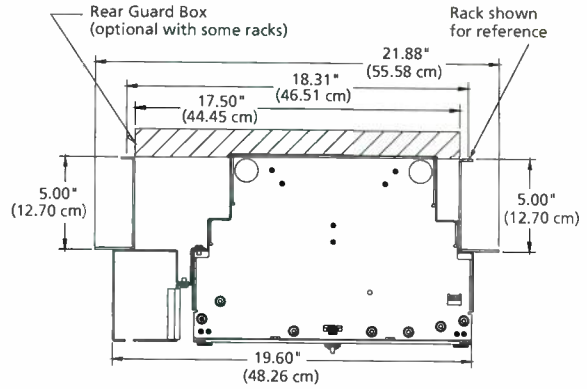
# FL2000 System

## Mounting Options – 19" (48.26 cm) Rack Mounting

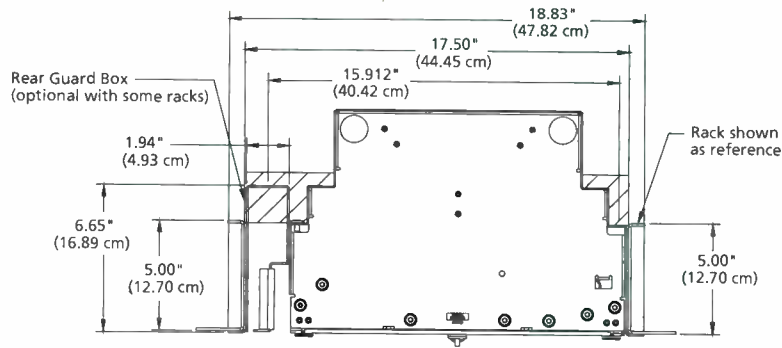
### Standard Mount (as shipped)

#### Features

- Panels typically shipped from factory equipped for this mounting
- Panels shipped with
  - Left-side "L" bracket
  - Left-side 2.5" (6.32 cm) wide vertical cable guide (VCG)



### Flush Mount



#### Ordering Information

Description	Panel Height	Ordering Number
<b>Flush Mount</b>	1.75" (4.45 cm)	FL2-FLMT0175-B
Allows 1", 2" or 4" (2.54, 5.08 or 10.16 cm) recess mounting	3.5" (8.89 cm)	FL2-FLMT0350-B
Kit includes: new vertical cable guide and mounting flanges	5.25" (13.34 cm)	FL2-FLMT0525-B
	7" (17.78 cm)	FL2-FLMT0700-B
	8.75" (22.23 cm)	FL2-FLMT0875-B
	10.5" (26.67 cm)	FL2-FLMT1050-B

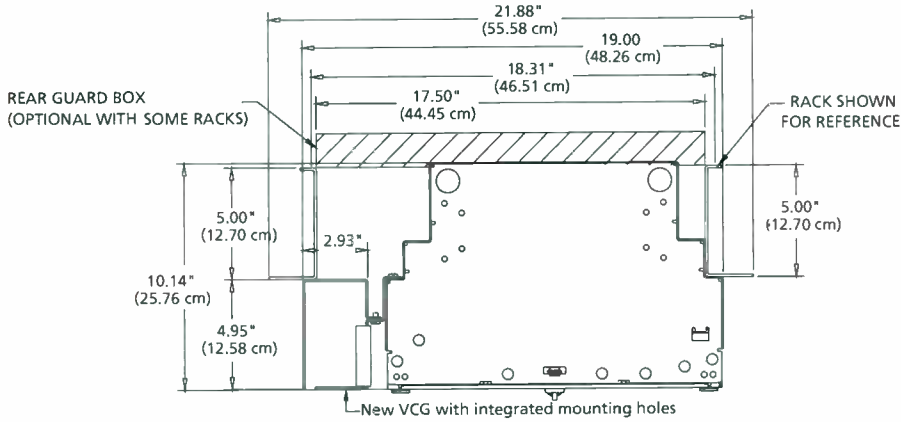
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# FL2000 System

## Mounting Options – 19" (48.26 cm) Rack Mounting

### 19" (48.26 cm) Maximum Mounting



### Ordering Information

Description	Panel Height	Ordering Number
<b>19" Maximum, black</b>	1.75" (4.45 cm)	FL2-19MAX0175-B
Allows entire panel to be contained within frame footprint	3.5" (8.89 cm)	FL2-19MAX0350-B
Kit includes: new vertical cable guide with integrated mounting holes	5.25" (13.34 cm)	FL2-19MAX0525-B
	7" (17.78 cm)	FL2-19MAX0700-B
	8.75" (22.23cm)	FL2-19MAX0875-B
	10.5" (26.67 cm)	FL2-19MAX1050-B
	14" (35.56 cm)	FL2-19MAX1400-B
	17.5" (43.18 cm)	FL2-19MAX1750-B

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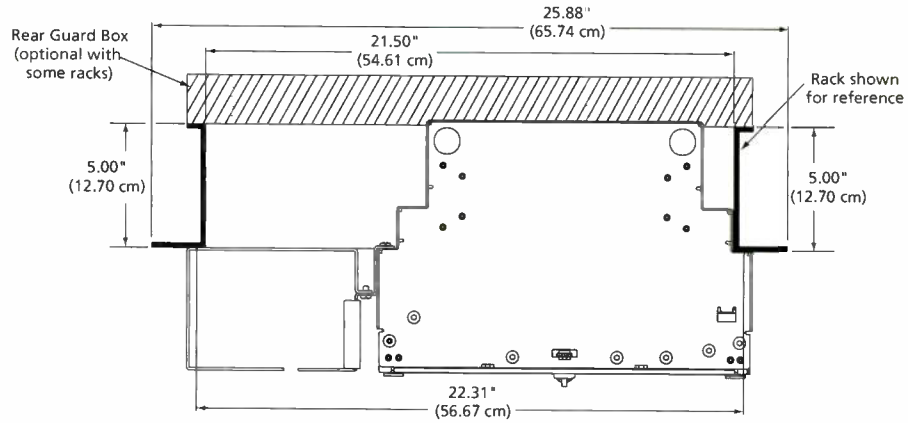
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# FL2000 System

## Mounting Options – 23" (58.42 cm) Rack Mounting

### 23" (58.42 cm) Wide VCG Mounting



### Ordering Information

Description	Panel Height	Ordering Number
<b>23" with Large VCG, black</b> Kit includes: new vertical cable guide with integrated mounting holes	1.75" (4.45 cm)	FL2-23VCG0175-B
	3.5" (8.89 cm)	FL2-23VCG0350-B
	5.25" (13.34 cm)	FL2-23VCG0525-B
	7" (17.78 cm)	FL2-23VCG0700-B
	8.75" (22.23 cm)	FL2-23VCG0875-B
	10.5" (26.67 cm)	FL2-23VCG1050-B
	14" (35.56 cm)	FL2-23VCG1400-B
	17.5" (43.18 cm)	FL2-23VCG1750-B

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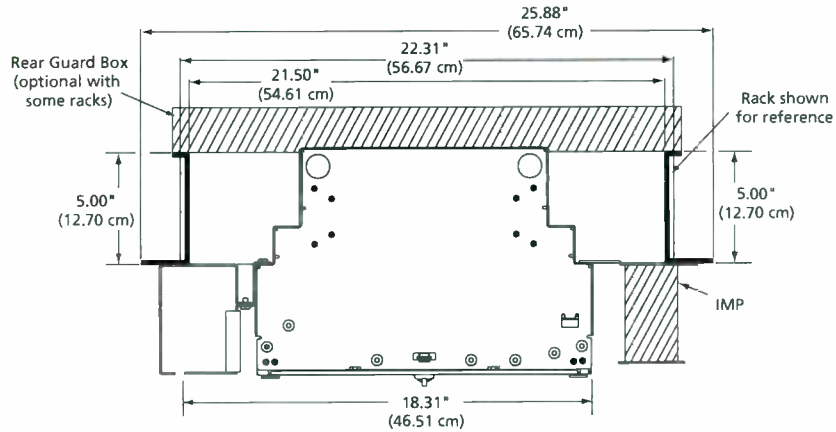


# FL2000 System

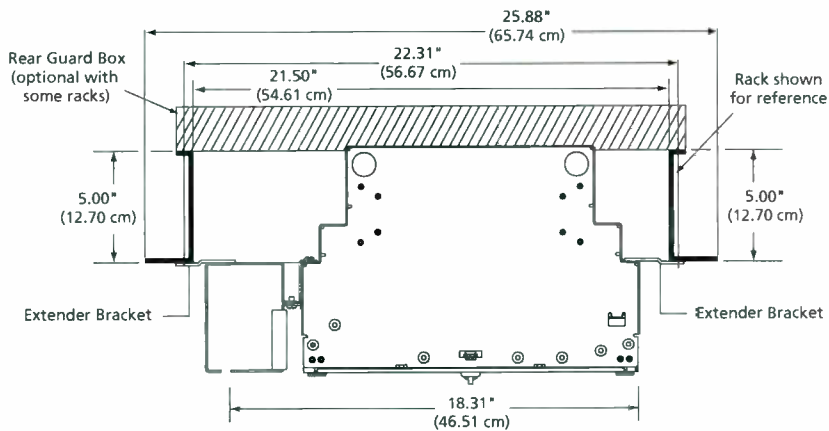
## Mounting Options – 23" (58.42 cm) Rack Mounting

### Inner IMP Mounting

Note: Standard mounting in a rack equipped with inner-IMP



### 23" (58.42 cm) Centered (Extender Bracket Mounting)



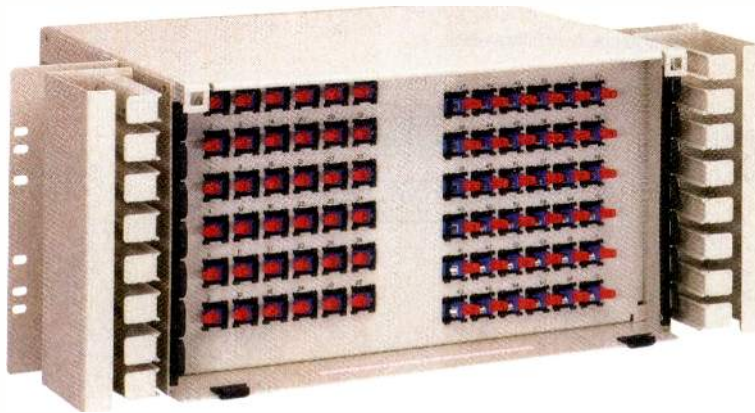
#### Ordering Information

Description	Panel Height	Ordering Number
<b>23" Rack Centered (with extender brackets)</b> This kit can be used with flush mount brackets (see page 149) to achieve 23" flush mounting, as well as 1", 2", or 4" recess mounting	1.75" (4.45 cm)	FL2-EB0175P-B
	3.5" (8.89 cm)	FL2-EB0350P-B
	5.25" (13.34 cm)	FL2-EB0525P-B
	7" (17.78 cm)	FL2-EB0700P-B
	8.75" (22.23 cm)	FL2-EB0875P-B
	10.5" (26.67 cm)	FL2-EB1050P-B
	14" (35.56 cm)	FL2-EB1400P-B
	17.5" (43.18 cm)	FL2-EB1750P-B



## FPL Series

Fiber Panels For Termination, Splice and Storage



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With a variety of fiber termination, splicing and storage solutions ADC's FPL Series fiber panels allow customers to optimize rack space and the dollars that go with it. The FPL panels combine the unique features of vertical cable guides and angle-left/angle-right adapters. This results in diverse cable routing options and a complete cable management solution. The panel's rear access splicing provides a high-density termination/splice solution maximizing rack space. And with a wide range of fiber capabilities and options, the panels are designed to meet growing network application needs.

ADC now introduces the 144-position High-Density Termination/Splice panel. The 144-position panel maintains all existing FPL panel capabilities – in the space of just five rack units (8.75").

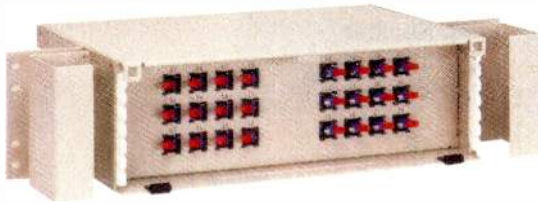
### Features

- Panels are equipped with adjustable mounting brackets to provide either 19" or 23" rack or cabinet mounting (EIA or WECO) as well as 4" or 5" recess mounting
- Available preterminated with pigtails to simplify ordering and reduce installation time
- ADC's patented removable angled retainers allow easy access for single fiber maintenance
- Vertical cable guides on either side of the panel provide bend radius protection and management of fibers exiting the panel
- Using an LC or ADC's LX.5\* connector will double the capacity of each panel

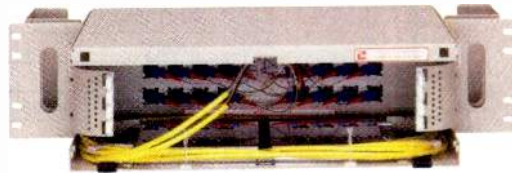


# FPL Series Fiber Panels

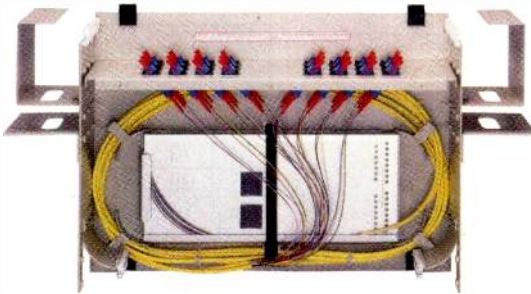
## Termination and Splice



Front View



Rear View



Top Cover Removed with Pigtail Routing Shown

### Features

- Available in 24, 48, 72, and 96 termination densities
- Provides termination and splice of pigtails as well as associated fiber/pigtail storage
- Rear splice area saves space by reducing panel height
- ADC recommends completely splicing all OSP/IFC cables during initial installation to maintain minimal disturbance of the interior of the panel
- Splice area provides up to a total of 7 meters of slack storage for pigtails and OSP/IFC buffer tubes
- Optional lock for both front and rear doors (available separately)
- Removable front polycarbonate door
- Designation labels included with each panel
- Mounting brackets included with panel may be flipped to accommodate 19" or 23" mounting and 4" or 5" recess
- Each panel includes 2 cable clamps

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3 / 0 4 • 1 1 8 0 2 7 0

Panel Size	Splice Tray Type	Number of Splice Trays included for a fully loaded panel
24	Single Height	2
48	Dual Height	2
72	Dual Height	3
96	Dual Height	4



# FPL Series Fiber Panels

## Termination and Splice

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**Ordering Number**  
FPL- R 0 - 0

Nominal Capacity		Dimensions Height
24	24-position	5.25" (3RU)
48	48-position	8.75" (5RU)
72	72-position	8.75" (5RU)
96	96-position	8.75" (5RU)

Adapters/Pigtails	
P	Stranded pigtails and adapters
R	Ribbon pigtails and adapters

Connector Style (Panel/Stub)	
<b>Multimode</b>	
9	SC
D	SC duplex
5	ST®
Y	LX.5®*
6	LC*
<b>Singlemode</b>	
2	FC
L	FC (zirconia adapter)
F	FC (8° angle polish)
7	SC
N	SC (zirconia adapter)
J	SC (8° angle polish)
E	SC duplex
4	ST®
P	ST® (zirconia adapter)
K	E-2000 (8° angle polish)
R	E-2000 (flat polish)
X	LX.5®*
8	LC*

Splice Type	
0	None or N/A
1	Bare fusion
2	Heat shrink fusion
3	Mechanical
4	Rotary
5	FibrLok®
7	Raychem Universal (RU)
8	Nortel
9	AFL

Number of Pigtailed Terminations	
12	12
24	24
36	36
48	48
72	72
96	96
144	144 (LX.5® and LC only)

\* LX.5® and LC are not available in 96-position panel

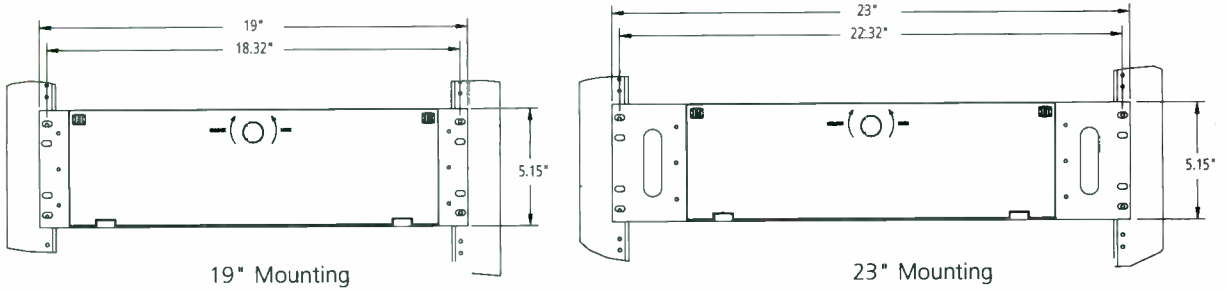




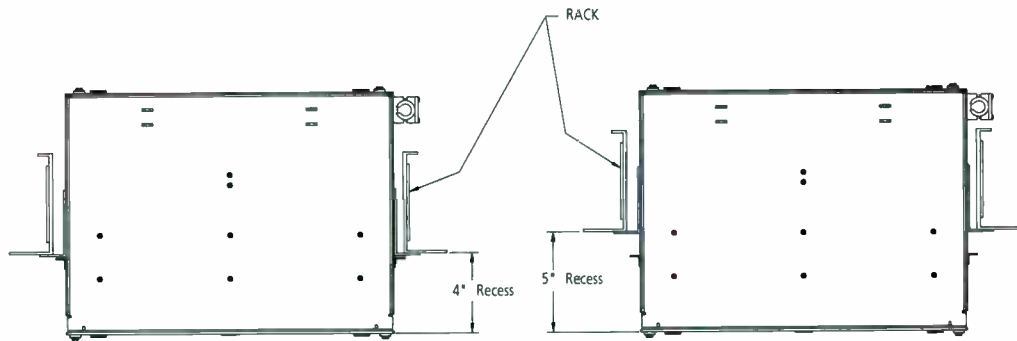
# FPL Series Fiber Panels

## Mounting Options for FPL Panels

The following mounting bracket options are available with all FPL panels except the single-drawer storage panels. (Vertical cable guides removed to show mounting brackets.)



Mounting brackets may be flipped to provide either 19" or 23" mounting.



Mounting brackets may be adjusted for 4" or 5" recess mounting.



# Fiber Management Tray

## Introduction

ADC's Fiber Management Trays provide a flexible, economical approach to handling your network's most vital elements by offering four different designs. Termination, termination/splicing, termination/storage, and slack storage designs are offered with ADC's modular, all-front-access design.

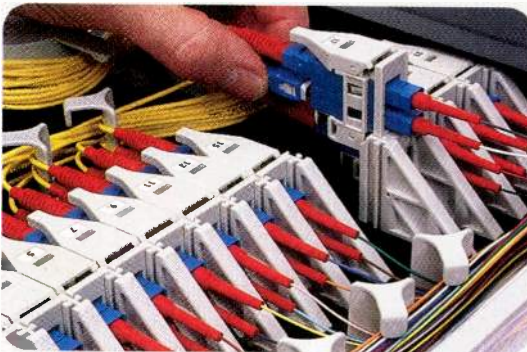
### Features:

#### All-Front-Access Design



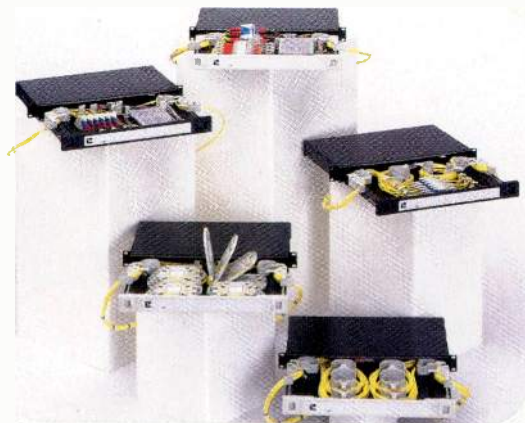
Sliding radius limiters provide ultimate fiber management by addressing one of the most critical elements of fiber cable management: bend radius protection.

By controlling the movement of fibers into the tray, error-proof slack loop management is maintained, ensuring 30 mm bend radius protection. This is crucial to protecting fiber, eliminating service failures and decreasing costs.



#### Sliding Adapter Packs

Sliding adapter packs allow easy access for connecting jumpers and cleaning connectors, ensuring that any fiber can be installed or removed without disturbing adjacent fibers. That can mean the difference between a network reconfiguration time of 20 minutes per fiber and one of over 90 minutes per fiber.



#### Modular Design

ADC's modular design offers the value of a single interface for performing multiple tasks in your network. By employing a one-rack-unit, modular tray, network technicians have familiar access to terminating, splicing, and storing fiber. This cable management approach translates to time and money saved, for moves, adds and changes.

