
HD Digital Receiver

User's Manual

HD-FOX T2

The default password is 0000.



HUMAX

Thank you for purchasing a HUMAX product. Please read this user's manual carefully to be able to safely install, use and maintain the product at maximum performance. Keep this user's manual next to your product for future reference. The information in this user's manual is subject to change without notice.

Copyright (Copyright © 2010 HUMAX Corporation)

Not to be copied, used or translated in part or whole without HUMAX's prior consent in writing except approval of ownership of copyright and copyright law.

Warranty

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

Meaning of Symbols



To reduce the risk of electric shock, do not remove cover (or back). No user serviceable parts inside. Refer servicing to qualified service personnel.



This symbol indicates dangerous voltage inside the product that presents a risk of electric shock or personal injury.



This symbol indicates important instructions accompanying the product.

Warnings, Cautions and Notes

Throughout the whole manual, pay special attention to the following marks that indicate hazardous situations.

Warning

Indicates a hazardous situation which could result in serious injury.

Caution

Indicates a situation which could damage the equipment or other apparatus.

Note

Indicates additional information to make the user aware of possible problems and information of any importance to help understand, use and maintain the installation.

Notice

'WEEE' Instructions



This product should not be disposed with other household wastes at the end of its working life. Please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources. This will prevent possible harm to the environment or human health from uncontrolled waste disposal.

Domestic users:

Please contact either the retailer where you purchased this product or their local government office for details of where and how they can take this item for environmentally safe recycling.

Business users:

Contact your supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

Trademarks

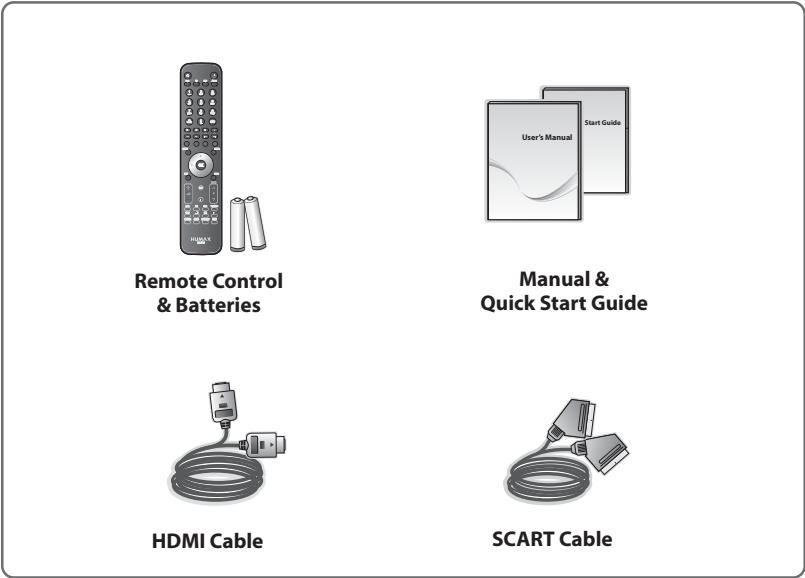
- Manufactured under license from Dolby Laboratories.
Dolby and the double-D symbol are trademarks of Dolby Laboratories.
- HDMI, the HDMI Logo, and High-Definition Multimedia Interface are trademarks of registered trademarks of HDMI Licensing LLC.

This product incorporates copyright protection technology that is protected by U.S. patents and other intellectual property rights. Use of this copyright protection technology must be authorized by Macrovision, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision. Reverse engineering or disassembly is prohibited.

Notice		
Quick Start Guide		
1. Checking Accessories	4	
2. Product Overview	4	
3. Connections	8	
4. Powering On	10	
5. Installation Wizard	11	
6. Menu Overview	13	
Basic Operation		
Changing Channels	14	
Volume / Mute / Audio	14	
Display Format / Resolution	15	
Programme Information (i-plate)	16	
Sleep Timer	17	
Subtitle	17	
Text and Interactive Services	17	
Channel List		
Changing Channels	18	
Editing Channels in Channel List	18	
Managing Channels		
Editing Channels	20	
Editing Favourite Channels	22	
TV Guide		
Watching Programmes	23	
Setting Reminders or Recordings	24	
Finding Programmes	25	
Scheduling Reminders and Recordings	26	
Recording and Playback		
Recording	27	
Playback	29	
Pausing and Rewinding Live TV (TSR)	33	
Using Video List	36	
Using Music List	40	
Using Photo List	43	
Preferences		
Parental Control	45	
Language Setting	47	
Setting Power On/Off Timer	48	
Video Setting	48	
Audio Setting	49	
Screen Display	50	
1 Installation		52
Automatic Search		52
Manual Search		53
Software Update		53
Antenna Power		54
Factory Default		54
OTA (Over the Air)		55
System		56
System Information		56
Signal Detection		56
Power Management		57
Internet Setting		58
Appendix		59
Specification		59
Service and Support		60
Safety Warning		61
Trouble Shooting		63
Error Message		65
Glossary		66
Remote Control Code List		66
OPEN SOURCE SOFTWARE NOTICE		97

Quick Start Guide

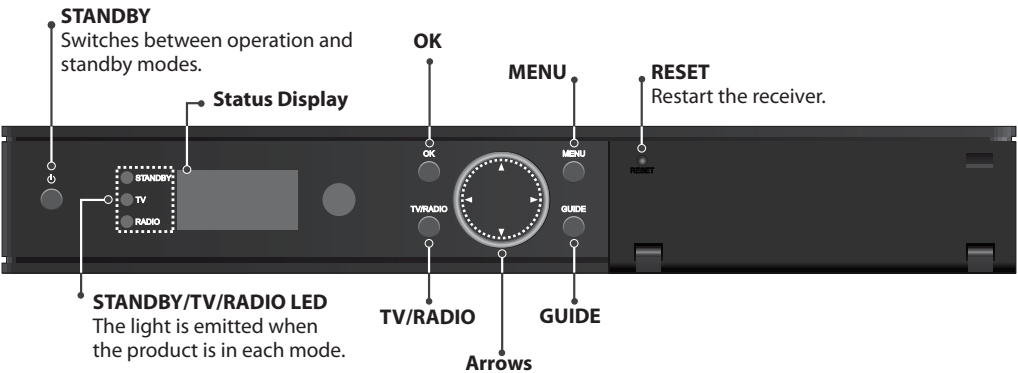
1. Checking Accessories



Note: The accessories may vary according to area.

2. Product Overview

Front Panel

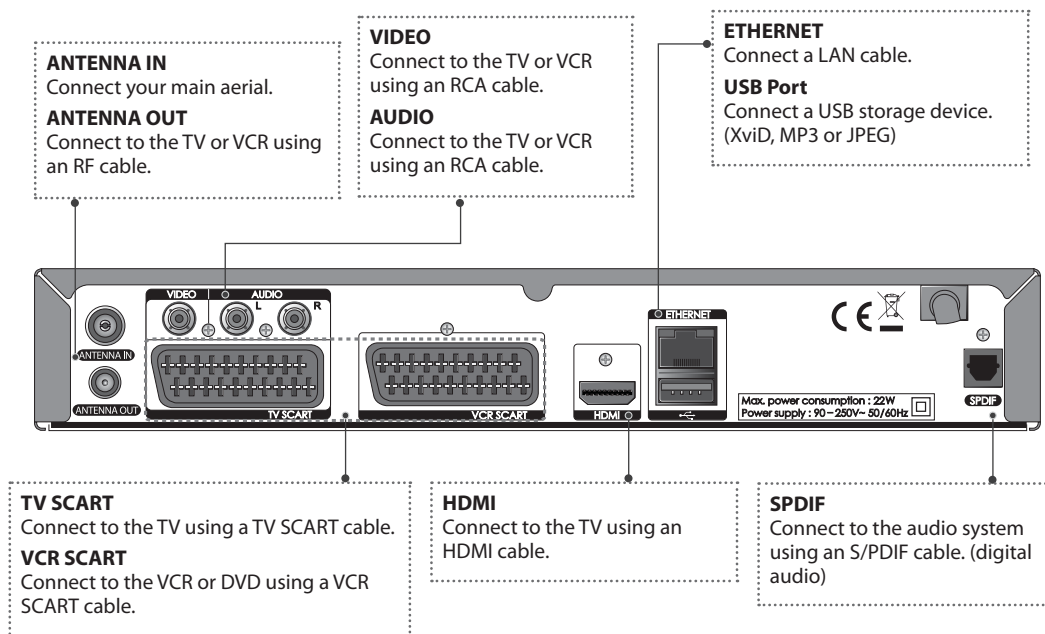


Note: The image shown may differ from the actual product.

Quick Start Guide

English

Rear Panel

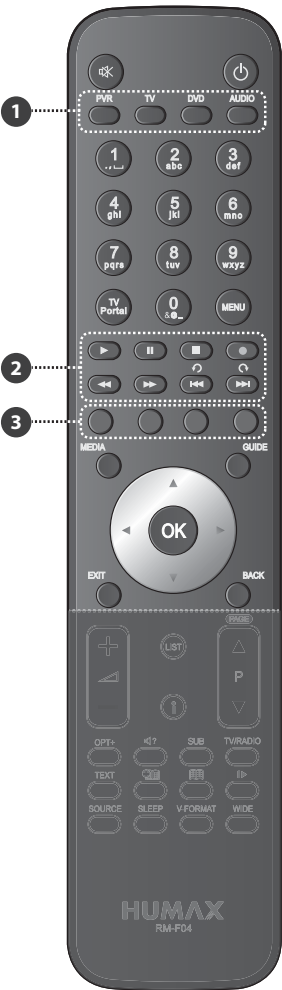


Note: The image shown may differ from the actual product.

Quick Start Guide

Remote Control

To control the product please make sure that the PVR mode is selected on the remote control.



MUTE	Mutes audio
STANDBY	Switches between operation and standby modes.

1 MODE	Changes the mode of remote.
---------------	-----------------------------

NUMERIC (0-9)

TV Portal Reserved for future functionality.
Access to Humax TV Portal.

MENU Displays the main menu.

2 Playback Control Buttons	▶ Play, II Pause, ■ Stop, ● Record (Reserved for future functionality) ◀◀ Rewind, ▶▶ Fast Forward, ◀◀ Previous, ▶▶ Next, ⌂ Instant Replay, ⌂ Skip
3 COLOUR Buttons	Colour keys for interactive applications.

MEDIA Displays the media list.

GUIDE Displays the programme guide.

ARROW Buttons Moves the cursor up, down, left or right.

OK Selects a menu or confirms.




EXIT Exits all On-Screen Display (OSD) screens.

BACK Returns to the previous screen.

Note:

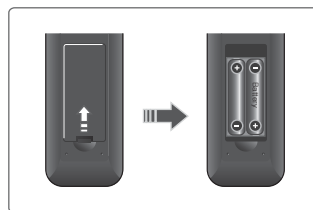
- The image shown may differ from the actual product.
- Some playback control buttons may not function depending on the contents.



VOLUME	Adjusts the audio volume.
P▲/P▼	Changes the channel or page.
LIST	Displays the channel list.
i (Information)	Displays the channel and programme information.
OPT+	Displays the channels attributes.
AUDIO	Displays the audio list.
SUB	Displays the subtitle language list.
TV/RADIO	Switches between TV and radio modes.
TEXT	Enters the digital text service.
SOURCE	Controls the output of TV SCART.
SLEEP	Sets the sleep timer.
V-FORMAT	Sets the resolution of video.
WIDE	Sets the display format.
 	Reserved for future functionality. Add Bookmark/Show Bookmark List.
	Slow Play

Inserting Batteries

1. Press the hook upward and lift the battery cover off.
2. Insert the batteries (supplied) matching the plus(+) and minus(-) at each end.
3. Close the cover.

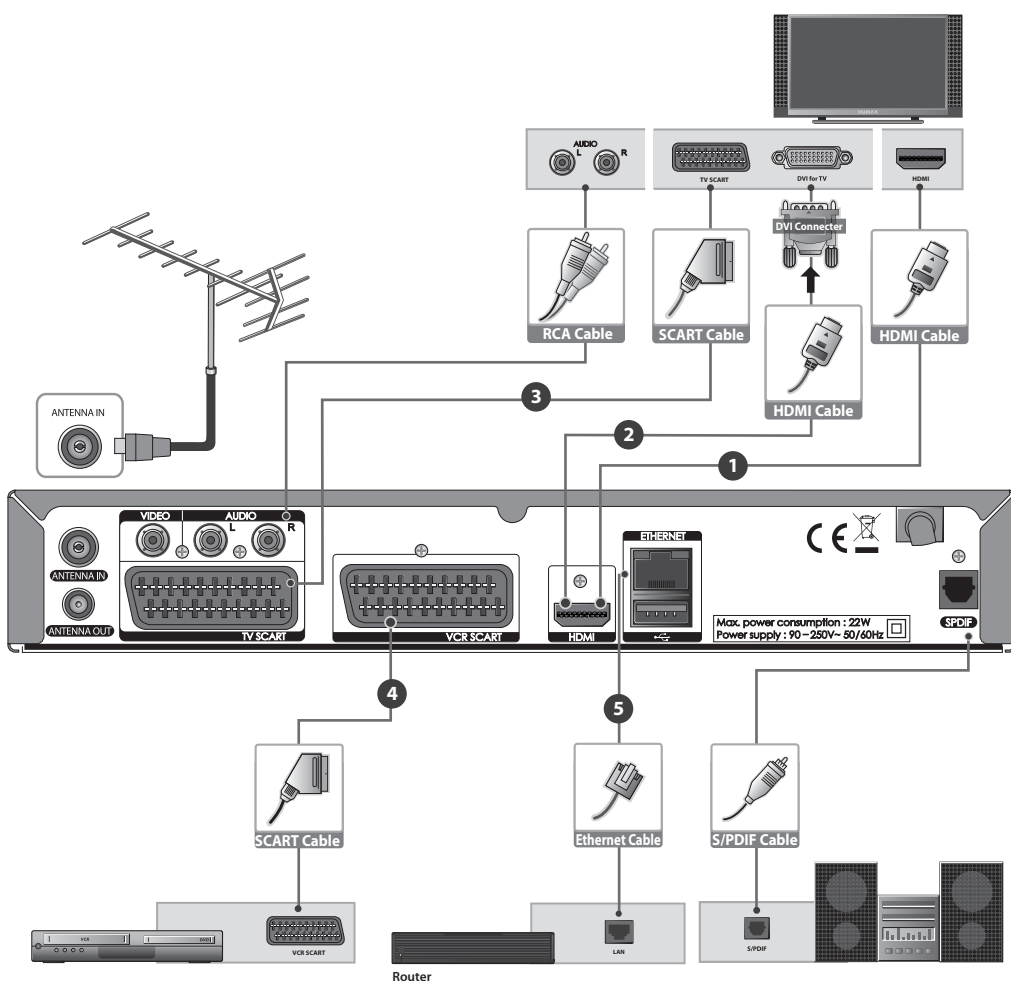


Quick Start Guide

3. Connections

This section describes how to connect your product to match your particular devices setup and to gain optimum signal quality. The product provides various interfaces to connect to the TV, VCR or other devices. Select the most appropriate procedure depending on the device you have.

Note: If you encounter any problems setting up your product, please contact your local retailer or Humax Customer Helpline.



Connecting the Antenna

Connect the aerial to the **ANTENNA IN**.

Connecting the TV and VCR

You can select one of the following connections depending on the device you have.

❶ TV with the HDMI connector;

For the best picture quality, connect the product and TV using a HDMI cable.
When using a HDMI cable it is not necessary to also use a scart cable.

❷ TV with the DVI connector;

For very good picture quality, connect the product and TV using a HDMI cable and a HDMI-to-DVI converter for video.

You will also require a RCA cable(Audio L/R) connected to the necessary connection(s) on your TV/Display for Audio.

Please refer to your TV/Display user manual for further information on the connections required for Audio.

❸ TV with the SCART connector;

For good picture quality, connect the product and TV using a SCART cable (TV SCART).

❹ TV with the SCART connector;

To output video and audio to an external recorder connect the product to the recorder using a SCART cable. (VCR SCART).

For additional audio connections you can either

1. Connect the product and TV using an RCA cable (Audio L/R).
2. When using the digital audio system, connect the product and the digital audio system using a S/PDIF cable.

Note: Connecting your TV directly to the audio/video output of the product will assure a more vivid picture and enhance your viewing enjoyment.

Connecting the Network

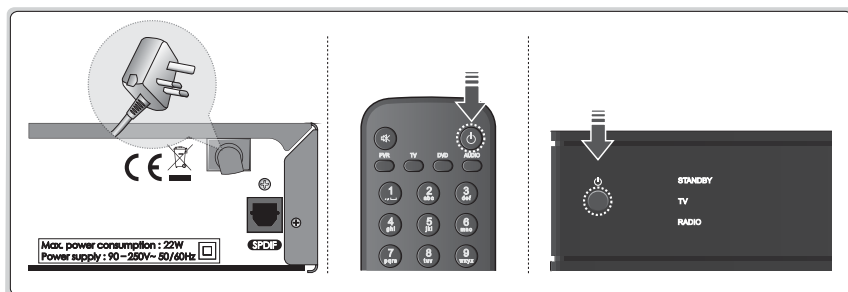
❺ Connecting to the LAN;

Connect one end of the Ethernet cable to the receiver and the other end to the LAN router.

Quick Start Guide

4. Powering On

1. Connect the power cord of the product to a wall outlet.
2. Power on by pressing the **STANDBY** button on the remote control or the **STANDBY** button at the front of the product.



Note: To control the product please make sure that the PVR mode is selected on the remote control.

5. Installation Wizard

When powering on your product for the first time after purchase or performing the factory default in menu, the installation wizard will operate automatically.

Note: If you exit the installation wizard without fully completing the channel searching procedure, you may not have all of the channels available. In this case, you can use the **Settings > Installation** menu to search for more channels.

1. Preferred Language

Select a language for audio and subtitle.



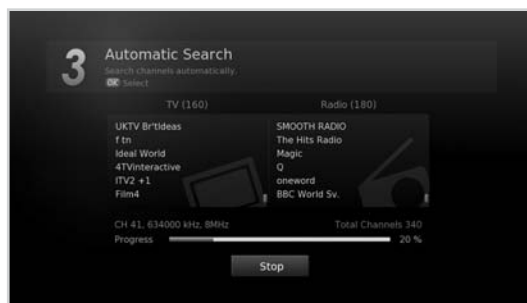
2. Display

Set the video output to your TV.



3. Automatic Search

Channel search will begin automatically. Save the found channels when the search is complete.



Quick Start Guide

4. Configure Network

Configure the network settings to connect to your router. Please leave the Configure IP as DHCP if you are unsure of this setting.




5. Result

The result of the Installation Wizard is shown. Select **Finish** to exit the wizard.



6. Menu Overview



	Channel List
	TV Guide
	Video
	Music
	Photo
	Settings 

Preferences

- Parental Control
- Language
- Time
- Video
- Audio
- Recording
- Screen Display

Edit Channels

- Edit Favourite List
- Edit Channel List

Installation

- Automatic Search
- Manual Search
- Software Update
- Antenna Power
- Factory Default

System

- System Information
- Signal Detection
- Power Management
- Data Storage
- Internet Setting

How to Navigate



Displays the Menu OSD



Moves among menus or options



Selects (Enters) a menu or confirms a selection



Changes or adjusts the option



Goes back to the previous screen



Enters the number (0~9)



Exit all On-Screen

Basic Operation

Changing Channels

You can change the channels in several ways.

- ❖ Press the **P▲/P▼** button.
- ❖ Enter the channel number directly. **(0-9)**
- ❖ Go to the channel list or TV guide and select a channel.

Note: Press the **TV/RADIO** button to switch between TV and radio channels.

Volume / Mute / Audio

- ❖ To adjust the audio volume, press the **▲+/-** button.
- ❖ To mute the audio temporarily, press the **MUTE** button.

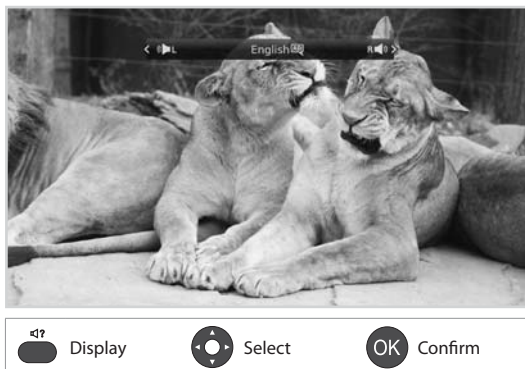
Setting Audio Options

Audio options are available only when the programme supports multiple audio languages.

1. Press the **AUDIO** button.
Each time you press this button, the audio language changes or the Audio Description soundtrack will be selected.
2. Select the audio direction if available.

Note:

- The mute button will not mute the audio if connected via the SPDIF connection, please control the volume via your Amplifier.
- The mute function remains set while you change channels.
- You cannot set the audio direction when the programme is broadcast in Dolby Digital.



Display Format / Resolution

Setting Display Format

Press the **WIDE** button to set the display format according to the screen ratio.
Each time you press this button, the value changes.

- Screen ratio 4:3: **Auto - Letterbox 16:9 - Letterbox 14:9 - Centre**
- Screen ratio 16:9: **Auto - Pillarbox - Zoom**

Note: Refer to **Display Format** for details.



