

The User's Manual

Please read this User's Manual
Carefully before installing this Satellite set-top Box

 **Technomate**
TM-Twin-OE

Premium Satellite Set-top Box
(Twin Tuner PVR)



I. Notice

Not to be copied, used or translated in part or whole Manufacturer's prior consent in writing except approval of ownership of copyright and copyright law.

II. Warranty

This warranty does not cover parts which may become defective due to misused of the information contained in this manual.

III. Warning

- Please read the following recommended instructions carefully to avoid the risk of your physical injury before the product is operated.
- Do not cover the receiver and keep clear space around the receiver for sufficient.
- Check the receiver's operation 90-250V, 50Hz-60Hz. Keep liquid away from the receiver.
- The receiver shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the receiver.
- Unplug the receiver from the wall outlet before cleaning.
- Use a soft cloth and a mild solution of washing-up liquid to clean the casing.
- Do not block the receiver's ventilation slots which are provided for ventilation and protection from overheating.
- Please maintain the receiver in a free airflow.
- Do not allow the receiver to be exposed to hot, cold or humid condition.
- Do not use any cable and attachment that are not recommended as these may damage your equipment.
- Please unplug the receiver from the wall outlet and disconnect the cable between the receiver and the antenna when you will not use it for long time.
- Do not remove the cover to reduce the risk of electric shock.
- Do not attempt to service the receiver yourself.
- Refer all serving to qualified service personnel.
- Manual may be updated as new features.

IV. Contents

1. Before you begin	5
1.1. General Features	5
1.2. Unpacking	6
2. Controls and functions	7
2.1. Front Panel	7
2.2. Rear Panel	8
2.3. Remote Control Unit (RCU)	9
2.3.1. Key and Functions	9
2.3.2. Setting-up the RCU for your TV	10
3. Connections TV, Audio, and Antenna	11
3.1. Connecting your TV to the receiver	11
3.2. Connecting your hi-fi audio to the receiver (optional)	12
3.3. Connecting your dish antenna to the receiver	12
4. Basic Operations	13
4.1. Switching Channel	13
4.2. Volume Control	13
4.3. Information Banner	13
4.4. Audio Track	14
4.5. Teletext	14
4.6. Channel Browser	14
4.7. PVR (Personal Video Recorder)	15
4.8. EPG (Electronic Program Guide)	15
4.9. Schedule	16
4.10. UPnP (Universal Plug and Play)	16
5. Initial / Easy Installation	17
5.1. Step-1 Language	17
5.2. Step-2 Time	18
5.3. Step-3 Audio, Video	18
5.4. Step-4 Antenna Connection	19
5.5. Step-5 Satellite Selection	20
5.6. Step-6 Antenna Setup	20
5.7. Step-7 Satellite Scan	21
5.8. Step-8 Scanning Channels	22

6. Menus	22
6.1. Menu Map	23
6.2. Multimedia	24
6.2.1. Internal Disk	24
6.2.2. USB1, USB2, USB3	24
6.2.3. Ethernet	24
6.3. Accessory	25
6.3.1. Games	25
6.4. Preference	25
6.4.1. Language	25
6.4.2. Schedule	25
6.4.3. Time	26
6.4.4. Audio, Video	26
6.4.5. OSD, Display	26
6.4.6. Network	27
6.4.7. PVR, Power-Save	27
6.4.8. Parental Control	28
6.4.9. Conditional Access	28
6.4.10. System Information	29
6.5. Channel Manager	29
6.5.1. TV, Radio Channels	29
6.5.2. Favorite TV / Radio	29
6.5.3. Backup Channel Data to Disk	30
6.5.4. Restore Channel Data from Disk	30
6.5.5. Delete All Channels	30
6.6. Installation	30
6.6.1. Satellite Scan	30
6.6.2. Antenna Setup	30
6.6.3. Motor Antenna	31
6.6.4. Satellite Selection	31
6.6.5. Antenna Connection	31
6.6.6. System Service	31
6.6.7. Easy Installation	33
7. Appendix	34
7.1. Specifications	34
7.2. Trouble Shooting	37
7.3 Brand Codes for Universal RCU	38

1. Before You Begin

1.1. General Features

- HD DVB-S/DVB-S2 Satellite Twin Tuner.
- Supporting MPEG-4, H.264, DivX, Xvid & VC-1 media file playback.
- Dual threading core (405MHz, 1,100 DMIPS).
- 2Gbit NAND Flash & 3Gbit DDR Ram
- Full-HD, true color graphic application software based on Linux.
- Full HD display support : Up-scaling to 1080P.
- High performance HD PVR : internal SATA2 disk interface, and three USB2.0/1.1 disks support.
- NTFS, FAT32 and Linux file systems support.
- 2 HD channel recording and 1 HD channel time shifting simultaneously.
- Fastest PVR trick play mode. (2×, 5×, 10×, ..., 120×)
- Time shifting function.
- HDMI, Component (Y, Pb, Pr) and Euro SCART(RGB, YC, CVBS) outputs.
- 12 character VFD display with scrolling for local time or channel name.
- Multi-language support.
- Ethernet Communication Port
- Dolby Digital Plus Optical S/PDIF

1.2. Unpacking

Please ensure that the following items are included with the receiver in our packing.

- User's Manual
- Power cord
- Remote Control
- 2 AAA batteries for Remote Control
- HDMI cable
- Guarantee Coupon



User's Manual



Power cord



Remote control unit



2AAA batteries



HDMI cable



Guarantee Coupon

2. Controls and Functions

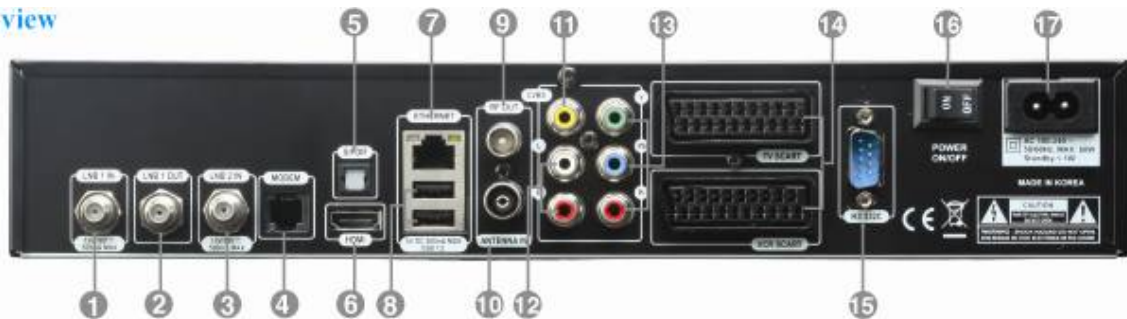
2.1. Front Panel



1. Power
: Switch between operation and standby modes.
2. Menu
: Open main menu & select sub menu using by navigation buttons.
3. OK
: Open service list in viewing mode and you can enter a selected menu or function in Menu mode.
4. Exit
: Close and return to the previous menu and screen.
5. Channel Up/Down
: Change channel or moves the cursor up/down on the menu.
6. Volume Up/Down Button
: Adjust the volume control.
7. Display (VFD)
: Display the current menu information.
8. USB
: Connect to the External HDD or USB storage with USB cable. (Max. 500mA)
9. Smart card reader
: Insert smartcard.
10. Common Interface Slot
: A slot for two CA modules with a Smartcard.

2.2. Rear Panel

Rear view

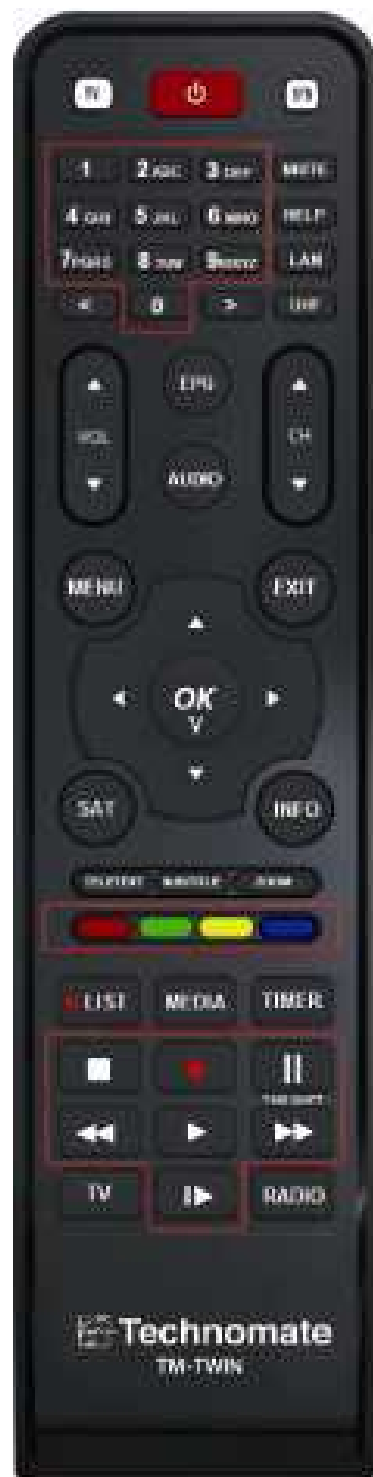


1. LNB 1 IN : 1st satellite tuner input from the LNB on a dish antenna. Turn the receiver OFF first before connecting.
2. Loop 1 OUT : Loop - through output of LNB1 IN for another satellite receiver. turn OFF the receiver to watch an analogue program.
3. LNB 2 IN : 2nd satellite tuner input from the LNB on a dish antenna. Turn the receiver OFF first before connecting.
4. Modem : Connect to a telephone line.
5. S/PDIF : Connect with an appropriate optical cable to your HiFi system.
6. HDMI : Connect to TV using a HDMI cable for both audio and video signals.
7. Ethernet : Communication port via HTTP, FTP, NFS, Telnet and Samba to access your Hard Drive or to upload channel lists. This is also used to update TM-Twin-OE's software.
8. 2x USB : Connect to the External HDD or USB storage with USB cable (Max. 500mA).
9. RF OUT : Connect to TV or VCR.
10. Antenna IN : TV Antenna connection
11. Video Output : Connect to TV using RCA cable.
12. Audio Output : Connect to TV using RCA cable.
13. Component (YPbPr) : Connect to TV using Component cable.
14. Scart (TV/VCR) : Scart Cable to TV/VCR(AUX) connection (RGB,CVBS, YPbPr).
15. RS232 : RS232 data port is provided.
16. Power Switch : Turn AC Power On/Off.
17. Power Inlet : Connect the detachable power cord.

2.3. Remote Control Unit (RCU)

2.3.1. Keys and Functions

1. POWER : Switches between operation and standby.
2. TV : TV Mode.
3. STB : STB Mode.
4. NUMERIC KEY (0~9) : Control the numerical operation and change the Channel/Service number directly.
5. PREV (<) : Return to the previous channel/service or move to the end of the Service List or the Play List.
6. NEXT (>) : Go to the next channel/service or move to the beginning of the Service List or the Play List.
7. MUTE : Mutes or unmutes the audio temporarily.
8. HELP : Displays major important operation methods of TM-TWIN. This provides users with a quick guide of using TM-TWIN.
9. LAN : Open network configuration menu.
10. UHF : Open UHF modulator setup menu.
11. VOL. +/- : Increase/Decrease the volume (Volume up/down).
12. CH. +/- : Move in menus. In viewing mode, you can operate CH+/- by pressing UP/DOWN button.
13. EPG : Displays the Electronic Program Guide (EPG) information if provided.
14. AUDIO : select an audio track and a sound mode.
15. MENU : Open main menu & select sub menu using by navigation buttons.
16. EXIT : Close and return to the previous menu and screen.
17. Navigation Keys : Navigates up/down and left/right on the menu options. Up/down keys are used to call up the channel list.
18. OK : Select a menu, or confirms the selected operation. Also displays the channel list while watching a programme.
19. SAT : Open channel list according to satellite.
20. INFO : Shows current program's stream information.
21. TELETEXT : Switch between the teletext and TV modes.
22. SUBTITLE : Display the subtitle language list.



23. Zoom : To zoom In/Out.

24. COLOR BUTTONS : Activates certain menu functions. Usage instructions are shown in each OSD menu.

25. LIST : Open recording file menu.

26. MEDIA : Open media file list.

27. TIMER : Start timer function.

28. PVR FUNCTIONS :Control the PVR functions in PVR Mode.

29. TV : Switch between TV mode.

30. RADIO : Switch between Radio mode.

2.3.2. Setting-up the RCU for your TV

The RCU is a universal remote control, i.e. it can control your TV. You should setup the RCU for them to use. If you want to control TV, please do the following steps with TV key instead.

1. At first, turn on the TV

2. Find the brand code for your TV in **Brand Codes for Universal RCU** at the Appendix. You can see one or more 4 digit numbers.

3. Press the OK and Power keys on the RCU at the same time for more than 3 seconds until the back light of the TV key twinkles 3 times shortly.

4. Please do just one of the following two methods.

A. Set the brand code manually – may be fast but a bit of complex

Press the 4 digit brand code in sequence found in the step 2.

If the back light of the **TV** key turns on during about two seconds,

- it means the code is wrong for the RCU,
- you can retry this step with the next code found in the step 2 within 20 seconds.

If the back light of the **TV** key twinkles 2 times shortly,

- it means the code was accepted to the RCU and the RCU transmits the ultra red light for the **POWER** key.

- if the TV turns off, go to the step 5.

- if the TV does not respond, you can retry this step with the next code found in the step 2 within 20 seconds.

