AwoX

mediaCTRL Center

Version 1.5

User's manual

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Dear Customer,

Thanks for purchasing mediaCTRL Center software suite from AwoX. We did our best to provide you with a new enriching digital media experience along with a new way to have your home appliances connected.

Please take a few minutes to register online or to fill in and return the included registration card, if applicable. This allows us to give you the best support.

Please visit www.awox.com for product updates, technical support, and general information. You can also contact us at support@awox.com for questions not answered online.

Welcome to the new era of connected home entertainment !

The AwoX Team – May, 2004

CHAPTER 1 *Overview*

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mediaCTRL Center is a complete, intuitive, ready-to-use software solution that allows you to take complete control over your PC-stored media files through the use of a mediaCTRL Center-ready Universal Remote Control.

When the PC hardware allows it (which is the case for most PCs today), mediaCTRL Center does not disturb normal PC usage. mediaCTRL Center can be used to watch a movie in the living room while another user browses the Internet in front of the PC.

mediaCTRL Center is able to handle many kinds of media files (videos, pictures, music, and so on). The software automatically indexes your hard drive digital content for your convenience. Your PC is now the world biggest hidden jukebox with its contents ready to be accessed in front of your TV!

The software is flexible enough to accomodate various hardware configurations. Depending on your particular requirements and hardware capabilities, the system can be configured from the simplest (a window on your PC display) to the most sophisticated solution (fully wireless solution for use with your home AV system).

CHAPTER 2   *Setup*

The CDROM may include additional software not part of original AwoX software distribution. These packages are provided for your convenience only. AwoX does not provide any guarantee or support of any kind regarding those packages; for any information, please refer to each package documentation or vendor support services.

The software installation is the same for all hardware configurations; this document is then split into two parts: one takes care of the software installation and one takes care of the various way to get the best from your PC capabilities. For detailed instructions about connecting your PC to your home AV system, please refer to "Hardware Setup Details" on page 19.

2.1   USB radio receiver installation

Plug the USB radio dongle in an available USB socket. The system should recognize and install it automatically: let the process go to its end. The typical operating range of the radio link is 100 feet in an open area and 30 feet within walls. Your mileage may vary depending on your particular home configuration. If the computer tells you that it has to be rebooted to use the device, please do so now.

2.2   Software Configuration

2.2.1   Software Installation

The included CDROM contains all the software needed for the following Microsoft Platforms:

- Windows 2000
- Windows XP

A hardware-accelerated video card is required to get the best from mediaCTRL Center. The software will recognize and use the accelerated features available on your video card. The installation procedure will check your video card capabilities.

We recommend that you make sure your PC is up-to-date by running Windows Update before continuing. In some cases, mediaCTRL Center cannot be used if you skip this step. To do this, please visit windowsupdate.microsoft.com and get the latest updates for your computer operating system. The most important thing is to make sure you have the latest drivers for your video card; the latest DirectX 9 version needed by mediaCTRL Center will be installed from the mediaCTRL Center installation CDROM. Also, for output quality reasons, we recommend setting your video card color depth to 32 bits per pixel.

mediaCTRL Center uses the installed audio/video codecs installed on your PC. mediaCTRL Center will handle the media files for which a suitable codec has been installed; a new format may require installing the appropriate codec. The general rule is that mediaCTRL Center will be able to render any file that can be opened with a mouse click. Installing Windows Media Player brings common codecs to your computer.

2.2.2   PC Installation

Before installing, make sure you have saved all documents and closed applications to avoid loosing work. If you encounter problems during installation, please refer to "Troubleshooting Software". Please perform the installation steps using an user account with "Administrator" privileges.

The CDROM included in this package includes an InstallShield wizard to help you installing the server and renderer services. Insert the CDROM into your drive. If the installation does not start automatically after one minute, open a Windows Explorer Window to the CDROM drive, change to the "Desktop" directory and double-click on "setup.exe". The installer window appears:
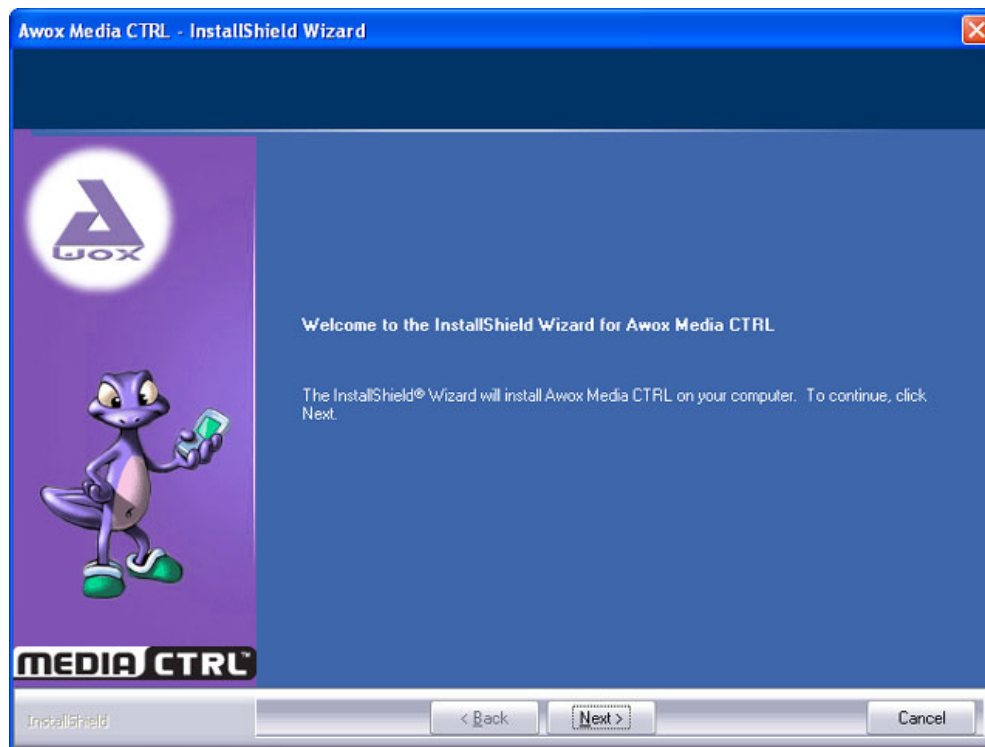
Fig. 1. PC installer welcome screen

Click "Next" and follow the instructions on screen to install the software on your PC.

In most cases, the standard installation will work for you. Custom setup allows you to change installation parameters. Reboot the machine if asked to do so.

The installer will require your product serial number and will let you choose whether you want to perform an immediate online registration. We strongly recommend that you do not skip this step; the information we gather from you will be useful if you have questions to ask and will allow us to tell you about new products and software updates.

At the end of the installation, the system starts automatically: the AwoX Media Settings application appears (this dialog is always available by left-clicking on the AwoX Icon on the Taskbar, see Figure 2). Before being able to use mediaCTRL Center, you must tell it which media folders are interesting for you. Note that some folders might have already been shared if you required that during the installation process.
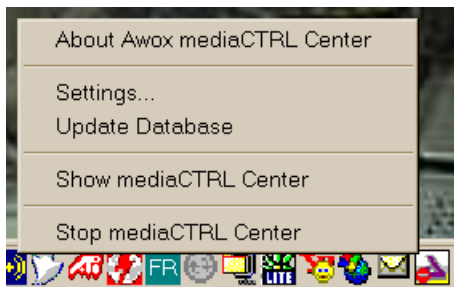
Fig. 2. mediaCTRL Center Settings

Note that the AwoX icon is dynamic, e.g. its appearance changes according to the state of the USB receiver. In normal operation, the icon should have a blinking part each time the receiver gets data from the remote control; on this picture, the one-way sign shows that the receiver is not connected. A "wave" effect is displayed when the database is updated (see below).

Select the "Settings" option. The dialog that appears allows you to select which folders will be parsed and indexed (Figure 3).
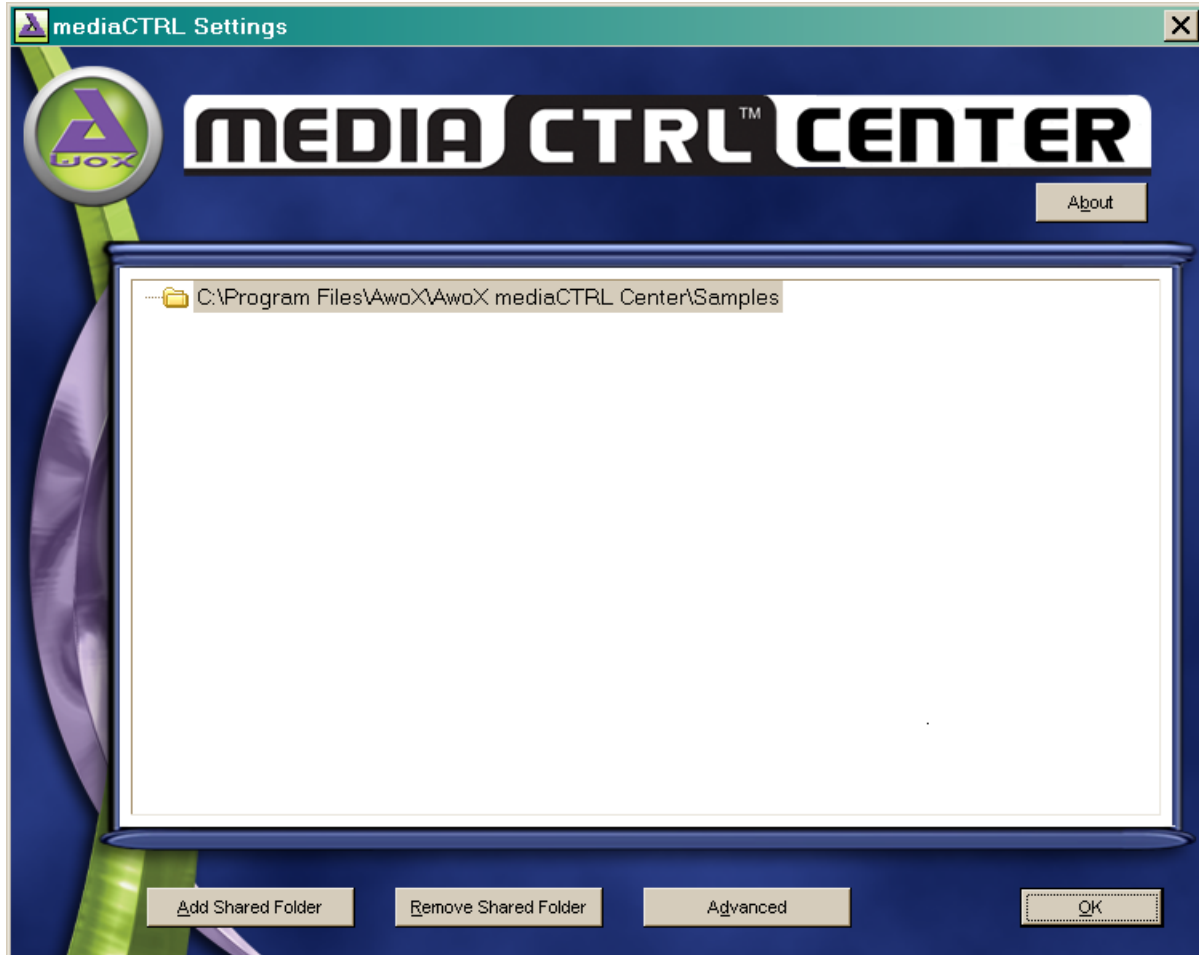
Fig. 3. Setting up media folders

To add folders into the browse list, drag and drop them over the window or press the "Add shared folder" button and select from the tree. Folder contents are recorded into the media database when they are added. Note that this is a "tree" view, which means multiple selection is NOT allowed (only one folder can be managed at a time).

