

User's Manual

Digital Terrestrial Receiver

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1. Introduction

Thank you for purchasing this digital receiver. It has been designed for easy setup and getting quickly started right after connecting your antenna system and your TV set.

Reception of terrestrial digital TV programs widely depends on local receiving conditions. Also, your antenna system is playing an important role. In some urban areas a simple indoor antenna may provide best reception quality of all available channels. In areas, located some 50 or more kilometers away from the next DVB-T transmitter it may become necessary that you install a high-performance roof antenna system. In case of doubt please ask your dealer for a universal indoor / outdoor active antenna system, such as "**Antares DTA-3000**" by **SCHWAIGER**. It has been designed to match the characteristics of this DVB-T receiver and will considerably improve the receiving quality, compared with conventional indoor antennas.

More information about DVB-T reception you will find in this manual.

To ensure that you get familiar with your receiver and that you will be able to make use of all advanced features, please read this manual and have it ready for later reference.

We hope you enjoy using this SCHWAIGER product.

2. Features

- Digital Terrestrial Receiver
- Slim-size design.
- Universal home and mobile / outdoor use (230 volts AC and 12 volts DC car battery)
- Comfortable graphic user interface (OSD)
- 10 language menu (German, English, French, Italian, Spanish, Turkish, Suomi, Swedish, Russian, Czechish)
- DVB subtitle display (on/off)
- Stand-by and channel selector buttons also at the front panel
- EPG: Electronic program guide, offering helpful detail information
- Integrated teletext function (OSD) and additional VBI display
- Automatic channel search and advanced manual search functions
- Main channel list and 5 "favourite channel lists" for individual use
- 1.300 TV channel memories
- Signal strength and quality indicator bars for easy antenna configuration
- Video output signal format (SCART) selectable: RGB and CVBS
- 4:3 / 16:9 screen format selector
- Active antenna power supply (5 volts DC)
- Data interface for software update: RS-232
- Infrared remote control with 33 functions
- Operating and stand-by indicator: dual colour LED

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3. Safety Notes

This set top box (STB) has been manufactured to satisfy the international safety standards. Please read the following safety precautions carefully.

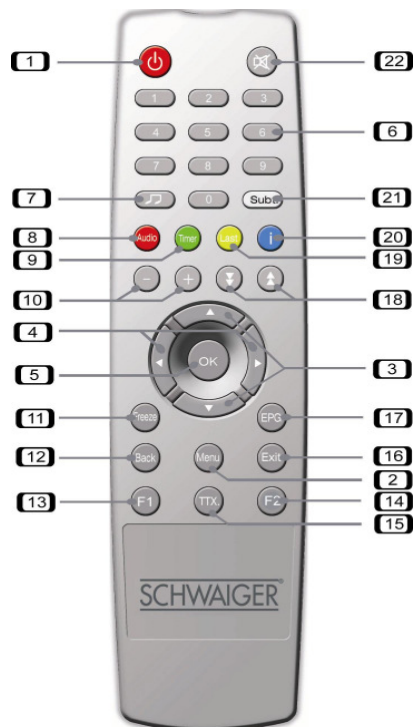
- MAINS SUPPLY:** 100 to 240V AC (no voltage selection)
- OVERLOADING :** Do not overload a wall outlet, extension cord or adapter as this may result in fire or electric shock.
- LIQUIDS :** The STB shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.
- CLEANING :** Disconnect the STB from the wall outlet before cleaning. Use a light damp cloth (no solvents) to dust the STB.
- VENTILATION :** The slots on top of the STB must be left uncovered to allow proper airflow to the unit. Do not expose the STB to direct sunlight or do not place it near a heater. Do not stack electronic equipments on top of the STB.
- ATTACHMENTS :** Do not use any accessories that are not recommended by the manufacturer of this unit as these may cause hazard or damage the STB.
- CONNECTION TO THE ANTENNA :** Disconnect the STB from the mains before connecting or disconnecting the cable from the antenna. Failure to do so can damage the antenna.
- CONNECTION TO THE TV :** Disconnect the TV from the mains before connecting or disconnecting the cable from the STB. Failure to do so can damage the TV.
- GROUNDING :** The antenna cable **MUST BE EARTHED** to the system earth of the antenna. The grounding system must comply with national standards for electrical safety.
- LOCATION:** The STB is designed for indoor use only. Do not expose it to lightening, rain, or direct sunlight.

