

User's Guide

# DVB-T Receiver UFD 570/S



Order No.: 20210035

**KATHREIN**  
Antennen · Electronic



Dear customer,

This User's Guide is designed to help you to use the extensive functions of your new DVB-T receiver most effectively.

We congratulate you on choosing DVB-T – the television standard that enables optimum TV reception with a corresponding room antenna (e.g. BZD 30 from Kathrein). Enjoy TV reception without ghost or double images and other disadvantages of conventional terrestrial TV.

We have made every effort to make the instructions as clear and understandable as possible and to keep them as short as necessary. You will find a small glossary of terms at the end of the User's Guide to facilitate understanding of certain technical expressions that do not lend themselves to translation.

We have designed the power switch specifically with the environment in mind. Therefore, in order to save electricity, disconnect your receiver from the mains if you will not be watching TV for a longer period of time. For shorter periods you can switch the receiver to standby with the remote control to reduce power consumption to a minimum.

We wish you the very best reception and great pleasure with your new DVB-T receiver.

Your

KATHREIN team

## Important information

Should you, contrary to all expectations, experience problems with your receiver, please contact your dealer or our Hotline.

Tel: #49 (0) 80 31 18 47 00

Fax: #49 (0) 80 31 18 46 76

Your receiver was equipped with the latest software at the factory, we are however committed to ensuring that the software always complies with customer requirements and the latest technological developments. You will find more details in the section "Software and channel list update".

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# Safety Information

## Important information on operation



In the following section you will find important information on operation, place of installation and connection of the receiver.

Please read this information carefully before you start up your receiver.

## Longer periods of absence/thunderstorm



Always switch off the receiver with the power switch at the front left in the event of longer periods of absence and during a thunderstorm. This also applies to any other devices that may be connected to the receiver.

If timer programming is set, make sure the receiver is switched on in good time before the set recording time.

## Mains lead



Take particular care to ensure that the mains lead (power supply cable) is not damaged. Never operate the device with a defective mains lead.

## Cleaning



Disconnect the mains power plug before you clean the receiver. Use a soft dry cloth for this purpose. Only clean the surface of the casing.

Never open the casing. Contact with parts on the inside of the receiver poses a risk of electric shock.

## Playing children



Make sure that children do not insert objects into the ventilation slots. This is a source of danger and fatal injury by electric shock.

## Repair



Only have qualified service personnel carry out repairs or adjustments to your receiver. Unauthorized opening up of the receiver and attempts at repair will invalidate the guarantee.

Unauthorized tampering with the device can jeopardize the electrical safety of the receiver.

The manufacturer shall not be liable for accidents to the user as the result of the receiver being opened up.

## Connections



Incorrect connection can lead to problems in operation or cause defects in the device.

# Safety Information

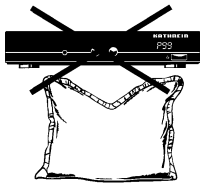
## Earthing



If you are using an outside antenna, make sure it is grounded correctly. Corresponding local and/or VDE regulations must be observed.

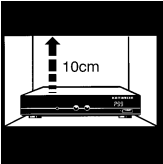
Important information on setting-up location and assembly.

## Setting-up location



All electronic devices generate heat. The rise in temperature, however, is within a safe range. Sensitive surfaces of furniture and veneers can over time discolour slightly due to the constant effects of heat. The feet of the receiver may also discolour when in contact with treated surfaces. If necessary, place the receiver on a suitable base.

## Ventilation

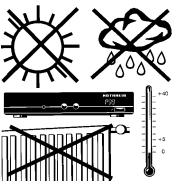


The heat generated in this receiver is adequately dissipated. Nevertheless, never install the receiver in a cabinet or on a shelf with insufficient ventilation. Never cover or close off the cooling slots on the device.



Never place objects on the receiver and maintain a minimum clearance of 10 cm above the device to ensure the heat is carried off effectively.

## Moisture, sunlight, heat



Protect the receiver from moisture, dripping and splash water.

Do not place the receiver near a source of heating and never expose it to direct sunlight.

## Mains voltage

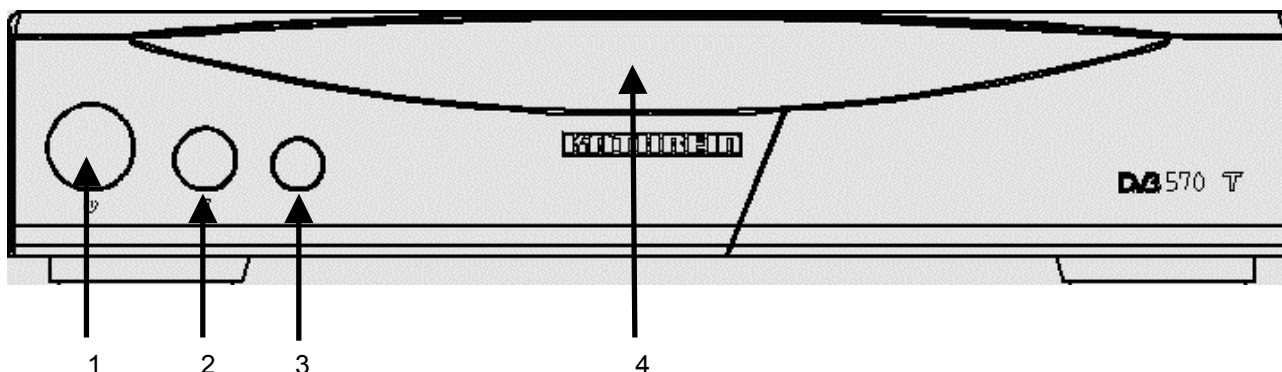
Operate the power supply unit for the receiver only with a mains voltage of 230 V/50 Hz. First connect the antenna and the television set before connecting the receiver to the mains power supply and switching it on.

# Controls, Indicators, Displays and Connections

In this section you will find a short description of all controls, indicators, displays and connections. The button symbols used here are also used in the description of the operating steps.

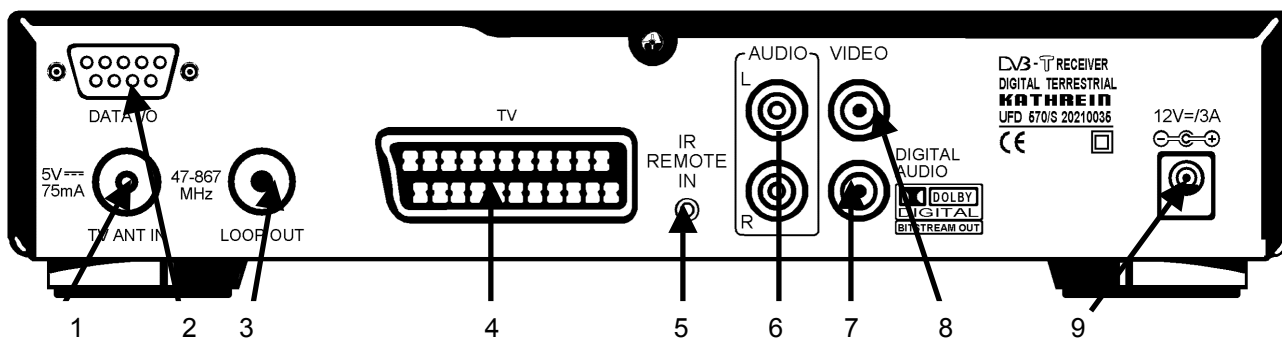
## Front view

(Panel folded down)



## Rear view

UFD 570 mit 12-V-Anschluss



### Controls, indicators and displays on the front panel

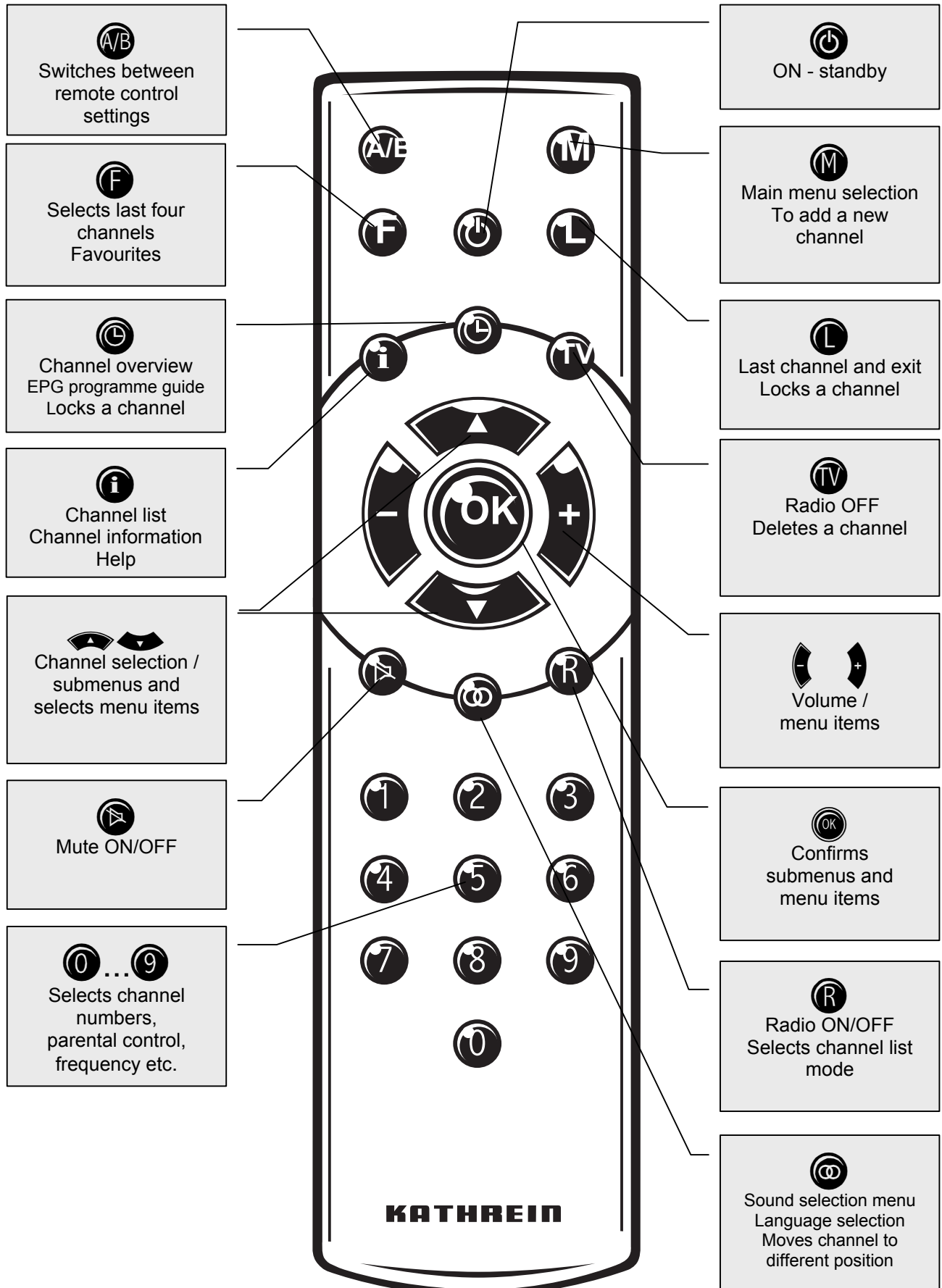
- 1 ON/OFF switch (with mains disconnection)
- 2 Channel down
- 3 Channel up
- 4 LEDs (red = standby, green = confirmation of remote control commands)  
Green = Operation  
Green flashing = Confirmation of remote control commands

### Controls and connections at the rear

- 1 Antenna input
- 2 DATA socket  
Interface for serial data transmission (service)
- 3 Antenna output (looped through)
- 4 SCART socket / TV connection
- 5 Input for infrared receiver
- 6 Audio outputs  
2 Cinch jacks, left and right channel
- 7 AC3 output (digital Dolby audio)
- 8 FBAS video output
- 9 Direct voltage input 12 V

# Controls, Indicators, Displays and Connections

## Remote control function buttons




# Remote Control Command Set

The remote control features 2 command sets, making it possible to operate 2 receivers independently of each other in one room (not together with a twin receiver).

**Note:**


*For this purpose, program one receiver on the command set 1 and the second receiver on the command set 2.  
Switch on receiver 1 and switch off receiver 2 with the power switch.*

Press and hold the  button.

Enter "901" with the number buttons.


To adopt the code, press the  button to switch receiver 1 to standby and then switch off the device at the power switch.

Switch on receiver 2.

Press and hold the  button.


Enter "902" with the number buttons.

To adopt the code, press the  button to switch receiver 2 to standby and then back into operation. Now switch on receiver 1 again.

Press and hold the  button.

Enter "903" with the number buttons.

When carrying out the first two settings, the remote control must be directed at the respective receiver (when switched on).

By pressing the  button, you can now switch between the two command sets A and B (toggle function) and alternately operate both receivers.

Command set 1 is always active as the on-delivery setting.

If you are operating only one receiver and the active command set is switched over by mistake so that this receiver can no longer be operated, the remote control can be easily switched back to command set 1. For this purpose, follow the procedure described above.



# Notes on Operation

## Menu concept

The menu concept is based on logical operating sequences.

The currently selected channel always appears in the top right corner of the screen.

### Note:

*Coloured backgrounds are used to emphasize the selected menus, submenus and menu items as well as the parameters to be set. The menus are to a large extent self-explanatory.*

The bar at the bottom edge of the screen provides information on the selected menu item.



Press the **M** button to select the main menu and press the **▲** **▼** buttons to select the submenus.

Press **OK** to access the submenus. The items in the submenu are selected by pressing the **▲** **▼** buttons.

The settings allocated to specific menu items are executed either by pressing the **←** **→** buttons or the number buttons.

Press **L** or **M** to exit the main menu, submenus and menu items.

## Button functions

**i** is a selector button (help function or general list) with menu function. Press **L** to exit the setting.

**TV** is a selector button. With identifier self-deleting function. In channel list function: Deletes a channel.


**Ⓞ** is a switch-on button with menu functions.


Press **L** to exit the setting. In channel list function: Moves channel to different position

**Ⓛ** is a switch-on button with menu functions.

Press **L** to exit the setting. In channel list function: Locks channel.