To remove a folder from the list, select it and press the "Delete" key or the "Remove" button. Press OK to save your changes and close the settings window.

2.2.3 Advanced settings

To fine-tune your application, press on the "Advanced" button (see Figure 4):
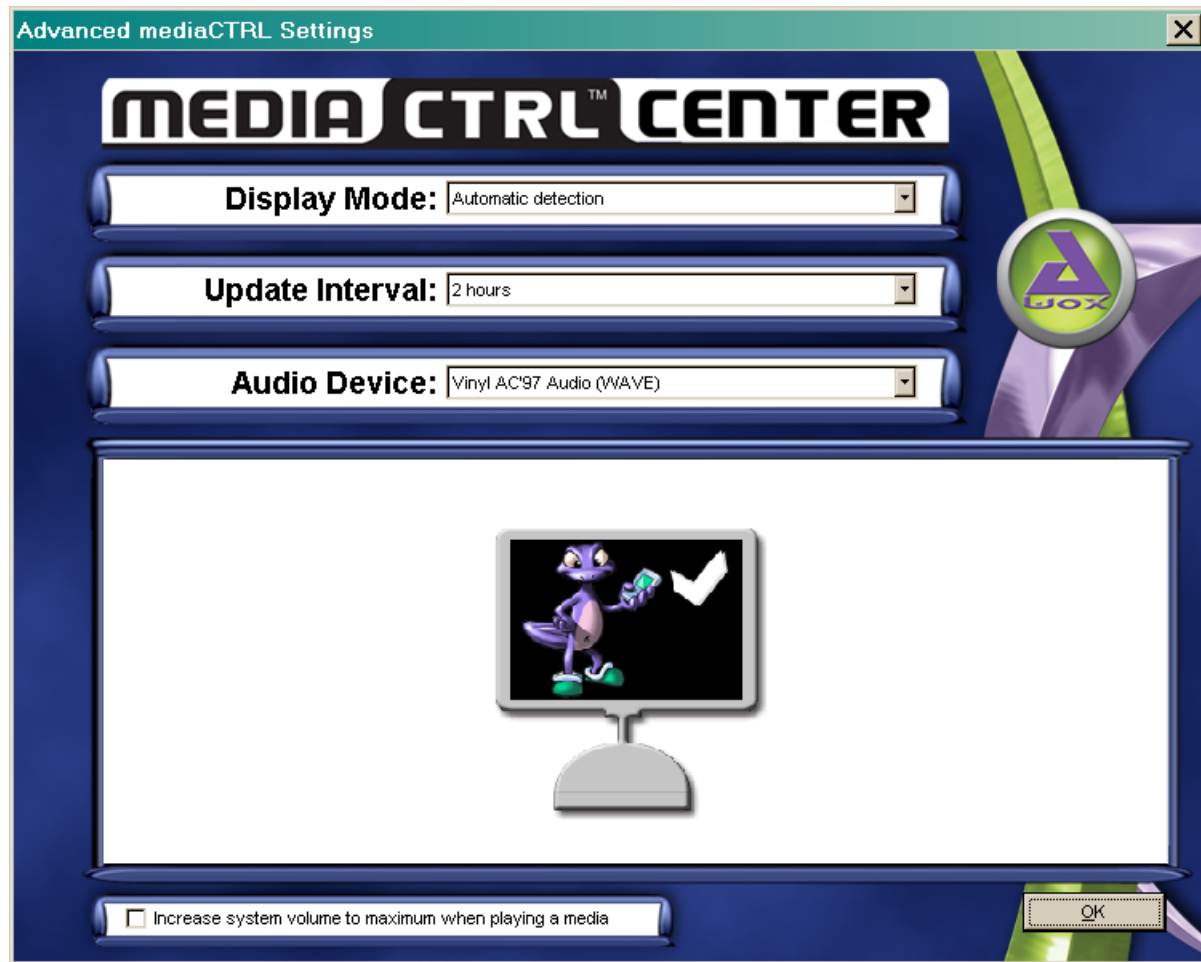
Fig. 4. Advanced settings view

mediaCTRL Center will try to detect the computer graphics adapter capabilities and adjust its settings accordingly. If the results are not correct, you may try one of the other options available especially if your computer is an old model.

Folder contents are updated automatically at a rate controlled by the "Update Interval" drop-down box. Changing this setting might be very useful if your folder contents change often and you want the application to always be up-to-date.

If for some reason you want your content database to be updated right now, right click on the system tray AwoX icon and select "Update Database".

You can select the sound card to use if your computer has more than one.

You can also click in one of the available screens (the greyed ones do not provide the features needed for media rendering). In this example, the computer has only one screen that will be used for mediaCTRL Center; whenever possible, the program will provide information about the kind of display (e.g. regular monitor, TV set...).

The system volume can be set to a maximum when playing: this ensures the best sound quality when using a TV set. You can still control the volume with the remote control, of course.

2.2.4   Additional Installations

The CDROM may include additional software packages that are not part of original AwoX software distribution. These packages are provided for your convenience only. AwoX does not provide any guarantee or support of any kind regarding those packages; for any information, please refer to each package documentation or vendor support services.

2.2.5   Uninstalling software

To uninstall mediaCTRL Center, click "Start Menu", select "Control Panel", "Add/ Remove Programs". Locate "AwoX mediaCTRL Center" and click on "Change/ Remove". The installer wizard starts; follow the instructions to remove the software from your PC. The machine may need to be rebooted in order to complete the uninstall process: if the installer asks for rebooting, please do so.

2.2.6   Verifying Setup

AwoX mediaCTRL Center should now run, ready to process your media requests. There should be a new AwoX icon in your taskbar.

If your configuration has only one video output, mediaCTRL Center will start "hidden" (the only visible part will be the small AwoX icon in the taskbar). It will appear automatically in full-screen mode when media playing is requested and go back to the "hidden" state when the media ends or is stopped. Double-clicking while mediaCTRL Center is in full-screen mode will make it go back to its "hidden" state (the only way to have it appear again without requesting a new media playing session is to use the icon "Show mediaCTRL Center" pop-up menu).

If your configuration includes a properly configured secondary video output, mediaCTRL Center will detect it and use it automatically, starting in full-screen mode. Double-clicking in mediaCTRL Center toggles rendering window status. In mono-screen configuration, the display is managed automatically when the remote control is used; you may select the "Show/Hide" option of the system tray menu to force display of mediaCTRL Center.

In all cases, mediaCTRL Center output displays the "AwoX living room" when started, waiting for requests (see Figure 5).

Fig. 5. mediaCTRL Center living room

You're now ready to use mediaCTRL Center.

2.3   Video Hardware Configuration

The simplest possible setup for mediaCTRL Center is as follows: your PC screen and speakers are used to display media output. The system is usable "as is" but it is much more interesting to use a dedicated video output for mediaCTRL Center. This feature is called "Multiple Monitors": the additional "monitors" can be either regular CRT or LCD PC monitors but the term also applies to TVs if your video card has a TV output.

To use an additional monitor or TV output, you must configure your PC to have it recognize the additional hardware. This is required independantly of the way the additional output is connected to your PC.

Note that some configurations requires the additional hardware to be plugged and the machine power-cycled (that is, power off - power on) in order to detect it properly. This is especially the case for composite TV outputs.

2.3.1 Multiple Monitors Output Configuration

mediaCTRL Center will detect and use any secondary output (either monitor or TV) it can detect. But you still may need to configure your multiple output setup by hand, since this depends on your video card brand and options. Remember: multiple output options may appear only if the hardware was connected when the machine was powered on. In most cases, your machine should recognize and configure the additional video outputs automatically.

For your reference, the following shows how to enable a secondary output on an ATI video card on a Windows 2000 system. Most manufacturers follow the same kind of convention so translating the instructions to your particular setup should not be difficult. If you have no success configuring this part, please refer to the instructions that came with the video card and / or drivers. First, left-click on your Desktop and select "Properties". Select the "Settings" tab (see Figure 6).
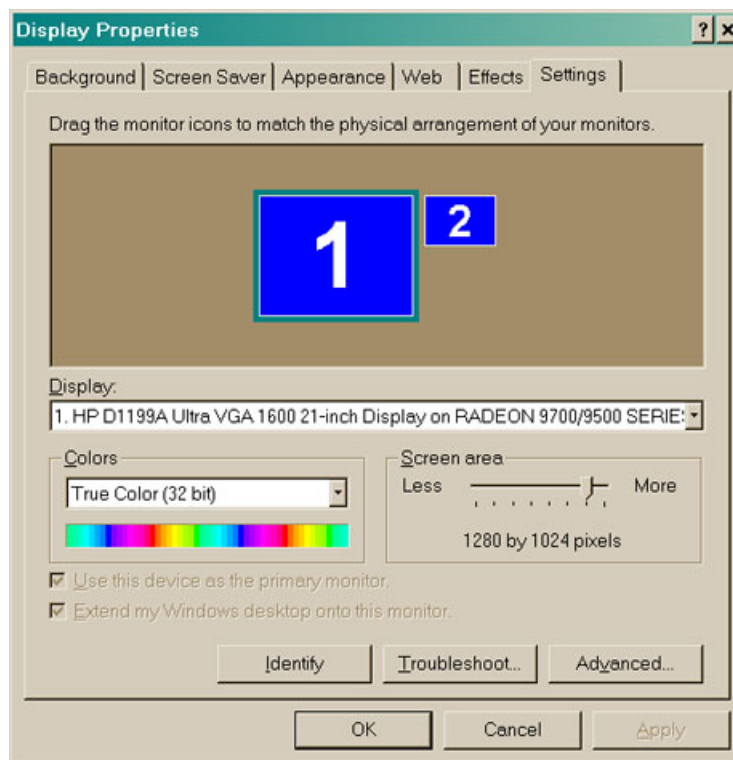
Fig. 6. "Display/Settings" panel