Setting Resolution

Press the **V-FORMAT** button to set the resolution of the screen.
Each time you press this button, the value changes.

- **576i - 576p - 720p - 1080i - 1080p - Original**

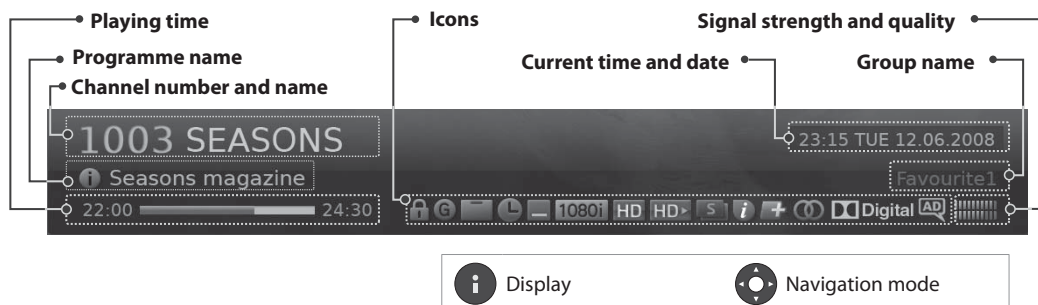
Note: When connected with a HDMI cable you may only be able to change to the resolutions that the TV supports..



Basic Operation

Programme Information (i-plate)

The i-plate is an information banner that is displayed for a certain period of time whenever you change channels. Press the **i** button while watching a programme to display the i-plate. Press the **EXIT** button to hide.



- **Viewing detailed programme information**
Press the **i** button again while the i-plate is displayed.
- **Viewing previous/next programme information**
Press the **◀/▶** button while the i-plate is displayed. Press the **OK** button to set reminders for future programmes.
- **Viewing programme information of other channels**
Press the **▲/▼** button while the i-plate is displayed. Press the **OK** button to change to the selected channel.

Icons

The icons represent the information and services provided.

	Locked programme		Series
	Parental guidance programme		Part of a split event
	Pay TV / encrypted programmes (CAS icons)		Interactive Service
	Parental guidance programme		Recommendation
	Resolution		Dolby Digital
	Multiaudio		Audio Description
	Programme being broadcast in HD at the same time		Scheduled programme (Red: Record, Blue Reminder)
	HD programme		

Note: Programme information is not displayed when there is no programme information.

Sleep Timer

Press the **SLEEP** button to set the automatic turn off time.

Each time you press this button, the value changes.

- **Sleep Off - 10 - 20 - 30 - 60 - 90 - 120 minutes**




Subtitle

You can select the subtitle language when subtitle information is provided.

Press the **SUB** button.

Each time you press this button, the subtitle language changes.

Note:

- You can choose to always display the subtitle when available.
- The  icon appears when the DVB subtitle is supported.



Text and Interactive Services

If your chosen channel has digital teletext features, you can access them. Teletext services often load automatically shortly after the digital teletext window is displayed. In which case, simply follow the on screen instructions. (Press colour buttons)

1. Press the **TEXT** button to access digital teletext.
2. Press the **TEXT** button again to return to normal viewing.
3. Press the **P▲/P▼** button to exit this service.

Channel List

The channel list will help you find the channel you want to watch quickly and easily.

You can access the channel list in several ways.

- ❖ Press the **LIST** button.
- ❖ Press the **MENU** button and select **Channel List**.

Changing Channels

Select the channel you want to watch and press the **OK** button. The displayed channel will change.

Note:

- : Locked channel, : Pay TV / encrypted programmes (CAS icons)
- Press the **i** button to view the detailed programme information.
- Press the **LIST** or **EXIT** button to exit.

Advanced Options

Changing Group

You can display the list of the selected channel group.

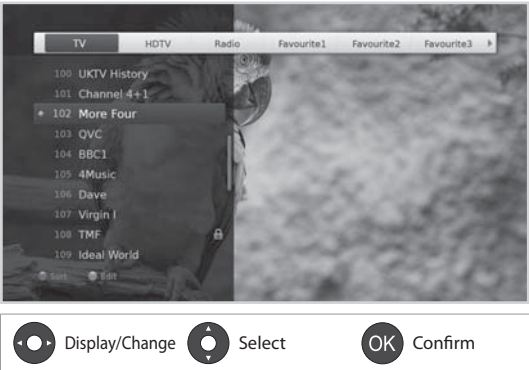
➤ **TV, HDTV, Radio, Favourite 1~5, Recent**

1. Press the **►** button.
2. Select a channel group.
3. Press the **OK** button.

Note: Press the **TV/RADIO** button to switch between TV and Radio groups.

Sorting Channels

Press the **RED** button to sort the list in numerical or alphabetical order.



Editing Channels in Channel List

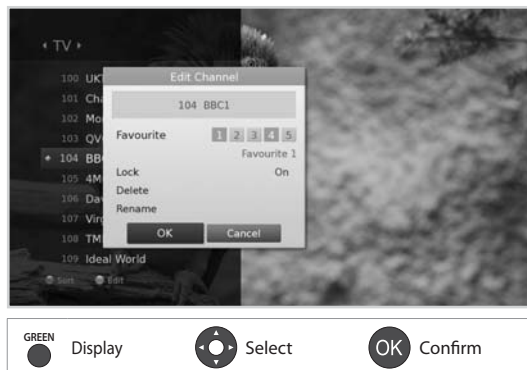
You can lock, delete or rename each channel in the channel list, as well as in menu. To edit the multiple channels, go to the **Settings > Edit Channels** menu.

Locking / Deleting / Renaming Channels

1. Select a channel you want to edit and press the **GREEN** button.
2. Select an option.
 - **Lock:** Select **On** or **Off**.
 - **Delete:** Press the **OK** button.
 - **Rename:** Press the **OK** button and enter the name in the keyboard.
3. Select **OK** to save and exit.

Note:

- Refer to **Edit Channels** for details
- The default password is 0000. If you have forgotten your password, please contact Humax Customer Support.



Setting Favourite Channels

You can select your favourite channels and include them in the five favourite groups.

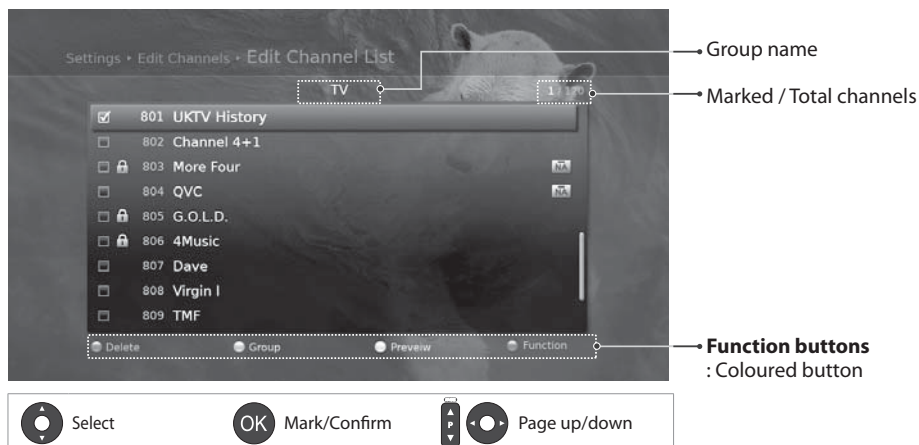
1. Select a channel and press the **GREEN** button.
2. Select **Favourite**.
3. Select a favourite group you want to include the channel in and press the **OK** button.
To remove a channel from a favourite group, select the group and press the **OK** button again.
4. Select **OK** to save and exit.

Managing Channels

Editing Channels

The **Edit Channel List** menu will help you delete, move lock or rename multiple channels.

MENU → Settings → Edit Channels → Edit Channel List



Note:

- : Locked channel, : Pay TV / encrypted programmes (CAS icons)
- Press the **MENU** or **EXIT** button to exit. Press the **BACK** button to return to the previous screen.

Deleting Channels

1. Select the channels using the **▲/▼** and **OK** button.
2. Press the **RED** button.

Locking / Unlocking Channels

1. Select the channels using the ▲/▼ and **OK** button.
2. Press the **BLUE** button.
3. Select **Lock**. To unlock, select **Unlock**.

Renaming Channels

1. Select a channel to rename.
2. Press the **BLUE** button.
3. Select **Rename**.
4. Enter the name in the keyboard.

Advanced Options

Changing Group

To list the channels of other groups, press the **GREEN** button and select a group you want.

Note: Press the **TV/RADIO** button to switch between TV and Radio groups.

Changing Background

You can change the channel displayed in the background while editing.

1. Select the channel you want to watch.
2. Press the **YELLOW** button. The displayed channel will change.

Selecting / Releasing All Channels

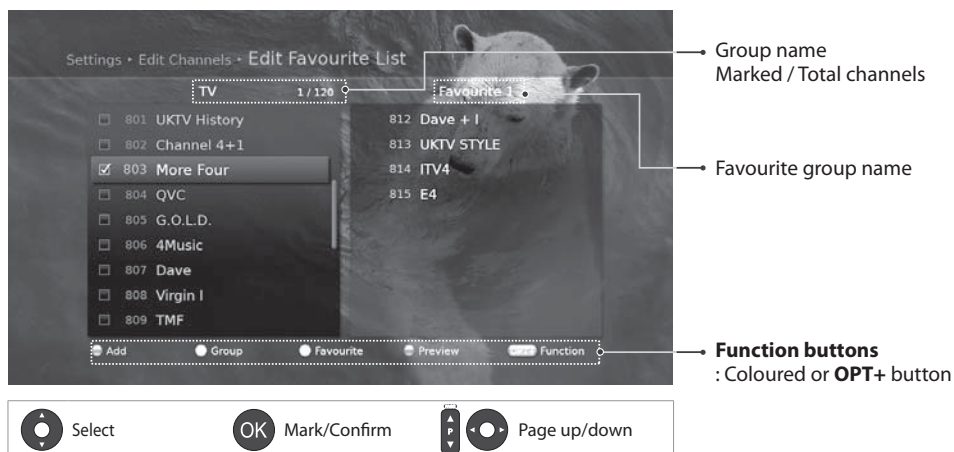
1. Press the **BLUE** button.
2. Select **Select All**.
3. To release all, select **Release All**.

Managing Channels

Editing Favourite Channels

The **Edit Favourite List** menu will help you add or remove channels from the favourite groups.

MENU → Settings → Edit Channels → Edit Favourite List



Note: Press the **MENU** or **EXIT** button to exit. Press the **BACK** button to return to the previous screen.

Adding / Removing Favourite Channels

1. Press the **YELLOW** button and select the favourite group you want to edit.
2. To add channels to the favourite list, select the channels you want to add using the **▲/▼** and **OK** button in the left column and then press the **RED** button. The added channels will appear in the right column.
3. To remove channels from the favourite list, select the channels you want to remove in the right column and then press the **RED** button.

Moving Channels

1. Select the channels using the **▲/▼** and **OK** button.
2. Press the **GREEN** button.
3. Move the selected channels to the location you want using the **▲/▼** and **OK** button.


Note: You can move the channels in the right column only.

The TV guide is an on-screen guide of grid type which displays the programme information of channels in time and date order.

You can access the TV guide in several ways.

- ❖ Press the **GUIDE** button.
- ❖ Press the **MENU** button and select **TV Guide**.

Note: Press the **GUIDE** or **EXIT** button to exit. Press the **BACK** button to return to the previous screen.



The screenshot shows the TV Guide interface. At the top, there's a 'Preview' section showing a program 'Mimic; Weatherview' on 'Channel 4+1' for 'TUE 12 JUN 06:00-07:30'. To the right, it shows the 'Current time and date' as '07:18 TUE 12 JUN 2005'. Below this is a grid of programs for 'Mon 11 Jun' and 'Tue 12 Jun'. The grid lists channels like SKY-THREE, UKTV History, Channel 4+1, More Four, QVC, G.O.L.D., and 4Music, along with their respective programs. At the bottom, there are 'Function buttons': Guide, Find, Schedule, and Group. Annotations on the right side point to these elements: 'Preview', 'Current time and date', 'Information of the selected programme: channel number & name, programme name, simple information, favourite group, network type, and icons', 'Time bar', and 'Function buttons : Coloured button'.

Preview

Current time and date





Information of the selected programme: channel number & name, programme name, simple information, favourite group, network type, and icons

Time bar

Function buttons
: Coloured button

Select OK Tune/Reserve Page up/down

Note:

- Press the **i** button to view the detailed programme information.
- : Scheduled programme (Red: Record, Blue: Reminder), : Recording programme, : Present time, : DRM(Digital Rights Management)

Watching Programmes

1. Select a programme and press the **OK** button. The programme will be displayed in the preview.
2. Press the **OK** button again to exit the TV guide and watch the programme.

TV Guide

Setting Reminders or Recordings

1. Select a future programme and press the **OK** button.
2. Select **Reminder** or **Record** and press the **OK** button.
Press the **OK** button again to cancel the reservation.
The reserved programmes will be added automatically in **Schedule**.

Note:

- Setting recordings is available only when the external hard disk drive has been connected for recording.
- If the programme is overlapped with another programme, adjust the reservation appropriately.
- If the channel is locked, you will be prompted to enter your password before watching.
The default password is 0000. If you have forgotten your password, please contact Humax Customer Support.
- In standby mode the product will switch on to the channel when the programme starts.
- You can reschedule reminders .(Refer to **Scheduling Reminders**.)

Advanced Options

Quick Navigation

Press the ◀/▶ button to move to the previous/next programme.

Press the ◀◀/▶▶ button to jump back/ahead two hours.

Press the ◀◀◀/▶▶▶ button to move to the previous/next day.

Changing Group

To list the channels of other groups, press the **BLUE** button and select a group you want.

Note:

- Press the **TV/RADIO** button to switch between TV and Radio groups.
- To search specific programmes, go to **Find** by pressing the **GREEN** button. (Refer to **Finding Programmes**.)

Finding Programmes

Find will help you find the programmes more specifically using the keyword or genre.

By Keyword

1. Press the **GREEN** button.
2. Select **Keyword** and press the ► button.
3. Select a keyword and press the **OK** button.
4. Press the **YELLOW** button to confirm.

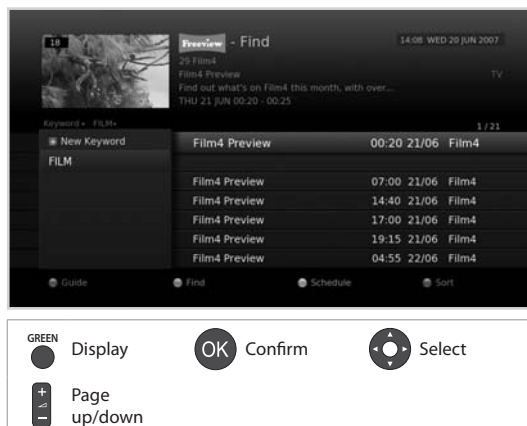
Note: To enter a new keyword, select **New Keyword**.

By Genre

1. Press the **GREEN** button.
2. Select **Genre** and press the ► button.
3. Select a genre and press the **OK** button.
4. Select the specific genre and press the **OK** button. (if provided)

Note:

- Press the **i** button to view the detailed programme information.
- Press the **OK** button to watch a found programme.
- You can set reminders or recordings for future programmes. (Refer to **Setting Reminders** or **Recordings**.)



TV Guide

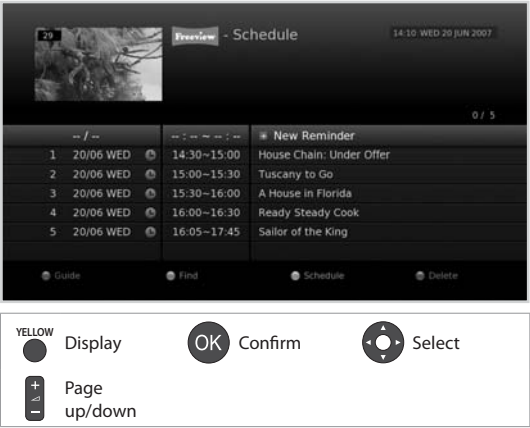
Scheduling Reminders and Recordings

Schedule lists reminders and will help you manage them in more detail.

1. Press the **YELLOW** button.
2. You can add, edit or delete your reminders.
 - To add, select **New Reminder** and press the **OK** button.
 - To edit, select a reminder and press the **OK** button.
 - To delete, select a reminder and press the **BLUE** button.
3. **Reminder** will pop up. You can change the options you want using the **▲/▼/◀/▶**, **NUMERIC(0~9)** and **OK** buttons.
4. Select **OK** to save and exit.

Note:

- Press the **i** button to view the detailed programme information.
- You can easily set reminders or recordings in **TV Guide**, **Find** or i-plate navigation mode.



Digital Television Recording functionality is not available on your product.

If you have not receive the Over Air Software update then please visit our website to download the software.

To see the Over Air Download schedule please visit http://www.dtg.org.uk/industry/download_schedule.php.

How to download the latest software via our website

1. Visit the HUMAX website. (<http://www.humaxdigital.com/uk/support>)
2. Download the software and save on a USB Pen (the USB Pen must be formatted in FAT32 format).
3. Disconnect the product from the mains power (remove the plug from the wall socket) and insert the USB Pen to the USB port on the rear of the product.
4. Hold in the Standby button on the front display of the product and plug in the mains power.
5. The download should start and the download progress should appear on the TV set; allow 10 minutes for the update to complete.

Warning: During the update process DO NOT power off the product.

6. When the update is complete End will appear on the front display, "Download Successful will appear on the TV.
7. Disconnect the product from the mains power (remove the plug from the wall socket), remove the USB pen, and plug in the mains power.

Connecting a USB Hard Disk Drive (HDD) for the first time

Warning: to use a HDD for recording functions it will need to be formatted via the product, all data on the drive will be lost. If you have important data then please backup or use a different USB HDD.

- Connect USB HDD to the rear USB
- "USB Device is Loading..." appears on screen
- Go to **Menu > Settings > System > Data Storage**
- Storage will state External.
- Select **Format Storage** and Press **OK**.
- Select **YES** on the warning message and press **OK**.
- Enter your password (Default = 0000).
- You can rename the drive using the On Screen keyboard, press the **YELLOW** button to confirm.
- "**Processing**" appears while formatting is in progress.

Warning: The time taken to format the HDD will depend on the HDD size, please do not power off the product or disconnect the USB HDD while formatting.

- The messages "Do you want to assign the currently selected HDD for recording purpose?" appears on screen, select **YES** and press **OK**.

Note:

- Make sure that the external hard disk drive is connected correctly before recording or playback.
- Please connect only the USB hard disk drive which has only one partition and was formatted for recording. If you connect the external hard disk drive for the first time, you will be prompted to format the USB hard disk drive to be used for recording. Please format the device according to the following steps.
- A USB storage device which was formatted with FAT32 or NTFS file system works only for media (MP3, JPEG, or Video files).
- Supported features according to USB file system
 - **ext3** : Record, Read, Copy (Digital TV recordings, MP3, JPEG, or Video files)
 - **FAT32** : Read, Copy (MP3, JPEG, or Video files)
 - **NTFS** : Read (MP3, JPEG, or Video files)

Recording and Playback

- Even if you have connected more than two external hard disk drives, you can use only one hard disk drive for recording.
- USB ports on your product supplies 800mA in total. This 800mA is shared among all devices connected to product.
- Please connect power to a USB storage device which requires an external power supply. If not, the device may not be recognized.
- Please connect a USB storage device with the cable offered by the device maker. If you use a cable which is not offered by the device maker or an excessively long cable (max 5m), the device may not be recognized.
- If the USB storage device is connected in standby mode, it will automatically be recognized when the product is turned on.
- Please do not disconnect or turn off the USB storage device while recording or playing back. When the USB storage device is suddenly disconnected from the product, the stored files or the USB storage device may be damaged.
- Be sure to back up important files since data stored in a USB storage device may be damaged. We will not be responsible for any data loss.
- Some USB storage devices may not be supported/recognised by the product.
- How fast a USB storage device is detected differs from device to device.
- USB storage devices below USB 2.0 are supported as well. But they may not work properly.

Recording

Instant Recording

To instantly record the current programme you are watching, press the **RECORD** button.

The recording will start from the current broadcast point and the record banner will be displayed for a few seconds.

Press the **STOP** button to stop recording the programme.

The recording will continue until the end of the current programme. However, if the programme ends in less than ten minutes, it will continue till the end of the next programme. When no programme information is provided, the recording will continue for two hours.

Note: You can also press the **Record** button while in the Guide to start recording a current programme on a different channel.

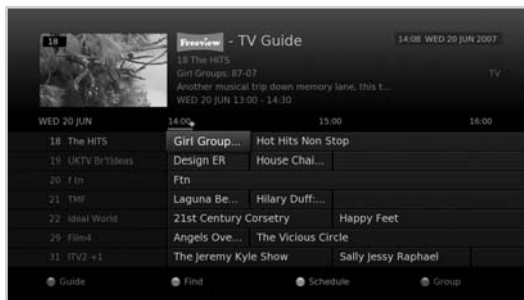


Recording and Playback

Scheduled Recording

You can easily set the recording reservations in **TV Guide**, **Schedule** or i-plate navigation mode.