General

- Do not remove the cover.
- Do not allow the unit to be exposed to hot, cold or humid conditions.
- Do not connect or modify cable when the STB is plugged in.
- Use a soft cloth and a mild solution of dish washing liquid to clean the casing.
- Never allow liquids, spray or other materials to come into contact with the inside of the STB.
- Service should be carried out only at a authorized service centre, contact your local dealer for more information.
- Please note that the STB will be isolated completely from the 100~240V AC mains supply only after unplugging the AC adaptor from the wall outlet.

4. Your Receiver and its Functions

4.1 Remote Control Functions



- | | |
|----|-----------------------------|
| 1 | POWER button |
| 2 | MENU button |
| 3 | Cursor UP / DOWN buttons |
| 4 | Cursor LEFT/ RIGHT buttons |
| 5 | OK (Enter) button |
| 6 | Numeric buttons (0 ~ 9) |
| 7 | RADIO button |
| 8 | AUDIO button |
| 9 | TIMER button |
| 10 | VOL (-) / VOL (+) buttons |
| 11 | FREEZE button |
| 12 | BACK button |
| 13 | free (F1) button |
| 14 | free (F2) button |
| 15 | TELETEXT button |
| 16 | EXIT button |
| 17 | EPG (Program Guide) |
| 18 | PAGE UP / DOWN button |
| 19 | LAST button |
| 20 | PROGRAMM INFORMATION button |
| 21 | SUBTITLE button |
| 22 | MUTE button |

Batteries

Before using the remote control unit for the first time please insert the supplied batteries according to the instructions below:

- Open the battery compartment on the back of the Remote Control Unit.
- Install two AAA size batteries. Make sure that the (+) and (-) terminals are aligned correctly.
- Close the cover.

Replacement

- Always replace all batteries at the same time.
- Mixing old and new batteries or mixing different types will reduce overall performance and could cause leakage or rupture.

Keys and its Functions

- 1 POWER button**
To switch the Receiver ON and OFF (standby mode).
- 2 MENU button**
To enter the main menu.
- 3 Cursor UP / DOWN buttons**
To move up/down in the menus and change channels.
- 4 Cursor LEFT/ RIGHT buttons**
To move left / right in the menus and change channels.
- 5 OK (Enter) button**
To confirm selection of an item or to confirm a menu option.
(In viewing mode: to display the TV / Radio channel list.)
- 6 Numeric buttons (0 ~ 9)**
To enter channel numbers and to select individual menu options.
- 7 RADIO button**
To toggle between TV or Radio mode. (In some areas there may be no radio service available from DVB-T television transmitters. Please ask you local dealer.)
- 8 AUDIO button**
To select the available audio channels.
- 9 TIMER button**
To Add / Remove channel of favorite list.
- 10 VOL (-) / VOL (+) buttons**
To change the basic audio volume level.
- 11 FREEZE button**
To freeze the current picture (still picture) or return to normal TV mode.
- 12 BACK button**
To return to previous status or menu.
- 13 F1**
This button is not available for this model.
- 14 F2**
This button is not available for this model.
- 15 TELETEXT button**
To enter teletext function.
- 16 EXIT button**
To return to previous status or menu and cancel or abort an active process.
- 17 EPG (Electronic Program Guide)**
To display the TV / Radio program guide. This Information is only shown if transmitted.

18 PAGE UP / DOWN button

To change pages in a list faster than with up/down keys.

19 LAST button

To toggle between present and previous TV / Radio channels.

