

User manual



# ARIVA 200



*English*



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# WARNING !!!



Ferguson satellite receivers support recording on external hard disk drives (HDDs) and flash memories (pendrives). In all instances, the correct operation of the recording function depends on the type of connected memory! You must read the following limitations.

## REMEMBER:

1. In order to use an external USB memory, the memory must support the USB 2.0 standard. To ensure stable recording and playback, **you must use a memory with a recording speed of 9.0 MB/s or greater**. Slower hard disk drives and flash memories may not function properly, have problems with recording (image jitter), or not function at all!!!
2. Only disks with one basic NTFS or FAT32 partition (we recommend using the NTFS format) will function properly. If you do not have such a format, prepare the disk on your computer before connecting it to the receiver.
3. Highly fragmented or used memories may also not operate smoothly or correctly.
4. External hard disk drives should be autonomously powered, since the built-in USB port is unable to provide sufficient power.

## CAUSION

1. Under no circumstances should you disconnect the USB device from the receiver during recording or playback. Disconnecting during operation may cause damage to the receiver and/or flash memory, and to the recorded data.
2. Do not touch the working device (and in particular the USB connector) with wet hands. Risk of electric shock and permanent damage to the receiver!

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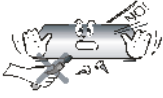
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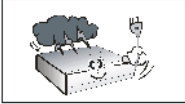
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## SAFETY MEASURES

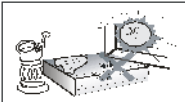
We request that you read the instruction manual and recommendations set forward therein. Also remember to correctly position the satellite antenna!



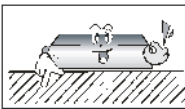
In order to avoid an electric shock, never open the housing. Damage to the warranty seal shall void the warranty.



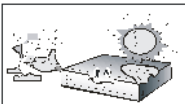
Disconnect the device from the mains during thunderstorms or when it is not to be used for an extended period of time. Please remember that the warranty does not cover damage to the equipment caused by a lightning strike.



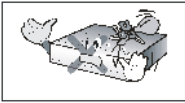
Do not expose the device to direct sunlight. Place it away from sources of heat and humidity. Do not cover ventilation ducts, in order to ensure the correct circulation of air.



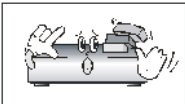
Place the device horizontally on a flat, even and stable surface.



If you move the device from a room that is warm to one that is cold (or vice versa), wait at min. 1 hour before connecting it to the mains. Otherwise, problems may arise.



The device should be placed away from vases, bottles, aquariums and other water containers in order to avoid damage. Do not touch the mains plug with your bare hands.



Do not place any objects on the housing of the device. This may cause overheating and reception problems.

Before commencing maintenance or installation work, disconnect the receiver from the mains. Do not clean the receiver with alcohol or liquids containing ammonia. If necessary, clean it with a soft, lint-free cloth wetted with a gentle solution of water and soap.

- Do not connect any cables when the mains plug is in the socket.
- Check the condition of your cables. Damaged cables may cause a fire.
- Please disconnect the receiver from the mains before connecting any cables.

## DOWNLOADABLE SOFTWARE

Ferguson has taken every effort to provide users with software updates in order to ensure that the parameters of the satellite television receiver are up to date. Ferguson reserves itself the right to amend, change or modify the software used in the satellite television receiver as it shall choose and without prior notification. The latest version of the software is available on the website <http://www.ferguson-digital.eu>

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## ABOUT THE INSTRUCTION MANUAL

Ferguson has made every effort to provide the most current information about its products. Ferguson does not grant any guarantee as to the contents of the present instruction manual and disclaims any implied guarantees concerning market value or suitability for specific purposes. The information contained herein is an instruction intended to enable the correct usage and maintenance of the receiver.

Ferguson reserves itself the right to introduce amendments, changes or translations of the instruction manual without prior notification thereof. For this reason, we recommend you regularly visit our website in order to obtain the latest information.

## MARKINGS AND SIGNS APPLIED TO THE RECEIVER



### Digital signal transmission logo.

This logo informs that the receiver conforms to the Digital Video Broadcasting standards.



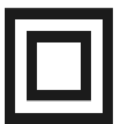
### Risk of electric shock - do not open.

This notice warns the user not to open the receiver housing. The housing may be opened solely by authorised service technicians.



### CE logo.

The logo informs that the receiver conforms to the terms and conditions of Directive 89/336/EEC concerning observance by Member States of provisions regulating electromagnetic compatibility, and to the terms and conditions of Directives 73/23/EEC and 93/68/EEC concerning observance by Member States of provisions regulating low voltage electricity and safety with relation to the handling and operation of electrical equipment.



### Double insulation logo.

This logo informs that the receiver is an electrically safe device, provided that it is used in accordance with the recommendations set forward in the chapter concerning safety.



### Take an active part in protecting the natural environment!

- Your device is made from materials that can be processed or recycled.
- To this end, you should deliver it to a designated collection point.

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## BASIC INFORMATION ABOUT THE RECEIVER



### 1. Main features

- ✓ Reception of high definition channels
- ✓ Scaling of PAL signals to a resolution of 720p or 1080i
- ✓ Availability of 32 programmable timers
- ✓ Separate lists of favourite, TV and Radio channels
- ✓ Quick channel search function (QuickFind)
- ✓ Teletext and on-screen captions
- ✓ DiSEqC 1.0, 1.1 and DiSEqC 1.2, USALS
- ✓ MPEG-2, MPEG-4, MPEG-4 AVC/H.264 standards
- ✓ Compatible with DVB-S and DVB-S2 systems
- ✓ Control by means of the universal RCU-640 remote control
- ✓ Card reader for pay-per-view television
- ✓ CI socket

### 2. Contents of box

Unpack the receiver and check whether all of the following elements are present

- ✓ 1 x remote control unit
- ✓ 1 x instruction manual
- ✓ 1 x satellite television receiver

### 3. Important instructions concerning handling of the receiver

The screen menu (OSD) simplifies operation of the receiver and has made it possible to reduce the number of keys on the remote control. All of the functions are displayed on the screen and may be controlled by means of a small number of keys. Common functions have been connected in one "MENU". The selected function is coloured. Depending on the selected option, various "function keys" are displayed: red, yellow, green, blue and white in the form of graphics and descriptions. The colours represent various functions in individual "Menus". The selected function is activated by pressing a key on the remote control unit. The so-called function keys are active only when in the appropriate field there is information about it. The user interface makes it possible to navigate within a menu and between functions in a number of different ways. Certain buttons on the remote control allow direct access to functions. The buttons are multi-functional, i.e. their functions depend on previously activated elements.

#### **NOTE:**



*Please keep in mind that new software may change the functionality of the receiver. Photographs and descriptions included in the instruction manual are for informational purposes only. If you should notice an error, please report it - we shall make every effort to have it rectified.*

## 4. Remote control

Due to the standardization of Ferguson equipment, the majority of these devices use the same remote control unit, i.e. RCU640. This means that not all keys are used by this equipment model!! The universal 4-in-1 RCU640 remote control unit can be used to operate any television set (TV), Ferguson satellite receivers (STB), the Ferguson AV-770 amplituner (AMP), and Ferguson DVD players (DVD). The remote control can operate nearly all basic TV functions. The TV button is used to programme, and subsequently operate the television set. By default, no television set is programmed. The STB, AMP and DVD buttons may be used to operate the pertinent device - only the factory set devices may be operated (i.e. others cannot be programmed). The red symbols are for DVD or amplituner (AMP) functions.

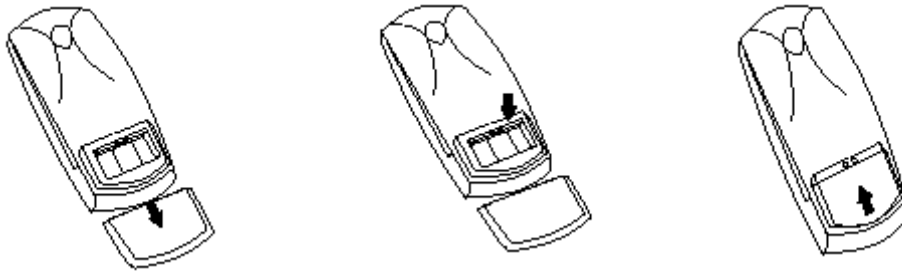
<b>POWER</b>	Turns the receiver on and sets it in standby mode.
<b>MUTE</b>	Switches the sound on and off.
<b>STB, TV, AMP, DVD</b>	Used to select the device that is to be operated. STB – satellite receiver, TV – television, AMP – Ferguson amplituner, DVD – Ferguson DVD player
<b>BACK</b>	Returns to the previously displayed channel.
<b>EPG</b>	Displays the electronic programme guide.
<b>MENU</b>	Displays the main menu on-screen.
<b>OPT</b>	Used to switch between the resolution selected in the menu and the default resolution of 576i. Allows the user to restore proper functioning of the receiver following the selection of a resolution not supported by the television.
<b>USB/PVR</b>	Displays the USB menu, if a USB memory device has been connected.
<b>FAV</b>	Displays a selection of favorite channel lists.
<b>VOL+ VOL-</b>	Used to change the volume level (lower, higher).
<b>CH+ CH-</b>	Switches to the next or previous channel.
<b>INFO</b>	Displays information about the current programme.
<b>EXIT</b>	Returns to the previous submenu, or exits the menu.
<b>TEXT</b>	Switches on the teletext on-screen, if this is available.
<b>AUDIO</b>	Switching between soundtrack versions, if these are available.
<b>SUBTITLE</b>	Switches the on-screen captions on and off, if these are available.
<b>FIND</b>	A quick search for channels according to successive name letters.
<b>EDIT</b>	Not used.
<b>TV/STB</b>	Used for controlling the SCART bush. Cyclic selection of signal sources.
<b>FORMAT</b>	Changes the image resolution. The following resolutions are available: 480i, 480p, 576i, 576p, 720p (50Hz), 720p (60Hz), 1080i (50Hz), 1080i (60Hz).
<b>PIP</b>	Not used.
<b>REV, PLAY, PAUSE, FF, STOP, REC</b>	Buttons used to operate the recording, playback and time shift mode functions.
<b>SAT</b>	Changes the active satellite for the channel list.
<b>TV/RADIO</b>	Switching between the list of television and radio programmes.





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#### 4.1 Installation of batteries



Remove the cover of the battery compartment on the rear panel of the remote control unit; slide it downwards and put it aside. Insert two AAA (R03) batteries into the compartment, observing the indicated polarity. **Do not mix old and new batteries, or batteries of different types.** Replace the battery compartment cover. Slide it upwards until it locks in place.

#### 5. Front panel



- POWER:** Turns the receiver on and sets it in standby mode.
- ▲▼:** Switches to the next/previous channel, moves the cursor up/down in the Menu.
- ◀▶:** Used to select the desired volume level (lower, higher) and move the cursor left/right in the Menu.
- OK:** Selects options in the Menu or displays the channel list.
- MENU:** Displays the main Menu on-screen.
- EXIT:** Switching off; exits the selected option.
- USB:** Port for connecting an external USB memory device.
- CA:** Socket for a subscriber's card – always insert with the chip facing down!
- CI:** Socket for the CAM conditional access modem.

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## 5.1. CAM module and subscriber's card

Inserting the module and subscriber's card

The conditional access module resembles a PC card (known as the PCMCIA) for laptop computers. There are different types of CI modules, suitable for various encoding systems.



1. First, turn off the receiver.
2. Insert the subscriber's card into the conditional access module.
3. Open the tab on the front panel and insert the CI CAM module, forcing it home into the socket on the right side of the front panel. If you want to remove the CAM module, press the black button next to the CAM socket.
4. After correctly inserting the module, turn on the receiver. From now on you will be able to watch coded television channels available through this module and card.

**Note:** Check whether the subscriber's card has been correctly inserted into the module. Incorrect insertion of the card may cause damage to the conditional access module.

**Warning:** Do not attempt to remove or insert the module and/or card when the receiver is turned on!!!

## 6. Rear panel



<b>LOOP OUT:</b>	Output of the signal from the converter to another satellite receiver.
<b>LNB IN:</b>	Input of the concentric cable from the converter.
<b>HDMI:</b>	Digital image and sound output.
<b>LAN:</b>	The Ethernet port used for communication over the LAN network/Internet.
<b>AUDIO (L/R):</b>	Analogue stereo audio output, 2 x RCA.
<b>COAXIAL:</b>	Digital coaxial audio output.
<b>COMPONENT (YpbPr):</b>	Component video output 3 x RCA (YpbPr).
<b>OPTICAL:</b>	Digital optical audio output.
<b>TV:</b>	SCART output, for connection to a television.
<b>VCR:</b>	SCART output, for connection - e.g. - to a recording device.
<b>RS232:</b>	RS232 port for communication with a PC computer.
<b>ON/OFF:</b>	Power on/off switch.

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## 7. Connecting the satellite antenna

In order to check the correctness of connection of external equipment, for example a satellite antenna or converter, read the installation manual or hire a professional technician!

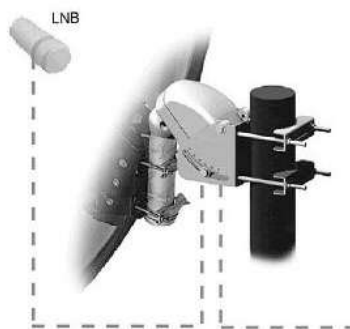


Good reception is conditional on the precise placement of the antenna. Even the best antenna will cause reception problems if it is incorrectly adjusted. Even slight placement errors may render reception impossible or considerably impair image/sound quality. Before installation make sure that the location is suitable. The proper direction may be initially determined by making a comparison with other antennas. There should be no objects directly in front of the antenna, for these may block the signal from reaching the bowl! Once you select an optimal location for the antenna, fix and adjust it initially, and then proceed to a precise adjustment. Each antenna is fitted with regulating screws that make it possible to correct its vertical and horizontal placement.

Adjusting is somewhat more difficult in the case of digital tuners. You cannot perform adjustments on the basis of the image, because this appears with a certain delay. What is more, the indicators available in the settings menu also act with a delay, and therefore adjustment may take considerable time and be very imprecise. An antenna signal meter will be indispensable for setting up the antenna. The meter must be connected to the antenna cable between the converter and the receiver. This will confirm the presence of a voltage that switches the converter from the tuner and show the signal strength for individual satellites. We strongly recommend hiring a professional technician!

## 8. Connecting an antenna system with a positioner

USALS type positioners manufactured by Stab will guarantee the correct operation of your Ferguson receiver. In order to connect an antenna system to a USALS positioner, you should connect the positioner out to the LNB IN of the Ferguson receiver. The role of the positioner installed between the mast and the antenna is to turn the bowl in such a way as to ensure that it is directed to various satellite positions. The positioner is built in such a way that its axis of revolution is parallel to the direction towards the North Star. For this reason, its mounting is frequently termed the Polar mount. In consequence, when the satellite changes position, it is not necessary to adjust the azimuth and elevation independently. The antenna revolves only in one axis. Using the introduced scale, the motor inclines in such a way as to ensure the appropriate placement of the axis of revolution. The angle of inclination corresponds to the latitude of the location where the antenna is installed. As in the case of a fixed antenna, the angle of elevation of the bowl must first be set. For this purpose, use is made of a satellite located as close as possible to the south of your location. Ideally, the position of the satellite should not differ from that of the said direction by more than 5°. In other words, you should use the satellite position closest to the longitude of the point of installation. For example, if your longitude is 73° W, you should search for a satellite located at a position between 68° and 78° W.



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The USALS function considerably simplifies configuration of the antenna. The Ferguson receiver requires that you enter the geographical coordinates of the antenna in order to automatically calculate the angle of revolution of the motor for individual satellites. The receiver activates the positioner automatically and turns the antenna to the selected satellite. When a signal is locked on, you should precisely adjust the antenna's elevation and azimuth settings in order to optimise signal reception. When correcting the azimuth, the entire antenna assembly and positioner revolve with respect to the mast. If initially the antenna was not directed precisely south, you can correct this now. When you have finished with the first satellite, all other satellites will be remembered automatically, provided that you have introduced their satellite position values correctly.

Without the USALS function, programming of the system is much more difficult. To this end you should use the DiSEqC 1.2 function, which turns the antenna to the selected satellite in a nearly identical manner. Since, however, it does not take into consideration the local geographical coordinates, the movement is effected on the basis of the prime meridian and the equator. Therefore it is necessary to introduce corrections separately for each satellite. Due to these difficulties, manufacturers of DiSEqC 1.2 positioners frequently provide useful software on their websites, using which you can easily calculate the location of the satellite.

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## 9. Connecting the satellite receiver

The following illustrations show cable connections for a television and other devices connected with the receiver. If you require any assistance in connecting individual devices, contact your local technician. Before connecting or altering cabling, disconnect the receiver from the mains !!!

### 9.1 Connection by means of an HDMI cable (recommended)

1. Connect the antenna to the LNB IN socket of the receiver.
2. Connect the HDMI to the receiver out and the television in.

Connection by means of an HDMI cable allows you to obtain the highest image quality.



If you have an amplifier with an HDMI out and in, which supports sound sent over HDMI, connect the devices by two HDMI cables. As in the following figure: one cable to the amplifier, and the other from the amplifier to the television set.

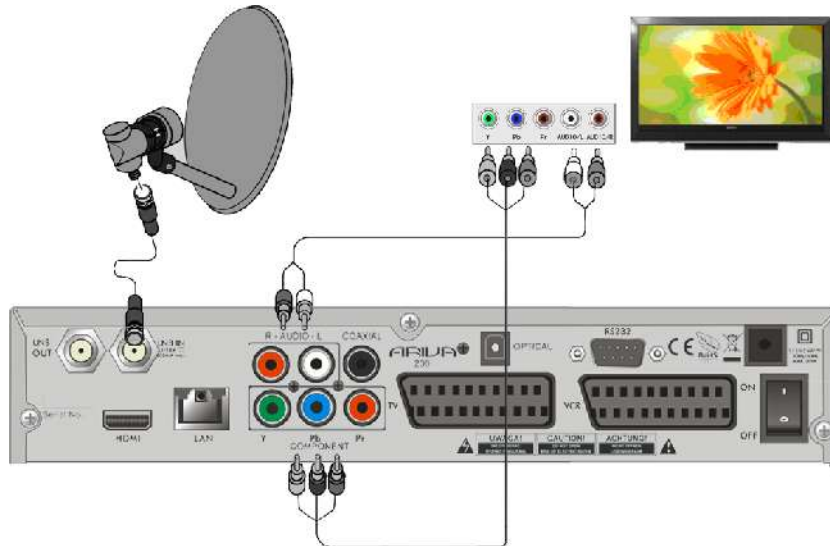


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## 9.2 Connection by means of the YPrPb (component) sockets

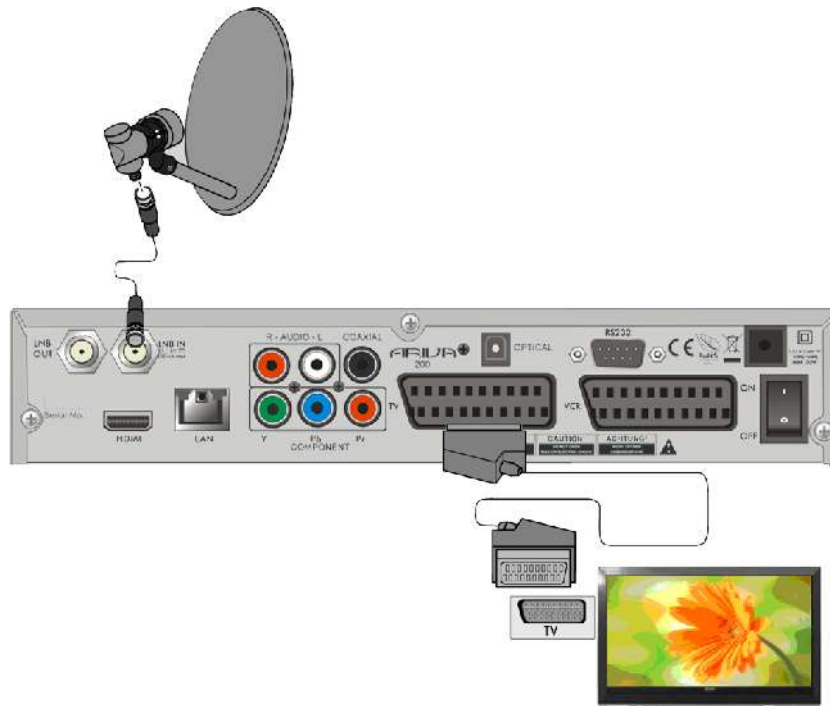
1. Connect the antenna to the LNB IN socket of the receiver.
2. Connect the video and audio by means of five cinch cables to the television set.