B. Set the brand code by scrolling – may take long time but easy

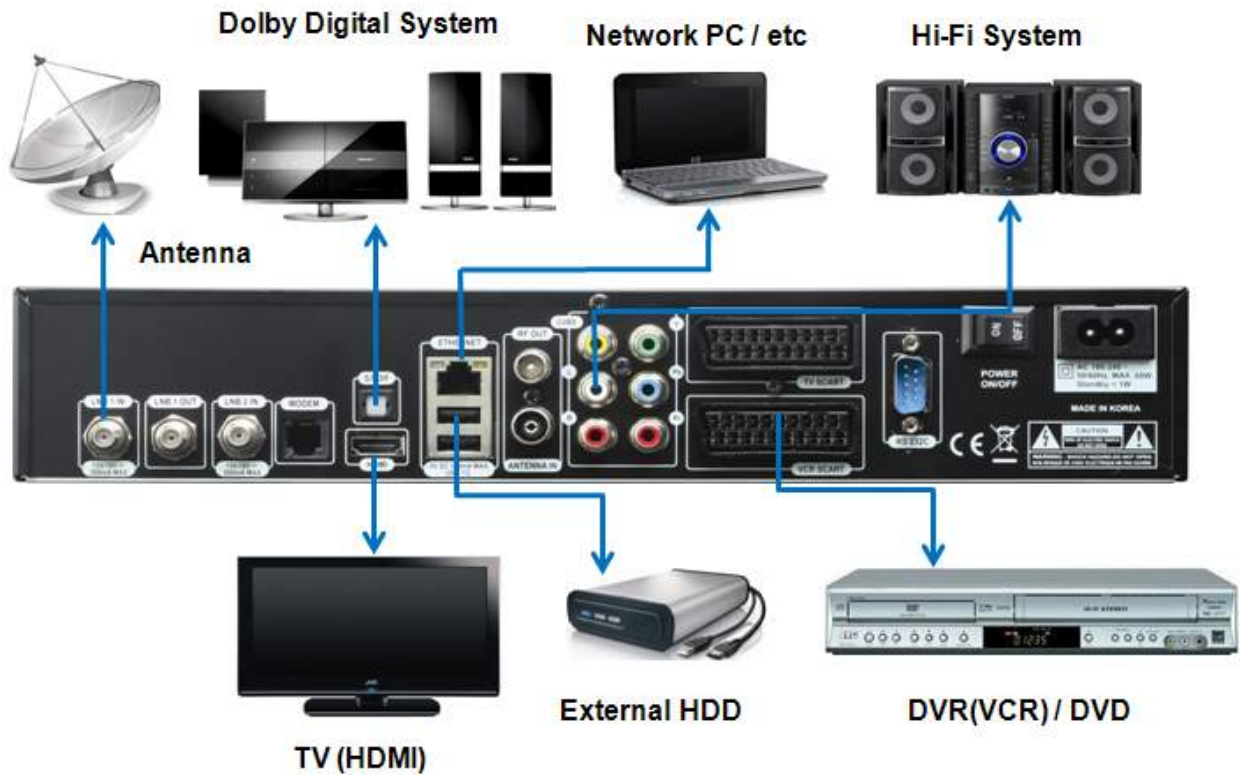
Press the **UP / Down** key until the TV turns off.

- if the TV turns off, go to the step 5.

- if the TV does not respond, continue this step B within 20 seconds.

5. Press the **OK** key then the back light of the TV key will twinkle 3 times again. Please turn on the TV by pressing the **POWER** key on the RCU then check whether other keys such a VOL / , CH / , etc are working correctly. Even though the **POWER** key works but other keys may not work under the brand code. Please try again from the step 1 to find out the correct brand code for your TV.

3. Connecting TV, Audio, and Antenna



3.1. Connecting your TV to the receiver

• There are various types of connections of the digital receiver, but please consider to follow the order below if available for the best possible picture quality.

1. HDMI connector
2. Component(Y, Pb, Pr) connectors
3. SCART connector (RGB, YC, CVBS)

Please select RGB for the SCART TV item in the Audio, Video menu, if your TV supports this mode because it is more clear than YC or CVBS.

• Using A HDMI Cable : If you have a HD television set, you should use a HDMI cable for the best results. Plug receiver's HDMI cable to the terminal marked "HDMI" on the rear panel of your receiver and its other end to the TV HDMI input. In this case, you do not have to make audio connection because the HDMI connector can output stereo audio or Dolby Digital audio.

• Using Component video cable : Plug the component video cable (RCA video cable) into the appropriate RCA jacks on your receiver : Y (green), Pb (blue), Pr (red) according to the color of both sets.

- Using A SCART Cable : Plug the SCART Cable into the TV SCART outlet on your receiver : then connect end to your TV.

3.2. Connecting your Hi-Fi audio to the receiver (optional)

- Connect RCA audio cable to the appropriate RCA input terminal of your external audio system and connect the other end to the RCA audio port on your receiver.
- If you have digital audio equipment, you can connect it to Receiver using S/PDIF.
 - Plug in the appropriate cable to the S/PDIF port on your Receiver, then connect the other end to your digital audio equipment.

3.3. Connecting your dish antenna to the receiver



- This receiver has two tuners inside and there are two LNB inputs and one loop-through output of the LNB1 IN.
- Please connect the appropriate satellite input to the LNB1 IN and/or LNB2 IN. The connection should be matched in the Antenna Connection menu later.
- Please ensure that there is a connection to both the LNB1 IN and LNB2 IN connectors on your receiver, so that both tuners work properly. You don't need to use a loop cable from the LNB1 OUT to the LNB2 IN connector because it will be connected internally according to the mode in the Antenna Connection menu.
- If you want to use another satellite receiver, please connect the LNB input of the receiver to the LNB1 OUT connector of this receiver.

4. Basic Operation

4.1. Switching Channel

- To display all channels list, press the OK key on the remote control.
- Use the ▲▼ keys to search the required channel one by one, and the ◀▶ keys for each page and press the OK key to watch the selected channel.

(Note : An Euro dollar sign may be on some entries, indicating Pay-TV service using CAS system . To watch the Pay-TV services, you may need the CAM and smartcard with entitlement)

4.2. Volume Control

- Press the VOL+ or VOL- key to control audio volume.
- Press the MUTE key to turn the sound on and off.

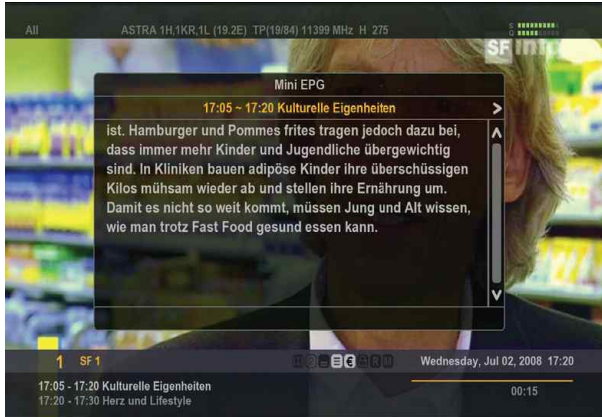
4.3. Information Banner



- Press the INFO key to see general information of the current channel or file.
- Info. included with channel name, current time, signal level/quality, displaying the stream information.

- There are small icons to show the program specific information.

	Dolby audio is available
	More than one language are present
	Subtitle is present
	Teletext is present
	Video resolution & framing mode
	Scrambled, Pay-TV service
	Locked channel requires PIN input
	Premiere's Multi-feed service
	Recording to a disk is in progress
	Timeshift playing is active



- If you press the INFO key again, it raises the Mini EPG window which shows more detailed information of the selected program.
- ◀, ▶ key moves the current program to the you can reserve the service for watching pressing the key named Reservation.

4.4. Audio Track

- Press the AUDIO key and ◀, ▶, ▲, ▼ keys on the remote control to select the audio track and audio mode (mono right/left, stereo).

4.5. Teletext



- You can raise the teletext window while you are watching/listening a TV/Radio program which has the teletext service by pressing the TELETEXT key on the remote control.
- You can adjust following features on the teletext window.
 - Transparency : changes the mixing level between background of teletext and the live video by pressing the REW(◀◀) and FF(▶▶) keys.
 - Language : changes the language by pressing the

OK key.

- Zoom : enlarges the teletext window by pressing the ZOOM key and back to the normal size by the same key.

4.6. Channel Browser

- While you are watching / listening a TV/ radio program, you can raise the Channel Browser by pressing the OK key and find the desired channel quickly.
- Press the Up / Down keys to move the key focus, Left / Right keys to move the prior or next page of the channel list.



- Press the Red key to find channels or files by specifying particular characters contained in them.
- Press the Green key to sort the channel list by

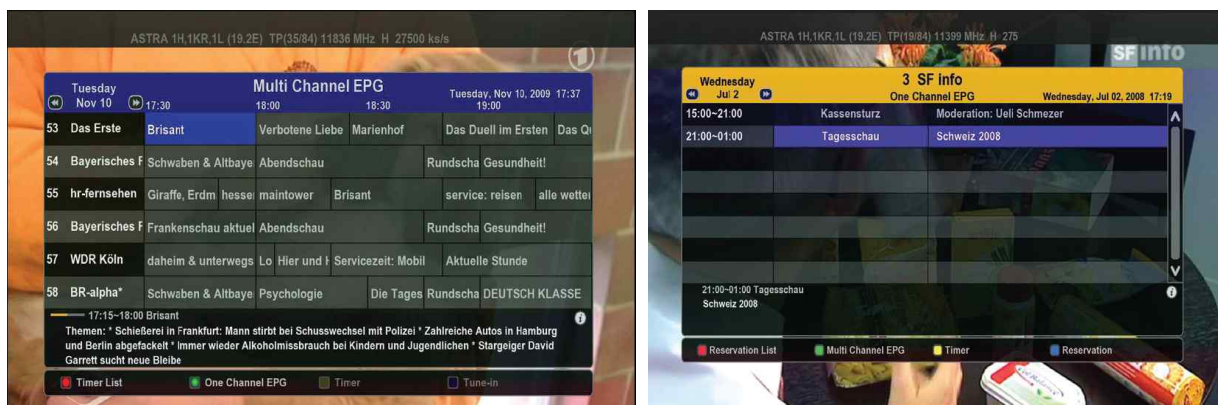
- None : Scanned Order
- A-Z : Ascending Order
- Z-A : Descending Order
- FTA-CAS : FTA (Free To Air) channels first
- CAS-FTA : CAS(pay-TV) channels first
- Press the Yellow key to pick up a group of channel or device list. You can select one of, for example, All SAT, Internal Disk, 'Astra 19.2E', USB1, etc.

4.7. PVR (Personal Video Recorder)

- Press the Record key to start recording while watching/ listening a TV/radio program.
- You may stop recording by pressing the Stop key manually, or the recording will stop automatically after the Recording Duration or the time specified by EPG information, depending on which you select when the recording starts. You can set the Recording Duration at the PVR, Power-Save menu in the Preference menu.
- If you wish to play the files recorded, raise the File Browser by pressing the MEDIA key.

4.8. EPG (Electronic Program Guide)

- We support 3 presentations of EPG : Mini-, One Channel-, Multi Channel EPG.
- Press the EPG key to display the EPG window. You can see the Multi Channel EPG window, press the same key again to show the One Channel EPG.



- Information in the channel and make an instant timer recording or create reminders to tune to TV programs.
 - Timer(Red) List : You can see the reserved programs
 - Timer(Yellow) : You can create Task function with preferred time frame
 - Turn-in(Blue) : Press button for Recording / Watching
- You can make reservation with the Blue key and the reservation type will be cycled.
 - W : Reserved for Watching
 - R : Reserved for Recording
 - WR : Reserved for Watching and Recording

- The One Channel EPG shows the program information only for the selected channel.

4.9. Schedule

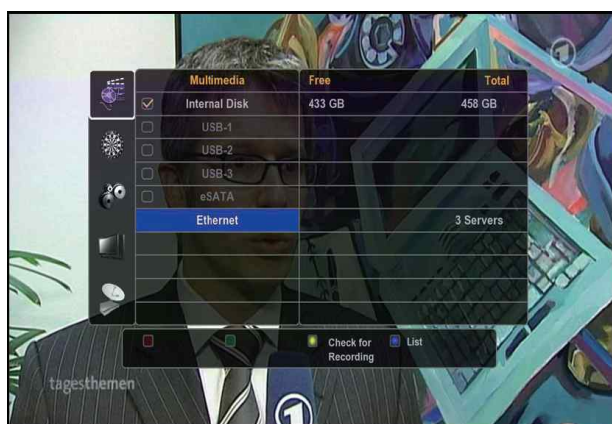


- When you want to reserve the record or set the TV on–time/off-time, select the Green key for below options.
- To save the data, press the Blue key. Otherwise, not to save the data, press the Yellow key.

4.10. UPnP (Universal Plug and Play)

✳ **UPnP (Universal Plug and Play)** : a set of networking protocols promulgated by the UPnP Forum.

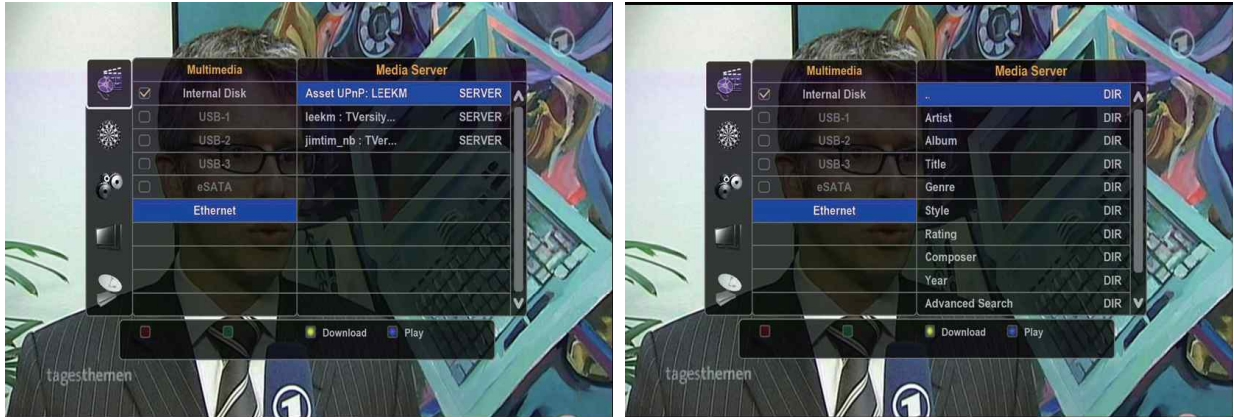
The goals of UPnP are to allow devices to connect seamlessly and to simplify the implementation of networks in the home (data sharing, communications, and entertainment) and in corporate environments for simplified installation of computer components. UPnP achieves this by defining and publishing UPnP device control protocols (DCP) built upon open, Internet-based communication standard



- The UPnP client function is always activated, and therefore, it is constantly searching for servers on the network.
- In order to use the UPnP file sharing functionality, you must have at least one UPnP server on the network such as x-Box360, PS/3, and a PC running a UPnP server software like TVersity , which is widely used in a PC environment.
- You can download and install the software from www.tversity.com on the PC. After installation, add

desired folder to share as instructed by its operation guide and start the server function.