20 PROGRAM INFORMATION button

To display the "Info Bar" at the bottom of the screen and review extended information about current and next programs in EPG mode (if transmitted).

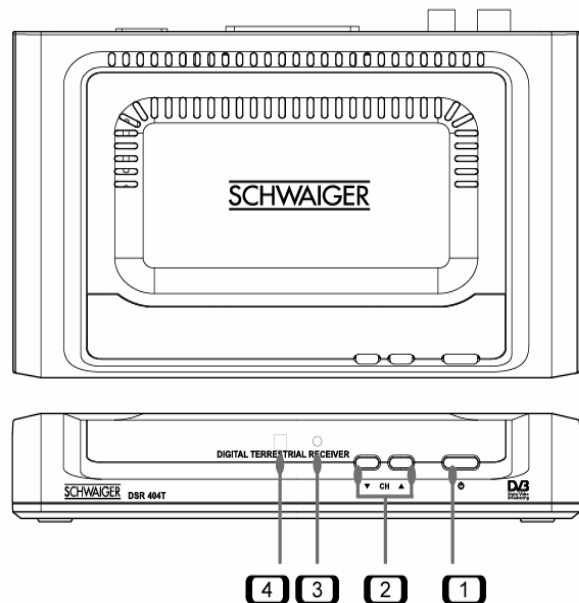
21 SUBTITLE button

To display DVB subtitles (on / off), if transmitted in specific programs

22 MUTE button

To temporarily mute the sound.

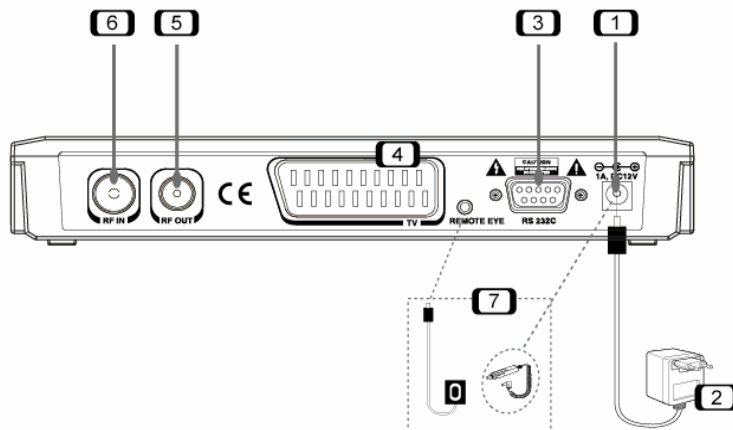
4.2 Front Panel Controls



- 1 POWER Button
- 2 CH UP / DOWN Buttons
- 3 Standby (red) / Operation (green) indicator
- 4 IR Sensor

The most essential control functions of this unit (POWER ON / OFF, CH UP / DOWN functions) can be carried out by remote control and by front panel operations as well. Infrared (IR) signals are being received through the front panel IR sensor.

4.3 Rear Panel Connections



- | | | | |
|----|--|---|-------------------------------------|
| 1 | DC power input (12 V, 1 A) | 4 | SCART Connector (TV) |
| 2 | AC Adaptor | 5 | Antenna Loop-Through Output |
| 3 | RS-232 Data Interface | 6 | VHF / UHF Terrestrial Antenna Input |
| 7. | Optional Cable: Car Cigarette Lighter Power cable (Use 12V DC Only) & Remote Eye Cable | | |

1 DC power input (12 V, 1 A)

This connector is designed for plugging in the DC power cable of the AC adaptor as well as any other suitable DC power source. Please observe polarity: CENTER PLUS.

2 AC Adaptor

This adaptor comes with the unit and may look different in some cases or areas. It will provide adequate 12 volts DC power for this unit. Please plug the DC cable into the "DC power input" jack (1) of this unit.

3 RS-232 Data Interface

Computer interface for service stations and advanced users only. To be used for software update and channel list data transfer from another receiver (master / slave).

