

# Cisco PowerVu Model D9850 Program Receiver

## Product Overview

The Cisco® PowerVu® Model D9850 Program Receiver (Figure 1) is designed for satellite content distribution applications requiring 4:2:0 video decoding. The receiver can receive digitally encrypted video, audio, utility data, and vertical blanking interval (VBI) data.

**Figure 1.** Cisco PowerVu Model D9850 Program Receiver



## Analog Cable Program Distribution

Composite video and balanced audio outputs can be connected to analog modulators for analog cable distribution. Four mono audio channels or two stereo pairs are available for primary audio programs, as well as secondary audio programs (SAP). For example, primary program audio could be carried on one of the stereo pairs, while SAP audio is carried on the other stereo pair.

## Digital Cable Program Distribution

Uplink-addressable transport output provides MPEG program streams for digital tier program delivery, so quality video programs can be distributed efficiently to households equipped with digital set-top boxes.

## Digital Program Replacement

Digital program replacement (DPR) allows programmers to transparently switch their primary service to an alternative service in the digital domain in blackout applications for cable digital tier distribution. This feature remaps the packet identifier (PID) information from the primary service to an alternate service, allowing downstream devices to continue to operate seamlessly. This helps make alternative programming available in the digital tier without operator intervention.

## Cable Headend Advertisement Insertion

For flexible advertisement insertion configurations, this receiver provides four types of outputs:

- Dual-tone multifrequency (DTMF) cue tone
- Cue trigger support, with eight open collector outputs
- One programmable contact closure
- Digital program insertion (DPI) messaging using Asynchronous Serial Interface (ASI) output

## Low-Speed Data Output

Asynchronous utility data (up to 38.4 kbps) is available through an RS-232 interface.

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## IP Data Output

IP data can be received and output at rates up to 50 Mbps.

## Main Features

- Four L-band inputs
- PowerVu conditional access with Data Encryptions Standard (DES) or Digital Video Broadcasting (DVB) descrambling
- Support for Basic Interoperable Scrambling System (BISS) conditional access
- 4:2:0 NTSC and PAL (B, G, I, D, M, and N) video decoding
- Aspect ratio conversion (4:3, 16:9 and 14:9) with Active Format Descriptor (AFD) control
- MPEG and Dolby Digital (AC-3) audio decoding
- Four audio outputs providing either two stereo pairs (four mono channels) of balanced audio each with the ability to use part of their output for applications such as SAP, DTMF, etc.
- Line 21 closed caption and V-chip support
- Utility data via RS-232
- IP data output up to 50 Mbps over Ethernet
- DVB VBI (WST, WSS, and VPS)
- PowerVu VBI, including North American Broadcast Teletext Standard (NABTS) and World System Teletext (WST)
- DVB or Imitext subtitling
- DTMF cue tone and cue trigger outputs for advertisement insertion
- Fingerprint trigger
- Field upgradeable software and security
- Front panel liquid crystal display (LCD) for control and monitoring
- 64 user-editable preset configurations
- Uplink addressable decoder output control (VBI, audio routing, DPI, and ASI output)
- Simple Network Management Protocol (SNMP) for setup, control, and monitoring
- Web browser interface for easy setup, control, and monitoring
- Digital program replacement providing uplink control of program replacement in blackout areas

## Optional Features

- ASI input (up to 68.5 Mbps)
- SDI video output with embedded audio
- AES-3id digital audio output

## Product Specifications

Table 1 provides product specifications for the Cisco PowerVu Model D9850 Program Receiver.