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Click on the "Advanced…" button.
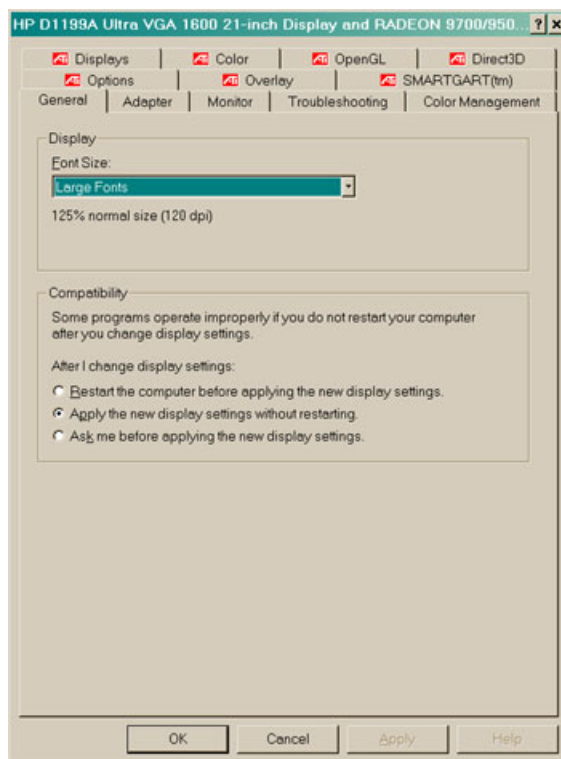
Fig. 7. Advanced Properties

Select the "Displays" tab.
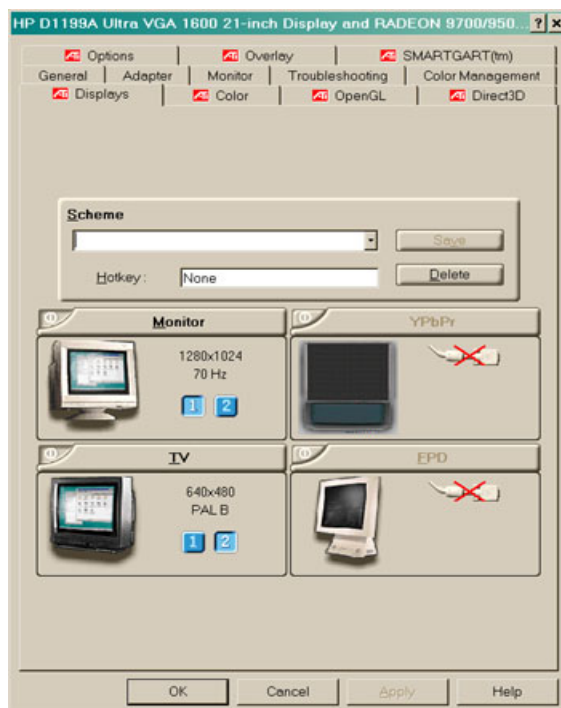
Fig. 8. The "Displays" tab

Make sure the TV / Secondary output is "powered on". Make other relevant changes (video format for instance); these settings can be accessed by clicking in the "TV" bar. Close the window. The "Settings" tab should now look like this when you click in the window numbered "2":
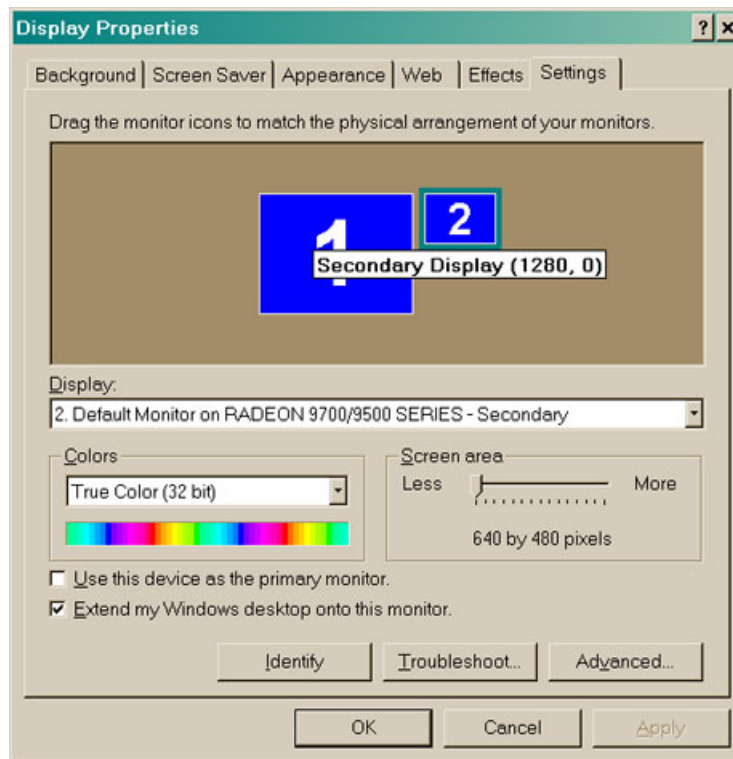
Fig. 9. Video card with secondary output configured

Make sure the "Extend my Windows desktop…" checkbox on the bottom left is checked. In fact, this configures your desktop so that it is spanned over the two displays. A normal user will use the "regular" (left) part while AwoX Services will make use of the "additional" (right) part.

Close the window. Try dragging a window to the edge of your normal display: you should see a part of it appearing on the secondary display. If this is the case, your setup is OK.

2.3.2 Having mediaCTRL Center recognize your new hardware

Reboot the machine. mediaCTRL Center should detect the secondary output automatically and display the banner on it. If this is not the case, please refer to "Troubleshooting".

Note that some so-called "secondary outputs" are in fact duplicate outputs. In this case, the picture on the secondary output is the exact copy of the one on the primary display and there is no "Extend my Desktop" checkbox. To use mediaCTRL Center on this kind of hardware, just maximize mediaCTRL Center (of course, the PC cannot be used anymore for other tasks).

2.3.3 Remember your AV input !

Once the setup is done, write down which of the TV AV inputs has been assigned to mediaCTRL Center output. This is needed to select the right input when you want to use mediaCTRL Center.

Note that TV volume settings override those from mediaCTRL Center. mediaCTRL Center cannot increase the volume more than what the TV allows!

CHAPTER 3   *Using mediaCTRL Center*

3.1   Getting Started with your new remote control

The AwoX mediaCTRL Center remote control is an universal remote control that has a dedicated "device" for mediaCTRL Center. If your AV devices are included in the pre-programmed infrared devices, the very same remote control can be used for both mediaCTRL Center and AV devices control. Refer to the universal remote control documentation for more information.

mediaCTRL Center functions can be accessed by pressing the AwoX button (1). Once this button has been pressed, all subsequent actions on the remote control will be directed towards mediaCTRL Center. Pressing one of the other device buttons will direct all subsequent actions to the said device (mediaCTRL Center will ignore buttons depressed when in Device Control mode).
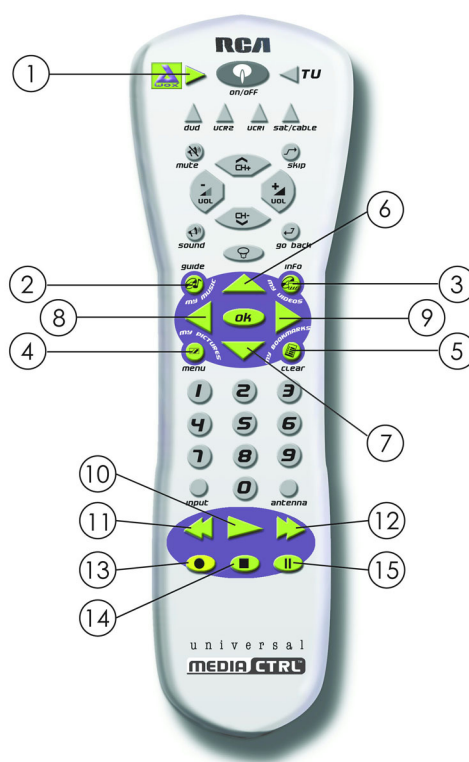
The proper AV input must be selected before using mediaCTRL Center. Use either the original TV remote control or the universal features of the mediaCTRL Center remote control to instruct your TV set to switch to the right input. This is exactly what you would do to select the input used by a DVD player or game console.

3.2   mediaCTRL Center pads

The mediaCTRL Center remote control has mauve pads with green keys (2-9 and 10-15). These buttons have special meanings when the mediaCTRL Center functions are used. The top pad (2-9) is dedicated to navigation and basic playback. The bottom one (10-15) is dedicated to media playback control.

The remaining arrow pad (on top) and the "Mute" key also work with mediaCTRL Center for setting the volume.

3.3   *mediaCTRL Center basics*

There are two categories of actions when using mediaCTRL Center :

- Navigation (going through media categories and lists)
- Playback (controlling media rendering)

Navigation is performed through the Navigation pad (2-9). Once a given media has been selected for rendering, the Control pad (10-15) gives control over media playback.

3.3.1   Understanding navigation

Fig. 10. AwoX Living Room (Ready to enjoy music)

The arrow buttons (6-9) and the OK button are used for navigation within the media that have been made known to mediaCTRL Center. The right arrow allows you to go down one category or folder (and so does the OK key when the highlighted item is a folder), while the left arrow brings you one level back.

The AwoX living room (Figure 10) shows you what kind of media are available for selection. You can either use the navigation keys and press OK when the desired media is selected, or use the shortcut keys (2-3-4-5) anywhere to go directly to the desired media category.

The up and down buttons allow you to highlight an item on the list, from which you can continue navigating (if it is not a media) or start enjoying your digital media.

The "Internet" category is special and is treated in a separate paragraph.
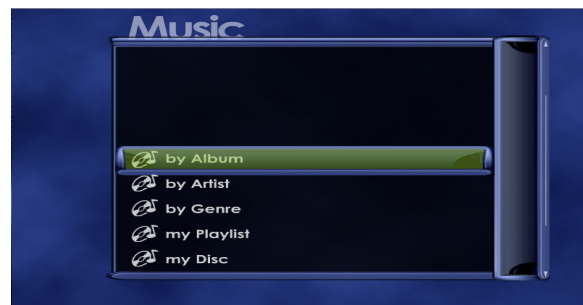
Fig. 11. Music selection screen

3.3.2   Same content, different presentations

The media folders you have selected for mediaCTRL Center contain digital media files. mediaCTRL Center sorts and indexes those files and gives you several ways to access them.

For your convenience, there is always an entry that mimics the file structure of your hard drive: you know it well, because you've created it. "My Music", for instance, is the hard drive content entry that shows your music files the way they are stored.

The software also presents your media files by sorting them into relevant groups, like Album, Artist or Genre. This feature provides a different media selection experience: the same content is selected through media-oriented criteria instead of rigid harddrive structure. Note that these categories will contain items only if the files you added have valid "tags", i.e. relevant information can be found inside them.

3.3.3   File preview and information

Whenever possible, the software will provide file previews to allow easy recognition of them. Reduced photos or randomly extracted images from the video files are displayed near to them; folders or category containers have a recognizable icon near them, and a generic icon is used when no relevant information can be displayed.

Fig. 12. Typical previews

When a media is highlighted, pressing the "Info" button (13) will display relevant information about it.

3.4   Playing media (Music, Pictures, and Video)

3.4.1   Playing a single media

By using any of the abovementioned means, you've now reached the media file you wanted to enjoy. You're now ready to control its playback: this is achieved with the

playback control buttons (10,11,12,14,15). For music and video, the play (10), pause (15), stop (14), reverse (11) and forward (12) buttons work as on any other appliance (DVD or VCR). For Pictures, only play and stop buttons are active.