Three cables, coloured green, blue and red, are used to send the three colour components. The two remaining cable, red and white, are used to connect sound (right and left channel).

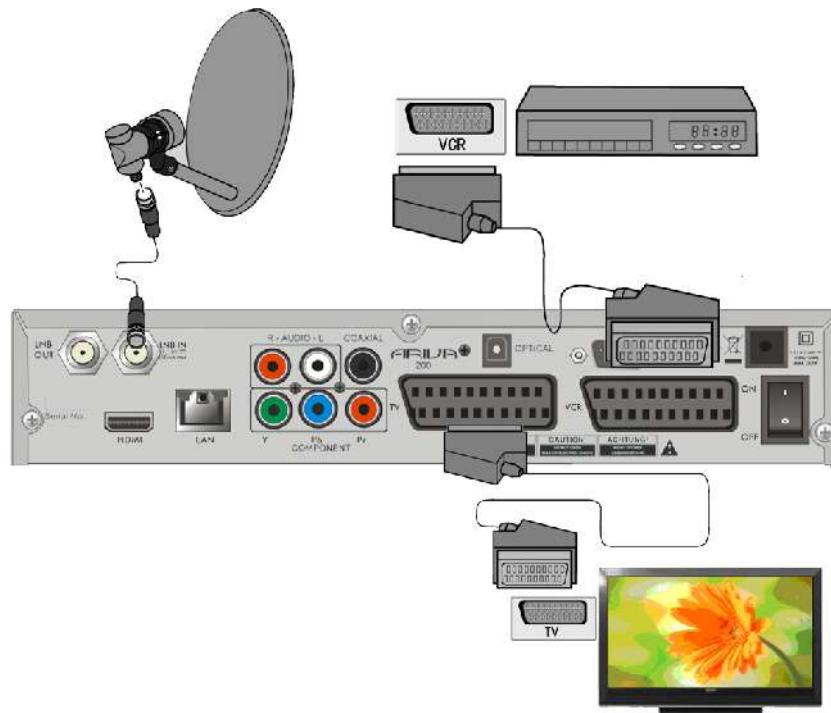


## 9.3 Connection by means of SCART cables

1. Connect the antenna to the LBN IN socket of the receiver.
2. Connect the television to the port in accordance with the description. We recommend using shielded SCART cables.



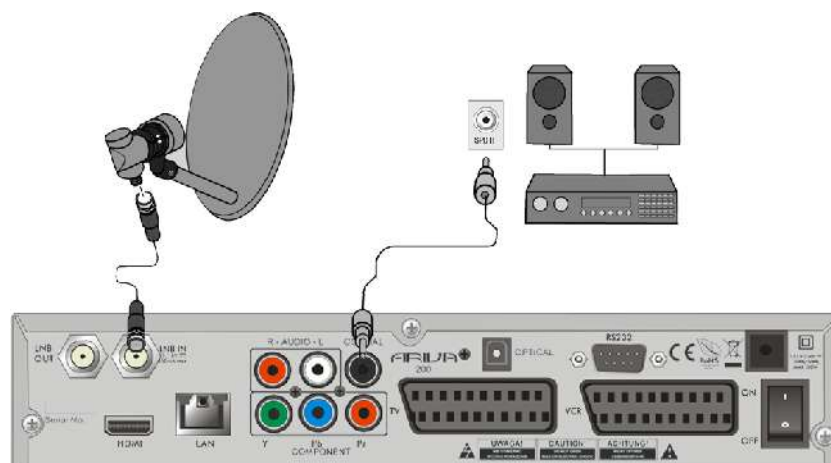
If you have a DVD recorder, video recorder, DVD or other devices - connect them in a cascade with the VCR port. Remember that the TV/STB button on the remote control unit is used to change the source of image from the SCART cascade.



#### 9.4 Connection of an audio system

1. Digital sound (including surround sound, if broadcast) may be obtained through two sockets: electrical (SPDIF) or optical (OPTICAL). The following figure presents the SPDIF connection.

2. Stereo sound may be obtained by connecting cinch cables (white and red) for the left and right channels



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## 9.5 Connection of an external memory

1. The receiver supports all types of hard disk drives in housings that are equipped with an independent power supply. The sole condition is that the hard disk has to have a single basic partition that is formatted in the NTFS (recommended) or FAT32 system.
2. We recommend that you regularly archive data on your PC computer. A large number of files with recordings may slow down cooperation with the receiver (slow loading of the file list).
3. Connect the memory through the USB port located on the front panel under a tab.



## 9.6 Connection of another receiver

Another receiver may be connected through the LNB OUT socket. Please keep in mind, however, that only one device may be used at any one time! Permanent damage may result if both are turned on simultaneously.

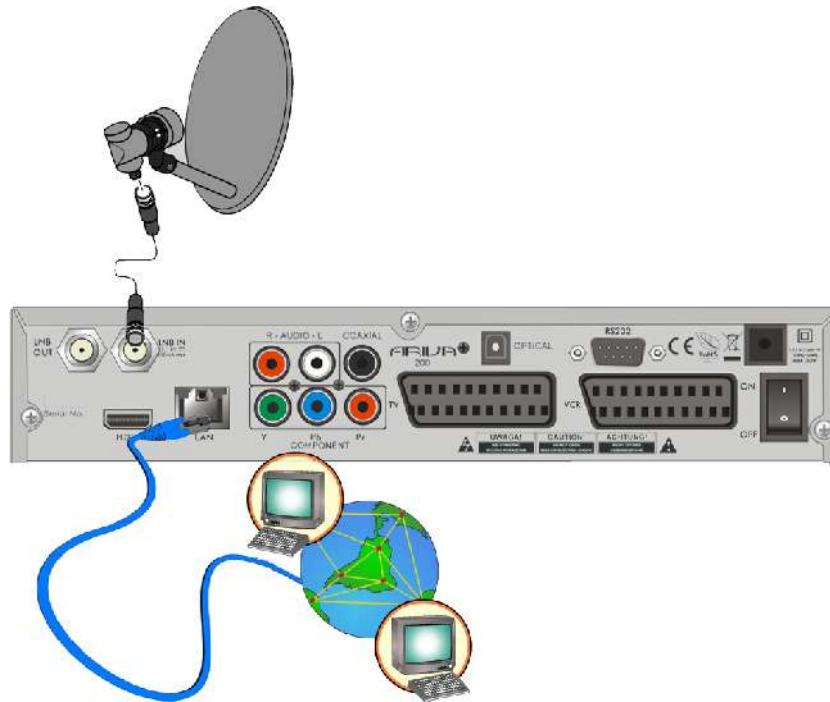




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## 9.7 Connection to the LAN local network

In order to connect the receiver to a local network, use an RJ45 cable. We recommend that you restart the receiver whenever the network settings are changed.



## 9.8 Connection to the computer by means of an RS232 Null Modem cable

For connection to a computer, use a Null Modem cable.



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## FIRST STEPS

1. Insert the plug of the receiver and other additional devices to a wall socket.
2. Select AV signal source of your television set.
3. The satellite receiver is supplied with reinstalled television channels. In order to watch other, i.e. non-default channels, you should use channel search function.



**Note:** check all of the connections, i.e. antenna cables, audio and video signal cables, before connecting the receiver to the mains!

## INFORMATION ABOUT THE USER MENU

The user interface allows you to use numerous settings and receiver functions. Some buttons on the remote control unit enable direct access to functions of the device. Certain of these buttons have been described, for example EPG, MENU, OK, or coloured for ease of usage. Other buttons are multi-functional and their operation depends on the type of device selected by the user. Hereunder we have presented a brief description of how to use certain device functions available through the user menu.

1. The up/down arrow keys on the remote control are used to move the cursor up and down on the menu.
2. The left/right arrow keys on the remote control are used to move the cursor left and right, and to switch on submenus
3. The OK button is used to enter submenus.
4. The EXIT button is used to exit menus or functions.
5. When using a submenu, the OK button is used to confirm your selection; a green background informs that a function is active.

## 10. Main menu

Press the MENU button on the remote control in order to display the following main menu, which contains six items:



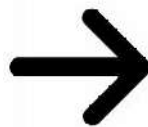
1. editing channel lists
2. installation
3. system settings
4. tools
5. games
6. recording settings

## 11. Installation

The installation menu is used to set antenna installation parameters and to search for channels on a satellite.

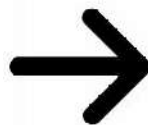
### 11.1 Antenna connection

Select one of the two available options, depending on your system. Two options are available: a fixed antenna (a typical system with a single converter) and an antenna with a positioner.



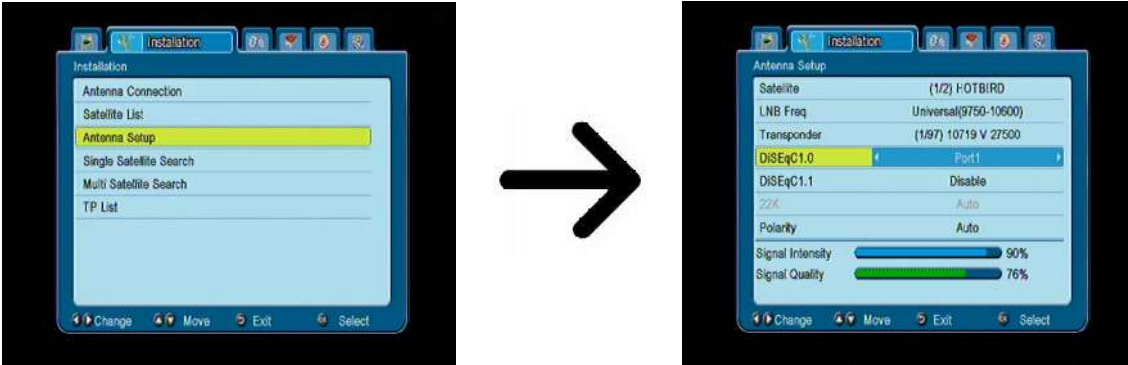
### 11.2 Satellite list

In this menu select the satellites that you want to use. Select a satellite by pressing the up/down arrow keys. Mark by pressing OK. Each selected satellite will be accompanied by the ♥ symbol. The remaining menu options will be available only for selected satellites.



### 11.3 Antenna setup

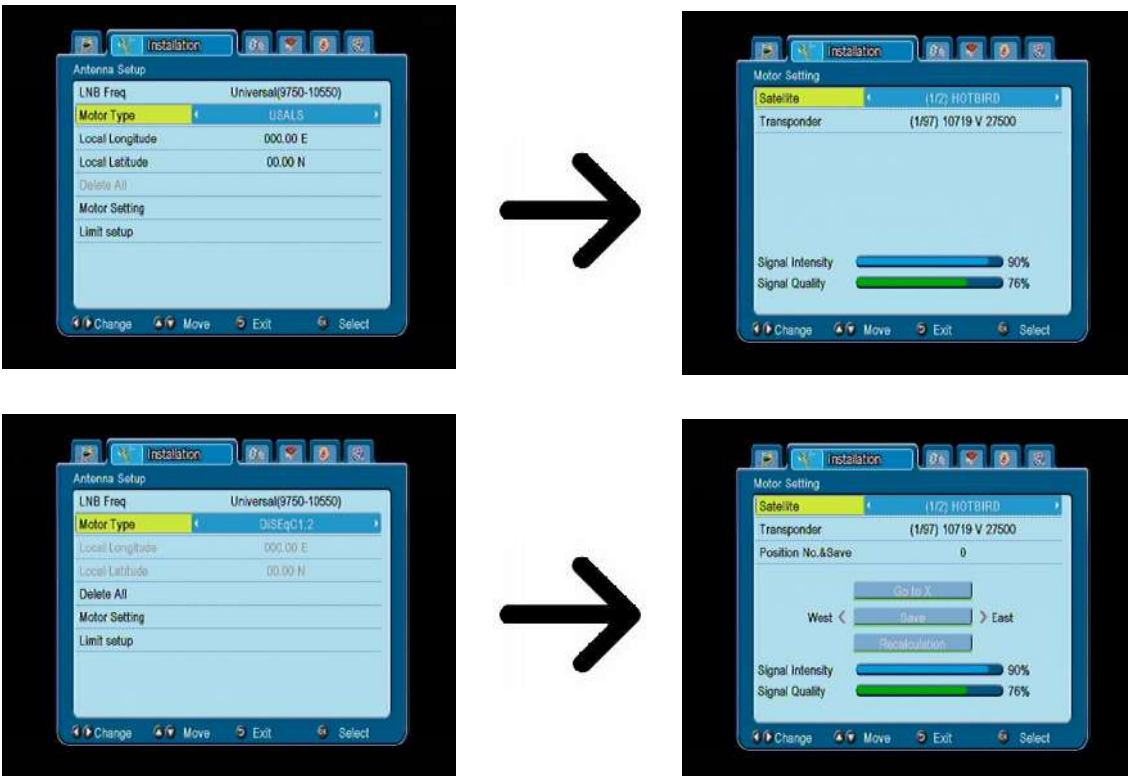
This menu is used to set detailed operating parameters for previously selected satellites, depending on your antenna system. Select a satellite by pressing the left/right arrow keys. Only satellites marked on the list of satellites will be available. Now select the converter type (usually, you do not have to change this option and may leave it set to "universal"). Next, if you have a switch for more than one satellite, set the required port. Depending on the type of switch, these will be options for DiSEqC 1.0 or DiSEqC 1.1 (do not activate these two options simultaneously).



The correct setting of the antenna is indicated by bars presenting the strength and quality of the signal. Both should indicate more than 80% for channel reception to be free of interference. In order to check the strength and quality settings, use the "transponder" option in order to alter the frequency and verify whether each V and H polarization is operative.

Confirm the settings by pressing EXIT.

If as the antenna connection you have selected: antenna with positioner, the antenna settings menu will have a different appearance. Two operating standards will be available for the positioner: USALS or DiSEqC 1.2. We recommend using USALS positioners, for which only the correct longitude and latitude must be given.

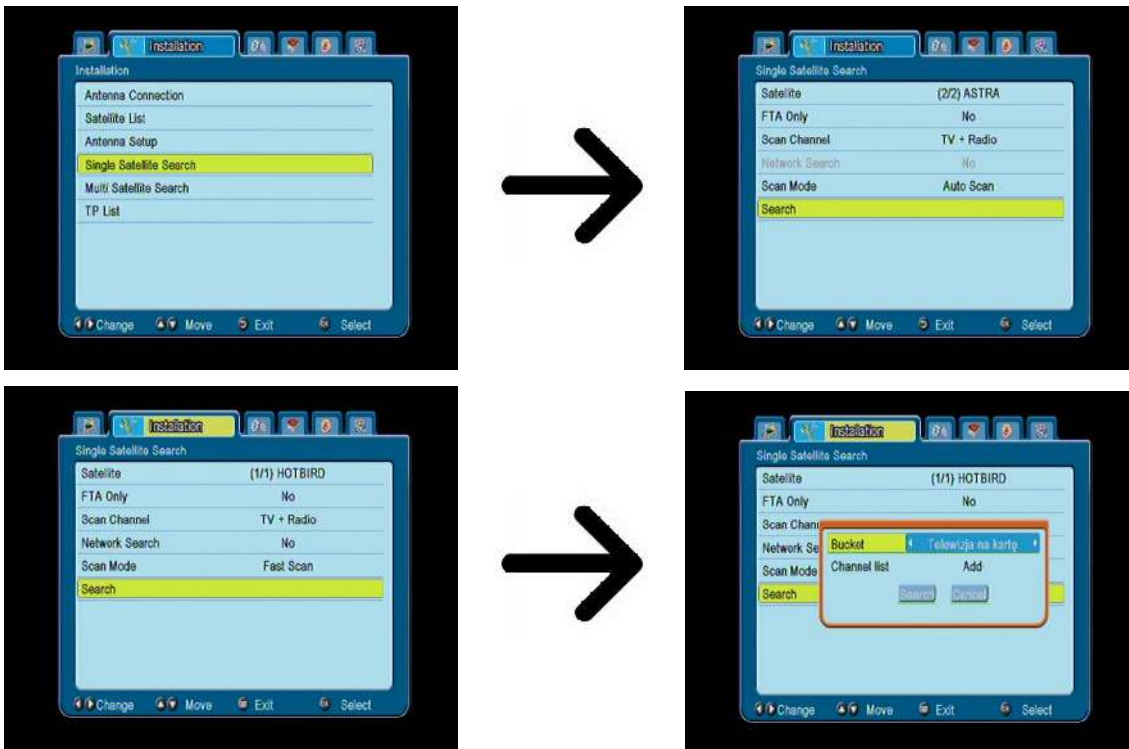


## 11.4 Single satellite search

In this menu you can search for channels from one selected satellite. To this end, select a satellite by pressing the left/right arrow keys. Only satellites marked on the list of satellites will be available. Next, select whether you want to search only for unencoded channels or for all channels, or for radio channels, television channels, or all channels.

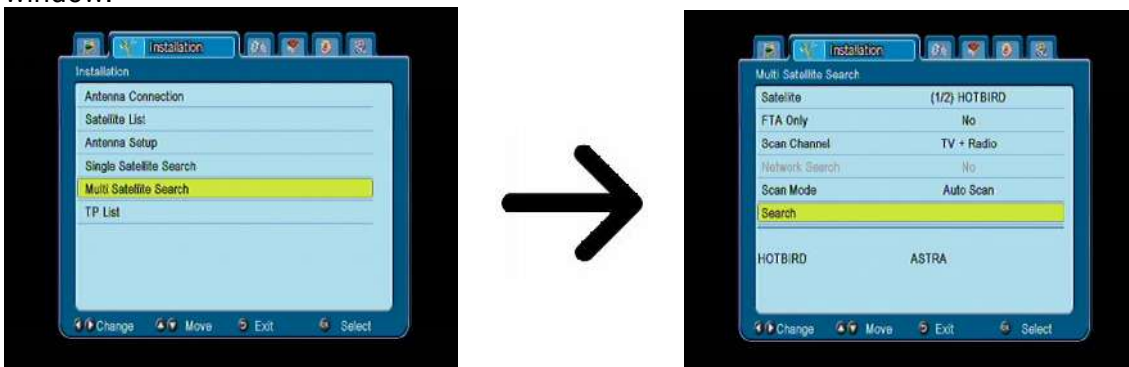
Three search modes are available:

1. Auto scan – a so-called blind scan, which consists in an automatic search for available satellite frequencies, which are then scanned in turn.
2. Preset scan – according to the TP list – the receiver searches through only frequency by frequency, in accordance with a list recorded for the selected satellite. This list may be edited in a separate menu.
3. FastScan - receiver scans the channels of the selected provider bucket. You can add channels to an existing list or replace an existing list. Please note that the search result and working of this function depends solely on the provider.



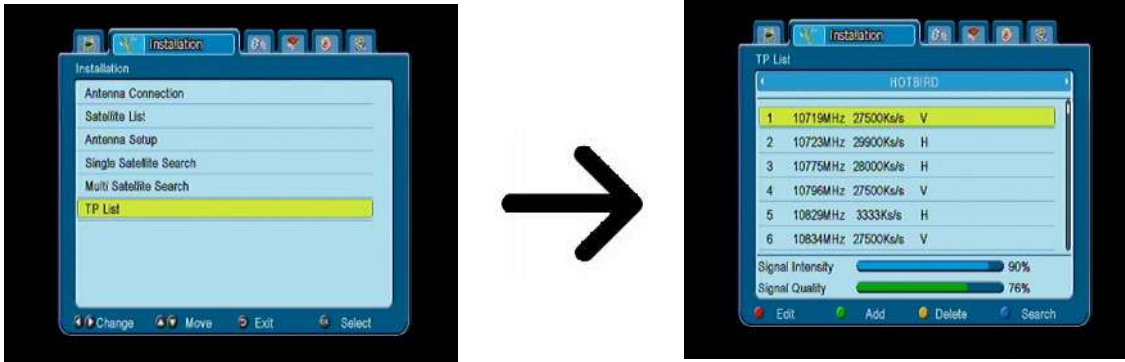
## 11.5 Multi satellite search

In this menu you can search for channels from a few satellites. The satellites will be searched automatically one after another in the order in which they were entered in the list of satellites. Options concerning settings and search functions are the same as in the menu: search one satellite. The names of satellites that are to be searched are visible in the lower part of the window.