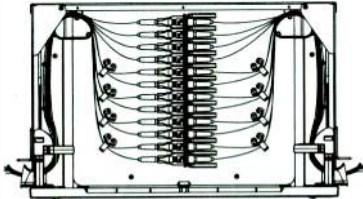
3.01 • 1.852.70 Broadcast Products



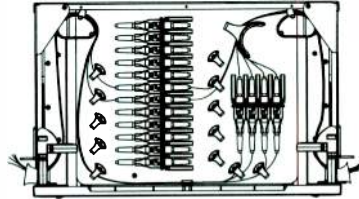
# Fiber Management Tray

## Termination Only

The termination only Fiber Management Tray provides termination for 24 or 32 fibers in an all-front-access design. This tray mounts in 19-inch, 23-inch, or ETSI racks, while sliding radius limiters provide cable management for incoming and outgoing fibers.



24-Termination Only



32-Termination Only

### Ordering Number

FMT-D 0 0A0 -

#### Drawer Configuration

RT	Termination only
----	------------------

#### Connector/Adapter Style

Multimode	
5	ST®
9	SC
Singlemode	
1	FC hybrid (FC connector on front; SC connector on back of bulkhead)
2	FC ultra polish
3	ST® hybrid (ST® connector on front; SC connector on back of bulkhead)
4	ST® ultra polish
7	SC ultra polish
F	FC angled polish
J	SC angled polish
K	E-2000 angled polish
L	FC with zirconia adapter
M	MTRJ feedthrough adapter
N	SC with zirconia adapter
P	ST® with zirconia adapter

#### Faceplate Color

B	Black
P	Putty

#### Number of Ports

24
32

#### Mounting Style

A	19" EIA 5" recess
C	19" EIA 2.2" recess
E	19" EIA 40 mm recess
F	ETSI 40 mm recess
S	23" WECCO 2.2" recess

#### Lock Type

0	No lock
1	Lock, key type 1
2	Lock, key type 2

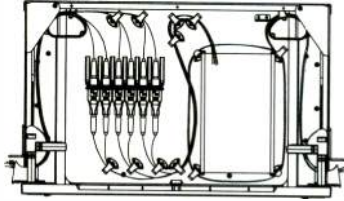
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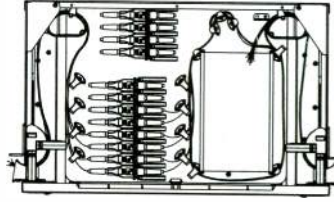
# Fiber Management Tray

## Termination and Splice

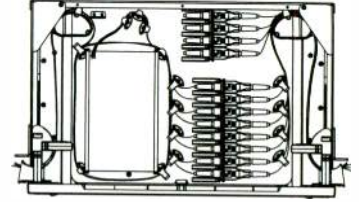
The termination and splice Fiber Management Tray accommodates 12, 16, or 24 fibers in an all-front-access design. This tray mounts in 19-inch, 23-inch, or ETSI racks, while sliding radius limiters provide cable management for incoming and outgoing fibers. Panels loaded with pigtailed come with 900 micron pigtailed, color coded with different colors.



12-Termination/Splice  
(right splice entry)



24-Termination/Splice  
(right splice entry)



24-Termination/Splice  
(left splice entry)



12-Termination/Splice  
(right splice entry)



24-Termination/Splice  
(right splice entry)

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### Ordering Number

FMT - D 0 0 -

#### Configuration

TL	Termination/splice with splice tray (left splice entry)
TR	Termination/splice with splice tray (right splice entry)

#### Connector/Adapter Style

Multimode	
5	ST®
9	SC
Singlemode	
1	FC hybrid (FC connector on front; SC connector on back of bulkhead)
2	FC ultra polish
3	ST® hybrid (ST® connector on front; SC connector on back of bulkhead)
4	ST® ultra polish
7	SC ultra polish
F	FC angled polish
J	SC angled polish
K	E-2000 angled polish
L	FC with zirconia adapter
N	SC with zirconia adapter
P	ST® with zirconia adapter

#### Cable or Adapter Type

A	Adapters only
K	Multimode pigtailed
U	Singlemode maxistrrip pigtailed

#### Faceplate Color

B	Black
P	Putty

#### Number of Ports

12
16
24

#### Mounting Style

A	19" EIA 5" recess
C	19" EIA 2.2" recess
E	19" EIA 40 mm recess
F	ETSI 40 mm recess
S	23" WECCO 2.2" recess

#### Lock Type

0	No lock
1	Lock, key type 1
2	Lock, key type 2

#### Chip Style (mini splice tray)

0	N/A
2	Heat shrink
3	Mechanical



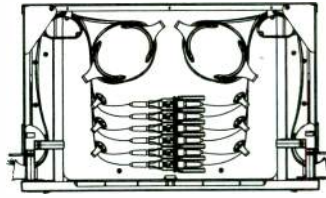
# Fiber Management Tray

## Termination and Storage

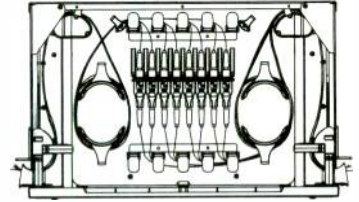
The termination and storage tray terminates and stores 12, 16, or 24 fibers in an all-front-access design. This tray mounts in 19-inch, 23-inch, or ETSI racks, while sliding radius limiters provide cable management for incoming and outgoing fibers.



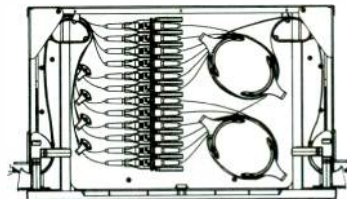
12-Termination/Storage  
(universal storage)



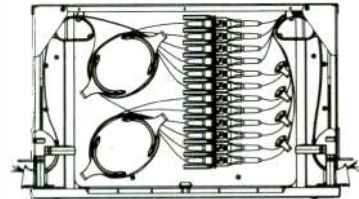
12-Termination/Storage  
(universal storage)



16-Termination/Storage  
(universal storage)



24-Termination/Storage  
(right storage)



24-Termination/Storage  
(left storage)

### Ordering Number

FMT-D 0 0A0 -

#### Configuration

SL	Termination/storage (left storage)
SR	Termination/storage (right storage)
ST	Termination/storage (universal storage)

#### Connector/Adapter Style

Multimode	
5	ST®
9	SC
Singlemode	
1	FC hybrid (FC connector on front; SC connector on back of bulkhead)
2	FC ultra polish
3	ST® hybrid (ST® connector on front; SC connector on back of bulkhead)
4	ST® ultra polish
7	SC ultra polish
F	FC angled polish
J	SC angled polish
K	E-2000 angled polish
L	FC with zirconia adapter
M	MTRJ feedthrough adapters
N	SC with zirconia adapter
P	ST® with zirconia adapter

#### Faceplate Color

B	Black
P	Putty

#### Number of Ports

12	Available with ST configuration only
16	Available with ST configuration only
24	Available with SR and SL configurations only

#### Mounting Style

A	19" EIA 5" recess
C	19" EIA 2.2" recess
E	19" EIA 40 mm recess
F	ETSI 40 mm recess
S	23" WECCO 2.2" recess

#### Lock Type

0	No lock
1	Lock, key type 1
2	Lock, key type 2

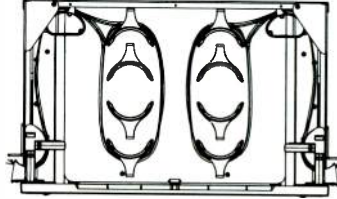


# Fiber Management Tray

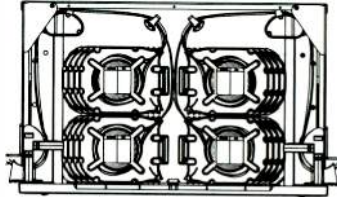
## Slack Storage Panels

The slack storage tray offers bulk storage for up to 60 fibers, and discrete slack storage for up to 16 fibers. This all-front-access tray mounts in 19-inch, 23-inch, or ETSI racks, while sliding radius limiters provide cable management for incoming and outgoing fibers.

### Bulk/Storage Drawer



### Discrete/Storage Drawer



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Slack storage type	Capacity		
	3 mm cable	2 mm cable	1.7 mm cable
Bulk	32 cables, 2.5 m each	48 cables, 2.5 m each	60 cables, 4 m each
Discrete	16 cables, 1.7 m each	16 cables, 2 m each	16 cables, 2.5 m each

### Ordering Number

FMT - D 0 0 0 00 - 00

#### Drawer Configuration

BS	Bulk storage
DS	Discrete storage

#### Lock Type

0	No lock
1	Lock, key type 1
2	Lock, key type 2

#### Faceplate Color

B	Black
P	Putty

#### Mounting Style

A	19" EIA 5" recess
C	19" EIA 50 mm recess
E	19" EIA 40 mm recess
F	ETSI 40 mm recess
S	23" WECO 2.2" recess



# Fiber Management Tray

## Specifications

### PHYSICAL

**Approximate Weight:**

8 lbs (3.7 kg)

**Configuration Options and Capacity:**

Termination only (24 or 32 fibers)

Termination/storage (12, 16, or 24 terminations)

Bulk Storage

3 mm outer diameter cable: 32 cables, length 2.5 m each

2 mm outer diameter cable: 48 cables, length 2.5 m each

1.7 mm outer diameter cable: 60 cables, length 4 m each

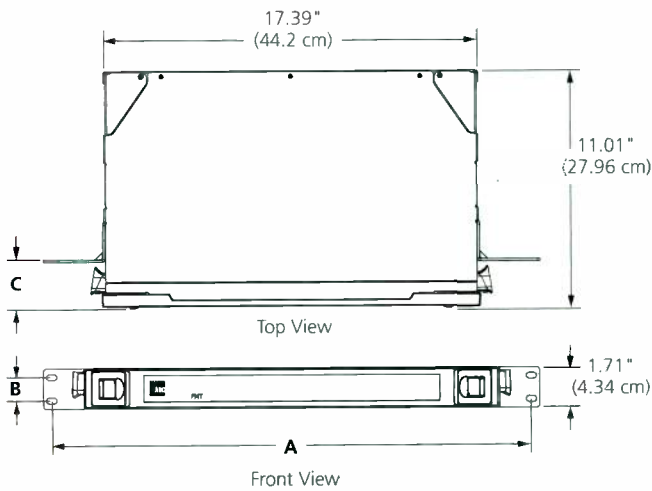
Discrete storage

3 mm outer diameter cable: 16 cables, length 1.7 m each

2 mm outer diameter cable: 16 cables, length 2 m each

1.7 mm outer diameter cable: 16 cables, length 2.5 m each

Termination/splicing (12, 16, or 24 splices)



Configuration	A	B	C
19" EIA (2.2" recess)	18.31" (46.5 cm)	1.25" (3.2 cm)	2.25" (5.7 cm)
19" EIA (40 mm recess)	18.31" (46.5 cm)	1.25" (3.2 cm)	1.54" (3.9 cm)
19" EIA (5" recess)	18.31" (46.5 cm)	1.25" (3.2 cm)	5.0" (12.7 cm)
ETSI (40 mm recess)	20.28" (51.5 cm)	0.98" (2.5 cm)	1.54" (3.9 cm)
23" WECO (2.2" recess)	22.31" (56.7 cm)	1.0" (2.5 cm)	2.25" (5.7 cm)
23" WECO (5" recess)	22.31" (56.7 cm)	1.0" (2.5 cm)	5.0" (12.7 cm)
23" EIA (2.2" recess)	22.31" (56.7 cm)	1.25" (3.2 cm)	2.25" (5.7 cm)
23" EIA (5" recess)	22.31" (56.7 cm)	1.25" (3.2 cm)	5.0" (12.7 cm)



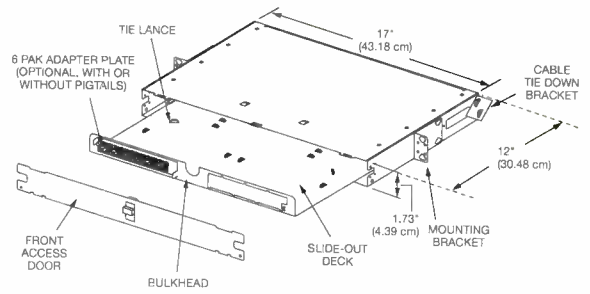
# FL1000 Fiber Termination Products

## Rack Mount

Limited floor space and smaller fiber counts often dictate that multiple pieces of communications apparatus share common equipment racks. The FL1000 is designed to be mounted within standard 19-inch or 23-inch EIA equipment racks. Standard flush mount capability also makes this panel well-suited to cabinet installations.

The left/right orientation of the individual angled adapters and retainers allows the easy exit of the jumpers from the panel. A removable rear door on the 24 termination panels allows efficient access the interior of the panel for the routing and termination of fiber cables. The 12 position panel is 1.75" high and features a sliding bulkhead drawer to accommodate easy access within the panel.

The FL1000 fanning panel, used in conjunction with the FL1000 rack mount panels and their left/right orientation, offers an effective and safe means of routing jumpers within a multi-use communications rack.



12-Position Rack Mount Panel



12-Position Rack Mount

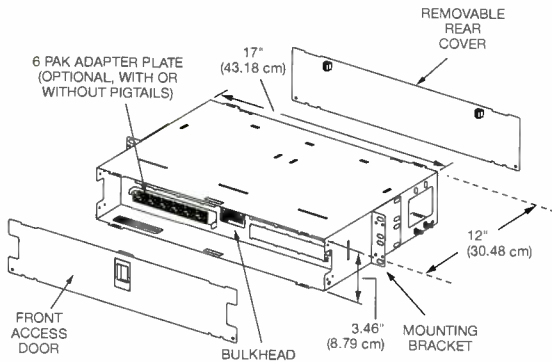


24-Position Rack Mount

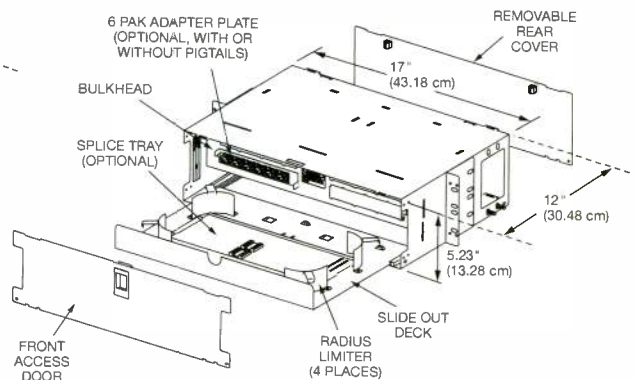


FL1-FPL

Designed to route optical cables left and right from the front of the FOT to the FL1000 6paks



24-Position Rack Mount Panel



24-Position Termination/  
Splice Rack Mount Panel

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3 / 0 4 • 1 1 8 0 2 7 0





# FL1000 Fiber Termination Products

## Ordering Information/Rack Mount Panels

### How to order

To order an FL1000 rack mount panel:

1. Select panel type
2. Select 6pak (with or without fiber) **not installed** in panel

OR

3. Select 6pak (with or without fiber) **installed** in panel
3. Select 6pak adapter type (if factory installed, choose placement in the panel)
4. Select splice tray with chip
5. Select number of cable clamps (0-9)
6. Select number of compression fittings (0-9)
7. Select number of bonding grounding kits (0-9)
8. Select number of radius limiters (0-9). Not used in flush mount applications.

FL1 - 1 2 3A 3B 3C 3D N N - 0 6 7 8

#### 1 Select Panel Type

##### Panel Type

D	12-position termination rack mount panel
E	24-position termination rack mount panel
F	24-position termination/splice rack mount panel

#### 2 6paks (with or without fiber) not installed into panel

1	Adapters with pigtails (2.0 mm x 3.0 m)
2	Adapters only
N	None/NA

OR

#### 2 6paks (with or without fiber) installed into panel

3	Adapters with pigtails pre-installed into panel (2.0 mm x 3.0 m)
4	Adapters pre-installed into panel

##### Rack Mount Front View



6pak placement ordering guide in panel is factory installed

#### 4 Select Splice Tray with Chip

1	Bare fusion
2	Heat shrink
3	Mechanical
4	Rotary
6	FibrLok®
7	Nortel QPAK
N	None/NA

Select number of each needed (0-9)

5, 6, 7, 8

##### Accessories

5	Cable clamp
6	Compression fittings
7	Bonding grounding kit
8	Radius limiters (set of two)

#### If selecting a splice tray:

- (1-2) 6paks: you will receive 1 splice tray
- (3-4) 6paks: you will receive 2 splice trays

#### 3 6pak Adapter/Connector Type Multimode (62.5/125)

9	SC
D	Duplex SC
5	ST®
A	FC
0	Blank plug-in
N	None/NA

OR

##### Singlemode

7	PCSC
E	Duplex PCSC
4	PCST
2	PCFC
R	PCSC-HP (zirconia sleeves)
C	Duplex PCSC-HP (zirconia sleeves)
P	PCST-HP (zirconia sleeves)
L	PCFC-HP (zirconia sleeves)
J	PCSC 8° angled polish
F	PCFC 8° angled polish
K	E-2000 8° angled polish
B	Duplex SC 8° angled polish
3	PCD4*
0	Blank plug-in
N	None/NA

\* = 3.0 mm x 3.0 m pigtails



# FL1000 Fiber Termination Products

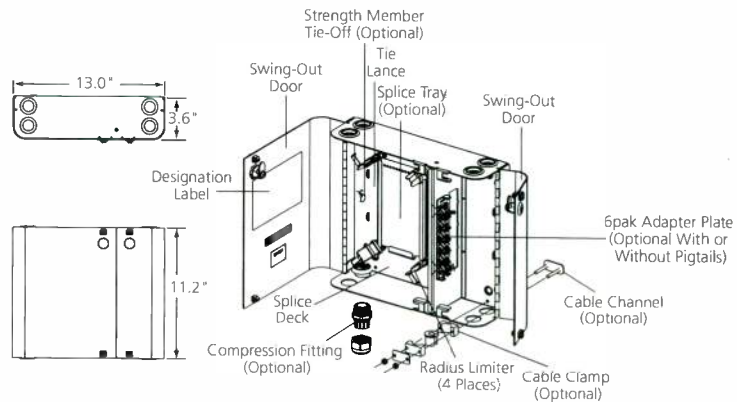
## Two-Door Wall-Mount Boxes

The FL1000 two-door, wall-mount boxes feature a unique design and many integrated features such as:

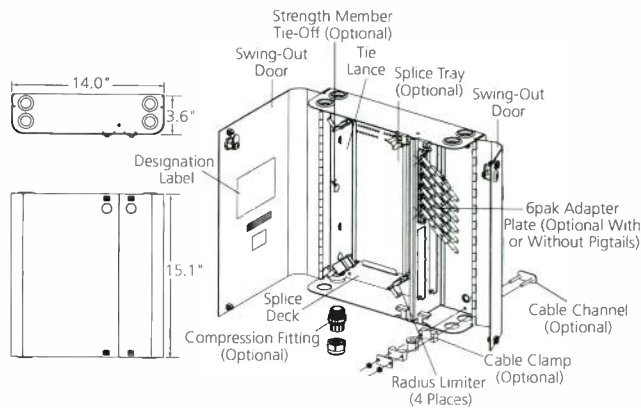
- Multiple, configurable locking options that allow users and service providers separate access for security
- Acceptance of strength member tie-off hardware
- Acceptance of cable clamps at each corner

Grounding screws, mounting screws, and dust caps are included with each panel. More accessories are available.

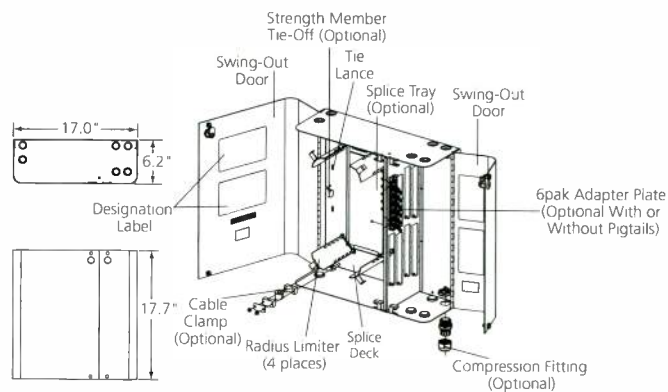
### 12-Position Termination/Splice Wall Box



### 24-Position Termination/Splice Wall Box



### 48-Position Termination/Splice Wall Box



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# FL1000 Fiber Termination Products

## Two-Door Ordering Information

Broadcast Products 3180270

### How to order an FL1000 two-door wall-mount box

1. Select wall box type
2. Select 6pak (with or without fiber) **not installed** in wall-mount box (recommended for quicker availability) **OR** Select 6pak (with or without fiber) **installed** in wall-mount box
3. Select 6pak adapter type (if factory installed, choose placement in the wall-mount box)
4. Select splice tray with chip
5. Select number of cable clamps (0-9)
6. Select number of compression fittings (0-9)
7. Select number of bonding grounding kits (0-9)
8. Select number of strength member tie-off kits (each wall box accepts 2, maximum) (0-9)
9. Select locks

**FL1-** 1 2 3A 3B 3C 3D 3E 4 5 6 7 8 9

#### Wall Box Type

G	2-door, 12-position termination/splice wall box
H	2-door, 24-position termination/splice wall box
J	2-door, 48-position termination/splice wall box

#### Multimode and Singlemode 6pak Adapter/Connector Type

0	Blank
N	None/NA

#### Singlemode

2	FC ultra polish
4	ST® ultra polish
7	SC ultra polish
B	SC Duplex
C	SC Duplex with zirconia sleeves
E	SC Duplex
F	FC angled polish
J	SC angled polish
K	E-2000 angled polish
L	FC with zirconia sleeves
P	ST® with zirconia sleeves
R	SC with zirconia sleeves
X	LX.5®
8	LC

#### Multimode

5	ST®
9	SC
A	FC
D	SC Duplex
Y	LX.5®
6	LC

#### Locks

A	Two A keys
B	Two B keys
C	One A key, one B key
D	One A key
E	One B key
N	None

Numerous locking options are available for separate user and service provider access. Choose the combination appropriate for your security needs.