- The number of servers found in the Multimedia menu.
- If you select one of the servers and press the OK key, it will show the files contained in the selected server.



- Select the file and press the OK key then the file will be downloaded into the upnp folder in the Internal Disk or external USB disk.

Depending on the file types, you may be able to play the file while downloading (e.g. .MKV format) or after downloading (e.g. .AVI format).

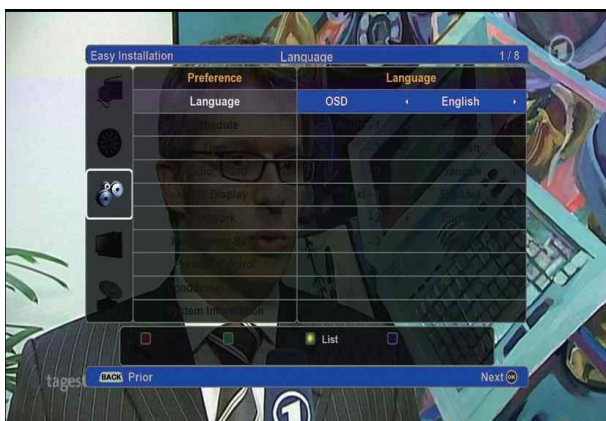
5. Initial / Easy Installation

The Easy Installation function was designed to do the first installation with ease but some steps require the technical knowledge about the satellite broadcasting system. Please see the detailed description in the 6. Menus chapter about the following steps.

5.1. Step-1 Language

There are three kinds of languages : OSD (On - Screen Display, e.g. Menu), multilingual audio (e.g. audio track), and multilingual text (e.g. teletext and EPG).

You can select three levels of priority for audio and text languages.



- OSD – Selects the language for On-Screen Display like menus.
 - Audio 1, 2, 3 : Selects the preferred audio language with priority.
 - Text 1, 2, 3 : Selects the preferred teletext and EPG language with priority.
- ☞ If a program has an audio/text language that is matched to the 1st Audio / Text language when you're watching the program, it will be output.
- If the 1st Audio / Text language does not

matched, receiver will do above step with the 2nd one and then 3rd one if then 2nd one also fails.

5.2. Step-2 Time

You should select the time zone where you are in and summer time correctly.

You don't need to adjust the time and date manually because the time and date will be synchronized with one in the broadcasting signal when you watch any program after finishing these installation phase successfully (in case of Sync with TDT is Any TP or "reference" TP).



- Receiver should have exact time for correct operation.
- Otherwise, the program time provided by the EPG and user's reservations of programs may be distrustful.
- Receiver can take time from broadcasting signal or set by user.
- You should specify your time zone and summer time correctly.

■ Time Zone : Select your area (ex : Berlin,

Germany and you can see the current date DD/MM/YY and current time of the selected area) Press the Yellow key to show the time offset table (example : GMT+1:00, Berlin using / key)

■ Summer Time (Yes, No) : If set "Yes", you can also select the start /end period.

- Start : Start date of daylight saving time

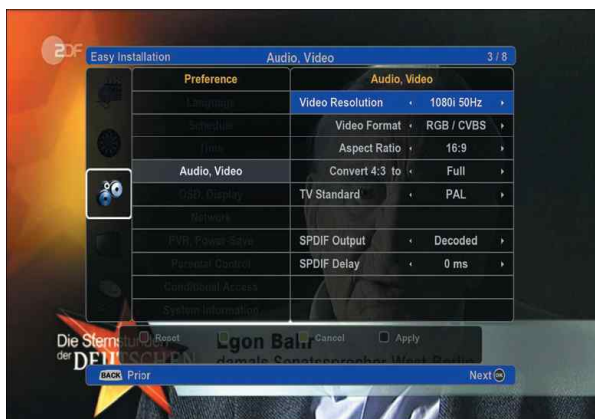
■ Format (DD/MM/YYYY, YYYY/MM/DD) : Display format

■ Sync with TDT (Any TP, Below CH, No) : if select "Below CH", time zone will be set automatically with broadcaster information

- TDT (Time Date Table) : Receive the time from broadcaster

5.3. Step-3 Audio, Video

Select your TV aspect ratio and the best resolution, etc.



• Video Resolution (576i 50Hz, 720p 50Hz, 1080i 50Hz, 1080p 24/25/30 Hz) : Selects the video resolution with framing rate. Please select the possible highest resolution to fit your TV.

• Video Format (YCbCr/CVBS, RGB/CVBS, YCbCr/YC, RGB/RGB) : Selects the video signal type for your TV. If you have a legacy TV which has only SCART connector, Select 576i mode resolution, then you can also select one of RGB, YC, and CVBS signal type. RGB is clear than YC and CVBS

but your TV may not handle it.

• Aspect Ratio (4:3, 16:9): Specifies the screen aspect ratio of your TV correctly. It will affect the

stretching of the video.

- Convert 4:3 to (Pillar-Box, Mixed, Zoom, Full) : Selects the way to show 4:3 video on 16:9 TV screen.
- TV Standard : Set the standard in your country: PAL for many European countries and China, NTSC for USA, Japan, and Korea.
- SPDIF Output (Decoded, Bit Stream) : Selects the optical output type of audio.
 - Decoded – Output the PCM type down mixed audio output.
 - Bit Stream – Bypass the audio stream to the optical output untouched.
- SPDIF Delay (0ms,10ms, 20ms,, ~ 500ms): When using S/PDIF (Sony/Philips Digital Interface) for digital audio, you can select the option for Sync delay.

5.4. Step-4 Antenna Connection

Specify your antenna connection.



- If you have only one antenna cable for one dish antenna.

Select “Direct” mode and connect it to LNB A1.

Our receiver has two tuners and it supports “Internal Loop-through”. So you can connect two separate antennas to each tuners or connect one antenna to LNB A1 tuner and internally loop-through to LNB A2 tuner. So you don't have to externally connect loop-through. In this mode, two tuners should have the same control signal such as

polarization and 22KHz tone.



- Select "Direct" mode of LNB A1 & LNB A2 both if you have two dish antennas separately.
- If you have one antenna cable for two or more dish antennas with DiSEqC switch, Select “DiSEqC” mode and connect the antenna cable to LNB A1 connector.

※ Note : LNB (Low Noise Block amplifier) is located at the satellite dish antenna.

5.5. Step-5 Satellite Selection

Specifies the satellite(s) to receive signals from your dish antenna(s).



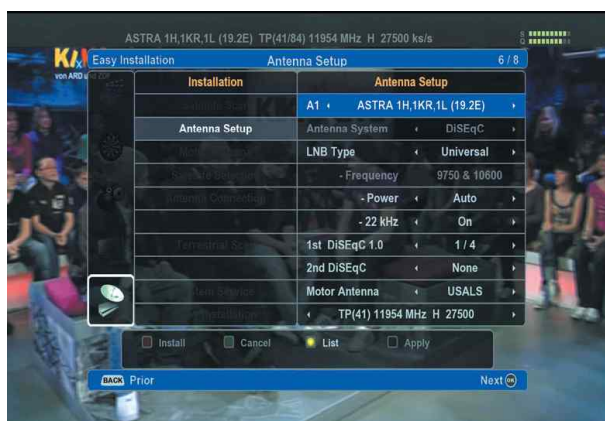
- Select the satellite(s) that you have installed for tuner 1 and 2 correctly. Selected state will be changed whenever you click OK key on the remote control.

5.6. Step-6 Antenna Setup

You may need to change some parameters for your antenna and LNB to receive signals from the satellite. You can find the signal with the signal meter display on the screen : it shows green blocks if the signals found, or grayed if not found.

Please go to the next step if you found a few good signals.

For setup of a satellite, you can configure Antenna System, LNB Type, DiSEqC switches and Motor Antenna if you have installed one.



- A1 “Astra 19.2E” shows the satellite selected currently with the longitude and which tuner is connected for the satellite.
- Antenna System : *DiSEqC, OneCable.
- LNB Type : *Universal, C-Band 1/2/3, Ku-Band 1/2/3, User Define.
- LNB Frequency : Specifies the frequency of LO (local oscillator) in the LNB. You should select the correct one installed.
- LNB Power : *Auto, Off, 13V, 18V - Supplies

electric power to the antenna system.

- LNB 22KHz : *Auto, Off, On
- 1st DiSEqC 1.0/1.1 : *None, 1/4 ~4/4, Tone A, Tone B, 1/16 ~16/16
- 2nd DiSEqC 1.0/1.1 : *None, 1/4 ~4/4, Tone A, Tone B, 1/16 ~16/16
- OneCable Status : Select the Red key to install.
- User Band : 1, 2, 3, 4
- UB Frequency : 1400, 1516, 1632, 1748 MHz
- MDU : *No, Yes - Select YES if you installed the Multiple Dwelling Unit system, “No” for Single

Dwelling Unit.

- MDU PIN : Enter PIN code for the MDU.
- Motor Antenna : *None, DiSEqC1.2, USALS - Set the type of positioner /motorized antenna if you have installed the one.

☞ DiSEqC1.2(Digital Satellite Equipment Control Level 1.2) or USALS(Universal Satellites Automatic Location System). If there is no motor antenna in your system, please just remain None as default.

5.7. Step-7 Satellite Scan

Now you are ready to start to scanning channels if you have passed the above steps correctly.

- To enjoy programs, you should take the channels contained in the broadcasting signal from satellite antenna(s); normally it calls 'Channel Scan' or 'Channel Searching'.
- There are several kind of channel scan modes according to target range to search.



- All SAT : searches all satellites you have selected at the Satellite – Select menu.
- SAT : searches all transponders in the specified satellite in the menu.
- TP : searches specified transponder in the menu.
- Service ID : searches the channel specified by its service ID in the menu.
- PID : adds the channel specified by its audio, video and PCR PID(Packet Identifier) in the menu.
- Blind : it takes long time because many tuning

parameters are applied without specifying correct ones. You'd be better to use the All SAT or SAT mode.

- Transponder parameters
 - Frequency : Current frequency displaying in MHz of selected TP
 - Symbol Rate : Current symbol rate displaying in kSym/sec of selected TP
 - Polarization (H,V) : Select Horizontal or Vertical polarization of electrical wave
 - Code Rate (*Auto, 1/2, 2/3, ... 9/10)
 - Modulation : Auto, QPSK/DVB-S, QPSK/DVB-S2, 8PSK/DVB-S2
 - Find (*All, FTA only) : Select "All" for scanning all channels including the scrambled ones. It will scan without CAS channels if you select "FTA only".
 - Network Scan (*No, Yes); You can search channels for another TP using NIT(Network Information Table) which has the streaming to get other information of another TPs. It expects to take more time depending on your network situation.

5.8. Step-8 Scanning Channels

It searches channels and shows them with the progress meter on the screen. It may take a few minutes or more depending on the total number of transponders in all satellites to scan.



- If you press the key named Scan under the Scan *** menu, then it will search and show TV and radio channels found with progress meter; it takes from a few seconds to a few minutes depending on the Scan Mode.

6. Menus

While you are watching/listening a TV/radio program or a media file, you can raise the Main Menu by pressing the MENU key. You can select the sub – menu using the ▲▶▼◀ keys. The selected sub-menu becomes highlighted color.

When you wish to return to the previous menu, press the BACK key.

When you wish to return to the live screen, press the MENU key again.

※ Password Protection

Some important menus like the Installation menu are protected by the password, sometimes called PIN(Personal Identification Number), to avoid modifying by accident. The password is 0000 by default and you need to change it as your secret numbers at the Change Password menu in the Parental Control menu and must remember that!

Warning : If you forgot the password you can't access the protected data or services and may lose all of your data in the receiver, or you can reset the password at the service center.