## 11.6 List of transponders

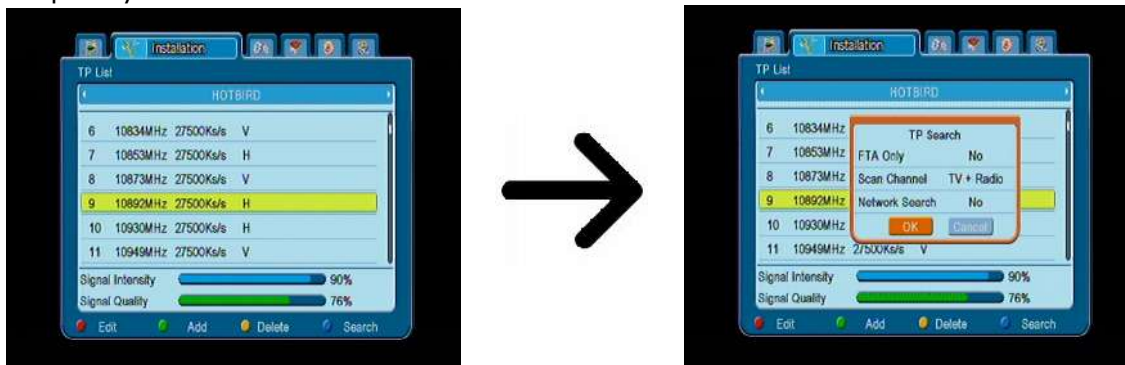
Channels on satellites are located in "sets". Such a "set" of channels comprises a transponder. A list of transponders is a list of frequencies available on a given satellite. In this menu you can edit, add and remove individual frequencies. Select a satellite by pressing the left/right arrow keys, and the desired frequency using the up/down arrow keys.



### How do I search for a new channel?

In order to search for a new channel, you must know the basic channel parameter, i.e. the frequency on which it is broadcast. This parameter may be obtained from the broadcaster, on the internet, in the press, etc.

Next proceed to the list of transponders, select a satellite and choose the desired frequency (if it is not on the list, use the function: add – green button on the remote control unit). Now click OK for the selected frequency or the blue button on the remote control, in order to call out the window for searching this frequency. Use the up/down buttons to change search options and confirm by means of the OK button. A search will be started. Newly found channels from this frequency will be added at the end of the list of channels.

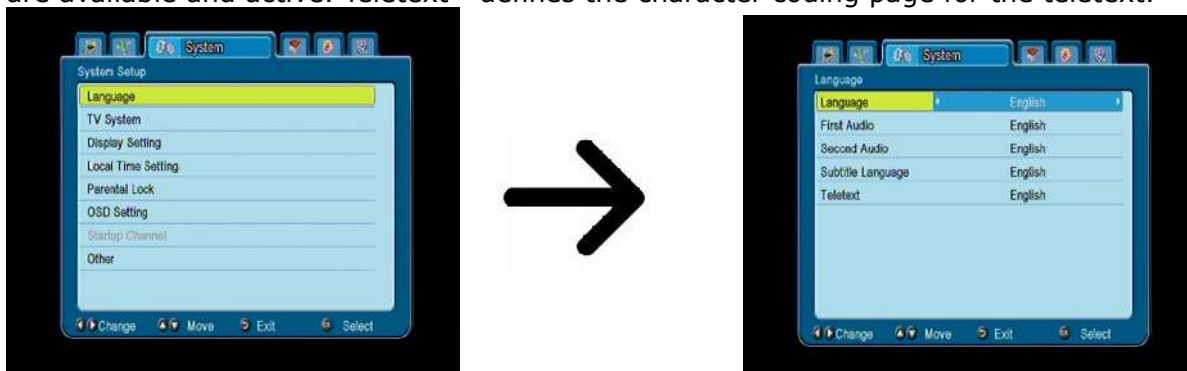


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## 12. System settings

### 12.1 Language

This menu is used to define the language in which the receiver's menu is displayed. The preferred and second language options refer to audio soundtracks. If a given channel supports more than one audio soundtrack, the receiver will by default search for soundtracks in the selected languages in this order. The language of subtitled – as in the case of audio soundtracks, this determines the language of subtitles to be used, provided that such subtitles are available and active. Teletext - defines the character coding page for the teletext.



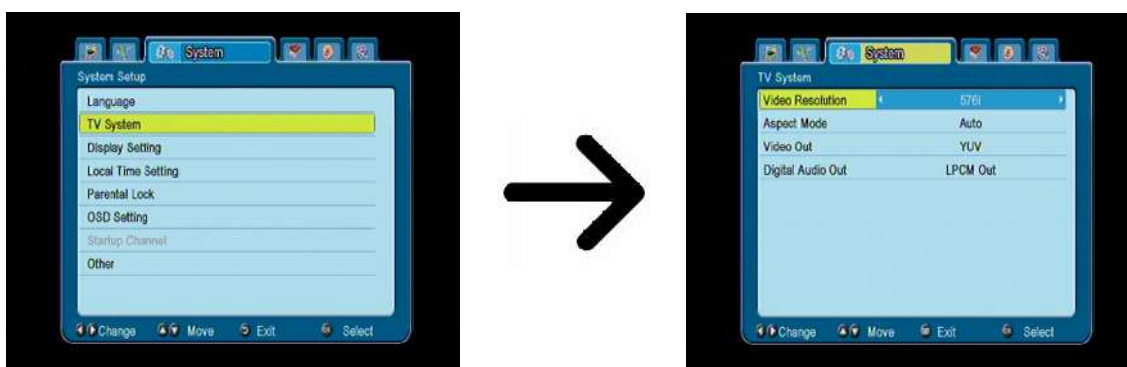
### 12.2 TV System

This menu is used to set the image parameters. Above all, you should determine the resolution of the image sent over the HDMI connection. Select the highest possible resolution supported by your HD television set in order to obtain the best image quality. The following resolutions are available: 480i, 480p, 576i, 576p, 720p (50Hz), 720p (60Hz), 1080i (50Hz), 1080i (60Hz). If you select an unsupported resolution, your image will be lost or become illegible – you can always use the **OPT** key to return to the basic resolution, i.e. 576i. Please keep in mind that you can also change the resolution at any time by means of the **FORMAT** button.

If you are using a component cable connection, then for the majority of television sets we recommend a resolution of 720p (50Hz) or 720p (60Hz), depending on your television set, and the YUV video out. *Note:* if you change the video out to RGB, no video signal will be output over the component connection!

If you are using a SCART connection, then for the majority of older television sets we recommend setting the video out to YUV. If your television supports RGB, then activate this option in order to obtain better image quality over the SCART connection.

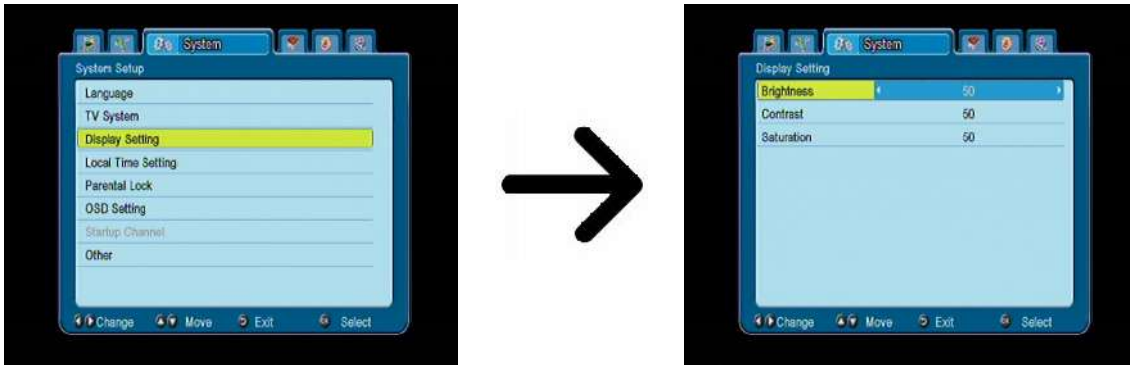
Additionally, in this menu you can choose the format in which the receiver will send sound over the digital connections. We recommend using LPCM in order to also receive a stereophonic signal over the digital connections.



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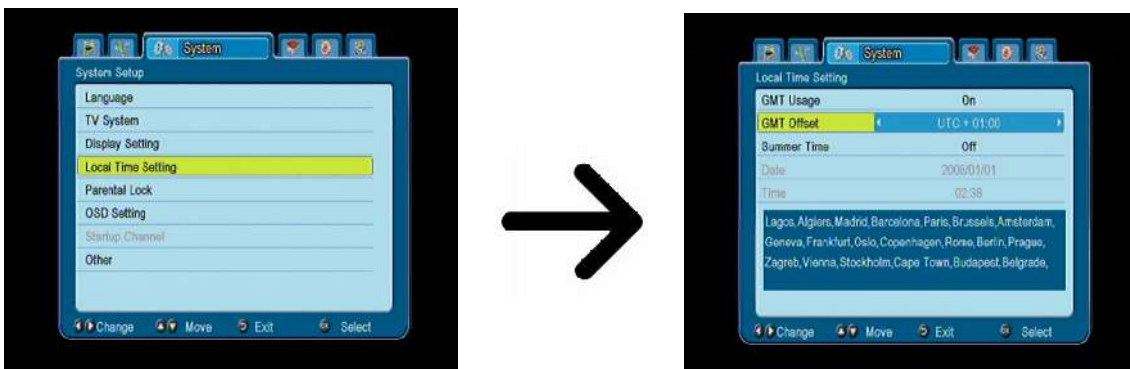
### 12.3 Display setting

This menu is used to adjust the image displayed by the receiver. You can change the brightness, contrast and colour saturation. By default, all of these values are set to 50.



### 12.4 Local time settings

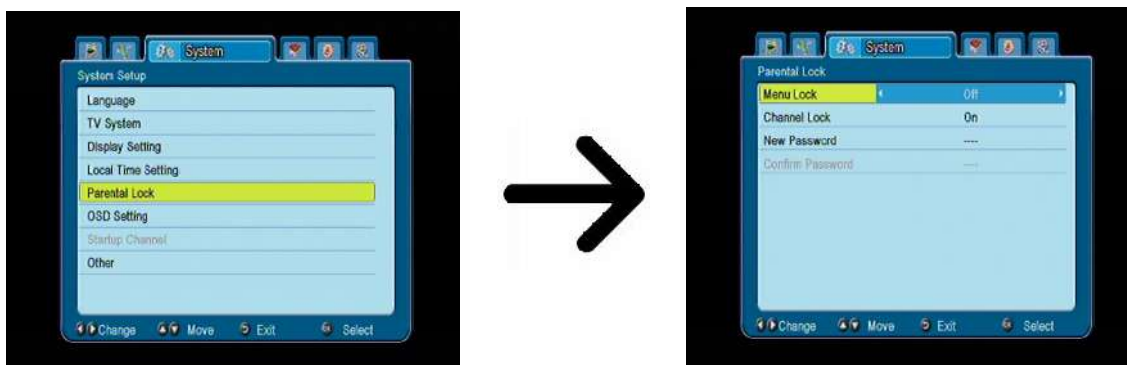
This menu is used to set the time and date. The receiver can automatically download the time and date from the satellite (recommended), or you may set the time and date manually. If you are using GMT, you should select the correct time shift value (for example +1 hour for Poland) and turn on or off the summer time, depending on the time of year. The manual editing of the time and date is effected by means of the numerical buttons.





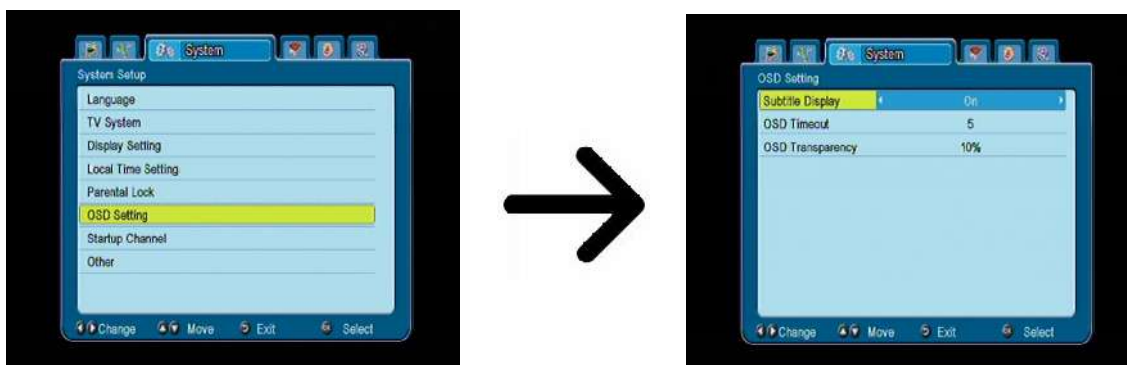
## 12.5 Parental lock

In this menu you may specify whether the receiver is to use a parental block or not. In addition, you can turn on or off the password protection function for selected menu options and change the default password. The default password is four zeros: **0000**.



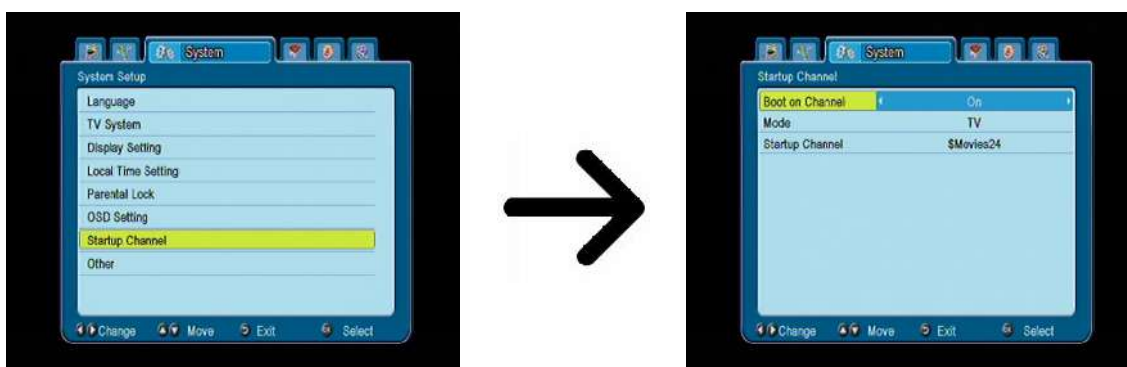
## 12.6 OSD settings

In this menu you can define the basic parameters of the on-screen menu (OSD). The first option concerns support for the subtitles. If the subtitles are turned on, the receiver will display them for channels that transmit such subtitles. By default, they are displayed in the language specified in the language selection menu for the subtitles. Another option determines the time for which information bars will be displayed; the default setting is 5 seconds. In addition, you can specify the transparency of the menu to suit your preference.



## 12.7 Startup channel

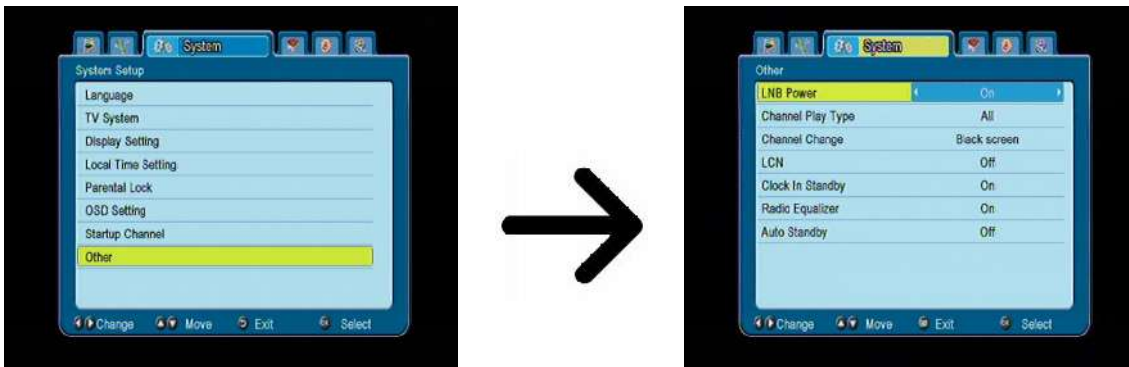
In this menu you can specify the television or radio channel to which the receiver will be switched on. This function is switched off by default, and this means that the receiver will switch to the channel on which it was turned off.



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## 12.8 Other

In this menu you can change the remaining options, such as the power supply of the converter, select the types of channels played, and how the receiver is to behave when switching channels.



**Clock In Standby** enables or disables the clock on the front panel display in standby mode.



**Note:** *only if the clock in standby mode is off the receiver draws less than 1W of energy!!!*

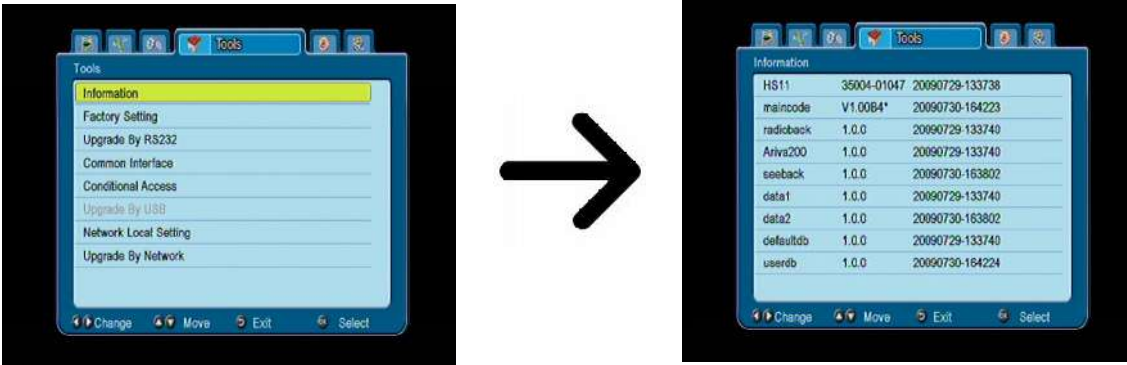
**Radio Equalizer** enables or disables the audio graphic equalizer display while listening to radio stations.

**Auto Standby** run this option will automatically turn off the receiver after 3 hours of inactivity.

## 13. Tools

### 13.1 Information

In this menu you can obtain detailed information about your software version. The software structure is divided into a number of independent databases. The most important of these from the point of view of the user is the **userdb**, which archives current settings and channel lists. The receiver's software version is a symbol placed next to **maincode**.

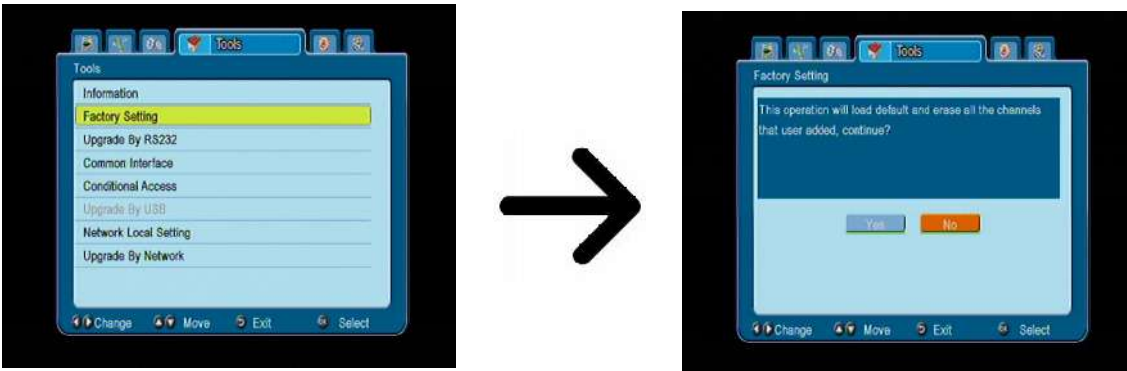


### 13.2 Factory settings

In this menu you can restore the default settings of the receiver.



**Note:** Restoration of default settings results in the removal of all user settings and the recall of a default channel list; in some cases, no channel list will be available. All changes introduced by the user, including the channel list and configuration of satellite antenna settings, will be removed!!!