## Notes on Operation

 is a switch-on button with menu functions. Press the button again to exit. In channel list function: makes selected channel a favourite channel.

 is a function change button for radio and TV. In record mode: preparation of recording. In channel list function: selects channel list mode.

 is a function change button. Press once again to change function.

### Alphanumeric entries

Use the number buttons to enter the channel and network names. They produce numbers and letters in the name fields of the corresponding menus. Position the bar cursor on the name field. The first position automatically assumes a dark background. You can now also enter letters with the number buttons by pressing the corresponding button several times. For example A, B and C are additionally allocated to the "2" button (see following table).

# Notes on Operation

## Alphanumeric assignment of number buttons on the remote control.

Button	1 x	2 x	3 x	4 x	5x
①	1	.	,	?	1
②	2	A	B	C	2
③	3	D	E	F	3
④	4	G	H	I	4
⑤	5	J	K	L	5
⑥	6	M	N	O	6
⑦	7	P	R	S	7
⑧	8	T	U	V	8
⑨	9	W	X	Y	Z
⑩	0	BLANK	0	BLANK	0

## Language selection - OSD

To select the language for the on-screen menus press:



The available languages are German, English, Italian, French, Dutch, Portuguese, Spanish and Turkish.

# Connection and Startup

The following section is specifically intended for the specialist dealer. You only need to read this section if you are carrying out the installation yourself.

You will find sample configurations in the section "Connection examples".

First carry out all installation work before connecting the receiver to the mains power supply. Refer to the information provided in the section on "Safety".

## To connect the receiver

### Antenna connection



DVB-T television was developed to provide a good TV picture wherever an adequate signal can be received. "Ghost or double images" are no longer a problem.

Connect the receiver either to your conventional individual or communal antenna that receives all VHF/UHF signals or use a DVB-T antenna specially developed by Kathrein for direct home reception.

*Even DVB-T TV cannot work miracles – you must have a good reception signal. Problems may arise in concrete buildings if you are only using a room antenna.*

### Presetting of reception antenna



If you use or have to use an active antenna, i.e. an antenna with preamplifier, it is possible to supply power to this antenna via the antenna input in the receiver. The default is set to "OFF" to ensure no damage can occur. Make sure you use an antenna that is designed for a supply voltage of 5 V (see page 16).

### TV connection

Use a SCART cable to connect the receiver (TV SCART) and TV set.

If your TV set is equipped for stereo output, you can receive the sound in stereo via the SCART connection.

### Audio connection

If you wish to reproduce the sound via a HiFi system, connect a corresponding Cinch cable from the audio Cinch jacks and the input sockets on your HiFi system.

### Dolby connection

The Dolby digital data output (AC3) is provided solely for connection to a Dolby digital sound system.

### Inserting batteries in the remote control

Remove the cover on the battery compartment on the underside of the remote control.

Insert the two supplied batteries in the remote control. Ensure correct polarity of the batteries, the + and – markings are indicated inside the battery compartment.

Slide the cover back into the casing and lock in position.

#### **Used batteries are special waste!**

Therefore do not throw batteries into the household waste but rather deposit them at a collection depot for old batteries!




# Switching On for the First Time

## The first steps

- Make sure that you have made all connections correctly.
- Connect the receiver to the mains power supply.
- Switch on the receiver by pressing the power button at the front of the unit.

The operation indicator LED on the front panel lights red, the receiver is now in standby mode.










Switch on the receiver by pressing the  button on the remote control.

- The green LED lights and the receiver assumes reception mode.

**The green LED at the front of the receiver provides confirmation every time a button is pressed on the remote control.**

You will see the factory preset channel on your TV screen. An information bar indicating the channel provider, the time, the timer settings, the channel status and the channel title will be displayed in the bottom section of the screen provided the corresponding data are transmitted. The number of the channel memory appears in the LED display.

The red standby indicator goes out.

You can now receive the TV and radio channels preset at the factory and select them by pressing the   buttons. Press the  and   buttons to select radio channels. Press the  or  button to return to TV channels.

Refer to the section "Channel lists – TV/radio" for information on how to set up and save other TV and radio channels.

**The reception status last set always reappears when the receiver is switched on.**

If the message "bad or no signal" appears on the screen in addition to an on-screen display indicating the channel last received, you will need to check the system installation and/or the receiver settings. If this problem only applies to individual channel slots, the problem may be due to an interruption in the transmission signal.














## Factory setting of the receiver


Before you change the basic settings of your receiver, make a note of the settings in the form provided at the end of this User's Guide. In this way, you will be able to restore the original settings at any time.

# Switching On for the First Time

## Switching on with BZD 30

1. Switch on the TV set and the receiver.
  - Switch the receiver into the operating mode with the  (**Stand-by**) button (the LED switches to green).
2. Switch the TV set to AV mode if the TV set does not switch over by itself.
3. To activate the power supply for the antenna, please perform the following steps with the receiver remote control:
  - Press the  button to reach the main menu.
  - When you are in the main menu please select the "Installation" sub-menu with the   buttons and confirm with the  button
  - Now go with the   buttons to "Network Configuration" and again confirm with .
  - Press the  button once again to reach the "Power" subitem.
  - Under this item you must now change the selection of the supply voltage with the   buttons from "Off" to "On" (see figure).



- The antenna is now supplied with the operating voltage of 5 V.
- You return to the TV mode by pressing  four times.

# Important on-screen displays/OSD (On Screen Display)

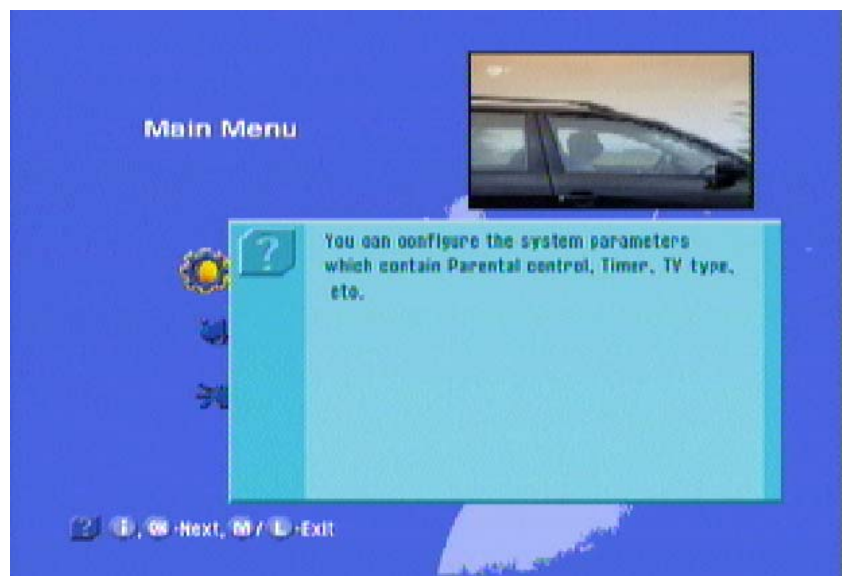
The receiver functions are controlled by a microprocessor and extensive software. The following explanations are intended to improve understanding of all procedures and to minimize the risk of mistakes. You can obtain information on the further procedure by pressing the **i** button when in the individual screen displays.

## Help function

You can call up help information for each menu and menu item. This help function provides you with a short description of the most important functions of the selected menu items. For example, you can select the main menu by pressing the **M** button.



Now press the **i** button to show the help display for the system parameters menu item.

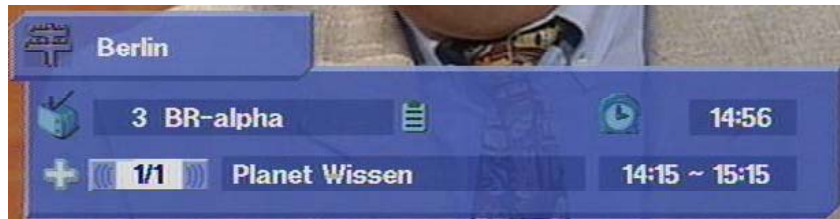



You will find a detailed description of the selected menu function in the corresponding section of the User's Guide.

Press the **L** or **i** button to exit the help function and return to the main menu. Press the **L** button once again to view the originally set channel.

# Important on-screen displays/OSD (On Screen Display)

## TV channel identifier



The channel identifier is displayed for several seconds every time the channel is changed or by pressing the  button. The antenna symbol at the top left indicates that a channel is received even if no picture can be seen (e.g. radio). The TV symbol indicates a TV channel with the selected channel shown next to it and whether video text is received. The time is also indicated. The + in the third line stands for the channel selection from the main channel list. If the favourite list is selected, you will see the "apple" symbol at this point. This is followed by the programme title as well as the start and end times of the current programme, provided these data are transmitted with the signal.

## Radio channel identifier

The identifier for the set radio channel has the same configuration. The radio symbol in the top left corner indicates that this is a radio channel. Programme times and text are displayed only if the corresponding data are transmitted with the signal.

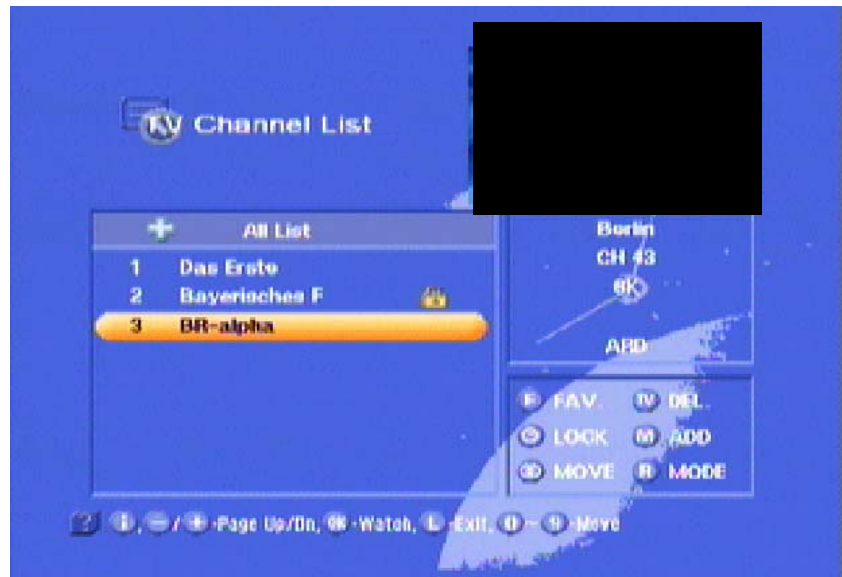
## Error message



"Bad or no signal" indicates that there is a fault in the reception system or in the receiver settings or the transponder is not transmitting. Check the antenna connection and antenna configuration. As an aid, refer to the list of service settings provided at the end of this User's Guide.

# Important on-screen displays/OSD (On Screen Display)

## Channel list - RADIO/TV



Press the **i** button to show the channel list. A + symbol for the main channel list is indicated at the top left. The column below contains information on the channel, broadcaster and whether the channel is normally scrambled (encrypted). The top right-hand column contains information on the received TV station, network and its channel. The required channel can be selected with the bar cursor and confirmed by pressing the **OK** button.

The channel settings menu is located in the bottom right corner. The channel defaults set at the factory can be changed here.

Press the **F** (FAV.) button to store the indicated channel as a favourite channel.

**C** (LOCK) to lock the indicated channel.

**TV** (DEL.) to delete the indicated channel.

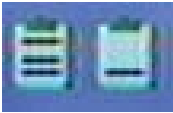
**M** (Plus) to add a new channel.

**R** (MODE) to select the channel list mode.

**@** (MOVE) to move the channel to a different position.

You will find further information in the section "Channel selection".

## Teletext/Subtitles







As soon as the symbol opposite for teletext or subtitles appears, the receiver will prepare the transmitted signals – teletext also in connection with scrambled signals – for your TV set. Teletext is selected and shown immediately by pressing the 0 button.

The individual pages can be selected with the number buttons.



A star appears in the top left corner during the search.

You can select the subtitles with the  button and . Use the  to select the required language. Exit the menu by pressing .

# Channel Selection

This section describes how you select TV channels with your receiver and how you can set the required volume.



This description of the functions assumes that the receiver has been connected correctly.

If you wish to connect the receiver yourself, please read the section "Connection and start-up" beforehand.

## Selecting a TV channel


### Reception status

The following information describes how to select other channels and shows what the on-screen displays look like.

After switching on the receiver, simply press the   buttons in order to select other TV channels in their ascending or descending order in the channel memory.




Every time you press the button, an on-screen display shows you the selected channel together with the time, the programme start and end times as well as the channel title in the information box provided this data is transmitted together with the signal.

By pressing the  button, you can leave this information box permanently displayed or switch it off by pressing the button once again.

You will receive the "Channel scrambled" message for scrambled channels.

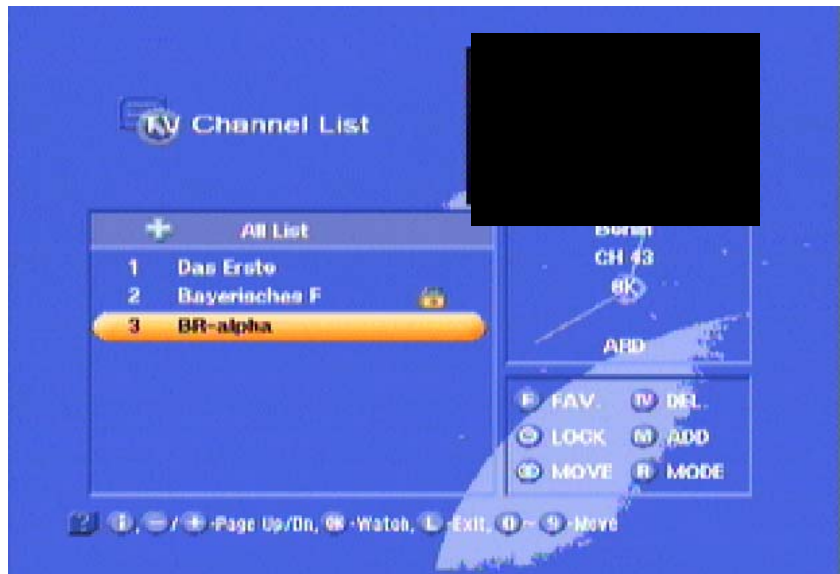
You cannot receive these channels with the receiver UFD 570.