- ❖ While in the **TV Guide** highlight a future programme and press the **OK** button.
- ❖ Select from:
 - Record Whole Series**
 - Record the Whole Programme**
 - Reminder** (Programme will not be recorded, instead a prompt will be displayed on screen to view the programme when it starts).
- ❖ Press the **OK** button on a future programme in i-plate and select either **Record Series**, **Record Whole Programme** or **Reminder**.



The recording will start at the scheduled time and the record icon will be displayed for a few seconds.

Press the **STOP** button to stop recording the programme.

Note:

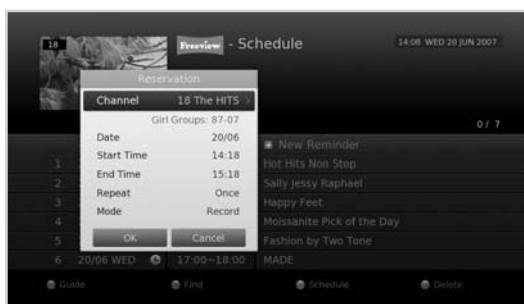
- Press the **GUIDE** button to go to **TV Guide**.
- Press the **GUIDE** button and press **YELLOW** button to go to **Schedule**.
- Press the **i** button while watching a programme to display the i-plate.

Editing Recording Schedule

You can edit or delete your reservations in **Schedule**.

- To edit, select a reservation and press the **OK** button. You can change the Channel, Date, Start Time, End Time, Repeat mode (Once, Daily, Weekly, Weekdays, or Weekend), or Mode (Record or Reminder).
- To delete, select a reservation and press the **BLUE** button.

Note: Editing a scheduled recording will result in disabling the Accurate recording and Series recording functions.

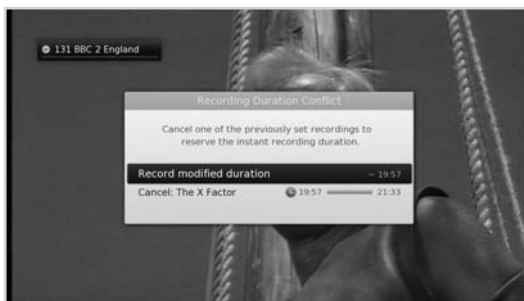


Recording Conflict

Recording Duration Conflict

When an instant recording conflicts with one of the scheduled recordings (or reminders), you can either;

- Record for the automatically modified duration.
- Cancel the scheduled recording (or reminder).



Watching Conflict

When a scheduled recording starts on a different channel while you are watching a channel, a record notice will pop-up 30 seconds before the scheduled recording starts.

- **OK:** The channel will change at the start time and the scheduled recording will start automatically.
- **Cancel:** The scheduled recording will be cancelled.



Scheduling Conflict

When a new scheduled recording conflicts with one of the previously set recordings (or reminders), you will be prompted to select the programme you wish to keep.

Select the programme using the ▲/▼ and OK button, then select **OK** and press **OK**.



Recording and Playback

Setting Recording Options

MENU → Settings → Preferences → Recording

Setting Padding Time

The Recording Padding Time will allow you to add additional minutes to the start and end time of the recordings you set.

- **Start Padding Time** : Additional recording time before the recording starts.
- **End Padding Time** : Additional recording time after the recording ends.

Note:

- 1 min, 2 mins, 5 mins, and 10 mins are available for the Start and End Padding times.
- When Padding Times are set the recordings will not use the broadcasters signalling for the start and end times (Accurate Recording).



Setting Jump Time

You can set the jump time to replay or skip scenes during playback or time shifted recording.

- **Instant Replay Time** : 7 sec, 15 sec, 30 sec
- **Skip Forward Time** : 30 sec, 60 sec, 120 sec, 240 sec

Setting Time Shift Recording

You can set the time shift recording

- **Time Shift Recording** : Time shift recording starts when the channel is changed. The maximum length of the Time Shift Buffer is 2 hours. If a recording starts the Time Shift Buffer will be cleared.

Important: To use the Time Shift Recording Feature go to **Menu > Settings > Preferences > Recording >** switch **Time Shift Recording** to **On**.

Note:

- Time Shift Recording works on TV and Radio channels.
- The record banner will be displayed with the i-plate whenever pressing the **i** button.
- You can change the recording duration by using the **RECORD** button for instant recording or by going to **MENU > TV Guide > Schedule** for scheduled recordings.
- Pressing the **STANDBY** button while recording will not stop the recording. New recordings will start even in standby mode.
- While watching a recorded programme, you can trick-play using the playback control buttons such as pause, fast rewind, instant replay, slow, etc.
- You can record the digital TV or radio programmes only. The external AV inputs cannot be recorded.
- Ensure that there is enough free space before recording. If the free space on the hard disk drive is insufficient, recording will stop. Recording one hour of programme may require up to 2 or 3GB of hard disk space. The space for recording one hour programme may differ depending on the programme.
- To view the recorded programme list, press the **MEDIA** or **MENU** button and select **Video**. (Refer to **Using Video List**.)



Record



Select



OK Confirm



Enter 0~9

Recording and Playback

English

Playback

You can playback the recorded programmes that you have recorded on the external hard disk drive.

Playing Recordings (Video)

You can access the recorded file list easily and play the recorded programmes.

- ❖ Press the **MEDIA** button.
- ❖ Press the **MENU** button and select **Video**.

Highlight a recording and press **OK**, from the Play Options list that appear select **Play from the Start** and press **OK**.

You can perform fast rewind, fast forward, slow motion and pause while playing back a recorded file. The green playbar is displayed when pressing the **PLAY**, **FAST FORWARD**, **REWIND**, **SLOW** or **PAUSE** button while playing.



Record












Select

OK Confirm

Enter 0~9

Recording and Playback

Playback Controls

	Play
	Pause the scene. Press the PAUSE button again to go back to play mode.
	Stop the playback of the current file and go to live TV.
	Fast Rewind
	Fast Forward
	Move to the previous chapter and replay the scenes.
	Move to the next chapter and skip scenes.
	Jump to the previous or next scene.
	Add or delete a bookmark in your desired scene. The bookmarked scene is shown as a yellow pointer.
	Jump to bookmarked scenes directly. The play pointer will first move to the nearest bookmark.
	Watch the recording in slow video.

Note:

- To play multiple files successively, select the files using the **RED** button and press the **OK** button. When multiple files are selected, **Resume Play** and **Rename** are not available in **Play Options**.
- You will be prompted to enter the password when playing the locked files or the files with guidance policy.
- Some playback control buttons may not function correctly depending on the content you are playing.

Recording and Playback

English

Editing Files

Sorting Files

1. Press the **OPT+** button.
2. Select **Sort** and press the **OK** button. The files will be sorted in alphabetical order.
3. To sort the files in time order, repeat the above procedure.

Note: Sorting files is available for video files only.

Deleting Files

1. Select the file(s) you want to delete and press the **OPT+** button.
2. Select **Delete** and press the **OK** button.
3. Select **Yes** and press the **OK** button.

Locking Files

1. Select the file(s) you want to lock and press the **OPT+** button.
2. Select **Lock** and press the **OK** button.
3. To unlock, press the **OPT+** button again and select **Unlock**.
4. Enter the password.

Moving / Copying Files

1. Select the file(s) you want to move and press the **OPT+** button.
2. Select **Move** and press the **OK** button.
3. Select the folder or storage you want to move the file(s) to and press the **OK** button.
 - **Moving the file(s) within the same storage:** Select the folder you want to move the file(s) to and press the **OK** button.
 - **Copying the file(s) to another storage:** Select the storage and then select the folder to copy the file(s) to. Press the **OPT+** button to create the folder.

Note:

- When moving a locked file, you will be prompted to enter the password.
- When a file is moved to a different storage, it will be copied. However, video recordings cannot be copied to other storages.

Renaming Files

1. Select the file you want to rename and press the **OPT+** button.
2. Select **Rename** and press the **OK** button.
3. Enter the name of the file in the keyboard and press the **YELLOW** button.

Creating Folder

1. Press the **OPT+** button.
2. Select **New Folder** and press the **OK** button.
3. Enter the name of the folder in the keyboard and press the **YELLOW** button.



Recording and Playback

Pausing and Rewinding Live TV (TSR)

Time Shifted Recording (TSR) allows you to pause a live broadcast and return to it later and continue where you left off.

The TSR function automatically saves the programmes you watch to the built-in hard disk drive temporarily.

TSR lasts for 120 minutes (2 hours).



To pause the programme you are watching,

Press the **PAUSE** button. Press the **PLAY** button to return. Pause makes a time gap between the live broadcasting point and watching point. The time gap is equivalent to the period the programme has been paused.

Press the **STOP** button to close the time gap and go to live programme.

Note: If a recording starts the Time Shift Buffer will be cleared and you will be taken to the live programme you have set to record.

To rewind and watch missed scenes,

Press the **REWIND** button. Press the **PLAY** button at the point where you want to start watching. You can pause, rewind or fast forward within the programme.

You can fast rewind back to the start point. If you reach the start point while rewinding, the programme is automatically played at normal speed.

To fast forward and skip scenes,

Press the **FAST FORWARD** button. You can fast forward only when there is a time gap between the current watching point and the live broadcasting point caused by pause, slow motion or fast rewind. You can fast forward up to the current broadcasting point. If you reach the live broadcasting point while fast forwarding, the programme is automatically played at normal speed.

Media List

English

You can retrieve video, music or photo files from the connected USB storage device, or the DLNA compliant devices.

You can access Media List in several ways.

- ❖ Press the **MEDIA** button.
- ❖ Press the **MENU** button and select **Video**, **Music** or **Photo**.
- ❖ Connect a USB storage device for media and select your desired media type.

Video	Lists TV/Radio recordings or XviD files.
Music	Lists MP3 files.
Photo	Lists JPEG files.

Note:

- Press the **MEDIA** or **EXIT** button to exit. Press the **BACK** button to return to the previous screen.
- When you connect a USB storage device, the media type menu is displayed automatically.
- Select **Copy** to copy the media files to the different devices. (Refer to **Using the Video List > Editing Files**.)

Switching Storage

1. Press the **BLUE** button to switch the storage.
2. Select the storage and press the **OK** button.
 - **USB:** Displays each partition of the connected USB storage devices. Select a USB.
 - **Network:** Displays the connected DLNA compliant devices. Select the server.



Switching Media

1. Press the **YELLOW** button to switch the media type.
2. Select the media type and press the **OK** button.
 - **Video, Music, Photo**



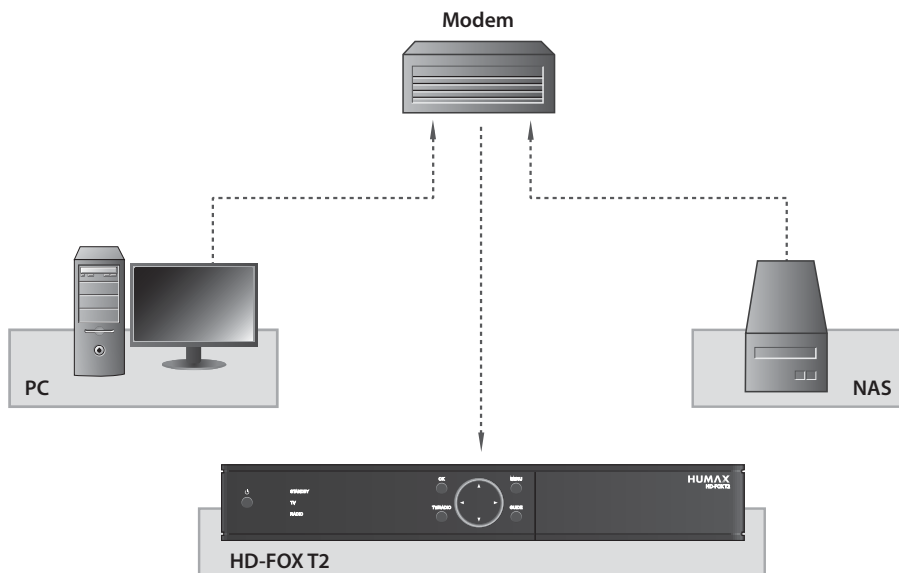
Media List

Note:

- Make sure that the USB storage device or network is connected correctly before using Media List.
- Please use only the USB storage device which was formatted with ext3, FAT or NTFS file system.
- Compatible USB devices include portable flash memory (particularly keydrives) and digital audio players (MP3 players) of format FAT12/16/32. It is not possible to connect this unit to a personal computer for USB playback.
- You can play back XviD/MP3/JPEG files (except files with copy-protection or restricted playback).
- Supported features according to USB file system
 - **ext3**: Read, Copy (Digital TV/Radio, MP3, JPEG, XviD)
 - **FAT**: Read, Copy (Digital TV/Radio, MP3, JPEG, XviD)
 - **NTFS**: Read (MP3, JPEG, XviD)
- USB ports on your product supply 800mA in total. This 800mA is shared among all devices connected to product.
- Please connect power to a USB storage device which requires an external power supply. If not, the device may not be recognized.
- Please connect a USB storage device with the cable offered by the device maker. If you use a cable which is not offered by the device maker or an excessively long cable (max 5m), the device may not be recognized.
- If the USB storage device is connected in standby mode, it will automatically be recognized when the product is turned on.
- A USB storage device using an automatic recognition programme may not be recognized.
- A USB storage device which uses its own driver may not be recognized.
- The recognition speed of a USB storage device may depend on each device.
- Please do not disconnect or turn off the USB storage device while playing back. When the USB storage device is suddenly separated or unplugged, the stored files or the USB storage device may be damaged.
- Be sure to back up important files since data stored in a USB storage device may be damaged. We will not be responsible for any data loss.
- If your USB storage device has multiple partitions, or if you use a USB multi-card reader, you can use up to 4 partitions or USB memory devices.
- If the USB memory stick does not work properly, disconnect and reconnect it.
- Some USB storage devices may not be supported or operated smoothly.
- How fast a USB storage device is detected differs from device to device.
- USB storage devices below USB 2.0 are supported as well. But they may not work properly.
- The system may require a longer time to read large amounts of data stored in a USB device.
- Only one USB icon will appear even when there are more than one USB.
- The network icon is displayed only when the network has been connected.
- HUMAX cannot guarantee compatibility (operation and/or bus power) with all USB mass storage devices and assumes no responsibility for any loss of data that may occur when connected to this unit.

Using the DLNA Server

You can have access to DLNA servers such as the PC or NAS (Network attached storage) and play the video, music or photo files. To connect to a DLNA server, the receiver must be connected to the local network.



Playing Video Files in Network

1. Go to **MENU>Video**.
2. Press the **BLUE** button and select **Network**.
3. Select the DLNA server from the list and select the folder the video file is located in.
4. Select the video file and play the file.

Note:

- Playing music and photo files is similar as playing video files.
- You can download DLNA tools such as Media Server 11(<http://www.microsoft.com/windows/downloads/default.aspx>) and XBMC(<http://www.xbmc.org>). The software can be downloaded and updated in each website.

Media List

Using Video List

You can play TV/Radio recordings or XviD files from the connected USB storage device, or the DLNA compliant devices.

MENU → Video

Note:

- Make sure that the USB storage device or network is connected correctly before using Media List.
- Press the **YELLOW** button to switch the media type.
- Press the **BLUE** button to switch the storage.
- Press the **i** button to view the detailed programme information.



Note:

- : Recording icon, : Playing icon, : HD icon, : CAS icon, : Lock icon
- : DRM (Digital Rights Management) expiration icon

Playing Files

Select a file and press the **OK** or **PLAY** button. Playback will start from the recently viewed point. To play multiple files successively, select the files using the **RED** button and press the **OK** or **PLAY** button.

You can perform fast rewind, fast forward, slow motion and pause while playing back a recorded file. Refer to **Recording and Playback > Playback** for details on playback control and playbar.

Note:

- You will be prompted to enter the password when playing locked files.
- Files with DRM (Digital Rights Management) expiration dates may expire if not watched before the written date.
- Some playback control buttons may not function depending on the contents.

Editing Files

Sorting Files

1. Press the **OPT+** button.
2. Select **Sort** and press the **OK** button. The files will be sorted in alphabetical order.
3. To sort the files in time order, repeat the above procedure.

Note: Sorting files is available for video files only.

Deleting Files

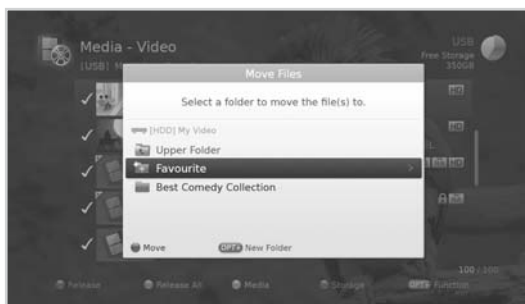
1. Select the file(s) you want to delete and press the **OPT+** button.
2. Select **Delete** and press the **OK** button.
3. Select **Yes** and press the **OK** button.

Locking Files

1. Select the file(s) you want to lock and press the **OPT+** button.
2. Select **Lock** and press the **OK** button.
3. To unlock, press the **OPT+** button again and select **Unlock**.
4. Enter the password.

Moving / Copying Files

1. Select the file(s) you want to move and press the **OPT+** button.
2. Select **Move** and press the **OK** button.
3. Select the folder or storage you want to move the file(s) to and press the **OK** button.
 - **Moving the file(s) within the same storage:** Select the folder you want to move the file(s) to and press the **OK** button.
 - **Copying the file(s) to another storage:** Select the storage and then select the folder to copy the file(s) to. Press the **OPT+** button to create the folder.



Note: When a file is moved to a different storage, it will be copied. However, video recordings cannot be copied to other storages.

Media List

Renaming Files

1. Select the file you want to rename and press the **OPT+** button.
2. Select **Rename** and press the **OK** button.
3. Enter the name of the file in the keyboard and press the **YELLOW** button.

Creating Folder

1. Press the **OPT+** button.
2. Select **New Folder** and press the **OK** button.
3. Enter the name of the folder in the keyboard and press the **YELLOW** button.

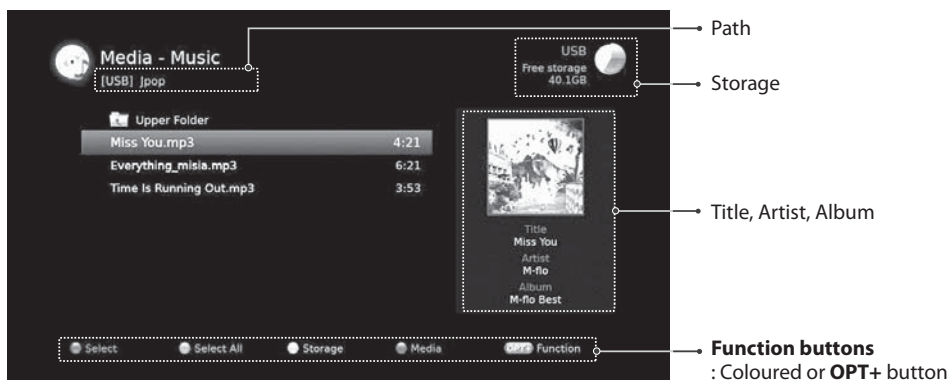
Using Music List

You can play MP3 audio files from the connected USB storage device, or the DLNA compliant devices.

MENU → Music

Note:

- Make sure that the USB storage device or network is connected correctly before using Media List.
- Press the **YELLOW** button to switch the media type.
- Press the **BLUE** button to switch the storage.



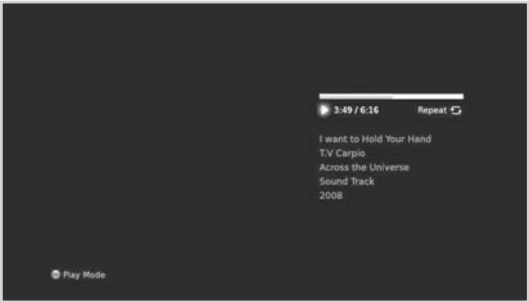
Playing Files

Select a file and press the **OK** or **PLAY** button. All files in the folder will be played successively. To play the selected files only, select the files using the **RED** button and press the **OK** or **PLAY** button.

Media List

Music Player

The music player is displayed while playing the music file(s).



	Plays or pauses		Plays
	Plays the previous file		Pauses
	Plays the next file		Changes the play mode (once, repeat, repeat all, shuffle)
	Plays the first file		Stops the music player and displays the list
	Plays the last file		Exits the music player and goes to live TV

Editing Files

Deleting, moving, renaming the music files or creating new folders are the same as in the video list. Refer to **Using Video List > Editing Files**.

Using Photo List

You can play JPEG photo files from the connected USB storage device, or the DLNA compliant devices.

MENU → Photo

Note:

- Make sure that the USB storage device or network is connected correctly before using Media List.
- Press the **YELLOW** button to switch the media type.
- Press the **BLUE** button to switch the storage.