Note that for easy access to a single media, pressing either OK or Right arrow buttons are equivalent to pressing the Play button as far as a media is highlighted. Also, the Left arrow button is equivalent to the Stop button when a media is playing.

3.4.2 Playing multiple media (automatic playlist)

When a container is highlighted, you can either press OK or Right arrow to enter it and continue navigating inside. Pressing the "Play" button when a container is highlighted will play its content, automatically chaining media found one level deeper automatically. Such locations are marked with a special "playlist" icon on the left.

This feature is very useful to listen to a whole music album, or to display a slideshow from a bunch of files downloaded from a digital camera.

3.4.3 The Internet Bookmarks category

When your shared folders contain Internet shortcuts, they will be displayed under this category. Selecting one of them will bring the Internet page it points to. You can use the remote control for simple browsing by moving the link marker (the square green box) over the desired link, then pressing OK. Page scroll automatically occurs when needed. Pressing STOP brings you back to the navigation interface.

This feature is not intended for heavy browsing in front of the TV set. The most interesting way to use it is too bookmark either media pages (such as Internet radios or live TV channels) or information pages such as CNN.com. mediaCTRL Center gives you instant access to the headline news to get a quick picture of what's happening and gives you a simple way to go one step further.

APPENDIX 1 *Hardware Setup Details*
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There is a number of ways to connect your PC and your AV components. If you ordered the hardware bundle, all the cables needed for the "Wireless Connection" are included for RCA and SCART plugs. Visual information is given in the Quick Start guide; please refer to it while reading this section.

Most PCs include audio output but TV connection is sometimes an option. If your PC does not have TV output, mediaCTRL Center can still be used. You may also contact your PC manufacturer or local delaer for more information about upgrading the machine with a secondary output.

In most cases, the "Line Out" output on your PC will be a 3.5 mm stereo female jack plug. Follow the instructions from your PC manufacturer to locate the "Line Out" plug.

Depending on your hardware, the "TV output" output on your PC can be:

- A female RCA jack (often yellow). This is quite uncommon, though.
- An S-Video output (4-pin). This output can be used as composite RCA output (the "S-Video to Composite" adapter comes with your video card or computer)
- A mixed output (7-pin, S-Video compatible). This output can either be used as S-Video output (plugs are physically compatible) or composite RCA output (the adapter is nonstandard and comes with your video card or computer).

Follow the instructions from your PC manufacturer to locate the "TV out" plug.

1.1   Direct connection

This configuration assumes that your PC and AV system will be connected through wires, which mean they are probably close to each other (for instance, you have a lap-top PC – or your PC is already in your living room).

The image will be displayed on the TV but you can select whether to output sound on your TV or stereo.

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The "Line In" audio inputs are mostly RCA female jacks (or are part of the SCART adaptor if your TV has a SCART input).

The video input on your TV can be composite (yellow RCA) or S-Video. The connection to choose depends on the PC end and the TV end; if possible, select S-Video (better quality). mediaCTRL Center does not rely on any particular connection pattern.

Make your connections. Configure your appliances to select the right input channels. You can now start installing software.

1.2   Wireless connection

This option is only available if you have ordered the mediaCTRL Center + AV extender bundle.

This option gives the best experience: no wires, no appliance moves, just plug and play. The 2.4 GHz transmitters only transmit composite video and cannot accept S-Video signals directly. If you only have an S-Video output on your PC, a S-Video to composite adapter is required.

1. Use the included cable to link your PC "Line Out" to the transmitter audio inputs.
2. As stated above, a video plug adapter might be necessary. Plug the male yellow RCA jack into the "Video In" plug of the transmitter.
3. The receiver has female RCA jacks for audio and video outputs. Use the triple RCA-to-RCA cable to connect these outputs to the corresponding inputs on your TV and/or amplifier, as you would do with a direct connection.
4. Plug the power transformers into the emitter and the receiver. Make sure you have selected the same channel on the transmitter and the receiver (you can switch channels by using the pushbutton on the front of the devices).
5. Configure your appliances to select the right input channels. You can now start installing software.

APPENDIX 2   *Troubleshooting*

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2.1   General Considerations

1. Always make sure to troubleshoot one thing at a time.

2. If you have any doubts with a wireless connection, try to make a direct connection first.

3. If you can see the AwoX icon in the PC taskbar but get no results, the software is running correctly but there is an issue with the connections and / or setup.

4. If your secondary output is not detected, make sure your connections were OK before booting the machine. TV output availability (from the system's point of view) may depend on the connections actually made at boot time.

5. If you have problems with colors (output is black and white or blurred) or image output quality or position, the reason is probably with the video standard used for TV output. Make sure your video output standard (PAL, SECAM, NTSC, and variants) is compatible with your TV.

6. If you see the same picture on your regular screen and secondary output, you've forgotten to check the "Extend" checkbox for the secondary monitor or your hardware features "duplicate outputs" only. Also try to update your video drivers to the latest version.

7. Make sure that your video card supports DirectX 9. All recent cards are OK but some old ones might not have support for this; check with the hardware manufacturer for information and / or updates.

2.2   Troubleshooting a "Direct Connection" configuration

Check the following items:

1. Did you locate your plugs correctly?

2. Did you select the right inputs on your appliances?

3. Are you sure your secondary output is enabled?

2.3   Troubleshooting a "Wireless Connection" configuration

If possible, try a direct connection configuration first to know whether the problem comes from the PC side or analog A/V signal transmission side. Also, you can try connecting a proven A/V source (such as a camcorder or digital camera) to the transmitter to isolate the A/V signal transmission side.

The transmitters are powerful enough to work correctly in most households environments. Some particular building techniques can cause signal weakness or perturbation, such as massive concrete. If you encounter this issue, try moving the transmitters around, changing locations and antenna orientations. Each situation is particular.

Wi-Fi and A/V transmitters share the same 2.4 GHz frequency band. This is not an issue since both can be instructed to use different channels within this band. If you suspect issues because of interferences between the two systems (and this can happen), try changing the channels on the A/V transmitters by using the front pushbutton. Other devices such as cordless phones and microwave ovens can also cause interference because they also use the 2.4 GHz frequency band.

2.4   Troubleshooting Software

Obscure problems can appear if you use a version of Windows that has strong permission checks ("XP Pro" editions for instance). In this case, make sure the user account you're installing with has local administrators rights for the machine. Also, switching users can cause misbehaviors depending on the particular machine configuration.

If for some reason you need to stop and restart software (remember that mediaCTRL Center can always be minimized through the AwoX Icon left-click-"Hide" popup), you can do so by left-clicking on the AwoX icon and selecting the "Stop/Start" option.

NOTE FOR WINDOWS XP SP2 USERS:

mediaCTRL Center makes use of network protocols, which might be blocked by the integrated firewall. To ensure proper functionality of mediaCTRL Center, please allow it to access the network protocols by configuring the firewall settings.

APPENDIX 3   *Universal Remote Control features*
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Your mediaCTRL Center remote control can be used as a replacement for the remote controls currently in use with your equipment. Here are the available features and the way to access them.

3.1   Device Selection Buttons

VCR1/2: When programmed, tells the remote to control the VCR. This button lights up when you press a valid button in VCR mode.

TV: When programmed, tells the remote to control the TV. This button lights up when you press a valid button in TV mode.

DVD: When programmed, tells the remote to operate the DVD player. This button lights up when you press a valid button in DVD mode.

SAT/CABLE: When programmed, tells the remote to operate the cable or satellite demodulator. This button lights up when you press a valid button in those modes.

ON/OFF: Turns the component you are controlling on or off. When pressed twice within two seconds, all components that are on are turned off (this feature only works with most RCA, GE, and Proscan products). The component keys also light up, one after another, counterclockwise in a circle.

MUTE: When programmed to control a TV or audio receiver, this button reduces that component's volume to its minimum level. Press again to restore the volume.

CH + and CH -: Use to scan up and down through the channels in the current channel list. In the program guide or menu system, use the CH buttons to page up and down a screen at a time.

VOL up and down: When programmed, adjusts the audio volume of your TV or audio receiver.

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MENU: Displays the Main menu. When using the remote control to operate other components, the MENU button might also bring up that componentís menu system.

Digit Buttons (0 - 9): Tune directly to a specific channel. In the menu system, use 1-9 to select menu items, or use 0 to return to the previous menu screen.

Transport Buttons (REVERSE, PLAY, FORWARD, RECORD, STOP, PAUSE): When the remote control is programmed, these buttons control an auxiliary component, such as a VCR or DVD player (when the remote is in the correct mode). If the VCR mode is active, pressing the RECORD button begins recording while watching a program.

3.2   Programming the Remote Control

The Media Control Center remote control can be programmed to control most brands of remote controllable components. The remote is already programmed to control most components; it may need to be programmed to control some manufacturers brands.

Testing the Remote Control

To determine whether the universal remote control needs to be programmed, turn a component on, such as a VCR, point the remote at the VCR, and press the VCR button. Then press the ON OFF or CH + and CH - buttons to see if the VCR responds to the remote commands. If not, the remote needs to be programmed. There are two ways to program the remote control: Automatic Code Search or Direct Entry.

Using Automatic Code Search

The following instructions can be used to program the remote to control many of the components connected to your TV. If you want to exit the automatic code search without programming any of your components, press the CLEAR button until the component button you're trying to program turns off.

1. Turn on the component you want to control (VCR, satellite receiver, etc.)

2. Press and hold the button you want to program. While holding the component button, press and hold ON OFF until all of the component buttons (VCR1/2, TV, DVD, SAT/CABLE) flash. Then, release both buttons.

3. Point the remote at the component, press and release PLAY, then wait five seconds or until the component button you re trying to program stops flashing.

At this point the remote control is searching for the correct code to program, so keep pointing it at the component. If, after five seconds, the component you want to control does not turn off, press and release PLAY again to tell the remote to search the next set of codes. Continue pressing and releasing PLAY until the component turns off or until the all of the component buttons on the remote flash 4 times in unison. If the component has not turned off by the time all the component buttons on the remote control flash 4 times in unison, then the remote cannot control that particular component.

If the component you want to control does turn off:

1. Press and release REVERSE, then wait two seconds. Repeat this step until the component turns back on.

2. To finish, press and hold STOP until the component button you're trying to program on the remote control turns off. This saves the code to that button.

Using Direct Entry

1. Turn on the component to be programmed.

2. Look up the brand and code number(s) for the component on the code list at the end of this section.

3. On your remote control, press and hold the component button you want to program.

4. While pressing the component button, enter a code from the code list. If all of the component buttons flash 4 times in unison, then the code you've entered is not the right kind of code for that button (see above to see which buttons can be programmed to control the component you want).

5. Release the component button, point the remote at the component and then press ON/OFF to see if the component responds to the remote control commands. If it

doesn't, try pressing the component button and then ON/OFF (or other buttons on the remote) again.

6. If you get no response, repeat these steps using the next code listed for your brand, until the component responds to the remote control commands.