6.1. Menu Map



Multimedia

- Internal Disk
- USB 1, USB2, USB3
- eSATA
- Ethernet



Accessory

- Tetris
- Sokoban



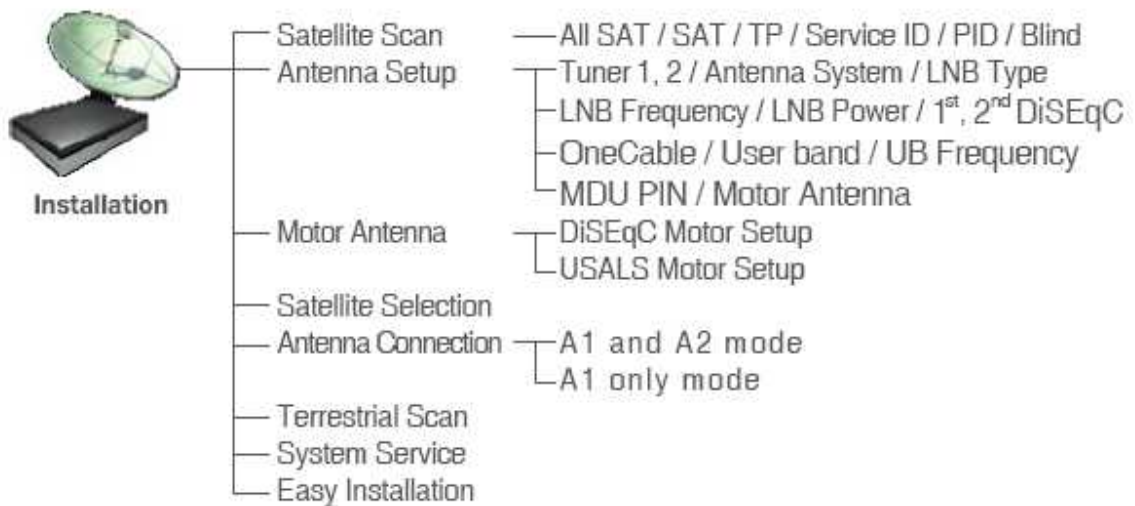
Preference

- Language
- Schedule
 - OSD / Audio 1, 2, 3 / Text 1, 2, 3
 - Number / Task / Watch Time
 - Start Time / Weekdays / CH Type
- Time
 - Time Zone / Summer Time / Format
 - Sync with TDT / Reference Channel
- Audio, Video
 - Video Resolution / Video Format / Aspect Ratio
 - Convert 4 : 3 to / TV Standard
 - SPDIF Output / SPDIF Delay
- OSD, Display
 - OSD Transparency / Text Transparency / OSD Font
 - Banner Duration / VFD Luminance
- Network
 - DHCP / IP Address / Subnet Mask / Gateway
 - DNS1, DNS2 / UPnP Server
- PVR, Power-Save
 - Timeshift / Timeshift Duration
 - Record Duration / CAS Recording
 - Standby Mode
 - Auto Standby
- Parental Control
 - Content, Pay-TV, Multimedia, Game
 - CH Manager, Installation, System
 - Change Password
- Conditional Access — CI 1, CI 2 , Smartcard
- System Information



Channel Manager

- TV , Radio Channels
- Favorite TV, Favorite Radio
- Backup Channel Data, Restore Channel Data, Delete All Channels

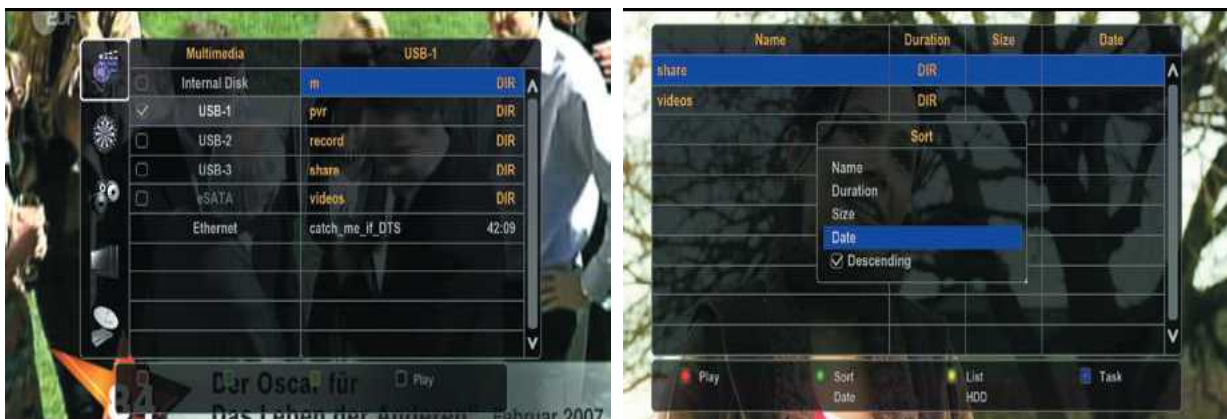


6.2. Multimedia

Multimedia menu is used for enjoying multimedia contents which are stored in a disk or available on the network. Recorded contents by PVR function or movie files downloaded from internet can be played. Photos or music files can be enjoyed also and all the files are treated just like PC.

6.2.1. Internal Disk - can be selected if it is present.

6.2.2. USB1, USB2, USB3 - There are 3 USB 2.0 ports in the receiver (two are at the rear panel and one is at the front panel). If one or more disks are connected at those USB ports, the USB menu are activated and can be selected just like internal disk.



- Among 3 USB devices, You can navigate from USB 1 to USB 3 and share the data, files and paste them as you do in PC. Also. Play the movies/Musics You recorded.

6.2.3. Ethernet – If the receiver is connected to Local Area Network, the menu will be activated and available number of servers will be displayed.

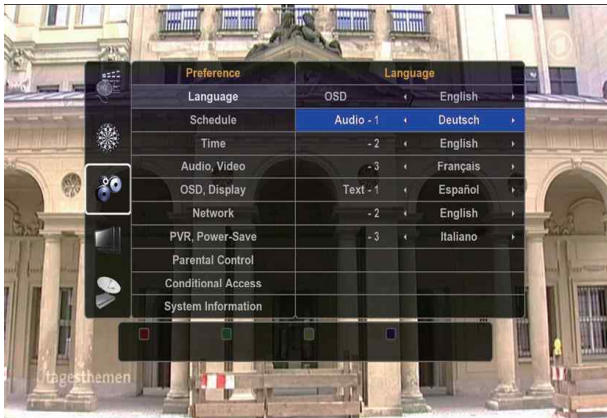
6.3. Accessory

This accessory section is for various applications like small utilities, games.

6.3.1. Games – it may have one or more games to enjoy.

6.4. Preference

6.4.1. Language



Please see the 5.1.Step-1 Language

6.4.2. Schedule

- Number : Task quantity.
- Task - “power” for on/off time of TV.
 - “Watch” for watching the selected TV channel.
 - “Record” for recording the required TV Program.
 - “Watch+Record” for watching & recording TV channel and program.



- Power-on time : After select the task “Power”, you should select the required power-on time.

- Start time : After select the task “Watch” or “Record” or “Wat + Rec”, you should select the required start time.

- Weekdays : Also you can select the required time period as Once, Everyday, Mon~Fri, and Sat~Sun.

- CH Type : You can select the TV, Radio and the last TV with using Yellow button showing all TV /

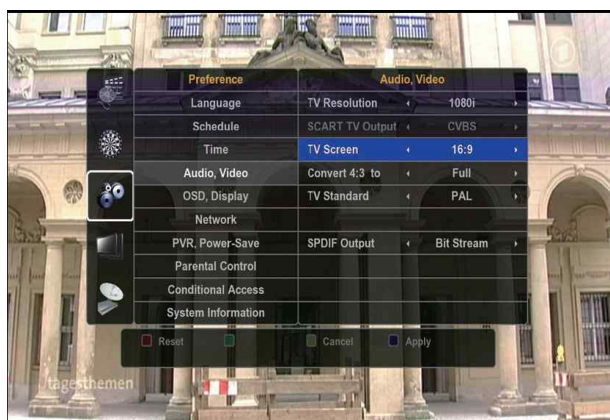
Radio Channels and the last channel.

6.4.3. Time



☞ Please see the 5.2.Step-2 Time

6.4.4. Audio, Video



☞ Please see the 5.3.Step-3 Audio, Video

6.4.5. OSD, Display



- OSD Transparency (0~100%) : OSD menu transparency value.
- Text Transparency (0~100%) : Text menu transparency value.
- OSD Font : Selects the font to be used for the menu. 9 more fonts are copied to the system and selected in addition to the default fonts.
Windows compatible "True Type Font" can be used and the fonts can be copied to the receiver from a USB disk using the Download color key.

- Banner Duration (No, 1, 3, 5, ..., 60 sec) : The information banner will be disappeared after this period of time.
- Screen Saver (No, 5, 10 min.) : Screen saver will be activated if no video state such a 'bad signal',

listening a radio channel continues during this period of time to protect your TV screen.

- VFD Luminance (Dark, Normal, Bright) : Luminance of the front VFD display.

6.4.6. Network

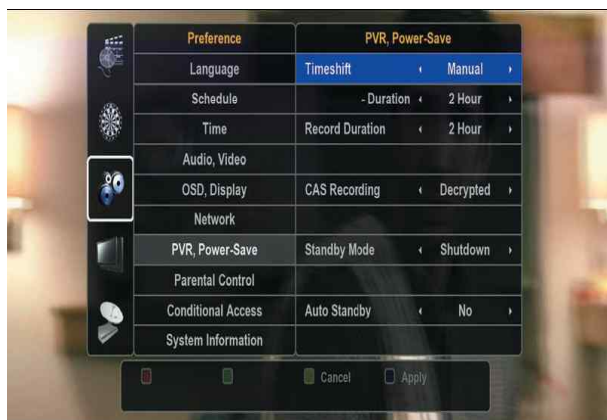


- DHCP (Yes, No) : Selects whether automatic IP configuration(DHCP) is enabled. If your network (Ethernet, LAN) supports DHCP service or server like a router or a hub, you can select Yes. If Yes is selected, the following menu items are disabled and the values are assigned automatically when you press the key named Apply.

If No selected, you should set below values correctly or you may need a help from a person who knows this kind of networking.

- IP Address
- Subnet Mask
- Gateway
- DNS1, DNS2
- UPnP Server (*Off, On) : Select On if you want to share the contents in a disk on the receiver with the UPnP clients outside with UPnP (Universal Plug and Play) protocol.
 - ※ Note : It has been set the UPnP server Off as factory default.
- You can set the folder to share by pressing the Blue (UPnP DIR) button.

6.4.7. PVR, Power-Save



- Timeshift : *Manual, Always – Timeshift function is enabled manually by default. If you set to Always, it consumes processing power, lifetime of disk, and electric energy, so we do not recommend this full - time timeshift by Always mode.

Instant timeshift by the Pause key will enable the timeshift function, but will be disabled after channel change or stop key.

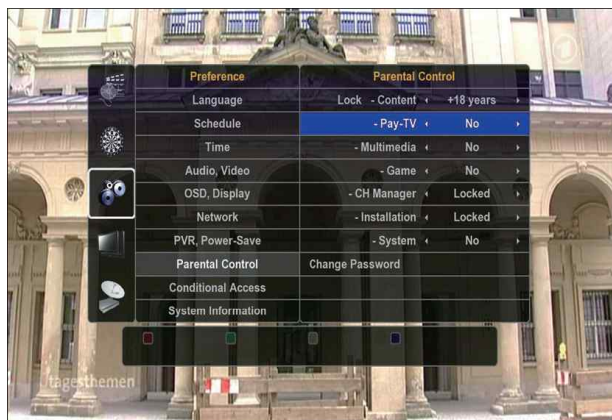
- Timeshift Duration : 1, *2, ... 8 hours - When you select the timeshift duration time (2 hours ; default),

timeshift function automatically starts whenever you change the channel.

- Record Duration : 1, *2, 3, 24 hours as default recording time.
- CAS Recording : Encrypted, Decrypted - When recording a scrambled program, you can select to descramble to play back in the future. "Decrypted" records contents for decrambling by CAS. "Encrypted" records contents untouched(scrambled), so it will be descrambled by CAS when plays back.

- Standby Mode : Sleep,*Shutdown - Default mode is Shutdown to save energy. Please set to Shutdown mode to minimize the power consumption but it takes more than (10~30 secs) to power on.
- Auto Standby : *No , After 2 STD, After 3 STD - It will go back to Standby Mode if there is No key operation during the selected time period.

6.4.8. Parental Control



- Lock - Content : controls the maturity rating of content (a / v channel or media file). If the content rating is over or equal to this condition, it will be blocked and prompt you to enter the password to enjoy the program.

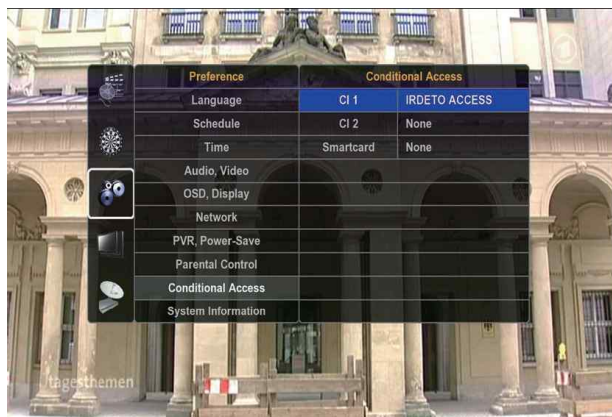
- Free : All contents can be viewed without the password protection.

- +7 years : Contents which have more than 6 years of rating are blocked.

- +12 years : Contents which have more than 11 years of rating are blocked.
- +15 years : Contents which have more than 14 years of rating are blocked.
- +18 years : Contents which have more than 17 years of rating are blocked.

- Lock - Pay - TV : No or Locked
- Lock - Multimedia : No or Locked
- Lock - Game : No or Locked
- Lock - CH Manager : No or Locked
- Lock - Installation : No or Locked
- Lock - System : You should enter the password when you turn on the receiver if this lock is Locked.
- Change Password : You can change the current password with new one with this menu.

6.4.9. Conditional Access



For watching / listening the scrambled services, you may need the proper smartcard with or without the CAM(Conditional Access Module) which depends on the service.

Following menu shows the name of each card or CAM when it was recognized and the sub menu items are defined by that card or module.

- CI1
- CI2
- Smartcard

6.4.10. System Information

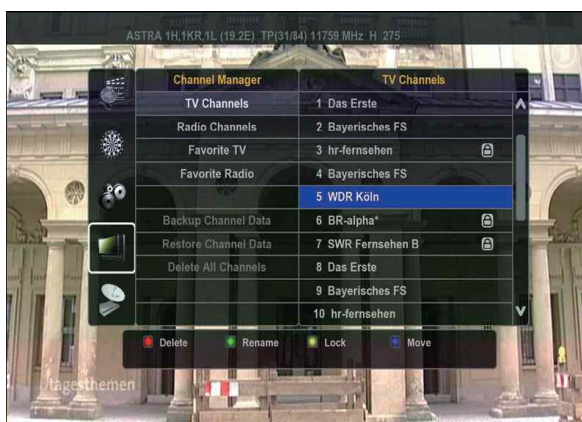
You can find the system information like below.

- Brand – TM-TWIN
- Model – TM-TWIN
- Hardware ID : variable
- Software version : variable
- Data Version : variable
- API Version : variable
- OS Version : variable

6.5. Channel Manager

To edit the TV services list, first select the OK key and then pop-up window will be displayed to ask the password and enter the 4 digit password and the OK key again then the TV services list is displayed and related menus become enabled.