#### 6paks not Installed into Wall Box (with or without Fiber)

1	Adapters with pigtails (2.0 mm x 3.0 m)
2	Adapters only
N	None/NA

**OR**

#### 6paks Installed into Wall Box (with or without Fiber)\*

3	Adapters with pigtails preinstalled into wall box (2.0 mm x 3.0 m)
4	Adapters preinstalled into wall box

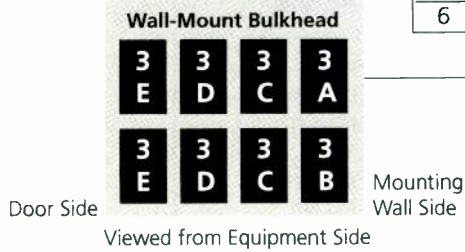
#### Accessories

5	Cable clamp
6	Compression fittings
7	Bonding grounding kit
8	Strength member tie-off

Enter the desired quantity (0-9) above the corresponding accessory.

#### Splice Tray with Chip

1	Bare fusion
2	Heat shrink fusion
3	Mechanical (elastomeric)
4	Rotary
6	FibrLok®
7	Nortel QPAK
N	None



\* Use the guide above for placement of factory-installed 6paks. Place the desired connector or adapter type (from guide above) above the corresponding location designation of 3A, 3B, 3C, 3D or 3E. The diagram illustrates the location of each 6pak within the bulkhead.

**Number of splice trays received depends on amount of 6paks used:**  
 (1-2) 6paks = 1 splice tray  
 (4) 6paks = 2 splice trays  
 (6) 6paks = 3 splice trays  
 (8) 6paks = 4 splice trays



# FL1000 Fiber Termination Products

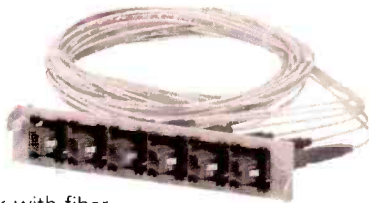
## 6pak Adapter Packs

Flexibility for future growth:

To add capacity to an existing FL1000 panel, simply order the appropriate 6pak.



6pak without fiber



6pak with fiber

### 6paks without fiber

Multimode (62.5/125)	Ordering Number
SC	FL2-6PMMSC
Duplex SC	FL2-6PMDSC
ST*	FL2-6PMMST
FC	FL2-6PMMFC
LX.5*	FL2-6PMLX
LC	FL2-6PMLC
<b>Singlemode</b>	
SC	FL2-6PSMSC
Duplex SC	FL2-6PSMDSC
ST*	FL2-6PSMST
FC	FL2-6PSMFC
SC (with zirconia sleeve)	FL2-6PSMSC-Z
Duplex SC (with zirconia sleeve)	FL2-6PSMDSC-Z
ST* (with zirconia sleeve)	FL2-6PSMST-Z
FC (with zirconia sleeve)	FL2-6PSMFC-Z
SC angled 8°	FL2-6PSMASC
FC angled 8°	FL2-6PSMAFC
E-2000 angled 8°	FL2-6PSMAE2
LX.5*	FL2-6PSMALX
LC	FL2-6PSMLC

### 6paks with fiber

Multimode (62.5/125)	Ordering Number
SC	FL1-6P9BC003
Duplex SC	FL1-6PDBC003
ST*	FL1-6P5BC003
FC	FL1-6PABC003
LX.5*	FL1-6PYBC003
LC	FL1-6P6BC003
<b>Singlemode</b>	
SC	FL1-6P7SC003
Duplex SC	FL1-6PESC003
ST*	FL1-6P4SC003
FC	FL1-6P2SC003
SC (with zirconia sleeve)	FL1-6PRSC003
Duplex SC (with zirconia sleeve)	FL1-6PSC003
ST* (with zirconia sleeve)	FL1-6PPSC003
FC (with zirconia sleeve)	FL1-6PLSC003
SC angled 8°	FL1-6PJSC003
FC angled 8°	FL1-6PFSC003
E-2000 angled 8°	FL1-6PKSC003
LX.5*	FL1-6PBC003
LC	FL1-6P8SC003

## Accessories

### Ordering Information

Description	Ordering Number
Compression fitting	FL1-ACC001
Radius limiters (set of 2 for use with rack mount panels)	FL1-ACC002
Strength member tie-off kit	FL1-ACC003
NEMA box access tool	ACE/AGX-KEY
Cable clamp	FL2-ACC007
Bonding grounding kit	FL2-ACC006
Lock and Key Type A	IPA-K1
Lock and Key Type B	IPA-K2
<b>Mini-splice trays</b>	
(used <b>only</b> in 12-position, wall mount box)	
Bare fusion	FL1-M-FT
Heat shrink fusion	FL1-M-HS
Rotary	FL1-M-RT
FibrLok®	FL1-M-3M
Northern Telecom QPAK	FL1-M-NT
<b>Standard splice trays</b>	
Bare fusion	FST-FT
Heat shrink fusion	FST-HS
Mechanical (Elastomeric)	FST-MT
Rotary	FST-RT
FibrLok®	FST-3M
Northern Telecom QPAK	FST-NT
Raychem universal chip	FST-RCM

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# FiberGuide® Fiber Management System

## Introduction

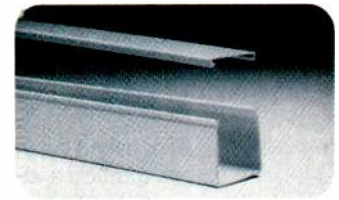
### The Industry's Most Comprehensive Optical Raceway System

ADC's FiberGuide® Fiber Cable Management System is a trough system designed to protect and route fiber optic patch cords, multifiber cable assemblies, and intrafacility fiber cable (IFC) to and from fiber splice enclosures, fiber distribution frames, and fiber optic terminal devices. The FiberGuide system is designed to ensure a 2-inch minimum bend radius is maintained throughout the system.

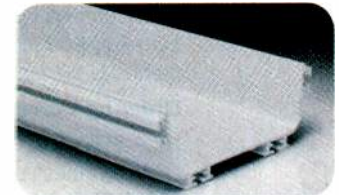
The FiberGuide system is a complete set of products designed and manufactured to ensure total off-frame protection. Basic components include horizontal and vertical straight sections, horizontal and vertical elbows, downspouts, junctions, and numerous support hardware and flex tube kits.

The FiberGuide system is available in a variety of sizes:

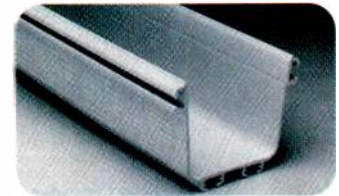
**2x2** — Ideal for smaller installations or for vertical routing into fiber bays. It has the trough capacity to support (400) 2 mm fiber optic patch cords. All 2x2 FiberGuide products are shipped with covers.



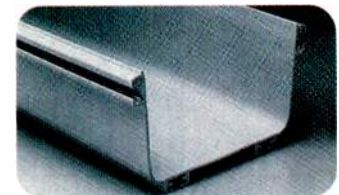
**2x6** — Designed for height-restricted environments, this robust system provides the same support and system flexibility of the traditional 4-inch-high system while saving 2 inches of overhead space. It features a maximum capacity of 1,200 2 mm patch cords.



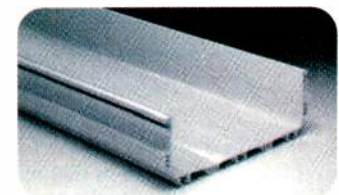
**4x4** — Features the maximum capacity to support 1,600, 2 mm patch cords. It has been engineered to allow straight sections to be self-supporting over a span of up to 6 feet (1.83 m).



**4x6** — Features the same benefits of the 4-inch system and a maximum trough capacity of 2,400 2 mm patch cords.



**4x12** — The largest system in the FiberGuide family, this 12-inch-wide trough has a maximum capacity to support nearly 5,000 2 mm patch cords. Perfect for runs over fibre frame lineups and perimeter routes.



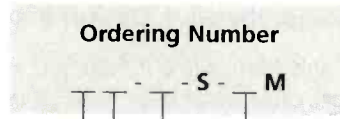
For complete ordering information, see ADC ordering guide 100569.



# Fiber Optic Patch Cords

Singlemode and Multimode

## Singlemode



### Cable Option

FPC	Connector on both ends (patch cord)
FPT	Connector on one end (pigtail)

### Cable Type

Leave Blank	3 mm single
M	2 mm single
F	1.7 mm single
9	900 micron
Z	3 mm dual zip
2	2 mm dual zip
T	1.7 mm dual zip

### Length

X Length in meters

### Connector Type<sup>1</sup>

SPSC	SC ultra polish
APSC	SC angled polish
SDSC	SC duplex <sup>2</sup>
SPFC	FC ultra polish
APFC	FC angled polish
SPST	ST <sup>®</sup> ultra polish
AE2	E-2000 angled polish
SPLX	LX.5 <sup>®</sup> ultra polish <sup>3</sup>
ALX5	LX.5 <sup>®</sup> angled polish <sup>3</sup>
SDLX	LX.5 <sup>®</sup> ultra polish duplex <sup>4</sup>
ADLX	LX.5 <sup>®</sup> angled polish duplex <sup>4</sup>
SPLC	LC ultra polish
SDLC	LC ultra polish duplex <sup>2</sup>

<sup>1</sup>For hybrid patch cords, enter both connector types in this field and separate them with a slash mark; remove "S" from the ultra polish connector options (see second ordering example).

<sup>2</sup>One connector per end; requires dual zip cable

<sup>3</sup>Requires 900 micron, 1.7 mm or 2 mm cable

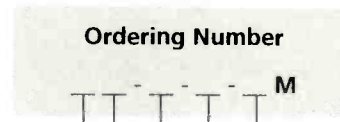
<sup>4</sup>Requires 1.7 mm or 2 mm dual zip cable

### Ordering Example

FPC2-SPFC-10M: Patch cord with ultra polish FC connectors on both ends, 2 mm dual zip cable, 10 meters in length with standard breakout length of 12" on both ends.

FPC-SPST/PSC-S-10M: Patch cord with ST<sup>®</sup> ultra polish connector on one end and SC ultra polish connector on the other end, 10 meters in length.

## Multimode



### Cable Option

FPC	Connector on both ends (patch cord)
FPT	Connector on one end (pigtail)

### Cable Type

Leave Blank	3 mm single
M	2 mm single
F	1.7 mm single
9	900 micron
Z	3 mm dual zip
2	2 mm dual zip
T	1.7 mm dual zip

### Length

X Length in meters

### Fiber Size

A	50/125
B	62.5/125

### Connector Type<sup>1</sup>

MSC	SC ultra polish
MDSC	SC duplex <sup>2</sup>
MFC	FC ultra polish
MST	ST <sup>®</sup> ultra polish
MLX5	LX.5 <sup>®</sup> ultra polish <sup>3</sup>
MDLX	LX.5 <sup>®</sup> duplex <sup>4</sup>
MLC	LC ultra polish
MDLC	LC duplex <sup>2</sup>

<sup>1</sup>For hybrid patch cords, enter both connector types in this field and separate them with a slash mark

<sup>2</sup>One connector per end; requires dual zip cable

<sup>3</sup>Requires 900 micron, 1.7 mm or 2 mm cable

<sup>4</sup>Requires 1.7 mm or 2 mm dual zip cable

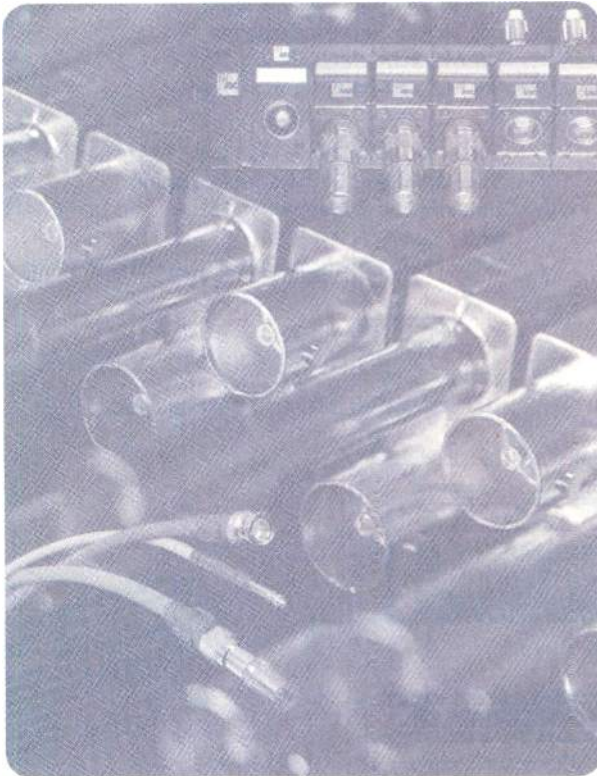
### Ordering Example

FPC-MST/MSC-B-7M: Patch cord with ST<sup>®</sup> ultra polish connector on one end and SC ultra polish connector on the other end, 62.5/125 fiber size, 7 meters in length.

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## Drawings and Specifications





# Drawings and Specifications

## ProPatch™ Programmable Series

### PPP1248 Chassis and AMI-BAN Module in all Chassis Configurations

#### ELECTRICAL

<b>Contact Resistance:</b>	0.020 Ohm maximum (initial) 0.020 Ohm maximum (after life cycling) 0.10 Ohm maximum (after salt spray)
<b>Insulation Resistance:</b>	10,000 megohms minimum (initial) 1,000 megohms minimum (after moisture resistance test)
<b>Dielectric Withstanding:</b>	Voltage: 500 Vac
<b>Contact Rating:</b>	Maximum: 100 mA + 130 Vdc; Minimum: -40 dBm

#### MECHANICAL

<b>Mechanical Shock:</b>	Per MIL-STD-202F, Method 213B, test condition H
<b>Vibration:</b>	MIL-STD-1344, Method 2005, test condition I
<b>Insertion Force:</b>	7 lbs. (3.17 kg) maximum
<b>Withdrawal Force:</b>	1.5 lbs. (.679 kg) minimum
<b>Life:</b>	20,000 insertion/withdrawal cycles minimum

#### ENVIRONMENTAL

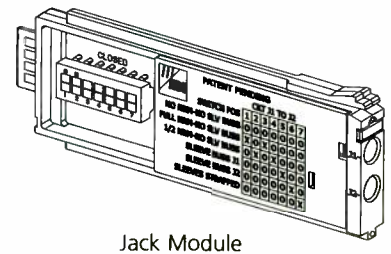
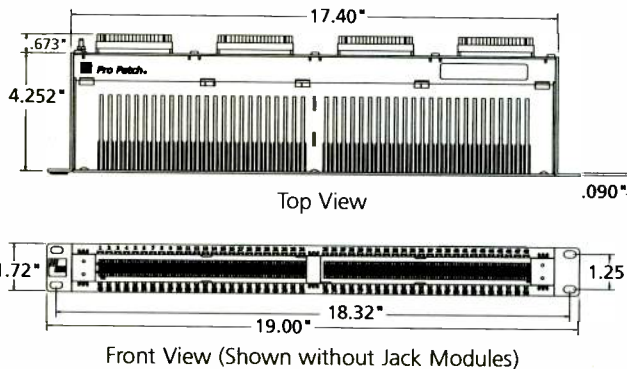
<b>Operating Temp:</b>	-40°C to 65°C
<b>Storage Temp:</b>	-55°C to 85°C
<b>Thermal Shock:</b>	Per MIL-STD-202F, Method 107G, test condition A
<b>Operating Humidity:</b>	0% to 95% (no condensation)
<b>Storage Humidity:</b>	0% to 95% (no condensation)
<b>Salt Spray:</b>	Per MIL-STD-202F, Method 101D
<b>Moisture Resistance:</b>	Per MIL-STD-202F, Method 106E

#### MATERIALS

<b>Chassis Frame:</b>	Steel, zinc plated with electroless nickel plating
<b>Bantam Frame:</b>	Steel with black zinc chromate plating
<b>Springs:</b>	Unreinforced polyetherimide resin rated UL 94-V0 for flammability
<b>Contacts:</b>	Nickel-silver
<b>PC Boards:</b>	WECO No. 1 gold crossbar alloy welded to springs
<b>Sockets:</b>	FR-4
<b>Switches:</b>	Phosper bronze
	30 micro inches gold on contact
	Copper alloy
	10 micro inches minimum gold on contact

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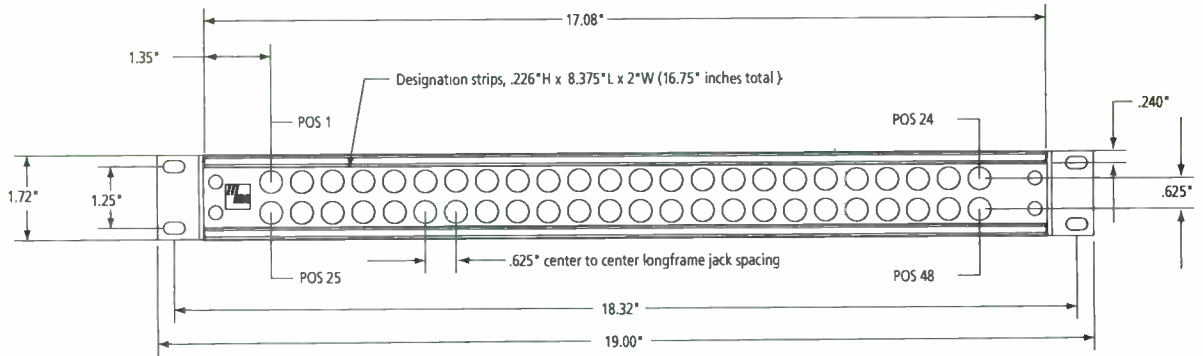




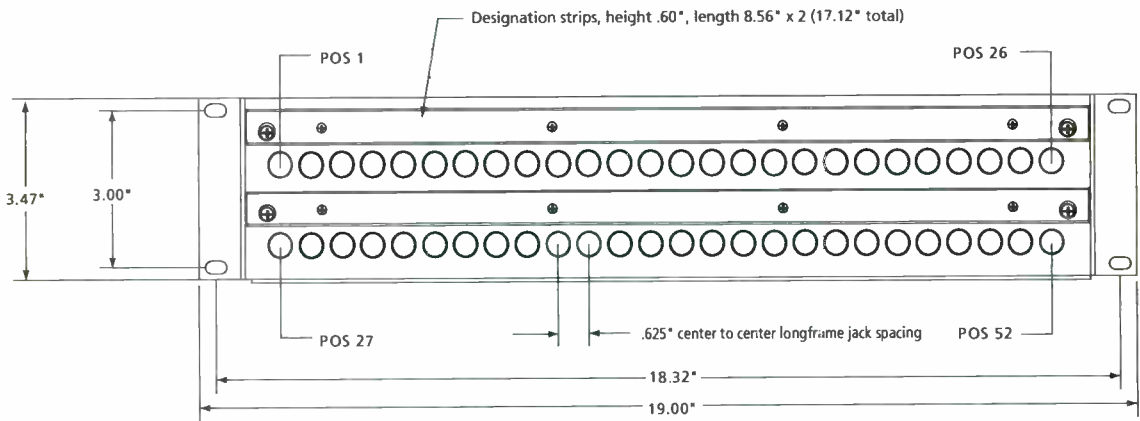
# Drawings and Specifications

## Longframe Audio Products

This section presents drawings and specifications for typical products. For additional information or for information about products not presented here, please see the ADC web site at [ADC.com](http://ADC.com) or consult our Technical Assistance Center.