3.3 Operating Other Components

Once the remote has been programmed successfully, you are ready to use it to operate your components.

To operate the component:

1. Press the component button (TV, VCR1/2, DVD, SAT/CABLE) to set the remote to control the desired component.

2. Press ON/OFF to turn the component on or off.

3. Use the remote control buttons that apply to that component. The component button on your remote lights up when you press valid buttons while in that component's mode.

Note: Your remote's buttons might operate differently for other components, especially when you're using another component's menu system.

3.4 Modes of Operation

Because this universal remote can control several different components (DVD player, VCR, cable box, etc.) it uses operational modes triggered by the component buttons. For example, if you want the remote control to operate the TV, press the TV button to put the remote into TV mode. If you want the remote to operate the VCR, press the VCR button.

The button corresponding to the mode the remote is in lights up when you press any button that works in that mode. For example, if you're in TV mode and you press the

VOL+ button, the TV button lights up. This tells you that the command to increase the volume is being sent to the TV (and not the satellite receiver,for example).

3.5   Codes for North American brands

These codes are applicable for North American remote control units and equipment brands.

3.5.1   Codes applicable for TV sets

Admiral	1002	1097	1118												
Aiko	1015														
Akai	1003														
Amtron	1026														
Anam National	1004	1026	1110	1111	1112										
AOC	1005	1006	1007	1099	1100	1113									
Apex	1140	1148	1150	1161											
Audiovox	1026														
Bell & Howell	1002	1029	1045												
Benq	1172														
Broksonic	1143	1151													
Celebrity	1003														
Centurion	1009														
Citizen	1005	1007	1008	1015	1026	1045	1063	1095	1119						
Colortyme	1005	1007	1010												
Contec/Cony	1011	1012	1013	1026											
Craig	1026														
Crown	1026	1038													
CTX	1173														
Curtis Mathes	1005	1007	1014	1029	1045	1063	1095	1119	1130	1157					
Daewoo	1005	1006	1007	1015	1016	1017	1080	1095	1108						
Daytron	1005	1007	1095												
Dimensia	1130	1157													
Dumont	1005	1084													
Electroband	1003														
Electrohome	1003	1004	1005	1007	1018	1019	1020								
Emerson	1005	1007	1011	1021	1022	1023	1024	1025	1026	1027	1029	1045	1078	1095	1101
	1102	1109	1127	1131	1138										
Envision	1005	1007													
Fisher	1028	1029	1030	1045	1103	1174									
Fujitsu	1027														
Funai	1026	1027													

Brand															
GE	1000	1001	1004	1005	1007	1020	1031	1032	1054	1104	1120	1130	1132	1144	1155
	1157	1158	1159	1169											
Goldstar	1005	1006	1007	1011	1018	1033	1034	1035	1087	1088	1095	1096			
Hallmark	1005	1007													
Hisense	1141														
Hitachi	1005	1007	1011	1012	1013	1036	1037	1102	1126	1134	1135	1136	1137	1138	1166
	1175														
Infinity	1038														
Janeil	1098														
JBL	1038														
JC Penney	1005	1006	1007	1008	1012	1020	1031	1032	1034	1035	1044	1054	1062	1063	1081
	1095	1096	1104	1130	1132	1147	1157								
Jensen	1005	1007													
JVC	1011	1012	1013	1032	1037	1039	1089	1090	1105	1127	1146	1170			
Kawasho	1003	1005	1007												
Kenwood	1005	1007	1018												
Kloss Novabeam	1026	1040	1041	1098											
KTV	1026	1042	1095	1101											
LG	1006														
Loewe	1038														
Logik	1002														
Luxman	1005	1007													
LXI	1007	1029	1038	1043	1044	1045	1104	1116	1130	1132	1147	1157			
Magnavox	1005	1007	1008	1018	1038	1040	1041	1046	1047	1048	1055	1082	1083	1124	1125
	1139	1163	1167												
Majestic	1002														
Marantz	1005	1007	1036	1038	1049										
Megatron	1007	1036													
Memorex	1002	1006	1007	1029	1045										
MGA	1005	1006	1007	1018	1020	1030	1050	1051							
Mitsubishi	1005	1006	1007	1018	1020	1030	1050	1051	1052	1079	1164				
Montgomery Ward	1002														
Motorola	1004	1097													
MTC	1005	1006	1007	1063											
Multitech	1026														
NAD	1007	1043	1044	1106	1126	1147									
NEC	1004	1005	1006	1007	1010										
Nikko	1007	1015													
Onwa	1026														
Optimus	1106	1126													
Optonica	1061	1097													
Orion	1025	1109													
Panasonic	1004	1032	1038	1094	1121	1128	1152	1153	1168						
Philco	1004	1005	1006	1007	1008	1011	1018	1038	1040	1041	1046	1048			
Philips	1004	1005	1008	1011	1018	1038	1040	1041	1046	1053	1054	1055	1056	1176	
Pioneer	1005	1007	1057	1058	1059	1102	1106	1126	1138	1177					
Portland	1005	1006	1007	1015	1095										
Price Club	1063														
Prima	1142														

Prism	1032													
Proscan	1000	1001	1104	1130	1132	1144	1155	1157	1158	1159				
Proton	1005	1007	1011											
Quasar	1004	1032	1042	1060	1121	1178								
Radio Shack	1029	1045	1130	1157										
Radio Shack/Realistic	1005	1007	1011	1026	1029	1045	1061	1095	1096					
RCA	1000	1001	1004	1005	1006	1007	1018	1102	1104	1108	1130	1132	1138	1144	1155
	1157	1158	1159											
Realistic	1029	1045	1130	1157										
Runco	1084													
Sampo	1005	1007	1095	1096	1156									
Samsung	1005	1006	1007	1011	1014	1018	1062	1063	1064	1095	1096	1114	1133	1179
Sansui	1109	1149												
Sanyo	1005	1028	1029	1045	1051	1065	1066	1093	1103					
Scott	1005	1007	1011	1021	1025	1026	1027							
Sears	1005	1007	1012	1013	1018	1027	1028	1029	1030	1039	1043	1044	1045	1067	1068
	1103	1104	1107	1130	1132	1147	1157							
Sharp	1005	1007	1011	1022	1023	1061	1069	1070	1071	1077	1095	1097	1162	
Signature	1002	1072												
Sony	1003	1115	1122	1123										
Soundesign	1005	1007	1008	1026	1027									
Starlite	1026													
Supre-Macy	1098													
Sylvania	1005	1007	1008	1018	1038	1040	1041	1046	1047	1048	1055	1073	1092	1154	1180
Symphonic	1024	1026	1107											
Tandy	1097													
Tatung	1004													
Technics	1032													
Techwood	1005	1007	1032											
Teknika	1002	1005	1006	1007	1008	1011	1012	1013	1015	1026	1027	1047	1063	1094	1095
	1121	1128												
Telecaption	1074													
Toshiba	1029	1043	1044	1045	1063	1067	1074	1075	1091	1092	1145	1147	1160	
Totevision	1095													
Universal	1031	1054												
Wards	1002	1005	1006	1007	1018	1021	1024	1027	1031	1038	1040	1041	1046	1047	1054
	1055	1061	1076	1130	1157									
Yamaha	1005	1006	1007	1018										
Zenith	1002	1005	1084	1085	1086	1117	1171							

3.5.2 Codes applicable for VCRs

Admiral	2069	2005	2058	2059	2060									
Aiko	2024													
Aiwa	2023													
Akai	2003	2004	2083											
Audiovox	2011													
Bell & Howell	2008													
Broksonic	2009	2022												
Calix	2011													
Canon	2018	2019												
Capehart	2017	2057	2012	2013	2014	2015	2016	2024						
Carver	2038	2104												
CCE	2024	2037	2020	2037										
Citizen	2010	2011	2010	2013	2015	2018	2019	2021	2061	2074	2107			
Colortyme	2006	2016	2022	2023	2024	2057								
Craig	2010	2011												
Curtis Mathes	2002	2006	2107											
Daewoo	2012	2014												
Daytron	2057	2011	2012	2018	2021	2022	2023	2025	2026	2027	2028	2029	2040	2060	2062
	2068	2070	2084											
Dimensia	2002	2074	2030	2031										
Electrohome	2011	2025	2063											
Emerson	2003	2009												
Fisher	2008	2020												
Fuji	2004	2018	2002	2010	2018	2019	2061	2064	2074	2087	2088	2089	2090	2091	2107
Funai	2023	2092												
Garrard	2023	2015	2033	2036										
GE	2000	2001												
Go Video	2073	2076												
Goldstar	2006	2011												
Gradiente	2023	2036	2054	2058	2064	2093	2094							
Harman Kardon	2006	2104	2008	2009	2010	2011	2018	2019	2031	2034	2035	2037	2038	2054
Harwood	2037	2058												
Hitachi	2034	2035	2008	2015	2058	2065	2077	2095	2096					
JC Penney	2006	2007	2008	2013	2015	2058	2065							
Jensen	2034	2035												
JVC	2006	2007												
Kenwood	2006	2007												
KLH	2037													
Kodak	2011	2018												
LG	2011	2038	2039	2053	2055	2066	2097	2098	2104	2108				
Logik	2037	2008	2013	2015	2018	2038	2104							
LXI	2011													
Magnavox	2018	2019	2011	2018	2020	2023	2053	2069	2109					
Marantz	2006	2007	2060											
Matsushita	2018	2054												
Memorex	2008	2010	2035	2040	2041	2042	2060	2065	2106					
MGA	2025	2040												

Minolta	2034	2035												
Mitsubishi	2025	2034												
Montgomery Ward	2069	2023	2032	2037										
Motorola	2018	2069	2008	2013	2015	2058	2065							
MTC	2010													
Multitech	2010	2013												
NEC	2006	2007												
Nikko	2011													
Noblex	2010													
Olympus	2018	2056	2067	2105										
Optimus	2011	2069	2035	2054	2064									
Optonica	2048													
Panasonic	2018	2019	2038	2039										
Pentax	2013	2034	2048	2066	2104									
Pentex Research	2015	2043	2065											
Philco	2018	2019	2016	2057										
Philips	2018	2038	2002	2074	2087	2088	2089	2090	2107					
Pioneer	2007	2034	2067											
Portland	2013	2014	2069											
Proscan	2000	2001	2011	2018	2019	2020	2023	2025	2030	2048				
Quasar	2018	2019												
Radio Shack	2011	2048	2002	2003	2010	2018	2034	2035	2044	2045	2046	2054	2061	2064	2067
	2071	2074	2075	2078	2087	2088	2089	2090	2107					
Radio Shack/Realistic	2008	2010	2011	2012	2018	2019	2020	2023	2025	2030	2048	2069		
Radix	2011													
RCA	2000	2001												
Realistic	2008	2010	2012	2028	2032	2059	2079	2085						
Ricoh	2072	2058	2065											
Runco	2053	2020	2080											
Samsung	2005	2010	2022	2027	2029	2040	2062							
Sansui	2007	2047	2018	2020	2030	2031	2034	2035	2054					
Sanyo	2008	2010	2048	2049	2069	2099								
Scott	2009	2012	2037	2050										
Sears	2008	2011												
Sharp	2014	2025	2072											
Shintom	2004	2035	2051	2063	2086									
Signature	2069													
Singer	2018	2037	2023	2038	2039	2040	2066	2104						
Sony	2004	2050												
STS	2018	2054												
Sylvania	2018	2019												
Symphonic	2023													
Tandy	2008													
Tashiko	2011													
Tatung	2058	2023	2052											
Teac	2023	2058	2031	2034	2040	2060	2100	2101						
Technics	2018	2056												
Teknika	2011	2018												
Toshiba	2012	2030	2012	2013										