4 SCART Connector (TV)

For connection of all audio and video signals of this digital receiver to the TV set.

5 Antenna Loop-Through Output

If you have another analogue or digital receiver and you wish to use the same antenna, then you can connect it to this "antenna loop-through" output jack (ANT OUT).

6 VHF / UHF Terrestrial Antenna Input

Connect your antenna to this input jack (ANT IN). For so-called "active" antenna systems a suitable power supply can be provided from through jack (to be selected in the "General Settings" menu, item "Antenna Booster Power")

7. Optional Cable: Car Cigarette Lighter Power cable (Use 12V DC Only) & Remote Eye Cable

CAUTION:

Do not mix up **ANT IN** und **ANT OUT** jacks when connecting your antenna system.

5. Getting Started

This section explains some settings you will need to make before using the receiver for the first time.

5.1 Connecting the DVB-T Receiver

Mains Supply

This unit is designed for operation on any common mains voltage (100 to 240 volts ~, no adjustment needed). Connect the supplied AC adaptor to this unit and to a wall outlet.

* You can connect a car cigarette lighter cable and plug its other end into the cigarette lighter power jack of your car (**12V DC only)

TV Set




Connect the TV SCART connector on this terrestrial receiver to the SCART connector of your TV set, using a commonly available 21-pole SCART cable.





Antenna

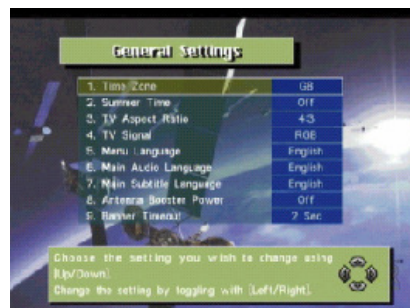
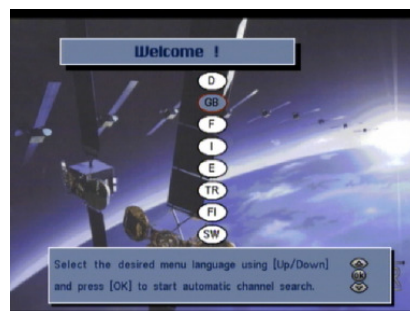
Connect the coaxial cable from your antenna system (indoor or outdoor antenna) to the ANT IN connector of the DVB-T receiver.

For details, please refer to section "Rear Panel Connections".

5.2 First Steps

Press the  button on the remote control or on the receiver. The RED standby indicator on the front changes to GREEN and the language selection menu appears on your TV. Use the   buttons on the remote control or on the receiver to select the language of your choice. Then press the OK button to start "Auto Search" (Automatic Channel Search).

- If the unit should fail to find available TV channels it automatically turns to the "Main Menu". Please go to sub menu "General Settings" and check the menu item "Antenna Booster Power". Set to ON when you use a so-called "active" antenna. (Be sure to set "Antenna Booster Power" to "OFF" if you are using conventional antennas that must not be supplied via the coaxial antenna cable.) Select "Channel Manager" in the Main Menu and perform "Auto Search" once again.
- After having successfully searched for available TV channels the unit turns to TV viewing mode.
- In the "General Settings" menu you can perform individual settings that are related to the local time zone (summer time included), your TV set, and desired language selections. For adjustments, please use the   and   buttons and see the explanations at the bottom of the menu screens. Leave this menu by pressing EXIT.
- No.9 Banner Timeout in the General Settings menu. When going to "Banner Timeout" you can adjust display time of the "Info Box" at the bottom of the screen that appears when selecting an other TV channel. Display time can be set to 2, 4, 6, 8 or 10 seconds.



6. Selecting TV and Radio Channels

The following steps will explain how to view a channel that has been found by "Automatic Search" or "Manual Search" already before. To select the channel you want to watch, use one of the following methods.

- Select the channel using the numeric buttons.
- Select the channel using the ▼▲ buttons on the remote control or on the receiver.
- Press the OK button and select a channel from the channel list that appears. Then press the OK button.
- Press EXIT to return to TV viewing mode.