Typical 1 RU 2x24 Longframe Audio Panel Dimensions

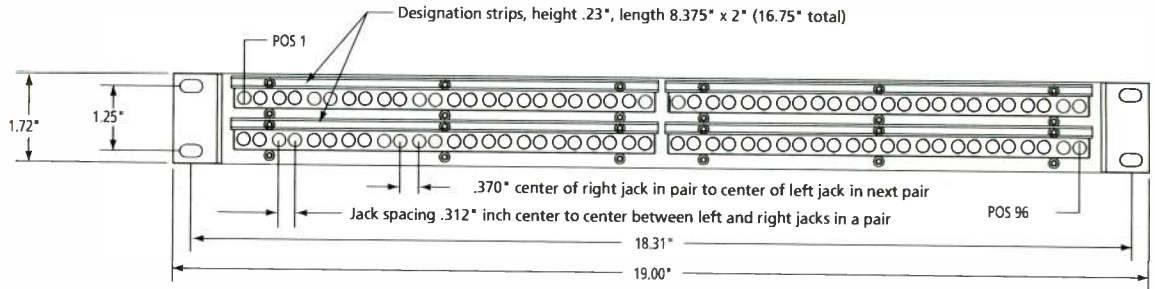


Typical 2 RU 2x26 Longframe Audio Panel Dimensions

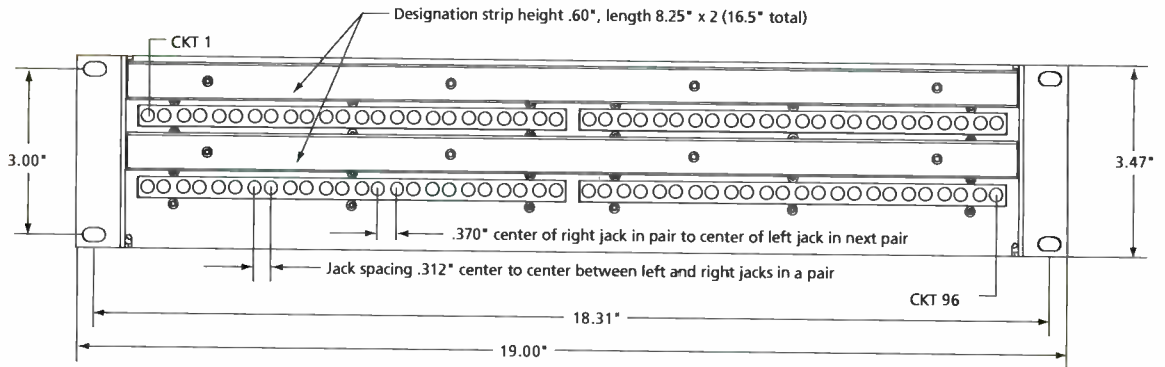


# Drawings and Specifications

## Bantam Audio Products



Typical 1 RU 2x48 Stereo Spaced Bantam Audio Panel Dimensions



Typical 2 RU 2x48 Stereo Spaced Bantam Audio Panel Dimensions

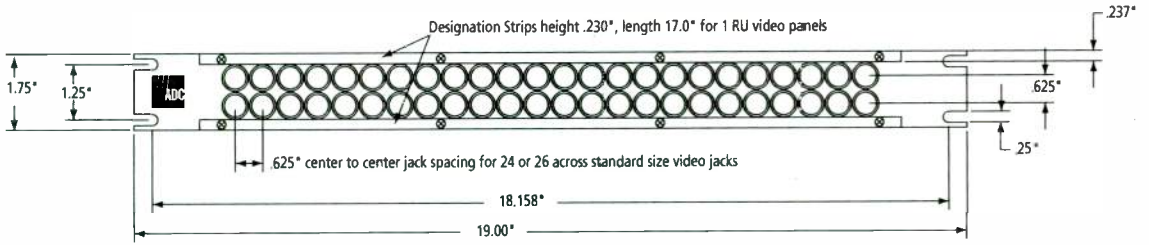
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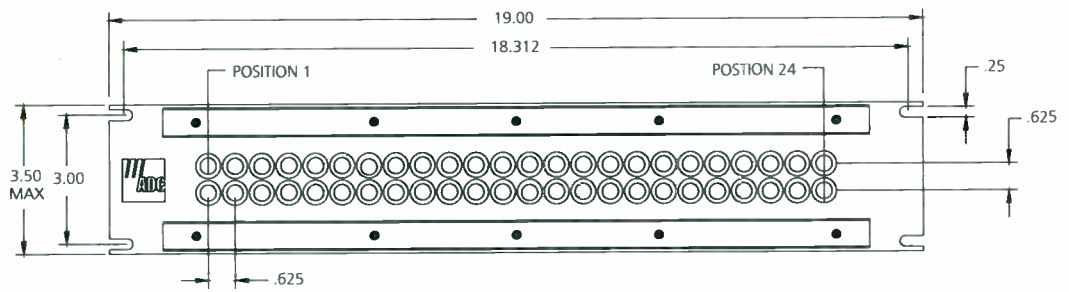


# Drawings and Specifications

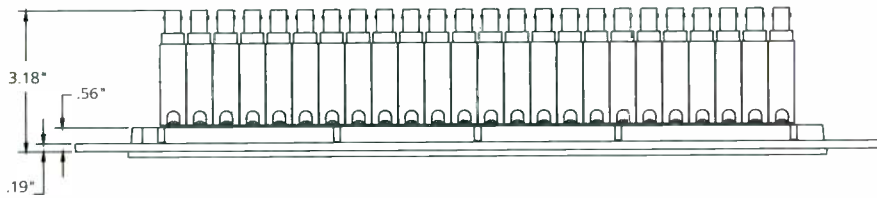
## Video Products



Typical 1 RU Series 2x24 Standard Size Video Panel Dimensions



Typical 2 RU Series 2x24 Standard Size Video Panel Dimensions



ASI Top View

Typical 2 RU Series 2x24 Standard Size Video Panel Dimensions

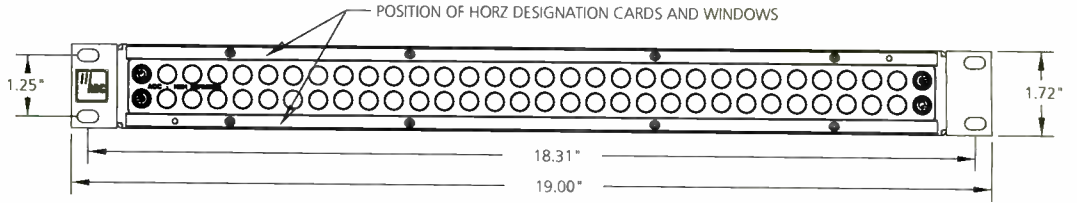
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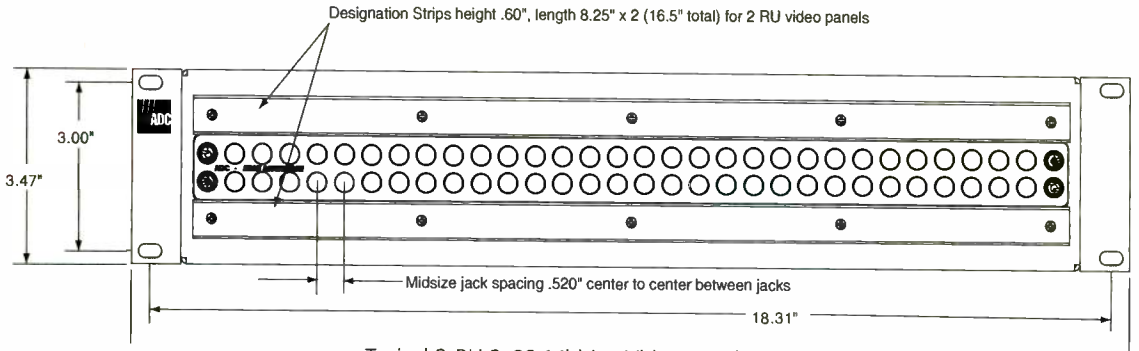


# Drawings and Specifications

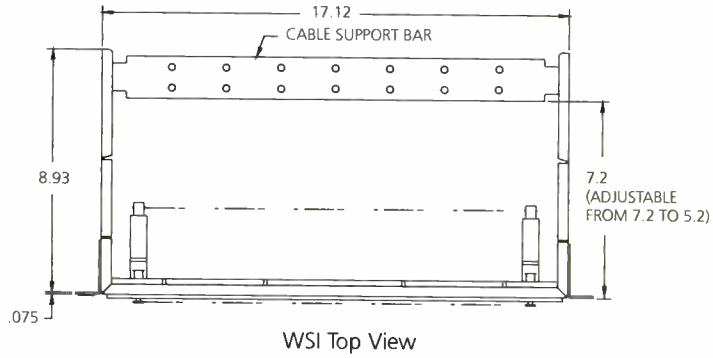
## Video Products



Typical 1 RU 2x32 Midsize Video Panel Dimensions



Typical 2 RU 2x32 Midsize Video Panel Dimensions



WSI Top View

Typical 2 RU Series 2x32 Midsize Video Panel Dimensions

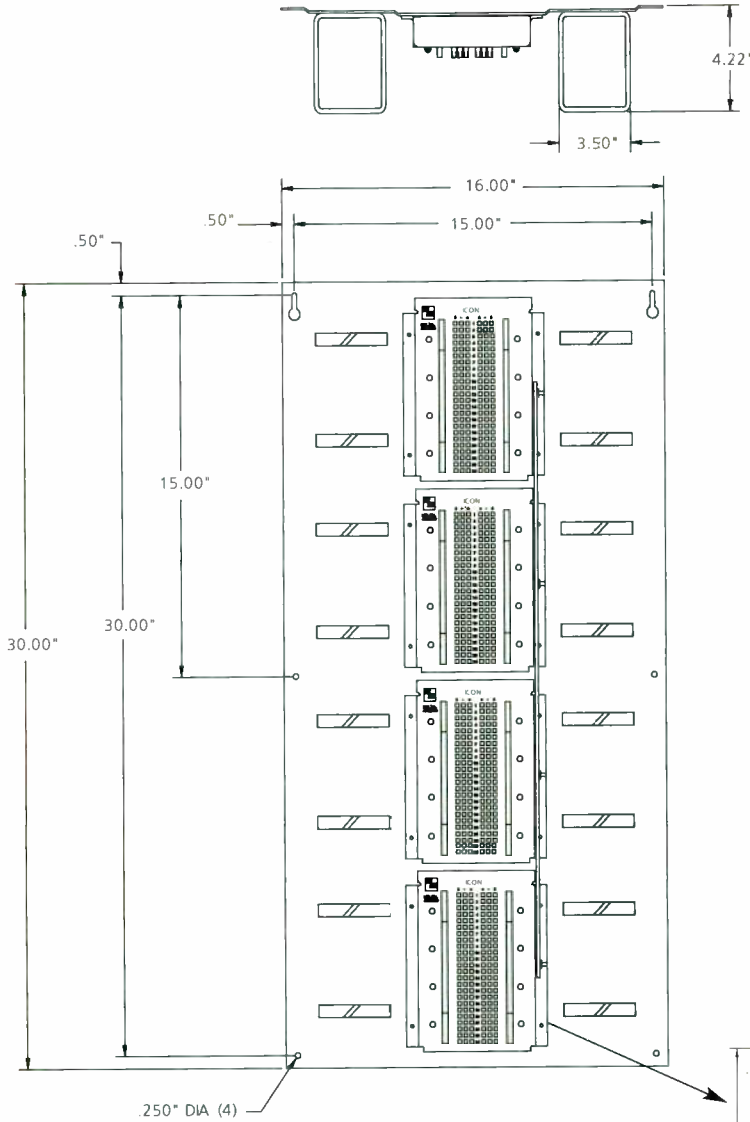
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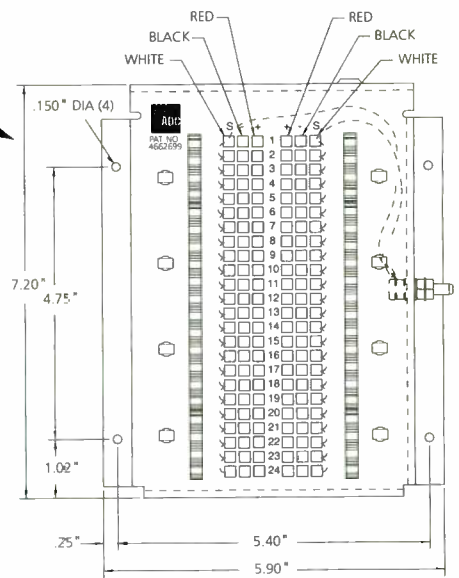
# Drawings and Specifications

ICON Audio Products

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ICON I-WA-MKII Audio Wall-Mount Frame Dimensions



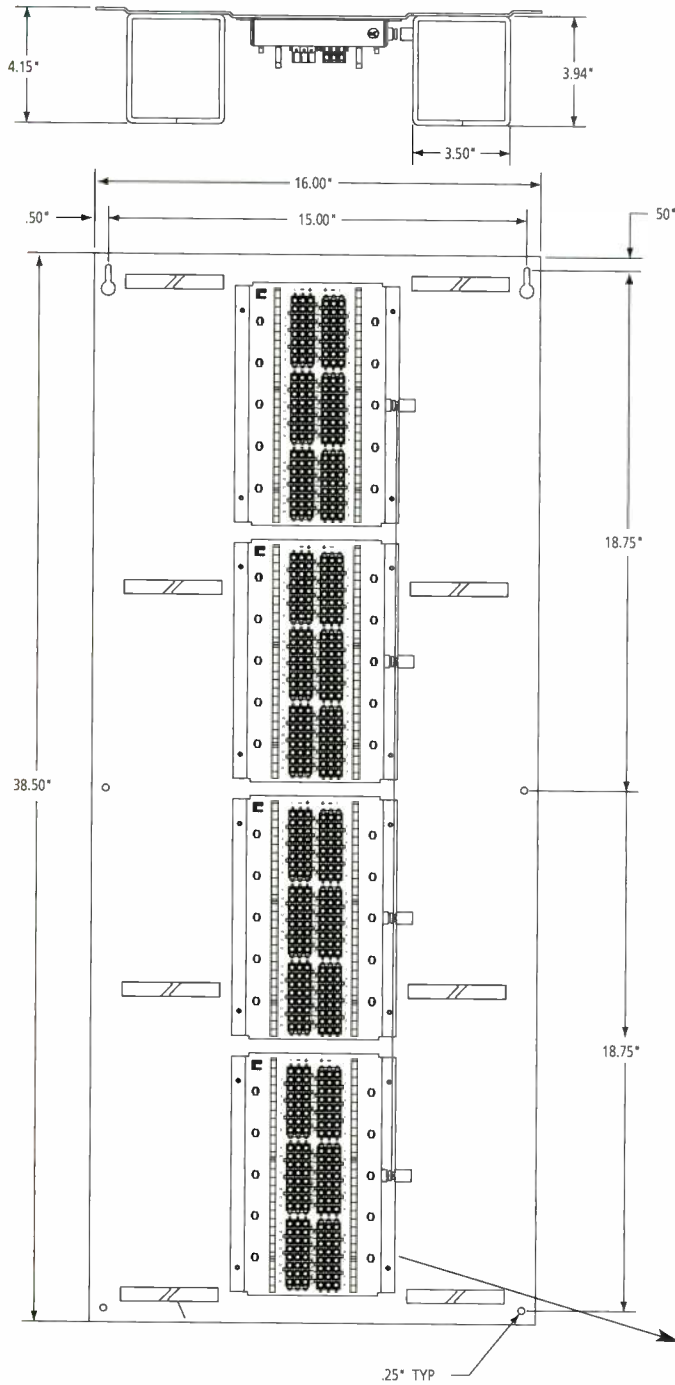
I-24-MKII



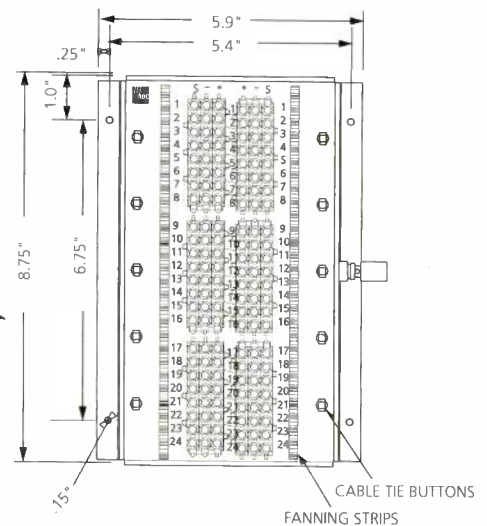
# Drawings and Specifications

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ICON I-WA-MKIV Wall Mount Audio Frame Dimensions



I-24-MKIV

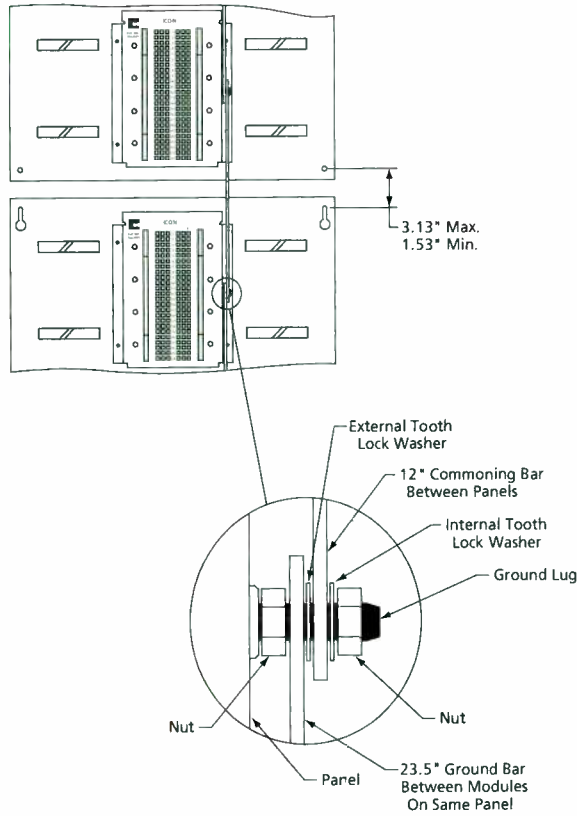


# Drawings and Specifications

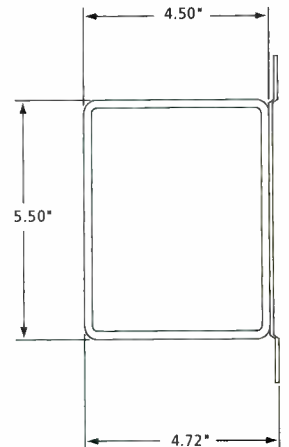
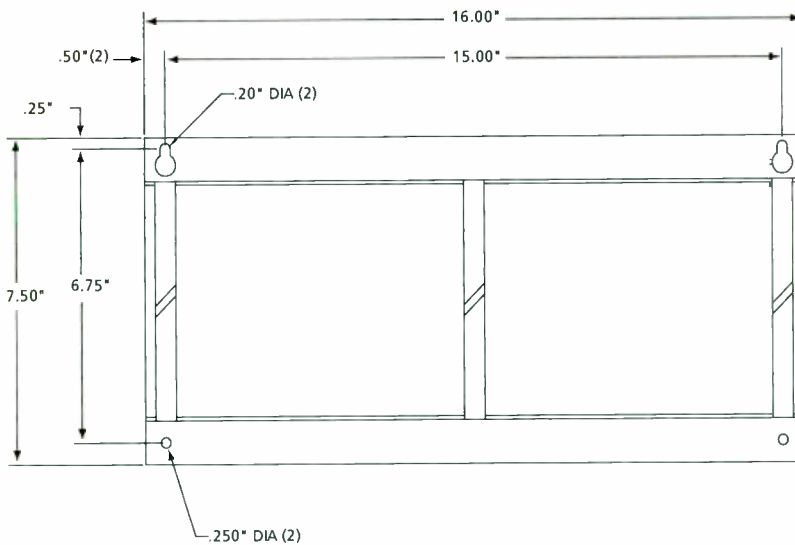
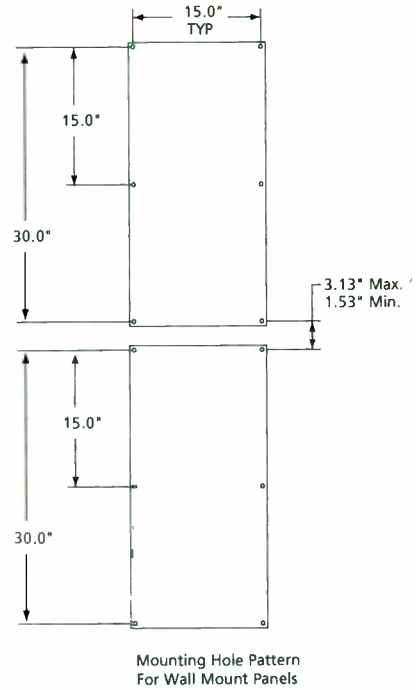
## ICON Audio Products