Totevision	2010	2011	2012	2013	2060									
Unitech	2010	2012	2018	2020	2023	2025	2034	2035	2037	2048	2054	2062	2069	2071	2104
Vector Research	2006	2007	2037											
Video Concepts	2006	2007	2008	2015	2058									
Wards	2010	2011	2053	2063	2072	2081	2102	2103						
XR-1000	2018	2023												
Yamaha	2006	2007												
Zenith	2004	2050												

3.5.3   Codes applicable for CDs

ADC	3125	3126	3136							
Aiwa	3110	3127								
Akai	3128									
Denon	3130									
Emerson	3111									
Fisher	3112	3133	3134							
GE	3135									
Hitachi	3113									
JVC	3114									
Kenwood	3115	3137	3138							
Luxman	3139									
Marantz	3117									
MCS	3140									
Mitsubishi	3141	3142								
Nakamichi	3144	3145								
NEC	3116									
Onkyo	3118	3146	3147							
Optimus	3148	3149	3150							
Panasonic	3119									
Pioneer	3120	3151								
RCA	3132	3159								
Sanyo	3158									
Sears	3129									
Sherwood	3152									
Sony	3121	3131	3153							
Teac	3154	3155	3156							
Technics	3122									
Toshiba	3143									
Yamaha	3123	3124	3157							

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3.5.4 Codes applicable for DVDs

Aiwa	3004	3097	3098	3099	3100										
Apex	3007	3008	3048	3049											
Audiovox	3075														
BOSE	3089														
Broksonic	3009	3050													
Classic	3101														
Daewoo	3010	3079													
Emerson	3011	3012	3052												
Funai	3012	3093													
GE	3000	3013	3062	3063											
Go Video	3040	3068													
GPX	3102														
Harman Kardon	3065														
Hitachi	3014	3064													
JVC	3041	3066													
Kenwood	3015	3084													
Konka	3005														
Koss	3051	3082													
Lasonic	3038														
Magnavox	3002	3016	3085												
Marantz	3094														
Memorex	3017														
Mintek	3018														
Mitsubishi	3003	3081													
NAD	3011	3096													
Nakamichi	3095														
Norcent	3019														
Onkyo	3020	3080													
Oritron	3024														
Panasonic	3006	3021	3056	3057											
Philips	3002	3046	3077												
Pioneer	3022	3023													
Proscan	3000	3062	3063	3088											
Qwestar	3024														
RCA	3000	3025	3026	3042	3060	3061	3062	3063	3078						
Samsung	3027	3039													
Sanyo	3043	3103													
Sharp	3028	3047	3070												
Sherwood	3104														
Sony	3029	3030	3031	3058	3073										
Sylvania	3012	3059	3090												
Technics	3067														
Techwood	3091														
Toshiba	3036	3074													
Yamaha	3087														
Zenith	3037	3045	3069												

3.5.5 Codes applicable for Cable Decoders

ABC	5003	5004	5005	5007	5046										
Archer	5010	5011													
Cableview	5008														
Contec	5016														
Eastern	5017														
GE	5003	5004													
Gemini	5018	5019													
General Instruments	5004														
Hamlin	5020	5021	5022	5027	5034										
Hitachi	5004														
Jerrold	5004	5018	5023	5024	5040	5046									
Magnavox	5025														
Motorola	5047	5048	5049												
Movie Time	5026														
NEC	5006														
NSC	5026														
Oak	5016	5028													
Panasonic	5042	5045													
Philips	5012	5013	5014	5015	5019	5025	5029	5030	5031						
Pioneer	5032	5033													
Proscan	5003	5004													
RCA	5008	5041	5043	5045											
Realistic	5010														
Samsung	5033														
Scientific Atlanta	5007	5035	5036	5037											
Signature	5004														
Sprucer	5045														
Standard Component	5038	5039													
Starcom	5018	5046													
Stargate	5018														
Tocom	5005	5023													
United Cable	5046														
Universal	5009	5010	5011												
View Star	5016	5025	5026												
Zenith	5044														

3.5.6 Codes applicable for Satellite Decoders

RCA	5089														
Alphastar	5068														
Chaparral	5050	5051													
Directtv	5095														
Dishnet	5067														
Drake	5052	5053													
Echostar	5074														
Express Vu	5084														

GE	5001	5002	5086	5087	5090	5091	5092	5096						
General Instruments	5054	5055	5056											
Hitachi	5070	5071												
Hughes	5099													
Hughes Network System:	5066	5075												
JVC	5069													
Panasonic	5064	5101												
Philips	5072	5093												
Primestar	5065													
Proscan	5001	5002	5086	5087	5090	5091	5092							
RCA	5000	5001	5002	5086	5087	5088	5090	5091	5092					
Realistic	5057													
Samsung	5094	5102												
Sony	5062	5103												
Star Choice	5085													
STS1	5058													
STS3	5059													
STS4	5060													
Toshiba	5061	5063	5076	5077	5078	5079	5080	5081	5082	5083	5098	5100		
Uniden	5073													
Zenith	5097													

3.6   Codes for European brands

These codes are applicable for European remote control units and equipment brands.

3.6.1 Codes applicable for TV sets

Brand																
Admiral	1024	1115														
Aiwa	1021	1059														
Akai	1039	1130														
Akura	1045	1131	1142													
Alba	1018	1060	1100	1131	1133	1171	1176									
Amplivision	1177															
Amstrad	1045	1048	1100	1124	1167	1171	1179									
Anitech	1100	1111	1114													
Arc en Ciel	1051															
ASA	1115	1119	1152													
Asberg	1114															
Atlantic	1129															
Autovox	1054	1114	1115	1129	1134	1152										
Baird	1036	1057	1174													
Bang & Olufsen	1115															
Barco	1056															
Baur	1038	1054	1101	1191	1193	1197	1199									
Beko	1014	1061	1170	1189												
Blaupunkt	1126	1128	1138	1156	1197	1199										
BPL	1145															
Brandt	1015	1026	1027	1062	1160	1161										
Brionvega	1115															
Bruns	1032	1115														
BSR	1151															
BTC	1131															
Bush	1016	1030	1038	1044	1056	1063	1064	1100	1131	1133	1145	1151	1168	1171	1173
	1204															
Cascade	1100															
Century	1115															
CGE	1056	1114														
Cimline	1100	1133														
Clatronic	1114	1170														
Condor	1170															
Contec	1100															
Continental Edison	1026	1027	1051	1160												
Crosley	1114	1115														
Crown	1100	1114	1170	1172	1180											
Daewoo	1022	1065	1100	1173												
Dainichi	1028	1131														
Daytron	1100															
Decca	1030	1113	1136	1137												
Dixi	1032	1100														
Dual	1054	1166														
Dumont	1112	1115	1119	1152												
Elbe	1140															
Elin	1055	1119														
Elite	1131															

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Elta	1100													
Emerson	1115													
Erres	1102													
Europhon	1034													
Expert	1129													
Ferguson	1019	1036	1125	1146	1161									
Fidelity	1044	1054												
Finlandia	1044	1130												
Finlux	1112	1113	1115	1119	1120	1152								
Firstline	1100	1133	1151	1157	1196									
Fisher	1054	1119	1130	1154	1170	1200								
Formenti	1056	1115												
Frontech	1024	1044	1047	1142										
Fujitsu	1113	1129												
Funai	1142	1151	1154											
GBC	1056													
GEC	1057	1106	1113											
Geloso	1100													
Genexxa	1024	1131												
GoldStar	1044	1084	1149											
Goodmans	1036	1113	1133	1139	1155	1171	1173							
Gorenje	1170													
GPM	1131													
Graetz	1024	1057												
Granada	1039	1044	1108	1113	1130	1163								
Grandin	1145													
Grundig	1001	1049	1098	1112	1126	1128	1134	1197	1199					
Hanseatic	1054	1182	1201											
Harwood	1139													
HCM	1100	1145	1179											
Hinari	1100	1131	1133	1178										
Hisawa	1145	1177	1186											
Hitachi	1013	1024	1026	1027	1038	1040	1044	1055	1057	1066	1083	1084	1106	1107	1120
	1132	1185	1202											
Huanyu	1173													
ICE	1142	1171												
Imperial	1056	1114	1170	1180										
Indesit	1134													
Inno Hit	1113	1194												
Interbuy	1111													
Interfunk	1024	1051	1057	1193										
Intervision	1023	1111	1142											
ITC	1056													
ITS	1171													
ITT	1024	1039	1054	1055	1057	1174								
JVC	1010	1068	1109	1118	1125	1127	1164	1165	1171					
Kaisui	1100	1131	1145											
Kapsch	1024	1057	1119	1129										

Brand															
Kathrein	1201														
Kendo	1133														
Kennedy	1056														
Kneissel	1140	1184													
Korting	1115	1147													
Lenco	1119														
LG	1009	1069													
Loewe	1006	1070	1115	1148	1193										
Luma	1044	1129													
Luxor	1025	1038	1040	1041	1044	1134	1174								
M Electronic	1024	1100	1110	1111	1119	1120	1146	1173	1188						
Magnadyne	1023	1054	1115												
Magnafon	1023	1034	1114												
Marantz	1201														
Matsui	1030	1044	1049	1054	1100	1105	1113	1124	1130	1133	1141	1151	1167	1168	1171
Memorex	1100		1000												
Metz	1115	1169	1197												
Minerva	1049	1112	1134	1197	1199										
Minoka	1045	1179													
Mitsubishi	1012	1071	1104	1115	1121	1134	1167	1193	1197						
Mivar	1149	1150	1194												
MTC	1038	1193													
Multitech	1023	1044	1100	1114											
Murphy	1119														
National	1134														
NEC	1123														
Neckermann	1038	1044	1115	1126	1191	1199	1201								
NEI	1047	1162													
Nikkai	1105	1113	1131	1142	1162										
Nokia	1055	1174	1188												
Oceanic	1024	1028													
Onwa	1048														
Orion	1008	1054	1093	1133	1151	1157	1168								
Osaki	1113	1131	1139	1142	1179										
Oso	1131														
Osume	1113	1122													
Otake	1155														
Otto Versand	1036	1038	1056	1101	1126	1133	1191	1193	1197	1199	1201				
Palladium	1044	1170	1180												
Panasonic	1004	1024	1057	1072	1091	1134	1138	1143	1169	1203	1205				
Pathe Cinema	1056														
Pathe Marconi	1026	1027	1051	1160											
Philco	1056	1114	1115												
Philips	1073	1102	1103	1106	1115	1158	1159	1173	1199	1201					
Phoenix	1115														
Phonola	1102	1103	1115												
Pioneer	1024	1084	1085	1146											
Profex	1044	1100	1114												
Proline	1157														