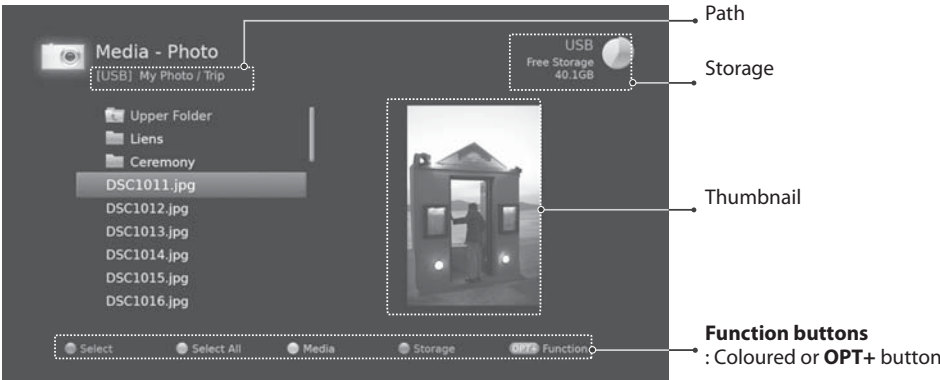


Photo Slideshow

Select a file and press the **OK** or **PLAY** button. All files in the folder will be shown successively. To slideshow the selected files only, select the files using the **RED** button and press the **OK** or **PLAY** button.

The info banner is displayed while slideshow is paused.



	Pauses or plays		Plays
	Shows the previous photo		Pauses
	Shows the next photo		Stops slideshow and displays photo list
	Shows the first photo		Exits slideshow and goes to live TV
	Shows the last photo		

Media List

Editing Files

Deleting, moving, renaming the photo files or creating new folders are the same as in the video list. Refer to **Using Video List > Editing Files**.

Slide Mode

You can play music files during slideshow.

1. Press the **OPT+** button.
2. Select **Slide Mode** and press the **OK** button.
 - **Display Time:** The duration a photo is displayed
 - **Music Play:** Select **On** to play music files during slideshow.
 - **Folder:** Select the folder the music files in located in using the **RED** button.
3. Select **OK** to save and exit.



In this chapter you can set options for parental control, language, time, video, audio and screen display.

Note: Press the **MENU** or **EXIT** button to exit. Press the **BACK** button to return to the previous screen.

Parental Control

MENU → **Settings** → **Preferences** → **Parental Control**

You will be prompted to enter the password to access this menu.

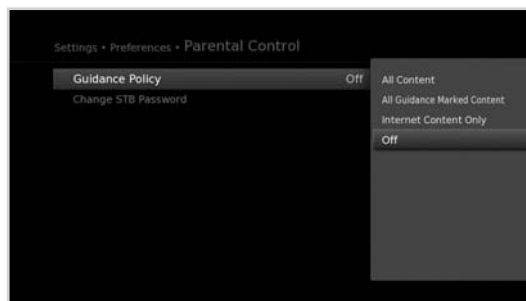
Note: The default password is 0000. If you have forgotten your password, please contact Humax Customer Support.

Guidance Policy

You can set the guidance on the recordings or internet contents during the watershed which is the time period (21:00 to 05:30) for adult contents.

1. Select **Guidance Policy**.
2. Select an option.
 - **All Content**
 - **All Guidance Marked Content**
 - **Internet Content Only**
 - **Off**
3. Press the **OK** button.

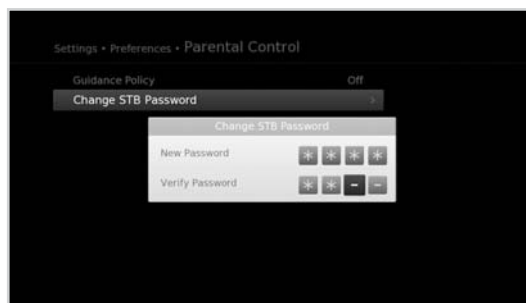
Note: The password is required to view the blocked programmes.



Changing Password

You can change the current password. This password is prompted every time a password blocked menu is accessed.

1. Select **Change STB Password**.
2. Enter the new password.
3. Enter the new password for verification.



Preferences

Language Setting

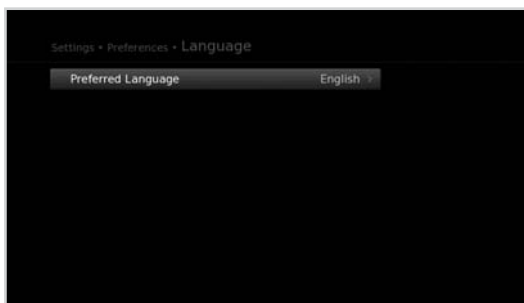
MENU → Settings → Preferences → Language

You can set the preferred language for audio and subtitle.

1. Select **Preferred Language**.
2. Select the language.

Note:

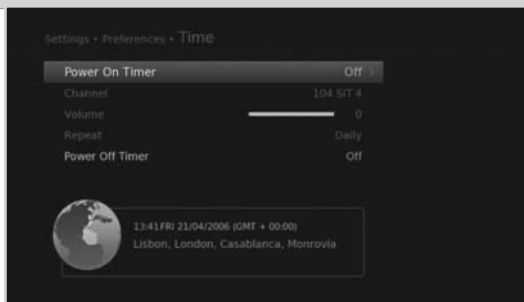
- You can change the audio or subtitle language by pressing the **AUDIO** or **SUB** button while watching a programme.
- The Preferred Language will be the priority when you change channels or restart the product.



Setting Power On/Off Timer

MENU → Settings → Preferences → Time

1. To turn on the product automatically, select **Power On Timer** and select **Set Timer**.
2. Enter the time.
3. Set the options for the power on timer.
 - **Channel:** Select the channel to be displayed when powering on.
 - **Volume:** Adjust the volume of the audio when powering on.
 - **Repeat:** Select the repeat mode of the power on timer.
4. To turn off the product automatically, select **Power Off Timer** and select **Set Timer**.
5. Enter the time.



Note: The power on time and power off time should be set different from each other.



Video Setting

MENU → Settings → Preferences → Video

Setting TV Screen Ratio

You can select the screen ratio of your TV.

1. Select **Screen Ratio**.
2. Select an option.
 - **16:9 - 4:3**








Setting Display Format

You can select the display format according to the screen ratio of your TV.

1. Select **Display Format**.
2. Select an option.
 - Screen ratio 4:3: **Auto - Letterbox 16:9 - Letterbox 14:9 - Centre**
 - Screen ratio 16:9: **Auto - Pillarbox - Zoom**



Note: You can set the display format by pressing the **WIDE** button while watching a programme. Refer to **Display Format / Resolution**.

Screen ratio	Display Format			
4:3	 Auto	 Letterbox16:9	 Letterbox14:9	 Centre
	 Auto	 Pillarbox	 Zoom	

Setting TV SCART / VCR SCART

You can select the video signal output option for the TV SCART or VCR SCART.

1. Select **TV SCART** or **VCR SCART**.
2. Select an option.
 - TV SCART: **CVBS – S-Video – RGB**
 - VCR SCART: **CVBS – S-Video**

Preferences

Audio Setting

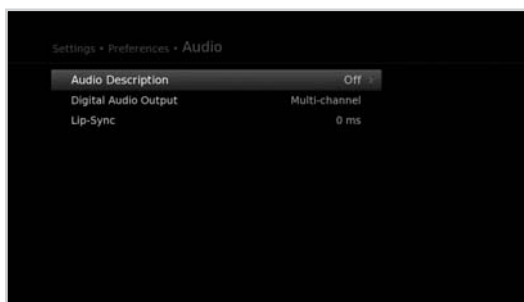
MENU → Settings → Preferences → Audio

Setting Audio Description

You can set to narrate the on-screen visuals which is used for visually impaired viewers.

1. Select **Audio Description**.
2. Select an option.
 - **On - Off**

Note: Not all channels/programmes will provide Audio Description; for further information please contact the Broadcaster.



Setting Digital Audio Output

You can select the digital audio signal output of your product.

1. Select **Digital Audio Output**.
2. Select an option.
 - **Stereo - Multi-channel**

Setting Lip-Sync

You can adjust the sound difference of audio and video.

1. Select **Lip-Sync**.
2. Adjust the lip-sync using the ◀/▶ button. Pressing the right button increases the audio speed and pressing the left button decreases it.

Screen Display

MENU → Settings → Preferences → Screen Display

Setting Info Display Time

You can set the duration the information box is displayed every time the channel is switched.

1. Select **Info Display Time**.
2. Select an option.
 - **Off - 1~20 sec**

Setting Transparency

You can set the transparency of the On-Screen Display.

1. Select **Transparency**.
2. Select an option.
 - **Off - 25% - 50% - 75%**

Setting Subtitle Display

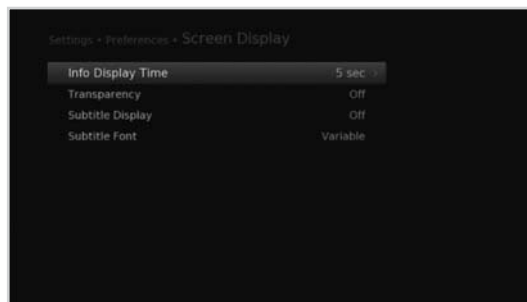
You can set to display the subtitle automatically or not.

1. Select **Subtitle Display**.
2. Select an option.
 - **On - Off**

Setting Subtitle Font

You can adjust the subtitle font.

1. Select **Subtitle Font**.
2. Select an option.
 - **Variable - Fixed**



Installation

Installation menu allows you to search the available TV and radio channels. Software update, antenna power and factory default setting are also available in this section.

MENU → Settings → Installation

Note:

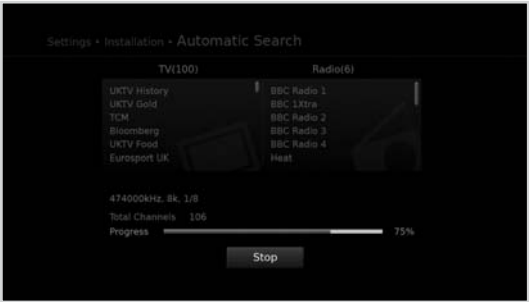
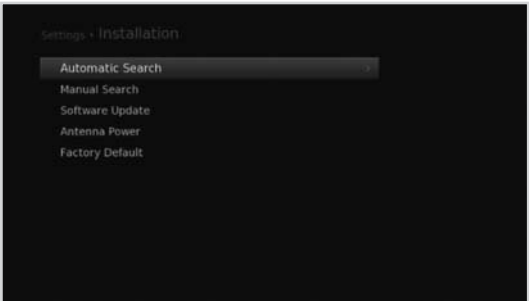
- You will be prompted to enter the password to access this menu. The default password is 0000. If you have forgotten your password, please contact Humax Customer Support.
- Press the **BACK** button to save the changes and return to the previous screen. Press the **MENU** or **EXIT** button to exit.

Automatic Search

You can search channels automatically without entering any other information.

1. Select **Automatic Search**. Channel search starts.
2. Select **Save** and press the **OK** button to save the results.

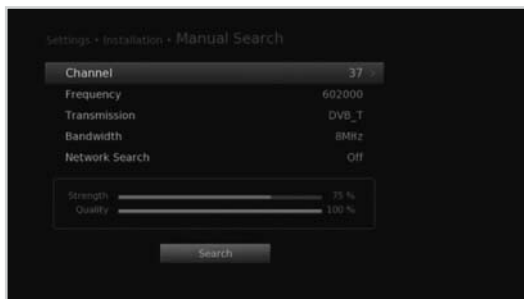
Note: Select **Stop** and press the **OK** button to stop the channel search.



Manual Search

You can search channels manually by searching parameters.

1. Select **Manual Search**.
2. Configure the search options.
 - **Channel:** Select the channel.
 - **Frequency:** Enter the frequency.
 - **Transmission:** Select **DVB-T** or **DVB-T2**.
 - **Bandwidth:** Select the bandwidth.
 - **Network Search:** Select **On** or **Off**.
3. Select **Search** and press the **OK** button.
4. Select **Save** and press the **OK** button to save the results.



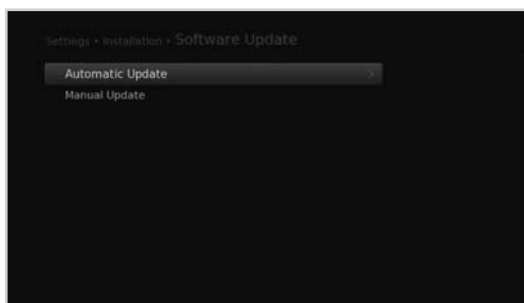
Note:

- Select **Stop** and press the **OK** button to stop the channel search.
- For information on the correct channel numbers to use in your area please visit <http://www.digitaluk.co.uk>. Please select the "I am in the aerial installation trade" option when searching your postcode.

Software Update

MENU → Settings → Installation → Software Update

1. Select **Software Update**.
2. Select **Automatic Update** if you want to update the software automatically.
3. Select **Manual Update** if you want to update the software by entering the options manually.
 - **Channel:** Select the channel.
 - **Frequency:** Enter the frequency.
 - **Transmission:** Select **DVB-T** or **DVB-T2**.
4. Select **Search** and press the **OK** button to search new software.



Note:

- The product is designed to search for software updates at 4am each morning if the product is in Standby mode; we recommend that you switch the product to standby mode each evening after viewing so that the product is updated automatically.
- To check if Software Updates are available for your product please visit http://www.dtg.org.uk/industry/download_schedule.php.

Installation

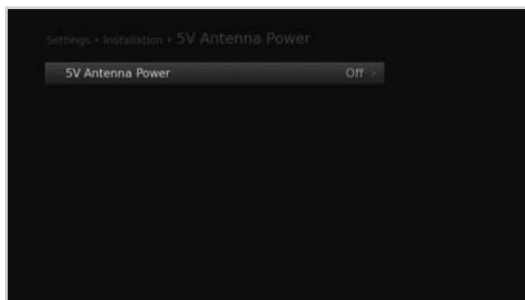
Antenna Power

MENU → Settings → Installation → Antenna Power

Active antenna is a portable or indoor antenna which needs power supply from the product because it does not have power cord for itself. Connect an active antenna to the **ANTENNA IN** on the rear of the product.

1. Select **5V Antenna Power**.
2. Select an option.
 - **On**: 5V power is supplied from the active antenna cable.
 - **Off**: No power supplied

Note: Most domestic aerial installation will not require the Antenna Power option to be switched on. Please check with your aerial installer if this is required for your aerial.

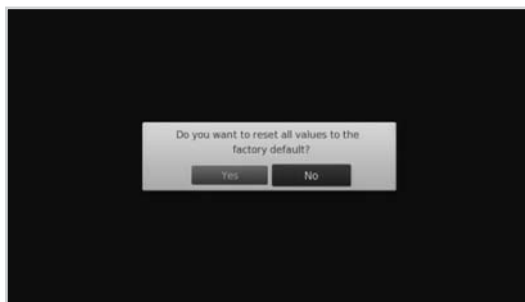


Factory Default

MENU → Settings → Installation → Factory Default

1. Select **Factory Default**.
2. Select **Yes**.
3. You will be prompted to enter the password.
Enter the password.

Note: When performing the Factory Default all user configuration/settings will be reset to the Factory Settings.



OTA (Over the Air)

In order to maintain proper performance of the product, it is essential to have the most up-to-date software. Visit the Humax website to check the latest news and newly released software versions. (<http://www.humaxdigital.com/uk>) It is recommended that you periodically check for the availability of software update. For the Over Air Download Schedule please visit http://www.dtg.org.uk/industry/download_schedule.php.

OTA, an abbreviation of **Over-the-Air**, is a standard for the transmission of software through a broadcast system. OTA is simply an alternative method for downloading software versions. However, the manufacturers reserve the right for deciding the release of the software for their products by beaming the latest software versions over the air via aerial. The software update via aerial will only occur under the following circumstances.

1. The equipment should have the appropriate loader software.

Caution: Please note that if the normal loader software is not equipped, the product may not be updated or operate properly after software update.

2. The manufacturer decides to release the software via a designated channel.
3. The equipment must be tuned properly to the same antenna equivalent to that of the manufacturer.
4. Update software when the signal strength and quality is high. If the weather is not favorable, and the signal strength and quality are not recommendable, perform the software update later.

Caution:

- Please be careful to keep the power on and the power cord plugged in during software update. If the power is off during software update, fatal damage may be caused to the product.
- Please be careful not to pull out the signal line (co-axial cable) during software update. Update may be interrupted and the product may not operate.

Note:

- It may take 5~10 minutes to update software.
- ther functions will not activate while software update takes place.
- You cannot schedule programmes during software update.

Updating New Software

When new software is detected, you can choose to download the software immediately or later.

- **Yes:** Update the software now.
- **No:** Ignore the message.
- **Later:** Display the message when entering standby mode.

Note that all functions will be disabled during software update.

System

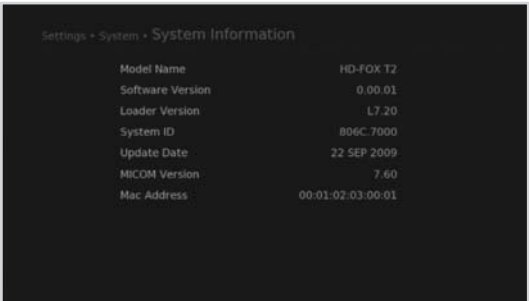
In **System**, system information, signal detection, power management, data storage and internet setting options are available.

Note: Press the **MENU** or **EXIT** button to exit. Press the **BACK** button to return to the previous screen.

System Information

MENU → Settings → System → System Information

The system information is displayed.

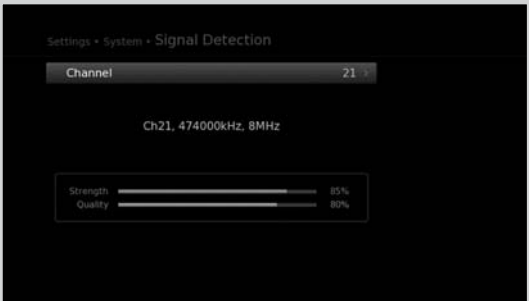


Signal Detection

MENU → Settings → System → Signal Detection

You can check the signal strength and quality of the searched channels.

Note: We recommend that the Signal Strength is above 30% and the Signal Quality is above 70% in order to receive the channels without picture/sound breakup.



Power Management

MENU → Settings → System → Power Management

Setting Power Saving in Standby

You can minimise the standby power consumption to below 1W.

1. Select **Power Saving in Standby**.
2. Select **On** to deactivate the certain features and minimise the power consumption.

Note: When **Power Saving in Standby** is switched **On** the Time on the front display will not appear when in standby, nor will the Antenna Out loop-through the signal to a connected device.



Setting Automatic Power Down

The receiver automatically enters standby mode for power saving if no user interaction occurs for 3 hours.

1. Select **Automatic Power Down**.
2. Select **On** to enter standby mode automatically if no user interaction occurs for 3 hours.

Note: The message will be displayed before entering standby mode. If no selection is made for 30 seconds, the receiver enters standby mode automatically.

System

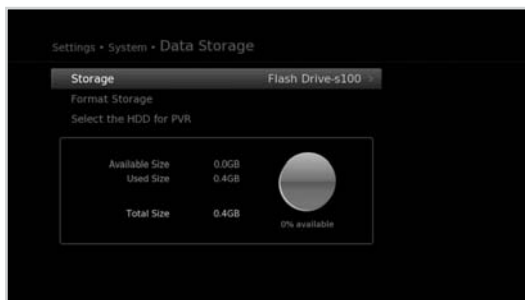
Data Storage

MENU → Settings → System → Data Storage

You can check the size of the external USB storage device.

Note: This function is available only when the external hard disk drive has been connected to the product via the USB port. Make sure that the external hard disk drive is connected correctly.

1. Select a storage to display the details for each storage.
2. To format the selected storage, select **Format Storage**. If you select **Yes**, you will be prompted to enter the password.
3. To assign the selected HDD for recording purpose, select **Select the HDD for PVR**. Select **Yes** and press the **OK** button to confirm. (Disabled when **HDD** is selected in **Storage**.)



Note:

- The default password is 0000. If you have forgotten your password, please contact your local distributor.
- Supported Features according to USB file system
 - **ext3**: Read, Copy (Digital TV/Radio, MP3, JPEG, XviD)
 - **FAT**: Read, Copy (Digital TV/Radio, MP3, JPEG, XviD)
 - **NTFS**: Read (MP3, JPEG, XviD)

Internet Setting

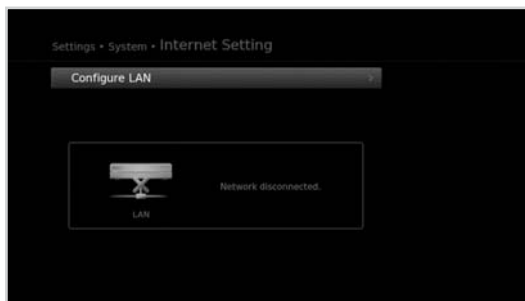
MENU → Settings → System → Internet Setting

Configuring IP (LAN)


1. You can configure the Ethernet setting options.
 - **DHCP**: Apply the options according to the DHCP.
 - **Manual**: Enter the options manually,

Select **Apply** and press the **OK** button.

Note: When entering the IP address manually, enter 3 digits in a row.