A further option for selecting a different channel is to press the


 button. The TV channel list is now displayed. In the top right column it provides information on the network, channel, carrier number and the broadcaster. The left column shows the channel location, channel name, type of received signal (free to air/scrambled) as well as the favourites and locked channels.




## Channel Selection



By pressing the   buttons you jump to the next channel and by pressing the   buttons you jump to the neighbouring page.

Confirm your selection by pressing the  button.

You can also use the number buttons to select the required channel.

Press the  button to exit the channel list and remain in the channel already set.



### Selecting a TV channel by number entry

You can select a different TV channel during a current TV channel by entering the channel location number. Use the number buttons

 to  for the purpose of entering the channel location number.

#### Example:

*You wish to select the TV channel "DSF". This channel is stored under the channel location number 015. (The order of TV channels is defined in the channel memory and therefore only serves as an example here.)*


*To select this channel, press the numbers  and  one after the other. The receiver waits for about 3 seconds for entry of the next number.*

*Follow the same procedure for all other channels – i.e. also channels with three-digit channel location numbers. Do not enter leading zeros otherwise teletext (if provided) will be selected.*


# Channel Selection

## Switching over to radio channel

You can switch over from a TV channel to a radio channel.

Press the  button on the remote control for this purpose.



The receiver switches over to the channel location of the radio channels last set. You can return to the TV channel by pressing the

same button or . The corresponding display relating to the received channel, i.e. as when selecting the TV channels, appears on the screen. The LCD display shows a small "r" together with the channel location number.




**The screen will be blanked out after several seconds.**

## Reception status - radio


After switching over the receiver, simply press the   buttons to select other radio channels in their ascending or descending order in the channel memory.

Every time you press the button, an on-screen display shows you the selected channel together with the time, the programme start and end times as well as the channel title in the information banner provided this data is transmitted together with the signal.








By pressing the  button, you can leave this information bar permanently displayed or switch it off by pressing the button once again.




A further option of selecting a different channel is to press the  button. The radio channel list is now displayed. In the top right

## Channel Selection



column, it provides information about the network, channel, carrier number and the broadcaster. The left column shows the channel location, channel name as well as the favourite identifier and locked channels.

By pressing the   buttons you jump to the next channel and by pressing the   buttons you jump to the neighbouring page. confirm your channel selection by pressing the  button.

You can also use the number buttons to select the required channel.



Press the  button to exit the channel list and remain in the channel already set.

### Selecting a radio channel by number entry

You can select a different radio channel during a current radio channel by entering the channel location number. Use the number buttons  to  for the purpose of entering the channel location number.

#### Example

You wish to select the radio channel "DLR-Berlin". This channel is stored under the channel location number 015. (The order of radio channels is defined in the channel memory and therefore only serves as an example here.)

To select this channel, press the numbers  and  one after the other. The receiver waits for about three seconds for entry of the next number.

Follow the same procedure for all other channels – i.e. also channels with three-digit channel location numbers. Do not enter leading zeros otherwise teletext will be accessed.

# Timer Settings

You can use the timers for recording a programme with your video recorder on time. 14 timers are available which you can set to different channels as well as start and end times.

To access the timer setting, press **M** to enter the main channel menu, **▼** **▲** to go to system parameters, followed by **OK** and **▼** **▲** to local time/ timer and **OK**. You now see the display:



Press the **▲** **▼** buttons to move the cursor to the timer you require and confirm it by pressing **OK**. Press **L** to exit the timer again.

Incorrect time settings will be rejected.

You can select and set

- the type of channels (TV, radio or software download)
- the channel location with channel name
- the start time (day, months, year, hour, minute)
- the stop time
- the timer status – inactive/once/daily/weekly

for 14 timers. You must enter leading zeros for the time settings.

Use the **+** **-** and the number buttons to make the required setting.

The current time that you must re-enter appears under the start time. If no other setting is entered, the end time will be set automatically to the same date and one hour after the start time.

Finally confirm the settings by pressing **M** or **L** 3x.

**If you have preprogrammed a download using a timer, all subsequent timer settings will be ignored after successful download!**



## VPS signal

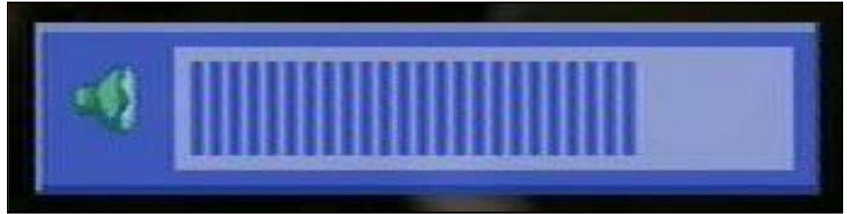



No VPS signal is transmitted for digital television.

You will therefore need to programme your video recorder corresponding to the timer settings.


# Sound Settings

## Setting the volume









Set the required volume level by pressing the  buttons on the remote control of the receiver. A bar indicator is displayed on the screen to show the set volume.

## Stereo and two-channel sound reproduction

The channel identifier that you can display by pressing the  button shows the set sound reproduction. (Depending on the direction of the symbolized sound waves – under the displayed time – mono left, mono right or stereo can be set. The digit indicates the number of transmitted sound channels). The channel title is shown in the box on the right.



Press the  button to call up the audio menu for sound and language selection. You can now make the required settings, e.g. language selection, provided the corresponding data are contained in the reception signal (sound track), Dolby Digital (5.1 CH). Select the menu items by pressing the  buttons and select the required setting with the  buttons. Press the  button once again to exit the menu.

If subtitles are also transmitted, you can use the  buttons to select the language in the subtitle bar and confirm setting with .

# Sound Settings

## AC3





The receiver can process sound transmissions in AC3 format (Dolby Digital) providing you with the opportunity of listening to cinema sound quality in your living room. The digital sound output is provided for this purpose. You will need to connect it to a corresponding system.


**Please refer to the instructions manual of your Dolby Digital system.**

In order to reproduce the AC3 format, set your receiver in the audio menu under "stereo" to "1 of 2" or "2 of 2 (2 Ch)". The corresponding transmission – "5.1 Ch" (5 channels + 1 subwoofer channel) is then indicated at "Dig. output".

Not many broadcasters transmit the AC3 format. If AC3 format is not transmitted, you will only be able to select the standard stereo or mono settings or select the broadcast language.

## Mute

Press the  button on the remote control to mute the sound. This symbol  appears on the screen.

Press the  button again to restore the sound. The standard volume display bar is then shown for several seconds.

Although you can change the channel while in mute mode, it will remain muted until this mode is cancelled or you correct the volume.

## Channel Overview

The channels set at the factory can be changed in the "channel list" menu. Select the menu by pressing the **i** button, the **▲▼** buttons as well as **◀▶** for TV or radio and **OK**. If stored, a password must be additionally entered.

### Selecting channels last received



Press the **F** button to display the four channels (selected for at least 10 s) you last received. The arrows correspond to the cursor buttons **▲▼** and **◀▶**. The allocated channel can then be selected by pressing these buttons. Select this function to call up the on-screen display shown above.

### Favourite channels



You can arrange and sort your favourite TV and radio channels, e.g. all German-language channels or channels that have no commercial breaks. These channels are identified by the "apple" symbol in the TV or radio channel lists which you can show by pressing the **i** button, select with the cursor buttons and confirm with **OK**.

Use the **◀▶** and **▲▼** buttons to select the required favourite channel which is then highlighted by a coloured bar.

The bar can be shifted page-by-page or line-by-line by pressing the



## Channel Overview

cursor buttons. You can also use the number buttons to enter the required channel number.


The list for choosing the favourite channels is shown by pressing the

 button.



With the aid of the   buttons, you can select the list in which you wish to save your favourite channels from the favourite lists 1 to 5. It is possible to save several different channels in one list.

Each member of the family can therefore save his/her own favourite channels and select them at any time. The channels can be protected against unauthorized access by entering a password (see Section "Password"). The selected list is highlighted by a coloured bar. The selected channel can be seen in the top left corner of the screen.

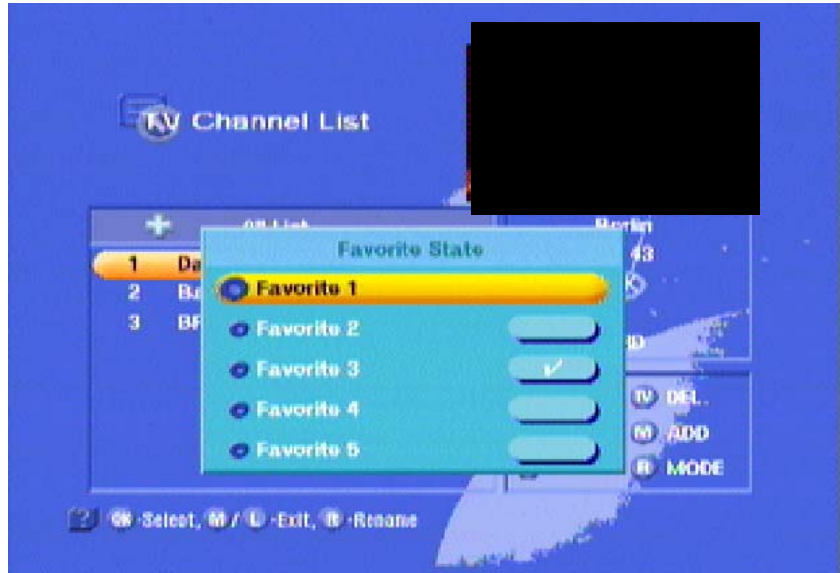
By pressing the  button, the highlighted line can now be marked with the "apple" symbol.

The next channel in the channel list is selected automatically and appears in the small screen in the top right corner. The next favourite programme can be marked with the "apple" symbol.

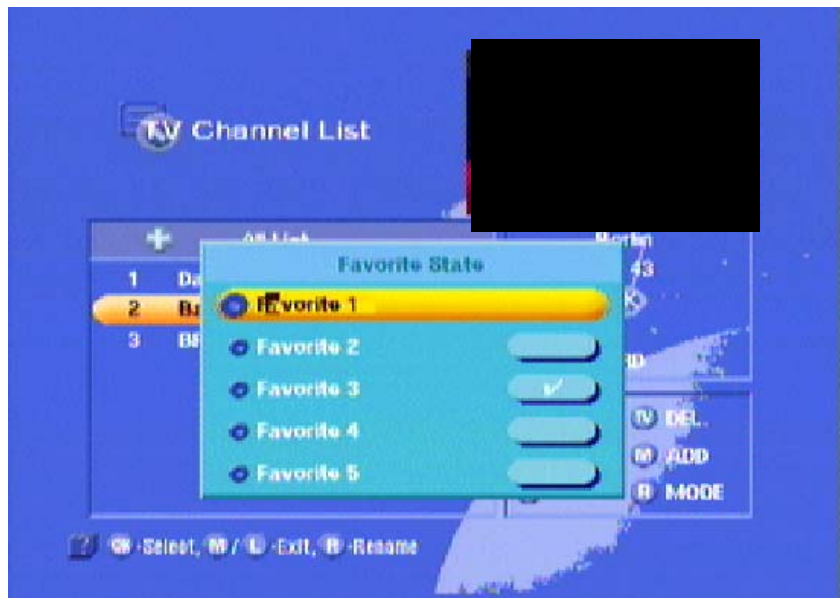
You can give the individual favourites a name so that you can, for example, group all channels that mainly show "movies" or specialize in "sports" under the favourite list 1. The name of the user (Peter, Karin, grandma, grandpa) can also be entered.

# Channel Overview

Press **i** to access the channel list and press the **F** button to view the favourite list. Here you can select a favourite channel with the aid of the **▲** **▼** buttons. The selected channel is highlighted by a coloured bar.

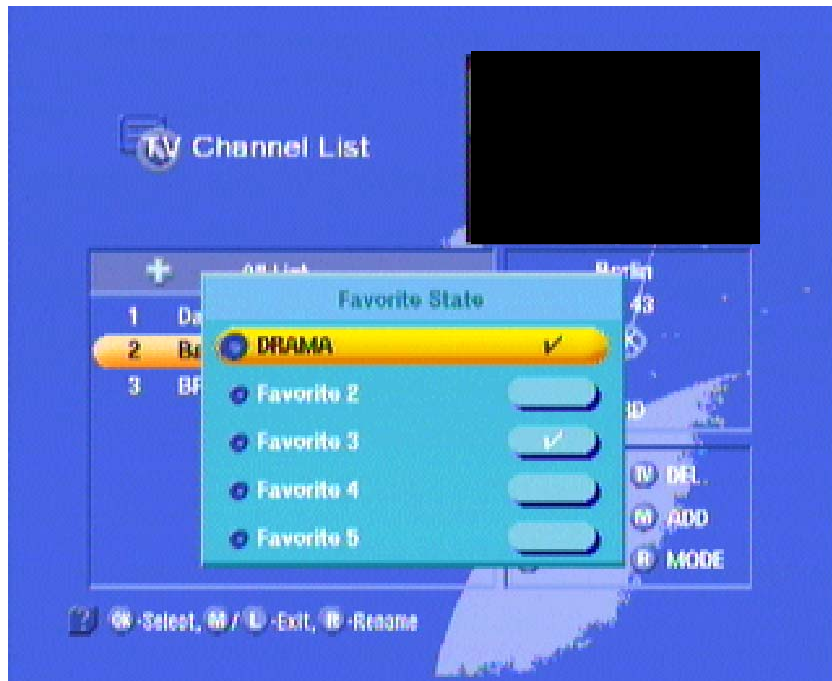


You can access write mode by pressing the **R** button. The first letter is now marked. You can now rename the favourite channel as you wish with the aid of the number buttons (see instructions for alphanumeric entry). With the aid of the **▲** **▼** buttons you can select other favourites you wish to rename.