Protech	1023	1047	1056	1100	1142	1162	1180							
Pye	1074	1102												
Quelle	1054	1056	1101	1112	1119	1152	1191	1193	1197	1199				
Radiola	1102	1158												
Radiomarelli	1115													
Rediffusion	1039													
Rex	1024	1129	1140	1142										
RFT	1032	1115	1182											
Roadstar	1100	1131	1142	1180										
Saba	1017	1024	1026	1027	1036	1051	1057	1115	1146	1153	1161	1164		
Saisho	1047	1054	1100	1104	1124	1133	1141	1142	1167					
Salora	1024	1025	1038	1040	1044	1055	1187							
Sambers	1023	1034	1114	1194										
Samsung	1007	1050	1075	1099	1100	1116	1142	1149	1170	1194	1201			
Sanyo	1020	1052	1108	1113	1119	1122	1130	1163	1174					
SBR	1102	1103	1106											
Schaub Lorenz	1057													
Schneider	1054	1103	1110	1131	1154	1158	1166	1171	1175					
SEG	1032	1056	1114	1142										
SEI	1023	1054	1101	1115	1124	1151								
Seleco	1024	1129	1140											
Sentra	1105													
Sharp	1005	1076	1117											
Shorai	1151													
Siarem	1023	1115												
Siemens	1122	1126	1128	1174	1197	1199								
Singer	1115													
Sinudyne	1023	1032	1054	1101	1115	1124	1133							
Skantic	1040	1041												
Solavox	1024	1039												
Sonitron	1130													
Sonoko	1100													
Sonolor	1024	1028	1130											
Sony	1003	1101	1191											
Stern	1024	1129	1140											
Sunkai	1133	1151	1157	1168										
Susumu	1131													
Tandberg	1152													
Tandy	1024	1031	1113	1131										
Tashiko	1044	1106												
Tatung	1113	1136	1137											
Tec	1056													
Technics	1138	1203												
TechniSat	1032													
Teleavia	1036	1051	1160											
Telefunken	1036	1051	1077	1084	1086	1089	1097	1161						
Teletech	1100													
Teleton	1038	1044	1129											
Tensai	1119	1131	1151	1155										

Texet	1131													
Thomson	1000	1002	1026	1027	1036	1038	1051	1078	1082	1084	1087	1088	1092	1095	1134
	1146	1153	1160											
Thorn	1036	1090	1105	1113	1119	1125	1127	1144	1191	1193	1197	1198		
Toshiba	1011	1079	1080	1094	1105	1112	1135	1192	1198					
Towada	1056													
Triumph	1124	1135												
Uher	1129	1154												
Ultra	1127													
Ultravox	1023	1039												
Universum	1056	1119	1120	1142	1170	1181	1190	1197						
Voxson	1024	1115												
Waltham	1040													
Watt Radio	1023	1034	1054	1056										
Wega	1115													
Yoko	1047	1142												
Zanussi	1044	1129												
JVC	1067													

3.6.2 Codes applicable for projectors

Hitachi	1058											

3.6.3 Codes applicable for LCD TVs

Sharp	1081											

3.6.4 Codes applicable for VCRs

Aiwa	2065	2072	2074	2089	2094	2095							
Akai	2021	2022	2033	2034	2049	2050	2068	2074	2090	2095			
Akura	2074	2081											
Alba	2009	2042	2048	2051	2059	2060	2065	2068	2081	2087	2090	2092	2093	2094	2095
Ambassador	2009	2068											
Amstrad	2048	2057	2058	2065	2081	2087							
Anitech	2081												
Ansonic	2066												
ASA	2028	2072											
Audiosonic	2087												
AudioTon	2068												
Baird	2031	2065	2074	2082	2087								
Blaupunkt	2002	2004	2008	2039	2044	2045	2067	2071	2083	2085			
Brandt	2037	2055	2074	2091	2098								
Bush	2042	2048	2051	2059	2060	2065	2081	2087	2088	2090	2092	2093	2094	2095
Carrefour	2077												
Casio	2065												
Cathay	2087												
CGE	2065	2074											
Cimline	2081												
Clatronic	2009	2068	2081										
Condor	2009	2068	2087										
Crown	2009	2048	2068	2081	2087								
Cyrus	2028												
Daewoo	2009	2048	2068	2077	2087	2095							
Dansai	2081	2087											
Daytron	2087												
Decca	2028	2065	2074	2080									
Denon	2015												
Dual	2065	2074	2087										
Dumont	2028	2031	2032	2065	2082								
Elbe	2013	2073	2087										
Elcatech	2081												
Elin	2086												
Elta	2081	2087											
Emerson	2077	2081											
ESC	2047	2048	2068	2086	2087								
Europhon	2068												
Ferguson	2029	2055	2065	2074	2091	2098							
Fidelity	2065	2081											

Finlandia	2028	2031	2065	2075	2079	2082									
Finlux	2015	2028	2031	2032	2065	2075	2082								
Firstline	2016	2042	2072	2075	2076	2077	2081	2088	2094						
Fisher	2018	2019	2023	2031	2068	2073	2078	2082							
Frontech	2009	2068													
Fujitsu	2065														
Funai	2065														
GBC	2068														
GEC	2028														
Genexxa	2082														
GoldHand	2081														
GoldStar	2043	2065	2072												
Goodmans	2009	2024	2048	2065	2068	2072	2081	2086	2087	2088	2094				
Graetz	2031	2047	2074	2082	2086										
Granada	2018	2028	2031	2065	2067	2072	2075	2079	2082	2086					
Grandin	2065	2068	2072	2081	2087										
Grundig	2002	2004	2005	2008	2028	2039	2041	2044	2051	2067	2085	2091			
Hanseatic	2072	2087													
Harwood	2081														
HCM	2051	2081													
Hinari	2003	2047	2051	2066	2074	2081	2087	2088	2095						
Hisawa	2095														
Hitachi	2003	2015	2032	2036	2046	2047	2065	2066	2074	2075	2082	2086			
Imperial	2065	2086													
Ingersol	2003	2066	2086												
Inno Hit	2068	2081	2086	2087											
Interbuy	2072	2081													
Interfunk	2028	2082													
Intervision	2065	2072	2087	2094											
Irradio	2072	2081													
ITT	2009	2018	2031	2033	2047	2048	2063	2074	2082	2086					
ITV	2068	2072	2087												
JVC	2006	2029	2040	2041	2063	2074	2080								
Kaisui	2081														
Kendo	2033	2042	2072	2081	2090	2094									
Kenwood	2074														
Kneissel	2094	2095													
Kuba	2078														
Lenco	2048														
LG	2065	2072													
Loewe	2003	2004	2028												
Loewe Opta	2066	2067	2072	2083	2097										
Logik	2003	2047	2066	2081	2086										
Lumatron	2087														
Luxor	2016	2018	2024	2031	2033	2076	2078	2079	2081	2082					
M Electronic	2013	2065	2072												
Marantz	2002	2004	2024	2028	2067	2073									
Matsui	2003	2011	2030	2038	2042	2065	2066	2072	2086	2094	2095				
Medion	2094														

M-Electronic	2065	2072	2073								
Memorex	2018	2031	2065	2072	2078	2079	2082				
Metz	2002	2004	2039	2045	2067	2083	2085	2097			
Migros	2065										
Minerva	2004	2008	2039	2085							
Mitsubishi	2016	2027	2028	2076	2080						
Multitech	2065	2068	2081	2082							
Murphy	2065										
National	2083										
NEC	2013	2014	2073	2074	2080						
Neckermann	2028	2067	2074								
Nesco	2065	2081	2095								
Nikkai	2068	2081	2087								
Nokia	2018	2031	2033	2047	2074	2075	2079	2082	2086	2087	2090
Nordmende	2052	2055	2063	2074	2091	2099					
Oceanic	2065	2074	2079	2082							
Okano	2081	2087	2090	2094							
Orion	2003	2011	2030	2042	2059	2060	2066	2092	2093	2094	2095
Orson	2065										
Osaki	2065	2072	2081								
Osume	2088										
Otake	2092	2093									
Otto Versand	2028										
Palladium	2004	2066	2067	2072	2074	2081	2086	2090			
Panasonic	2044	2045	2083	2097							
Pathe Cinema	2011	2066	2076								
Pathe Marconi	2074										
Pentax	2015	2032									
Perdio	2065										
Philco	2013	2073	2081								
Philips	2028	2063	2067								
Phonola	2028										
Pioneer	2028	2046	2075	2080							
Portland	2009	2068	2087								
Prinz	2065										
Profex	2056										
Profi-Tronic	2086										
Proline	2051	2065	2088								
Pye	2028										
Quelle	2028	2067									
Radiola	2028										
Rex	2063	2074									
RFT	2068	2081									
Roadstar	2047	2048	2072	2081	2086	2087					
Saba	2040	2041	2052	2055	2063	2074	2091				
Saisho	2003	2011	2030	2038	2042	2066	2094				
Salora	2016	2018	2033	2076	2082						
Samsung	2047	2086	2096								
Sanwa	2066										

Sanyo	2018	2031	2078	2079	2082								
SBR	2028												
Schaub Lorenz	2031	2065	2074	2082									
Schneider	2028	2065	2072	2081	2086	2087							
SEG	2047	2056	2081	2086	2087								
SEI	2003	2028											
SEI-Sinudyne	2066												
Seleco	2068	2072	2074										
Sentra	2009	2068	2081	2088									
Sharp	2024	2079											
Shintom	2031	2081	2082										
Shivaki	2072												
Shorai	2003	2066											
Siemens	2002	2004	2008	2023	2028	2031	2039	2067	2072	2082	2085		
Sinudyne	2003	2028	2066										
Solavox	2009												
Sonitron	2078												
Sonoko	2087												
Sonolor	2018	2024	2079										
Sontec	2072												
Sony	2007	2010	2069	2070	2071								
Starlite	2072	2082											
Stern	2087												
Sunkai	2094												
Sunstar	2065												
Suntronic	2065												
Supra	2072	2086											
Symphonic	2065	2081											
Tandberg	2087												
Tashiko	2065	2072	2079	2086									
Tatung	2028	2065	2074	2076	2079								
Teac	2065	2074	2087										
Tec	2009	2068	2081	2087									
Technics	2044												
Teleavia	2074												
Telefunken	2037	2055	2063	2074	2091	2098	2100						
Teletech	2081	2087											
Tensai	2056	2065	2066	2072	2081								
Thomson	2000	2001	2063	2074	2091	2098	2099						
Thorn	2011	2029	2031	2072	2074	2082							
Toshiba	2016	2028	2063	2074	2076	2077							
Towada	2056	2081											
Uher	2047	2072	2086										
Ultravox	2021	2087											
Unitech	2086												
Universum	2004	2008	2021	2028	2033	2039	2047	2057	2065	2067	2072	2085	2086	2094
Yoko	2009	2047	2068	2072	2081	2086							