6.5.1. TV, Radio Channels



In order to delete the selected TV channel(s), select the Red (Delete) key on the display and then pop-up window below will be shown asking you to confirm it and you can delete the channel(s) you want by pressing the OK key.



Also you can change the name of channel by using the Green (Rename) key and if you want to protect the channel(s) by using the Yellow (Lock) key, the channel will be secured by adding mark on the channel list.

Also you can remove the channel you selected to the other display of list by using the Blue (Move) key on the display.

6.5.2. Favorite TV / Radio

You can also edit and save your favorite TV channels. There are 9 favorite channel groups (Kids,



Education, Sports, Drama, Movie and Shopping) and also select the favorite Radio channels using radio key on the remote controller (see remotes map). There are 6 groups (Classic, Pop, Jazz, Hip Hop, Rock, and Wrap).

6.5.3. Backup Channel Data

☞ Please see the 6.6.7 System Service.

- You can also move / copy / paste all channel data into internal Disk and USB devices

6.5.4. Restore Channel Data

☞ Please see the 6.6.7 System Service.

6.5.5. Delete All Channels

☞ Please see the 6.6.7 System Service.

6.6. Installation

6.6.1. Satellite Scan

☞ Please see the 5.7.Step-7 Satellite Scan.

6.6.2. Antenna Setup

☞ Please see the 5.6 Step-6 Antenna Setup



6.6.3. Motor Antenna

If there are two Motor Antenna mode DiSEqC1.2 or USALS in your system above, Select below.



- Positioner Name(DiSEqC motor setup).
- TP name.
- My Longitude.
- My Latitude.
- DiSEqC 1,2 : Save Position, Recalculate Position.
- USALS : Goto X, Goto Reference.
- Cancel Limit.
- East - Limit – West
- East – Move –West

6.6.4. Satellite Selection



☞ Please see the 5.5 Step-5 Satellite Selection

6.6.5. Antenna Connection



☞ Please see the 5.4 Step-4 Antenna Connection

※ LNB(Low Noise Block) is usually located at the Satellite dish antenna. If you are unsure, do NOT change the default settings).

6.6.6. System Service

☞ The system has following software components in the flash memory and you can update with new one selectively from an USB disk. They can be backed up to/restored from an USB disk.



- Main Firmware is the core GUI program you are enjoying.

- Channel Data includes information of satellites, transponders and channels.

- Update Firmware from Disk : You can click the selected USB disk which includes new firmware and then, please follow up the direction on the screen.
- Update Firmware from Network (Auto, Manual) : When you click OK button, it will connect the file server connected to the internet and show the pop up the list of the firmware files and you can select the latest firmware for updating or any version of firmware in the list.



Pop-up window will be displayed when you select the firmware in the list and the downloading firmware will be started by select the Red (Apply) button.

While updating, also the display indicates the sign with " Firmware update is in progress"



Finally, Your confirmation is needed whether you want to get update or not.

- Backup Channel Data from Disk

: Same as the method of update firmware from Disk above.



- Restore Channel Data from Disk
- Format Internal Disk : It will initiate the format when you install new HDD or when you try to re-format with the existing internal disk in the STB.
 - ※ Warning : It may be causing to lose all or some data while doing this .
- Delete All Channels : deletes all channels.
 - ※ Warning : if you do this, you should rescan channels to enjoy in the Satellite Scan menu but it

may be difficult to you if you are not familiar with.

- Factory Reset : erase all data changed by users and resets to the factory default settings.
 - ※ Warning : if you do this, you should reinstall many things to enjoy in the Installation menu but it may be difficult to you if you are not familiar with. You may do that using the Easy Installation menu.

6.6.7. Easy Installation

Please see the 5. Initial / Easy Installation

7. Appendix

7.1. Specifications

Satellite Front-End

Input Connector	F-Type, IEC 169-24, Female x 2
Loop-through Connector	F-Type, IEC 169-24, Female
Frequency Range	950MHz to 2150MHz
RF Input Level	-25dBm to -75dBm
LNB Power & Polarization	Vertical: +13V (+14V at high voltage) Horizontal: +18V (+19V at high voltage) Current: Max. 500mA (Overload protection)
22KHz Tone	Frequency : 22KHz, +/- 4KHz Amplitude: 0.7V, +/- 0.2V
DiSEqC Control	Version 1.0, 1.2, USALS compatible
Demodulation	QPSK, 8PSK
Input Symbol Rate	DVB-S : 1-45 MBaud DVB-S2 : 5-30 MBaud (QPSK), 2-30 MBaud (8PSK)
FEC Mode	DVB-S : 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 7/8, 8/9, 9/10 DVB-S2 : 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10

RF Modulator

RF-Connector	75ohm IEC169-2, Male / Female
Frequency	470MHz to 860MHz
Output Channel	CH 21~CH 69 for the Demodulator
TV Standard	PAL B/G/I/D/K Selectable by Menu Setting
Audio Output	Mono with Volume Control
Preset Channel	CH 40, Software changeable by Menu screen

System Resource

Main Processor	Broadcom BCM7335 HD PVR Satellite System-On-Chip
Flash Memory	8MByte (NOR) 2Gbit (NAND)
DDR2 RAM	3Gbit

Storage Interface

SATA	For Internal HDD, SATA-2 (3.0 Gb/s)
USB	3 Port (5V/1500mA Max), Front ×1, Rear ×2 Host USB 2.0 compliant

Data In / Out

RS-232	D-SUB 9-Pin, Male Type
Ethernet	RJ-45, 10/100 BASE-T
Modem	RJ-11, Soft Modem (Optional)

Video In / Out

SCART	TV SCART (CVBS, S-Video, RGB) VCR SCART (CVBS, S-Video)
Composite Video Out	CVBS (RCA Type)
Component Video Out	YPbPr (RCA Type)
HDMI	HDCP 1.2

Audio Out

SCART	TV / VCR SCART
RCA Type	Left / Right
SPDIF	Optical (Shutter Type)
RF Modulator	

Conditional Access System

Common Interface Slots	x2
Smart Card Reader	x1

Front Panel

Display	5×7 Dot, 12 Digit, VFD
Buttons	POWER , MENU , OK , BACK, CH-,CH+,VOL+, VOL-
IR Receiver	x1

Power Supply

Input Voltage	AC 90-250V (Free voltage), SMPS
Power Consumption	Operation - 60W Max. Standby - 1W Max.
Operating Temperature	0 to+45 Degrees

Physical Specification

Size (Width×Height ×Depth)	340 × 68 × 270 mm
Weight(Net)	2.8 Kg

Accessory

Remote Control Unit	x1
User's Manual	x1
Guarantee Coupon	x1
HDMI Cable	x1
Power Code	x1
Batteries	AAA Size × 2

7.2. Trouble Shooting

Problem	Solution
No Display on the front panel or No power supply	Check the power cable is plugged into the power socket
No Picture	Check the dish and adjust it. Check the cable connection and correct it. Push the TVOUT button repeatedly on remote controller for proper TV resolution
Poor picture quality	Check the signal level
No Sound	Check the volume level of the TV and receiver Check the mute status of TV and receiver Check the cable connection and correct
Remote Control unit does not work	Replace the batteries Aim the remote control unit directly to the receiver Checking that nothing blocks the front panel
Service is not running or scrambled	Check the Conditional Access Module and smartcard are appropriate for the selected service Check the Conditional Access Module and smartcard are correctly inserted
No signal on the screen	Check the signal strength and the signal quality in the menu Check the LNB and replace the LNB if necessary Check the LNB cable Check the Dish and adjust it
Tuner Defective Check	Go to the Optional and select system information
You have forgotten your secret PIN code	Contact your service provider

7.3. Brand Codes for Universal RCU

Brand Name	Code				Brand Name	Code			
A.R.SYSTEMS	8644	7213	6896	5090	ALBA	8644	3840	6896	8060
	7014					7647	5553	7287	4530
ACCENT	7647	8644	6896	3637		5355	7384	4016	4469
ACER	3857					5531	5605	6230	6812
ACTION	4523	5510	3637	4648		7733	5119	4925	3637
ADCOM	4884					4648			
ADL	7855				ALFA	4648			
ADMIRAL	3193	2438	5553	5605	ALKOS	6482			
	3488	3637	4648		ALLSTAR	8644	6896	4648	
ADVENTURA	5874				ALL-TEL	4677			
ADVENTURI	5874				AMERICAN HIGH	5510			
ADYSON	4469	4523	4648		AMERICANA	5510			
AEA	8644	6896			AMPLIVISION	7287			
AEG	5952	6305	5319		AMSTRAD	7647	8568	3488	4530
AGASHI	4469	3488				4016	8644	6896	5739
AGB	8568					6764	8377	3840	3451
	7647	8644	6896	4469		7066	3637		
AIKO	4530	4530	6482	5739	ANAM	8644	6896	7647	4526
	3350	3518	3488	3637	ANAMNATIONAL	8644	6896	4526	
	8644	6764	6896	3036	ANDERSSON	5319	7660		
AIM	7910	8435	8484		ANGLO	7647	3488	3637	
AIWA	5448	7733	6736		ANITECH	7647	3488	8644	6896
	3350	7910	4530	3011		5896	4523	3637	4648
	8644	5739	6669	3518	ANSONIC	7287	8644	6896	7647
	6482	7647	3036	4016		5355	5090	5605	2620
	2429	8060	5605	8568		5531	4917	3637	
	6381	2810	6896	4783	AOC	4523	4648		
AKAI	8020	8394	4469	3488	APOLLO	4659			
	5393	2796	6305	3840	ARCAM	4469			
	7733	4659	3451	5905	ARCENCIEL	7430			
	4925	4523	3802	3637	ARDEM	2590	8060	8644	5613
	5874	4648				6896			
AKASHI	7314	7647			ARISTONA	6896	8644	4648	
AKIBA	4016	5896	7014	8644	ART TECH	4648			
	6896				ARTHURMARTIN	5605			
AKIRA	5553				ASA	4819	6092	4265	
AKITO	8644	6896			ASBERG	8644	6896	4648	
	8644	6896	5355	6764	ASORA	7647	3637		
AKURA	7647	4016	5896	3488	ASTRA	8644	6896	3637	
	8060	7066	3637	4648	ASUKA	4016	4469	3488	5896
ALARON	4469				ATD	2924			

Brand Name	Code				Brand Name	Code				
ATLANTIC	8644	6896	4469	4648	BEON	8644	6896	5553	4648	
ATORI	7647	3637			BERTHEN	5355				
ATORO	3637				BEST	7287				
AUCHAN	5605				BESTAR	8644	6896	7287	5090	
AUDIOSONIC	7647	8644	5090	8033		4648				
	6896	7430	8060	6381	BESTAR-DAEWOO	5090				
	7287	3488	4016	2590	BIGSTON	3637				
	3637	4648			BLACKDIAMOND	5319	8033	3840	6896	
AUDIOTON	2590	7287	3488	3637		7837	3036			
AUDIOVOX	4648				BLACKSTAR	5531				
AUDIOWORLD	2924				BLACKSTRIP	6482	3802	5510		
AUTOVOX	5531				BLACKWAY	5896	4016			
AVP	7733				BLAUPUNKT	3518	6640	5265	6538	
AWA	7507	6812	7647	5090			7839	5186	7014	4849
	6764	8644	6896	4469			6812			
	6305	5620	3488	4698	BLUESKY	8644	8060	3840	6230	
	3637						5355	6381	2499	6896
AXXENT	7647					4016	5896	7014	7733	
AXXON	8060					4156	7361	6685	4648	
B&D	7855				BLUESTAR	5896				
BAIRD	7430	6127	6982	5301	BONDSTEC	5531				
	7910	3453			BOOTS	7647				
BARCO	5605				BOSCH	7839				
BASIC LINE	3637	4648	5090	8644	BPL	8644	6896	5896		
	5605	5355	6896	7647	BRANDT	4884	7430	4422	3270	
	4016	5896	7014	6559			6982	3847		
	3840				BRANDT_ELECTRONIQUE	4422	3270			
BAUER	8484	7647			BRENDSTAR	3637				
BAUR	7647	6640	5265	3835	BRINKMANN	8644	6896	5355	7350	
	8644	6896	3518	3350			5553	2590		
	6736	3637	5874	4648	BRIONVEGA	8644	6896	8377	4648	
BEAUMARK	5393				BRIORRYEGA	4648				
BEC	4648				BRITANNIA	4469				
BECRESE	4523	3802	5874	4648	BROCKWOOD	4523	3802	5874		
BEKO	8060	6482	2590	7287	BROKSONIC	4523	3802	5874		
	8644	5553	3840	6896			3488			
	6305	6381	7361	4648	BRUNS	2590				
BELL & HOWELL	4648				BSR	5605	3350			
BELSON	4156	4706			BTC	4016				
BENCHMARK-BEAUMA	4523	5510	3637	4648	BUSH	5355	4016	5605	7647	
BENNETT	6896	8644					6812	8644	4530	5896
BENQ	8016						7384	2438	5090	7350