# Channel Overview

After entering the name, confirm your entry by pressing the **OK** button. You now return to the channel list.



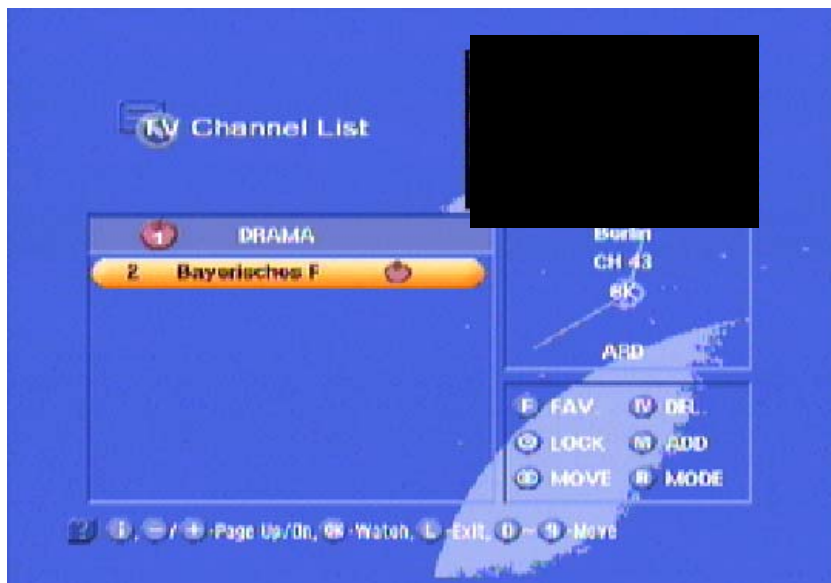
Press **M** to go back to the TV picture. Storage of your changed setting is confirmed and the information banner of the currently received channel appears for a few seconds on the screen.

To select a favourite channel, press the **i** and the **R** button to access the favourite list.



Using the **▲▼** buttons, first select the line with the "apple" symbol and then select the required list ("DRAMA" or "Favourite 1" in the example) with the **←→** buttons. The selected favourite list appears after pressing the **OK** button.

# Channel Overview

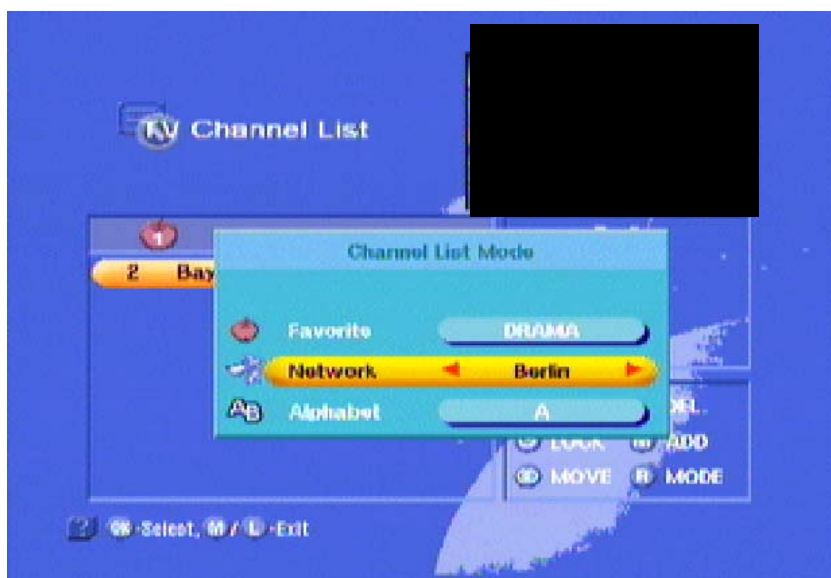


Use the buttons to select the channel you require that is highlighted by a coloured bar and can be seen in the top right corner

of the screen. Press the button to view your selected favourite channel.

If you wish to cancel a marked channel, select the favourite list in which the channel is stored with the aid of the buttons and the button and delete the "apple" symbol by pressing the and button.

To return to the channel list (overview of all channels of the set network), first press the button followed by the button.



Use the buttons to first select the "network line" and then select "all networks" with the buttons. Press the button to view the current channel list.

# Channel Overview

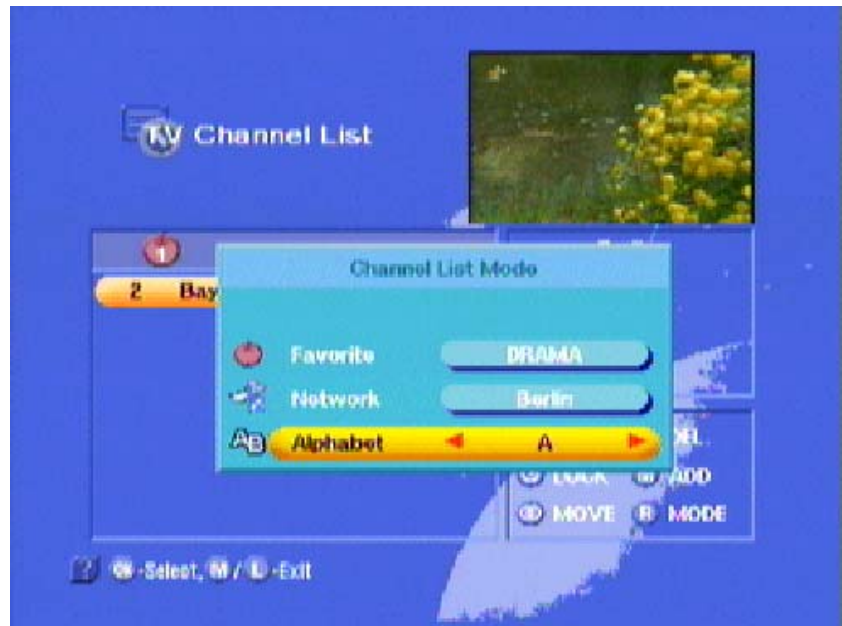
## To search for channels in alphabetical order

You can view a list of channels with the same initials (letters), making it possible to quickly select a certain channel from the entire channel list.

Press the **i** button to access the channel list.

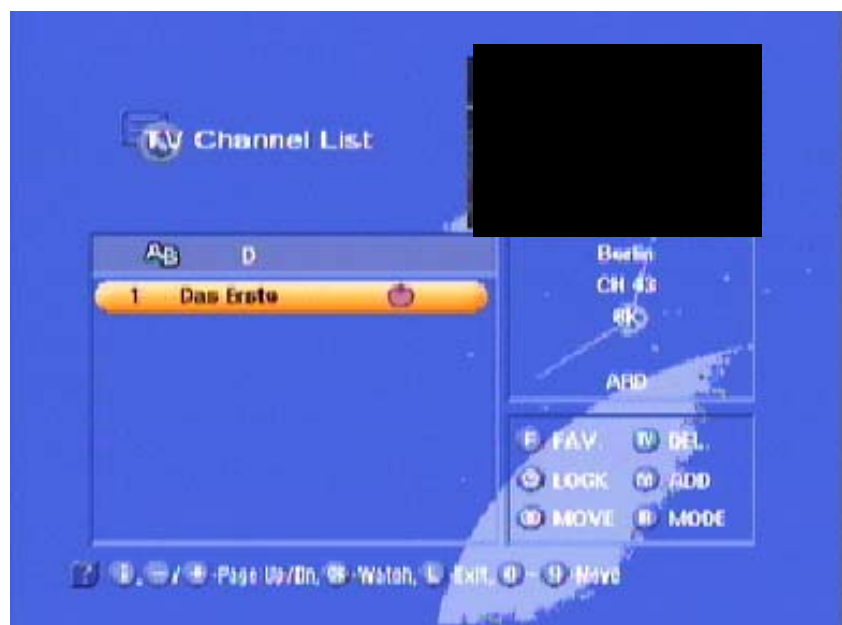
You can select the sorting criteria by pressing the **R** button.

Use the **▲▼** buttons to select the "alphabet" bar.













You can select the required letter with the aid of the **◀▶** buttons that scan the alphabet sideways. Each letter is shown in the "alphabet" bar.

Press **OK** to confirm the required letter and to obtain a list of all channels that begin with the selected letter.



## Channel Overview

Now use the   buttons to define the required TV station that is highlighted by a coloured bar and appears as a preview in the top right corner of the screen. Now press the  button to confirm your selection.





To return to the channel list (overview of all channels of the set networks), first press the  button followed by the  button. Use the   buttons to first select the "network lines" and then the   buttons for the required network. The current channel list appears after confirming with the  button.

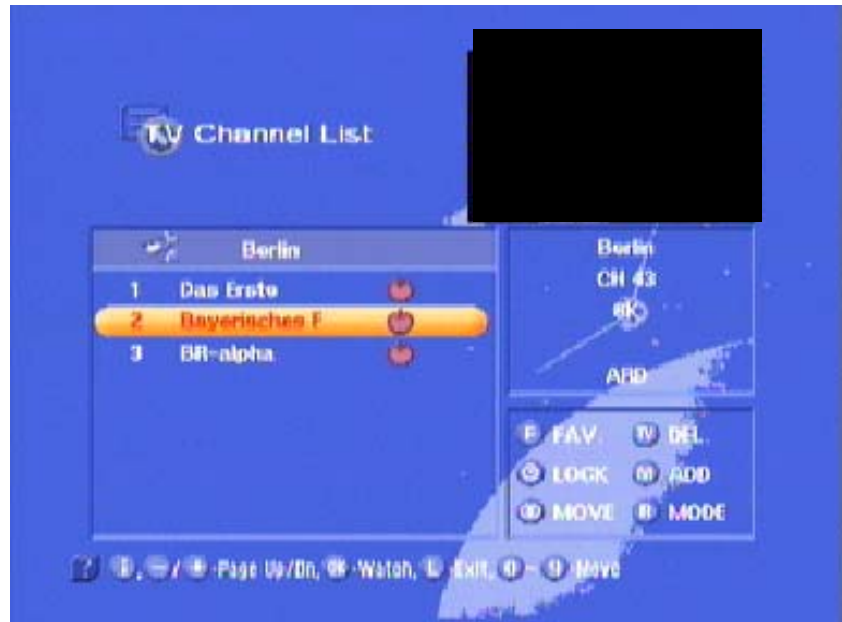
### To sort the channels


You can sort channels as required. The channels are sorted by shifting the entries in the channel lists.






Select the channel list by pressing .

You now see the required channel list on the screen.

Use the   and   buttons to select the channel you wish to move. The line with the current channel is highlighted in the list by a coloured bar and the programme appears in the top right corner of the screen.



Press the  button to mark the channel you wish to move. It is highlighted by a different coloured bar.

You can now move it to the required position using the   and   buttons and save it in the corresponding channel location by pressing .

# Channel Overview




Confirmation is given that your changes have been saved and is displayed for several seconds on the screen. The moved channel can be seen on the screen.

## To delete a channel

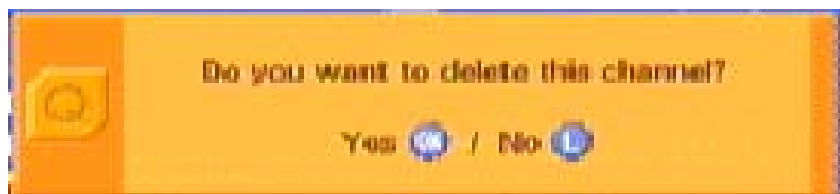
Basically follow the same procedure for sorting in order to delete a channel.

Press the main menu button  to access the "channel list".


Use the  and  buttons to select the position of the channel you wish to delete.

Now press the  button to confirm deletion of the channel.

The control programme now asks:





Confirm you required selection by pressing the corresponding button.

The program location is deleted by pressing . Confirmation is given that your changes have been saved and the programme of the next station in the channel list can be seen on the screen.

## To add channel manually

Basically follow the same procedure for sorting in order to add a channel.

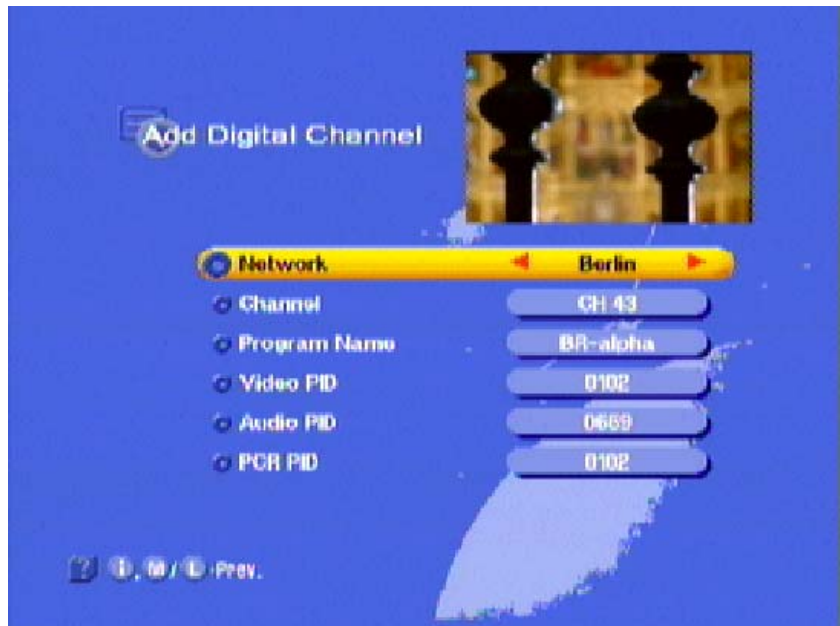
Press the  button to access the channel list.

Press the  button to show the menu for adding a channel on the screen.





**Caution when deleting channels!**



## Channel Overview



Here you can enter the details of the new channel.

The first line in the list is highlighted by a coloured bar.

Press the   buttons to move the bar vertically to the required position.


Press the   buttons or the number buttons to edit the relevant position, i.e. to make the necessary entries.