### 13.3 Updating by RS232

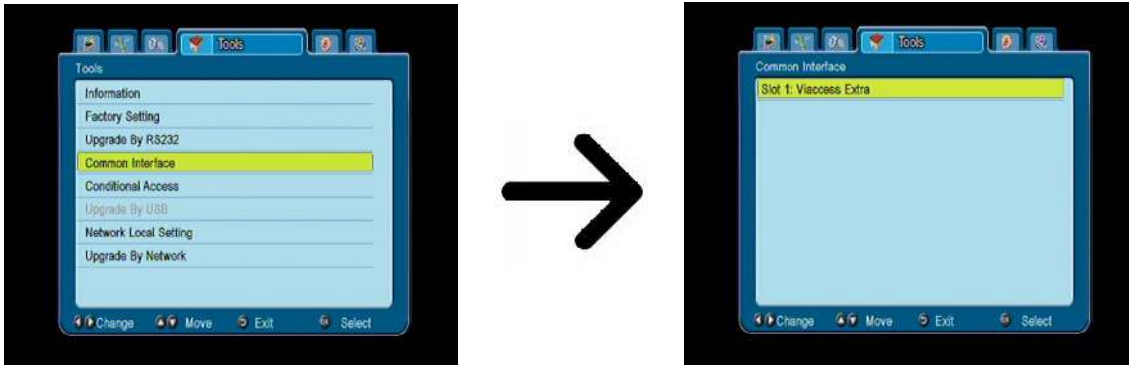


This menu allows you to send software, settings or channel lists from one receiver to another receiver of the same type. Connect the receivers using an RS232 Null Modem cable. Select **allcode** in order to send all of the software, or **userdb** to send only current settings and the channel list.

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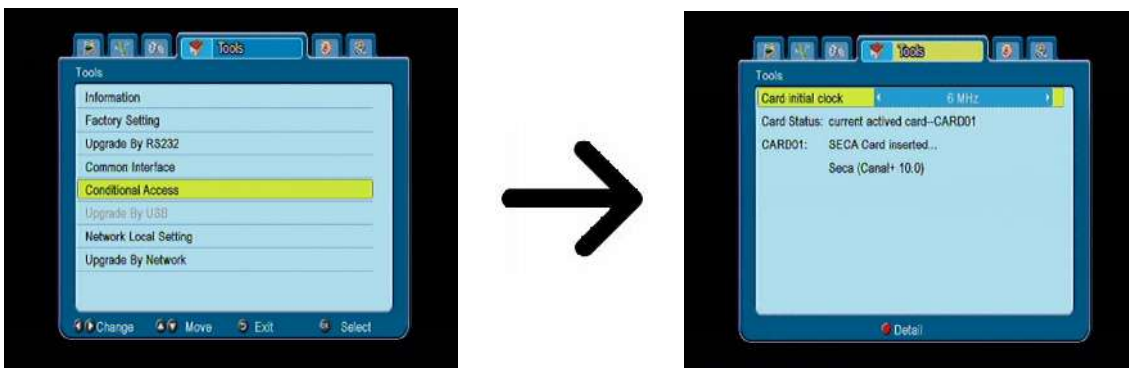
### 13.4 Common interface

In this menu you can obtain additional information about your CAM conditional access module. This option is active only when the module is in the CI socket and has been correctly recognized by the receiver. Detailed information about the module depends on the module's software and is not connected with the software and operation of the receiver.



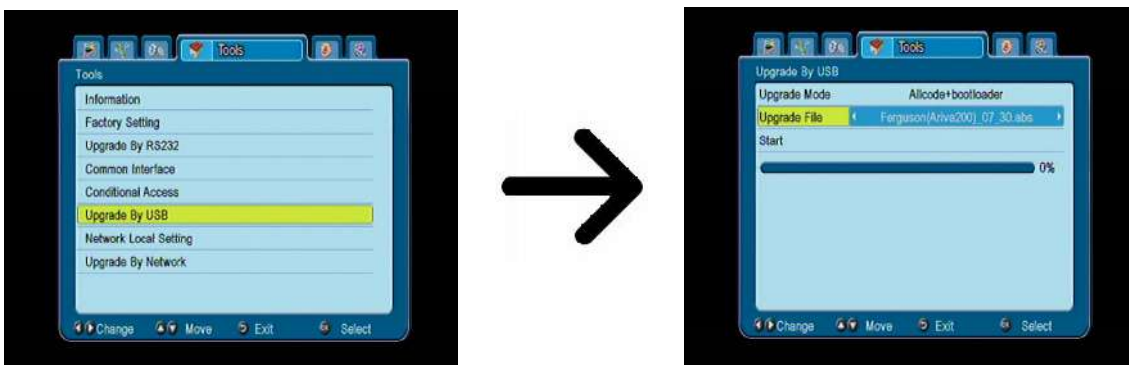
### 13.5 Conditional access

In this menu you can obtain additional information about the subscriber's card in the card reader. The information presented depends on the type and version of your card. Card initial clock is by default is set to 6MHz but if you have any problems with card splitter systems you can try to slow it down to 3,6MHz. Change require receiver reboot!



### 13.6 Upgrade by USB

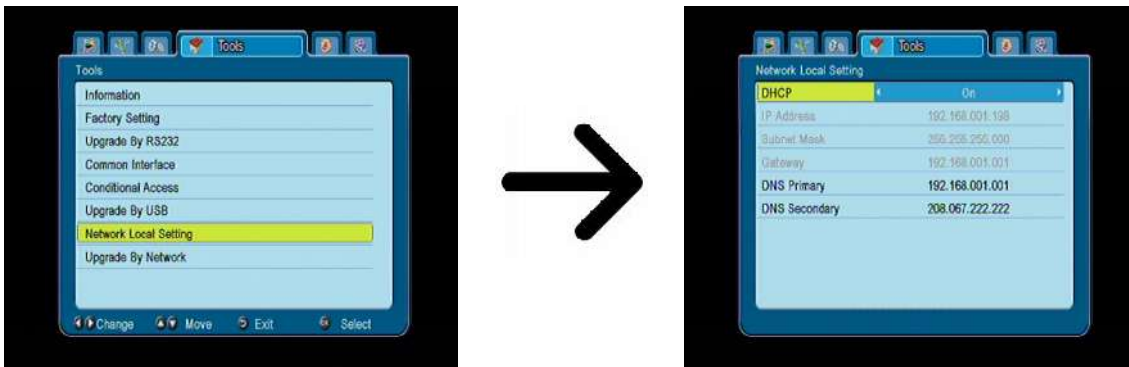
This menu is used to update the receiver. The latest software is available on the manufacturer's website. The downloaded file needs to be unpacked and recorded to an external USB memory device. Next, select it by means of the LEFT/RIGHT buttons and press start in order to commence the update.



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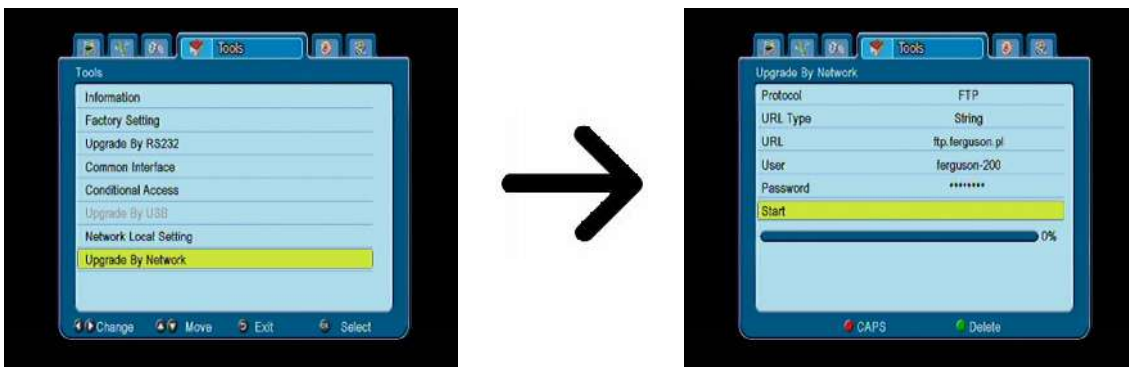
### 13.7 Local network settings

This menu serves to configure addresses and DNS servers. These options concern the Ethernet port, which enables the exchange of data over the network.



### 13.8 Upgrade by network

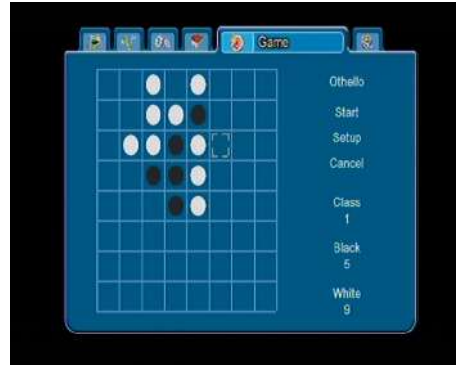
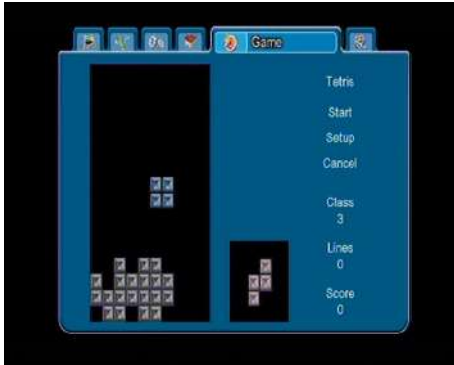
The receiver allows you to update software over the Internet. Detailed information about current connection parameters can be found on the manufacturer's website.



## 14. Games

The receiver has three factory-installed games:

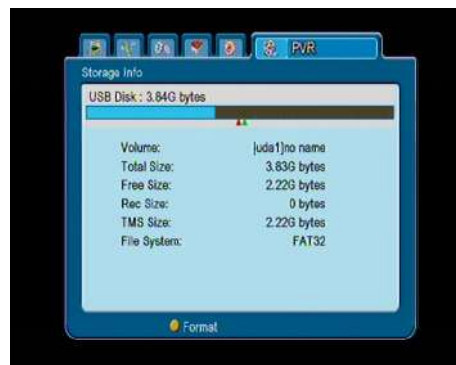
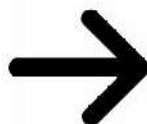
- Tetris (classic arranging of successive levels using blocks of various shapes).
- Othello (a logical game, which consists in the placement of your colour on a board and changing your opponent's colour; the person whose colour dominates, wins).
- Sudoku (the game consists in completing diagrams with numbers from 1 to 9 in such a way that each column and each line contains each number from 1 to 9).



## 15. PVR – recording configuration

### 15.1 Storage info

This menu displays basic information about the connected USB memory device. An additional option allows you to format the memory device. Press the yellow button in order to select the file system in which the device is to be formatted. Two options are available: FAT and NTFS. Both file systems are supported correctly, however due to the lack of limitations regarding the size of written files and greater reliability, we recommend using the NTFS system.

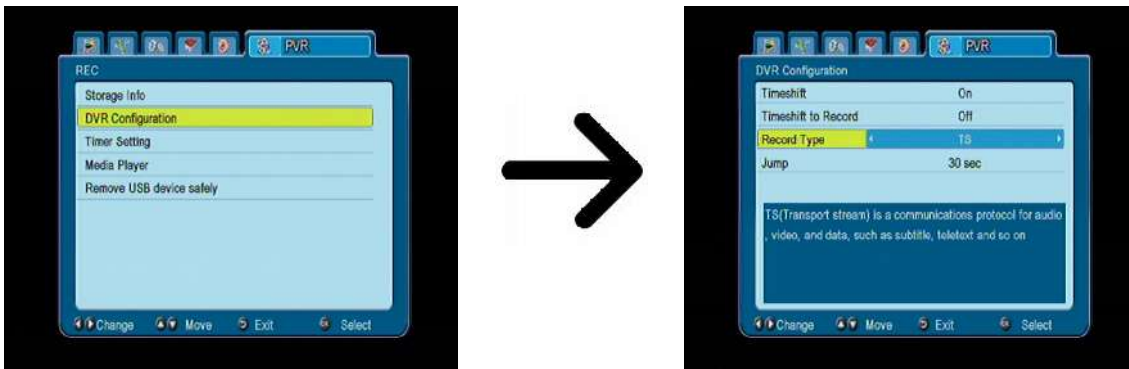


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## 15.2 DVR configuration

In this menu you can adapt preferences concerning recording to an external USB memory device. In the first option you decide whether you want to use the time shift option. This mode makes it possible to stop the current transmission at any moment by pressing the **PAUSE** button and resume it after a break by pressing the **PLAY** button.

Another option allows you to switch on or off the buffering of data gathered by the TimeShift function. This means that once you press the **REC** button, the contents of the buffer will be recorded and the recording shall be continued. This option is inactive by default, which means that once you press the **REC** button, the receiver will start recording from that moment on.

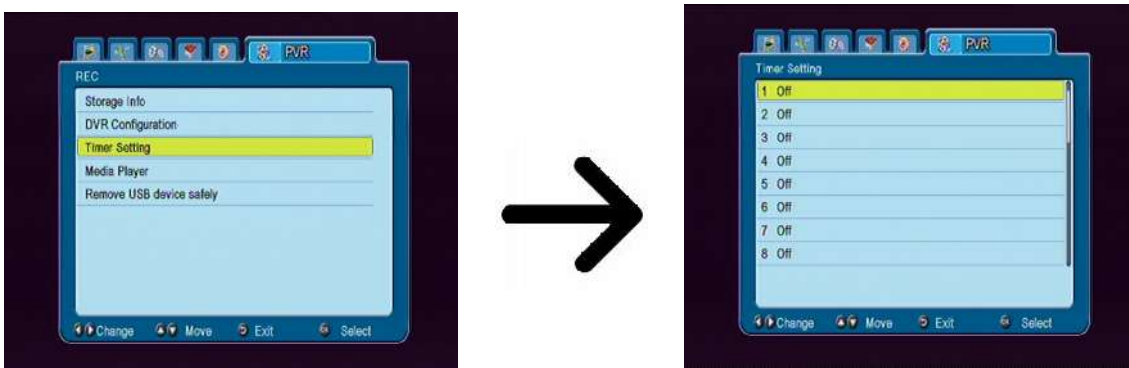


In this menu you can also determine the type of recorded files. All data are recorded in TS (transport stream) format or in an abbreviated version, with only the default sound and video in PS (program stream) format. We recommend using the TS format, which records the audio soundtracks, video, subtitles and teletext.

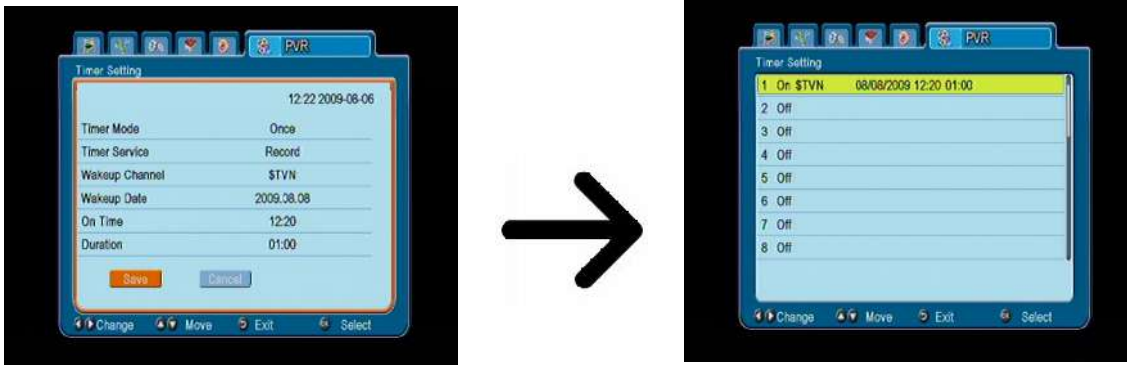
The final option concerns the playback of recordings. It defines the time of rapid movement by means of they ▲ / ▼ forward/back keys, respectively, during playback.

## 15.3 Timer settings

This menu serves to programme up to 32 different events. Events enable the automatic switching on and off of the receiver to a previously planned programme.



Select the event that you want to programme and press OK. Set the timer activation frequency. Select the channel (press OK to display the simplified channel list). Next set the date, start time and duration. Select 'record' to return to the events list. A new item has been added.



## 15.4 Media Player

The receiver is equipped with a simple multimedia player. You can use it to listen to music, watch photographs and films, and - first and foremost - play back recordings. The player is available through a menu option or directly, by pressing the **USB/PVR** button.

### Music



In this tab you can support a number of popular formats of music files, such as MP3 or OGG. There are a few additional functions that can be operated by means of the functional keys described in the lower part of the screen.

### Photos



In this tab, you can view photographs in JPEG format. There are a few additional functions that can be operated by means of the functional keys described in the lower part of the screen.



*When viewing photographs, you may listen to music. To this end, activate the playback of music files and pass to the photograph tab using the LEFT/RIGHT buttons.*



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## Video



In this tab, you can play back files in MPG format. High resolution MPG files can also be played back.

## Recordings



This tab is used to play back recordings made using the receiver. Each recording may be blocked by a password, deleted, or its name changed.

Options available during playback (subtitles, teletext, audio soundtracks) depend on the selected recording format!!!

During playback, press the INFO button in order to display the information bar. There are a few different methods of quick viewing/scrolling a recording:

1. Use the Fast forward and Rewind buttons to navigate within a current recording and press the PLAY button in order to start viewing from a selected moment.
2. You can set the red cursor by means of the LEFT/RIGHT buttons and confirm with OK in order to start viewing from a selected moment.
3. Another method consists in moving by means of the  $\blacktriangle$  /  $\blacktriangledown$  keys. Scrolling is effected by the number of minutes defined in the DVR configuration menu. Keep in mind that this function is available only when the time of the recording exceeds the selected scroll time.
4. Another option of quick scrolling a recording is based on usage of the numerical keys. This results in scrolling in accordance with the value applied, i.e. 4 in order to pass to 40% of the recording, 5 in order to pass to 50% of the recording, etc.

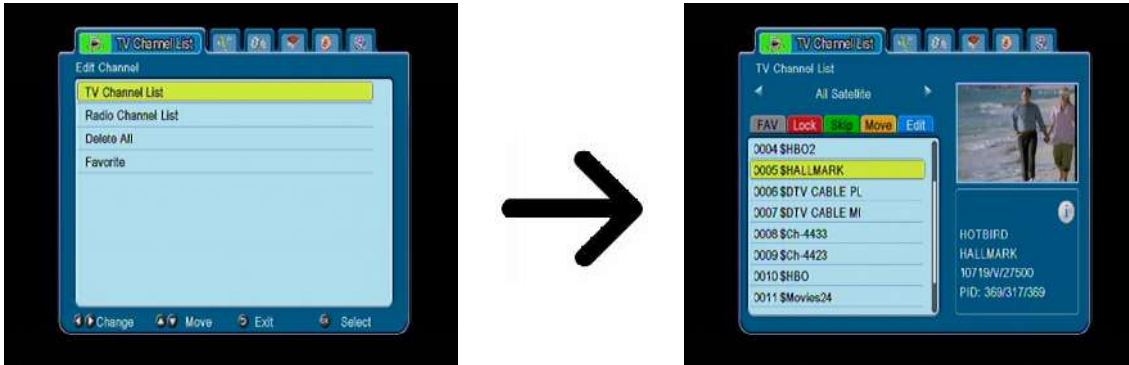
### 15.5 Safe removal of a USB device

This function allows you to rapidly and, what is most important, safely remove any USB memory device connected to the receiver. In the case of flash memories or portable disks, this prevents the loss of data when disconnecting the USB memory device. Always use this option before disconnecting a USB memory device!

## 16. Edit channels

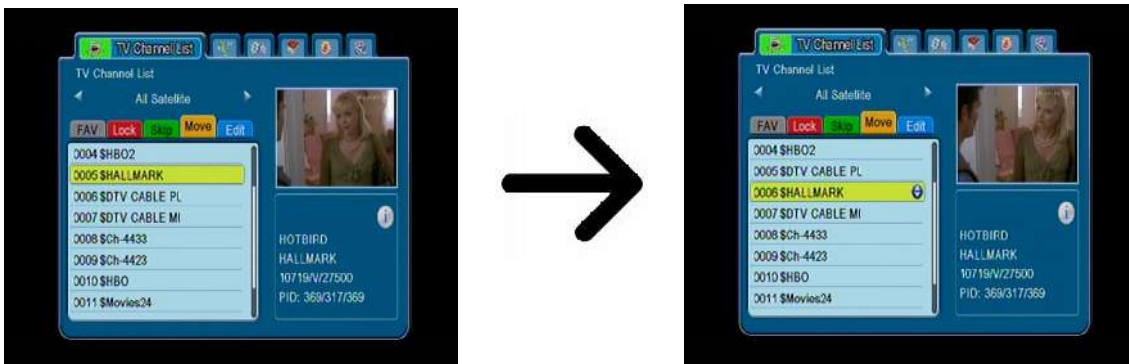
### 16.1 TV channels list

In this menu you can edit the list of television channels. Editing is effected by means of the coloured buttons on the remote control unit. The raised colour function is active - select OK on the selected channel in order to use it. EXIT, in order to save.