Brand Name	Code				Brand Name	Code			
BUSH	3488	3350	3840	6230	COLORTYME	5510	4648		
	7910	5952	5905	2924	COMBITECH	7733			
	6896	8060	5832	7733	COMPUTRON	3637			
	5453	3802	4648		CONCORDE	7647	3637		
CAMPLE	4523	3802	5874		CONDOR	8644	6896	7287	4469
CANDLE	4523					7647	5896	5531	5553
CANTON	4016					2620	5605	3488	3637
CAPEHART	4523	3802	4648			4648			
CAPSONIC	3488				CONIA	3491	7837	4706	8033
CARAD	2696	8644	6896	5355	CONIC	4523	3802	4648	
	3840				CONRAC	7361			
CARENA	7014	8644	6896		CONRAD	8644	6896		
CARREFOUR	6812	4265	8644	6896	CONTEC	4469	7647	7507	6812
	4648					3488	8644	6896	3802
CARVER	4849	4648				3637			
CASCADE	7647	8644	6896		CONTINENTALEDISON	7430	4422	6230	
CASIO	8644	6896	5605	4648	CORONADO	4523			
CATHAY	8644	6896			COSMEL	7647	8644	6896	3637
CCE	8644	6896			CRAIG	4648			
CELESTIAL	6498	8033	7837		CROSLEY	5531	4752	6634	5605
CENTREX	7046	5397				3802	5874	4648	
CENTRUM	3840				CROWN	7647	5716	7287	2590
CENTURION	8644	6896	4648			8644	6896	6230	8060
CENTURY	5531					6305	6381	5553	7910
CGE	4752	6634	5553	5531		4638	6559	3840	4523
	7287	5605	3637		3637	4648			
CGM	3637				CRYSTAL	4648			
CIE	3637				CSELECTRONICS	4469	4016	5531	
CIHAN	4648				CTC	5531			
CIMLINE	7647	4016	3637		CTX	8016			
CINEX	3451	5952			CURTIS MATHES	4523	3802	5510	4648
CIRCUIT CITY	4523	3802	5874			3193			
CITIZEN	4523	5510	4648		CYBERTRON	4016	3802		
CITY	7647	3637			CYTRONIX	3191			
CLARIVOX	5553	8644	6896	4265	DAEWOO	5295	5090	2499	4874
CLATRONIC	8644	7287	4530	8060		3876	8644	6896	7647
	4016	3488	6896	5531		4469	4016	6286	7733
	7647	3451	6305	5319		3118	2016	3620	4677
	3637					4523	3637	4648	
CLAYTON	3840				DAICHI	3637			
CMS	4469				DAINICHI	4016	4469		
COBOLT	5397				DAITSU	4201			

Brand Name	Code				Brand Name	Code			
DANSAI	8644	6896	3488	6482	DREAMVISION	8561			
	4469	7647	6812	7910	DSE	6641	5952	8033	
	4523				DTS	7647	3637		
DANSETTE	6764				DUAL	6982	7350	8644	6896
DANTAX	7287	2590	8060	6305		7213	3158	5605	6286
	6381	7733				8394	7660	3840	4648
DATSURA	7910					3637			
DAWA	7647	8644	6896	4648	DUMONT	4265	4523	3802	5874
DAYTEK	2924	4979	8435	4698	DUNAI	5605			
DAYTON	4979				DURABRAND	8644	4917	6896	
DAYTRON	7647	5090	8644	6896	DUX	8644	6896		
	4523 3637				D-VISION	8644	7066	6896	
DEC	4167	7314	5397		DVX	5397			
DECCA	8568	8644	6896	6286	DYNAMIC	3637			
	7733 4648				DYNATECH	4523	3802	5874	
DEGRAAF	7910	5605	4783	2438	DYNATRON	8644	6896		
DEITRON	8644	6896	5090	4016	EASYLIVING	4596	5905		
DENKO	3488				EATON	5510			
DENVER	8644	6896	6305	4485	ECCO	2335	8435		
	8299 3637				ECR	3802			
DER	6127				EDISON-MINERVA	6230			
DESMET	8644	6896	7647	3637	ELBE	3444	8377	7287	5605
	4648					8644	6896	4016	3518
DIAMANT	8644	6896				2620	2696	8568	3350
DIAMOND	3488	2924	7647	4777	ELBE-SHARP	8568			
	4469	4530	7314	8033	ELBIT	4648			
	3637				ELCIT	5531	8568	5605	
DIGATRON	8644	6896			ELECS	4648			
DIGIHOME	7660				ELECTRATUNE	4523			
DIGILINE	8644	6896	4819	5355	ELECTRO TECH	3637			
DIGILOGIC	8644	6896			ELECTROBRAND	5874			
DIGITEX	8033				ELECTROHOME	4523	3802	5874	
DIGITOR	8644	6896	6641		ELECTRONIKA	4648			
DIGIVISION	3350				ELEKTA	7647	8644	6896	3488
DIGIX	3118					5896	3637		
DIK	8644	6896			ELFUNK	3573	3840		
DIXI	7647	8644	6896	5531	ELG	8644	6896		
	3637 4648					4469	8644	6896	4819
DL	5397	7046	8644	8299	ELIN	4783	3350	5605	7647
	4677					3637	4648		
DOMEOS	5355				ELITE	4016	8644	6896	4523
DOMLAND	3158					3802	5510	4648	

Brand Name	Code				Brand Name	Code			
ELTA	7647	3488	4469	3637	ELITE	4016	8644	6896	4523
EMCO	5531					3802	5510	4648	
EMERSON	8060	5393	5531	8644	EMCO	5531			
	6896	4530	4265	5896	EMERSON	8060	5393	5531	8644
	3350	2499	2590	7287		6896	4530	4265	5896
	5605	5355	4523	3802		3350	2499	2590	7287
	5874					5605	5355	4523	3802
				5874					
EMPEROR	5896				EMPEROR	5896			
ENZER	3036				ENZER	3036			
EON	3802	5510			EON	3802	5510		
ERRES	8644	6896	4648		ERRES	8644	6896	4648	
ESC	8644	6896			ESC	8644	6896		
EST?LE	5605				EST?LE	5605			
ETRON	4709	8644	6896	7647	ETRON	4709	8644	6896	7647
	5605	8033	3637			5605	8033	3637	
EUROFEEL	3488				EUROFEEL	3488			
DYNATECH	4523	3802	5874		EUROLINE	8644			
DYNATRON	8644	6896			EUROMAN	4469	3488	8644	6896
EASYLIVING	4596	5905			7287				
EATON	5510				EUROMANN	4648			
ECCO	2335	8435			EUROPA	8644	6896		
ECR	3802				EUROPHON	8644	8568	5605	6896
EDISON-MINERVA	6230				5531	4469	4648		
ELBE	3444	8377	7287	5605	EVEHAM	4596			
	8644	6896	4016	3518	EXCEL	8644	6896		
	2620	2696	8568	3350	EXPERT	5605			
ELBE-SHARP	8568				EXQUISIT	8644	6896	5531	
ELBIT	4648				FAGOR	8644	6896		
ELCIT	5531	8568	5605		FAIRTEC	4156			
ELECS	4648				FAMILYLIFE	8644	6896		
ELECTRATUNE	4523				FAST	3634			
ELECTRO TECH	3637				FENNER	5090	7647	3637	
ELECTROBRAND	5874				FERGUSON	5301	4884	4422	3270
ELECTROHOME	4523	3802	5874			6127	7430	3847	8644
ELECTRONIKA	4648					6896	6482	6982	4638
ELEKTA	7647	8644	6896	3488		5620	3350	4783	5119
5896	3637					3840	4648		
ELFUNK	3573	3840			FIDELIS	3637			
ELG	8644	6896			FIDELITY	5605	3835	2438	8644
ELIN	4469	8644	6896	4819		6896	4530	6764	6127
	4783	3350	5605	7647		4469	3488	7733	3350
	3637	4648							
ELTA	7647	3488	4469	3637	FILSAL	3637			

Brand Name	Code				Brand Name	Code			
FINLANDIA	7910	6092	4783	3350	GE	6982	5393	5896	3847
	5605	2438	4422	6982		4422	7430	3270	4884
FINLUX	4819	8644	6896	8060	GEANTCASINO	5605			
	6092	5605	8568	6381	GEC	5605	3350	8644	8568
	4265	2620	8394	6753		6896			
	8020	5952	4659	5553	GELOSO	5531	7647	2438	5605
	6305	7361	3637	4648		5090	3637		
FIRSTLINE	8644	6896	5090	5355	GEMSOUND	3637			
	8060	5605	7647	4469	GENERAL	7430	4422	3637	
	5531	2499	2620	7910	GENERAL TECHNIC	3637	7647		
	3350	3840	4156	7361	GENERALELECTRIC	6982	4422		
	6685	5319	3637	4648	GENESIS	7647	8644	6896	
FISHER	6812	7910	7287	3350	GENEXXA	4016	8644	6896	6764
	5605	3802				5605	7647	4648	
FLINT	8644	6896	2696	4016	GERICOM	4677	3191	7855	3118
	7014	3488	4648		GITEM	4648			
FORCE	7660				GM	3637			
FORGESTONE	6127				GMG	3637			
FORMENTI	5605	8644	6896	2590	GOLDFUNK	5355			
	4469	4648			GOLDHAND	4469	3637		
FORMENTI-PHOENIX	4469				GOLDSTAR	8644	7647	7287	4709
FORTRESS	3193	4523	3802			2796	5393	5531	4469
FRABA	8644	6896	7287			6896	5605	3350	7430
FRIAC	7647	8644	6896	7287		2438	6305	8060	6381
	4874	2696				7014	4523	5510	4648
FRONTECH	5531	3488	2438	7647	GOODING	6230			
	5605	3637			GOODMANS	5295	5905	3840	8644
FUJIMARO	4677					4874	6896	8060	5355
FUJITSU	5605	7647	7213	8644		2499	5090	6812	3488
	6896	3350	8360	4523		8568	7647	6230	4530
	3802	5874				6982	6482	8020	3847
FUJITSUGENERAL	7647	5605				3270	4016	7733	3876
FUJITSUSIEMENS	3191	5905	5319			5832	3118	6948	8299
FUNAI	5355	3488	6764	4523		4698	3637	4648	
	3802	5874				GORENJE	7287		
FURICHI	7314					GPM	4016	3637	
FUTRONIC	3488	4167	7314		GRADIENTE	4638	4849	8644	6896
FUTURE	8644	6896			GRADIN	3637	4648		
GALAXI	8644	6896	3350	5605	GRAETZ	8060	3350	4530	5605
GALAXIS	7287	5553	8644	6896		8644	6559	6896	5319
GALERIA	7647	3637			GRANPRIX	3451			
GBC	5605	7647	5090	4016	GRENADIER	3637			
	2438	3637							

Brand Name	Code				Brand Name	Code				
GRANADA	8644	6896	3001	5620	HCM	7647	6764	8644	6896	
	4659	3270	3847	5605		4016	5553	5896	3488	
	7910	6812	6559	8568		3637				
	2438	3952	6982	4783	HEMA	7647				
	4648				HICON	2519				
GRANDIN	8644	6896	7647	5605	HIFIVOX	7430				
	5090	5896	4016	7014	HIGASHI	4469				
	2696	8060	6381	5355	HIGHLINE	3488	8644	6896		
	3840	4677	4156	3118	HIKONA	4016				
GRONIC	5605				HILINE	3637				
GRUNDIG	5265	4679	6640	3518	HINARI	7910	8644	6896	7647	
	8435	6896	8299	7647		4016	6812	5605	7384	
	4265	6230	8644	5119		5119	6230	3488	7733	
	6812	7287	4925	7733		3802	3637	4648		
	6948	5393	4698	6982	HISAWA	5896	4016	7014	2696	
GRUNKEL	5319				7733	8060				
GTT	3637				HISENSE	6685	7910			
H&B	7361				HITACHI	3952	6069	4889	6812	
HAAZ	8435					6896	7430	2438	4783	
HAIER	2924	3488				5620	4659	5605	6982	
HALIFAX	3488	4469				6619	5295	7040	5393	
HALLMARK	4523	3802	5874			8568	6972	4874	8644	
HAMMERSTEIN	3488					6286	4819	6753	4737	
HAMPTON	4469					3350	3835	8020	3840	
HANIMEX	4016	7733				8374	7660	3802	5874	
HANSEATIC	8644	6896	4874	7350			4648			
	5605	3350	5896	3158		HITACHIFUJIAN	5620	3952		
	5295	7287	3876	7647		HITSU	7647	2696	7014	4016
	7361	2590	3637	4648		HMV	6127			
	2796	8060				HOHER	8060	5952	4677	
HANTAREX	7647	8644	6896	8568		HOMELECTRONICS	6305			
	3637	4648			HORIZONT	4648				
HANTOR	8644	6896			HORNYPHON	8644	6896	4648		
HARLEY DAVIDSON	4523	3802	5510	5874	HOSHAI	4016	7014	5896		
HARRAD	4523	3802	5874		HUANYU	5090	4469			
HARSPER	4677				HUGOSON	3094	7855			
HARVARD	4523	3802	5874		HYGASHI	4469				
HARWA	2335	3453	7789		HYPER	7647	4469	5531	3637	
HARWOOD	7647	6764	8644	6896		4648				
	6230				HYPERSONIC	3350				
HAUPPAUGE	8644	6896			HYUNDAI	8644	4677	6896	8435	
HEATHKIT	5874	4648				7314	3036	3620	5952	
HEDZON	6896	8644			IBERIA	8644	6896			

Brand Name	Code				Brand Name	Code			
HYPSON	8644	6896	8060	6381	IRRADIO	7647	8644	6896	4016
	3488	5896	7014	7733		5531	4530	3637	4648
	3840	5355	2590	3637	IST	4648			
	4648					ISUKAI	4016	8644	6896
ICE	3488	8644	4530	7647	7014		4648		
	6896	4016	4469	3637	ITL	3637			
	4648					ITS	8644	4530	4016
ICES	4016	4469			3488		4469	7647	6896
	8644	6286	6896		3637				
IISONIC	4698				ITT	5605	8020	3350	4659
IYAMA	7855	3094				4783	6127	6092	6559
IMA	4523	3802	5874			7910	2696		
IMPERIAL	8644	5605	7287	4752	ITTNOKIA	3350	4783	5605	4659
	6634	6896	2620	3350		6305	2696	8394	2438
	5553	5531	4648			8020	6092	7910	6559
INDIANA	8644	6896	4648		ITV	3488	8644	6896	5531
INFINITY	4648					5090			
INFOCUS	3251				JBL	4648			
INGELEN	6230	2696	8060	5605	JCB	5874			
	3350				JDV	7066			
INGERSOLL	7647	3637			JEAN	6812			
INNOHIT	7647	8644	6896	4016	JEC	6482			
	3637	4648	5896	5319	JETPOINT	5510	4648		
	8568	5531			JMB	8644	4874	5295	5090
INNOVATION	7350	8644	6896			6896	5119	7733	
INNOWERT	4677	3191			JOCEL	5716			
INOTECH	2335	8033			JUBILEE	6896			
INTERACTIVE	8644	6896	3835	7839	JUMBOTROIC	4648			
	5605	3350	7287	7430	JVC	4638	6812	6127	4530
	2620					4016	6305	5553	3193
INTERBUY	7647	8644	3488	5531		4526	3802	4648	
	3835	6896	3637		KAISER	4648			
INTERDISCOUNT	4648				KAISUI	4016	5896	8644	6896
INTERFUNK	8644	6896	3835	7839		4469	7014	7647	3637
	5605	3350	7287	7430	4648				
	5531	6538	4648		KAMBROOK	2796			
INTERNAL	8644	6896	4874	5090	KAMP	4469			
	2499				KAPSCH	5605	3350		
INTERNATIONAL	4469				KARCHER	8644	6896	7287	2696
INTERVISION	5896	7014	8644	4530		5605	5896	3488	5453
	2796	7350	2590	7287		8060	5952	6305	3637
	3488	5531	7647	6896		4648			
	3158	6230	4016	5605	KATHREIN	6896	8644		