Specification

Tuner & Channel	
Input Connector	IEC 169-2 Female
Frequency Range	174MHz to 230MHz 470MHz to 862MHz
Signal Level	-10 to -70 dBm
Demodulation	OFDM
Mode	DVB-T : 2K, 8K DVB-T2 : 1K, 2K, 4K, 8K, 16K, 32K
FEC Mode	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Guard Intervals	DVB-T : 1/4, 1/8, 1/16, 1/32 DVB-T2 : 1/4, 1/8, 1/16, 1/32, 1/128, 19/128, 19/256
Audio/Video Decoding	
Audio Decoding	Dolby Digital Plus
Audio Mode	Single channel/Dual channel/Joint stereo/Stereo
Video Decoding	HD MPEG2 /SD MPEG2 / MPEG4(H.264/AVC)
Video Format	4:3, 16:9, Letter Box
Video Resolution	1080p, 1080i, 720p, 576p, 576i
Memory	
Flash Memory	32MB
RAM	320MB
EEPROM	8KB
Audio/Video In/Out	
Video	TV-SCART, VCR-SCART, RCA, HDMI/HDCP
Audio	TV-SCART, VCR-SCART, Audio L/R, S/PDIF (Digital Audio Output)
Data In/Out	
USB	USB 2.0 Host (5 V  500mA Max.)

Appendix

RJ-45	Ethernet 10/100Mbps
Power Supply	
Input Voltage	90-250V a.c., 50/60Hz
Type	SMPS
Power Consumption	Max. 22W (Standby: 0.72W)
Protection	Separate internal fuse. The input should be protected against lightning.
Physical Specification	
Size (w/h/d)	280mm x 45mm x 200mm
Weight	1.42Kg
Operating Temperature	0 °C to +45 °C

Note: The specifications are subject to change without notice.

Service and Support

Information concerning troubleshooting, software upgrade and product support is provided in the following websites and call centers. Should your product require warranty service, please contact HUMAX to obtain the appropriate authorization.

HUMAX Call Center

UK	Tel: Opening Hours: E-mail: Website: Language:	0844 669 8800 Mon - Fri 09:00 – 17:30 (excluding Bank Holidays) uksupport@humax-digital.co.uk www.humax-digital.co.uk English
----	-----------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------

Safety Warning

This product has been manufactured to comply with international safety standards. Please read the following safety precautions carefully.

Safety Instructions and Precautions

1. MAINS SUPPLY

- Operate this product only from the type of power supply indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your local power company.
- Disconnect the product from the mains before you start any maintenance or installation procedures.

2. OVERLOADING

- Do not overload a wall outlet, extension cord or adapter as this may result in electric fire or shock.

3. LIQUID

- The product should not be exposed to liquid of any kind. In addition, no objects filled with liquid should be placed on the apparatus.

4. CLEANING

- Disconnect the product from the wall outlet before you clean it.
- Use a moist cloth to clean the product. Do not use solvents. Wipe the surface gently with a soft cloth as it may get scratched.

5. VENTILATION

- Make sure that the slots on top of the product are not blocked. It is necessary to have a sufficient airflow into the unit.
- Do not put the product on soft surfaces.
- Do not put objects on the product. This will block the ventilation or cause damage to the surface.

6. ATTACHMENTS

- Do not use any unsupported attachments as these may be hazardous or cause damage to the product.

7. LIGHTNING, STORM OR NOT IN USE

- Unplug the product from the wall outlet and disconnect the antenna during a thunderstorm or when left unattended and unused for long periods of time. This will prevent damage to the unit due to lightning and power-surges.

8. EXTRANEIOUS OBJECTS

- Do not insert anything through the openings in the unit, where they can touch dangerous voltage points or damage parts.

9. REPLACEMENT OF PARTS

- When replacement of parts is required, be sure the service technician uses replacement parts specified by the manufacturer or those that have the same characteristics as the original part. Unauthorized substitution may result in additional damage to the unit.

10. CONNECTION

[Satellite] CONNECTION TO THE SATELLITE DISH LNB

- Disconnect the product from the mains before connecting or disconnecting the cable from the satellite dish. Failure to do so can damage the LNB.

[Cable] CONNECTION TO THE CABLE TV SIGNAL

- Connect all components before plugging any power cords into the wall outlet. Always turn off the product, TV and other components before you connect or disconnect any cables.

[Terrestrial] CONNECTION TO THE AERIAL

- Disconnect the product from the mains before connecting or disconnecting the cable from the aerial. Failure to do so can damage the aerial.

Appendix

11. CONNECTION TO THE TV

- Disconnect the product from the mains before connecting or disconnecting the cable from the TV. Failure to do so can damage the TV.

12. EARTHING

[Satellite] The LNB cable must be earthed to the system earth for the satellite dish.

13. LOCATION

- Place the product indoors to avoid exposing it to lightning, rain or sun. Do not place it near a radiator or heat register.
- We recommend that the product has 10 cm clearance from any other appliances susceptible to electromagnetic influences, such as a TV or a VCR.
- Do not block the openings with any object, and do not place the product on a bed, sofa, rug, or other similar surface.
- If you place the product on a rack or a bookcase, ensure that there is adequate ventilation and that you have followed the manufacturer's instructions for mounting.
- Do not place the product on an unstable cart, stand, tripod, bracket, or table where it can fall. A falling product can cause serious injury to a child or adult, and serious damage to the appliance.

Warning

1. To avoid damage of the power cord or plug;

- Do not modify or process the power cord or plug arbitrarily.
- Do not bend or twist the power cord.
- Make sure to disconnect the power cord holding the plug.
- Keep heating appliances as far as possible from the power cord in order to prevent the cover vinyl from melting.
- The mains plug, as a disconnection device, shall remain readily accessible by the user.

2. To avoid electrical shock;

- Do not open the main body.
- Do not insert metal or inflammable objects inside the product.
- Do not touch the power plug with wet hands.
- Disconnect the power cord in case of lightning.

3. To avoid damage of product;

- Do not use the product when it is out of order. If you continue to use the product when defective, serious damage can be caused. Make sure to contact your local product distributor if the product is out of order.
- Do not insert metal or alien substance into the slots for the modules or Smartcards. (where applicable) It may cause damage to the product and reduce its life span.

4. To avoid damage of the hard disk drive (PVR only)

- Do not move the product or turn the power off suddenly while the hard disk drive is running.
- The company shall not be liable for any corruption of data on the hard disk drive caused by carelessness or misuse.

Trouble Shooting

Before contacting your local service centre, please read the tips below carefully. If the problem persists after completing the following procedure, please contact your local product distributor or service centre for further instructions.

1. No message displayed on the front display. (The product will not switch on.)

- Check the main power cable and make sure it is plugged into a suitable power outlet.
- Check that the mains supply is switched on.
- Connect the power cable to a different power outlet.
- Check that the power switch is on at the rear of the product. (where applicable)

2. No picture

- Make sure that the product is powered on and in operation mode. (Press the **STANDBY** button)
- Make sure that the AV cable is firmly connected to the TV.
- Make sure that the antenna cable is properly connected to the product.
- Make sure that you have selected the correct AV Channel / Input on your TV set (refer to your TV user manual for more information)
- Be sure to activate channel search.
- Check the brightness level of the TV.
- Check if the channel is currently on air. Contact the broadcaster to ensure that the channel is running.
- Press the **SOURCE** button if the product is in external input mode. (where applicable)
- **Satellite:** Make sure that the antenna setting in the menu is correct.

3. Poor picture/sound quality

- Install the antenna in an obstacle-free place.
- Make sure there is no mobile phone or microwave oven near the product.
- Keep the power and the antenna cables apart from each other.
- Check the signal levels and adjust your antenna if the level is too low. The signal level may be affected by weather conditions.

Note: If the antenna is covered with snow or the RF is weakened by heavy rain, the condition of the sound and picture may temporarily be poor. However, the poor sound and picture quality due to weather conditions cannot be accepted as a malfunction of product.

- **[Satellite]** Check that your dish alignment is correct.
- **[Satellite]** Change the satellite dish for a larger one as this will increase the signal levels received.
- **[Satellite]** Replace the LNB with a lower noise factor in cases where the noise factor is too high.
- **[Satellite]** Replace the LNB with a new one in case it is damaged or out of order.
- **[Terrestrial]** Adjust the antenna direction to get a better picture.
- **[Terrestrial]** Set the antenna power in menu to On, if you use the active antenna to improve the reception. (where applicable)

4. No or poor sound

- Check that your AV cable is connected correctly.
- Check the volume levels of your TV set and the product.
- Check if the product or TV is on mute.
- Check audio type or soundtrack option in the AV menu. (where applicable)

5. Remote control does not operate.

- To control the product, the top end of the remote control should point directly towards the receiving part of the product.
- Remove and reinsert the batteries in the remote control.

Appendix

- Replace the batteries in the remote control for a new set.
 - Set the remote control to STB or PVR mode, if you are using the universal remote control. (where applicable)
- 6. Cannot make reservations.**
- Check that no previous reservations are conflicting with the new reservation.
- 7. No password information is given.**
- The default password is always **0000**.
- 8. Channel search does not work.**
- **Satellite:** Make sure that the antenna setting in the menu is correct.
 - **Terrestrial:** Make sure that the antenna is connected correctly.
 - **Terrestrial:** Use the appropriate antenna capable of receiving VHF or UHF channels for your area.
- 9. Cannot update new software.**
- You can get an update. If the product does not show a message requesting update, this means no software is available.
- 10. The product makes a humming noise. (PVR only)**
- The noise is from the fan; the hard disk is operating normally. This kind of noise is inevitable but seldom noticeable.
- 11. Cannot record programmes. (PVR only)**
- The hard disk is full. Delete unnecessary programmes and make space for new recording.
 - Check if recording is overlapped with another channel. Stop the current recording or wait until the recording is finished.
 - Check that the product is switched on when recording starts.
- 12. Cannot operate TSR (Time Shifted Recording). (PVR only)**
- TSR may not be available during recording. Wait until recording is finished.
 - Delete unnecessary programmes and make space for new recording.
- 13. Cannot playback. (PVR only)**
- To playback the recorded file of a scrambled channel, use the Smartcard. In case it has been a long time since you last recorded, this may not work. Contact the product distributor.
 - The signal during recording may be weak or the hard disk too full.
- 14. Cannot change channels while recording. (PVR only)**
- Certain channels may not be changed due to restriction of the tuner or connection type.

Error Message

Error message	Possible causes	What to do
No or bad signal [Satellite]	The satellite dish is not pointing at the satellite.	Adjust dish alignment.
	Signal is too weak.	Increase the LNB voltage or connect a signal amplifier.
	Satellite dish is too small.	Change to a larger dish.
	Problem with LNB.	Change the LNB.
	Wrong antenna setting.	Set the antenna correctly.
No or bad signal [Cable]	The cable is not connected.	Make sure the cable is connected correctly.
	The cable may be damaged or defective.	Exchange the cable.
	The channel is not broadcasting.	Exchange the cable.
No or bad signal [Terrestrial]	The aerial is not pointing properly.	Adjust aerial. Check the cable from the aerial. If you cannot resolve the problem, you may need to have your aerial and installation tested by a professional.
The channel is scrambled or not available.	The channel has a signal, but no audio or video.	Confirm if the channel is currently on air.
	The channel has been deleted by the broadcasting company.	Check if the channel is currently on air
	The channel is for data broadcasting.	Remove the channel from the channel list and check for new transponder details.
The audio is not available.	The channel has a video signal, but no audio.	Press the audio button to confirm that the channel has audio options.
No access	No access	Make sure you are subscribed to the channel.
	No authorization.	If the product has been turned off for a long time (standby or power off), please wait for authorization. It may take up to 60 minutes.

Appendix

Glossary

CVBS (Composite Video Baseband Signal)

A technology for transmitting video signals via a cable. Mixes luminance (brightness) and the chrominance (colour) signals together.

DiSEqC (Digital Satellite Equipment Control)

A DiSEqC compatible receiver relies on a switching box which detects the 22kHz tone pulsing rapidly on and off. In this way, a specially designed receiver can control numerous LNBs through a DiSEqC switching box.

Dolby Digital

An encoding system that digitally compresses up to 5.1 discrete channels of audio (left front, centre, right front, left surround, right surround) into a single Bitstream. A low frequency effect (LFE) channel is included providing the sound needed for special effects.

DVB (Digital Video Broadcasting)

Set of standards that define digital broadcasts using satellite, cable or terrestrial systems.

EPG (Electronic Programme Guide)

An electronic equivalent to a printed television listings magazine; it is an application used with digital set-top boxes and digital television sets to list current and scheduled programs that are or will be available on each channel, including a short summary or commentary for each program. The information supplied in the EPG is sent and updated by the channel broadcaster.

FEC (Forward Error Correction)

A technique for error control of data transmission.

Frequency

The property of a signal measured in cycles per second (=Hz).

FTA (Free-To-Air)

An unscrambled broadcaster allowing customers to view channels or services without paying any subscription.

HDD (Hard Disk Drive)

The primary computer storage medium, which is made of one or more aluminum or glass platters, coated with a ferromagnetic material.

Hi-Fi (High Fidelity)

The characteristics of audio devices that can play back all the audio frequencies a person can detect, which is the range of 16Hz-20KHz. Sometimes it is used to indicate good quality of audio devices such as stereo tape recorders.

LNB (Low Noise Block)

A device that is mounted on an arm facing your satellite dish, focusing on satellite signals. A LNB converts signals received from satellite to a lower frequency and sends them to a satellite receiver via coaxial cable.

NVOD (Near Video On Demand)

A technology that allows customers to view the start of popular programmes or films within a short period from the time they make their selection. This is possible as the broadcaster sends multiple copies with staggered start times.

OSD (On Screen Display)

OSD displays the basic information necessary for the users to configure monitor or TV settings. OSD information may include brightness, contrast, tuning, RGB adjustment, and screen size and position.

OTA (Over the Air)

A standard for the transmission of software for equipment, through a broadcast system. Manufacturers reserve the right for deciding the release of the software for their products.

PID (Packet Identifier)

A set of numbers identifying stream packets contained within a single data stream.

PIP (Picture In Picture)

A function that allows you to display two different TV channels (or TV inputs) on a single screen.

Polarisation

The direction of the electrical and magnetic fields of a signal. Satellites use both vertical and horizontal polarisation. Means that a frequency can be used twice.

PVR (Personal Video Recorder)

Video recorder that can record and playback programmes directly using the embedded hard disk drive(s).

QPSK (Quaternary Phase Shift Keying)

Digital modulation technique in which the carrier phase can have one of four possible values.

RF (Radio Frequency)

Television signals are modulated onto RF signals and are then demodulated by your television's or STB's tuner.

RF Modulator

Enables you to output the receiver's digital signals to a TV's RF (Aerial) input, allowing you to connect the receiver to a TV set without a SCART connection.

RGB (Red – Green – Blue)

A technology for transmitting video signals via a cable. RGB is a system to represent red, green, and blue colours on a TV or monitor display. Red, green, and blue can be combined in various proportions to obtain any colour.

RS-232C

A connection to allow you to connect to a PC to update receiver's software.

SCART

A 21-pin connector standard to connect two pieces of Audio-Visual equipment such as a TV and a VCR. Each device will have a 21-pin female connection; a cable with male connection at both ends is used for connecting the devices.

Smartcard

A credit card sized card that contains updateable chip memory. It is used for accessing Pay TV (encrypted) channel or services when inserted into an appropriate receiver.

S/PDIF (Sony/Philips Digital Interface format)

A standard format for the transfer of digital audio signals. It allows the transfer of digital audio between two devices without any conversion to and from analogue, which could degrade the signal quality.

S-Video (Super-Video)

Sometimes referred to as Y/C video; a technology for transmitting video signals via a cable. It is a video signal transmission in which the luminance (brightness) and the chrominance (colour) signals are transmitted separately to achieve superior picture clarity.

Transponder

A satellite is divided up in parts called transponders. A transponder is one distribution section of the satellite. Each transponder can be used for distribution of several channels or services.

Trick-Play

Pause, Fast Forward/Fast Rewind, Slow Motion, Instant Replay, Commercial Skip, Repeat A-B.

TSR (Time Shifted Recording)

A function that records the present programme temporarily to support trick-play.

Appendix

Remote Control Code List

1. Using the Universal Remote Control

1. Select the mode(PVR, TV, DVD, AUDIO) you want to set by pressing the corresponding button on the remote control. The button will blink once.
2. Keep pressing the button for 3 seconds until the button lights on.
3. Enter the 3-digit code. Every time a number is entered, the button will blink. When the third digit is entered, the button will blink twice.
4. If a valid 3-digit code is entered, the product will power off.
5. Press the **OK** button and the mode button will blink three times. The setup is complete.
6. If the product does not power off, repeat the instruction from 3 to 5.


Note:

- When no code is entered for one minute the universal setting mode will switch to normal mode.
- Try several setting codes and select the code that has the most functions.

Remote Control Function List

The keys on the remote control function as in the list below.

Note: Some keys may not function depending on the product.




Button	TV	DVD	AUDIO
STANDBY	POWER	POWER	POWER
	MUTE	MUTE	MUTE
PVR			
TV			
DVD			
AUDIO			
1	DIGIT 1	1	INPUT 1
2	DIGIT 2	2	INPUT 2
3	DIGIT 3	3	INPUT 3
4	DIGIT 4	4	INPUT 4
5	DIGIT 5	5	INPUT 5
6	DIGIT 6	6	INPUT 6
7	DIGIT 7	7	INPUT 7
8	DIGIT 8	8	INPUT 8
9	DIGIT 9	9	INPUT 9
0	DIGIT 0, 11	0	INPUT 0
TV Portal			
MENU	MENU	MENU	MENU/MODE

Appendix

English

Button	TV	DVD	AUDIO
▶	TEXT EXPAND	PLAY	PLAY
II	TEXT HOLD	PAUSE	PAUSE
■	PIP INPUT	STOP	STOP
●	PIP MOVE	RECORD, OPEN CLOSE	RECORD
◀◀	PIP OFF	REWIND, SEARCH REVERSE; SCAN	DVD SEARCH REW, CD SEARCH REW, REW
▶▶	PIP	FAST FORWARD, SEARCH FORWARD; SCAN	FAST FORWARD, DVD SEARCH REW, CD SEARCH REW, REW
◀◀	TEXT MIX	SKIP -, TRACK -, CHAPTER -	DVD SKIP -, CD SKIP -, SKIP -
▶▶	TEXT OFF, TV	SKIP, TRACK +, CHAPTER +	DVD SKIP+, CD SKIP +, SKIP +
RED	RED	RED	RED
GREEN	GREEN	GREEN	GREEN
YELLOW	YELLOW	YELLOW	YELLOW
BLUE	BLUE	PROGRAMME	BLUE
MEDIA			
GUIDE	GUIDE	GUIDE	DSP MODE
OK	OK	OK	OK
UP	UP	UP	UP
LEFT	LEFT	LEFT	LEFT
RIGHT	RIGHT	RIGHT	RIGHT
DOWN	DOWN	DOWN	DOWN
EXIT	EXIT	EXIT, RETIRN	EXIT
BACK	LAST, RECALL; PP; LAST CHANNEL	CLEAR	REPEAT
VOL+	VOL+	VOL+	VOL+
VOL-	VOL-	VOL-	VOL-
i	INFO, OSD; DISPLAY	INFO, OSD; DISPLAY	INFO
LIST		LIST	
P+	P+	P+	P+
P-	P-	P-	P-
TEXT	TEXT	PVR MENU	
🔊?		AUDIO, LANGUAGE	SURROUND
SUB	SUBTITLE, LANGUAGE; CC	SUBTITLE	

Appendix

Button	TV	DVD	AUDIO
TV/RADIO	TV/DTV ATV/DTV; D/A; DTV/TV; DTV; DIGITAL	HDD, DVD/HDD	BAND
OPT+			RANDOM
	TEXT SUBPAGE TEXT TIME		RANDOM
	TEXT INDEX	TITLE	
	TEXT POSITION TEXT CANCEL; TEXT UPDATE	SLOW; STEP	
SOURCE	SOURCE, AV, 55INPUT; TV/AV	SOURCE, TV/DVD, TV/DISK	SOURCE, FUNCTION
SLEEP	SLEEP	SLEEP	SLEEP
V-FORMAT	TEXT SIZE; TEXT EXPAND; FTB		
WIDE	WIDE, FORMAT, 16:9, ASPECT; ZOOM	ZOOM	

2. TV Code List

Brand	Code
A.R. Systems	102, 006, 080, 066
Accent	006
Acer	261, 278, 305
Acoustic Solutions	210, 312, 324, 370, 386, 428, 477
Acura	002
ADL	224
Admiral	043, 014, 015, 023
Advent	192, 342
Adyson	034, 035
AEG	211, 256, 327, 489
Agashi	043, 034, 035
AGB	094
Agef	014
Aiko	006, 061, 043, 074, 002, 004, 011, 028, 034, 035, 065
Aim	006, 171
Airis	316, 413, 473
Aiwa	139, 141, 445

Akai	102, 006, 098, 144, 145, 111, 061, 043, 074, 148, 232, 280, 128, 122, 461, 109, 462, 489, 094, 084, 083, 065, 035, 034, 033, 028, 023, 011, 004, 002, 154, 321
Akiba	006, 036, 080, 045
Akito	006, 044
Akura	006, 144, 134, 204, 043, 036, 002, 026, 045, 071, 298, 327, 376, 451
Alaron	034
Alba	006, 144, 134, 204, 087, 064, 036, 005, 108, 473, 455, 447, 388, 099, 084, 077, 072, 065, 059, 034, 023, 002
AlfaView	220
All-Tel	190, 238
Allorgan	032, 035
Allstar	006
Amitech	131, 241
Amoi	315
Amplivision	064, 035, 049