### How do I move a channel?

Proceed to the editing of channel lists. Select a channel and press OK in order to see a preview in a small window. Press the yellow button in order to turn on the channel movement function and then once again press OK on the selected channel. A symbol comprising two arrows will appear next to the channel name.



Use the up/down arrows to move the channel to a selected position and confirm by pressing OK. Next press the yellow button again in order to switch off the channel movement function.



Once you are finished, press EXIT. A message will appear asking you to confirm the changes made. If you fail to do this, changes in the channel list will not be saved.

## How do I delete a channel?

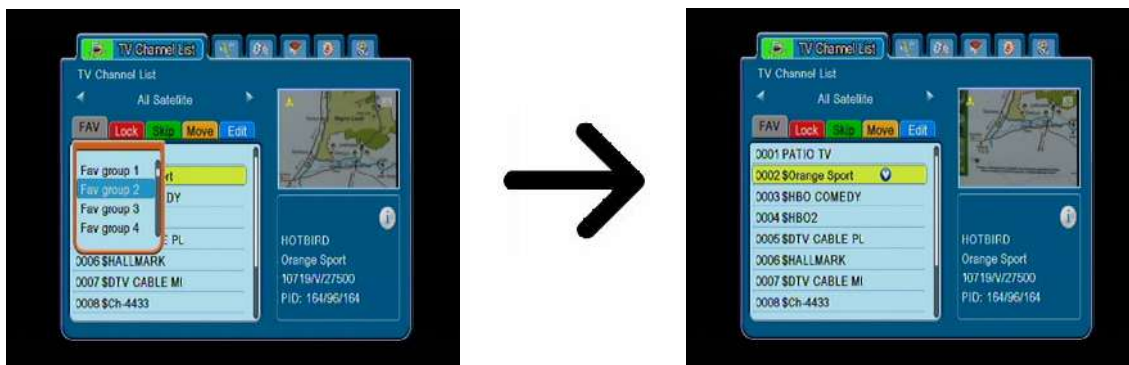
Proceed to the editing of channel lists. Select a channel and press OK in order to see a preview in a small window. Press the blue button in order to pass to the channel edition menu. Press the blue button in order to switch on the channel delete function and OK on the channel that you want to remove. The symbol **X** will appear next to the channel name.



Next press the blue button again in order to switch off the channel delete function. In this way you can mark one or more channels that you want to delete with the **X** symbol. Once you are finished, press **EXIT**. A message will appear asking you to confirm the changes made. If you do not do this, the channel(s) will not be deleted.

## How do I add to the group of favourites?

Proceed to the editing of channel lists. Select a channel and press OK in order to see a preview in a small window. Press the FAV button in order to switch on the add-to-favourite-groups function. A window will appear with a list of favourite groups (names of favourite groups are changed in a separate menu).



Use the up/down arrows to select the group to which the selected channel is to be added. Next press OK to confirm. Select a channel and press OK on this channel in order to add it to the group. The heart symbol, ♥, will appear next to the channel name.



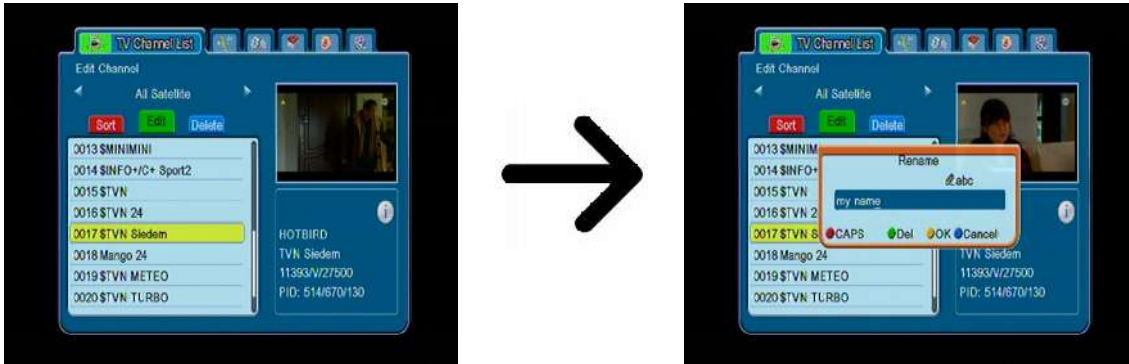
Once you are finished, press FAV in order to switch off the add-to-favourite-groups function.

Having completed the addition of channels to successive favourite groups, press EXIT. A message will appear asking you to confirm the changes made. If you fail to do it, the changes made will not be saved!

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## How do I change a channel name?

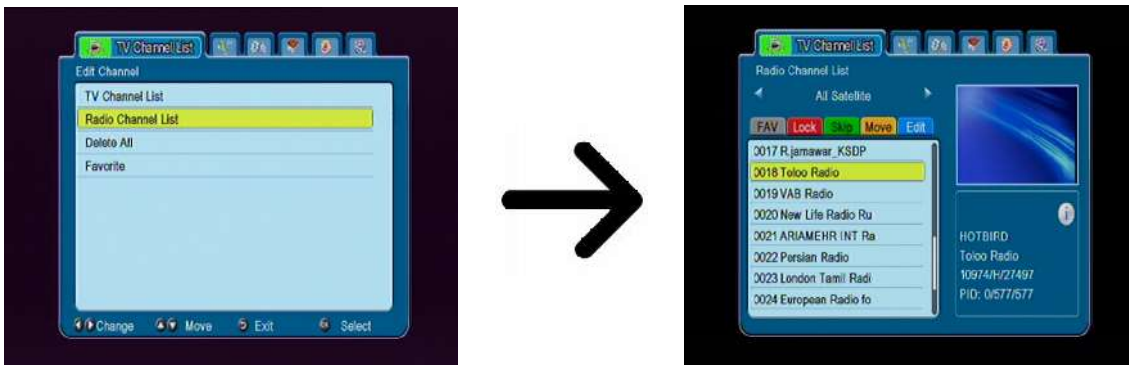
Proceed to the editing of channel lists. Select a channel and press OK in order to see a preview in a small window. Press the blue button in order to pass to the channel edition menu. Press the green button in order to switch on the channel name change function. Use the numerical keyboard in order to change the channel name.



Confirm the new name by pressing the yellow button. Next press the green button again to switch off the channel name change function. In this way you can change the name of one or more channels. Once you are finished, press EXIT. A message will appear asking you to confirm the changes made. If you fail to do it, the changes made will not be saved!

## 16.2 Radio channel list

In this menu you can edit the list of radio channels. Editing is effected by means of the coloured buttons on the remote control unit. The raised colour function is active - select OK on the selected channel in order to use it. EXIT, in order to save.



## 16.3 Delete all

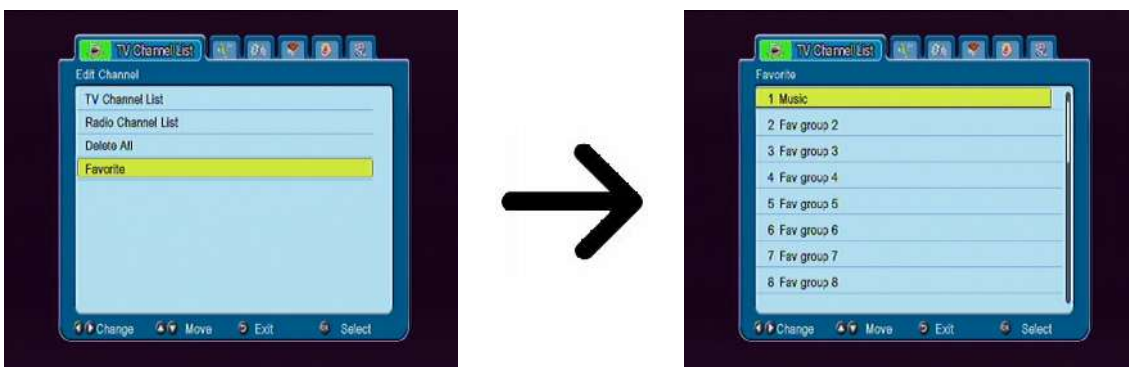


This option allows you to remove all channels from the channel list. Note: This operation cannot be reversed! Make sure that you are certain that you want to remove all of the channels?

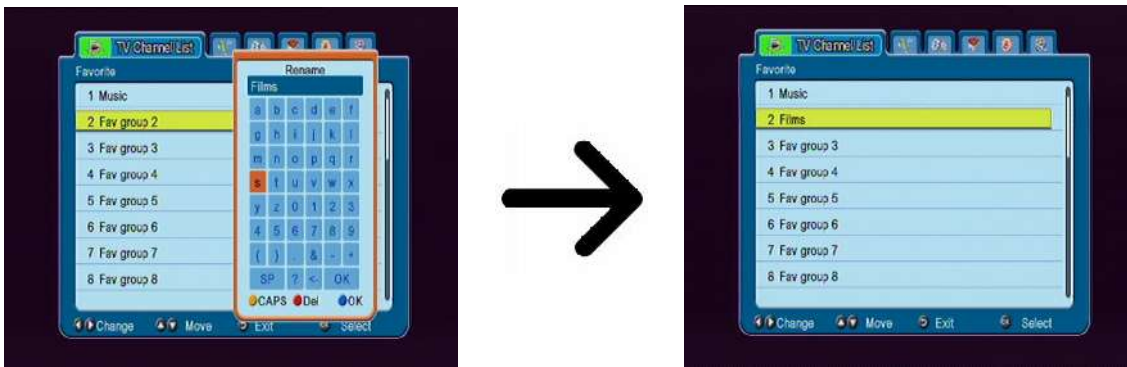
Having selected this option, you should wait a while for all of the options available for the channel list to be highlighted as unavailable.

## 16.4 Favorite

The receiver allows you to define up to 32 different groups of favourite channels. In this menu you can change the names of all of them.



In order to change a name, select the favourites group and press OK. Next use the numerical and coloured buttons to input the name. Confirm the changes by pressing the yellow button on the remote control.



## 17. Basic functions supported by the remote control

### 17.1 EPG



This function displays a programme guide. The contents of current, future and detailed information depend on what a given station broadcasts.

Having selected a programme, you can use the timer function (green button) to automatically plan the viewing or recording of a given programme.



Select the desired programme and press OK in order to view detailed information about the programme. Keep in mind that the availability of the said information depends on what a given television station is broadcasting.

### 17.2 FIND



The FIND button calls up the quick channel search function. Enter successive letters by choosing them one by one. The results list is updated after each successive letter is added. Press the blue button in order to proceed to the list containing results of the search procedure and select the desired channel.

### 17.3 TXT - teletext



This function displays the teletext, provided that it is broadcast by the selected television station. Keep in mind that the correct code page (diacritical marks) is displayed depending on the language settings made in the language settings menu!

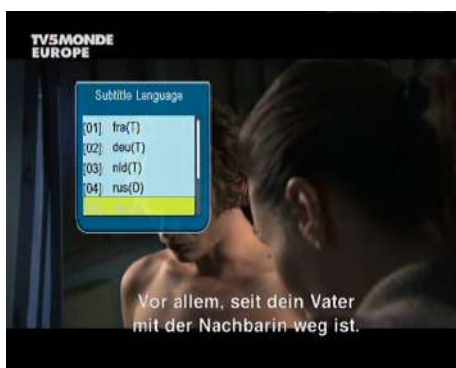
### 17.4 AUDIO



The green audio button displays a window with available audio soundtracks. You can select any of the broadcast soundtracks. Please keep in mind, however, that audio soundtracks with AC3 surround sound may be played back solely through an amplifier connected to the digital audio out – Coaxial or Optical.

This function is also available when playing back a recording, provided that the material was recorded in TS format. Audio soundtracks other than those recorded by default will be available during playback only if they are not scrambled or scrambled in the same way as the default recorded soundtrack.

### 17.5 SUBTITLE



The yellow button displays a window with available on-screen captions /subtitles. You can select any of the broadcast subtitles. If subtitles for a given language have been activated in the menu, these will be marked as default on the list. You can, however, select any of the broadcast subtitles. Keep in mind that the availability of subtitles and the way in which they are displayed depends on the broadcaster!

This function is also available when playing back a recording, provided that the material was recorded in TS format.

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## 17.6 REC - recording

 *This function is available only when an external USB memory device is correctly connected!!!*



1. Select a channel and press the REC ● button. The present channel will now be recorded.
2. If you press the REC button again, a list of options will be displayed, where you can determine the duration of the recording (by default, this is 2 hours).
3. The information bar indicates which programme you are recording and viewing.
4. In order to terminate recording, press the STOP button and confirm your decision.

 *Keep in mind that during recording, the information bar may be hidden by means of the EXIT button. In order to restore the bar, press REC again.*

### **Browsing through a recording – during recording.**

1. The contents of a recording are available for browsing in the course of recording.
2. Use the Fast forward and Rewind buttons to navigate within a current recording and press the PLAY button in order to start viewing from a selected moment.
3. You can set the red cursor by means of the LEFT/RIGHT buttons and confirm with OK in order to start viewing from a selected moment.
4. Another method consists in moving by means of the ▲ / ▼ keys. Scrolling is effected by the number of minutes defined in the DVR configuration menu. Keep in mind that this function is available only when the time of the recording exceeds the selected scroll time.
5. Another option of quick scrolling a recording is based on usage of the numerical keys. This results in scrolling in accordance with the value applied, i.e. 4 in order to pass to 40% of the recording, 5 in order to pass to 50% of the recording, etc.

### **SEMI-TWIN TUNER**

The receiver is equipped with a so-called SEMI-TWIN TUNER; during recording, this function allows you to watch a different channel broadcast on the same frequency.

1. When recording a channel, press OK in order to display a list of channels available from this transponder.
2. If the recorded channel is not scrambled (FTA) - select any other channel, which you want to watch.
3. If the recorded channel is scrambled - select any other not scrambled (FTA) channel, which you want to watch.
4. You can stop recording at any time by pressing the STOP button.



## 17.7 PAUSE - time shift




 This function is available only when an external USB memory device is correctly connected!!!

The time shift mode allows the user to control the television broadcast by "pausing" and then resuming it from the same point. From the moment you switch on the time shift mode, the Ferguson receiver will constantly record the signal from the satellite in a buffer. The buffer is created automatically on the external USB memory device.



### Pausing the television broadcast



1. Press **PAUSE**
2. The time elapsed bar will now be visible on the screen
3. Press the **PLAY** button in order to resume the television broadcast. The Ferguson receiver continues to record the television broadcast when viewing the previously broadcast programme.

 Keep in mind that during buffer playback, the information bar may be hidden by means of the EXIT button. In order to restore the bar, press PAUSE/PLAY again.

### Scrolling the contents of the time shift buffer (playback of an earlier television broadcast)



1. Switch on the time shift mode by pressing PAUSE.
2. The contents of the time shift buffer can now be scrolled through.
3. Use the Fast forward and Rewind buttons to navigate through the time shift buffer and press PLAY in order to start playback.
4. You can set the red marker by means of the LEFT/RIGHT buttons and confirm with OK in order to start playback from a selected moment.

5. Another method consists in moving by means of the  /  keys. Scrolling is effected by the number of minutes defined in the DVR configuration menu. Keep in mind that this function is available only when the buffer time exceeds the selected scroll time.


## Recording the time shift buffer



1. This option is available only if previously switched on in the receiver's menu.
2. Switch on the time shift mode by pressing **PAUSE**.
3. Press REC in order to record the existing buffer and continue recording the channel.
4. Perform further operations in accordance with description given for the recording function.
5. It is also possible to view the contents of the current recording as above.

## Switching off the time shift mode

Switch off the time shift mode by means of the STOP button.

 *Keep in mind: when no external memory device is connected to the USB port, the PAUSE button is used to temporarily pause the image, i.e. freeze-frame.*

## 17.8 INFO



Pressing the INFO button will call up the information bar for the current channel. This contains information about the current and next programmes (if such information is made available by the broadcaster)

If you press it twice, the receiver will display detailed information about the current and next programme – provided that such information is made available by the broadcaster (select by pressing the LEFT/RIGHT buttons)

If you press it three times, the receiver will display information about the signal and broadcasting parameters of the current channel.

## 17.9 FAV – favourites



If you press the FAV button, the receiver will display a window with groups of favourites (provided that the user has created such groups).

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## ATTACHMENT A - GLOSSARY OF TERMS

**CA - Conditional Access** – a coding system used in order to protect transmitted data against unauthorised access. Access to protected channels is available only to subscribers.

**CAM - Conditional Access Module** – an electronic device, usually fitted with card slots, that allows access to coded pay-per-view channels on a receiver equipped with a CI socket.

**CI - Common Interface** – CI sockets of digital receivers are used for the installation of CAM conditional access modules, and thus allow you to view coded pay-per-view channels through these modules.

**DVB-S** the Digital Video Broadcasting standard that defines modulation and error correction in satellite transmissions. In DVB-S, both the MCPC and SCPC modes can be used by the operator to transmit channels. MPEG-2 is used as the transport stream.

**EPG - Electronic Programme Guide** – a service that displays detailed information about current and future programmes on the television screen.

**FTA - Free-to-air** – unencoded radio and television channels that may be received on any television set.

**LNB - low-noise block converter** – a converter - it converts satellite signals, and then sends them to the tuner through a coaxial cable. The basic parameters are: gain, noise factor and power consumption.

**MCPC - multiple channels per carrier** – more than one signal (channel) is transmitted on a given frequency (transponder). All of these channels comprise a single data stream, which is transmitted on one frequency following modulation.

**Monoblock** – a device that comprises two converters and a DiSEqC switch in a single housing, which receives signals from two satellites on similar orbits.

**Pay-TV** – Pay-per-view digital television, to which only subscribers have access. The service is provided by satellite, cable, over the ground or through the network.

**SCPC** - Single channel per carrier – only one signal (channel) is transmitted over a given frequency (transponder).

**STB - Set-top box** – an electronic device connected to the television set, which processes the signal received from the ground-based, cable or network satellite antenna. It enables the playback of video and sound.

**TP - Transponder** – a type of wireless communication device (transmitter), which automatically receives, modulates, strengthens and responds to a signal coming in real time over a specific frequency. The term is derived from the words "transmitter" and "responder". Usually, each transponder transmits numerous compressed digital channels.

**DiSEqC - (Digital Satellite Equipment Control)** a communication protocol, used between a satellite receiver and equipment such as switches or positioners, which supports switching between television signal sources and antenna control.

**USALS - (Universal Satellites Automatic Location System)** – a communication protocol used between satellite receivers and positioners, which makes it possible to control the positioner through the receiver. Used in connection with the DiSEqC 1.2 protocol.

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## ATTACHMENT B – Using the universal RCU-640 remote control

### Programming the television set by means of a brand code

1. Switch on the television set with which you want to use the remote control.
2. Find the brand of your television set on the attached list (e.g. LG 0075; 0082; 0083; ...).
3. Press and hold the TV button for three seconds. The POWER button on the remote control will light up. This means that the RCU640 is in programming mode.
4. Enter a 4-digit equipment code (e.g. 0075 for the LG television set). If nothing is entered within 15 seconds, programming of the remote control will be stopped.
5. The POWER button on the remote control will go out if the remote control accepts the code. The POWER button on the remote control will flash twice; this means that the code is incorrect and you must return to step 2. Enter a correct code from the list.
6. Check the operation of the buttons of the remote control. If the majority of buttons do not function properly, enter a different 4-digit code (e.g. 0082...) for the same brand from the list. Repeat steps 3 to 6 until all basic functions of the remote control are functioning correctly. The television set will be programmed correctly when you enter the appropriate code.



**Note:** You may interrupt programming of the remote control by pressing the TV or OK button. The programming mode is automatically interrupted if no button is pressed within 15 seconds.



**Note:** In the programming mode, ONLY the numerical buttons are available, and the OK, POWER and TV buttons. The remaining buttons are inactive.

### Automatic programming of the television set

If programming using the brand code is unsuccessful or you cannot find the brand code, then you can try to programme the remote control using the automatic search function.

1. Switch on the television set with which you want to use the remote control.
2. Direct the remote control towards the television set. Press and hold the **TV** button for 3 seconds. The POWER button on the remote control will light up. This means that the RCU640 is in programming mode.
3. Press the **MUTE** button; the remote control will now start to send successive switch-off signals to the television set (successive codes from the list will be checked). Immediately after the television set is switched off, press the **OK** or **TV** button in order to complete the automatic programming procedure. The POWER button on the remote control will go out.
4. Turn on the television set by means of the **POWER** button on the remote control. Check the operation of the buttons of the remote control. If none of the buttons are inoperative (because automatic programming was interrupted too late) or the majority of buttons on the remote control do not function correctly, resume the automatic search (steps 3 and 4) in order to find the correct code. If the majority of buttons function correctly, press the **TV** button in order to record the television set code and complete programming.