Brand Name	Code				Brand Name	Code			
KAWA	4530				LEADER	7647 3637			
KAWASHO	4469				LECSON	8644 6896			
KBARISTOCRAT	5605				LEGEND	7647 3637			
KENDO	2696 8644 6896 5605				LEMAIR	2620			
	7350 3835 7287 2796				LENCO	8644 7647 5605 5090			
	2438 2620 5531 8377					6896 8299 3840 3637			
	3451 3840 4917 2590				4648				
	3637 4648				LENOIR	3637 7647			
KENDWOOD	4523				LESA	5531			
KENNEDY	5605 3444				LEVISAUSTRIA	8644 6896			
KENNEX	3840				LEXSOR	3453			
KENWOOD	4819				LEYCO	3488 8644 6896 4648			
KINGSLEY	4469				LG	8644 5393 7287 7647			
KIOTA	4709 3637					7430 2924 6381 8265			
KITON	6896 8644 5355					2796 5447 4709 6896			
KLH	4523 3802 5874					4156 6944 4312 5531			
KLOSS	5510					8060 4469 5605 6305			
KNEISSEL	8644 7287 2696 2620				LIESENKOTTER	7839 8644 6896 4648			
	5090 4874 6896 3444					8644 7839 5186 6896			
	8377 7733								
KOBIC	3637				LIFE	3637			
KOBRA	2519				LIFETEC	8644 7647 7350 5090			
KOLSTER	8644 6896 5531 4016					5355 3835 3840 6286			
	4648					6896 4016 3488 4596			
KONICHI	7647 3637				8060				
KONKA	8644 6896 4530 8060				LIFETEC	3637 4648			
	5553 4016 8485 8299				LINITRON	4523 3802			
	3491 4706				LLOYD	4523 3802 3637 5874			
KONTAKT	6230				LLOYD'S	4709 7647			
KORPEL	8644 6896 4648				LODOS	3840 7660			
KORTING	7287				LOEWE	3835 5613 7337 8644			
KOSMOS	8644 6896					6896 7287 8377 8568			
KOTRON	6764 3488					4648			
KOYODA	7647				LOGIK	7507 2924 2335 7647			
KTV	4523 3802 5874					6127 3488 4530 4709			
KUASHO	4523 4648					3118 7855 3840			
KUBA	5605				LOGIX	5355 7350			
KUBAELECTRONIC	5605				LUKER	7066			
KYOSHU	6764 5553 3488				LUMA	8644 2438 5605 2620			
KYOTO	5605 4469					6896 5090 7647 8377			
L&SELECTRONIC	4677 8060					3637 4648			
LASAT	2590 7287				LUMATRON	2438 8644 6896 8377			
LAVIS	3840 8644 5605					5605 3350 3488 5301			

Brand Name	Code				Brand Name	Code			
LUX MAY	4648	8644	7647	6896	MAXIM	7066	5952		
LUXOR	5319	2438	8020	6753	MCE	7647	3637		
	6092	4659	3840	8394	MEDIATOR	8644	6896	4648	
	3350	7910	4783	5605	MEDION	8644	8060	7361	7350
	LXI	5393	4648			2924	7733	3840	4917
M ELECTRONICS	3637	4648		5355		6896	3835	6286	
MACYS	4523	3802				5832	4596	3118	3730
MADISON	8644	6896			MEGAS	2696			
MAGNADYNE	5531	8568	5605	3637	MEGATRON	5393			
	4648				MEI	3840	8644	6896	
MAGNAFON	4648	8568	4469	5301	MELECTRONIC	6092	8644	3835	7430
MAGNASONIC	4523	3637	4648			2620	5605	4422	6896
MAGNAVOX	8644	6896	6812	7046		6982	5531	4819	5090
	3802		4648			5295	3350	3518	5265
MAGNUM	3451	8060	8644	6896		7647	8020	6753	4469
	6381		3730		3876	8060			
MANDOR	3488				MEMOREX	7647	5393	4526	3637
MANESTH	8644	6896	3488	6482	MEMPHIS	3637	7647		
	5605		2438 4648		MERCURY	4709	8644	7647	6896
MANHATTAN	8644	6896	5355	3840		3637			
	4201		5605 5453		MERRITT	4783	3350	5605	
MARANTZ	8644	6896	6764	4648	METZ	2769	6975	5313	2410
MARCYS	3802					8644	6896	8299	5355
MARK	8644	6896	4469	5090		5319	5265	6640	3518
	7647		8060 6381 4648			3840		7324	
MASTER'S	4874	8644			MGA	5393	8644	6896	4016
MASUDA	4016	4530	7647	3488	MICROMAXX	8644	6896	5355	3840
	8644		6896			7361			
MATSUI	8644	6896	6230	7647	MICROSTAR	7361			
	5605	8568	6482	7910	MICROTEK	8033			
MARK	7507	7384	6812	4530	MIDLAND	4523			
	5265	3518	3270	8060	MIKOMI	7660			
	5739	5119	2438	7014	MINATO	8644	6896		
	7733		3840 3637 4648		MINERVA	6230	6640	5265	4265
4526				3518		8568	5620		
MATSUSHITA	4526				MINOKA	6764	8644	6896	4648
MATSUVIAMA	8299				MIRROR	5832			
MAVA	4523				MISTRALELECTRONICS	6127			
MAX_MULTI	4648				MITSUBISHI	5620	3193	3835	8644
MAX_TIP1	3637					5393	6812	6127	6640
MAX_TIP4	4648					6896	7910	3840	3802
MAXAM	3488	3637				3637		4648	
MAXDORF	2335								
MAXELL	3637				MITSURIGENERAL	5605			

Brand Name	Code				Brand Name	Code			
MIVAR	7287	4469	4318	8568	NEUFUNK	8644	7647	6896	2696
MONACO	7647					4016	5896	8060	8644
MONITOR	5510					7647	6896	6982	3637
MORGAN'S	8644	6896				4648			
MOTOROLA	3193	4648			NICAMAGIC	4469			
MTC	7287	3835	5605	4469	NIKKAI	4016	8644	6896	3488
	3350	4523	5510			6482	4469	7647	6812
MTLOGIC	8060 6948					4523	4648		
MULTIBROADCAST	6127				NIKKEI	8060			
MULTITEC	8644	6896	2590	5355	NIKKO	5393			
	3840	5952			NISSAN	5510			
MULTITECH	7647	2438	2590	8644	NOBLEX	3637			
	7287	6896	4469	5531	NOBLIKO	4265	4469		
	3488	4523	3802	3637	NOGAMATIC	7430			
	5874	4648			NOKIA	3350	5605	8020	4783
MURPHY	4469	5605		5090		8394	6305	6092	
MUSIKLAND	8644	4016	5531	6753		4659	6559	7910	
MYCOM	4698 5393					2696	7430	5510	3637
MYRYAD	6896 8644					4648			
NAD	5393	3350	5605	3802	NONAME	4648			
NAIKO	8644	7066	6305	6896	NORDMENDE	7430	8060	5397	4422
NAKIMURA	5090	8644	6896			6896	3270	5605	5905
NAMSUNC	3637					3847	6982	5265	8644
NAONIS	2438 5605					4648			
NAP	4648				NORFOLK	5605			
NARITA	7066				NORMEREL	8644 6896			
NAT	3001				NOVABEAM	4648			
NATIONAL	3001	4648			NOVAK	8644 6896			
NEC	4849	8299	7976	3726	NOVATRONIC	8644	4819	5090	6896
	8644	6896	7507	8561		3637	4648		
	6812	7014	7647	5090	NURNBERG	5605	3350		
	4874	4638	3876	3637	NU-TEC	7014 2924			
	3802	5510			O GENTERAL	3637			
NECKERMANN	8644	3518	7287	6736	OCEANIC	5605	3350	7910	4659
	5553	5531	2620	2438	4783	8020			
	6538	6896	5605	7839	ODEON	3488			
	3835	3637	5874	4648	OKANO	7287	8644	6896	3488
NEI	8644	6896	4530	5605	7647	3637			
	4648				OLIDATA	4698			
NEOVIA	4677	4698			OLYMPIC	3637			
NESCO	5531	7733			OMEGA	3488			
NETSAT	8644	6896			OMNI	7046	5397	2924	
NEWWORLD	4016				ONCEAS	3637			

Brand Name	Code				Brand Name	Code						
ONWA	4530	2810	4016	5739	PANASONIC	4526	5620	3001	3350			
OPERA	8644	6896	4648	5605		4783	7605	4709				
OPTIMUS	4526	2410	8568	8644		6896						
OPTONICA	3193	8360	5393	4648								
ORAVA	4648	PANAVISION				8644	2620	6896				
ORBIT	8644	6896	4648	PANAVOX				3637				
ORCOM	4262	PANORMA				3637						
ORIENT	3637	PAPOUW				8644	6896					
ORION	8644	5119	7384	6896	PATHECINEMA				5605	4469	7287	
	6764	8568	7733	3118	PATHEMARCONI				7430			
	8060	7507	7647	3488	PAUSA				7647	3637		
	3453	3637	5874	4648	PCE/PEC				4523	3802	5510	
	4523	3802	PENNEY				4523	5510				
ORLINE	8644	4016	6896	PERDIO				5605	8644	4469	5896	
ORMOND	5355	3840	8644	6896	6896							
ORSOWE	8568	PERFEKT				8644	6896	4648				
OSAKI	4016	3488	8644	6764	PERFORMANCE				3802	5874		
	5090	7384	6896	6634				4752	5553	5531		
OSIO	8644	6896	PHILCO				5605	7287	8644	6896		
OSO	4016	3802				3637	4648	7350				
OSUME	6812	4016	8644	6896	PHILEX				6127	5605		
OTF	3637	6896				8644	3518	6127				
OTTO VERSAND	3802	3637	5874	7350	PHILIPS				6538	8016	3802	5874
	3518	3350	7430	3001	6982				5090	3350	7647	
	6736	6812	3193	3835	4648							
	5531	7647	5896	6982	PHOCUS				3730	6948	8060	
	8644	6896	6640	5265	PHOENIX				8644	6896	7287	2590
OVP	4648	5605				4469	4648					
PACE	7733	PHONOLA				8644	6896	6127	4469			
PACIFIC	8644	6896	6286	8060	6896				8644	5716	8435	
	3840	5119	5510									
PAEL	4469	4174				7507	8644	4849				
PALLADIUM	7287	8644	2620	8060	3350				7430	5605	4422	
	5553	6896	5531	7839	6896				8209	7287	6982	
	6286	3518	6736	6538	2590				3835	4648	7287	
	5605	7350	2438	4648	2590							
PALSONIC	3488	6764	8644	2796	PLANTRON				8644	6896	3488	7647
	4709	5553	5453	3453	3637				4648			
	4016	2924	6896	2335	PLAYSONIC				8060	8644	6559	6381
PANAMA	7647	3488	4469	8644	7430				3350	5605	4265	
	6896	5531	3637	4752				6634	6640			
PANASHIBA	4709	3637	POLYTRON				5896					

Brand Name	Code				Brand Name	Code			
POPPY	7647	3637			QUELLE	6812	5531	4752	7839
PORTLAND	5090	2499	4523	5874		4523	3802	3637	5874
	4648					4648			
POWERPOINT	6230	8644	6896	2924	QUESTA	6812	3802		
PRANDONI-PRINCE	5531	8568	3350	2438	R LINE	4648			
PREMIER	7647	3488			RADIALVA	7430	4016	5605	8644
PRESIDENT	7314					6896	4422		
PRIMA	7647	3488	6764	7789	RADIO SHACK	4523			
	4523	3802	5510	3637	RADIOLA	8644	6896	4648	
	4648				RADIOMARELLI	8568	5531	8644	6896
PRINCESS	2924	3637			RADIO SHACK	8644	6896	5393	
PRINSTON	3840				RADIOTONE	7647	8644	6896	7287
PRINZ	3350					3488	3840	3637	4648
PROELCO	4648					5553	6764	3451	5355
PROFEX	7647	5605	3350	2438	RANK	4265			
	3637				RANKARENA	6812	2810	3036	
PROFI	7647				RBM	4265			
PROFITRONIC	8644	6896	4648		RCA	4884	3193	3847	3270
PROLINE	8644	6896	4884	5295		6982	3036	5510	
	2620	4698			REALISTIC	5393			
PROSCAN	5510				RECOR	8644	5553	6896	4648
PROSONIC	8644	6896	7287	5090	RECORD	4648			
	4530	5355	8060	4469	RECTILIGNE	8644	6896		
PROTEC	3637	4648			REDIFFUSION	3350	4783	6812	6092
PROTECH	8644	6896	7647	5531	REDSTAR	8644	6896		
	3488	5553	5355	5896	REFLEX	8644	6896	3840	5355
	5605	2590	3840		REGENTE	3637			
PROTON	5393	4523	3637		RELISYS	4677	2108	4979	3191
PROVISION	4874	8644	6896	3840	REOC	8060	5295	2499	
	8060				REVOX	8644	6896	7287	4648
PULSER	4523	5510	3637	4648	REVOX/STUDER	4648			
	4156				REX	2438	2620	5531	5605
PYE	8644	6896	5090	6764		3488			
	4648				RFT	7287	3488	8644	6896
PYMI	7647	3637			2590				
QTY1	4648				RHAPSODY	4469			
QUADRAL	4016				RICE CLUB	5510			
QUASAR	5531	4526	4677	7647	RICOH	8644	6896		
	6634	5186	4265	4819	RINEX	2335	5553		
QUELLE	8644	6736	7507	7430	R-LINE	8644	6896	5605	
	5355	6896	5265	6538	RMB	4523			
	3835	6640	3518	3350	RODEX	8644	6896		
	3488	3840	6092	7647	ROSITA	3637			