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I-WA Mounting Details



ICON I-WFP Fanning Panel Dimensions

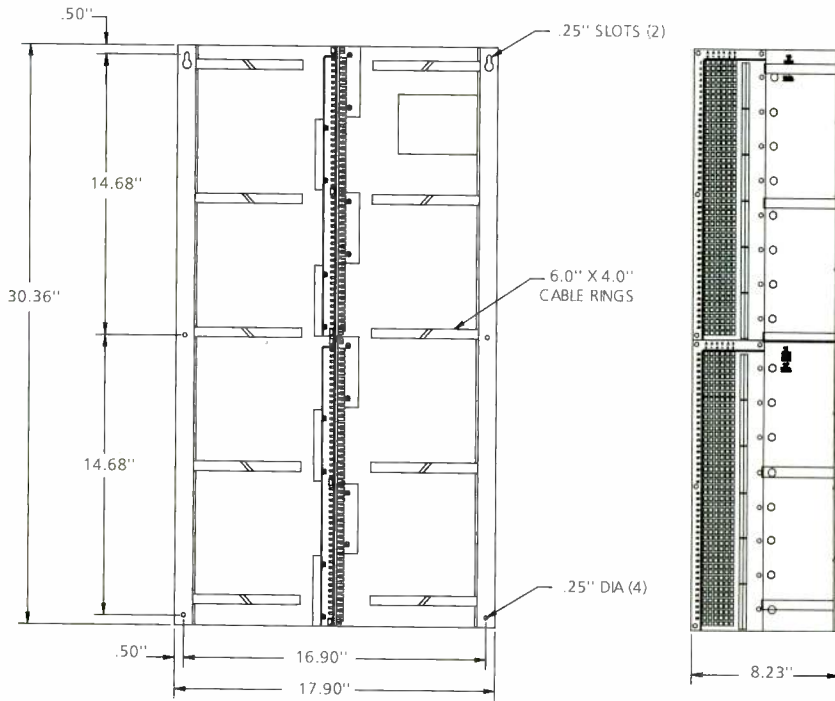


# Drawings and Specifications

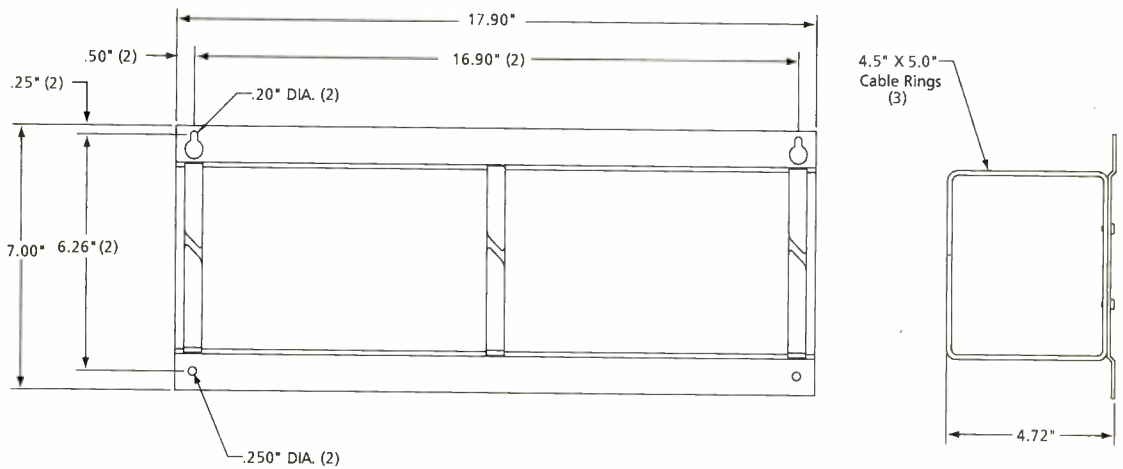
## ICON Audio Products

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ICON I-WS-MKII Wall-Mount Audio Panel Dimensions



ICON I-WSET Express Trough Dimensions

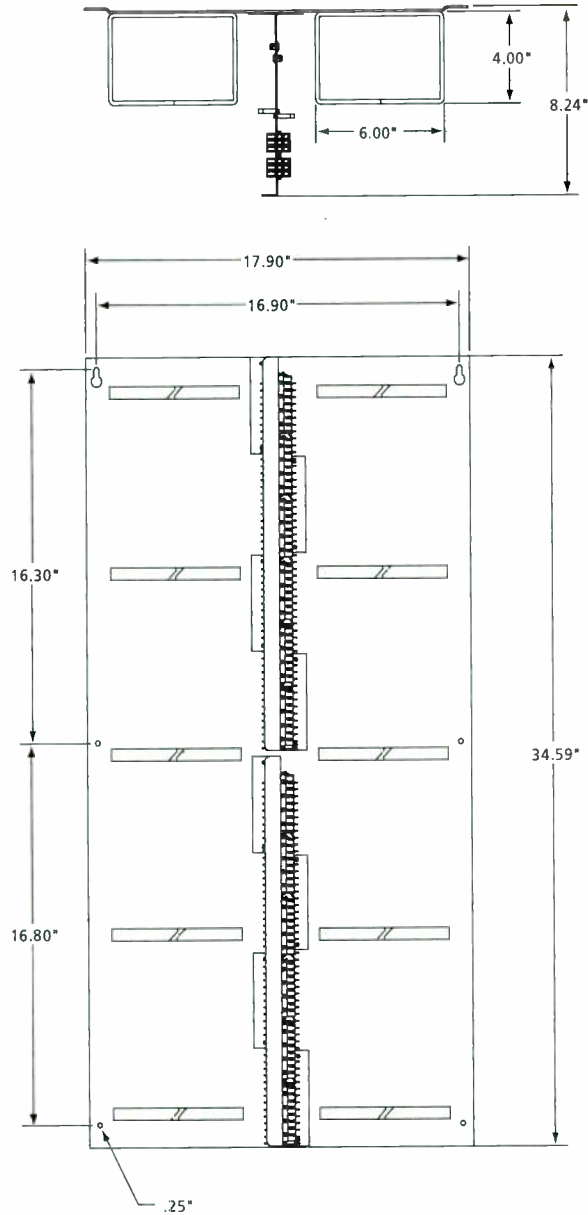




# Drawings and Specifications

ICON Audio Products

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ICON I-WS-MKIV Wall-Mount Audio Frame Dimensions



# Drawings and Specifications

## Component Audio Products

### PJ339 and PJ482 Longframe Audio Jack Specifications

#### ELECTRICAL

<b>Contact Resistance:</b>	0.020 Ohm maximum (initial) 0.020 Ohm maximum (after life cycling) 0.10 Ohm maximum (after salt spray)
<b>Insulation Resistance:</b>	10,000 megohms minimum (initial) 1,000 megohms minimum (after moisture resistance test)
<b>Dielectric Withstanding:</b>	Voltage: 500 Vac
<b>Contact Rating:</b>	Maximum: 100 mA + 130 Vdc; Minimum: -40 dBm

#### MECHANICAL

<b>Mechanical Shock:</b>	Per MIL-STD-202F, Method 213B, test condition H
<b>Vibration:</b>	MIL-STD-1344, Method 2005, test condition I
<b>Insertion Force:</b>	7 lbs. (3.17 kg) maximum
<b>Withdrawal Force:</b>	1.5 lbs. (.679 kg) minimum
<b>Life:</b>	20,000 insertion/withdrawal cycles minimum

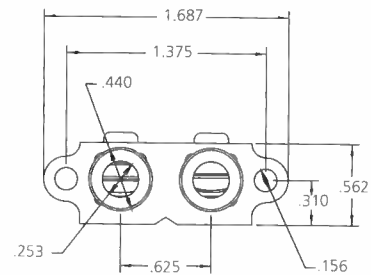
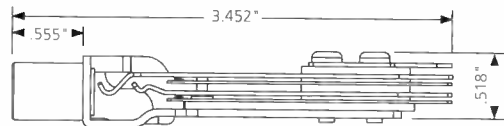
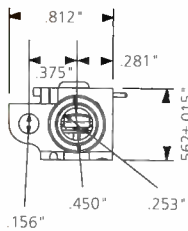
#### ENVIRONMENTAL

<b>Operating Temp:</b>	-40°C to 65°C
<b>Storage Temp:</b>	-55°C to 85°C
<b>Thermal Shock:</b>	Per MIL-STD-202F, Method 107G, test condition A
<b>Operating Humidity:</b>	0% to 95% (no condensation)
<b>Storage Humidity:</b>	0% to 95% (no condensation)
<b>Salt Spray:</b>	Per MIL-STD-202F, Method 101D
<b>Moisture Resistance:</b>	Per MIL-STD-202F, Method 106E

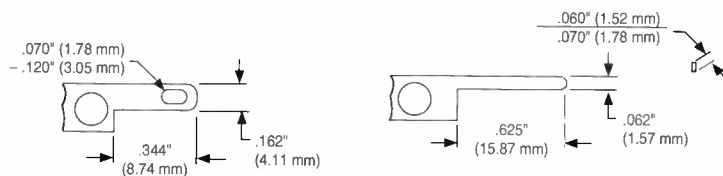
#### MATERIALS

<b>Frame:</b>	Steel, zinc plated with electroless nickel plating
<b>Sleeve:</b>	Brass, nickel plated
<b>Insulators:</b>	Unreinforced polyetherimide resin rated UL 94-V0 for flammability
<b>Springs:</b>	Nickel-silver
<b>Contacts:</b>	WECO No. 1 gold crossbar alloy welded to springs
<b>Solder Lugs:</b>	Hot tin dipped

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PJ482



Single Longframe Audio Jack

# Drawings and Specifications

## Component Audio Products

### PJ839 and PJ889 Bantam Audio Jack Specifications

#### ELECTRICAL

<b>Contact Resistance:</b>	0.020 Ohm maximum (initial) 0.020 Ohm maximum (after life cycling) 0.10 Ohm maximum (after salt spray)
<b>Insulation Resistance:</b>	10,000 megohms minimum (initial) 1,000 megohms minimum (after moisture resistance test)

#### Dielectric Withstanding:

<b>Voltage:</b>	500V RMS
<b>Contact Rating:</b>	Maximum: 100 mA ± 130 Vdc; Minimum: -40 dBm

#### MECHANICAL

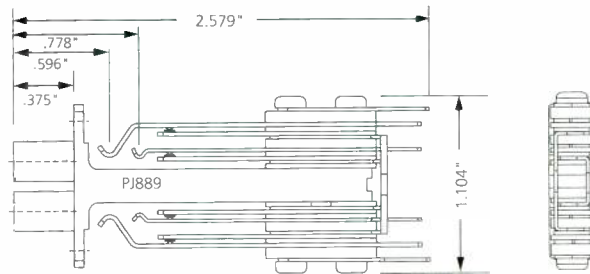
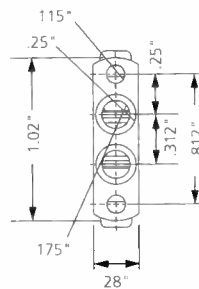
<b>Mechanical Shock:</b>	Per MIL-STD-202F, Method 213B, test condition H
<b>Vibration:</b>	MIL-STD-1344, Method 2005, test condition I
<b>Insertion Force:</b>	7 lbs. (3.17 kg) maximum
<b>Withdrawal Force:</b>	1.5 lbs. (.679 Kg) minimum
<b>Life:</b>	20,000 insertion/withdrawal cycles minimum

#### ENVIRONMENTAL

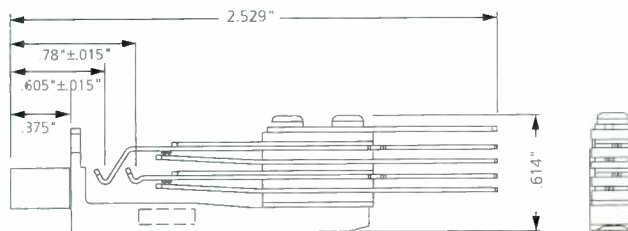
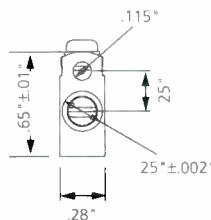
<b>Operating Temp:</b>	-40°C to 65°C
<b>Storage Temp:</b>	-55°C to 85°C
<b>Thermal Shock:</b>	Per MIL-STD-202F, Method 107G, test condition A
<b>Operating Humidity:</b>	0% to 95%, non-condensing
<b>Storage Humidity:</b>	0% to 95%, non-condensing
<b>Salt Spray:</b>	Per MIL-STD-202F, Method 101D
<b>Moisture Resistance:</b>	Per MIL-STD-202F, Method 106E

#### MATERIALS

<b>Frame:</b>	Zinc die-cast zinc plated with electroless nickel plating
<b>Insulators:</b>	Unreinforced polyetherimide resin rated UL 94-V0 for flammability
<b>Springs:</b>	Nickel-Silver alloy
<b>Contacts:</b>	WECO No. 1 gold crossbar alloy welded to springs



Three-Conductor Dual Bantam Jack



Three-Conductor Single Bantam Jack

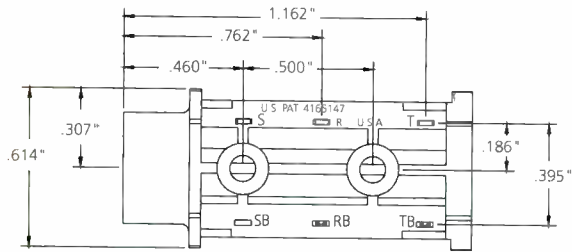
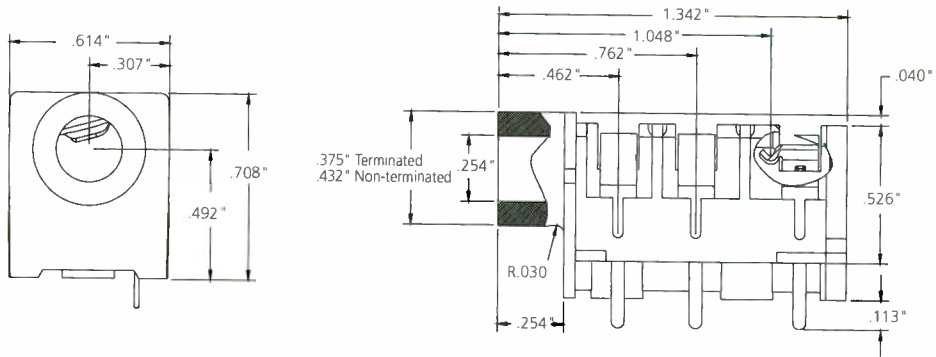


# Drawings and Specifications

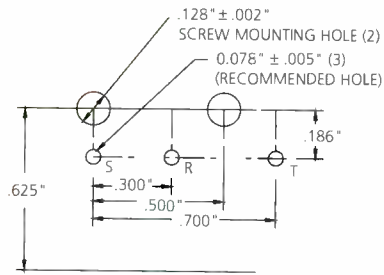
## Component Audio Products

Broadcast Products

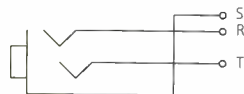
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AJ238/AJ339

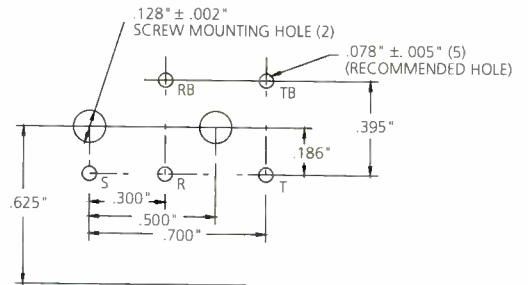


PC BOARD DRILL GUIDE  
AS SEEN FROM COMPONENT  
SIDE OF BOARD

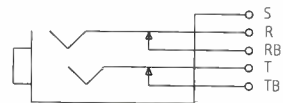


REFERENCE SCHEMATIC

AJ238



PC BOARD DRILL GUIDE  
AS SEEN FROM COMPONENT  
SIDE OF BOARD



REFERENCE SCHEMATIC

AJ339

# Drawings and Specifications

## Video Products

### CJ2011 and CJ2020N-75 (terminated) Standard Size Coaxial Video Jack Specifications

#### ELECTRICAL

<b>Characteristic Impedance:</b>	62.5 Ohm nominal
<b>Return Loss:</b>	> -20 dB; 1 MHz to 2 GHz
<b>Contact Resistance:</b>	0.030 Ohm maximum change post environment

#### MECHANICAL

<b>Mechanical Shock:</b>	Per MIL-STD-202, Method 213
<b>Vibration:</b>	Per MIL-STD-202, Method 201
<b>Insertion Force:</b>	7 lbs. (3.17 kg) minimum
<b>Withdrawal Force:</b>	1.5 lbs. (0.675 kg) minimum
<b>Life:</b>	10,000 insertion/withdrawal cycles minimum

#### ENVIRONMENTAL

<b>Operating Temperature:</b>	-40°C to +65°C
<b>Non-operating Temperature:</b>	-55°C to +85°C non-operating
<b>Thermal Shock:</b>	Per MIL-STD-202, Method 107
<b>Humidity:</b>	0% to 95% non-condensing, operating and non-operating
<b>Salt Spray:</b>	Per MIL-STD-202, Method 101
<b>Moisture Resistance:</b>	Per MIL-STD-202, Method 106

#### MATERIAL

**Jack Sleeve & Frame:** Brass per ASTM B16 with electro-deposited nickel plating per QQ-N-290 or electro-deposited gold plating per MIL-G-45204

#### Center Conductors

**.090" (.23 cm):** Beryllium copper per QQ-C-533 with electro-deposited gold plating per MIL-G-45204 on contact areas only

#### Outer Conductor Contacts:

Phosphor bronze QQ-B-746 with electro-deposited gold plating per MIL-G-45204 or electro-deposited nickel plating per QQ-N-290

#### Insulators:

Rated UL 94V-0 for flammability

#### Crimping Sleeves:

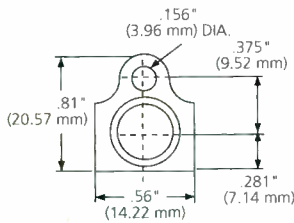
Brass per ASTM B16 with tin plating per MIL-T-10727

#### INTERFACE DIMENSIONS:

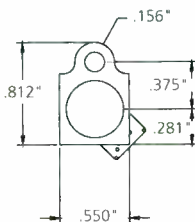
Outer diameter of mating plugs must be .375" (.95 cm) with pin diameter of .090" (.23 cm) or .070" (.18 cm)

#### MOUNTING INFORMATION:

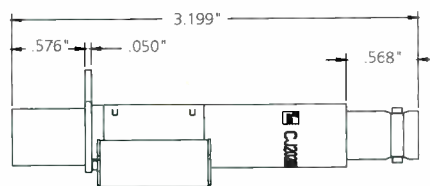
All jacks are supplied with 6-32, 5/16" Phillips head screws



CJ2011



CJ2020-N75



Dimensions for CJ2020N-75 and CJ2011N (except CJ2011N has no termination can)





# Drawings and Specifications

## Video Products

### SVJ-2x Standard Size Video Super Jack Specifications

The SVJ-2x family is rated to handle digital video data rates up to and including uncompressed HDTV SMPTE 292M 1.485 Gbps.

#### ELECTRICAL

<b>Rated Bandwidth:</b>	2.4 GHz
<b>Return Loss:</b>	Better than -20 dB to 2.4 GHz
<b>Characteristic Impedance:</b>	75 Ohm
<b>Insertion Loss:</b>	<.5 dB Loss to 2.4 GHz
<b>Center Conductor Diameter:</b>	Accepts .09 center conductor
<b>Contact Resistance:</b>	Less than 20 milliohms
<b>Termination Resistor:</b>	75 Ohm, $\pm 1\%$

#### MECHANICAL

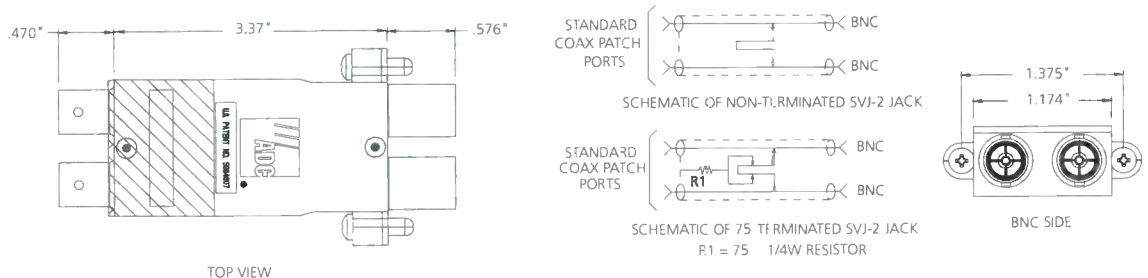
<b>Mechanical Shock:</b>	Per MIL-STD-202, Method 213 Test condition G
<b>Vibration:</b>	Per MIL-STD-202, Method 201
<b>Insertion Force:</b>	12 lbs. maximum
<b>Withdrawal Force:</b>	3 lbs. minimum
<b>Life Cycles:</b>	20,000 insertion/withdrawal cycles minimum

#### MATERIAL

<b>Body and Cover:</b>	Zinc diecast per ASTM B86
<b>Front and Rear</b>	
<b>Center Conductors:</b>	Phosphor Bronze per ASTM B139
<b>Insulators:</b>	Polyetherimide resin rated UL 94V-0
<b>Switching Springs:</b>	Beryllium Copper per ASTM B196

#### ENVIRONMENTAL

<b>Temperature</b>	
<b>Operating:</b>	-40°C to 65°C
<b>Storage:</b>	-55°C to 85°C
<b>Thermal Shock:</b>	Per MIL-STD-202, Method 107
<b>Humidity</b>	
<b>Operating:</b>	0% to 95%, non-condensing
<b>Storage:</b>	0% to 95%, non-condensing
<b>Salt Spray:</b>	Per MIL-STD-202, Method 101
<b>Moisture Resistance:</b>	Per MIL-STD-202, Method 106
<b>Dust Resistance:</b>	Per MIL-STD-202, Method 110A



SVJ-2x Standard Size Video Super Jack

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# Drawings and Specifications

## Video Products

### CJ Series Midsize Single Coaxial Jacks to BNC Specifications

The SJ2000 family is rated to handle analog and digital video data rates up to and including 360 Mbps.