**Note:** In the programming mode, ONLY the MUTE, OK, LEFT, RIGHT and TV buttons are available. The remaining buttons are inactive.



**Note:** Automatic programming checks the codes in descending order (from the current code). Using the LEFT (descending) and RIGHT (ascending) buttons you can change the search direction.



**Note:** Having checked all of the codes, the POWER button on the remote control will flash three times and go out. The programming mode will be interrupted automatically.

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## Manual programming of the television set

1. Switch on the television set with which you want to use the remote control.
2. Direct the remote control towards the television set. Press and hold the **TV** button for 3 seconds.
3. The **POWER** button on the remote control will light up. This means that the RCU640 is in programming mode.
4. Press the **POWER** button more or less every 1.5 seconds. The **POWER** button should flash, which means that the RCU640 is in programming mode.
5. Immediately after the television set is switched off, press the **OK** or **TV** button in order to complete manual programming. The **POWER** button on the remote control will go out.
6. Check the operation of the buttons of the remote control. If the majority of buttons do not function correctly, continue manual programming, i.e. continue to press the **POWER** button every 1.5 seconds (steps 4 and 5)



**Note:** Manual programming will be interrupted automatically if nothing is entered within 15 seconds.



**Note:** In the programming mode, **ONLY** the **POWER**, **OK**, **LEFT**, **RIGHT** and **TV** buttons are available. The remaining buttons are inactive.



**Note:** Manual programming checks the codes in descending order (from the current code). Using the **LEFT** (descending) and **RIGHT** (ascending) buttons you can change the search direction.

## Reading the current television code

You can read the code of your television set programmed in the remote control by executing the following steps.

1. Press and hold the **TV** button. Simultaneously press the **1** button in order to display the first digit of the 4-digit code (thousands digit). Calculate the number of times the **POWER** diode flashes. If none, this means zero.
2. Press and hold the **TV** button. Simultaneously press the **2** button in order to display the second digit of the 4-digit code (hundreds digit).
3. Press and hold the **TV** button. Simultaneously press the **3** button in order to display the third digit of the 4-digit code (tenths digit).
4. Press and hold the **TV** button. Simultaneously press the **4** button in order to display the fourth digit of the 4-digit code (unity digit).

An example code is 0075:

1. Press the **TV** button and **1** - the LED will not flash.
2. Press the **TV** button and **2** - the LED will not flash.
3. Press the **TV** button and **3** - the LED will flash seven times.
4. Press the **TV** button and **4** - the LED will flash five times.

## Deleting television settings

1. Press and hold the **TV** button for 3 seconds. The **POWER** button on the remote control will light up.
2. Enter the 4-digit code 9990.

All of the television set's settings will be deleted, and the **POWER** button on the remote control will go out.

## TV brands code

@DIKON 1551; 1525	1440; 1469; 1559; 1578; 1587; 1588;	AWATRON 0359	BROTHER 0322; 0513
A.R. SYSTEM 0237; 0544; 0322; 0513;	1638; 1639; 1666; 1711	AXXWNT 0513	BROWN 1317
0540; 0246	ANAM 0540; 0513	BAIRD 0375; 0378; 0539	BRUNS 0262; 0540; 0242; 0359;
ACCENT 0322; 0359; 1637; 0540;	ANEX 1639; 0513	BANG &	0336; 1611;
0131	ANGLO 0322; 0359	OLPFSEN	0024; 0363; 0077; 0311
ACCUPHASE 0540	ANIS 0322; 0336	0024	BSR 0300; 0052; 0329; 0230
ACEC 0024; 0042; 0067; 0111; 0119;	ANITECH 0111; 0513; 0077; 0359;	BARCO 0146; 0024; 0090	BTC 0262
0133;	0505; 0322;	BARCOM 0329	BUSH 0097; 0052; 0083; 0513
0153; 0157; 0302; 0391; 0536; 0586;	0424; 0329; 0114; 0540	BASIC LINE 0203; 0262; 1423; 0424;	CADMOS 0513; 0246; 0114; 0025;
1317; 1364; 1380; 1383; 1557; 1607;	ANSONIC 0322; 1657; 0336; 0057;	0097; 0513;	0230; 0359;
1617; 1618; 1630; 0540; 0513; 0409;	0359; 0077;	0354; 0539; 0557; 0230; 0359; 0141	1319
1672; 1705	0141; 0513	BASTIDE 0067	CALIFORNIA 0025; 0067; 0083; 0111;
ACER 1363	ANTECNO 0262	BAUER 0561; 1302; 0513; 0069;	0114; 0115;
ACTION 0359	AOC 1540	0275; 0114	0136; 0540; 0227; 0230; 0322; 0354;
ADMIRAL 0024; 0080; 0359; 0428;	AQP 0096; 0103; 0157; 0295; 0327;	BAUMATIC 0322	0359; 0435; 0542; 0513; 1637; 1639;
0429; 0222	0335;	BAUR 0111; 0083; 0103; 0133; 0157;	1654
ADYSON 0359; 0329; 0067; 0505	0549; 1450; 1491; 1649; 1652; 1692;	0162;	CAMPER 0230; 0336; 0513; 0141
AEA 0540; 0513	0351; 1702	0178; 0290; 0337; 0351; 0540; 0359;	CANAIS 0042
AEG 0540; 1423; 0513	ARC EN CIEL 0051; 0055; 0052; 0090;	0391; 0434; 0467; 0528; 0174; 0513;	CANALERA 1363
AG 0557	0092; 0094;	1637; 1652; 0495	CANALSANTE 0230
AGASHI 0359; 0322; 0111; 0513	0095; 0096; 0119; 0136; 0164; 0181;	BAZIN 0067; 0441	POLSKI
AGB 0242; 0095; 0119; 0229; 0094;	0229; 0230; 0242; 0455; 0549; 1045;	BEAUMARK 0547	RCU640
0090;	1435; 1478; 1445; 2026	BEKNTEKNIK 0337; 0207; 1657	Kody marek TV5
0092; 0051; 0052; 0513; 0181; 0055;	ARCAM 0067	BEKO 0141; 0207; 0227; 0230; 0336;	CANDLE 0075; 0082; 0083; 0111;
0025; 0024	ARCELIK 0141; 0230; 0557	0496;	0067; 0125;
AGEF 0262; 0540; 0242; 0359; 0336;	ARDEM 0141; 0513; 0336; 0557	0540; 0513; 1435; 0557	0141; 0145; 0153; 0052; 0227; 0277;
0363;	ARGENTINA 0572; 1711; 0569	BENNET 0540; 0513	0275; 0329; 0540; 0359; 0384; 0557;
1611; 0024; 0077; 0311	ARISTONA 0024; 0042; 0067; 0111;	BENSTEN 1511; 0550; 0145; 1491	0561; 0925; 0547; 1459; 1498; 1476;
AIKO 0262; 0359; 0067; 1608; 0513	0119; 0133;	BEON 0540; 0513	0513; 1607; 0542; 1614; 0230; 3044;
AIM 0540; 0329; 0539; 0354; 0237;	0153; 0157; 0302; 0391; 0536; 0586;	BEST 0556	4206; 4207
0513;	1317; 1364; 1380; 1383; 1557; 1607;	BESTAR 1657; 0114; 0415; 0359;	CANTON 0252
1302	1617; 1618; 1630; 0540; 0513; 0409;	0540; 0336;	CAPSONIC 0322; 0513
AIOSTAY 0136	1672; 1705	0513; 0435	CARAD 0540; 0513
AIWA 1038; 0581; 0513	ARPHONE 0246; 0114; 0025; 0230;	BIAZET 0513; 0052	CARENA 0544; 0513; 0540
AKAI 0067; 0070; 0374; 0103; 0111;	0359; 0513	BIFONIC 0067; 0359	CARREFOUR 0540; 0513
0143;	ART-TECH 0359; 1638; 0424; 0513	BIGSTON 0354; 0359; 0322	CARYONSE 0024; 0042; 0067; 0111;
0162; 0262; 0290; 0296; 0298; 0337;	ARTHUR	BINATONE 0067	0119; 0133;
0345; 0354; 0359; 0361; 0375; 0415;	MARTIN	BLACK DIA-	0153; 0157; 0302; 0391; 0536; 0586;
0431; 0222; 0515; 0549; 0556; 0558;	0075; 0080; 0082; 0083; 0137; 0540;	MOND	1317; 1364; 1380; 1383; 1557; 1607;
1243; 1311; 1314; 1396; 1423; 0540;	0178; 0162; 0513; 0390; 0431; 0539;	0513; 0540	1617; 1618; 1630; 0540; 0513; 0409;
0513; 1652; 0230; 1684	0556; 1016; 0230; 1702; 0222	BLACK STRIP 1608	1672; 1705
AKI 1638; 0513	AS-BERG 0131; 0077; 0302; 0374;	BLACKSTAR 0262	CASCADE 0540; 0513
AKIBA 0540; 0513; 0262	0513	BLACKTRON 0262	CASIO 1611; 0540; 0409
AKIO 1139; 1318	ASA 0136; 0066; 0222; 0390; 0282;	BLACKWAY 0351; 0262	CASONIO 0062; 0083; 0162; 0178;
AKIRA 1485; 1637; 0141; 0374; 0513	0513	BLAUPUNKT 0039; 0069; 0096; 0103;	0203; 0204;
AKITA 0065; 0127; 0195; 0196; 0262;	ASORA 0322	0148; 0149;	0251; 0252; 0431; 0539; 0052; 1654;
0300;	ASTHON 1638; 0415; 0114; 0490;	0157; 0266; 0276; 0540; 0544; 0351	0222; 2356; 4340; 4341
0322; 0329; 0359; 0407; 0409; 0415;	0131; 1639;	BLAUSONIC 0067	CAT 4575; 1410
0418; 0447; 0472; 0544; 0556; 0557;	0136; 1657; 1658; 0230; 1363; 0125;	BLOOM 0540; 0513; 0556; 1399;	CATHAT 0540; 0513
0513; 1009; 0141; 1368; 1422; 0540	0097; 0513; 0077; 0024; 1227; 0111;	1433; 1390;	CCE 0540; 0513
AKITO 0540; 0513	0327; 0547; 0196; 0067; 1317; 0336	1386	CDV 1410
AKTRON 0513; 0197; 0207; 0296;	ASTRA 0415; 0329; 0296; 0302;	BLUE SKY 0556; 0557; 1423; 0051;	CELINT 0052
0337; 0557;	0359; 0067;	0097; 0513;	CENTURION 0540; 0513
1423; 1608; 0467; 0351	0354; 1485	0540; 0549; 0065; 0141; 0262; 0467	CENTURY 0057; 0024; 1227
AKURA 0143; 0231; 0190; 0359;	ASTRO	BLUE STAR 0230	CGE 0057; 0131; 0227; 0298; 1711;
0322; 1637;	SOUND	BOCA 0143; 0196; 0222; 0262; 0322;	0374;
0513; 0540	0237; 0230	0359;	0513; 1638; 0230
ALBA 0415; 0300; 0262; 0230; 0513;	ASUKA 0067; 0322; 0262; 0230	0415; 0513; 1343; 1410; 1423; 0540;	CGM 0097; 0227; 0322; 0336; 0359;
0359	ATAKI 0424	1440; 1469; 1559; 1578; 1587; 1588;	0424;
ALBATRON 1378	ATLANTIC 0025; 0067; 0083; 0111;	1638; 1639; 1666; 1711	0513; 0064; 1657; 0230
ALBIRAL 0025; 0237; 0513; 0262;	0114; 0115;	BONDSTEC 0125	CIE 0060; 0196; 0262; 0354; 0359;
0322; 0125;	0136; 0540; 0227; 0230; 0322; 0354;	BOOTS 0067	0513
0230; 1174; 1639	0359; 0435; 0542; 0513; 1637; 1639;	BOSCH/BAUER 0069	CIHAN 0230; 0115
ALBRECHT 1586	1654	BOSTON 1621; 0067	CIMLINE 0359
ALHORI 0067	ATORI 0359	BOSUN 0001	CINEMA 0513
ALKOS 0513; 0197; 0207; 0296;	AUDIOLA 1432	BPL 0540; 0513	CITIZEN 1324
0337; 0557;	AUDIOSONIC 0359; 0141; 0262;	BRANDT 1435; 0051	CITY 0359
1423; 1608; 0467; 0351	0125; 0149; 0111;	BRANDT ELEC-	CLARITRONIC 1657
ALL TEL 0550; 0513; 0145; 1383	1638; 0067; 0025; 1227; 0077; 0230;	TRONIQUE	CLARIVOX 0024; 0025; 0096; 0111;
ALLORGAN 0391; 0108; 0067	0162; 0322; 0060; 0490; 0424; 0336;	0051; 0055; 0052; 0090; 0092; 0094;	0204; 0237;
ALTEK 1494; 1399; 1526; 1401; 1395;	0354; 0545; 0540; 0513; 0557; 1657	0095; 0096; 0119; 0136; 0164; 0181;	0490; 0540; 0230; 1611
1546	AUDIOTON 0114; 0359; 0067; 0125	0229; 0230; 0242; 0455; 0549; 1045;	CLATRONIC 0540
ALTUS 0557	AUDIOVOX 0572	1435; 1478; 1445; 2026	CLAYTON 0230; 0513
AMBRSSADOR 0196	AURORA 0024; 0067; 0354	BRAUN 0067	COFANDEL 0051; 0055; 0052; 0090;
AMPLIVISION 0067; 0237	AUSIND 0131; 0136; 1126	BRENDSTAR 0359	0092; 0094;
AMSTRAD 0143; 0196; 0222; 0262;	AUTOVOX 1423; 0067; 0136; 0131;	BRIGMTON 0067; 0111; 0237	0095; 0096; 0119; 0136; 0164; 0181;
0322; 0359;	1124; 0391;	BRINKMANN 0540; 0513	0229; 0230; 0242; 0455; 0549; 1045;
0415; 0513; 1343; 1410; 1423; 0540;	1126; 1653; 0108; 1367; 0556; 1395;	BRIONVEGA 1622; 0295; 0247; 1367;	1435; 1478; 1445; 2026
	0513; 0111	1124; 0024;	COLOR MAT 0024
	AUVISAT 0513	0111; 0428; 0223; 0222; 1181	COLUMBIA 0111
	AVIOUS 1550	BRITANNIA 0067; 0162	COMBITECH 0065; 0127; 0195; 0196;
	AWA 0149; 0359; 0067; 0354; 0540;	BROKLINE 1319	0262; 0300;
	0513	BROKSONIC 0513; 1323	0322; 0329; 0359; 0407; 0409; 0415;

0418; 0447; 0472; 0544; 0556; 0557;	DE GRAAF 0513	0359;	FERGUSON 0051; 0217; 0229; 0237;
0513; 1009; 0141; 1368; 1422; 0540	DECCA 0065; 0067; 0111; 1637;	1009; 1639; 0230	0242; 0254;
COMET 0540; 0556; 0536; 0262; 0513	0246; 0254;	ELECTRO	0302; 0378; 0455; 0513; 1616; 0322;
COMPUTRON 0431; 0415; 0359; 0513	0302; 0375; 0540; 0513	TECH	1700
CONCERTO 0075; 0082; 0083; 0111;	DEITRON 0540; 0513	0359	FIDELIS 0067; 0296; 0359; 0513
0067; 0125;	DELTON 0557	ELEKTA 0359; 0424; 0322; 0354;	FIDELITY 0391; 0067; 0329; 1713;
0141; 0145; 0153; 0052; 0227; 0277;	DEMACOLOR 0513	0111; 0513	0359; 0415;
0275; 0329; 0540; 0359; 0384; 0557;	DENKO 0322	ELEKTRONIKA 1657; 0516	1637; 0513; 0262
0561; 0925; 0547; 1459; 1498; 1476;	DENTAL 0025; 0067; 0083; 0111;	ELEKTRONSKA	FILSAI 0359; 0067
0513; 1607; 0542; 1614; 0230; 3044;	0114; 0115;	IND.	FINLANDIA 0083
4206; 4207	0136; 0540; 0227; 0230; 0322; 0354;	0025; 0230	FINLUX 0066; 0077; 0115; 0127;
CONCORDE 0359	0359; 0435; 0542; 0513; 1637; 1639;	ELEMIS 0230; 0513; 0336	0131; 0136;
CONDOR 0114; 0131; 0227; 0337;	1654	ELG 0540; 0513	0137; 0230; 0246; 0282; 0295; 0359;
0322; 0359;	DENVER 1546; 0359; 1638; 0513;	ELIN 0111; 0359; 0513; 0067; 0153;	0374; 0375; 0390; 0431; 0513; 0556;
0374; 0424; 0513; 0540	1522	0162;	0558; 1126; 0557; 0540; 0222
CONFORAMA 0431	DESMET 0246; 0114; 0025; 0230;	0282; 0083; 0066; 0431	FIRST LINE 0237; 0359; 0354; 1453;
CONIC 0002; 0329; 0296	0359; 0513	ELITE 0262; 0322; 0114; 0513	0391; 0111;
CONRAC 1435	DEWO 1085	ELLEVISION 0322; 0527	0302; 0375; 0067; 0057; 0097; 1654;
CONRAD 0513	DHS 0415; 0329; 0296; 0302; 0359;	ELMAN 0025; 0230; 0077; 0196;	0540; 0298; 0114; 0539; 0222; 0513;
CONTEC 0322; 0359; 0197; 0067;	0067;	0067; 1700	0557; 0230; 1435; 0203; 1637; 1009;
0540; 0424	0354; 1485	ELSAY 0513	1420
CONTI M. 0513	DIADEM 0222	ELTA 0359; 0435; 0057; 0067; 0322;	FISHER 0363; 0133; 0066; 0067;
CONTIN. EDIS. 0051; 0055; 0052;	DIAMAT 0540; 0513	0513	0314; 0115;
0090; 0092; 0094;	DIAMOND 0359; 0354; 1264; 1112;	EMATEC 0062; 0083; 0162; 0178;	0197; 0149; 0290; 0024; 1657; 0391;
0095; 0096; 0119; 0136; 0164; 0181;	1121; 1241;	0203; 0204;	0539; 1658; 0572
0229; 0230; 0242; 0455; 0549; 1045;	0513; 0540; 1338; 0047	0251; 0252; 0431; 0539; 0052; 1654;	FLINT 0513; 0073; 0544
1435; 1478; 1445; 2026	DIBOSS 0513	0222; 2356; 4340; 4341	FLORIDA 0067
CONTINENTAL 0549; 1639; 0513;	DIFFE 1514	EMCO 0057; 0060; 0131; 0227; 0298;	FNR 0077
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RITZ 0230	0415; 0513; 1343; 1410; 1423; 0540;	0539; 0556; 1016; 0222; 1713	SPECTRA 0322; 0513; 0354
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ROADSTAR 0076; 1453; 0359; 0141;	1638; 1639; 1666; 1711	SIDEC 0230	SPORT GEN-
0097; 0540;	TECSONIC 0572	SIEL 0230	EXXA
0528; 0557; 1423; 1469; 0262; 0513;	TEDELEX 0230; 0359; 0111; 0302;	SIEMENS 0039; 0069; 0103; 0148;	0025; 0067; 0083; 0111; 0114; 0136;
1343; 1525; 1435; 0556	0067; 0490;	0157; 0513;	0540; 0196; 0227; 0230; 0322; 0354;
ROBERTS 0327	0561; 0513; 1094; 1243; 0528	0329; 0335; 0351; 1651; 1652	0359; 0435; 0542; 0513; 1637; 1639;
ROBOTRON	TEINEL,SA 0230; 1639	SIERA 0540; 0513	1654
ELECTR	TEK 1127	SIESTA 1657; 0336; 0111	SSANGYONG 0064; 0067; 0075; 0082;
0024; 0363	TEKA 1127	SILVA 0149; 0359; 0067; 0302; 0322;	0227; 0296;
RODEX 0540; 0513	TEKNANT 0424; 0513; 0359	0298;	0312; 0322; 0359; 0375; 0384; 0422;
POLSKI	TEKNIKA 1614	0513; 0329	0453; 0513; 0515; 0542; 0544; 0547;
RCU64010	TEKON 0384; 0359	SILVER 0149; 0262; 0513; 0540; 0322	1309; 0111; 1382; 0540; 0528; 1657;
SUPERTECH 0359; 0513; 0415; 0474;	TELEAVIA 0051; 0055; 0052; 0090;	SIMATEC 0065; 0127; 0195; 0196;	1658; 2066; 4267
0262; 1638;	0092; 0094;	0262; 0300;	SSS 0359; 0557; 1558; 0513; 0149;
1453; 0298	0095; 0096; 0119; 0136; 0164; 0181;	0322; 0329; 0359; 0407; 0409; 0415;	1664;
SUPERTONE 0025; 0067; 0114; 0204;	0229; 0230; 0242; 0455; 0549; 1045;	0418; 0447; 0472; 0544; 0556; 0557;	0322; 0230
0237; 0435;	1435; 1478; 1445; 2026	0513; 1009; 0141; 1368; 1422; 0540	STAG 0556; 0544; 0424; 0262; 0067;
0230	TELECHROM 0424; 0513	SIMTEL 0111; 0262; 0322; 0424;	0513;
SUPRA 0359; 0354; 0322; 0329;	TELECOR 0540; 0513	0133	0359; 0415; 0073; 1420
0547; 0067;	TELEFAX 0359	SINGER 0359; 0077; 0060; 0115;	STANDARD 0359; 0060; 0067; 0262;
0422	SCOPE 0005; 0013; 0014	1227; 0025;	0513; 0111;
SUPREME 0136; 0060	SCOTLAND 0025; 0067; 0083; 0111;	0024; 0513; 0067; 0429; 0111; 0415;	0114
SUTRON 0359	0114; 0136;	0540; 1311; 1638	STAR 0513
SVA 0561	0540; 0196; 0227; 0230; 0322; 0354;	SINOTECH 0322; 0495; 0561; 0374;	STARLINE 0513
SYC LINE 0067; 0359	0359; 0435; 0542; 0513; 1637; 1639;	0141	STARLITE 0322; 0359; 1638; 0111
SYDNEY 0067	1654	SINUDYNE 0024; 0077; 0115; 0127;	STARLUX 0359; 0513; 0067
SYSLINE 0540; 0513	SCOTT 0114; 1639; 1638; 0547;	0169; 0162;	START 0513
SYTEL 0246; 0114; 0025; 0230; 0359;	0327; 1317	0195; 0196; 0222; 0262; 0295; 0300;	STASSFURT 0262; 0540; 0242; 0359;
0513	SEARS 0024; 0513; 0067; 0149;	0359; 0391; 0409; 0528; 0556; 0581;	0336; 0363;
TADISTAR 0374; 0262	0197; 0227;	1009; 1022; 1422; 0513; 1433; 1434;	1611; 0024; 0077; 0311
TAISHO 0230	0290; 0312; 0314; 0363; 0375; 1423;	1565; 1622; 0540; 0445; 1639	STENWAY 0424