It is possible to set

- the received network,
- the channel,
- the channel name.

Only alphanumeric and decimal entries are accepted at the positions

- Video PID (program identification)
- Audio PID and
- PCR PID (PCR = program clock reference)

Access the channel list again by pressing . Confirmation is given that your changes have been saved and the information display of the channel currently received appears for several seconds on the screen. The new channel is added to the end of the existing channel list.

You can obtain the necessary PIDs from relevant TV and satellite magazines and the Internet. Refer to section "Notes on operation" for information on how to make alphanumeric entries.

Never change the PIDs without good reason as they affect the identification of the reception signal.


**This function is only required for channels that are not broadcast in accordance with the DVB-T standard. All standard channels are detected and stored by the automatic scan.**







# Channel Overview

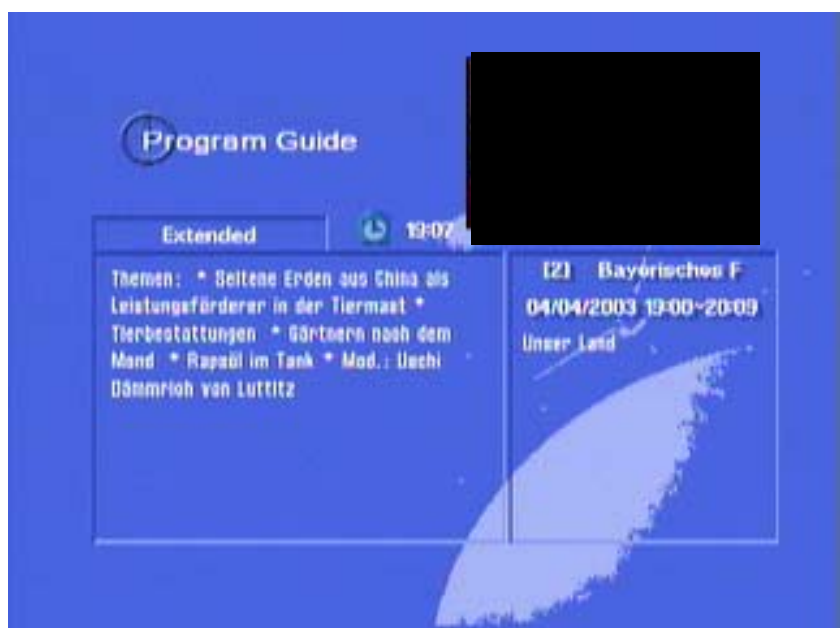
## EPG



Press the EPG button  to obtain an overview of the channels being transmitted by the currently received network together with the time and duration (see on-screen display) provided data is transmitted together with the Electronic Programme Guide (EPG), e.g. ARD and ZDF. An abbreviation of the channel title is indicated in the column on

the right. In the column on the left, you can use the   buttons to set the cursor on a channel that is to be selected by pressing the  button.

Press the  button to obtain further details on the current programme.



Press the EPG button  and  to obtain the programme overview

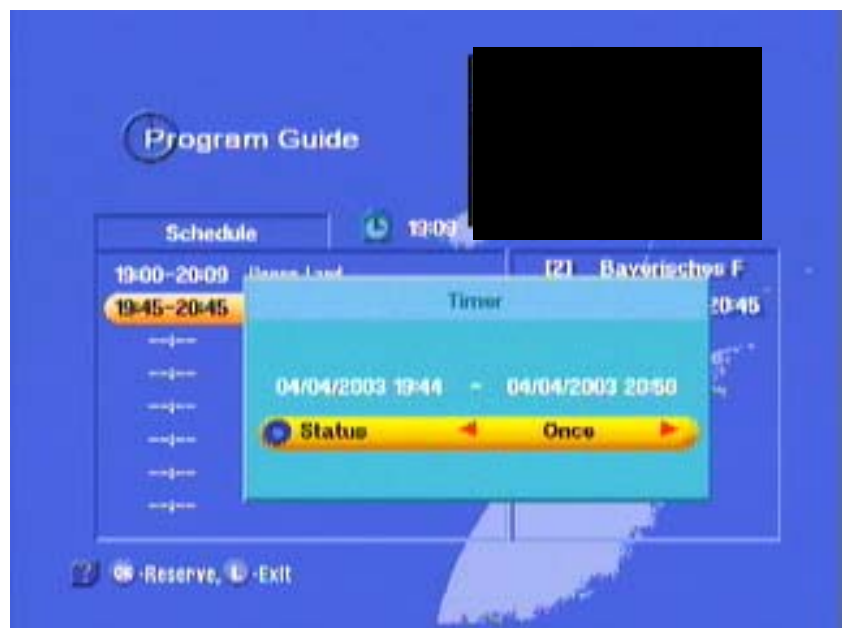
# Channel Overview




of the station currently received together with the time and duration (see on-screen display) provided these data are transmitted together with the Electronic Programme Guide (EPG).





The length of the channel list depends on the prospective broadcaster and can extend over several days.


## EPG timer programming



You can now move the coloured bar in the list using the  -buttons and select a programme for timer programming. Select the timer by pressing .

With the  or  buttons you can select the various timer settings, e.g. whether the required programme is to be recorded only once, daily or weekly.

## Channel Overview

Press  to confirm your selection. Confirmation appears on the screen for several seconds. The programme will then be recorded at the set time.



You can exit this menu without timer setting by pressing  twice.

# Password




You can prevent your receiver being used by unauthorized persons by means of a password. In this way, you can ensure your reception settings are not changed by other persons. At the same time, you can activate the parental control function to lock out various channels.

**Keep your password in a safe place so that you always have access to your channels should you ever forget it.**

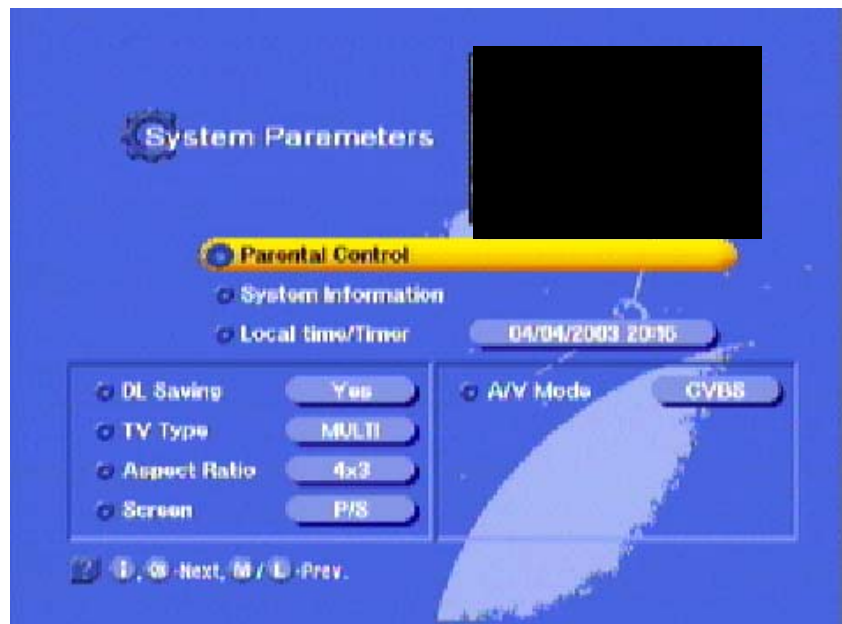
## Factory setting




The factory setting is password "0000", witch is inactive.

## Entering a password

Call up the main menu by pressing the  button.

In this menu, press the   buttons to select "system parameters" and confirm by pressing .



Now press the   buttons to select the "parental control" function and confirm by pressing . You may be asked to enter a password.



# Password



You can carry out the following settings in this on-screen display:

*Age limit:* This setting is only effective if the corresponding lock-out signals are sent together with the transmission.

*Lock list:* Yes/No. With this option you can lock or unlock the editing function for channel lists.

*Lock installation:* Yes/No. With this option you can lock or grant access to the installation menu.

*Enter password:* Here you can enter your (new) password with the aid of the number buttons.

*Confirm password:* Here you enter your (new) password once again with the number buttons to serve as a confirmation.

*Personal:* Here, enter the receiver identification which the receiver displays when switched on. This may be a useful function to recognize the receiver in the case of theft. See section "Notes on operation" for information on how to use the number buttons on the remote control for alphanumeric entries. The factory setting is "UFD 570".


You have now completed all settings for securing and identifying your satellite receiver.

If you have forgotten your password, you must contact your dealer who will unlock your receiver.




# Password




## Parental control

In a similar way to identifying your favourite channels with the "apple" symbol, you can set the parental control to prevent unauthorized access for children. Locked channels are identified by the "padlock" symbol in the "TV" or "radio" channel lists.


Press  to access the channel list.





Use the   and  buttons to select the channel in the on-screen display you wish to lock.


With the  and   buttons you can move the bar page-by-page or line-by-line.

The selected channel is identified by a coloured bar.

Confirm your selection by pressing the  button and the padlock symbol will appear in the bar.

You will move automatically to the display of the next channel in the channel list.

By pressing  you can now lock another channel or cancel the channel lock by pressing the  again. The padlock symbol now disappears.

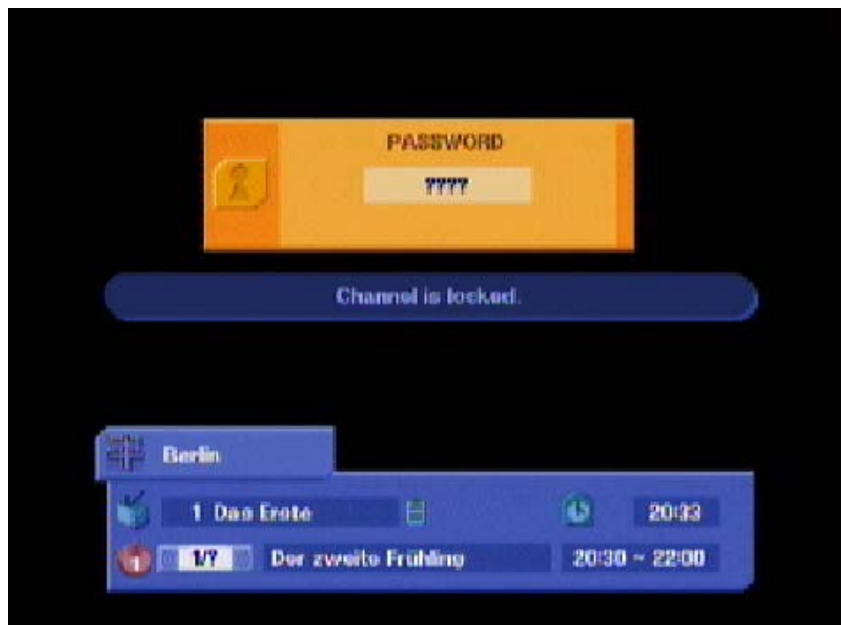
After pressing , the changed settings are confirmed and the next channel in the channel list appears together with the information banner for several seconds.

# Password

After selecting the locked channel with the number buttons, "channel is locked" appears and the channel cannot be viewed.



After pressing the **L** button and selecting the locked channel via the channel list, you will be asked to enter your password to view the locked channel.



## Operation from the Front Panel

Should you have misplaced your remote control or if the batteries are discharged, you can operate your receiver from the front panel.

### Operation in exceptional cases

There are three buttons on the front panel.

The ON/OFF button and the UP/DOWN buttons.

Use the ON/OFF button to switch your receiver on and off.

You can select all channels one after the other with the arrow buttons.

**Since there are no number buttons, you will not be able to call up networks that are locked by a password.**



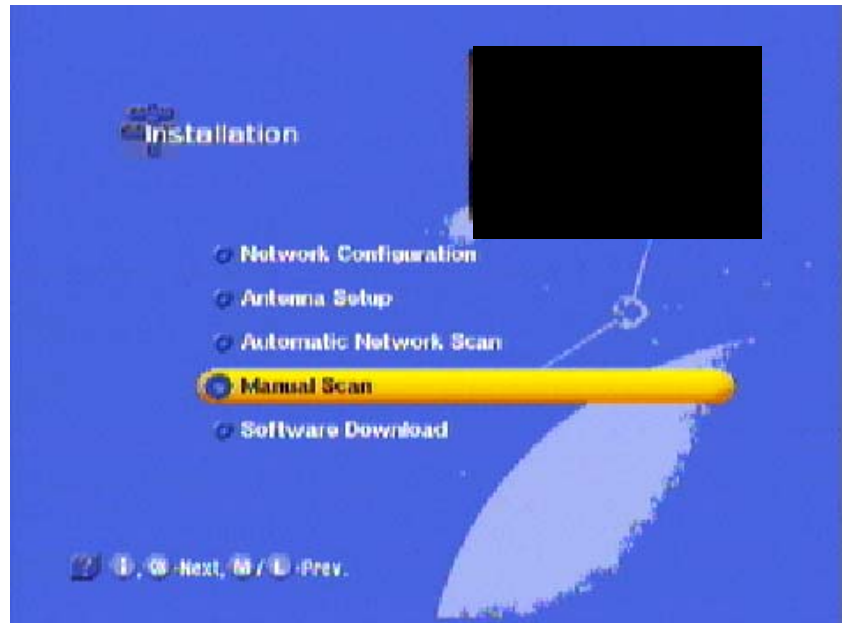
# Installation

## Network configuration






New networks can, of course, be added to the network configuration.