Amstrad	006, 204, 043, 036, 074, 002, 023, 026, 062, 065, 071, 094, 128, 410, 436, 451
Anam	006, 002
Anam National	006, 129
Andersson	210, 211
Anglo	043, 002
Anitech	006, 043, 002, 045
Ansonic	006, 134, 064, 002, 017, 023, 042, 048, 066, 070, 285
AOC	120, 266, 335
Apollo	083
Apro	420
Arc En Ciel	020
Arcam	034, 035
Ardem	006, 144
Arena	006
Aristona	102, 006
ART	204
Arthur Martin	023
ASA	010, 014, 017, 018, 055
Asberg	006
Asora	002
Asuka	043, 036, 034, 035, 045
Atec	340, 387
Atlantic	006, 032, 034, 042, 049
Atori	002
Auchan	023
Audiosonic	006, 144, 086, 145, 043, 064, 036, 002, 020, 035, 066, 190, 250, 405, 473
Audioton	086, 043, 064, 035
Audiovox	079
Aumark	009
Autovox	014, 032, 035, 056, 097
AVC	472
Avious	352
Awa	111, 005, 019, 002, 003, 035, 079, 271
Axxent	002
Baier	192

Baird	011, 012, 020, 033, 035, 054, 218
Bang & Olufsen	014
Barco	023
Basic Line	102, 006, 134, 204, 036, 080, 002, 023, 035, 045, 053, 066, 211
Bastide	035
Bauer	171, 344
Baur	006, 030, 061, 028, 056, 093, 096, 097, 101
Bazin	035
Beaumark	027
Beko	006, 144, 086, 145, 111, 064, 072, 172, 361, 405
Belson	138, 201, 215
Belstar	204
BenQ	223, 328, 329
Bensten	258, 436, 437
Beon	006, 072
Berthen	134
Best	064
Bestar	006, 064, 066
Bestar-Daewoo	066
Binatone	035
Black Diamond	444, 204, 211
Blackway	036, 045
Blaupunkt	030, 005, 080, 025, 028, 096, 101
Blue Media	340, 387
Blue Sky	102, 006, 144, 134, 204, 145, 087, 036, 080, 091, 119, 045, 215, 229, 254, 265, 310, 361, 380, 445
Blue Star	045
BlueH	391
Boca	361
Boman	256
Boots	002, 035, 044
Bork	265
Bosch	049
BPL	006, 033, 045, 202
Brandt	120, 144, 103, 020, 046, 052
Brimax	380
Brinkmann	006, 134, 086, 072, 095

Appendix

Brionvega	006, 014, 062
Britannia	034, 035
Brother	043
Bruns	014
BSR	023
BTC	036
Bush	102, 006, 144, 134, 204, 138, 087, 061, 043, 036, 005, 108, 376, 373, 370, 361, 355, 352, 327, 388, 430, 431, 432, 440, 448, 451, 473, 476, 477, 478, 002, 033, 035, 044, 045, 056, 059, 065, 066, 095, 133, 164, 210, 213, 229, 232, 250
Canton	036
Capsonic	043
Carad	134, 204, 113
Carena	006, 080
Carrefour	006, 005, 010
Carver	025
Cascade	006, 002
Casio	006
Cat	373, 504
Cathay	006, 386
CCE	006
cello	397, 410, 418, 419, 420
Centrum	204
Centurion	006
Century	014
CGE	064, 023, 072
Changhong	180
Chimei	475, 415
Cimline	036, 002
Cineral	079
Cinex	128, 213, 327
Citizen	009
City	002
Clarivox	006, 010, 072
Classic	091
Clatronic	006, 144, 043, 064, 036, 002, 035, 049, 065, 256
Clayton	204
CMS	034

CMS Hightec	035
Concorde	002
Condor	006, 043, 064, 002, 034, 045, 049, 070, 072
Conia	179, 201, 298, 376
Conrac	172
Contec	006, 005, 002, 034
Continental Edison	087, 020, 046
Cosmel	006, 002
Crosley	014, 023
Crown	006, 144, 134, 204, 086, 145, 087, 111, 143, 064, 361, 135, 072, 071, 053, 033, 002
Crown Mustang	135
CS Electronics	036, 034
CTX	395
Curtis Mathes	009, 015, 021, 024, 079
Cybertron	036
Cytronix	246
D-Vision	102, 006, 451
Daewoo	102, 006, 124, 444, 036, 441, 406, 341, 338, 271, 249, 195, 192, 190, 164, 133, 119, 091, 079, 066, 035, 034, 002
Dainichi	036, 034
Daitsu	237
Dansai	006, 005, 002, 004, 033, 034, 035
Dansette	071
Dantax	144, 204, 086, 145, 064, 361, 445, 450
Datsura	033
Dawa	006
Daytek	221, 269, 271
Dayton	002, 221, 269
Daytron	006, 002, 066
De Graaf	098, 007, 023, 033
DEC	258
Decca	006, 011, 035, 044, 094, 118
Dell	235, 278
Denko	043
Denon	021

Denver	006, 108, 214, 256, 352, 410, 453, 473, 489
Desmet	006, 002, 014, 049
DGM	436
Diamant	006
Diamond	181
DiBoss	293
Digatron	006
Digihome	210, 370
Digiline	006, 134, 018
Digimate	198
Digital Device	340
Digitek	310, 380
Digitrex	478
Digix Media	195
Dixi	006, 002, 014, 035
DL	199, 258
DMTech	260, 438, 449, 454, 456
Domeos	134
Dream Vision	379
DTS	002
Dual	006, 204, 208, 035, 042, 054, 056, 095, 097, 164, 210, 219, 237, 468
Dual Tec	035
Dumont	010, 011, 014, 017, 035
Durabrand	285, 361, 453
Dux	006
Dynatech	035
Dynatron	006
e-motion	380
E:max	256, 316
Easy Living	230, 326, 402
Ecco	162
ECE	006
Edison-Minerva	087
Eiki	150
Elba-Sharp	094
Elbe	102, 006, 113, 036, 028, 035, 042, 048, 062, 070, 075, 094, 099, 121
Elcit	014, 023, 094

Elekta	043, 045
Element	376
Elfunk	204, 222
ELG	006
Elin	006, 098, 061, 002, 017, 056
Elite	006, 036, 049
Elta	043, 002
Emerson	006, 144, 134, 444, 086, 061, 064, 010, 014, 027, 045, 049, 065, 119
Emperor	045
Envision	266
Epson	243, 184, 186
Erae	267
Erres	006
ESC	006, 035
Etron	002, 023
Eurofeel	043, 035
Euroman	006, 043, 064, 034, 035
Europa	006
Europhon	006, 035, 094
Evesham	230, 340, 370, 382, 387
Evesham Technology	387
Evolution	395
Excors	467
Expert	023, 032, 042
Exquisit	006
FairTec	268
Fenner	002, 066
Ferguson	006, 120, 098, 103, 030, 204, 012, 020, 029, 046, 052, 054, 077, 292, 447, 476
Fidelity	006, 061, 043, 023, 026, 029, 034, 065, 071, 093, 097
Filsai	035
Finlandia	098, 061, 011, 023, 033, 055
Finlux	102, 006, 144, 145, 333, 327, 172, 122, 118, 094, 089, 084, 083, 070, 055, 035, 023, 018, 017, 014, 011, 010
Firstline	102, 006, 144, 134, 204, 061, 341, 267, 265, 250, 215, 172, 119, 097, 070, 066, 056, 050, 035, 034, 033, 011, 002

Appendix

Fisher	061, 064, 005, 008, 011, 014, 017, 033, 035, 056, 097
Flint	006, 113, 043, 036, 080, 011
Force	210
Forgestone	029
Formenti	006, 014, 023, 034, 049
Formenti-Phoenix	034, 049
Fortress	014, 015
Fraba	006, 064
Friac	006, 113, 064, 002, 091
Frontech	043, 002, 023, 035
Fujimaro	190
Fujitsu	002, 011, 032, 035, 042, 137, 173, 187
Fujitsu General	002, 032, 035, 137
Fujitsu Siemens	172, 211, 230, 246, 268, 369
Funai	144, 134, 043, 275, 336, 369, 407
Galaxi	006
Galaxis	006, 064
Gateway	394
GBC	036, 002, 023, 066
GE	015, 027, 045, 052, 079, 150, 442
GEC	006, 061, 011, 023, 035, 056, 094
Geloso	002, 023, 066
General	020, 046, 082
General Technic	002
Genexxa	006, 036, 002, 023, 071
Gericom	172, 190, 195, 220, 224, 246, 340, 388
Go Video	009
Gold	397, 413, 484, 485
Goldfunk	134
GoldHand	034
GoldStar	006, 144, 145, 111, 061, 001, 007, 020, 023, 027, 034, 035, 047, 067
Gooding	087
Goodmans	102, 006, 120, 144, 103, 134, 124, 444, 204, 087, 043, 036, 005, 478, 211, 232, 477, 250, 476, 271, 445, 355, 370, 373, 440, 376, 382, 383, 386, 002, 004, 011, 035, 047, 052, 054, 065, 066, 084, 091, 094, 119, 121, 133, 172, 195, 210

Gorenje	064
GPM	036
Gradiente	006, 025, 207
Graetz	144, 087, 061, 023, 053, 065, 211
Gran Prix	128
Granada	006, 098, 103, 005, 019, 038, 011, 023, 033, 035, 053, 054, 060, 081, 083, 094, 008
Grandin	102, 006, 144, 134, 204, 145, 113, 036, 080, 272, 270, 269, 246, 220, 215, 195, 190, 119, 066, 049, 045, 023, 002
Gronic	035
Grundig	102, 006, 030, 087, 142, 005, 108, 498, 476, 448, 447, 445, 430, 405, 370, 271, 267, 250, 225, 135, 121, 010, 101, 096, 028, 077
Grunkel	211
H & B	172, 456
Haier	138, 344, 392, 339
Halifax	043, 034, 035
Hallmark	027
Hampton	034, 035
Hanimex	036, 443
Hanns.G	402
Hannspree	262, 263, 264, 342, 401, 402, 463
Hanseatic	102, 006, 120, 144, 124, 061, 064, 172, 133, 097, 095, 091, 067, 056, 049, 048, 045, 035, 014, 002
Hantarex	006, 002, 094, 190, 260, 289
Hantor	006
Harsper	190
Harwa	162, 218, 238
Harwood	006, 087, 002, 071
Hauppauge	006
Havermy	015
HCM	006, 043, 036, 002, 035, 045, 071, 072
Hema	002, 035
Hemmermann	056, 097
Hifivox	020
Higashi	034
Highline	006, 043

Appendix

English

Hikona	036, 452
Hinari	006, 043, 036, 005, 002, 033, 059, 077, 443
Hisawa	144, 113, 036, 080, 045
Hisense	102, 092, 165, 254, 265, 366, 491
Hit	014
Hitachi	006, 098, 124, 204, 208, 005, 019, 037, 146, 152, 153, 163, 169, 193, 197, 007, 206, 210, 217, 227, 295, 296, 330, 377, 399, 424, 483, 020, 021, 023, 027, 035, 054, 056, 060, 076, 081, 083, 084, 085, 089, 091, 094, 018, 106, 107, 011
Hitachi Fujian	019
Hitsu	113, 036, 080, 002
HMV	014
Hoehner	144, 190, 211, 327
Home Electronics	111
Hornophon	006
Hoshai	036, 080, 045
Huanyu	034, 066
Hugoson	198, 224
Humax	505, 299, 506, 507, 245, 319, 322, 411, 433, 479
HYD	271
Hygashi	034, 035
Hyper	002, 034, 035
Hypersonic	061
Hypson	102, 006, 144, 134, 204, 086, 145, 043, 080, 035, 045, 118
Hyundai	164, 190, 192, 241, 244, 271, 291, 317, 338, 340, 341, 439
Iberia	006
ICE	006, 043, 036, 034, 035, 065
ICeS	036, 034
iDEAL	327
Igo	226
IIsonic	271, 308, 342
Iiyama	193, 198, 224
Imperial	006, 064, 056, 072, 121, 487
Indiana	006
InFocus	212, 220, 283
Ingelen	144, 113, 087, 023

Ingersol	002
Inno Hit	036, 002, 011, 035, 045, 047, 094, 211
Innovation	095
Innowert	190, 246
Interbuy	006, 043, 002
Interfunk	006, 061, 014, 020, 023, 056, 093
Internal	102, 444, 119
Intervision	006, 086, 087, 043, 036, 080, 002, 035, 045, 067, 095
Irradio	006, 036, 002, 047, 065, 147
Isukai	006, 036, 080, 045
ITC	035, 049
ITS	006, 043, 036, 034, 045, 065
ITT	098, 113, 061, 023, 029, 033, 053, 055, 056, 083, 084, 097
ITT Nokia	098, 113, 111, 061, 023, 033, 053, 055, 056, 083, 084
ITV	006, 043, 066
JDV	451
Jean	005, 307, 308
JEC	004
JMB	102, 124, 077, 091
JNC	378
Jocel	143
Jouge	284
Jubilee	102
JVC	111, 036, 005, 129, 130, 015, 029, 065, 072, 137, 149, 207, 264, 362, 408, 496
Kaisui	006, 036, 080, 002, 034, 035, 045
Kamp	034
Kapsch	061, 017, 023, 032, 042
Karcher	144, 113, 111, 043, 064, 045, 164, 327, 451
Kathrein	102, 195
Kawa	065
Kawasho	034
KB Aristocrat	023
Kendo	006, 204, 113, 064, 062, 067, 070, 095, 099, 128, 210, 285, 333
Kennedy	023, 032, 075

Appendix

Kennex	204
Keymat	258, 300, 398, 436, 437
Kingsley	034
Kioto	142
Kiss	170
Kiton	006, 134
Kneissel	102, 006, 113, 064, 042, 048, 062, 066, 070, 075, 091
Kobra	290
Kolster	006, 036, 056
Konig	006, 016
Konka	006, 144, 036, 065, 072, 126, 158, 201
Kontakt	087
Korpel	006
Korting	064, 014, 049
Kosmos	006
Kotron	071, 440
Koyoda	002
Kreisen	192, 293
KTV	035
Kuba	056
Kyoshu	071, 072
Kyoto	023, 034, 035
L&S Electronic	144, 172, 190
LaSAT	086
Lava	293
Lavis	204
Leader	002
Lecson	006
Lemair	070
Lenco	006, 108, 017, 066, 352, 452
Lenoir	002, 214
Lentec	316
Lexsor	218, 303
Leyco	006, 043, 011
LG	102, 006, 144, 145, 138, 061, 064, 248, 281, 354, 367, 368, 384, 396, 416, 417, 425, 426, 215, 209, 067, 047, 035, 034, 027, 023, 002, 001, 236, 257

Liesen & Tter	006
Liesenkotter	006
Lifetec	006, 144, 134, 204, 208, 036, 002, 066, 095, 137
Lloyd's	002
Local India TV	002, 033, 109, 280
Lodos	204, 210
Loewe	006, 064, 014, 048, 093, 094, 123, 131, 167, 414, 434
Logic	494
Logik	204, 001, 003, 029, 162, 195, 224, 292, 376, 464, 465, 466
Logix	134, 095
Luker	451
Luma	204, 002, 023, 032, 042, 062, 066, 070
Lumatron	006, 043, 012, 023, 032, 035, 042
Lux May	006, 002
Luxor	098, 204, 061, 023, 033, 035, 047, 055, 056, 060, 083, 084, 122, 211
LXI	022
M Electronic	006, 144, 124, 030, 061, 361, 133, 093, 089, 084, 070, 066, 056, 055, 054, 046, 035, 034, 023, 020, 018, 017, 002
Madison	006
MAG	298, 376
Magnadyne	014, 023, 094, 097
Magnafon	012, 034, 094
Magnavox	005, 003
Magnin	442
Magnum	006, 144, 145, 128, 242
Mandor	043
Manesth	006, 043, 004, 035, 049
Manhattan	006, 134, 204, 164, 192, 237, 293
Maqma	290, 340, 378, 404
Marantz	102, 006, 071, 140, 277, 317
Marelli	014
Mark	006, 144, 145, 002, 034, 035, 066
Marks and Spencer	420
Marquant	478
Mascom	327, 432

Master's	091
Masuda	036
Matsui	102, 006, 144, 030, 204, 087, 005, 080, 074, 153, 195, 097, 094, 369, 445, 077, 447, 065, 059, 056, 052, 044, 035, 033, 028, 011, 008, 004, 003, 002
Matsushita	129
Maxent	394, 160
Maxim	213, 327, 451
Medialine	220, 449
Mediator	102, 006
Medion	102, 006, 144, 134, 204, 138, 208, 172, 195, 093, 040, 210, 213, 219, 230, 285, 327, 370, 440, 456
Megas	113
Megatron	021, 027
MEI	204
Memorex	204, 002, 009, 027
Memphis	002, 011
Mercury	006, 002
Metronic	120
Metz	006, 134, 030, 108, 014, 028, 063, 096, 101, 211, 318
MGA	027, 442
Micromaxx	006, 134, 204, 121, 172, 256, 456
Microspot	343
Microstar	172
Mikomi	204, 153, 210
Minato	006
Minerva	030, 087, 019, 010, 028, 094, 096, 101
Minoka	006, 071
Mirai	369, 423, 482
Mirror	440
Mistral Electronics	029
Mitsai	327
Mitsubishi	102, 006, 204, 005, 019, 014, 015, 027, 093, 096, 191, 311
Mivar	034, 035, 047, 048, 094, 112
Mogen	374, 410
Monaco	002

Morgan's	006
Motorola	015
MTC	064, 009, 034, 056, 093
MTEC	044
MTlogic	144, 473
Multibroadcast	029
Multitec	006, 134, 204, 086, 327
Multitech	006, 086, 043, 064, 002, 034, 035
Murphy	017, 023, 034
Musikland	036
Mx Onda	298, 376
MyCom	271
Myrica	369
Myryad	102
NAD	006, 061, 190
Naiko	006, 111, 157, 451
Nakimura	006, 066
Narita	451
NAT	038
National	038
NEC	005, 002, 003, 025, 035, 040, 049, 066, 140, 239, 379
Neckermann	102, 006, 064, 014, 028, 049, 056, 070, 072, 101
NEI	006, 204, 065
Neon	237, 389
Neovia	190, 192, 220, 260, 267, 268, 271, 273, 449, 454
Nesx	389
Netsat	006
NetTV	160
Neufunk	102, 006, 144, 113, 036, 002
New Tech	102, 006, 002, 035, 054
New World	036
Nextier	338
NFREN	170
Nicam	097
Nicamagic	034
Nikkai	006, 043, 036, 005, 002, 004, 011, 034, 035
Nikkei	144

Appendix

Nikko	027
Nobliko	010, 034
Nogamatic	020
Nokia	098, 113, 111, 061, 023, 033, 049, 053, 055, 056, 066, 083, 084, 089, 122
Norcent	266, 335
Nordic	035
Nordmende	006, 144, 103, 030, 020, 046, 054, 242, 280, 499
Normerel	006
Northern Star	220
Novatron	006, 018, 066
Novita	273
Oceanic	098, 061, 023, 033, 083
Odeon	043
Okano	006, 043, 064, 002, 011
Olidata	271
Omega	043
Onida	207, 226
Onimax	144
Onn	380, 465, 477, 495, 497, 500, 501
Onwa	036, 074, 065, 109
Onyx	380, 397
Opera	006
Optimus	129, 024
Optoma	234, 346, 371
Orbit	006
Orcom	300
Orion	102, 006, 144, 204, 467, 458, 457, 456, 448, 445, 443, 385, 218, 195, 131, 097, 094, 077, 071, 059, 050, 049, 003
Orline	006, 036
Ormond	134, 204
Orsowe	094
Osaki	102, 006, 043, 036, 011, 035, 044, 059, 066, 071
Osio	006, 047
Oso	036
Osume	006, 036, 005, 011
Otic	298, 376

Otto Versand	102, 006, 030, 061, 005, 038, 028, 020, 035, 049, 054, 056, 015, 093, 096, 097, 101
Pacific	102, 144, 204, 208, 077, 256
Packard Bell	254, 293
Pael	034
Palladium	102, 006, 144, 064, 208, 035, 056, 028, 070, 072, 095, 101, 023, 121, 131, 014
Palsonic	006, 138, 043, 001, 035, 072, 218, 238, 303
Panama	006, 043, 002, 034, 035
Panasonic	006, 098, 061, 129, 038, 023, 063, 094, 187, 251, 294, 353, 359, 279, 306
Panavision	006, 070
Pathe Cinema	023, 034, 048, 049
Pathe Marconi	020
Pausa	002
Penney	009, 022, 027, 442
Perdio	006, 011, 023, 034, 045, 049
Perfekt	006
Petters	006
Philco	006, 064, 014, 021, 072
Philex	029
Philharmonic	035
Philips	102, 006, 061, 459, 435, 429, 395, 310, 302, 297, 247, 125, 110, 101, 073, 066, 054, 029, 014, 002
Phocus	144, 242, 250, 361, 405
Phoenix	006, 086, 064, 011, 014, 023, 034, 049
Phonola	102, 006, 014, 029, 034
Pilot	142
Pioneer	006, 086, 061, 064, 020, 023, 024, 046, 073, 093, 136, 159, 233, 277, 286, 381
Pionier	086, 064, 327
Plantron	006, 043, 002
Playsonic	006, 144, 145, 035, 053, 361, 405
Polaroid	298, 312, 355, 376, 383, 390, 240
Poppy	002
Portland	066, 119