STERLING 0540; 0513	5023	XONYCS 0513	VIDECON 0111
STERN 0062; 0080; 0108; 0153; 0052; 0197;	THORN 0051; 0217; 0229; 0237; 0242; 0254;	XRIPTON 0513; 1638; 0374; 0540	VIDEOLOGIC 0262; 0067; 0322
0242; 0295; 0390; 0428; 0429; 0435; 0222; 0513; 1149; 1181; 0540; 1653	0302; 0378; 0455; 0513; 1616; 0322; 1700	YAMISHI 0424; 0359; 0540; 0544	VIDEOMAC 0067; 0322
STRATO 0540; 0513; 0322	TIME 1537; 1489; 0513	YAMO 0262	VIDEON 0513
STRONG 1432; 1586	TMK 0196; 0547	YOCAN 0540	VIDEOSAT 0057; 0125
STT SONIG 0111	TOBISHI 0262; 0359; 0384; 0195; 0067; 0322	YOKO 0359; 0207; 0322; 0067; 0092; 0540;	VIDEOSYSTEM 0513; 0540
STV 0162	TOBO 0322; 0359	0354; 0125; 0329; 0435; 0262; 0290; 0513; 0230; 0516	VIDEOTON 0513; 0060; 0067; 0097; 0111; 0119;
STVI 0230; 0067	TOKAI 0359; 0322; 0435; 0540; 0513	YORK 0262	0178; 0290; 0302; 0374; 0391; 0435; 0441; 1423; 0540; 0230
SUNIC LINE 0513	TOKIWA 0359; 0322; 0435; 0540; 0513	YOSHITA 0513	VIDESON 0230
SUNKAI 0447; 0073; 0513; 0549; 0300; 0195	TOKO 0513	YOTAKA 0513	VIDIKRON 0359; 1661; 0114; 0077
SUNNY 0415	TOKYO 1608; 0424; 0384	YUMATU 0322; 0359; 0111; 0374; 0415	VIDION 0359
SUNSTAR 0536; 1639; 0322; 0359; 0513	TOMASHI 0556; 0544; 0424; 0262; 0067; 0513;	ZAMPA 0052	VIDITAL 0322
SUNWATT 0111	0359; 0415; 0073; 1420	ZANELA 0311; 0445; 0321	VISIOLA 0025; 0067; 0114; 0204; 0237; 0435;
SUNWOOD 0513; 0359	TOMITA 0067	ZANUSSI 0062; 0080; 0108; 0153; 0052; 0197;	0230
SUPERLA 0230; 0025	TOP VISION 0230; 0513; 0435; 0238	0242; 0295; 0390; 0428; 0429; 0435; 0222; 0513; 1149; 1181; 0540; 1653	VISION 2000 0513; 0359; 0540; 0322
SUPERSONIC 0539; 0544; 1637; 0415; 0513; 0359;	TOPSHOW 0561; 0322	ZENOR 0539	VISION MAGIC 1412
1094; 0322	TORRE 0051; 0055; 0052; 0090; 0092; 0094;	ZIRWATEL 0495	VISIONREX 0025
POLSKI	0095; 0096; 0119; 0136; 0164; 0181; 0229; 0230; 0242; 0455; 0549; 1045; 1435; 1478; 1445; 2026	ZOPPAS 0062; 0080; 0108; 0153; 0052; 0197;	VISTA 0051; 0217; 0229; 0237; 0242; 0254;
RCU64011	TOSHIBA 0513; 0197; 0207; 0296; 0337; 0557;	0242; 0295; 0390; 0428; 0429; 0435; 0222; 0513; 1149; 1181; 0540; 1653	0302; 0378; 0455; 0513; 1616; 0322; 1700
TELEFUNKEN 0051; 0092; 0094; 0095; 0107; 0111;	TOWADA 0230; 0077	TRILUX 0540	VISTAR 0203; 0431
0119; 0141; 0164; 0229; 0242; 0378; 0524; 0528; 0540; 0513; 0579; 1191; 1269; 1301; 1616	TRANS CONT. 1437; 1434; 1453; 1569; 0097; 0540;	TRISTAR 0374; 0111; 0262	VORTEC 0145; 0540; 0513
TELEFUSION 0540; 0513	1383; 1564; 0513	TRIUMPH 0196; 0540; 0513	VOXSON 0024; 0080; 0136; 0322; 1227; 0556
TELEGAZI 0391; 0162; 0540; 0513	TRANSONIC 1607; 0322; 0536; 0513; 0528	TRIVISION 0359	VSM 0181
TELEKTRON 0359; 0077	TREVI 0424; 1549; 0149; 0359; 0230; 1525;	TSOSHI 0556; 0544; 0424; 0262; 0067; 0513;	WAGNER 1654
TELEMASTER 0513	1343	0359; 0415; 0073; 1420	WALKIE 0295; 0153
TELEMEISTER 0540	TRIAD 0540; 0237; 0513; 0111	TTR 0513	WALKVISION 0513
TELEOPTA 0359	TRIDENT 0067	TV STAR 0230	WALTHAM 0513; 0060; 0067; 0097; 0111; 0119;
TELEPAC 0359	WATSON 0111; 0080; 0097; 0105; 0114; 0115;	TVD 0513	0178; 0290; 0302; 0374; 0391; 0435; 0441; 1423; 0540; 0230
TELEPOINT 0513	0196; 0540; 0262; 0322; 0359; 0536; 0513; 1639; 1651	UHER 0153; 1149; 0238; 0108; 0114; 0513;	
TELERENT 1637	WATT RADIO 0227; 0077; 0115; 0060; 0298; 0067;	1637; 0133; 0077; 0540; 1126; 0083	
TELESONIC 0513; 1338	0513; 0359; 1657; 0238	ULTRAVISION 0237; 0290	
TELESTAR 0374; 0359; 0322; 0536; 0336; 0111;	WEBER 0359; 0125; 0262; 0322; 0047	ULTRAVOX 1639; 0077; 0354; 0067; 0513; 0409;	
0302; 0513	WEGA VISION 0149; 0024	0125; 0115; 0189; 0050; 0111; 0024	
TELESYSTEM 1548; 1475; 0513; 2008; 2395; 1496;	WEGAVOX 0374; 0359; 0556; 0302; 0322; 0528;	UNDERWOOD 1391	
4551; 0540	0540; 0141; 0097; 0057; 0513	UNIC RADIO 0025; 0067; 0230; 0435; 1657	
TELETECH 0097; 0513; 0057; 0359; 0540	WELLFUND 0424	UNIMOR 1657; 0513; 0336; 0153	
TELETON 0067; 0108; 0153; 0052; 0083; 0149	WELLINGTON 0513	UNITED 1423; 0557; 1657; 0145; 0141; 0513	
TELEVIEW 0540; 0513	WELLTECH 0557	UNITRON 1338	
TELEXA 0077	WELTBlich 1639; 0540; 0114; 0513; 1638; 1453	UNITRONIC 0359	
TELRA 0111; 0513	WESTON 0435; 0540; 0424	UNIVERSUM 0047; 0065; 0066; 0069; 0374; 0075;	
TEMCO 0195	WESTWOOD 0513; 0540; 1338	0077; 0083; 0094; 0096; 0097; 0103; 0108; 0111; 0067; 0125; 0136; 0137;	
TEMPEST 0540; 0513; 0067; 0359; 0262	WHARFEDAILE 0540; 1338	0148; 0149; 0157; 0162; 0164; 0167; 1637; 0195; 0196; 0197; 0230; 0242;	
TENNESSEE 0540; 0513	WHITE WEST-	0282; 0290; 0295; 0296; 0298; 0300; 0302; 0310; 0312; 0322; 0326; 0329;	
TENSAI 0060; 0066; 0067; 0077; 0097; 0111;	HINGHOUSE	0337; 0351; 0359; 0375; 0390; 0391; 0409; 0418; 0427; 0431; 0222; 0434;	
0114; 0195; 0238; 0262; 0282; 0302; 0354; 0359; 0415; 0540; 0542; 0513; 1639; 0230	0067; 0077; 0083; 0108; 0114; 0115; 0131; 0136; 0153; 0227; 0295; 0322;	0516; 0558; 1126; 0540; 0513; 1639; 1649; 1651; 1652; 1653; 1654; 1657;	
TENSON 0359	0359; 0374; 0424; 0435; 1149; 0540; 0513; 1639; 1658; 0230	1658; 1672; 0174; 0495	
TESLA 0024; 0230; 0111; 0513; 0415; 0262;	WILSON 0513	UNIVOX 0024; 0237; 0230; 0162; 0540	
0237; 0528; 0540	WINDSOR 0513; 0097	UNK 0025; 0557; 0375; 0230; 0513	
TESLA SLOW 0024; 0230; 0111; 0513; 0415; 0262;	WINDSTAR 0051; 0217; 0229; 0237; 0242; 0254;	URANIA 0329; 1126; 0077; 0025; 1124; 0237;	
0237; 0528; 0540	0302; 0378; 0455; 0513; 1616; 0322; 1700	0238; 0131	
TETRA 0230; 0114	WINDY SAM 0540	URANYA 0354; 0359; 0114; 0513; 0227; 0136;	
TEVION 0540; 0557; 0513; 1377	WINNER 1531; 1346; 0359	0025	
TEXT 0067	WINSTON 0424; 0513	UTAX 0067; 0359	
THES 1440	WINTERNITZ 0359; 0097; 0497; 0354	VANGUARD 0067; 0083; 0359	
THOMAS 0544	WORLD TECH 0513	VASILINEC 0359	
THOMSON 0051; 0055; 0052; 0090; 0092; 0094;	WORLDVIEW 0513; 0359; 0544; 0111; 0415	VECO 0359; 0111	
0095; 0096; 0119; 0136; 0164; 0181; 0229; 0230; 0242; 0455; 0549; 1045; 1435; 1478; 1445; 2026	0415	VENTANA 0513	
Thomson	WOV 1450	VESTEL 0042; 0057; 0083; 0097; 0230; 0298;	
3004	WREMEN 0238	1423; 0540; 0513; 1639	
5013	XCELLENT 1338; 1638; 0513	VEXA 0424; 0359; 0067; 0513	
Thomson	XENA 0204	VICEROY 0329; 1082; 0067; 0322	
2100			

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## ATTACHMENT C – Using the universal RCU-640 version 2 remote control

### Setup TV via brand name search

1. Switch on the TV for which you wish to use the remote control.
2. Point the remote control at the TV. Press and hold down the **TV** and **POWER** button for three seconds. Then release buttons.
3. The **POWER** button lights up and the remote control is in set-up mode.
4. Press and hold pressed **number** button corresponding to to your TV brand.

All brand name start with Letter “A, B, C”, you can press and hold pressed number 2 button for quick brand search. To find the right button just look at the letters printed on it.

For example, if TV brand is Sony, just keep pressed number button 7, the “Volume+” signal is automatically transmitted from the remote control to the device (code scan).

5. As soon as the volume of the TV changes, immediately release number button.
6. Check whether the other buttons on the remote control function correctly. If the majority of the buttons do not function correctly, continue searching (see steps 4 to 5).

brand name start with	number button
A, B, C	2
D, E, F	3
G, H, I	4
J, K, L	5
M, N, O	6
P, Q, R, S	7
T, U, V	8
W, X, Y, Z	9

### Setup TV via auto search

If the set up via brand name and code was not successful or you were unable to find your brand name in the list, you can use the auto search function to find the correct TV code for your remote control.

1. Switch on the TV for which you wish to use the remote control.
2. Point the remote control at the TV. Press and hold down the the **TV** button for 3 seconds, (or just press **TV** button for three seconds). The **POWER** button should lights up, i.e. the RCU640 is in Auto Search mode.
3. The **VOL+** signal is automatically transmitted from the remote control to the TV (code scan). As soon as the TV volume changes, immediately press **TV** button to terminate Auto Search, now the **POWER** button light goes out.
4. Switch on the TV via the **POWER** button. Check whether the other buttons on your remote control function correctly. If

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none of the buttons function (i.e. the search was not be stopped at the correct time) or the majority of the buttons do not function correctly, restart the search (see steps 3 to 4) to find a suitable code. If the majority of the buttons function correctly, set up has been successful. Re-press the TV button to save the code and to terminate the set-up mode.

**NOTE:** Entering the auto searching mode, it will search forward from the current code.

**NOTE:** After all codes have been gone through, The POWER button will flash three times and go off. The RCU640 exit from auto search automatically.

### **Setup TV via brand name code**

1. Switch on the TV for which you wish to use the remote control.
2. Find the code number of your TV brand in the code list (e.g. LG 0009; 0051; 0059; ...).
3. Press **TV** button for three seconds The POWER button on your remote control lights up, i.e. RCU640 is in set-up mode.
4. Enter the 4-digit device code (e.g. 0051 for LG TV set). If an entry does not occur within 10 seconds, the set-up mode is automatically terminated.
5. The POWER button LED goes out if the remote control accepts the code.

If the POWER button LED flashes three times the code is incorrect; and you need to start from step 2.

If this occurs, re-enter the correct code from the list.

6. Check the function of the buttons on your remote control. If the majority of the buttons on your new remote control do not function correctly, enter another 4-digit device code (e.g. 0059...) from the list under the same brand name. Repeat steps 3 to 6 until all the basic functions operate correctly. The TV is set up correctly as soon as you enter the correct code.

**NOTE:** Exit the set-up mode by pressing the TV button or OK button. The set-up mode is automatically terminated if a button is not pressed during a 10 second period.

### **Setup TV via manual search**

1. Switch on the TV for which you wish to use the remote control.
2. Point the remote control at the TV. Press and hold down the **TV** button for three seconds. Then release the button.
3. The POWER button lights up and the remote control is in set-up mode.
4. Press the **VOL+** button approx. every 1.5 seconds. The device should start to flash, i.e. the device is in Manual Search mode.
5. As soon as the TV volume changes, press TV button to save the codes and exit from Manual Search mode, now the POWER button light goes off.
6. Check whether the other buttons on the remote control function correctly. If the majority of the buttons do not function

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correctly, press the VOL+ button approx. every 1.5 seconds to initiate the reactive code (manual search is continued, see steps 4 to 5).

**NOTE:** Sometime, remote control does not work properly just because Manual search does not stop in time. In this case, just enter into Manual search again, and press Vol- button approx. every 1.5 seconds to search backward the code.

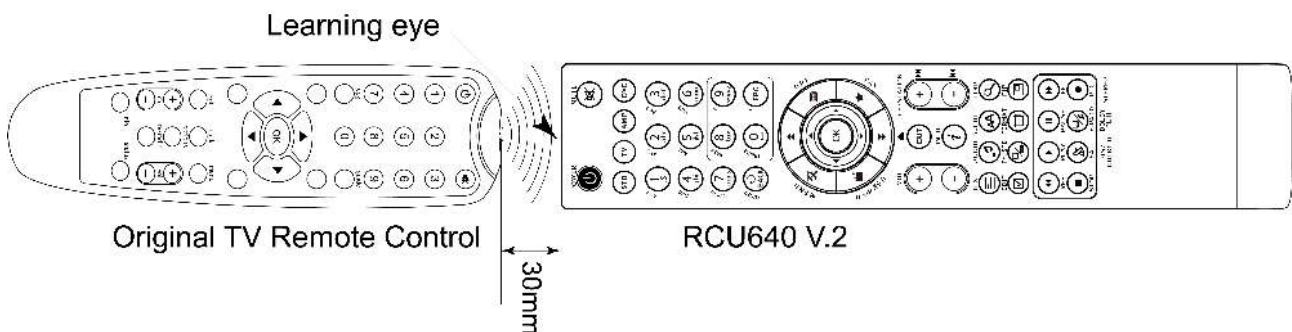
**NOTE:** The Manual Search is automatically terminated if no entry occurs during a 10 second period.

**NOTE:** Entering the auto searching mode, it will search forward from the current code.

### Learning Function

The Learning feature is used to supplement the preprogrammed code list. The standard code list may provide most of the functions needed, but you can add a small number of additional functions for your remote control. You can add a new code from a new original remote control.

1. Press **BLUE** button on RCU-640 without releasing, and then, press **TV** button. The **POWER** button lights up and the remote control is in learning mode.
2. Point the IR transmitter of the original TV remote control remotes face to the IR receiver of RCU-640 by approximately 30 mm apart. Keep two remotes at the same straight line to make the learning process more accurate.



3. Press any button on RCU-640 which you want to learn a new code from original remote control, (For example, you choose ▲ button) now LED starts to flashing and RCU-640 is under learning status.
4. Press the one button (for example, ▲ button) from your TV original remote control. When **POWER** button on RCU-640 flashes three times and stop, it means RCU-640 has accepted new code and now you can start to learn another new code from original TV remote.
5. Repeat step 3 to 4 to learn another code from TV original remote control.
6. When you finish learning all buttons, press **TV** button to save all learnt from original TV remote codes.

**NOTE:** Only TV device have Learning Function. You can not learn any new code for DVD, AMP, and SAT.

**NOTE:** Total 13 or 30 buttons (depending on RCU revision) can be used for learning new codes.

**NOTE:** If you want to replace the code you have learnt into RCU-640, just learn a new code from original TV remote

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control.

### **Display TV Code**

You can call up the TV code which you have set in your new remote control as follows:

1. Press and hold down the **TV** button simultaneously press number button **1** to display the thousands of the 4-digit code.  
Count how often the **POWER** button flashes. If the **POWER** button does not flash, the number is **ZERO**.
2. Press and hold down the **TV** button simultaneously press number button **2** to display the hundreds of the 4-digit code.
3. Press and hold down the **TV** button simultaneously press number button **3** to display the tens of the 4-digit code.
4. Press and hold down the **TV** button simultaneously press number button **4** to display the ones of the 4-digit code.

Example for code 0075:

1. Press TV and 1 LED flashes Zero times.
2. Press TV and 2 LED flashes Zero times.
3. Press TV and 3 LED flashes Seven times.
4. Press TV and 4 LED flashes Five times.