#### ELECTRICAL

<b>Characteristic Impedance:</b>	75 Ohms nominal
<b>Return Loss:</b>	> 19 dB; 300 KHz to 2.4 GHz
<b>Contact Resistance:</b>	10 milliohms typical
<b>Termination Resistance (3014N-75/4014N-75):</b>	75 Ohms commercial, 1/8 watt 5%

#### MECHANICAL

<b>Mechanical Shock:</b>	Per MIL-STD-202, Method 213
<b>Vibration:</b>	Per MIL-STD-202, Method 201
<b>Insertion Force:</b>	7 lbs. maximum
<b>Withdrawal Force:</b>	1.5 lbs. minimum

#### ENVIRONMENTAL

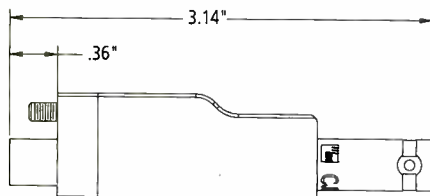
<b>Operating Temp:</b>	-40°C to 65°C
<b>Storage Temp:</b>	-55°C to 85°C
<b>Thermal Shock:</b>	Per MIL-STD-202, Method 107
<b>Humidity:</b>	0% to 95% non-condensing, operating and non-operating
<b>Salt Spray:</b>	Per MIL-STD-202, Method 101
<b>Moisture Resistance:</b>	Per MIL-STD-202, Method 106

#### MATERIAL

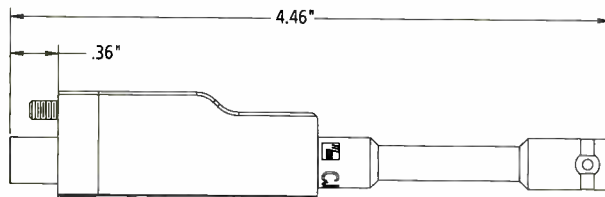
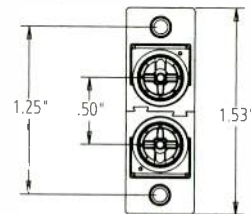
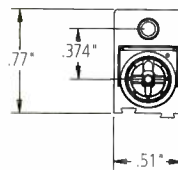
<b>Jack Sleeve &amp; Frame:</b>	CDA 360 brass rod per ASTM B16 with electro-deposit nickel plating per QQ-N-290
<b>Center Conductors:</b>	Phosphor bronze per ASTM B139 with electro-deposited gold plating per MIL-G-45204
<b>Insulators:</b>	TFE-Fluorocarbon per ASTM D1710

#### OTHER

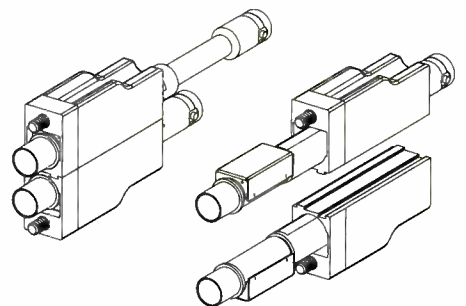
<b>Interface Dimensions:</b>	Outside diameter of mating plugs must be .298" (.75 cm) with pin diameter of .048" (.12 cm)
<b>Mounting Details:</b>	Jacks supplied with a 6-32 UNC-2A 5/16" Phillips head screws (zinc chromate plated)



CJ3014N and CJ3014N-75



CJ4014N and CJ4014N-75



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# Drawings and Specifications

## Video Products

### MVJ-3 Midsize Video Super Jack Specifications

#### ELECTRICAL

The MVJ-3 Family is rated to handle digital video data rates up to and including uncompressed HDTV SMPTE 292M 1.485 Gbps.

<b>Rated Bandwidth:</b>	1 MHz to 3 GHz
<b>Return Loss:</b>	Better than -17 dB 1 MHz to 3 GHz
<b>Characteristic Impedance:</b>	75 Ohms
<b>Insertion Loss:</b>	0.3 dB Loss to 3 GHz
<b>Center Conductor Diameter:</b>	0.048 (.12cm)
<b>Contact Resistance:</b>	0.01 Ohm maximum change
<b>Termination Resistor:</b>	75 Ohm, MVJ-3T only

#### MECHANICAL

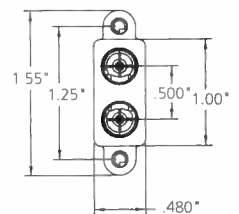
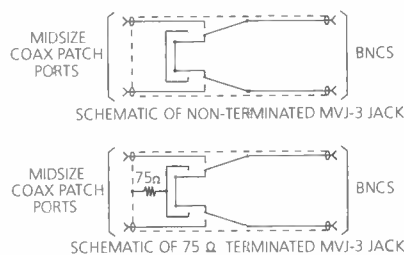
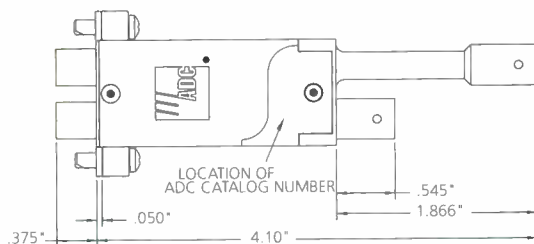
<b>Mechanical Shock:</b>	Per MIL-STD-202, Method 213
<b>Vibration:</b>	Per MIL-STD-202, Method 201
<b>Insertion Force:</b>	7lbs (3.17 Kg) maximum
<b>Withdrawal Force:</b>	1 lb. (.452 Kg) minimum
<b>Life Cycles:</b>	20,000

#### MATERIAL

<b>Body and Cover:</b>	Zinc alloy per ASTM B86
<b>Front and Rear Center Conductors:</b>	Beryllium Copper per ASTM B196
<b>Insulators:</b>	Unreinforced polyetherimide resin rated UL94-VO for flammability
<b>Switching Springs:</b>	Beryllium copper per ASTM B196

#### ENVIRONMENTAL

<b>Operating Temperature:</b>	-40°C to 65°C
<b>Storage Temperature:</b>	-40°C to 65°C
<b>Thermal Shock:</b>	Per MIL-STD-202, Method 107
<b>Operating Humidity:</b>	0% to 95%, non-condensing
<b>Storage Humidity:</b>	0% to 95%, non-condensing
<b>Salt Spray:</b>	Per MIL-STD-202, Method 101
<b>Moisture Resistance:</b>	Per MIL-STD-202, Method 106
<b>Dust Resistance:</b>	Per MIL-STD-202, Method 110



MVJ-3 Midsize Video Super Jack

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# Drawing and Specifications

## 75 Ohm BNC Connectors

### Straight BNC Connectors

#### ELECTRICAL

<b>Characteristic Impedance:</b>	75 Ohm
<b>Voltage Rating:</b>	1000 Volts RMS
<b>Insertion Loss:</b>	< 0.6 dB 1 MHz to 1 GHz (measured with 1 meter of 728 cable)
<b>Return Loss:</b>	Better than 35 dB to 1 GHz; 30 dB to 2 GHz; 26 dB to 3 GHz
<b>Contact Resistance:</b>	.030 Ohm maximum change post environmental
<b>Insulation Resistance:</b>	200 megohms minimum change

#### MECHANICAL

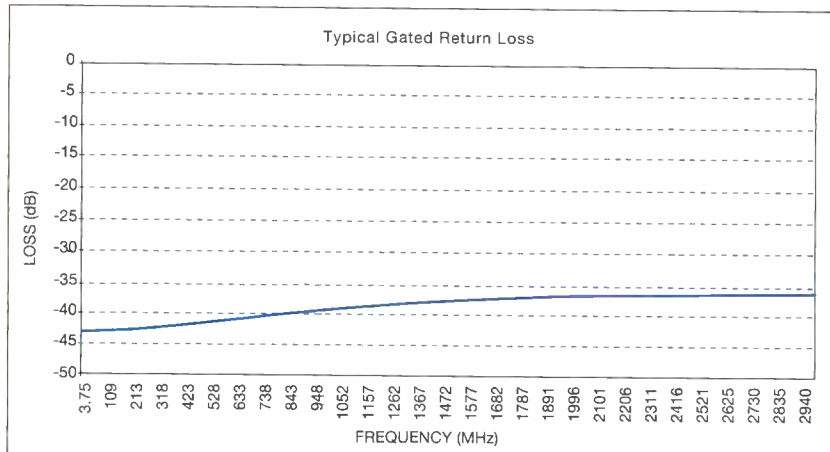
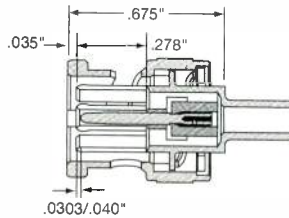
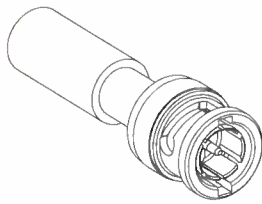
<b>Mechanical Durability:</b>	500 cycles minimum
<b>Center Contact Retention:</b>	6 lbs. minimum
<b>Coupling Mechanism:</b>	100 lbs. minimum
<b>Cable Pulloff Force:</b>	Dependent on cable size
<b>Cable Bend and Twist:</b>	500 cycles minimum
<b>Force to Engage/Disengage:</b>	Torque 2.5 in/lb maximum; longitudinal force 3 lbs. maximum
<b>Interface Dimension:</b>	MIL-C-39012 except 75 Ohm

#### ENVIRONMENTAL

<b>Thermal Shock:</b>	-40°C to 65°C operating; -55°C to 85°C, non-operating
<b>Moisture Resistance:</b>	0% to 95%; MIL-STD-202 Method 106
<b>Corrosion (Salt Spray):</b>	MIL-STD-202 Method 101, Test Condition B
<b>Flammability:</b>	UL 94-VO rated (center conductor insulator)
<b>Vibration:</b>	MIL-STD-202 Method 201
<b>Solvent Resistance:</b>	MIL-STD-202 Method 215

#### FINISH

<b>Body/Bayonet:</b>	Tarnish-resistant electroless nickel plating
<b>Center Conductor:</b>	50 millionths inch gold plating MIL-G-45204 Type 1, Grade C, Class 1; requires .042" crimp station die



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# Drawings and Specifications

## 75 Ohm BNC Connectors

### Right Angle BNC Connectors

#### ELECTRICAL

<b>Characteristic Impedance:</b>	75 Ohm
<b>Voltage Rating:</b>	1000 Volts RMS
<b>Insertion Loss:</b>	< 0.6 dB 1 MHz to 1 GHz (measured with 1 meter of 728 cable)
<b>Return Loss:</b>	Better than 30 dB to 1 GHz; 26 dB to 2 GHz; 20 dB to 3 GHz
<b>Contact Resistance:</b>	.030 Ohm maximum change post environmental
<b>Insulation Resistance:</b>	200 megohms minimum change

#### MECHANICAL

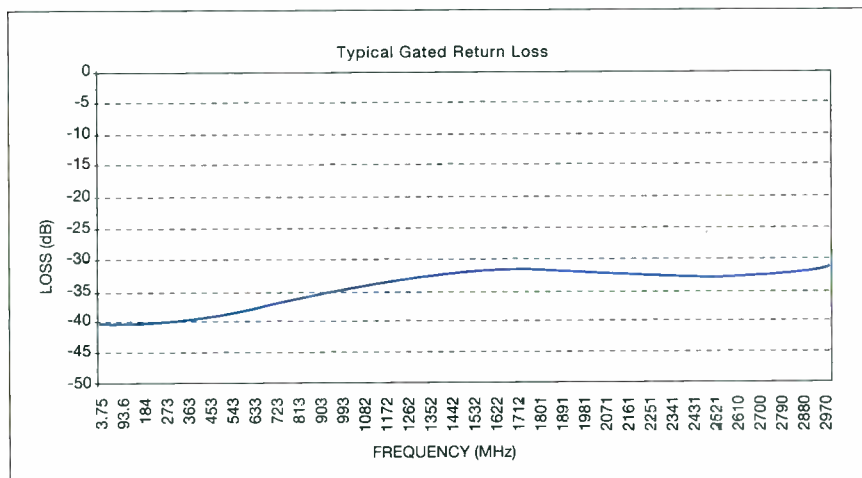
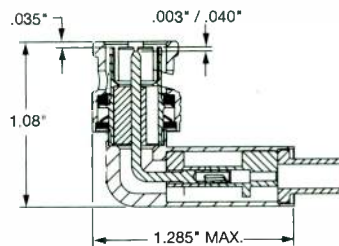
<b>Mechanical Durability:</b>	500 cycles minimum
<b>Coupling Mechanism:</b>	100 lbs. minimum
<b>Cable Bend and Twist:</b>	500 cycles minimum
<b>Force to Engage/Disengage:</b>	Torque 2.5 in/lb maximum; longitudinal force 3 lbs. maximum
<b>Interface Dimension:</b>	MIL-C-39012 except 75 Ohm

#### ENVIRONMENTAL

<b>Thermal Shock:</b>	-40°C to 65°C operating; -55°C to 85°C, non-operating
<b>Moisture Resistance:</b>	0% to 95%; MIL-STD-202 Method 106
<b>Corrosion (Salt Spray):</b>	MIL-STD-202 Method 101, Test Condition B
<b>Flammability:</b>	UL 94-VO rated (center conductor insulator)
<b>Vibration:</b>	MIL-STD-202 Method 201
<b>Solvent Resistance:</b>	MIL-STD-202 Method 215

#### FINISH

<b>Body/Bayonet:</b>	Tarnish-resistant electroless nickel plating
<b>Center Conductor:</b>	50 millionths inch gold plating MIL-G-45204 Type 1, Grade C, Class 1; requires .042" crimp station die





# Drawings and Specifications

## 75 Ohm BNC Connectors

### Bulkhead Jack Connectors

#### ELECTRICAL

<b>Characteristic Impedance:</b>	75 Ohm
<b>Voltage Rating:</b>	1500 Volts RMS
<b>Insertion Loss:</b>	Better than 0.20 dB 1 MHz to 2 GHz
<b>Return Loss:</b>	Better than 26 dB to 1 GHz; 18 dB to 2 GHz; 16 dB to 3 GHz
<b>Contact Resistance:</b>	.030 Ohm maximum change post environmental
<b>Insulation Resistance:</b>	5000 megohms minimum change

#### MECHANICAL

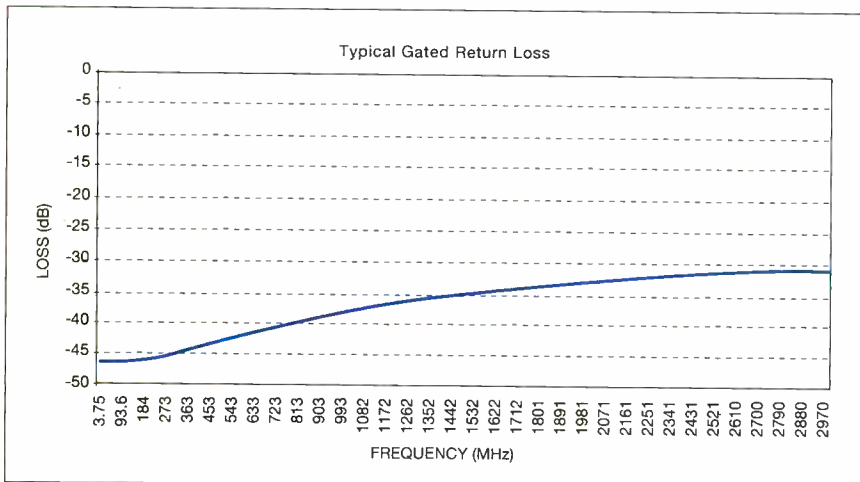
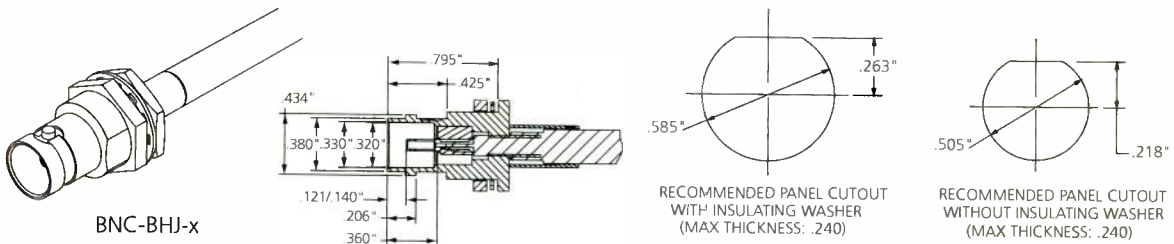
<b>Mechanical Durability:</b>	500 cycles minimum
<b>Center Contact Retention:</b>	6 lbs. minimum
<b>Coupling Mechanism:</b>	100 lbs. minimum
<b>Cable Bend and Twist:</b>	500 cycles minimum
<b>Force to Engage/Disengage:</b>	Torque 2.5 in/lb maximum; longitudinal force 3 lbs. maximum
<b>Interface Dimension:</b>	MIL-C-39012 except 75 Ohm

#### ENVIRONMENTAL

<b>Thermal Shock:</b>	-40°C to 65°C operating; -55°C to 85°C, non-operating
<b>Moisture Resistance:</b>	0% to 95%; MIL-STD-202 Method 106
<b>Corrosion (Salt Spray):</b>	MIL-STD-202 Method 101, Test Condition B
<b>Flammability:</b>	UL 94-VO rated (center conductor insulator)
<b>Vibration:</b>	MIL-STD-202 Method 204, Test Condition B
<b>Solvent Resistance:</b>	MIL-STD-202 Method 215

#### FINISH

<b>Body/Bayonet:</b>	Tarnish-resistant electroless nickel plating
<b>Center Conductor:</b>	50 millionths inch gold plating MIL-G-45204 Type 1, Grade C, Class 1



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# Drawings and Specifications

## 75 Ohm BNC Connectors

### BNC Adapters

#### ELECTRICAL

<b>Characteristic Impedance:</b>	75 Ohm
<b>Voltage Rating:</b>	1500 Volts RMS
<b>Insertion Loss:</b>	Better than 0.20 dB 1 MHz to 2 GHz
<b>Return Loss:</b>	Better than 40 dB to 1 GHz; 30 dB to 2 GHz; 26 dB to 3 GHz
<b>Contact Resistance:</b>	.030 Ohm maximum change post environmental
<b>Insulation Resistance:</b>	5000 megohms minimum change

#### MECHANICAL

<b>Mechanical Durability:</b>	500 cycles minimum
<b>Center Contact Retention:</b>	6 lbs. minimum
<b>Coupling Mechanism:</b>	100 lbs. minimum
<b>Cable Bend and Twist:</b>	500 cycles minimum
<b>Force to Engage/Disengage:</b>	Torque 2.5 in/lb maximum; longitudinal force 3 lbs. maximum
<b>Interface Dimension:</b>	MIL-C-39012 except 75 Ohm

#### ENVIRONMENTAL

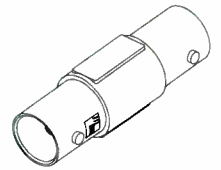
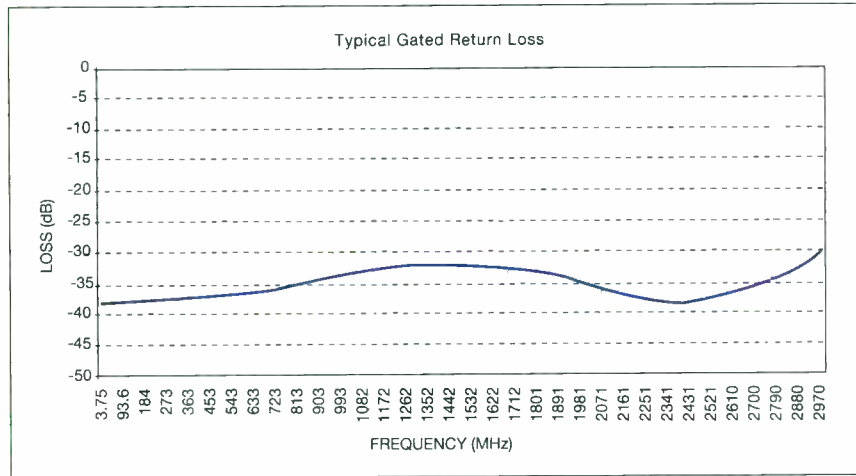
<b>Thermal Shock:</b>	-40°C to 65°C operating; -55°C to 85°C, non-operating
<b>Moisture Resistance:</b>	0% to 95%; MIL-STD-202 Method 106
<b>Corrosion (Salt Spray):</b>	MIL-STD-202 Method 101, Test Condition B
<b>Flammability:</b>	UL 94-VO rated (center conductor insulator)
<b>Vibration:</b>	MIL-STD-202 Method 204, Test Condition B
<b>Solvent Resistance:</b>	MIL-STD-202 Method 215