Appendix

English

Powerpoint	006, 138, 087, 201
Prandoni-Prince	061, 094
Precision	035
Premier	199
Prima	043, 002, 071, 218, 238, 303
PrimeView	340
Prinston	204, 145
Prinz	061, 011, 056, 097
Profex	061, 002, 023
Profi	002
Profilo	327
Profitronic	006
Proline	006, 120, 124, 204, 011, 050, 070, 118, 121, 271, 324, 386, 450
Proscio	002
Prosonic	006, 144, 134, 064, 034, 035, 065, 066, 389, 403, 428, 437, 467, 486
Protech	006, 134, 204, 086, 043, 002, 035, 045, 056, 072
Proton	027
ProVision	102, 006, 144, 256
Proxima	150, 152
Pvision	192, 310, 456
Pye	102, 006, 014, 056, 066, 101
Pymi	002
QONIX	352
Quadral	036
Quasar	002, 190
Quelle	006, 134, 030, 204, 061, 101, 097, 096, 093, 056, 028, 020, 017, 010, 003
Questa	005
R-Line	006
Radialva	036, 023
Radiola	102, 006, 035
Radiomarelli	006, 014, 094
RadioShack	006, 027
Radiotone	006, 134, 204, 043, 064, 002, 071, 072, 128
Rank	010
Rank Arena	005

RBM	010
RCA	120, 015, 442
RealTV	237
Reality	237
Recor	006
Rectiligne	006
Rediffusion	098, 061, 005, 055
Redstar	006
Reflex	006, 134, 204
Relisys	190, 192, 193, 194, 220, 221, 271, 310, 333, 338, 341, 355, 390
Remotec	006, 015, 021, 026
Reoc	144
Revox	006
Rex	043, 023, 032, 042, 070, 099
RFT	006, 043, 011, 014
Roadstar	006, 144, 134, 204, 145, 043, 036, 002, 045, 072, 214, 440
Robotron	014
Rolson	178, 267
Rover	193
Royal Lux	064, 052, 071
Saba	120, 098, 144, 103, 061, 014, 020, 023, 046, 052, 054, 090, 094, 335
Sagem	113, 080, 182, 253, 337
Saisho	043, 002, 003, 023, 035, 094, 097
Saivod	006, 134, 204, 143, 211, 327, 451
Sakai	023
Salora	098, 061, 023, 033, 047, 056, 060, 084, 094, 118, 122, 213, 219, 327
Salsa	052
Sambers	094
Sampo	394, 160
Samsung	102, 006, 043, 064, 108, 115, 231, 252, 276, 287, 332, 345, 350, 351, 372, 442, 474, 488, 490, 492, 228, 176, 175, 127, 095, 047, 035, 034, 033, 027, 023, 011, 009, 002
Sandra	034, 035
Sansui	006, 142, 131, 148, 189, 267, 326
Santon	002

Appendix

Sanyo	204, 064, 005, 019, 442, 370, 363, 358, 357, 356, 222, 200, 150, 140, 097, 053, 048, 035, 034, 033, 025, 023, 017, 011, 008, 003, 002, 240
SBR	102, 006, 029
Schaub Lorenz	098, 144, 086, 111, 061, 056, 066, 215, 256, 267
Schneider	102, 006, 144, 134, 204, 061, 208, 036, 451, 450, 293, 128, 097, 095, 065, 056, 054, 042, 035, 023, 010
Scotch	027
Scotland	023
Scott	214
Sears	022, 026, 027
Seaway	124
Seelver	204
SEG	006, 134, 204, 087, 043, 036, 005, 285, 211, 210, 119, 062, 056, 035, 034, 002
SEI	006, 014, 023, 032, 056, 094, 097
Sei-Sinudyne	006, 014, 032, 094, 097
Seleco	023, 032, 042, 055, 062, 065, 070, 075, 099
Semp	022
Sencora	002
Sentra	004
Serino	113, 080, 015, 034
Sharp	005, 130, 216, 015, 029, 088, 094, 177, 274, 334, 365, 409, 166, 288
Shintoshi	006
Shivaki	006, 077
Siarem	014, 023, 094
Siemens	006, 030, 028, 096, 101
Siera	102, 006
Siesta	064
Silva	006, 061, 034, 128
Silva Schneider	006, 213, 327, 451
Silvano	108
Silver	145, 061, 005
SilverCrest	204
Singer	006, 074, 002, 014, 052, 075
Sinotec	162

Sinudyne	006, 061, 014, 023, 032, 056, 094, 097
Skantic	060
SKY	006, 195, 271, 300, 307, 308, 340, 341, 342, 343, 344, 391, 400, 421
SKY Brazil	195
Sliding	170, 190, 195, 256, 269, 270, 272
SLX	134
Smaragd	087
Soemtron	190, 246
Sogera	049
Sogo	271, 473
Solavox	006, 098, 061, 011, 023
Sonawa	036
Soniko	006
Sonitron	064, 033, 035, 053
Sonix	271, 389
Sonneclair	006
Sonoko	006, 043, 002, 035, 045
Sonolor	098, 061, 023, 033, 045
Sontec	006, 064, 002
Sony	006, 301, 005, 446, 412, 393, 375, 360, 325, 255, 203, 185, 174, 058, 003
Sound & Vision	036, 066
Soundesign	027
Soundwave	006, 204, 145, 049, 072, 420
Spectra	002
Squareview	026
Ssangyong	002
Standard	006, 204, 036, 002, 035, 049, 066, 380
Starlite	006, 043, 002, 023
Stenway	036, 045
Stern	043, 023, 032, 042, 070, 099
Strato	006, 043, 002, 403
Strong	210, 211
Stylandia	035
SunBrite	284
Sungoo	470
Sunkai	113, 087, 036, 080, 050, 059, 190

Appendix

English

Sunstar	006, 043, 002, 065
Sunstech	456
Sunwood	006
Superla	034, 035, 094
SuperTech	102, 006, 036, 002, 034
Supra	002, 066
Susumu	036, 046, 052
Sutron	002
SVA	108, 190
Swedx	340
Swissflex	481
Swisstec	481, 480, 422, 421, 401, 400, 391, 344, 343, 342, 341, 340, 308, 307, 300, 271, 195, 190
Sydney	034, 035
Sylvania	026, 275, 427
Sysline	006
Sytong	034
Tactus	044
Tandberg	061, 020, 063
Tandy	036, 011, 015, 023, 035
Targa	237, 267
Tashiko	005, 023, 025, 034, 035
Tatung	006, 003, 011, 035, 044, 094, 118, 215, 230, 256, 267, 326, 327, 382, 383, 395
TCL	142, 321
TCM	144, 172, 242, 456
Teac	006, 144, 134, 138, 143, 043, 080, 002, 025, 026, 027, 056, 093
Tec	006, 002, 035, 042, 052, 082
Tech Line	006, 134, 211, 285
Tech Lux	214
Techica	036
Technema	049
Technica	118, 451
Technics	102, 129
Technika	422, 428, 465, 468, 480, 493
TechniSat	102, 131, 237
Technisson	144, 242, 361
Technosonic	102, 120, 091, 195, 256, 258, 436, 437, 451, 468

Technotrend	316, 378
Techwood	204, 211
Teckton	271
Tecnimagen	102
Teco	205
Tedalex	002, 035, 380
Teiron	002
Tek	168
Teknika	009
TELE System	192
Teleavia	046, 054
Telecor	006, 036, 023, 035, 042
Telefunken	006, 120, 144, 103, 086, 320, 202, 105, 090, 082, 055, 054, 052, 046, 020, 016, 012, 348
Telefusion	006
Telegazi	006, 043, 036, 023, 042
Telemagic	150
Telemeister	006, 049
Telesonic	006
Telestar	102, 006
Teletech	006, 134, 204, 002
Teleton	005, 032, 035, 042, 056
Televideon	023, 034, 049
Televiow	006
Tempest	002
Tennessee	006
Tensai	006, 204, 145, 036, 002, 017, 018, 035, 049, 065, 066, 067
Tenson	002, 049
Tevion	102, 006, 144, 134, 204, 208, 468, 405, 403, 376, 355, 327, 298, 246, 242, 232, 230, 172, 128
Texet	036, 002, 034, 035, 066
Texla	165
Thes	467, 469, 471
Thomson	006, 120, 103, 020, 046, 052, 054, 056, 082, 335
Thorn	006, 061, 005, 100, 096, 093, 091, 054, 052, 044, 029, 020, 017, 012, 011, 004
Thorn-Ferguson	012, 029, 052, 054, 091

Appendix

Time	378, 454, 455
Tiny	238
TMK	027
Tobishi	310
Tokai	006, 134, 204, 002, 011, 023, 035, 066
Tokaido	204
Tokyo	004, 034
Tomashi	036, 045
Topline	134, 204
Toshiba	030, 204, 005, 115, 129, 092, 447, 364, 313, 304, 242, 212, 211, 183, 100, 039, 022, 020, 010, 009, 004, 236, 257
Tosumi	451
Towada	035, 056
Toyoda	002
Trakton	043
TRANS-continents	102, 006, 134, 204, 035, 118, 190, 269, 272
Transonic	006, 108, 002
Transtec	034
Trident	035, 094
Trio	298, 376
Tristar	043, 036, 029
Triumph	102, 006, 055, 094
Tsoschi	045
TVTEXT 95	102
TWF	432
Uher	006, 086, 064, 032, 042, 049, 066, 072, 084
Ultravox	006, 014, 023 034, 066
UMC	308, 340, 343, 391, 400, 422, 480, 481, 493
Unic Line	006, 080, 083
United	006, 144, 204, 145, 108, 397, 445, 451
Universal	006
Universum	006, 134, 030, 204, 061, 043, 064, 005, 115, 070, 072, 083, 084, 089, 093, 096, 097, 101, 122, 172, 211, 285, 062, 056, 055, 047, 035, 025, 020, 018, 017, 010, 003, 002

Univox	006, 014, 023
V2max	190
V7 Videoseven	195, 224, 237, 271, 369, 394
Venturer	324, 386, 428
Vestel	006, 134, 204, 035, 211, 333, 370
Vexa	006, 002
Vibrant	044
Victor	005
Videocon	092
Videologic	036, 034
Videologique	036, 034, 035
VideoSystem	006
Videotechnic	034, 035, 049, 066
Videoton	023, 060
Vidikron	150, 277
Vidtech	027
Viewpia	192
Viewsonic	307, 308, 323, 335, 349, 391, 394, 259, 331
Visiola	034
Vision	006, 035, 049
Vistar	032
Vistron	265, 460
Vivax	250, 258
Vivid	250
Vortec	006
Voxson	006, 014, 023, 072
Waltham	006, 134, 204, 020, 035, 060, 072, 077
Wards	009, 022, 024, 027
Watson	006, 144, 134, 204, 036, 002, 023, 049, 095, 271, 285
Watt Radio	023, 034, 056, 097
Wega	006, 005, 014
Wegavox	002
Welltech	014
Weltblick	035, 049
Weltstar	204
Westinghouse	189
Wharfedale	102, 006, 095, 189, 256, 327, 370, 452, 453, 477, 502

White Westinghouse	006, 034, 049, 119
Wilson	102
Windsor	134, 204
Windstar	045
Windy Sam	102
World-of-Vision	190, 193, 195, 198, 224, 242, 246, 340, 389
X-View	215
Xenius	124, 133
XLogic	188
Xomax	397
Xoro	218, 224, 229, 303, 404, 503
Xrypton	006
Yakumo	342
Yalos	398
Yamaha	169, 314, 330, 184
Yamishi	006, 036, 080, 035, 045
Yokan	006
Yoko	006, 043, 064, 036, 002, 034, 035, 053
Yorx	036
Ytawai	316
Zanussi	032, 035
Zenith	119, 236
Zenor	053
TV/VCR Combo	
Aiwa	445
Amstrad	026
Beko	086
Black Diamond	444
Blue Sky	119, 445
Daewoo	444, 119
Dantax	445
Emerson	444, 119
Ferguson	120, 012
Fidelity	026
Finlux	017
Firstline	119
GE	015, 442
GoldStar	006

Goodmans	444, 066, 119, 445
Grandin	119
Grundig	102, 006, 030, 101, 445
Hanimex	443
Hinari	005, 443
Internal	444, 119
Irradio	147
LG	027
Magnin	442
Matsui	445
MGA	442
Mitsubishi	102, 015
Orion	443, 445
Penney	442
Philips	102, 006
Portland	119
Radiola	102
RCA	015, 442
Saba	120
Samsung	442
Sanyo	442
Schneider	102, 006
SEG	119
Sharp	015
Siemens	006
Sony	301, 446
Teac	026
Technics	102
Thomson	120
United	445
Universum	018
White Westinghouse	119
TV/VCR/DVD Combo	
Bush	448
Ferguson	447
Grundig	448
Matsui	447
Orion	448

Appendix

3. DVD Code List

Brand	Code
3D LAB	038
4Kus	106
A-Trend	063
Acoustic Solutions	066, 062, 114, 193, 208
AEG	073, 077, 058, 075, 113, 181
AFK	105, 181
Airis	057, 081, 109, 117, 216
Aiwa	036, 115
Akai	077, 075, 093, 100, 113, 162, 212
Akira	149
Akura	093, 103, 113, 136
Alba	038, 059, 066, 057, 062, 064, 103, 140, 162, 185, 216
Alize	104
Altacom	109
Amitech	073, 013, 087
Amstrad	073, 077, 062, 104, 136
Amuseer	120
AMW	091
Ansonic	082, 071, 120, 136
Apex Digital	057, 094, 116, 134
Arena	100
Aristona	038, 052, 214
ASCOMTEC	181
Asono	109
Atacom	109
Audiola	149, 224
Audiosonic	181, 216
Audix	062
Autovox	062
Auvio	086
Axion	066
Basic Line	062, 185
Baze	093
BBK	109
Bellagio	094
Bellwood	081

Belson	136, 181
Belsonic	136
Berthen	156
Binatone	181
Biostek	148
Black Diamond	062
Blu:sens	113, 117
Blue Nova International	117
Blue Sky	059, 077, 057, 062, 086
BlueTinum	136
Boghe	094
Boman	093
Bose	189
Brainwave	073, 100
Brandt	033, 039
Broksonic	059
Bush	066, 082, 057, 062, 064, 065, 103, 120, 127, 129, 140, 162, 172, 216, 217
Cambridge Audio	070
Cat	076, 181
CCE	066
cello	164, 198, 205
Centrum	058, 062, 076, 110, 181, 185
CGV	070, 100
Chili	135, 136
Cinea	085
Cinetec	062, 091
CJ Digital	156, 204
Classic	066, 164
Clatronic	057, 058, 075, 113, 181
Clayton	062
CMX	156
Coby	066, 120
Codex	113
Commax	117, 135
Compacts	081, 211
Contel	075
Continental Edison	082, 091

Crown	073, 062, 100	ECC	066
Cybercom	082	Eclipse	065, 070
CyberHome	063	Elfunk	062, 087
Cytron	061, 119	Elin	073
D-Vision	100	Ellion	013, 087
Daenyx	091	Elta	073, 057, 075, 087, 100, 104, 113, 161, 204
Daewoo	073, 018, 061, 063, 083, 091, 129, 130, 159	Eltax	113, 117, 149
Dalton	097	Emerson	043, 061
Dansai	073, 100, 162	Enterprise	043
Dantax	038, 077, 062, 065, 122	EuroLine	058, 075, 100, 113, 120, 131, 156
Daytek	091	F&U	203
Dayton	091, 106	Ferguson	059, 062, 093, 162, 164
DCE	082	Finlux	067, 043, 073, 057, 070
Decca	073, 100	Fintec	140
Denon	032, 049, 151	Firstline	062, 086, 090, 140
Denver	057, 075, 093, 117, 128, 136, 148, 181, 216	Fisher	056
Denzel	055	Funai	059, 058
Desay	086	Gateway	106
Dgtec	057	GE	064
Difrnce	211	Global Link	109
Digihome	062	Global Solutions	072
DigiLogic	062, 159	Global Sphere	105
Digitech	172	Go Video	090
Digitek	013	Gold	198
Digitrex	217	GoldStar	067, 043
Digix Media	081	Goodmans	066, 077, 062, 065, 094, 103, 105, 116, 140, 164, 181, 217
DiK	082	GoWell	156
Dinamic	075	GPX	067
Disney	082	Graetz	055
DiViDo	061	Gran Prix	082, 093
DK Digital	082, 116	Grandin	062, 113, 116, 204
Dragon	082	Greenhill	064
DreamX	104	Grundig	038, 039, 059, 077, 056, 061, 062, 094, 097, 129, 156, 162, 164, 172
DSE	164	Grunkel	073, 082, 077, 136
Dual	066, 082, 077, 055, 062, 129, 140	GVG	073
Durabrand	082, 058, 062, 128, 140, 159	H & B	013, 062, 085, 087, 113, 204
E:max	026, 113, 117, 156, 161		
eBench	105		

Appendix

Hanseatic	067, 077
Harman/Kardon	060, 111, 135
Harwa	211
HCM	075
HDT	061
HE	066, 181
Henss	062
Hikona	124
HiMAX	086
Hitachi	042, 054, 062, 185
Hiteker	057, 181
Hoeher	082, 062, 081, 094, 109, 140
Home Electronics	073, 066
Home Tech Industries	109, 156, 181
HotMedia	105
Humax	052, 225
HYD	113
Hyundai	087
Ingelen	075
Inno Hit	062
International	159
Irradio	090, 100, 109, 113
ISP	059
it's	064
Jamo	097
Jaton	055
JDB	066
JGC	140
JMB	059
JVC	045, 038, 033, 107, 147, 176
Kansas Technologies	113, 140
Kazuki	136
Kendo	082, 057, 062
Kennex	073, 062, 093
Kenwood	032, 037
KeyPlug	156
Kiirro	073
King Vision	136, 156
Kiss	055, 085

KXD	088, 117, 135, 181
Lawson	072
Leiker	091
Lenco	073, 062, 124
Lexia	072
LG	067, 043, 077, 090, 143, 179, 186
Lifetec	082, 119
Limit	072
LiteOn	106, 126, 157, 165
LM	156
Lodos	062
Loewe	038, 067
Logic	222
Logik	062
Logix	061
Lumatron	067, 059, 061, 062, 100, 117, 172, 215
Lunatron	067
Luxman	042
Luxor	062, 064, 094, 162, 164
Magnat	181
Magnavox	038, 033, 052, 058, 062, 103
Magnex	065
Magnum	129
Majestic	149, 224
Manhattan	061, 062
Manta	136
Marantz	038
Mark	062
Marquant	073, 217
Matsui	059, 057, 062, 094, 162, 164
Maxim	062, 091, 114
MBO	066, 164
MDS	062
Mecotek	073
Mediencom	070
Medion	067, 082, 119, 157
MEI	077
Memorex	082

Appendix

English

Metz	041, 035, 062, 185	Oopla	106
MiCO	065, 070, 116	Opera	215
Micromaxx	059, 162	Optim	086
Micromedia	038, 033	Optimus	035
Micromega	038	Orbit	091, 156
Microsoft	163, 194	Orion	059, 062, 113, 127, 162
Microstar	082	Ormond	062
Minax	062	Pacific	082, 072, 077, 062, 071
Minoka	073, 100	Packard Bell	082, 117, 158
Mitsubishi	062	Palladium	059, 062, 179
MixSonic	101	Panasonic	032, 146, 155, 173, 178, 180
Mizuda	073	Panda	076, 135
Monyka	055	peeKTon	093, 109
MPX	086	Philips	038, 033, 052, 058, 106, 118, 121, 137, 167, 170, 191, 192, 195, 196, 210, 209
MTlogic	216	Pioneer	041, 035, 016, 048, 133, 141, 145, 175, 183, 220
Mustek	066, 148, 164	PJ	181
Muvid	136, 156, 204	Play It	156
Mx Onda	070, 116	Plu2	087
Myryad	116	Polaroid	134
Mystral	082	Powerpoint	091
NAD	067	Prinz	082
Naiko	073, 094	Prism	082, 061
Neom	136, 156	ProCaster	094, 200
Neon	013	Proline	057, 094, 122, 165, 193
Neufunk	055	Proson	062
Nevir	073, 082, 057	Prosonic	130, 208
Nexius	077	ProVision	066, 117, 136, 181
Next Base	160	Pye	038, 052
NFREN	081	QONIX	077
Nikkai	181	Quartek	158
Nikkei	116	Radionette	067, 090, 179
Norcent	181	Radiotone	062
Nordmende	082	Raite	055
Nortek	204	RCA	168
Oasis-Media	148	REC	032
Olidata	057	Redstar	073, 071, 075, 093, 125, 181
Onkyo	033, 046, 169	Relisys	119
Onn	223		
Onyx	198		