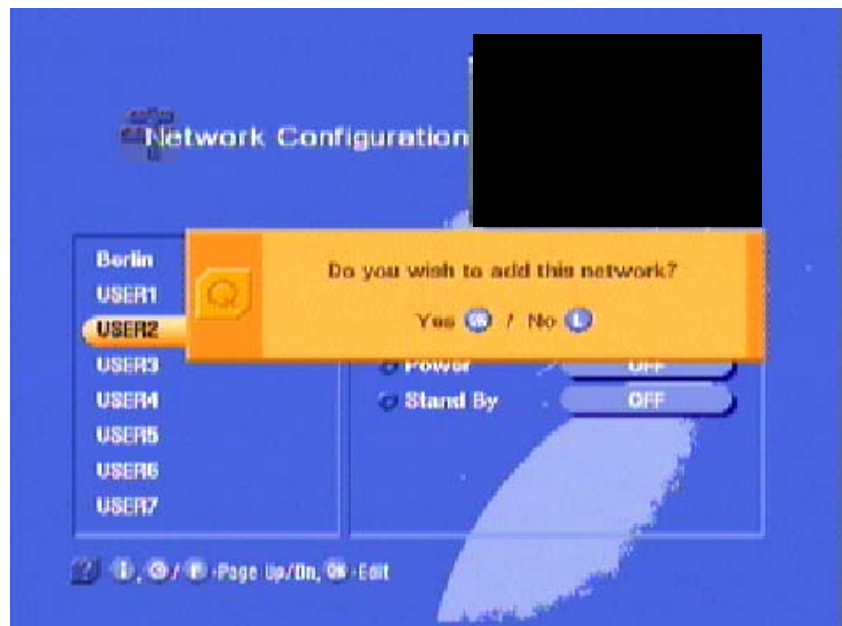


Pay attention to the help information on the individual menu items you can obtain by pressing the  button!



The menu item "Antenna settings" in the installation menu can be used as an aid to align the antenna.



Use the   and  buttons (plus password if activated) to access the "Network configuration" via the main menu  and the submenu "Installation". Select "Network configuration" by pressing . You can now enter or select a new network.




Bear in mind that your receiving system must be set up accordingly!

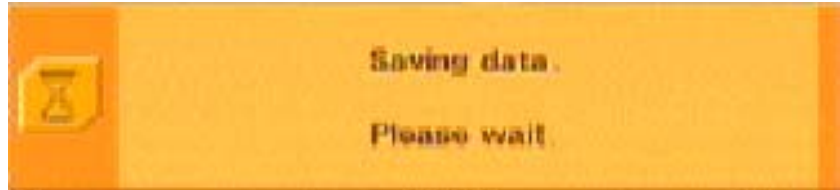
In the next step, use the   buttons to move to the entry "User 1" or another entry.





# Installation

After pressing the  or  button, an on-screen display appears asking whether you wish to add the network?

Confirm by pressing .

The following message appears:




You can now use the ,  and  or  buttons to make the entry corresponding to your receiving system in the corresponding positions and exit the menu by pressing  3x. The new station data are stored simultaneously.

Under "Operation" enter whether your active antenna is to receive its power supply from the receiver.

Under "Standby" enter whether the power supply is to be switched off in receiver standby.







To enter network names

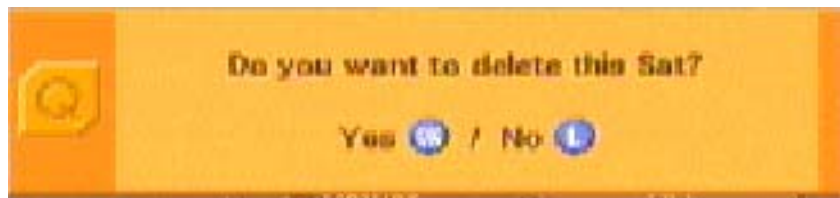
Set the bar cursor in the required network position and press . Set the bar on the name, the first letter is marked. You can now change the network name with the aid of the number buttons. The procedure is described in the Section "Operating Information".

## To remove a network



Pay attention to the help information on the individual menu items you can obtain by pressing the  button!

To remove a network, go to "Network configuration", move the cursor bar with the  or  buttons and press  or . You will now be asked whether you wish to remove the network and you can confirm by pressing  or cancel with .



# Installation

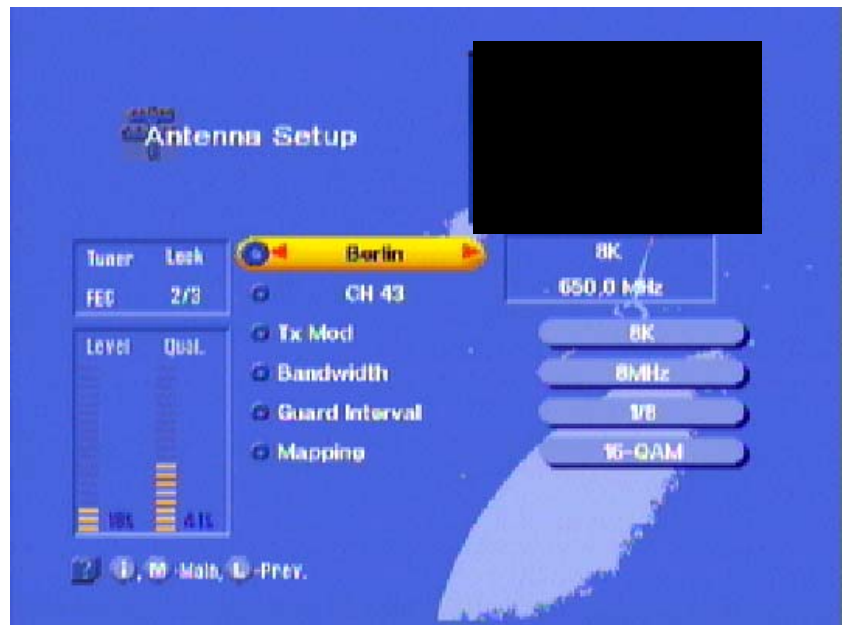
## Antenna set-up

The menu item "Antenna set-up" can help you to align your antenna.

Here you will see various technical data that are intended for service purposes only. The entries with the network name and reception channel are of importance to you.

Here **"Berlin"** and **"CH 43"**.

If you are already receiving a signal, you will see two bars in the left column and "lock" next to the tuner entry.



You can now change the location of the antenna or in the case of a directional antenna, turn the antenna slowly.

While doing so, observe the maximum of the left-hand bar and fix the location of the antenna accordingly.

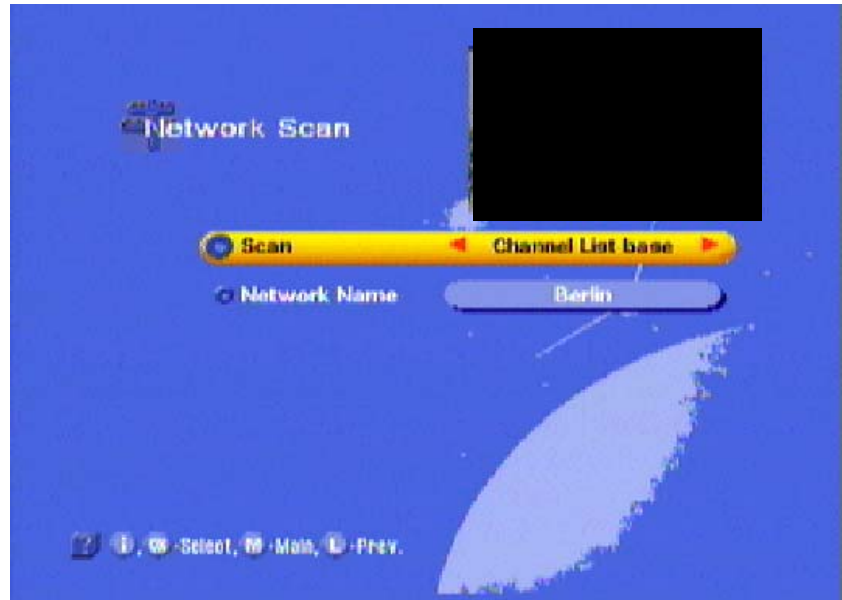
# Installation

## Automatic network search

You can set your receiver to automatically search for networks and channels. You can choose between "Network" search and "Channel list" search.


Channel list: Searches for existing channels based on the channel list stored in the receiver.

Network: Searches for all channels in the current network.

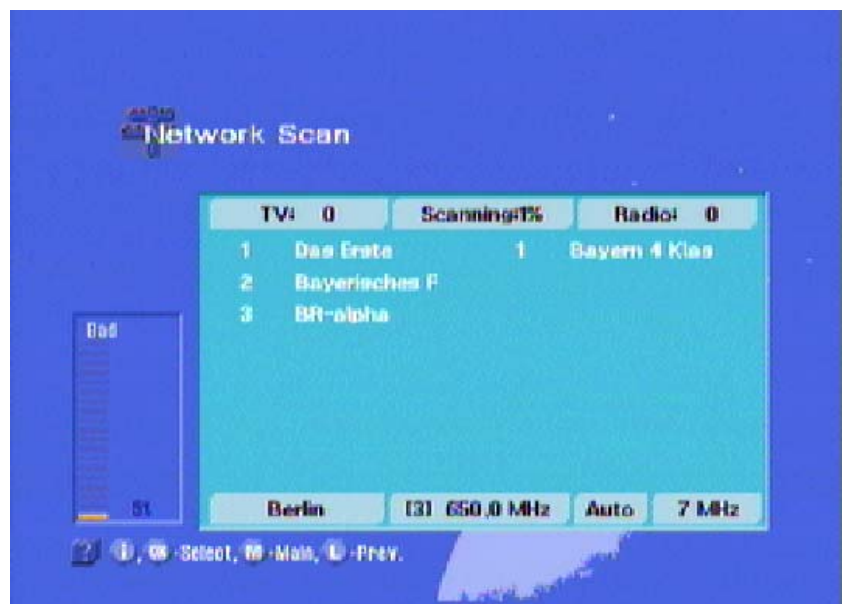




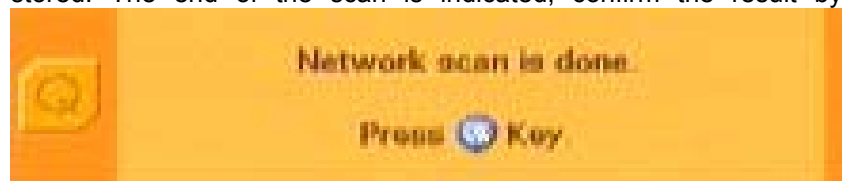
Pay attention to the help information on the individual menu items you can obtain by pressing the  button!



Press  to start the automatic scan.

The scan progress is indicated under "Scanning: --%".





The two lists on the left and right show what channels are currently stored. The end of the scan is indicated, confirm the result by



pressing  and exit the menu by pressing  3x. The new data are saved automatically.

# Installation

## Manual search

The manual search is recommended when you already know the channel data, frequency or channel number. Use the   buttons to select one of the two settings you can change step-by-step until you receive a signal. The bar on the left indicates when a signal is received.



Pay attention to the help information on the individual menu items you can obtain by pressing the  button!

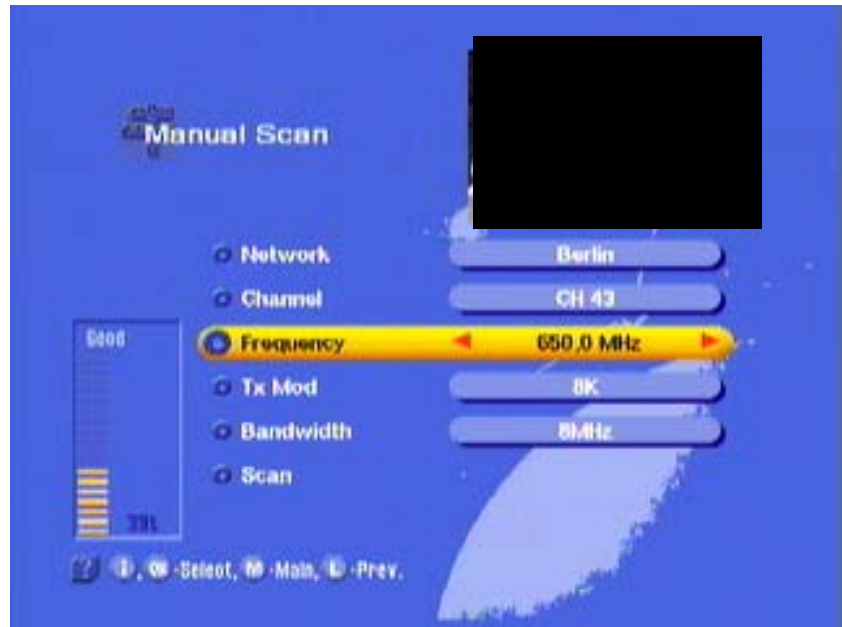
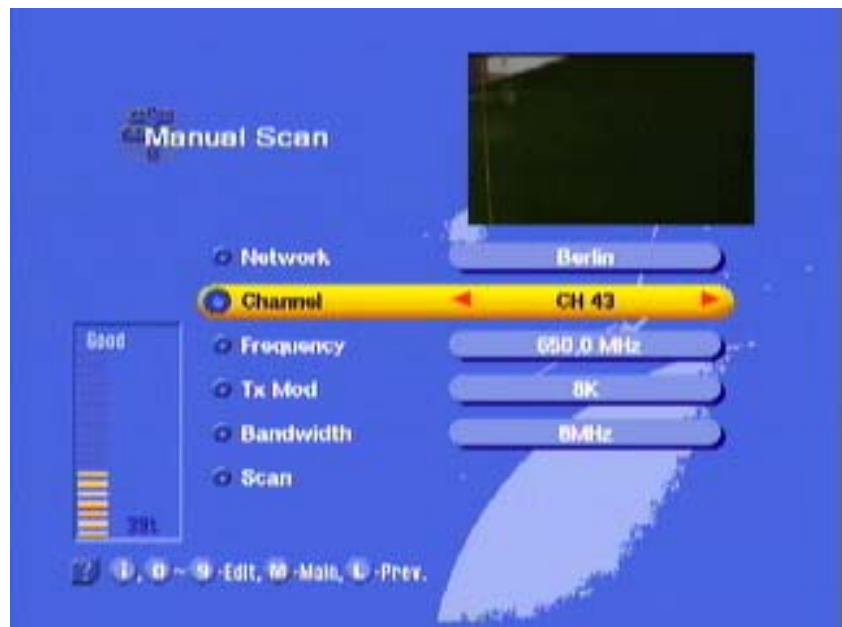






Figure above: Correct network, wrong channel, wrong frequency  
Figure below: Correct network, right channel, right frequency, signal indicator "good"



**You must enter the network, channel and frequency otherwise the manual search will not be adopted!**

Channel entry: Select the respective channel using the   buttons or the number buttons. For this purpose, press  and enter the required channel number. After pressing  again, the channel is changed to the corresponding frequency.