#### FINISH

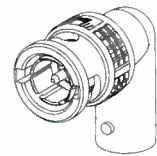
<b>Body/Bayonet:</b>	Tarnish-resistant electroless nickel plating
<b>Center Conductor:</b>	50 millionths inch gold plating MIL-G-45204 Type 1, Grade C, Class 1

Broadcast Products

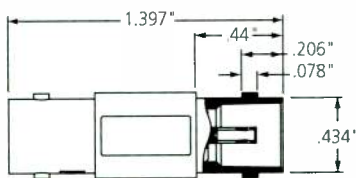
3 / 0 4 • 1 1 8 0 2 7 0



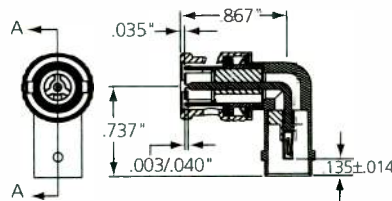
BNC Straight Adapter



BNC Right Angle Adapter



BNC Straight Adapter



BNC Right Angle Adapter



# Drawings and Specifications

## 75 Ohm BNC Connectors

### Recessed BNC

#### ELECTRICAL

<b>Characteristic Impedance:</b>	75 Ohm
<b>Voltage Rating:</b>	1500 Volts RMS
<b>Insertion Loss:</b>	Better than 0.20 dB 1 MHz to 2 GHz
<b>Return Loss:</b>	Better than 40 dB to 1 GHz; 30 dB to 2 GHz; 26 dB to 3 GHz
<b>Contact Resistance:</b>	.030 Ohm maximum change post environmental
<b>Insulation Resistance:</b>	5000 megohms minimum change

#### MECHANICAL

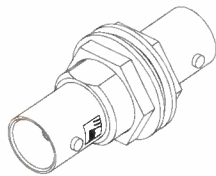
<b>Mechanical Durability:</b>	500 cycles minimum
<b>Center Contact Retention:</b>	6 lbs. minimum
<b>Coupling Mechanism:</b>	100 lbs. minimum
<b>Cable Bend and Twist:</b>	500 cycles minimum
<b>Force to Engage/Disengage:</b>	Torque 2.5 in/lb maximum; longitudinal force 3 lbs. maximum
<b>Interface Dimension:</b>	MIL-C-39012 except 75 Ohm

#### ENVIRONMENTAL

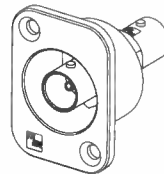
<b>Thermal Shock:</b>	-40°C to 65°C operating; -55°C to 85°C, non-operating
<b>Moisture Resistance:</b>	0% to 95%; MIL-STD-202 Method 106
<b>Corrosion (Salt Spray):</b>	MIL-STD-202 Method 101, Test Condition B
<b>Flammability:</b>	UL 94-VO rated (center conductor insulator)
<b>Vibration:</b>	MIL-STD-202 Method 204, Test Condition B
<b>Solvent Resistance:</b>	MIL-STD-202 Method 215

#### FINISH

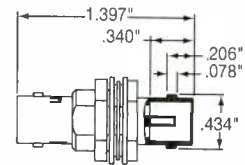
<b>Body/Bayonet:</b>	Tarnish-resistant electroless nickel plating
<b>Center Conductor:</b>	50 millionths inch gold plating MIL-G-45204 Type 1, Grade C, Class 1



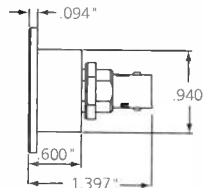
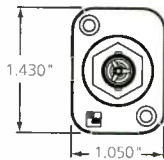
BNC Bulkhead Feed Through



Recessed BNC



Bulkhead Feed Through



Recessed BNC

# Drawings and Specifications

## 75 Ohm BNC Termination Plugs

### BNC Terminations Plugs

#### ELECTRICAL

**Characteristic Impedance:** 75 Ohm  
**Termination Resistance:** BNC-TP-2, 75 Ohm + 0.1% (resistor value); BNC-TP-1, 75 Ohm + 1.0% (resistor value)  
**Return Loss:** BNC-TP-2, better than -29 dB return loss to 3.0 GHz; BNC-TP-1, better than -16 dB return loss to 2.0 GHz

#### MECHANICAL

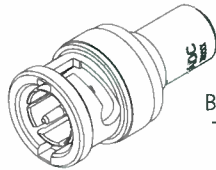
**Mechanical Durability:** 500 cycles minimum  
**Coupling Mechanism:** 100 lbs. minimum  
**Mechanical Shock:** MIL-STD-202, Method 213  
**Interface Dimensions:** MIL-C-39012 except 75 Ohm

#### ENVIRONMENTAL

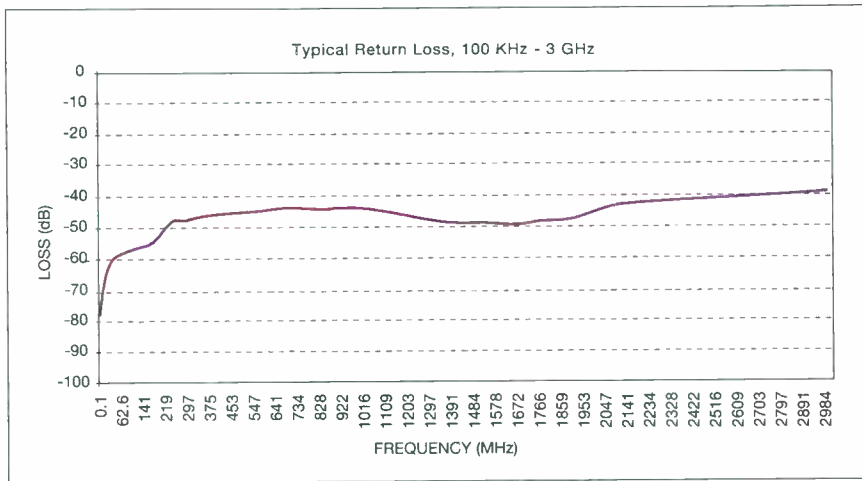
**Thermal Shock:** -40°C to 65°C -55°C to 85°C, non-operating;  
**Moisture Resistance:** 0% to 95% relative humidity, tested to MIL-STD-202 Method 106  
**Corrosion (Salt Spray):** MIL-STD-202 Method 101, Test Condition B  
**Vibration:** MIL-STD-202 Method 201

#### FINISH

**Body/Bayonet:** Tarnish resistant electroless nickel plating  
**Center Conductor:** 50 millionth inch gold plating MIL-C-45204 Type 1, Grade C, Class 1



BNC TP-1 and TP-2  
Terminating Plugs





# ProAx™ Triaxial Camera Connectors

## Specifications

Electrical performance specifications of ProAx™ triaxial camera connectors are based on a male and female connector mated together.

<b>Rated Bandwidth:</b>	1 MHz to 1.5 GHz
<b>Return Loss:</b>	Better than -20 1 GHz/-15 to 2 GHz
<b>Characteristic Impedance:</b>	75 Ω nominal
<b>Insertion Loss:</b>	Better than 0.8 dB loss 1 MHz to 1.5 GHz
<b>Dielectric Withstanding Voltage:</b>	1500 Volts AC
<b>Life Cycles:</b>	1000 cycles minimum per MIL-PFR-39012

### MECHANICAL

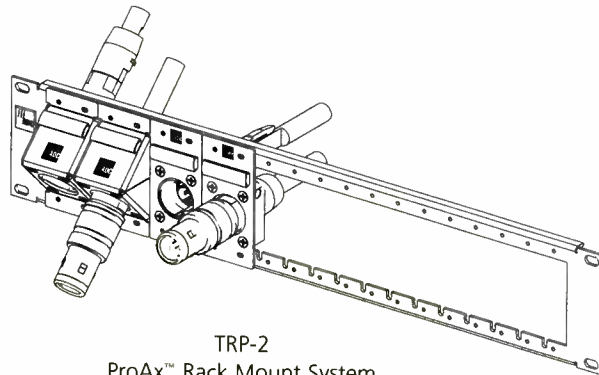
<b>Life Cycles:</b>	1000 cycles minimum per MIL-PFR-39012
<b>Cable Retention:</b>	100 lb. Per MIL-STD-1344A Method 2010.1

### MATERIALS

<b>Body Materials:</b>	Brass per ASTM B16, CDA Alloy 360 with electroless nickel plating per QQ-N-290
<b>Inner Bodies:</b>	Brass per ASTM B16, CDA Alloy 360 with 50 millionths inch gold plating
<b>Latching Spring:</b>	Stainless Steel 460 SE heat treated and Electro-Polished
<b>Spring Center Conductors:</b>	Beryllium Copper with 50 millionths inch Gold per MIL-G-45204 Type 1
<b>Crush Rings:</b>	303 Stainless
<b>Machined Center Conductors:</b>	Brass per ASTM B16 CDA Alloy 360 with 50 millionths inch Gold per MIL-G-45204 Type 1
<b>Ground Clip:</b>	Beryllium Copper with electroless nickel plating per QQ-N-290 and Gold per MIL-G-45204 Type 1
<b>Insulators:</b>	Ultem®, Teflon™
<b>O-Rings:</b>	Ethylene Propylene

### ENVIRONMENTAL

<b>Temperature</b>	
<b>Operating:</b>	-40°C to 65°C
<b>Storage:</b>	-55°C to 85°C
<b>Thermal Shock:</b>	Per MIL-STD-202, Method 107
<b>Humidity</b>	
<b>Operating:</b>	0% to 95%, non-condensing
<b>Storage:</b>	0% to 95%, non-condensing
<b>Salt Spray:</b>	Per MIL-STD-202, Method 101, Test Condition B
<b>Moisture Resistance:</b>	Per MIL-STD-202, Method 106
<b>Sand and Dust Resistance:</b>	Per MIL-STD-202, Method 101
<b>Flammability:</b>	UL 94-VO Rated
<b>Crush Resistance:</b>	Per MIL-STD-1344A, Method 2008.1



TRP-2  
ProAx™ Rack Mount System

Broadcast Products

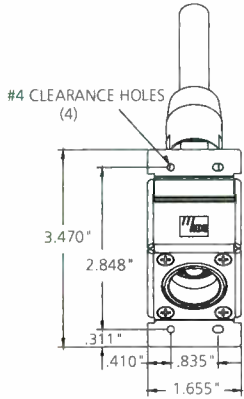
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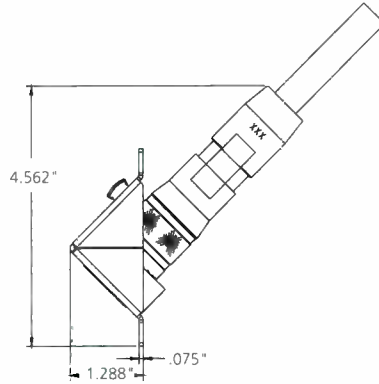


# ProAx™ Triaxial Camera Connectors

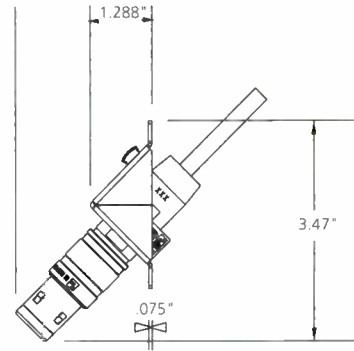
## 48° Angled Adapter



Front View

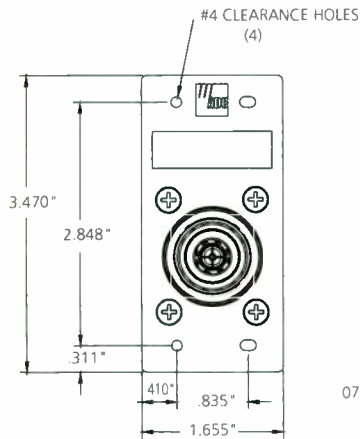


Female

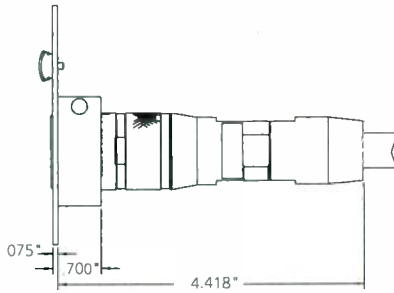


Male

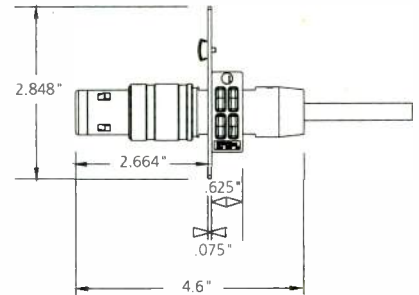
## Straight Adapter Kit



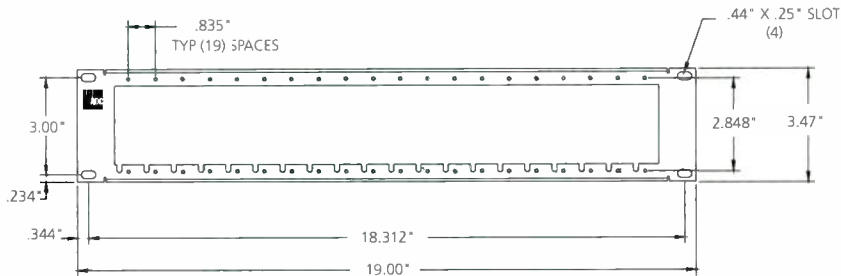
Front View



Female



Male



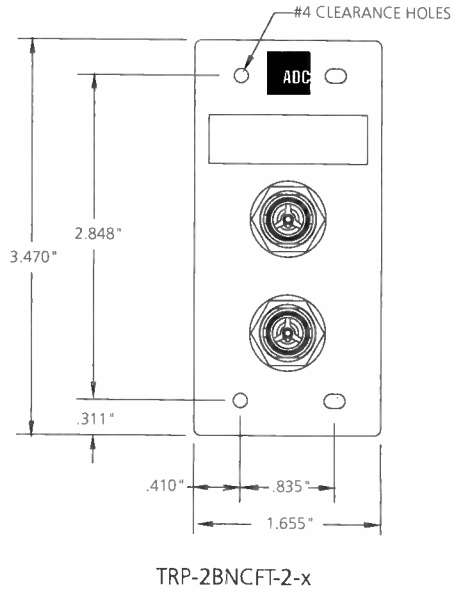
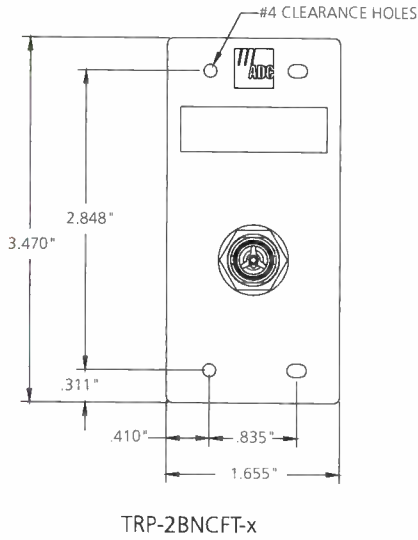
3 / 0 4 • 1 1 8 0 2 7 0 Broadcast Products



# ProAx™ Triaxial Camera Connectors

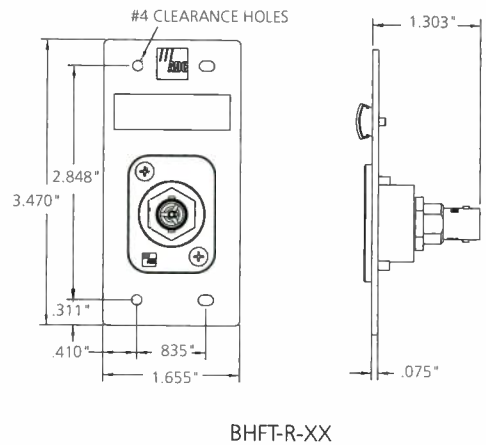
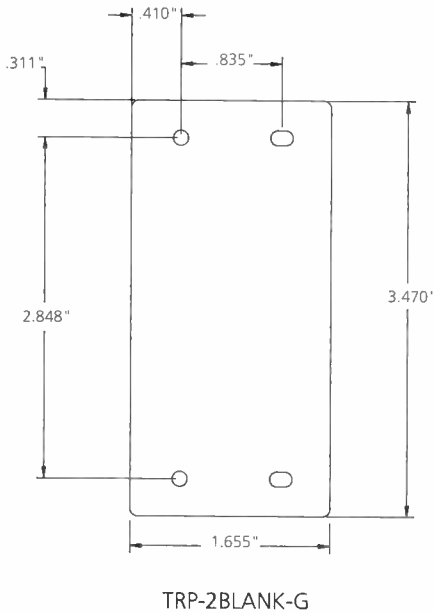
## BNC Modules for ProAx™ Rack Mount Plate

Broadcast Products



## Recessed BNC Modules for ProAx™ Rack Mount Plate

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## ADC Patents for Products in This Ordering Guide

Product	Patent
SVJ-2 Super Video Jack	USO5964607 USO6045378
MVJ-3 Super Video Jack	USO5885096 USO6045378
UniPatch®, High-Density Data Patching System	USO6186798 USO6345986 USO6623278 Others Pending
UniPatch® Balun Modules	USO6597256 Others Pending
ProAx™ Triaxial Connectors	USO5967852 USO6109963 USO6146192 USO6231380 USO6575786 USO6561848 Others Pending
BNC/Coaxial Connectors	USO5921802 USO6428354 USO5921802 Others Pending



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## Notes

## Notes

## Notes







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# Sachtler's Artemis camera-stabilizing system

BY GÜNTER FLENNER

**D**emands from directors for non-static images featuring unusual content are increasing. However, many production budgets are unable to satisfy these often time-consuming and expensive demands. It's easier on budgets to use camera-stabilizing systems such as Sachtler's Artemis. It is designed as a crossover machine to suit both top-heavy film cameras and tail-heavy camcorders.

The system meets the demands of both film and TV production. It can be configured for film and video applications when operated with film cameras. The Artemis SDI Pro is best

particularly suited to the new generation of video cameras with SDI interfaces, because its special main connection cable is able to handle

periods of shooting.

The Artemis Cine/HD system features fully modular and flexible setups. It also has three video lines so

**The various models that make up the camera series are adapted to the wide-ranging demands of film, HDTV (SDI and RGB HD) and broadcast productions.**

high-data transfer.

The camera system is an all-metric construction except for components that have internationally standardized dimensions, such as the post diameter, camera plate and arm connector. The various models that make up the camera series are adapted to the wide-ranging demands of film, HD (SDI and RGB HD), and broadcast productions.

The system offers dual-dynamic balance, which includes a third battery that can be independently adjusted. Focus remote receivers can be mounted on both sides to improve the camera's center-of-gravity balance. Battery indicators with three rows of LED displays show the remaining power in each battery. All common battery mounts, including V-Mount Anton/Bauer and PAG, are available.

The vests and spring arms in all models are identical, so users can upgrade their systems if and when the need arises. Also, a range of spring sets allows the arm to be precisely adjusted according to the weight of the camera being used.

The company's vest can be adjusted as desired, evenly distributing the bulk of the system's weight onto the user's hips. This guarantees camera operators a comfortable fit for extended

operators can use HD RGB video cameras without downconverters.

The EFP Pro (SDI HD) is the rig for all kinds of video — especially SDI HD and RGB HD productions. It's the only camera stabilizing system with an internal 1.5GHz video line, which enables operators to produce professional work with SDI HD cameras.

The EFP model offers users the functionality of the larger Artemis models. It features a "touch and go" system that ensures camera changeover between the stabilizing system and tripod — even while shooting. The model includes a color flat-panel monitor as a standard component, and is compatible with Artemis accessories and third-party systems.

The camera-stabilizing system's modular construction enables system components to be combined in a variety of ways according to the operator's needs. Individual modules also can be replaced or upgraded without much effort or cost.