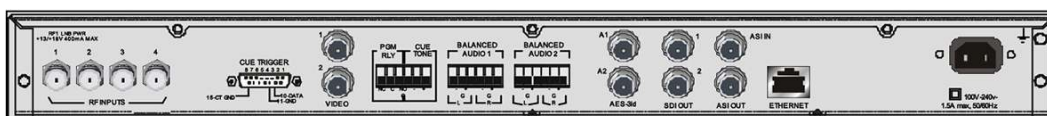
**Table 1.** Product Specifications

Features	Description
<b>System</b>	
<b>Standards</b>	MPEG-2 and DVB compatible EN 300 421, EN 300 468
<b>Demodulation</b>	Quaternary phase shift keying (QPSK)
<b>Forward Error Correction (FEC)</b>	Variable (1/2, 2/3, 3/4, 5/6, or 7/8)
<b>Tuner</b>	
<b>Input level</b>	-25 to -65 dBm per carrier
<b>Frequency range</b>	950 to 2150 MHz
<b>Tuning step size</b>	125 kHz
<b>Symbol rate range</b>	1.0 to 45 Msymbols per second
<b>Carrier capture range</b>	$\geq \pm 3.0$ MHz (5-45 Msym)
<b>Satellites</b>	C-band and Ku-band
<b>Input impedance</b>	75 $\Omega$
<b>Analog Video Output</b>	
<b>Number of channels</b>	1 (2 identical outputs)
<b>Video decompression type</b>	MPEG-2 4:2:0
<b>Output level</b>	1.0Vpp $\pm$ 5%
<b>Output impedance</b>	75 $\Omega$
<b>Video standard</b>	NTSC and PAL B, G, I, D, M, and N
<b>NTSC</b>	0.0-4.2 MHz $\leq$ +0.5 dB/-0.75 dB
<b>PAL</b>	0.0-5.0 MHz $\leq$ +0.5/-1.25 dB
<b>Maximum video resolution</b>	720x480/576
<b>Maximum video bit rate</b>	15 Mbps
<b>Chroma-luma delay</b>	$\pm$ 30 ns
<b>Field time distortion</b>	$\leq$ 3%
<b>Line time distortion</b>	$\leq$ 3%
<b>Differential phase</b>	$\leq$ 3°
<b>Signal-to-noise ratio</b>	$\geq$ 55 dB
<b>Analog Audio Output</b>	
<b>Number of channels</b>	2 stereo pairs/4 mono channels
<b>Audio decompression</b>	MPEG or Dolby Digital
<b>Output level</b>	Balanced, adjustable audio outputs are factory set for unity gain (0 dBm out over 600 $\Omega$ for 0 dBm in). Output is adjustable at the front panel by $\pm$ 6.0 dB (ref.100 K $\Omega$ ) and is factory calibrated to +18 dBu (at full scale).
<b>Frequency response</b>	$\pm$ 0.5 dB, 20 to 20 kHz (ref. 100 K $\Omega$ )
<b>Total harmonic distortion</b>	< 0.3% at 1 kHz (ref. 100 K $\Omega$ )
<b>Dynamic range</b>	85 dB (CCIR average response meter (ARM) weighting)
<b>Crosstalk</b>	80 dB at 1 kHz (typical)

Features	Description
VBI	<ul style="list-style-type: none"> <li>• NTSC lines 10 to 22, fields 1 and 2</li> <li>• Line 21 closed captions</li> <li>• NABTS</li> <li>• AMOL I and II (Nielsen)</li> <li>• PAL lines 7 to 22, fields 1 and 2</li> <li>• WST</li> <li>• WSS</li> <li>• VPS</li> </ul>
Data outputs	RS-232 asynchronous data at rates up to 38.4 kbps
Rates	300, 1200, 2400, 4800, 9600, 19,200, and 38,400 bps
Ethernet output for IP data	RJ-45, 10BASE-T Ethernet and 100Base-T Ethernet, up to 50 Mbps
<b>Cue Trigger Outputs</b>	
Number of outputs	8
Type	Open collector
<b>Cue Tone Output</b>	
Balanced audio output	-3.0 dBu $\pm$ 3 dB, 600 $\Omega$
Output impedance	< 50 $\Omega$
Ethernet output for control and monitoring (same connector is used for data)	RJ-45, 10BASE-T Ethernet and 100BASE-T Ethernet
MPEG-2 transport output	EN 50083-9, DVB-ASI coaxial, 188 byte packets
Programmable relay output	Alarm or configurable to one of the 8 open-collector outputs
MPEG-2 transport input	EN50083-9, DVB-ASI coaxial, 188/204 byte packets
Two SDI video outputs (with embedded audio, same video channel)	BNC, SMPTE-259MC
Two digital audio Outputs (one stereo channel each)	BNC, AES-3id
<b>Environmental/Physical</b>	
Operating temperature	0 to 50°C (32 to 122°F) (without SDI option)
Storage temperature	-20 to 70°C (-4 to 158°F)
Physical dimensions	1.75 in. x 19.0 in. x 15 in. (4.4 cm x 48.3 cm x 38.1 cm) 1U high, 19 in. EIA rack mountable
Weight	10 lbs (4.5 kg) approximately
<b>Power</b>	
Voltage range	100 V to 240 V AC
Line frequency	50/60 Hz
Power consumption	50 W max.
LNB power on RF1	+13 V or +18 V at 400 mA maximum