Frequency entry: This function is intended for service purposes only and permits manual entry of the channel frequency.

# Setting System Parameters

You should not change the following settings without good reason as they represent factory settings or operational settings that are adapted to your receiving system.

New settings are only required when changes are made to the reception system.

The selected menus, submenus and menu items as well as the parameters to be set are highlighted by a colour bar. The menus are to a large extent self-explanatory.

You can always obtain help on the selected menu item by pressing the **i** button. Press the **i** button again to exit the help program.

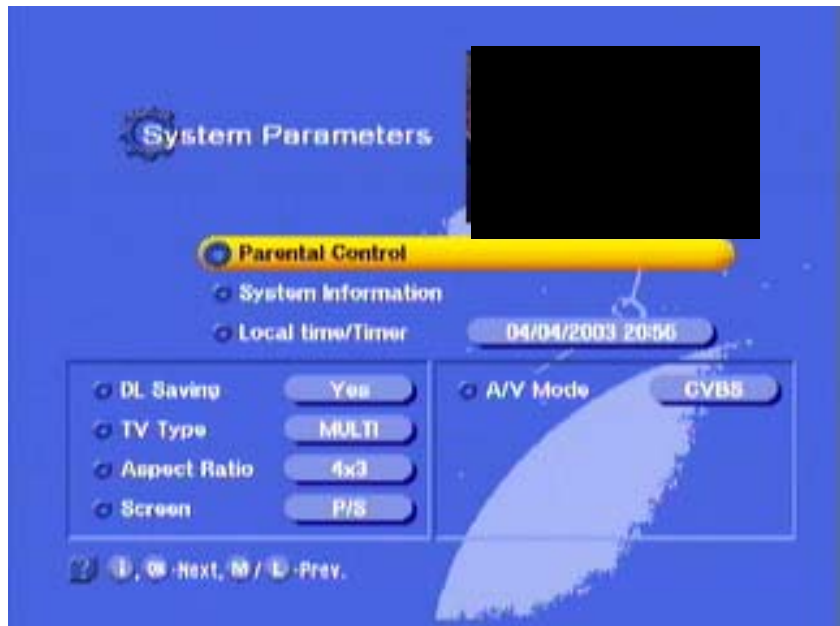


The main menu consists of the following submenus:

- System parameter
- Installation
- Language

# Setting System Parameters

## System parameter

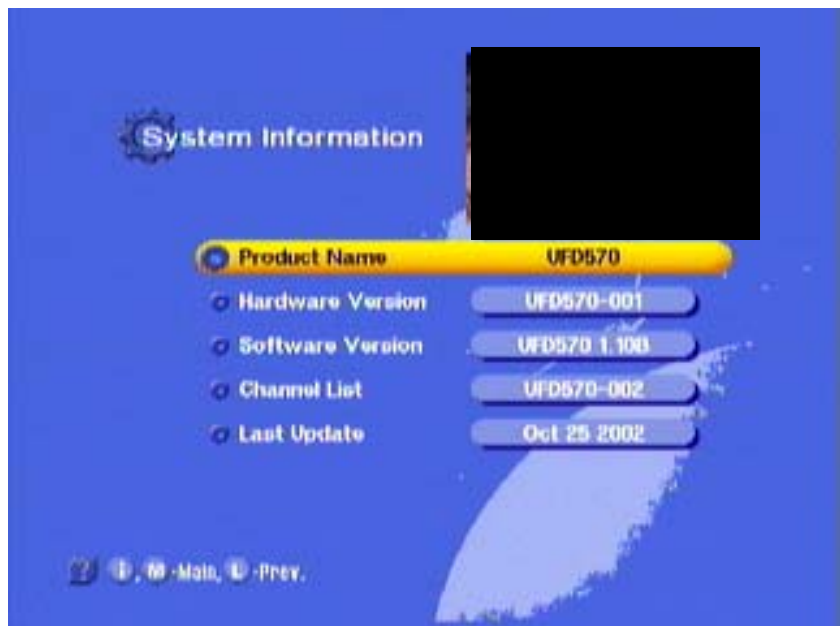


Select the "system parameters" menu by pressing the menu button , the button in the main menu and . Press the buttons to select the menu items.

## Parental control

The basic settings that can be implemented here are described in the section "Password" under "Setting parental control".

## System information



Under the menu item "System information" you will find factory settings which cannot be changed and are intended for service purposes only. Press or to return to the "system parameters" submenu.


# Setting System Parameters

## Local time/timer

As the factory setting, the receiver indicates "UTC" (United Time Coordinate, formerly Greenwich Meantime) that is transmitted together with the data stream. The time must therefore be corrected by +1 hour for Germany.

It may also be necessary to correct summer time to ensure the timers switch at the correct times.

You can correct the time yourself with the aid of the number buttons.

For this purpose, move the cursor bar with the  button to the menu item "local time/timer". The first digit in the entered time assumes a black background. You can now correct the date and time setting with the number buttons. After each entry, the cursor moves


forward by one position. Press  twice to end the entry. The receiver saves the new setting..

After this setting, do not switch off the receiver with the power switch but rather first with the remote control, otherwise the settings will be lost.

## Summer time

You can confirm summer time here with "Yes".


## TV type

Using the  buttons, here you can set whether your television set is a

- PAL
- Multi-standard or
- NTSC set

Confirm by pressing  twice.


## Picture format

Using the  buttons, here you can select the picture format for your TV set. Either

- 4:3 format or
- 16:9 format.
- Auto

Confirm by pressing  twice.

## Screen


Using the  buttons, here you can select the type of screen format

- Standard (P/S) = standard format for 4:3 TV sets or
- Wide (letterbox display) – the wide picture format is imposed on the 16:9 TV set in this setting.

Confirm by pressing  twice.


# Setting System Parameters

## A/V mode

Using the  buttons, here you can select the type of video signal applied at the SCART socket. Select the signal that your TV set can process.

Refer to the operating manual of your TV set!

- Composite colour signal – basic band signal (FBAS)
- RGB – Red/Green/Blue signal or
- Y/C – S-VHS signal (luminance/chrominance)







Confirm your selection by pressing  twice.

## Installation menu


You should not change the following settings without good reason as they represent factory settings or operational settings that are adapted to your receiving system.

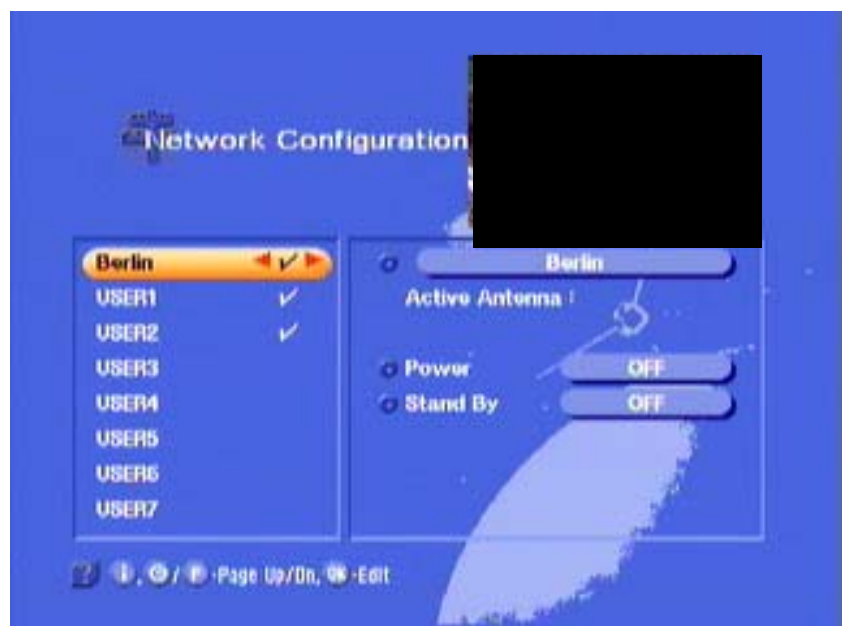
New settings are only required when changes or expansions are made to the reception system.

The main menu consists of the following submenus:

Select the "Installation" menu with the menu button , the   buttons in the main menu and . If set, you must also enter the password. Select the menu items with the   buttons.



## Network configuration





You can remove and add networks in this menu. Please refer to the TV program magazines and periodicals as well as to the Internet for information on new programmes in new networks. Press  to open the menu.



# Setting System Parameters


## Network selection

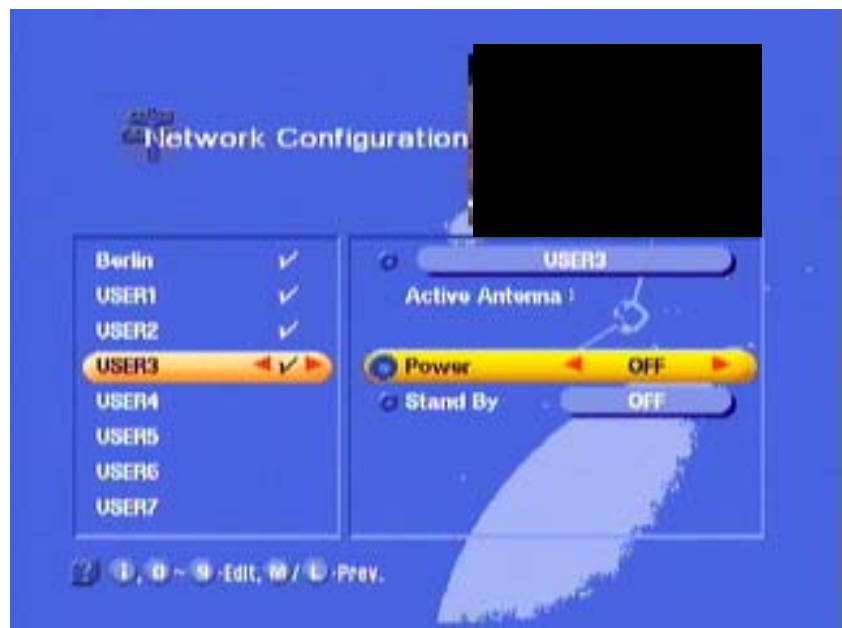
You can now select the required positions with the   buttons:

- Depending on whether a network is already set, after pressing the  or  button in the required position you will be asked whether you wish to delete or add the network. If add is selected, the cursor will jump to "Operation".
- Under "Operation" use  or  to set whether you have an active antenna requiring power supply from the receiver.
- Under "Standby" enter whether the power supply for the antenna is to be switched on or off in standby mode.

## Factory setting

In this position, you can reset all settings to the factory settings by

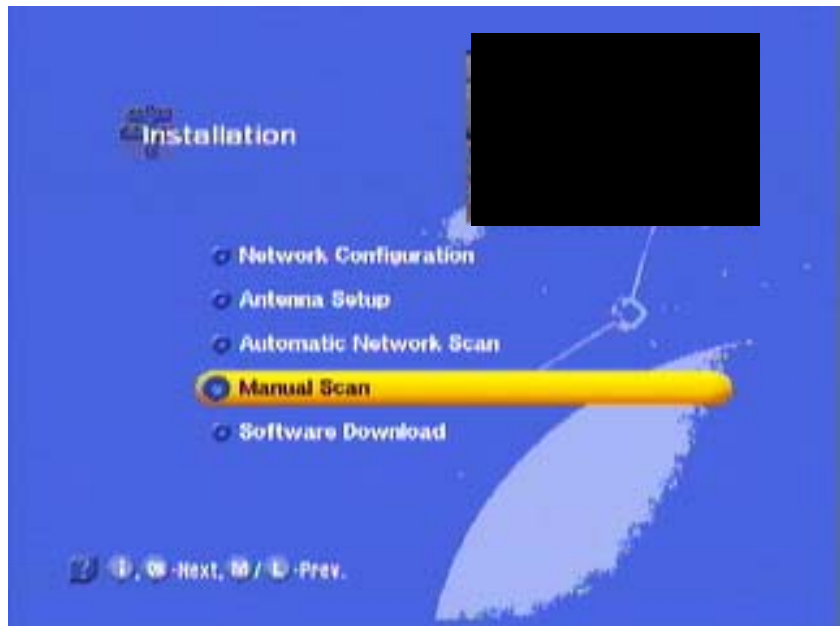
pressing . The factory settings need not necessarily correspond to the settings required for your receiving system! After the reset, you may have to carry out the entire set-up procedure necessary for your receiving system.



## Software and channel list update

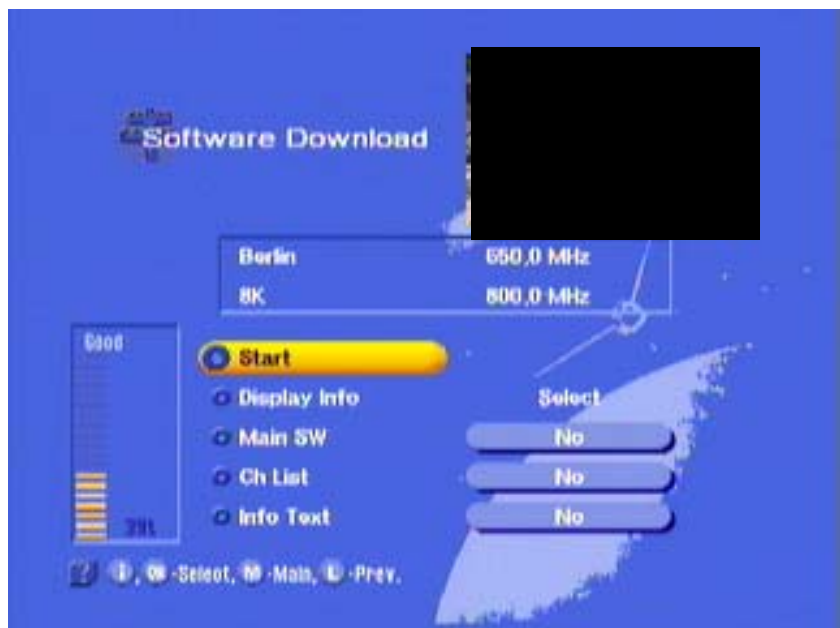
Thanks to digital technology, the software and channel list of your receiver can be updated in signal reception mode. The software download submenu will inform you whether new software or a new channel list is available. The only precondition is that your receiving system is aligned and set to a service channel.