**BE**

*Günter Flenner is an industry writer based in Hamburg, Germany.*

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**Artemis provides a full range of options and features that allow it to handle almost any camera.**

# Discreet's smoke 6.0 at Broadway Video

BY ANDY MILKIS

**B**roadway Video is a New York-based independent entertainment company, encompassing all aspects of development, production and distribution. At the heart of its post-production services is the Discreet smoke 6.0 editing and effects creation system for completing episodic TV shows, high-end commercials and trailers for theatrical release.

Recently, Broadway Video completed several commercials for Nickelodeon's series "Fairly Odd Parents." This involved combining SD and HD video with computer-generated graphic files up to 5K in size. The new multi-resolution capability of the software allows mixing source material of any format on the same timeline, regardless of frame rate, resolution or aspect ratio. That enabled the company to combine 4:3 material at 30fps from archived episodes of "Fairly Odd Parents" with new footage shot for the promotions in 24p HD at 16:9. Even the computer-generated graphics from other workstations now can be imported directly into the software as QuickTime movies, a feature lacking in previous software releases. Because smoke 6.0 offers the option of working with either 10-bit component 4:4:4 RGB video or Discreet's own proprietary 12-bit media format, the system promises consistent high-quality images.

The software comes with an advanced color corrector called color warper, which uses the familiar three-ball on-screen interface with a fourth warp ball for separate secondary color correction without the need for manually created vector shapes. It was sophisticated enough to distinguish

the green of the backscreen from green elements in the clothing of one of the characters.

For overall color timing, a new timesmear feature shows a sample from every frame in a visual display that can be stretched to any duration. Throughout the "Fairly Odd Parents" promotions, this feature provides a visual cue for checking color continuity and identifying specific problem regions on the program's timeline.

The new unlink/relink tool in the

tended to replace a given shot. Each time graphics and animation from other workstations are revised, the new media can be relinked, and all the original edits and effects setups are automatically retained.

During editing, smoke 6.0's more intelligent master keyer has a 3-D color-isolation technology, which permits the blending of edges in composites even if the green screens were occasionally unevenly lit. The master keyer interactively determines



**The new multi-resolution capability of smoke's version 6.0 software allows mixing source material of any format on the same timeline, regardless of frame rate, resolution or aspect ratio.**

software is invaluable for recapturing media at different resolutions. This tool allows the user to disconnect metadata from an original clip and re-attach it to the new material in-

the optimal parameters for the key based on a selected region. It also brings up context-sensitive controls directly under the operator's pen cursor for manual fine-tuning. This was

called upon extensively during the elaborate compositing in the "Fairly Odd Parents" spots.

Another workflow improvement in the software is the new intelligent proxy feature that was previously available only on the Discreet inferno 5, flame 8 and flint 8 effects systems. At any point during the post-production process on the software, low-resolution proxies of each clip can be generated to allow the artist to work in HD with all of the performance and interactivity of SD. With one click, the proxies are replaced with the full-resolution material for final tweaks and rendering.

The new software offers a multi-mastering feature that can output projects in any format, including PAL, NTSC, HD and 2K. One component of this, the EDL module, now can keep track of EDLs at different frame rates. For "Fairly Odd Parents," Broadway Video shot at 24fps HD and performed its offline edits at 30fps SD. The 30fps EDLs were converted in the software to 24fps, providing a seamless match with their 24fps HD masters. Conforming the shots and performing final composites at 24fps saved 20 percent of the rendering time. They then output the release version in 30fps SD for DigiBeta delivery.

Broadway Video is looking forward to moving its smoke systems onto the new Tezro platform from SGI. It is powered by up to four MIPS processors in a high-bandwidth architecture leveraged from the SGI 3000 family of supercomputers. Smoke 6.0 on the Tezro visual workstation will enable real-time output of 2K projects as well as a significant acceleration of all I/O and internal digital media processes.

New possibilities always lead to new challenges. Archiving a project when it is finished is more cumbersome when different formats are involved in the same production. The software can currently archive standard-definition projects to SD media and high-definition projects to HD media. But if resolutions are mixed on the same timeline, the project can only be archived as data. This can be time-consuming and expensive compared to traditional methods.

In the future, the software should be able to recognize the properties of all of its stored material as a whole project and archive it in a single format. Perhaps it could all be recorded to HD, with material smaller than HD placed in an HD frame and elements larger than HD broken up into HD-size tiles. That way the project could be reloaded from one source and re-assembled on a single timeline. **BE**

*Andy Milkis is the visual effects supervisor and senior effects artist at Broadway Video.*

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## redefining television

# DPA Microphones' 4071-BM

BY ROB FRITTS

**T**hese days, every time you change the channel, there is a new reality-based show on your television. The production companies producing these programs rely heavily on their microphones to capture each and every sound bite, even in the noisiest and most acoustically challenging spaces. Many of the microphone applications require small, non-obtrusive microphones that are highly resistant to moisture, extreme temperature change and humidity. I've had the opportunity to review the 4071-BM miniature microphone with presence boost from DPA Microphones, and it survived my tests.

The first challenge for the microphone was shooting a pilot in a bowling alley. The sound of bowling balls slamming into pins and bursts of

with the DPA 4071-BM. Both microphones were transmitting through a Sony 820 wireless system and being recorded at 48kHz directly to a hard disk Deva digital recorder.

After listening to the recordings, recordings from Bowler B sounded

microphone also clipped a couple times, resulting in a much smaller dynamic range. DPA's microphone has a maximum sound pressure level (SPL) of 144dB before clipping, a large range for any body-worn microphone.

The microphone's second challenge

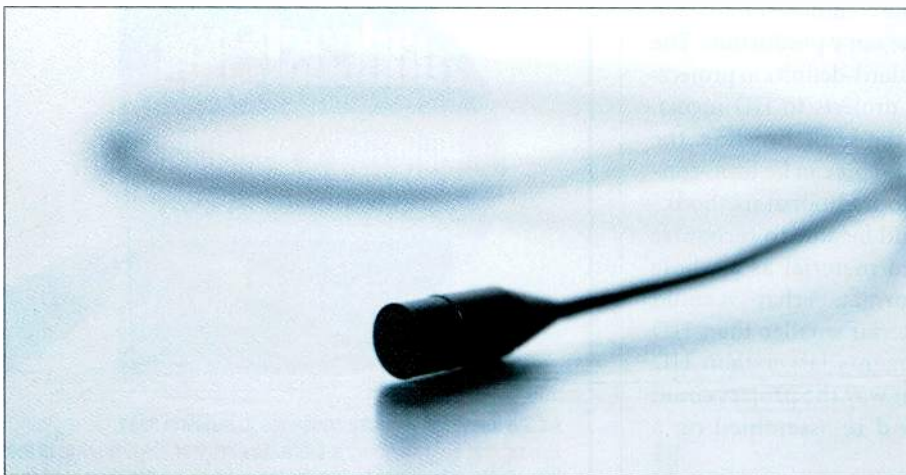
**The microphone is omnidirectional, which inherently cuts down wind and pop noise, keeping the proximity effect on the low side.**

natural and unforced. The speech was clear and intelligible, with a peak at about 5kHz, yet still sounded open to the ambient background sounds.

was in a park in a large, open valley. The head wrangler, Chad Lammers, was fitted with the microphone. The winds were whipping through the valley at high speeds, so you can imagine that the low-end buffeting would be a big problem. The microphone was placed just under Lammers' collar and then he was fitted with the DPA Miniature Windjammer DUA0571, the buffeting wind was cut down significantly.

The microphone is omnidirectional, which inherently cuts down wind and pop noise, keeping the proximity effect on the low side. These characteristics helped greatly in reproducing a clear, intelligible recording. Though there was some evidence of low wind rumble in the recording, it did not cause any

problems later in the mix session. Another helpful feature is the fixed soft boost grid, which gives the microphone a 5dB boost between 4kHz to 6kHz. It is between that frequency



**The 4071-BM miniature microphone features a fixed microphone grid with a soft pressure boost of typically 5dB at 4kHz to 6kHz.**

cheers from bowlers and spectators filled the room. Two female bowlers were fitted with microphones. Bowler A was fitted with a Sony lavalier microphone, and Bowler B was fitted

The biggest difference between the two microphones was in the low end and overall headroom. Bowler A had a consistent low rumble that made the recording slightly muddy. That mi-

range where the presence in a human voice is most apparent. When we were filming Lammers in action, the microphone performed well under harsh conditions.

The third challenge was at the same park, but this time the scene was inside a teepee during a prayer sequence with Rosalie "Little Thunder." Rosalie was wearing the microphone directly in the center of her chest under her clothing. The film crew was also using a Schoeps shotgun microphone hooked to a boom pole. The Schoeps microphone would pick up the participants from overhead as they took part in the prayer. Both the Schoeps and 4071-BM microphones were connected to a Shure mixer, where their respective signals were sent to separate channels on the Sony high-definition camera.

With Rosalie's microphone placement, you would expect a slightly muddy sound due to sound reflections off the chest cavity. However, DPA has a nifty adapter called the DAD6024, which connects directly to the 4071-BM and turns around to a standard XLR male connector. This adapter attenuates the frequency area around 800Hz by 3dB to 4dB. When we returned to the studio and played back our recording, we were pleasantly surprised with the quality of the recording and how it blended with the ambient background recorded by the Schoeps microphone.

The DPA 4071-BM microphone, DAD6024 adapter and DAK4071-F accessory kit for miniature microphones come in handy for any audio field recordist, whether in the studio during a live performance, or filming in the field. **BE**

*Rob Fritts is senior sound designer/mixer for Henninger Digital Audio.*

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# Digital Vision's BitLink at KAET-DT

BY TERRY HARVEY

**P**hoenix PBS station KAET-DT's transition to digital terrestrial broadcasting necessitated an array of new equipment to facilitate reception, storage and transmission of digital programming. Following the station's investigation of various technical solutions, it was determined that Digital Vision offered an integrated receiver/decoder (IRD) that would perform a number of critical broadcast functions, all within one box. The station currently uses the BitLink IRD for the main HD program and will shortly use IRDs for SD programs as well.

## A multifunction IRD

Before implementing the IRD, the station required more than one piece of equipment to receive and decode a single digital program feed from a satellite for recording and playout. In order to also handle the recording and transmission of EIA-708B closed captions and the second audio program (descriptive video service or Spanish),

## IRD interfaces

The station's program-rebroadcast needs dictate receiving satellite-relayed HD and SD programs pre-encoded at the PBS station in Alexandria, VA. The programs are then directly relayed to air or recorded for later broadcast. The IRD is configured for two inputs from the satellite LNBs on L band (vertical and horizontal antenna polarization). Output ASI interfaces are used for recording and downstream remapping to air, and decoded MPEG-2 video and AES audio program outputs are routed to conventional HD and SD VTRs for later playback. An internal frame synchronizer locked to the station's 480i 59.94 house reference is included on

on the station's over-the-air DTV broadcast programs on audio PIDs.

To simplify the handling of multiple audio channels (up to 5.1) per audio



After its transition to digital, KAET-DT selected the BitLink IRD from Digital Vision to perform multiple broadcast functions for the station's main HD program. It will soon use IRDs for SD programs as well.

**The station currently uses the BitLink IRD for the main HD program and will shortly use IRDs for SD programs as well.**

KAET-DT would have needed a more complicated system of equipment.

The IRD simplifies the situation to a large degree. Its flexible 1RU frame may be fitted and configured with up to six cards, giving the user many ways to configure the inputs and outputs. The station felt this design would adapt itself to meeting future configuration requirements.

HD and SD serial digital outputs, which eliminates the need for external synchronizers.

## Multiple audio streams

PBS currently relays two Dolby Digital AC3-encoded audio streams with each HD and SD program: the main audio and the descriptive audio service or Spanish. Each stream will reappear

stream and eliminate audio quality loss through needless decoding and re-encoding of the Dolby Digital (AC3), the IRD provides the option to bypass the audio decoding function and instead output both audio streams as Dolby Digital. KAET-DT took advantage of this feature to route both audio streams to their station encoder/multiplexer so that they might deliver maximum quality Dolby Digital audio to air with minimum complication and expense.

## HD and SD closed captions

The IRD also handles and routes EIA-708B HD closed captions. Utilizing the SMPTE 334 standard to carry closed-caption data in the VANC of the HD-SDI stream, the station plans to record closed captions with its HD VTRs soon. It will also route the embedded



EIA-708B closed captions to the HD encoder/multiplexer, where the data will be re-embedded into the HD MPEG video stream for broadcast.

Currently, closed captions are output as standard EIA-608 on line 21 of the SD-SDI interface and may be recorded and relayed to air as required.

#### Future uses

PBS digital program distribution will take other forms in the near future. Video and audio encoding at higher data rates (less compression) are an option. The IRD can decode HD MPEG-2 video encoded to 60Mb/s. KAET-DT also an-

ticipates implementing Dolby-E pass-through when it's available from PBS and when the situation demands it.

PBS also plans delivery of programs at non-real time via IP carriage of digitally compressed programs. PBS stations will be able to extract the IP program stream from the IRD via its ASI interface.

#### Software updates

With frequent new technical demands imposed on broadcast stations, broadcast engineering personnel need to periodically update the software in equipment. The BitLink IRD can be easily

updated via its Ethernet connection. Digital Vision has rapidly attended to initial problems. Later software revisions activated new features, such as HD closed captions in the HD-SDI VANC and a widened synchronizer output-timing window to accommodate all HD and SD output timing preferences.

At a time of rapid technological change in the broadcast industry, the BitLink integrated receiver/decoder fulfills KAET's need to future-proof all digital satellite reception processes. **BE**

*Terry Harvey is chief broadcast engineer for KAET-TV and KAET-DT.*



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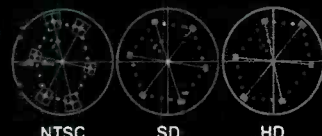
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# We're still confusing the consumer

BY PAUL MCGOLDRICK

**T**he following correction notice appeared in my regional newspaper recently. It related to an earlier Gateway insert:

"The insert advertises the Gateway 41-inch plasma TV for \$2499.99 after \$300 mail-in rebate, after \$299.99 bracket purchase. The insert states that this model is "HD-ready" (capable of displaying high-definition TV). This is incorrect. The insert should describe this model as "HD compatible" (capable of receiving high-definition input, but not capable of displaying high-definition TV). Gateway also offers a 42-inch plasma TV, which is HD-ready. This model is available for \$4499.99. We apologize for this error."

Going to Gateway's Web site does not show much improvement in what must already be incredibly confusing lingo to the average consumer. The company offers three different 42-inch plasma displays. The one on special boasts a 600:1 contrast ratio with a native resolution (my words, not theirs) of 852x480 pixels. They call it "ED," without definition. The company also offers an ultra bright version with the same resolution, but the contrast ratio is increased to 1000:1; still ED. Then the HD version — for that extra \$2000 — has a native resolution of 1024x1024 pixels.

In the nitty-gritty detail of the ED version, although there is mention of scaling, there is the wonderful statement, "Compatible signals display resolutions up to 1280x1024." What should the public make of that?

But then, if you read the FAQ on the HD display, comparing it to the ED version, "You will also notice a slight improvement in image quality when displaying HDTV signals." There are more than double the pixels in the HD display. Why is there only a "slight

improvement"? If that were really the case, the first thing to come to mind would be: Is there something seriously wrong with their video amplifiers?

At least with all the stories going around about shortened lives of plasma displays, Gateway does offer that display life will be "25,000 hours

says, "Signal and tuner required." But the accessory that I just have to get is a "universal glow remote!"

We have been bemoaning the lack of DTV terrestrial tuners over the last few years and the pressures to get them fitted to new receivers — in other words, to actually make them into receivers

## How many consumers, do you think, go out to buy an HD-ready TV and then drive it with the 480i output from one of these receivers?

to half luminance (sic) — but without any guarantee. And we won't get into their "NTSC tuners."

This little experience made me curious about what else the consumer was being told out there. A little reading through newspaper advertisements turned up some interesting questions. One vendor offered a Bose surround sound home theater system with "three wires, two speakers" (actually pictures three speakers). "It plays DVD, CD, MP3, plus AM/FM tuner." "Feels like you're at the game," screams the banner. Doesn't home theater imply pictures as well? I would have thought you might want a tuner and monitor to feel that close to the game, or even to get the best out of those DVDs you're going to play.

How about a Toshiba "46-inch HD widescreen 16:9 HD monitor" that has an "HD Window Dual Tuner PIP." Or a Mitsubishi 65-inch widescreen that "provides enhanced pixel multiplication." Maybe we can get them breeding so that the display gets bigger every day!

Then there is a vendor offering a variety of models of a TV with "Velocity Scan Modulation" and lots of products with "3DYC digital filters." And in the small print for an "HD-ready" TV it

for DTV, discounting the analog "NTSC" tuner(s) that are fitted. There are now a number of HD/SD tuners on the market and the majority, which fall into the \$499.99 to \$699.99 price range, also offer satellite reception for DirecTV and DirecTV HD (sold without a dish or the LNB converter). But all of them offer scaled output, so you can set them to output 1080i, 720p, 480p, or 480i. At least one also offers a scaler for 480i to go up to 720p or 1080i. How many consumers, do you think, go out to buy an HD-ready TV and then drive it with the 480i output from one of these receivers? Or upscale their off-air analog signal (to make it better) and then watch on a native 480p display?

You may think either of those scenarios are absurd; however, recent research by the well-respected Yankee Group found that 26 percent of questioned consumers thought they already had an HDTV ... No, of course they're not confused. **BE**

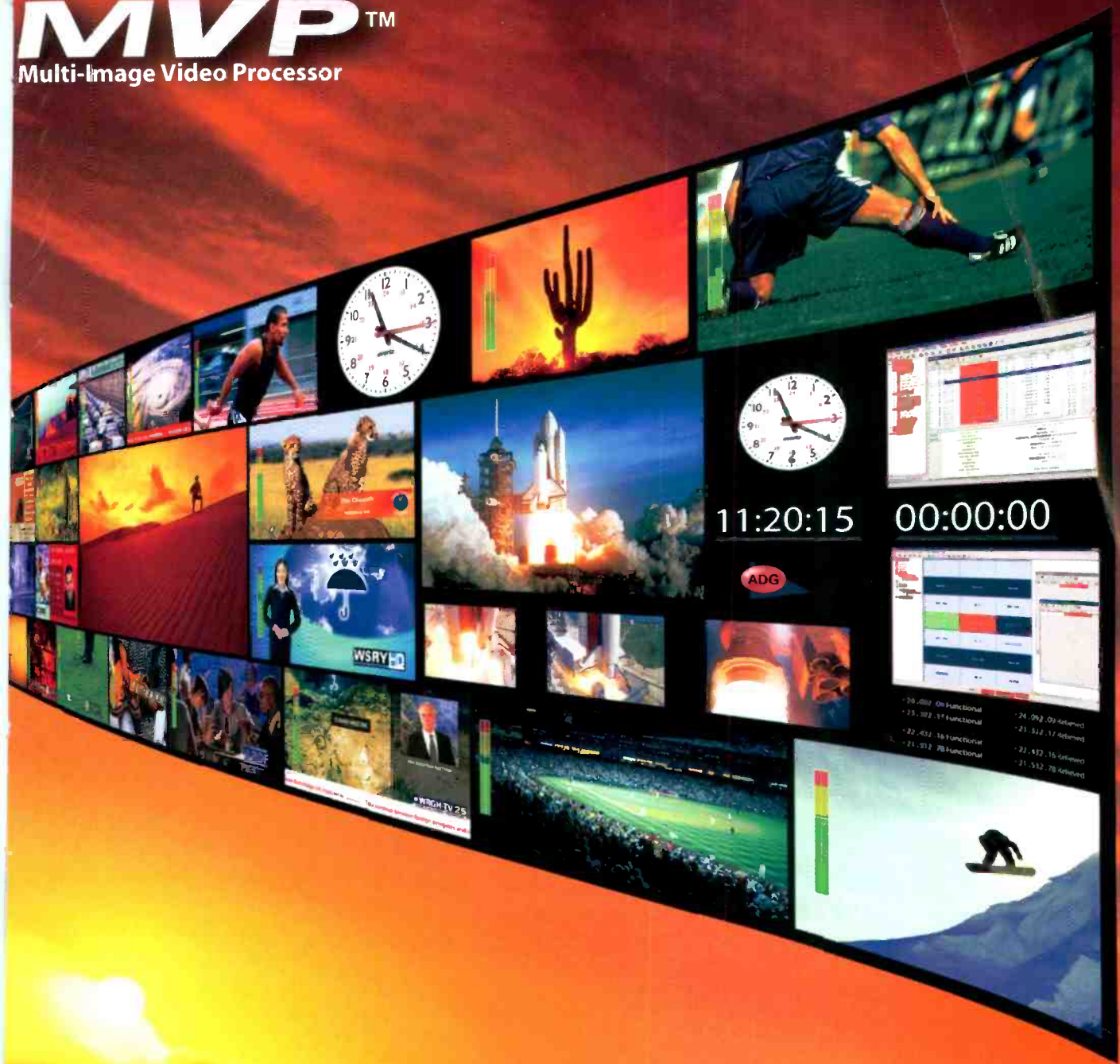
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