Figure 2 shows the rear panel of the Cisco PowerVu Model D9850 Program Receiver.

**Figure 2.** Cisco PowerVu Model D9850 Program Receiver Sample Rear Panel



## Ordering Information

To place an order, visit the [Cisco Ordering Home Page](#). To download software, visit the [Cisco Software Center](#).

Table 2 provides ordering information.

**Table 2.** Ordering Information: Cisco PowerVu Model D9850 Program Receiver

Cisco 9850 Feature	Part Number
1RU with GEN-ISE & ASI	D9850-GEN-ASI-1RU
1RU with GEN-ISE & SDI	D9850-GEN-SDI-1RU
1RU with NAP-ISE & ASI	D9850-NAP-ASI-1RU
1RU with NAP-ISE & SDI	D9850-NAP-SDI-1RU
1RU with FTP-ISE & ASI	D9850-FTA-ASI-1RU
1RU with FTP-ISE & SDI	D9850-FTA-SDI-1RU
1RU with GEN-ISE for VERIZON	D9850-GEN-VER-1RU
1RU with NAP-ISE for VERIZON	D9850-NAP-VER-1RU
Cisco D9850 User Defaults	Part Number
POWERVU user default settings	D9850-UD-POWERVU
TBS user default settings	D9850-UD-TBS
LIFETIME user default settings	D9850-UD-LIFETIME
AETN user default settings	D9850-UD-AETN
RAINBOW user default settings	D9850-UD-RAINBOW
COURTTV user default settings	D9850-UD-COURTTV
DLA user default settings	D9850-UD-DLA
E user default settings	D9850-UD-E
FTA user default settings	D9850-UD-FTA
OLN user default settings	D9850-UD-OLN
FOX user default settings	D9850-UD-FOX
SPEED user default settings	D9850-UD-SPEED
CARTOON user default settings	D9850-UD-CARTOON

Table 3 provides ordering information on country-specific power cords.

**Table 3.** Ordering Information: Country-Specific Power Cords

Power Cord Description	Part Number
North American Power Cord (US, IEC, 10AMP, 2.5m)	CAB-PWR-DMN-US
Japan Power Cord	CAB-PWR-DMN-JPN
China Power Cord (IEC)	CAB-PWR-DMN-CHN
Australia Power Cord	CAB-PWR-DMN-AUS
Italy Power Cord	CAB-PWR-DMN-IT
European Power Cord (EU)	CAB-PWR-DMN-EU
Brazil Power Cord	CAB-PWR-DMN-BRA
India Power Cord	CAB-PWR-DMN-IND
Argentina Power Cord	CAB-PWR-DMN-ARG
UK Power Cord (IEC, 10AMP, 2.5m)	CAB-PWR-DMN-UK

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Using the Cisco Lifecycle Services approach, Cisco and its partners provide a broad portfolio of end-to-end services and support that can help increase your network's business value and return on investment. This approach can help you successfully deploy and operate Cisco technologies and optimize their performance throughout the lifecycle of your network.

## For More Information

To learn more about this product, contact your local account representative.

To subscribe to receive end-of-life/end-of-sale information, go to <http://www.cisco.com/cisco/support/notifications.html>.




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