3.6.5 Codes applicable for CDs

Aiwa	3081	3103		
Akai	3079	3084	3090	
Alba	3086	3096	3100	3113
Arcam	3085			
Audio Research	3085			
AudioTon	3085			
Bush	3113			
Condor	3083			
Cyrus	3085			
Denon	3072	3075		
Dual	3089			
Eclipse	3114			
Fisher	3087	3101		
GoldStar	3111	3112		
Goodmans	3086	3112	3114	
Grundig	3085			
HCM	3114			
Hitachi	3097			
Kenwood	3073	3088	3110	3115
Kodak	3095			
Linn	3085			
M Electronic	3111			
Marantz	3078	3082	3085	
Matsui	3085	3096	3099	3112
Meridian	3085			
Micromega	3085			
Mitsubishi	3079	3084		
NAD	3071			
Naim	3085			
Nikko	3086			
Panasonic	3098	3102		
Philips	3085	3094	3095	
Pioneer	3074	3105		
Quad	3085			
Radiotone	3113	3114		
Revox	3085			
Roadstar	3104	3111		
Rotel	3085			
Sansui	3091	3108	3114	
Sanyo	3087	3101		
Schneider	3083	3113		
Sharp	3077	3093		
Sherwood	3080	3089		
Siemens	3109			
Sony	3071	3107		
SuperTech	3114			
Teac	3086			
Technics	3092	3098		
Thorens	3085			

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Toshiba	3106	3115													
Universum	3085														
Watson	3113														
Yamaha	3076														

3.6.6 Codes applicable for DVDs

Aiwa	3028	3043				
Akai	3006	3023				
Alba	3061					
Bush	3044					
CyberHome	3029	3030				
Daewoo	3060					
Dansai	3031					
Denon	3002	3009	3042			
Goodmans	3062					
Grundig	3041	3045				
Hitachi	3046					
JVC	3016	3027	3054			
Kenwood	3002	3005	3014	3066		
LG	3048	3064				
Magnavox	3010					
Micromega	3021					
Mitsubishi	3011					
Onkyo	3010					
Optimus	3020					
Panasonic	3002	3009	3036	3049	3065	3067
Philips	3010	3018	3021	3024	3037	3055
Pioneer	3020	3022	3038			
Samsung	3017	3050	3058	3063		
Sanyo	3057	3059				
Scott	3039					
SEG	3040					
Sharp	3051					
Sony	3004	3013	3047	3052		
Technics	3009					
Thomson	3000	3001	3012	3015	3019	3025	3026
Toshiba	3003	3010	3053			
Xbox	3012					
Yamaha	3009	3056				
Zenith	3010					

3.6.7 Codes applicable for HTIBs

Aiwa	3028
Denon	3042
Kenwood	3066
LG	3064
Panasonic	3067
Sanyo	3059

3.6.8 Codes applicable for Portable DVDs

Panasonic	3034	3035

3.6.9   Codes applicable for Video Laser Discs

Philips	3007	3008												

3.6.10   Codes applicable for Cable Decoders

Alcatel	5025	5026												
BT Cable	5004													
Cabletime	5007	5010	5014	5019	5021	5023								
Filmnet Cablecrypt	5022													
France Telecom	5024	5027	5029											
General Instrument	5020													
Grundig	5013													
Jerrold	5002	5008	5017	5020										
Macab	5024													
M-Net	5022													
Nokia	5015													
Philips	5024	5028	5029											
Pioneer	5005													
Sagem	5016	5024												
Scientific Atlanta	5003	5009												
Tele+1	5012	5022												
Telepiu	5022													
United Cable	5002	5017												
Videoway	5006	5018												
Visiopass	5024	5029												
Westminister Cable	5004													

3.6.11 Codes applicable for Satellite Decoders

AB Sat	5079						
Akai	5091						
Alba	5032	5063	5093				
Allsat	5037	5043	5091				
Alltech	5066						
Alpha	5091						
Altai	5052						
Ampere	5052						
Amstrad	5035	5046	5052	5067	5069	5073	5080
Ankaro	5044	5047	5094				
Anttron	5032	5043	5063				
Apollo	5032						
Arcon	5071						
Armstrong	5091						
ASA	5053						
Asat	5091						
AST	5048						
Astra	5033	5050	5057				
Astro	5041	5063	5094	5095			
AudioTon	5063						
Best	5094						
Blaupunkt	5041						
Brain Wave	5049	5071					
BSkyB	5080						
BT Satellite	5072						
Bush	5037	5043	5093				
Cambridge	5031	5068					
Canal Satellite	5088	5096					
Channel Master	5093						
CityCom	5077						
Clatronic	5049						
Comtec	5047	5051					
Condor	5033	5094					
Conrad	5033	5060	5061	5094			
Contec	5051	5061					
Daewoo	5032						
Dansat	5037	5043					
D-Box	5083						
DNR	5071						
DNT	5052	5091					
Echostar	5052	5082	5088	5096			
Einhell	5032	5046	5047				
Elsat	5069						
Elta	5032	5091	5094				
Emme Esse	5082	5094					
Europa	5044	5061	5091				
Eurosky	5030	5033	5094				
Eurostar	5033	5084					

Ferguson	5037	5043	5064				
Fidelity	5046	5067					
Finlux	5031	5055	5060				
Fracarro	5032	5082					
Freesat	5066						
FTE	5061	5068	5094				
Fuba	5032	5052	5094				
Galaxis	5047	5051	5057	5081	5094		
Grandin	5038						
Grundig	5035	5040	5041	5074	5076	5080	
G-Sat	5043						
Hanseatic	5062						
Hinari	5032	5043	5093				
Hirschmann	5030	5041	5052	5053	5054	5056	5060
Hisawa	5049						
Huth	5033	5044	5047	5049	5050	5051	5061
Intervision	5033	5065					
ITT/Nokia	5053	5060	5083				
Johansson	5049						
Kathrein	5041	5056	5063	5077	5086	5091	5095
Kolon	5032						
Kosmos	5056						
KR	5063	5066					
Kreiselmeyer	5041						
Kyostar	5032	5063					
Lasat	5033	5051	5068	5094			
Lemon	5071						
Lenco	5032	5044	5057	5071	5094		
Lexus	5091						
Lorenzen	5033	5044	5071	5073			
Luxor	5060	5083					
Manata	5072						
Manhattan	5072						
Mascom	5056						
Maspro	5039	5041	5066	5071	5074		
Matsui	5031	5041	5072	5093			
Mediabox	5096						
Mediasat	5057	5088	5096				
Medion	5094						
Metronic	5032	5038	5047	5063	5077		
Metz	5041						
Micro Technology	5057						
Morgan's	5061	5068	5091				
NEC	5042						
Network	5043						
Neuhaus	5033	5044	5057	5061	5071		
Neusat	5071						
Nokia	5053	5060	5083				
Nordmende	5032	5049	5064	5093			

Novis	5049														
Octagon	5032	5044	5051	5063											
Ondigital	5045	5089	5090												
Orbitech	5032	5058	5059	5061											
Pace	5035	5037	5043	5045	5075	5080									
Palcom	5093														
Palladium	5032														
Panasonic	5035	5080													
Panda	5033	5037													
Philips	5041	5043	5044	5061	5063	5072	5074	5076	5077	5086	5088	5089	5090	5091	5096
Phoenix	5043	5051													
Phonotrend	5047	5081													
Pioneer	5087	5088	5096												
Predki	5032	5049													
Premiere	5096														
Prosat	5047	5065	5093												
Quadral	5047	5061	5065	5072	5093	5094									
Quelle	5033	5046													
Radiola	5091														
Radix	5052	5066	5085												
Redpoint	5057														
RFT	5044	5047	5058	5091											
Rover	5065														
Saba	5033	5043	5064	5070	5071	5072									
Sagem	5034	5078													
Sakura	5051														
Samsung	5030	5032													
Satcom	5033	5050	5062												
Satelco	5094														
Satford	5050														
Satline	5065														
SatPartner	5032	5049													
Schneider	5076														
Sedea Electronique	5032														
Seemann	5057	5094													
SEG	5032	5049	5062	5073	5094										
Seleco	5082														
Siemens	5041	5068													
Skardin	5057														
Skymaster	5047	5062	5065	5084											
SL	5071														
Sony	5031	5035													
Strong	5032	5094													
Sunny Sound	5094														
Sunstar	5094														
Techniland	5050														
TechniSat	5036	5058	5059	5091											
Telasat	5062														
Teleciel	5063														

Telefunken	5032	5072			
Teleka	5052	5056	5063	5071	5074
Telesat	5062				
Teletech	5084				
Thomson	5033	5064	5088	55000	
Tonna	5050				
Triad	5048				
Triasat	5055				
Triax	5055				
Uniden	5067				
Unisat	5051	5091			
Universum	5033	5041	5053	5067	5073
Variosat	5041				
Vestel	5073				
Visiosat	5070				
Viva	5044				
Vortec	5030	5032	5045		
Wela	5061				
Winersat	5049				
Wisi	5041	5048	5052	5061	5070
World	5049				
Zaunkonig	5071				
Zehnder	5048	5073	5077	5094	

3.7 Codes for North American Combos

From the universal remote control, a combo is seen as multiple devices. For instance, a TV/DVD combo will require a code for the TV key of the remote and a code for the DVD key of the remote control.

3.7.1 Codes for TV part of combos

TV/DVD Combo		
Broksonic	1143	
Sansui	1149	
Toshiba	1145	
TV/DVD/VCR Combo		
Panasonic	1152	1153
Sylvania	1154	
TV/VCR Combo		
Broksonic	1151	
Hitachi	1166	
Magnavox	1167	
TV/PVR Combo		
Panasonic	1165	

3.7.2 Codes for VCR part of combos

TV/DVD/VCR Combo		
Toshiba	2101	
TV/VCR Combo		
GE	2091	
Hitachi	2094	
JVC	2096	
Magnavox	2097	2098
Sharp	2099	
Toshiba	2100	
Zenith	2103	
PVR		
Tivo	2082	
DVD/VCR Combo		
Broksonic	2083	
Emerson	2084	
Go Video	2076	2092
Hitachi	2093	
JVC	2077	2095
RCA	2078	
Samsung	2079	2085
Sanyo	2080	
Sony	2086	
Zenith	2081	2102

3.7.3 Codes for DVD part of combos

TV/DVD Combo		
Broksonic	3009	
RCA	3025	
TV/DVD/VCR Combo		
Panasonic	3056	3057
RCA	3060	
Sylvania	3059	
DVD/VCR Combo		
Broksonic	3050	
Emerson	3052	
Go Video	3040	3068
JVC	3041	
RCA	3042	
Sanyo	3043	
Sony	3058	
Zenith	3045	3069
DVR		
Philips	3072	

3.8   Codes for European combos

From the universal remote control, a combo is seen as multiple devices. For instance, a TV/DVD combo will require a code for the TV key of the remote and a code for the DVD key of the remote control.

3.8.1   Code for TV part of combos

TV/DVD Combo															
Bush	1204														
Panasonic	1205														

3.8.2   Codes for DVD parts of combos

TV/DVD Combo															
Panasonic	3065														

APPENDIX 4   *FCC Interference Statement*

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.