## TV brand codes RCU-640 version 2

	BASIC LINE	CS ELECTRONICS	ELMAN
	0009 0011 0051 0245	0011	0014
	BAUR	CTC CLATRONIC	ELTA
	0169	0014	0009
	BEKO	CYBERCOM	EMERSON
ACER	0007 0042 0083 1064	0002 0009 0038 0042 0047 0068 0103	0000 0127
0753	BEON	0107 0115 0127 0169 0185 0206 0207	EMGETON
ACME	0051 0169	0208 0209 0210 0228 0291 0924	0200 0243 0255
0011	BEST	CYBERMAXX	Energy Sistem
ADA	0113	0002 0009 0015 0038 0042 0047 0048	1038 1039
0018	BESTAR	0049 0068 0103 0107 0115 0127 0169	ERAE
ADC	0051 0245	0185 0206 0207 0208 0209 0210 0211	1003
0006 0007	BLACK PANTHER LINE	0218 0228 0291 0894 0924 1005	ERRES
ADMIRAL	0245	CYBERTRON	0169 0051
0000 0001 0002 0047	BLAUPUNKT	0011	ESC
AGAZI	0002 1172	CYTRON	0245
0002	BLUE SKY	0009 0015 0038 0042 0047 0048 0049	ETRON
AGB	0011	0068 0103 0107 0115 0127 0169 0185	0009
0123	BLUE STAR	0206 0207 0208 0209 0210 0211 0218	EURO-FEEL
AIKO	0120	0228 0291 0864 0924 1005	0002
0004 0009	Bosun/Foresee	DAEWOO	EUROLINE
AIWA	1024	0009 0051 0059 0061 0067 0085 0088	0149
0291	BPL	0115 0131 0191 0245	EUROMANN
AKAI	0120	DAINICHI	0002 0051
0004 0006 0009 0011 0051 0068 0069	BRANDT	0011	EUROPHON
0086 0169 0736	0045 0046 0126 0127 0139	DANSAI	0051 0123
AKIBA	BRION VEGA	0002 0051 0169	EUSTON
0011	0000 0051 0169	DANTAX	0077 0080 0095 0118 0125 0129
AKURA	BROKSONIC	0113 0169	EXPERT
0002 0009 0011 0074 0169	0920	DATSURA	0157
ALBA	BRUNS	0121	FAIRTEC
0009 0011 0027 0028 0047 0068 0083	0000 0007	DAYTON	0746
0169 0245	BSR	0009	FENNER
ALKOS	0026	DAYTRON	0009 0115
0164	BTC	0245	FERGUSON
ALLORGAN	0011	DCE	0050 0052 0079 0100 0111 0127 0163
0026 0157	BUSH	0042	0169
ALLSTAR	0009 0011 0024 0027 0028 0051 0062	DE GRAAF	FIDELITY
0051	0068 0107 0115 0120 0139 0167 0169	0006 0033	0068 0074 0096
ALTUS	0245	DECCA	FINLANDIA
0042	CAPSONIC	0004 0030 0051 0123 0169	0006 0110
AMSTRAD	0002	DECCACOLOR	FINLUX
0002 0009 0011 0013 0030 0068 0069	CARREFOUR	0015	0000 0004 0014 0016 0017 0018 0042
0074 0123	0027	DELL	0043 0051 0110 0123 0157 0167 0169
ANAM	CASCADE	0025	FIRSTLINE
0009 0109	0009	DESMET	0009 0026 0051 0062
ANGLO	CATHAY	0051 0169	FISHER
0009	0051 0169	DIGITOR	0000 0006 0018 0027 0029 0040 0083
ANITECH	CENTRUM	0227 0228	FLINT
0002 0009 0043 0109	0205	DIXI	0051 0113
ANSONIC	CENTURION	0009 0051 0169	FORMENTI
0009 0014	0051 0169	DR HD	0000 0001 0043 0169
ARC EN CIEL	CENTURY	0134 0138 0142 0143 0148	FORTRESS
0045 0126 0139	0000	DTS	0001 0000
ARISTONA	CGE	0009	FRONTECH
0051 0169	0043 0047	DUAL	0002 0009 0068 0120
ARTHUR MARTIN	CIMLINE	0002 0009 0038 0042 0047 0068 0089	FUJITSU
0158	0009 0028	0103 0107 0115 0126 0127 0139 0169	0004 0116 0157
ASA	CITY	0206 0207 0208 0210 0228 0291 0924	FUNAI
0000 0016 0017 0018 0110	0009	DUAL-TEC	0002 0026
ASBERG	CLARIVOX	0009	GALAXY
0051 0043	0169	DUMONT	0047 0083
ASTRA	CLATRONIC	0000 0014 0017 0018	GBC
0009	0002 0009 0011 0030 0043 0051 0083	DURABRAND	0009 0027
ASUKA	CONCORDE	0228 1006 1008 1019 1020 1073	GEC
0002 0011	0009	DUX	0004 0041 0051 0123 0169
ATLANC	CONDOR	0169	GELOSO
0051 0157 0169	0051 0083 0245	DVICO	0009
ATORI	Conic/Scope	0276	GENERAL TECHNIC
0009	1025	DYNATRON	0009
AUDIOSONIC	CONRAC	0051 0169	GENEXXA
0009 0011 0051 0090 0139 0157 0169	0726	ELBE	0011 0051
1062	CONTEC	0157	GERICOM
AUSIND	0009 0027 0029 0030	ELCIT	0049 1023 1064
0043	CONTINENTAL EDISON	0000	GOLDEN INTERSTAR
AUTOVOX	0045 0046 0111 0126 0139	ELECTRO TECH	0177
0000 0002 0043 0157	COSMEL	0009	GOLDSTAR
BAIRD	0009	ELEKTA	0009 0051 0084 0093 0169 0261
0111 0139 0245	CROSLEY	0120	GOODMANS
BANG & OLUFSON	0000 0043	ELIN	0002 0004 0009 0027 0028 0051 0068
0000	CROWN	0016 0018 0051 0169	0093 0111 0115 0127 0169 0245
BARCO	0009 0043 0047 0051 0083 0121 0169	ELITE	GORENJE
0112	0245	0011 0051	0083

GPM	0009 0031 0143	MANDOR	0031 0141
0011	ITV	0002	NORDMENDE
GRANADA	0009 0086 0169 0245	MANESTH	0000 0024 0045 0046 0051 0111 0126
0004 0006 0016 0027 0031 0040 0043	JACKTOP	0002 0028 0051 0169	0127 0139 0719
0051 0054 0064 0123 0127 0169	0073	MARANTZ	NORDVISION
GRANDIN	JEC	0051 0169	0169
0009 0011 0120 0169 0245	0164	MARELLI	OCEANIC
GRUNDIG	Jeja	0000	1015
0017 0043 0087 0091 0097 0117 0136	1029	MARK	OKANO
GS	Jinpin	0051 0169	0083
0194	1028	MATSUI	ONWA
H&B	Jointek	0002 0004 0009 0013 0026 0027 0028	0069
0228	1030	0030 0051 0068 0091 0113 0123 0147	OPENBOX
HAAZ	JVC	0164 0169 0173 0180	0162
0228	0027 0051 0065 0067 0068 0088	MCMICHAEL	ORBIT
HALIFAX	KAISUI	0041	0051
0002	0009 0011 0120	MEDIATOR	ORION
HANSEATIC	KAPSCH	0051 0169	0009 0013 0026 0028 0030 0051 0062
0007 0009 0026 0027 0051 0083 0169	0157	MEDION	0075 0123 0147 0169 0212 0920
HANTAREX	KARCHER	0002 0009 0015 0038 0042 0047 0048	OSAKI
0009 0123	0006 0016 0169	0049 0058 0061 0068 0103 0107 0115	0002 0004 0011 0074
HB	KATHREIN	0127 0169 0185 0206 0207 0208 0209	OSO
0015 0042 0703 1003	0199	0210 0211 0218 0228 0291 0624 0726	0011
HCM	KENDO	0731 0751 0894 1005 1014	OSUME
0002 0009 0074 0120	0014 0028 0245	Mein	0004 0029
HIFIVOX	KENNEDY	1031 1032 1333	OTTO VERSAND
0139	0157	MELECTRONIC	0001 0027 0051 0111 0120 0121 0139
HINARI	KING TV	0009 0016 0018 0051 0068 0109 0110	0169
0006 0009 0011 0027 0043 0051 0137	0015	0115 0139 0169	PACKARD BELL
0169 0248	KNEISSEL	MEMOREX	0203
HISAWA	0174	0009 0920	PALLADIUM
0011 0113 0120	KOLSTER	MEMPHIS	0083
HISENSE	0051	0004 0009	PANAMA
0156 0746 1027	KONKA	METZ	0002 0009
HITACHI	0011 0047 0068 1037	0000 0075 0151 0152	PANASONIC
0004 0016 0023 0027 0033 0041 0045	KORPEL	MICROMAXX	0064 0072 0124 0151 0152 0197
0046 0047 0059 0065 0076 0083 0123	0051 0169	0002 0009 0015 0038 0042 0047 0048	PANK
0139 0140 0144 0213 1013	KORTING	0049 0068 0103 0107 0115 0127 0169	0017 0027
HORNYPHON	0000	0185 0206 0207 0208 0209 0210 0211	PATHE CINEMA
0051	KOYODA	0218 0228 0291 0864 0924 1005	0083
HOSHAI	0009	MICROSTAR	PATHE MARCONI
0011	KURO	0002 0009 0015 0038 0042 0047 0048	0045 0046 0126 0139
HPC	0121	0049 0068 0103 0107 0115 0127 0169	PAUSA
1026	LENCO	0185 0206 0207 0208 0209 0210 0211	0009
HUANYU	0009 0245	0228 0280 0291 0894 0924 1005	PERDIO
0115	LENOIR	MINERVA	0004
HYPER	0009	0017	PHILCO
0009	LEYCO	MINOKA	0000 0043 0047
HYPSON	0002 0004 0026 0051 0169	0051	PHILIPS
0002 0051 0120 0169	LG	MITSUBISHI	0000 0020 0041 0043 0051 0083 0089
HYUNDAI	0009 0051 0059 0061 0067 0079 0081	0000 0027 0030 0051 0054 0060 0098	0111 0115 0169 0339 0044 0053 0057
1010	0084 0085 0093 0119 0133 0135 0169	0205	0059 0067 0079 0130
ICE	0261	MIVAR	PHOCUS
0002 0009 0011 0051 0068	LIESENK	0043 0055 0083 0093 0123	0042 1064
IMPERIAL	0169	MOTION	PHOENIX
0043 0047 0051 0083	LIFE	0043	0000 0051 0169
INDESIT	0002 0009 0068 0103 0107 0111 0115	MTLOGIC	PHONOLA
0024	0169 0291	0090 1062	0000 0051 0169
INDIANA	LIFETEC	MULTISYSTEM	PIONEER
0051 0169	0002 0009 0015 0038 0042 0047 0048	0169	0051 0067 0076 0079 0139 0145 0169
INGERSOL	0049 0058 0061 0068 0085 0088 0103	MULTITECH	PLANTRON
0009	0107 0115 0127 0169 0185 0206 0207	0009 0014 0027 0043 0045 0169	0002 0051
INNO HIT	0208 0209 0210 0211 0218 0228 0291	MURPHY	POPPY
0004 0009 0011 0051 0093 0123 0169	0894 0924 1005	0018	0009
0245	LOEWE	NATIONAL	PORTLAND
INNOVATION	0000 0051 0098 0169 0734	0064	0245
0002 0009 0068 0103 0107 0111 0115	LOGIK	NEC	PRANDONI-PRINCE
0169 0291	0030	0027 0056 0185 0752	0123
INTERBUY	LUMA	NECKERMANN	PRIMA
0009 0109	0157 0169	0000 0051 0083 0169	0009
INTERFUNK	LUMATRON	NEI	PRINZ
0000 0051 0139 0169	0002 0051 0074 0107 0157 0169 0245	0051 0068 0169 0113	0047
INTERTRONIC	LUX MAY	NEW WORLD	PRO2
0894	0051	0011	0002 0009 0015 0038 0042 0047 0048
INTERVISION	LUXOR	NEWTECH	0049 0068 0103 0107 0115 0127 0169
0002 0014 0109	0047 0093	0009 0051	0185 0206 0207 0208 0209 0210 0211
IRRADIO	MAGNADYNE	NIKKAI	0218 0228 0291 0894 0924 1005
0009 0011 0051 0068 0169	0000 0014 0123 0169	0002 0004 0011 0051 0164 0169	PROFEX
ISUKAI	MAGNAFON	NOBLIKO	0009 0043
0011	0014 0043 0123	0014 0043	PROFI-TRONIC
ITS	MAGNUM	NOGAMATIC	0051
0011 0051 0068 0120	0002 0009 0068 0103 0107 0111 0115	0139	PROLINE
ITT	0169 0291	NOKIA	0004 0051 0062

PROSONIC	0164	0105 0111 0126 0127 0139 0163 0190	YORX
0015 0042 0068 0107 0169 0245	SHARP	TELETECH	0011
PROTECH	0001 0027 0029 0065 0099 0141 0187	0009 0113 0169	ZANUSSI
0002 0009 0014 0051 0113 0169	SHORAI	TELETON	0157
PROVIEW	0026	0157	
0751	SIAREM	TENSAI	
PROVISION	0000 0014 0123	0011 0018 0026 0051	
0015 0169	SIEMENS	TESMET	
PYE	0029	0051	
0051 0068 0169	SIENWAY	TEVION	
PYMI	0120	0051	
0009	SIERRA	TF	
QUELLE	0051	0003 0010 0019 0021 0035 0037 0039	
0002 0016 0017 0018 0026 0030 0051	SILVER	0063	
0136 0169	0027	THOMSON	
QUESTA	SINGER	0045 0046 0050 0051 0052 0102 0111	
0027	0000 0014 0228	0126 0127 0139 0163 0176 0185 0245	
R LINE	SINUDYNE	0723	
0051 0169	0000 0013 0014 0015 0026 0028 0075	Thomson 3004	
RADIOLA	0169	1040 1041	
0051 0169	SKYMASTER	THORN	
RADIOMAPRELLI	0016	0004 0018 0054 0111 0127 0164 0169	
0000 0123	SKYWORTH	TOKAI	
RADIONETTE	0228 1034	0004 0051	
0016 0018	SOLAVOX	TOMASHI	
RADIOTONE	0092	0120	
0007 0051	SONITRON	TOSHIBA	
RBM	0006 0031	0017 0027 0065 0082 0094 0108 0117	
0017	SONOKO	0122 0128 0132 0164 0189 0920	
RCA	0002 0009 0051 0169 0245	TRIUMPH	
0031	SONOLOR	0013 0082 0123	
REVOX	0006	UHER	
0051 0169	SONTEC	0043 0051 0157	
REX	0051 0169	ULTRAVOX	
0002 0157	SONY	0000 0014 0133	
RFT	0004 0009 0027 0029 0030 0061 0065	UNITED	
0000 0007	0066 0094 0106 0127 0146 0183	0169	
ROADSTAR	SOUND &	UNITED QUICK STAR	
0002 0009 0011 0245	VISION	0245	
ROBOTRON	0011 0014	UNIVERSUM	
0000	SOUNDWAVE	0002 0016 0018 0051 0083 0102 0110	
RTF	0051 0369	0143 0169	
0000	STANDARD	VESTEL	
SABA	0009 0011 0051 0245	0051 0083 0092 0103 0107 0169 0195	
0000 0045 0046 0111 0123 0126 0127	STARLIGHT	1014 0067 0079 0361 0410	
0139 0245	0169	VEXA	
SAISHO	STERN	0009 0169	
0002 0009 0013 0028 0123	0157	VICTOR	
SALORA	SUNKAI	0027 0051	
0031 0047 0093 0107 0121	0009 0026 0062	VIDEO SYSTEM	
SAMBERS	SUNWOOD	0051	
0014 0043 0123 0169	0009 0051	VIDEOCON	
SAMSUNG	SUPRA	0737	
0002 0004 0009 0030 0051 0058 0059	0009	VIDEOL OGIQUE	
0061 0066 0067 0079 0081 0083 0085	SUSUMU	0011	
0090 0093 0105 0114 0135 0312 1042	0011	VISION	
0198	SUTRON	0051	
SANDRA	0009	VISOREX	
0009	SYSLINE	0096	
SANSUI	0169	VIZIO	
0051 0920	TANDBERG	0343	
SANYO	0026 0157	VORTEC	
0004 0006 0016 0018 0027 0029 0030	TANDY	0051 0169	
0031 0040 0043 0059 0065 0066 0083	0001 0004 0011	VOXSON	
0101 0127	TARGA	0000 0043 0051	
SBR	0185 1003 1004 1018	WATSON	
0041 0169	TASHIKO	0051 0067 0079 0088 0169	
SCHAUB LORENZ	0027 0041 0056	WATT RADIO	
0697 0698 0703 0715 0015 0042 0096	TATUNG	0014	
0205 1003	0004 0051 0123 0169	WEGA	
SCHNEIDER	TCM	0000 0027	
0011 0051 0068 0139 0169 0245	0002 0009 0042 0047 0068 0103 0107	WELLTECH	
Scope	0115 0127 0169 0185 0206 0207 0208	0042	
1035 1036	0209 0210 0211 0228 0291 0742 0924	WELTBlick	
SEG	0994 1005 1017	0051 0169	
0002 0009 0014 0027 0043 0169 1014	TEC	WHITE WESTINGHOUSE	
SEI SINUDYNE	0009	0014 0043 0169	
0000 0013 0014 0026 0075 0123	TECHNISSON	YAKUMO	
SELECO	0042	1012	
0027 0157	TELEAVIA	YINHE	
SENCORA	0045 0111 0126 0139	0728	
0009	TELEFUNKEN	YOKO	
SENTRA	0050 0051 0052 0067 0076 0078 0102	0002 0009 0011 0051 0169	

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## SPECIFICATION

### Main Features

STB Type	DVBS/S2 Receiver
Main Chipset	ALI 3602

### Special Features

Encrypt	ASIC Type
TUNER Type	HALF NIM Tuner
Demodulator Type	ALI3501
SMPS Type	Separate SMPS

### Mechanical

Dimension	W:26.0 cm D:21.3 cm H:4.5 cm
Net Weight	1.5 kg

### Main Chip Sets

CPU frequency	333MHz
Flash Memory	1PC 32Mbit/4Mbyte
SDRAM Memory	2PCS 32MX16bit/64Mbyte DDRs

### DVBS Tuner

Tuner Type	STV6110A+3501 ON BOARD
Frequency Range	950 ~ 2150MHz
Input Impedance	75Ω
LNB Power and Polarization	Vertical 13VDC;Horizontal 18VDC @ 400mA (max) 22KHz±0.4KHz(0.6V±0.2V)tone, Overload Protection
Input Level Range	-65dBm ~ -25dBm
Loop-Through	Signal loop through

### DVBS Channel Decoder

DVBS Demod standard	DVB-S,DVB-S2
DVBS Demodulation	QPSK, 8PSK
DVBS Symbol Rate	2 ~ 90MSPS (Code Rate 1/2)
DVBS Code Rate	1/2,2/3,3/4,5/6,7/8 for DVBS, 1/4,1/3,2/5,1/2,3/5,2/3,3/4,5/6,8/9,9/10 for DVBS2

### TS Demux

Demultiplexer	MPEG2 ISO/IEC 13818-1
Input Bit Rate	Max 100Mbit/s

### Video Decode

Video Decode	MPEG2 ISO/IEC 13818-2 MP@ML, H.264(MPEG4 part 10) main and high profile level 4.1/MPEG-2 MP@HL
Aspect Ratio	4:3, 16:9
Video Resolution	1920×1080,1280×720,720×480

### Audio Decode

Audio Decode	MPEG-1 layerI/II, PCM downmix, IEC958 SPDIF, Dolby 5.1 channel, Dolby downmix 2 channel, Dolby Prologic2
Sampling Frequency	32KHz, 44.1KHz, 48KHz

### AV Output

Video Bandwidth	SD:5.0MHz(-3dB),HD:30MHz(-3dB)
Video Impedance	75Ω
Video Voltage Level	1.0 Vp-p
Audio Freq. Range	20 ~ 20KHz
Audio Impedance	600Ω
Audio Voltage Level	2V rms(5.6Vp-p)

### Environment

Input Voltage	AC 175 ~ 250V, 50Hz/60Hz
Consumption	Max 30W
Temperature	0 ~ 40°C
Humidity	<95%