Brand Name	Code				Brand Name	Code				
ROADSTAR	3840	7647	5553	8644	SANTON	7647				
	3488	5896	4485	5832	SANYO	7910	3573	6812	7507	
	6896	8060	5355	4016		5605	8644	5620	6896	
	3637					7287	6559	4469	7647	
				2590		4849	3802	3637		
ROVER	6812	2108			SAVE	8644	6896			
ROWA	3488	2924	5716	7647	SAVILLE	7733				
	4469	8299	8644	6896	SBR	8644	6896	6127	4648	
	3637				SCHAUBLORENZ	4783	8060	3350	6305	
ROYAL	3637					2590	5090	4156		
ROYALLUX	7287	6764	3270		SCHNEIDER	6286	8644	6896	7350	
RUKOPIR	6896	8644				3840	5605	3451	8060	
RUNCO	5510						3158	7213	6982	5531
SABA	4884	7430	3847	6982			2499	7733	7066	4265
	2104	3270	4783	4526		4530	3350	4016	5355	
	4422	5605	8568	3350		3637	4648			
	8060				SCOTLAND	5605				
SAGEM	2696	7014	5896	2820	SCOTT	4485	5393	4523	3802	
	2517						5874			
SAISHO	8568	7647	7507	5605	SEARS	5393				
	3488 4648				SEAWAY	5295				
SAIVOD	8644	7066	6896	5319	SEELVER	6896	3840	8644		
	5355 5716 3840				SEG	8644	6896	3840	4917	
SAKA?	5605						8377	4469	5319	4016
SAKIO	3637						5355	6230	7647	5605
SAKURA	3637						2499	3634	8060	3637
SAKYNO	7014						3488	5295	6812	5531
SALORA	5605	3350	8568	2438			4523	3802		
	4783	6559	7910	8020		SEI	6736	5605	8568	8644
SALSA	3270						6896			
SAMBERS	8568				SEI-SINUDYNE	8568	6736	8644	6896	
SAMPO	4523					5874	4648			
SAMSUNG	2517	8299	8644	5393	SEITECH	7855				
	7910	7350	5605	4884	SELECO	2438	8377	5605	2620	
	6896	7736	3193	4495		3444	3488	6092	6812	
	4523	5510	3637	4648			4530			
	7647	7287	3488	4469		SEMUA	4523			
SAMSUX	4523				SENCORA	7647	3637			
SANDRA	4469				SENTRA	6482	4016	7647		
SANKY	4523				SERINO	2696	7014	4469	3193	
SANSUI	8644	2429	6896	8435	SHARP	3193	7138	6812	4638	
	4530	2810	7014	6641		6127	8568	6538	4174	
	3036	4523	5510	3637		7409	5319	4523	3802	
	4648									

Brand Name	Code				Brand Name	Code			
SHINTOM	5874				SONNECLAIR	8644	6896		
SHINTOSHI	8644	6896			SONOKO	8644	6896	7647	3488
SHIVAKI	8644	6896	5119	5090		3637	5896 4648		
	5393				SONOLOR	7910	5605	6736	4783
SHOW	5553	7647	3637			3350	5896		
SIAREM	5605	8568			SONTEC	8644	6896	7287	7647
SIEMENS	3518	6640	6538	5265		4648			
	7839	5186	8644	6896	SONY	6736	2762	7507	6219
	3350					3193	4849	4752	5874
SIEMES	4523	4648				3078	6812	8644	6896
SIERA	8644	6896	8299		3802				
SIERRA	4648				SOUND&VISION	4016	5090	8644	6896
SIESTA	7287				SOUNDESIGH	4523	3802	5510	5874
SIGMAX	5510					5393			
SIGNATURE	5874				SOUNDMASTER	3637			
SILMA	4648				SOUNDWAVE	8644	6896	5553	6381
SILVA	8644	6896	4469	3350	SOYEA	2335			
	3451	3637			SPECRICIAN	4523	4648		
SILVASCHNEIDER	5952				SPECTRA	7647			
SILVER	6812	8644	7014	3350	SSANGYONG	7647			
	6896	6381	5605	3802	STAKSONIC	7647			
SILVERCREST	3840	8644	6896		STANDARD	8644	6896	3840	4016
SINGER	7647	3011	8644	6896		7647	5090	3637	
	5531	3444	3270	5605	7647	5605	8644	6896	
	3637	4648			3488	6764	3637		
SINOTEC	2335				STARLUX	3637			
SINUDYNE	5605	3350	8568	6736	STENWAY	5896	4016		
	8644	6896	7733		STERN	5605	2438	3488	2620
SKY	8644	5896	3118	5393		3444			
	6896	4262			STEVISON	7066	5952		
SKYMASTER	4819				STRATO	8644	6896	3488	7647
SKYSONIC	3036				STRONG	5319	7660	3840	8644
SLIDING	4677	3118				6896			
SLX	5355				SUNICLINE	8644 6896			
SMARAGD	6230				SUNKAI	7384	7014	4016	2696
SNYDER	4648					8644	6896	6230	4677
SOEMTRON	4677	3191			SUNSTAR	4530	8644	6896	7647
SOLAVOX	3350	5605	4783	8644		3488	3637		
	6896				SUNWATT	7014			
SONAWA	4016				SUNWOOD	8644	6896	7647	3637
SONIKO	8644	6896				4648			
SONIQ	2519				SUPERLA	8568	4469		
SONITRON	7910	7287	6559		SUPERTEC	3637	4648		

Brand Name	Code				Brand Name	Code				
SUPERSONIC	7910	6896	2924	3488	TECHNICS	4526	4648			
	8484	7014			TECHNILAND	4648				
SUPERTECH	7647	8644	6896	4469	TECHNISAT	8644	6896	5605	4201	
	4016	3637			TECHNISSON	8060	3730			
SUPRA	5393	5090	7647	3637	TECHNOSONIC	8644 6896				
SUPREMACY	4523	3802			TECHWOOD	5319	5510	5874		
SUPREME	5874				TECNIMAGEN	6896				
SUSUMU	3270	4016	4422		TECNISON	3637				
SUTRON	7647	3637			TEDELEX	5553	6305	3011	7647	
SVASA	8484					8435	7910	2924	8299	
SWISSLINE	5531					5397	8644	6896	3637	
SWISSTEC	4262	3118				TEHNOL	3637			
SYC LINE	3637				TEIRON	7647				
SYDNEY	4469				TEKNANT	3637	4648			
SYLVANIA	4648				TEKNIKA	4523	5510			
SYMPHONIC	4523	3802	5874		TEKON	5510	3637			
SYSLINE	8644	6896			TELEAVIA	7430	4422	6982		
SYTONG	4469				TELECOR	8644	6896	5605	4016	
T+A	6975					3158				
TANDBERG	2410	2620	7430	8377	TELEFAC	3637				
	3350	5605			TELEFUNKEN	4884	3847	4752	8299	
TANDY	4016	5531	3193	5605		4262	4422	6634	3270	
TASHIKO	6812	4849	4469	5605		7430	2924	6982	5716	
	2438	3802				5301	8644	6896	2590	
TATUNG	5952	8644	6896	8568		2104	8033	2707	3491	
	7507	7733	8016	5905		8060	5952	6092	7837	
	4156	4648			TELEFUSION	8644	6896			
TCM	8060	3730	7361		TELEGAZI	8644	5605	4016	3488	
TEAC	2924	3835	8644	4917	6896	TELEMEISTER	8644 6896			
	5393	7647	6764	5896	TELEOPTA		3637			
	3840	6896	5716	5355	TELESONIC		8644	6896		
	5553	4849	8060	7660	TELESTAR		7647	8644	6896	6764
	7014	8435	3488	2499			3637			
	5991						TELETECH	8644	6896	5355
TEAK	3637				5531	3840	3637			
TEC	7647	5531	3270	8644	TELETON	5605	6812	2438		
	6896	3350	5605		TELEVIDEON	5605 4469				
	3637	3637			TELEVIEW	8644 6896				
TECHICA	4016				TEMPEST	7647	8644	6896	3488	
TECHLINE	8644	6896	5355	4917	3637	TENNESSEE	8644 6896			
TECHLUX	4485				3637		TENSON	3637	7647	
TECHNICA	7066									

Brand Name	Code				Brand Name	Code			
TENSAI	4016	8644	6896	7647	TOYODA	7647	4530	3488	
	4819	5090	4530	2796	TRAKTON	7647	3488		
	5531	6381	5605	3840	TRANSCONTINENS	5355	3840	8644	6896
	3637	4648				2590			
TESLA	8644	4648			TRANSCONTINENTS	4677			
TESLA ORAVA	4648					8644	6896	7014	8299
TEVION	7350	4706	5905	3191	TRANSONIC	3835	3488	2924	5716
	3451	5355	6286	8060		5553	7647		
	8644	5952	6896	7361		TRANSTEC	4469		
	3840	4596	3730		TRC	3637			
TEXET	5090	7647	4469	4016	TREVI	3637			
THOMAS	4523	5510	3637	5874	TRIAD	8644	6896	4016	4648
	4648				TRIDENT	8568			
THOMSON	4884	3847	6982	4422	TRILUX	4648			
	7430	3270	8644	6896	TRISTAR	3488	4016	6127	
	4469				TRIUMPH	8568	6092	6896	8644
THORN	5620	6127	7430	5301	TRIVISION	3637			
	8644	6896	7507	3270	TSOSCHI	5896			
	3952	6982	3350	6736	TVTEXT95	6896			
	3835	6812	5090	6482	UHER	8644	6896	5090	5553
	4752	6634	4874	6640		2590	7287	8020	4648
	4265	3802			ULTRAVOX	5090	5531	4469	5605
THORN- FERGUSON	5620	7430	6127	3350	8644	6896			
	3270	4874	5301	6482	UMA	4648			
TINY	3453	7789	5393	5510	UNICLINE	8644	6896	4659	7014
TOBISHI	4016				UNIMOR	4648			
TOBO	3637				UNITED	8060	8644	6381	6896
TOKAI	8644	6896	5355	5605		7733	3840	8299	7066
	5090	7647	3840	4648	UNIVERSAL	8644	6896		
TOKAIDO	3840				UNIVERSUM	6092	4819	5265	4659
TOKYO	4469	6482	5510			2620	4752	7839	5186
TOMASHI	5896	4016				6640	3350	5531	6753
TONGTEL	7046	8299				6736	5355	7430	8377
TOPLINE	3840	5355				8020	7287	6538	5553
TOSHIBA	4679	4081	6482	3730		8394	7647	6634	3634
	7733	7647	2924	8644		7507	8644	3835	6812
	6812	4265	8060	7430		3840	4917	4849	5319
	3251	5319	4925	5952		4265	5605	3488	6896
	4940	5265	3518	2517		7660	2517	3637	4648
5447	4526	8561	3802	UNIVOX	8644	6896	5605		
5510				URANYA	3637				
TOSONIC	4523	5510			UTAX	5605			
TOTEVISION	4523				VANGUARD	3637			

Brand Name	Code				Brand Name	Code			
V7VIDEOSEVEN	5991	5393	3118	4698	WEGAVOX	7647	8644	6896	3637
	7855					4648			
VECO	3637				WELLTECH	8060			
VESTEL	8644	5605	6896	5355	WELTBlick	8644	6896	4648	
	3840	5319	4648		WESTON	8644	6896		
VEXA	7647	8644	6896	3637	WHARFEDALE	8644	6641	7350	2707
	4648					6896	5952		
VICTOR	4638				WHITE WESTINGHOUSE	4648	4469	8644	6896
VIDEO SYSTEM	4648					2499			
VIDEOLOGIC	4016	4469			WINDSOR	5355	3840		
VIDEOLOGIQUE	4469	4016			WINDSTAR	5896			
VIDEOSAT	5531				WINDYSAM	6896			
VIDEOSYSTEM	8644	6896			WINSTON	3637	4648		
VIDEOTECHNIC	4469	5090			WINTEL	8060			
VIDEOTON	5605				WINTERNITZ	3637			
VIDION	3637				WORLD-OF-VISION	3118	3094	4677	3730
VIDTECH	6812	5393				3191	2108	7855	
VIEWSONIC	5991				WORLDVIEW	7014	3637	4648	
VISIOLA	4469				XENIUS	5295			
VISION	8644	3488	6896	3637	XLOGIC	2924	7314		
VISON	4648				XORO	3453	7855		
VISTAR	3350				XRYPTON	8644	6896		
VOCSON	4648				X-VIEW	4156			
VORTEC	8644	6896			YAMAHA	4526	8374		
VOTREC	4648				YAMISHI	5896	7014	4016	8644
VOXSON	8644	6896	2438	5553		6896			
	5605	5393			YOKAN	8644	6896		
WALTHAM	5553	4422	8644	6896	YOKO	8644	6896	4016	3488
	5355	7430	3840	5605		7647	7287	6559	4469
	5119					5531	3637	4648	
WARDS	4648				YORK	4648			
WATSON	3840	4596	8644	6896	YORX	4016			
	5605	7647	5355	4016	ZANUSSI	2438			
	4698	7839	3637	4648	ZENITH	2499	5874	4648	
	7350	3158	7733	4917	ZENOR	6559			
WATTRADIO	5605	4469			ZX	7733			
WEGA	8644	6896	6812	3802					