Appendix

Reoc	072, 092
Revoy	085
Richmond	113
Roadstar	066, 057, 062, 093, 110, 172
Ronin	091
Rotel	045
Rowa	064
Rownsonic	076
Saba	039, 204
Saivod	082, 071
Salora	067
Sampo	117
Samsung	032, 042, 017, 022, 069, 099, 152, 166, 182, 197, 199, 219, 080
Sansui	059, 013, 070
Sanyo	056, 062
Scan	061, 087
ScanMagic	066, 164
ScanSonic	162
Schaub Lorenz	073, 075, 100, 104, 156
Schneider	038, 082, 052, 077, 061, 062, 075, 090, 110, 122, 214
Schoentech	062
Scientific Labs	072
Scott	057, 097, 113, 125, 181
Seeltech	109, 156
SEG	055, 062, 091, 140, 185, 215
Shanghai	057
Sharp	058, 062, 090, 127
Sherwood	067, 064
Shinco	064
Siemssen	123
Sigmatek	109, 200
Siltex	109
Silva	075, 093
Silva Schneider	067, 082, 090, 093
SilverCrest	014, 015, 105
Sinudyne	116
Sistemas	057
Skantic	038, 062

SKY	013
Skymaster	066, 072
Skyworth	093
Sliding	100
SM Electronic	066, 072, 105
Smart	061, 062
Sogo	136, 203, 216
Sontech	131
Sony	036, 089, 096, 098, 139, 142, 150, 171, 177, 184, 188, 190, 201, 202
Sound Color	113
Soundmaster	072
Soundwave	062, 140
Standard	082, 072, 075, 093
Star Clusters	105, 110
Starmedia	109
Stein	148
Strato	105, 123
Strong	062
Sunkai	073, 087
Sunstar	001
Sunstech	082, 148, 149
Suntronic	001
Sunwood	075, 093
Supervision	072, 105
Supratech	203, 213
SVA	057
Swisstec	206, 218
Sylvania	058, 207
Symphonic	058
Synn	072
Syscom	081
Sytech	148, 200
Tamashi	125
Tandberg	062, 162, 185
Tangent	117
Targa	110, 157, 179
Tatung	073, 162
Tchibo	067

TCM	067, 077	Walkvision	064
Teac	067, 072, 061, 064, 071, 110	Waltham	062, 140
Tec	093	Welkin	082
Technica	162	Wellington	062
Technics	032, 178	Weltstar	062
Technika	073, 082, 100, 140, 162, 206, 208, 218, 221	Wharfedale	077, 062, 070, 100, 124, 172
Technisson	100	Wilson	082, 113
Technosonic	100	Windsor	062
Techwood	062, 140, 185	Windy Sam	042
Telefunken	039	Wintel	101
Teletech	072, 062	Woxter	104, 109
Tensai	073	Xbox	163, 194
Tevion	093, 097, 110, 123, 131, 164, 181, 215	Xenius	077
Textorm	136	Xomax	198
Theta Digital	041	Xoro	108, 226
Thomson	039, 116, 160, 168	Yakumo	094
Time	013	Yamada	091, 094, 104, 106, 126, 135, 136
Tokai	077, 055, 075, 093, 113	Yamaha	032, 038, 052, 079
Tom-Tec	076, 148	Yamakawa	055, 091, 215
Top Suxess	109	Yukai	066, 164
Toshiba	033, 059, 132, 138, 153, 154, 169, 187	Zenith	033, 043
TRANS-continents	082, 081, 091, 113, 117	TV/DVD Combo	
Tredex	086	Acoustic Solutions	193, 208
Trevi	082	Airis	216
TSM	109	Akai	212
TVE	062	Alba	216
Umax	104	Audiosonic	216
UMC	206, 218, 221	Bush	062, 216, 217
United	059, 066, 058, 062, 075, 081, 100, 105, 113, 120, 131, 156, 172, 198	cello	198, 205
Universum	067, 043, 077, 062, 090, 110, 140	Dantax	122
Vecatech	136	Denver	128, 216
Venturer	077, 169, 193, 208	Digitrex	217
Vestel	062, 140, 185	Gold	198
Vieta	061	Hikona	124
Voxson	066, 082	Logic	222
Waitec	066, 104, 109, 113	Marquant	217
		MTlogic	216
		Onn	223
		Onyx	198

Appendix

Philips	210
Proline	193
Prosonic	208
Sliding	100
Sogo	216
Swisstec	218

Technika	208, 221
UMC	221
Venturer	193, 208
TV/VCR/DVD Combo	
Ferguson	059
Matsui	059

4. VCR Code List

Brand	Code
Accent	009
Adventura	001
Adyson	009
Aiwa	003, 028, 001, 029, 002, 068, 102
Akai	028, 029, 023, 012, 020
Akiba	009
Akura	009
Alba	010, 021, 028, 001, 009, 029, 023
Allorgan	020
Allstar	010
America Action	021
Amstrad	021, 001, 009
Anam	021, 003, 019, 020
Anam National	019
Anitech	009
Ansonic	001
Aristona	010
ASA	010, 003
Asha	020
Asuka	010, 003, 001, 009
Audiolab	010
Audiosonic	021
Audiovox	003
AVP	001, 029
Awa	003, 024, 005
Baird	021, 001, 011, 012
Basic Line	021, 009, 011
Beaumark	020
Beko	011

Bell & Howell	011
Bestar	021
Black Diamond	051
Black Panther	021
Blaupunkt	010, 019
Blue Sky	021, 003, 028, 051, 009, 029, 031, 068, 102
Bondstec	009
Brandt	024, 025
Brinkmann	028
Bush	010, 021, 028, 001, 051, 009, 029, 023, 068
Calix	003
Carena	010
Carrefour	006
Carver	010
Casio	001
Cathay	021
CCE	021, 009
Centrum	044
CGE	001
Cimline	009
Cineral	021
Citizen	021, 003
Clatronic	001, 009
Colt	009
Combitech	029
Condor	021
Craig	003, 009, 020
Crown	021, 003, 009, 031

Appendix

English

Cybernex	020
Cyrus	010
Daewoo	021, 050, 051, 029, 006
Dansai	021, 009
Dantax	029, 068
Daytron	021
De Graaf	010, 011, 007, 004
Decca	010, 001, 029, 008
Deitron	021
Denko	009
Denon	004
Diamant	003
Dual	010, 021, 028, 001
Dumont	010, 001, 011
Durabrand	051, 044
Elbe	021
Elcatech	009
Electrophonic	003
Elin	020
Elsay	009
Elta	021, 009
Emerex	002
Emerson	021, 050, 003, 001, 009, 006, 005
ESC	021, 020
Ferguson	021, 028, 001, 024, 025, 068
Fidelity	001, 009, 029, 030, 020
Finlandia	010, 003, 001, 011, 007, 005, 004, 012, 019
Finlux	010, 001, 011, 004
Firstline	021, 003, 028, 009, 006, 005, 004, 031, 102
Fisher	011
Flint	028
Frontech	009
Fujitsu	001
Funai	001, 044
Galaxi	001
Galaxis	021
Garrard	001
GE	007, 020

GEC	010
General Technic	028
Genexxa	011
Go Video	030, 102
GoldHand	009
GoldStar	003, 001, 031, 102
Goodmans	010, 021, 050, 003, 028, 001, 051, 009, 029, 020, 068
GPX	003
Gradiente	001
Graetz	011, 020
Granada	010, 003, 001, 011, 007, 004, 019, 020
Grandin	021, 003, 001, 009, 068
Grundig	010, 028, 009, 024, 029, 019, 068
Hanimex	029
Hanseatic	010, 003
Harley Davidson	001
Harwood	009
HCM	009
Hinari	021, 009, 029, 020
Hisawa	029
Hischito	006
Hitachi	010, 001, 004, 020, 044
Hoeher	021, 051
Hornyphon	010
Hughes Network Systems	004
Hypson	021, 003, 001, 009, 029, 031
Imperial	001
Ingersol	020
Inno Hit	009
Interbuy	003, 009
Interfunk	010, 011
Internal	021, 050
International	021, 003, 051
Intervision	021, 003, 028, 001
Irradio	010, 003, 009, 102
ITT	011, 012, 020
ITV	021, 003

Appendix

JBL	021
JMB	028, 029, 068
Joyce	001
JVC	008
Kaisui	009
Karcher	010, 021, 051
KEC	021, 003
Kendo	021, 003, 028, 051, 009, 023, 012
Kenwood	008
KLH	009
Kneissel	021, 003, 028, 029
Kodak	003
Korpel	009
Kyoto	009
Lenco	021
Leyco	009
LG	021, 003, 001, 031, 102
Lifetec	028
Lloyd's	001
Loewe	010, 144, 003
Logik	009, 012, 020
Lumatron	044, 102
Lunatron	102
Lux May	009
Luxor	009, 011, 007, 005, 023, 012
LXI	003
M Electronic	003, 001
Magnasonic	021, 044
Magnavox	010, 001
Magnin	020
Magnum	051
Manesth	010, 009, 006
Marantz	010
Mark	021, 001
Mascom	051
Mastec	051
Master's	021
Matsui	003, 028, 029, 020, 068
Mediator	010

Medion	028, 051, 029
Memorex	003, 028, 001, 011, 007, 020
Memphis	009
Metronic	010
Metz	010, 144, 003, 019, 084
MGA	005, 020
MGN Technology	020
Micormay	028
Migros	001
Minolta	004
Mitsubishi	010, 051, 008, 007, 005, 031
Motorola	007
MTC	001, 020
Multitec	003
Multitech	001, 009
Murphy	001
Myryad	010
NAD	011
Naiko	028, 051
National	019
NEC	003, 011, 008
Neckermann	010
Nesco	001, 009
Neufunk	102
Nikkai	021, 009
Nikko	003
Noblex	020
Nokia	010, 021, 011, 007, 004, 023, 012, 020
Nordmende	051, 024, 008, 025
Oceanic	010, 001, 024, 011, 007, 012
Okano	021, 028, 009, 023
Olympus	019
Onimax	051
Optimus	007, 030, 044
Orbit	009
Orion	028, 029, 068
Orson	001
Osaki	003, 001, 009

Appendix

English

Osume	009
Otto Versand	010
Pace	029
Pacific	028, 001, 051, 068
Palladium	003, 028, 009
Palsonic	001, 009
Panasonic	144, 019, 084
Pathe Cinema	005
Penney	003, 004, 020
Pentax	004
Perdio	001
Philco	009
Philips	010, 044
Phoenix	021
Phonola	010
Pilot	003
Pioneer	010, 008, 004
Portland	021, 050
Prinz	001
Profitronic	010, 020
Proline	021, 001, 051, 024, 025
Proscio	021
Prosonic	021
Protech	010, 009
ProVision	021
Pye	010
Quasar	021
Quelle	010
Radialva	010, 003, 009, 007
Radiola	010
Radionette	003, 102
RadioShack	003, 001
Radix	003
Randex	003
RCA	024, 007, 004, 020
Realistic	003, 001, 011, 007
Reoc	028
RFT	009
Roadstar	010, 021, 003, 009, 020, 068

Royal	009
Saba	021, 024, 025
Saisho	028
Salora	011, 005, 012
Samsung	006, 030, 020, 068
Sanky	007
Sansei	007
Sansui	001, 009, 008, 012
Sanyo	011, 008, 007, 020
Saville	021, 029, 020
SBR	010
ScanSonic	020
Schaub Lorenz	028, 001, 011, 023, 012
Schneider	010, 021, 003, 028, 001, 051, 009, 029, 004, 020, 102
Scott	005, 044
Sears	003, 001, 011, 004
Seaway	021
SEG	010, 021, 050, 051, 009, 020, 044
SEI	010
Sei-Sinudyne	010
Seleco	003
Semp	006
Sentra	009
Setron	009
Sharp	007, 040, 102
Shintom	009, 011
Shivaki	003
Shogun	020
Siemens	010, 003, 024, 011
Siera	010
Silva	003
Silva Schneider	102
Silver	021
SilverCrest	051
Singer	009, 006
Sinudyne	010, 029
Smaragd	028
Sonneclair	009

Appendix

Sonolor	007
Sontec	021, 003
Sony	001, 002, 012, 095, 112
Soundwave	003, 028
Ssangyong	009
Standard	021
Stern	021
Sunkai	021, 028
Sunstar	011
Suntronic	011
Sunwood	009
Supra	003
Sylvania	010, 001, 005
Symphonic	001, 044
Tandberg	021
Tandy	001, 011
Tashiko	010, 003, 001, 007, 020
Tatung	010, 028, 001, 029, 007, 005
Tchibo	028
TCM	028
Teac	003, 001, 051
Tec	009
Tech Line	009
Technics	010, 019
TechniSat	028
Technosonic	029
Teknika	003, 001
Telefunken	021, 024, 025
Telerent	019
Teletech	021, 001, 009
Tenosal	009
Tensai	021, 003, 001, 009
Tevion	028, 051
Texet	021
Thomas	001
Thomson	021, 024, 008, 025
Thorn	003, 011
TMK	020
Tokai	003, 009, 011

Topline	028
Toshiba	010, 029, 006, 005, 030, 068
Totevision	003, 020
Towada	009
Tradex	010
Uher	020
Ultravox	021
Unitech	020
United	028, 068
Universum	010, 003, 028, 001, 011, 012, 020, 102
Vector	006
Victor	008
Video Concepts	006
Video Technic	001
Videomagic	003
Videosonic	020
Villain	001
Wards	010, 001, 009, 006, 007, 004, 020
Watson	010, 051, 029
Weltblick	003
Wharfedale	044
White Westinghouse	021, 009
World	028
XR-1000	001, 009
Yamishi	021, 009
Yokan	009
Yoko	003, 009, 020
Zenith	050, 001
ZX	028, 029
TV/VCR Combo	
Aiwa	001, 029, 068, 102
Alba	029
Amstrad	001
Beko	011
Bestar	021
Blue Sky	021, 029, 068
Bush	029, 068

Appendix

English

Citizen	021	Portland	050
Colt	009	Radiola	010
Daewoo	021, 050	RCA	007, 020
Dantax	029, 068	Saba	024
Emerson	021, 050	Samsung	030, 020, 068
Ferguson	021, 001, 025, 068	Sansui	001
Fidelity	001	Sanyo	020
Firstline	021	Saville	029
Funai	001	Schneider	010, 001
GE	007, 020	Sears	003, 001
GoldStar	003, 031	SEG	050
Goodmans	021, 050, 029, 068	Sharp	007
Grandin	021, 068	Siemens	010
Grundig	010, 029, 068	Sinudyne	029
Hanimex	029	Sony	001, 002, 112
Harley Davidson	001	Sylvania	010
Hinari	029	Symphonic	001
Hitachi	001	Tatung	029
Hypson	003	Teac	001
Internal	021, 050	Technics	010
JBL	021	Technosonic	029
JMB	029	Telefunken	021
Kneissel	021, 029	Thomas	001
LG	003, 031	Thomson	021, 025
Lloyd's	001	Toshiba	029, 030, 068
Magnasonic	021, 044	United	068
Magnavox	010, 001	White Westinghouse	021
Magnin	020	Zenith	011
Matsui	029, 068		
Medion	029		
Memorex	003		
MGA	020		
Mitsubishi	010, 007		
Orion	029, 068		
Pace	029		
Pacific	068		
Penney	003, 020		
Philips	010		

Appendix

5. Audio & AUX Code List

Brand	Code
Amplifier	
Acoustic Solutions	078, 082, 084, 094
Cambridge Audio	106
Curtis Mathes	014
Denon	012
Durabrand	089, 090
Goodmans	093
Hitachi	089
JBL	042
Logitech	074
Magnat	042
Magnum	094
Mustek	093
Optimus	014, 029
Pacific	094
Pioneer	014, 029
RCA	014
Sven	090
Tevion	094
Trice	090
upXus	078
Vieta	042
Yamaha	016, 030
Accessory	
Apple	038
Sony	008
Yamaha	121, 122
Receiver	
Acoustic Solutions	087
AEG	071, 072
AFK	071
Aiwa	005, 073
Akai	004, 021, 072, 087
Alba	087, 088
All-Tel	072
Amstrad	024, 072
Anam	021

Arcam	044
ASCOMTEC	071
Audiolab	043
Audiosonic	071
Audiotronic	043
Bang & Olufsen	028
Basic Line	088
Belson	071
Binatone	071
Blue Sky	072, 087
Bose	046, 099
Bush	027
Cambridge Audio	080, 101
Cat	071
CCE	065
Centrum	045, 071
Clatronic	027, 071
Cosmotron	027
Daewoo	076
Dantax	018, 072
Denon	067, 025, 036, 075
Denver	071
DiK	027
Dual	045, 072
eBench	024, 027
Elta	024, 027, 072
EuroLine	098
Fine Arts	043
Firstline	027
Garrard	013, 018
Genexxa	010
Global Sphere	098
Goodmans	021, 024, 027, 071, 072
Grundig	043, 013, 027, 035, 087
Grunkel	024, 072
Hanseatic	072
Harman/Kardon	043, 056, 003, 011, 057, 060
Harwood	024

HCM	072
HE	071
Hitachi	088
Hitech	024
Hiteker	071
Home Tech Industries	071
Hyundai	087
Inkel	020
Intersound	024
JBL	056, 057
JVC	001, 019, 068
Kenwood	033, 061, 091, 010
Kioto	027
Kompernass	027
KXD	071
LG	054, 086, 125
Lifetec	027
LXI	024
Magnat	071
Magnavox	043, 035
Marantz	043, 049, 031, 035, 053
Matsui	024, 027
MBO	065
Medion	027, 087
MEI	072
Metz	088
Micromega	043
Microstar	027
MTLogic	087
Musicmagic	035
Mustek	065
Mx Onda	024, 027
Myryad	043
NAD	015, 021
Nexius	072
Nikkai	071
Nikkei	024
Norcent	071
NTDE Geniesom	024

Onkyo	006, 063, 114
Optimus	032, 010, 024
Orient Power	024
Orion	018
Palladium	027, 045, 054, 072, 086
Panasonic	109, 085, 058, 059, 062, 110, 111, 113, 128
Paramount Pictures	045
PCCW	128
Philips	043, 049, 031, 035, 048, 053, 117
Phonotrend	020
Pioneer	052, 032, 010, 039, 081, 097
PJ	071
Polk Audio	053
Prima Electronic	027
Proline	027, 072
ProVision	071
QONIX	072, 087
Radionette	054, 100
Recco	027
Redstar	071
Revox	007, 010, 035
Roadstar	027
Rotel	026
Samsung	013, 055, 119, 123, 083
Sansui	021, 035, 098
Sanyo	024
Schneider	003, 024, 045, 072
Scott	071
SEG	088
Sharp	010, 022, 070, 100
Sherwood	020, 022
Siemens	021
Silva Schneider	027, 072, 086
SilverCrest	087
Sony	040, 034, 047, 103, 107, 037, 066, 077, 079, 096, 108, 116, 118, 124
Soundwave	021
Stereophonics	032
Sumida	024

Appendix

Sunfire	061
T+A	050, 105
TAG McLaren	043
Tandberg	088
Targa	054
TCM	027
Teac	018, 021
Technics	109, 085, 058, 059, 011, 110
Techwood	088
Tedelelex	098
Tevion	071
Thorens	043
Thorn	024
Tokai	072
Toshiba	092

United	072, 098
Universum	013, 021, 024, 027, 045, 072, 076, 095
Venturer	027, 072
Vestel	088
Victor	001
Waitec	065
Watson	027
Wellfund	024
Welltech	027
Wharfedale	072
Xenius	072
Yamaha	009, 002, 010, 017, 023, 041, 051, 064, 069, 112, 115, 120
Yukai	065
Zenith	024

MDB1.3

OPEN SOURCE SOFTWARE NOTICE

HUMAX products use certain open source operating system software distributed pursuant to GNU GENERAL PUBLIC LICENSE Version 2 and GNU LESSER GENERAL LICENSE Version 2.1 each as defined and published by the Free Software Foundation, Inc.

The following GPL and LGPL software source codes used in this product can be provided. Please contact us at gnu@humaxdigital.com.

GPL Software

linux
busybox
avinfo
ntpclient

LGPL Software

uClibc
libexif
id3lib

FreeType License (FTL) Software

freetype

Portions of this software are copyright © <2007> The FreeType Project (www.freetype.org).
All rights reserved.

Appendix

Use, modification and redistribution of the Open Source Software is governed by the terms and conditions of the applicable Open Source License. The GNU General Public License (GPL) v2 is shown below.

The GNU General Public License (GPL)

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software—to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things. To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".
Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.
1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.
You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.
2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:
 - a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.
 - b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.
 - c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program,

and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:
 - a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
 - b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
 - c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.
5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.
6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.
7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.
9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns. Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.
10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software

Appendix

Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.
12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

One line to give the program's name and a brief idea of what it does.

Copyright (C) yyyy name of author

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'. This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program `Gnomovision' (which makes passes at compilers) written by James Hacker.

signature of Ty Coon, 1 April 1989

Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.

GNU Lesser General Public License (LGPL)

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc. 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure

that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".
A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.
The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification")
"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.
Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

Appendix

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.
You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.
2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:
 - a) The modified work must itself be a software library.
 - b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
 - c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
 - d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.
Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.
This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.
You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will

not necessarily be able to recompile the application to use the modified definitions.)

- b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.
- c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

- 7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:
 - a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.
 - b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.
- 8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.
- 9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.
- 10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.
- 11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

- 12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.
- 13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns. Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.
- 14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

Appendix

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.
16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

one line to give the library's name and an idea of what it does.> Copyright (C) year name of author

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library 'Frob' (a library for tweaking knobs) written by James Random Hacker.

signature of Ty Coon, 1 April 1990

Ty Coon, President of Vice