# Setting System Parameters




Press **M** to select the main menu and use the **▲** **▼** buttons and **OK** to access the "Installation" submenu. Now set the cursor bar to the "Software download" position and select by pressing **OK**.

The "Software download" menu appears. Here you can select the individual positions with the **▲** **▼** and **OK** buttons. Under the "Show info" position you can obtain information on the transmitted software and channel list. "Yes" is set automatically under the positions "Show info", "Operating software", "Channel list" if new information and contents are available. The left-hand bar indicates the relative signal level.



With the light cursor bar **▲** **▼** and **←** or **→** you can choose what position you wish to deactivate (No). Positions that are already inactive cannot be changed. If you wish to only update the software and leave the channel list, deactivate the "Channel list" field and vice versa. Likewise, you can select the "Info text" only.

## Setting System Parameters

For data update, move the cursor bar to "Start" and confirm by pressing . The receiver now begins with the update and outputs different messages on the screen as required.

On completion of the update, the receiver is reinitialised and reassumes operation. The message "**Download failed**" appears if a problem occurs or if no signal is received.

On no account switch off the receiver during the update procedure, otherwise the entire software will be lost. The software will then have to be reinstalled in a workshop or PC and zero modem cable. The message "**Please wait**" flashes during the download.

*After the prompt  
"Show information"  
an on-screen display appears providing instructions you must  
follow precisely.*



**Pay attention to all on-screen displays!**

**You will need to reset the clock after a software update!**

You can also download the update on the Internet under the address:  
[www.esc-kathrein.de/download/ufd/](http://www.esc-kathrein.de/download/ufd/).

Here you will find information on the procedure.

## Technical Features

Reception of all DVB-T-TV and radio channels (free-to-air)

Looped antenna input

1000 channel memory slots

Electronic Programme Guide (EPG) over several days and short channel description

Timer programmable for 14 events

Timer programming via EPG

Software update for operating software and channel list at air (optionally via antenna) or serial interface RS 232

On-screen displays (OSD) in 8 languages (German, English, French, Italian, Dutch, Portuguese, Spanish, Turkish)

LED indicators for operation, standby and RCU reception

Compact design

Teletext generation (TV and in-receiver presentation)

4:3 and 16:9 format recognition (optional output)

FBAS, YC (S-VHS) and RGB signal output programmable via SCART socket

Manual input of PID date possible

Channel search

1 SCART socket

Audio output via Cinch jacks

S/PDIF (IEC-958) Dolby Digital audio output (AC3)

Radio button

Volume control and mute

Automatic settings for date and time via DVB data flow

Channel slot sorting function

Infrared remote control

RF level display

12 V input

230 V power supply unit contained in the scope of supply

External infrared sensor for concealed installation

Operation of an active DVB-T indoor antenna (e.g. Kathrein BZD 30) possible without additional power supply unit

# Technical Features

## Technical data

### RF features

Frequency ranges VHF	C05 to C12 177.5...226.5 MHz
UHF	C21 to C69 474...858 MHz
Input level range	43 to 83 dB $\mu$ V
RF input	IEC socket with loop output
Input impedance	75 $\Omega$

### Video

Modulation, FEC, demultiplexer	DVB-T Standard
Video resolution	CCIR 601 (720 x 576 lines)
Frequency range	20 Hz to 5 MHz
Input data rates	
QPSK, Code rate 1/2, Guard int. 1/4	4.98 MSymbols/s to
64-QAM, Code rate 7/8, Guard int. 1/32 (according EN 300 744 Annex A)	31.67 MSymbols/s
Video decoding	MPEG-1/2-compatible
Bit rate	1.5-15 MB/s
Output voltage	1 V <sub>ss</sub> / 75 $\Omega$
S/N	>53 dB typ.

### Audio

Audio decoding	MPEG-1/2, Layers 1 and 2
Bit rate	32/44,1/48 kb/s
Frequency range	40 Hz to 20 kHz
Output voltage	typ. 770 $\pm$ 50 mV at 10 k $\Omega$ (TV SCART and Cinch)
S/N	65 dB

### Power supply

Mains voltage/power supply unit	230 V $\pm$ 10%, 50 Hz/12 V
Power intake	<15 W
Power consumption in standby	<5 W
Antenna amplifier supply	5 V / 30 mA

### Connections

TV connection	SCART socket, 21-pin
Audio output	2 x Cinch jack
Dolby Digital data output (AC3)	Cinch jack
Data interface for service	RS 232 Sub D 9-pin

### General

Device dimensions (W/H/D))	235 x 45 x 200 mm
Weight	approx. 1.4 kg

### Temperature range

Ambient temperature	+5 $^{\circ}$ C to +40 $^{\circ}$ C
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# Technical Features

## Accessories

- 1 Infrared remote control
- 2 Batteries 1.5 V, type: LR 03, size: AAA (Micro)
- 1 SCART cable
- 1 Set of operating instructions
- 1 Infrared mouse (ext. IR receiver)

## SCART socket assignments

Signal	Pin No.	TV
Audio output, right	1	X
Audio input, right	2	
Audio output, left	3	X
Audio earth	4	X
Blue earth	5	X
Audio input, left	6	
Blue signal	7	X
Switching voltage	8	X
Green earth	9	X
Data signal	10	
Green signal	11	X
Data signal	12	
Red earth	13	X
Data earth	14	
Red signal (C)	15	X
Blanking signal	16	X
Video earth	17	X
Blanking signal earth	18	X
Video output (FBAS/Y)	19	X
Video input	20	
Connector shield	21	X

## VHS/S-VHS changeover

The SCART socket can be switched over between VHS and S-VHS. The changeover is executed in the "system parameters / A/V mode" menu.

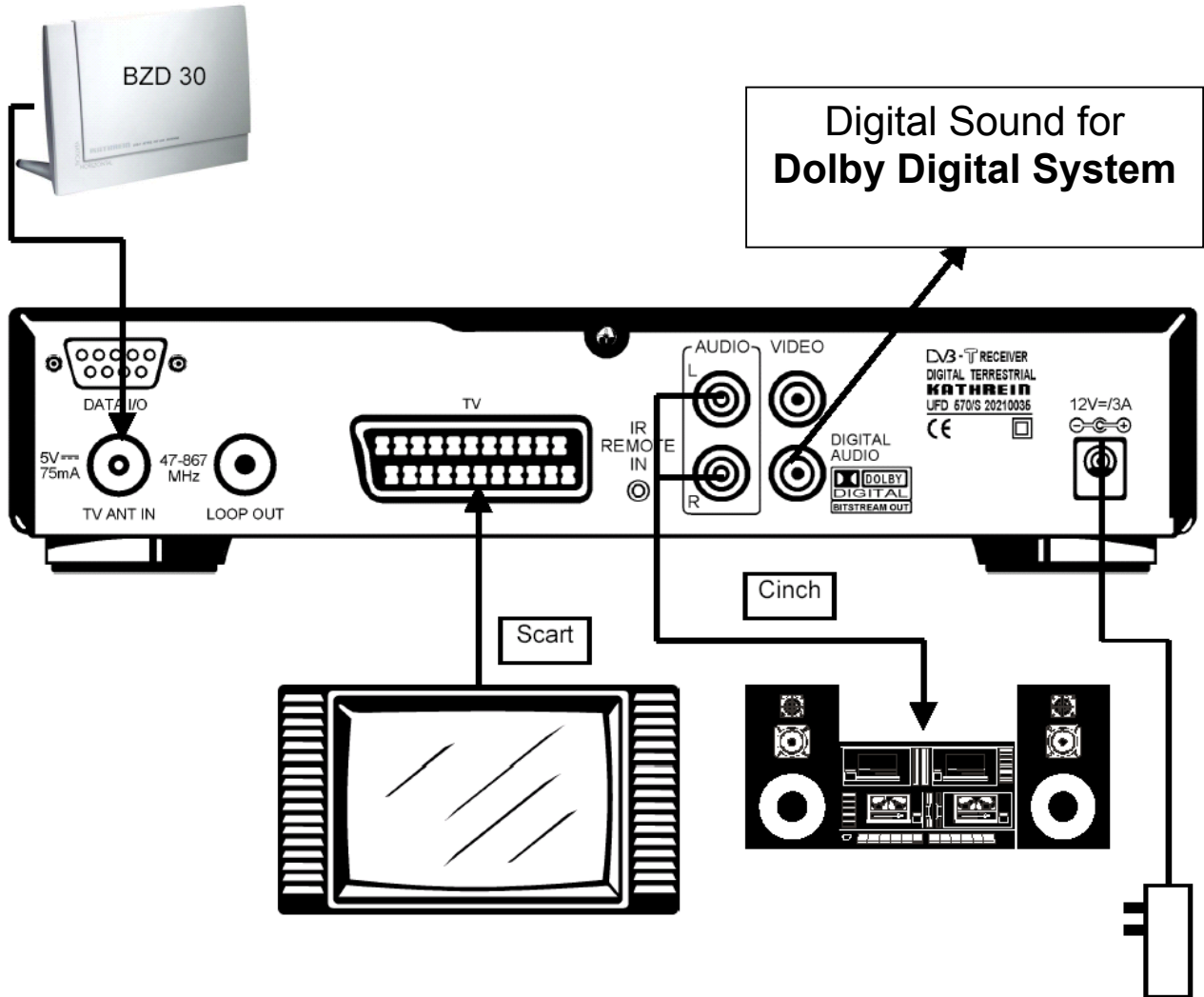
**VHS (RGB):** the RED signal is applied at terminal 15, the FBAS output is applied at terminal 19.

**S-VHS (C/Y):** the C output is applied at terminal 15, the Y output is applied at terminal 19.

# Connection Example

Connections of a DVB-T receiver together with the complete TV and HiFi systems. The digital sound output can be connected to a Dolby Digital system.

The Kathrein indoor antenna BZD 30 is used in this example.



# Glossary of Technical Terms

## DVB MPEG-2

DVB is the abbreviation for digital video broadcasting. DVB-T refers to the type of transmission (T = terrestrial). MPEG is the abbreviation for Moving Picture Experts Group, a working group which draws up internationally valid standards for the digital compression of video together with audio. MPEG-2 has been promoted to the standard for the compression of digital TV signals. MPEG-2 operates at a data rate of up to 100 MBit/s.

## Eb/No ratio

The Eb/No ratio is a measure for the signal-to-noise ratio of the digital signal. This value is not identical to the C/N value as known from analogue reception technology. As a rule, reception is no longer possible at Eb/No levels below 5 dB.

## FEC

FEC is the abbreviation for Forward Error Correction. The FEC error rate corresponds to the viterbirate.

## PID

The PID number (Package IDentification) is an identification number for video signals and audio signals in the digital data stream of DVB MPEG-2 signals. The receiver uses the PID number to establish distinct allocation of the video and audio data transmission. PID-PCR is the identification number for the synchronisation signal. PID-PCR is the identification number for the synchronisation signal. PID-PCR is normally identical to PID video. In the case of multi-language channel transmissions, by means of manual entry of the audio PID, it is possible to allocate another language to the TV broadcast. After entering the PID, the digital receiver automatically selects audio data from the data stream identified by the PID number and allocates these data to the video signal.

## Channel package

The channel package of a digital transponder mostly contains several TV and radio channels. Each channel package has a fixed allocation with regard to the transponder transmit frequency, the polarization (horizontal or vertical), the symbol rate and the viterbirate or error rate.

## Symbol rate

The symbol rate describes the amount of data transmitted per second. The symbol rate is measured in MSymbols/s and is equal to the number of symbols that are received per second.

## Video bit rate

The video bit rate describes the quantity of data of the digitised video signal that is transmitted per second.

## Viterbi rate

The viterbi rate (code rate, error rate) characterizes the type of error protection used by the channel provider. The DVB standard stipulates the following values: 1/2 - 2/3 - 3/4 - 5/6 - 7/8.

# Glossary

<b>Audio output</b>	Receiver sound output
<b>AV channel slot</b>	Preferential channel location of TV set for SCART input
<b>DVB</b>	Digital video broadcasting
<b>Eb/No</b>	Power density per unit of information
<b>Eb/No-Verhältnis</b>	Digital signal-to-noise ratio
<b>LED display</b>	Receiver display
<b>Mute</b>	Mute circuit
<b>OSD</b>	On-screen display
<b>PAL</b>	Analogue television standard
<b>Pay-TV</b>	Pay TV (e.g. Premiere)
<b>PIN</b>	Personal identification number
<b>Receiver</b>	Receiver
<b>RGB</b>	Video signals made up of 3 individual colour signals (red, green, blue)
<b>SCART cable</b>	21-pin connecting cable
<b>Standby</b>	Standby
<b>S-VHS</b>	Super video home system (video recorder standard)
<b>Symbol rate</b>	Transmitted data rate of transmit signal
<b>Timer function</b>	Clock function for pre-programmed switch-on and switch-off times
<b>Viterbi rate</b>	See glossary of technical terms

# Service

OSD language

- German
- 

Picture format

- 4:3
- 16:9

Antenna supply

- |                       |     |                       |
|-----------------------|-----|-----------------------|
| Operation:            |     | Standby:              |
| <input type="radio"/> | ON  | <input type="radio"/> |
| <input type="radio"/> | OFF | <input type="radio"/> |

Other settings

- |                       |                       |                       |
|-----------------------|-----------------------|-----------------------|
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

936.2536/-/0204/ZWT - Technical data subject to change!

internet: <http://www.kathrein.de>

KATHREIN-Werke KG · Phone (+49 80 31) 18 40 · Fax (+49 80 31) 18 43 06  
Anton-Kathrein-Straße 1-3 · P.O.B 10 04 44 · D-83004 Rosenheim

**KATHREIN**

Antennen · Electronic