6.1 Info Box

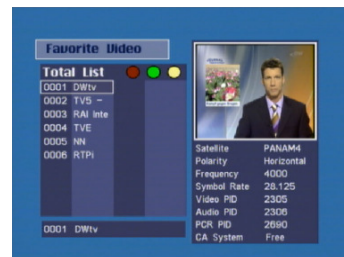
Your selected channel appears on the TV screen, along with the "Info Box" at the bottom of the screen that will be visible for a few seconds. Display time of the "Info Box" can be set to 2, 4, 6 or 8 seconds (menu "Banner Timeout" in "General Settings" menu).

To recall the "Info Box" please press the blue INFO button on the remote control, and press EXIT to cancel it.

The Info Box displays information such as the titles of the current and next programs as well as the reception quality and signal strength. For more detailed information about the current program press the INFO button again.

You can display all available channel information and multiplex information on any desired TV or radio channel.

- Press OK to display the "Total List" or any Favorite Channel List.
- Select the channel using the ▼▲ and ◀▶ buttons on the remote control or on the receiver.
- Press the INFO button.



6.2 Channel List and Sort Manager

Digital TV offers numerous channels. Therefore, all available channels are managed in lists.

- To view the "Total List", press the OK button while watching TV or listening to the radio.
- Three colored buttons are used to manage the Channel List.



RED Button

This button ("Change List") enables you to select the channel list. The "Total List" is showing all TV or radio channels that have been found. If you should have created one or more favorite lists according your personal preferences you can select the desired list by pressing the RED button repeatedly. You can create up to five "Favorite Lists" (A ~ E), using the menu item "Add / Remove Channels" in the menu "Favorite List Manager".

GREEN Button

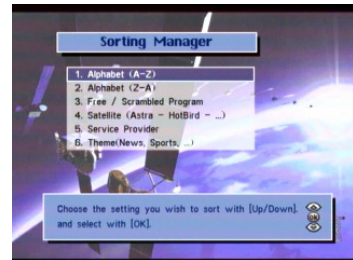
Alternatively, you can add or delete channels from the "Favorite Lists" (A ~ E), using the GREEN button. Its changing function is indicated in the bottom line of the lists.

YELLOW button

This button offers various options for sorting the lists. It can be made in different ways:

- Alphabet (A-Z)
- Alphabet (Z-A)
- Listing channels names under a selected "initial letter" (A ~ Z)

Please note that an individual sorting (others than mentioned above) cannot be restored later.



6.3 Program Information

Please note that not all broadcasters provide program information. So, depending on the broadcaster, program information may not always be available. You can use the EPG and INFO buttons to view the extended program information.

Use the EPG button to view the information on program titles, broadcast schedule, program synopsis, etc., which are provided by the broadcaster of the current channel.



- Select the program you want to learn more about.
- Use the ▼▲ buttons on the remote control to navigate through different programs and use the ◀▶ buttons to navigate through the days of the week.
- Press the OK button. A synopsis of the selected program appears.

Use the INFO button to obtain information about the current program.

- While watching TV or listening to the radio, press the INFO button.
- When the button is pressed once, the channel information will be displayed in the Info Box.
- Press the INFO button again to display additional information, such as a synopsis of the current program, theme, etc.
- To display information about the next scheduled program, press the ◀▶ button.
- To return to viewing mode, press the INFO button again or press the EXIT button.



6.4 Subtitles

This receiver is capable of displaying DVB subtitles that come with selected TV channels. Please note that subtitles may not be available, depending on the TV provider.

- To display subtitle text, press the SUBT button on the remote control.
- Press the SUBT button again to switch off subtitles.

6.5 Teletext

With this receiver, teletext can be viewed in two different ways.

- The so-called "OSD Text" is utilizing the built-in teletext decoder of this receiver. It can be operated with the remote control unit of this receiver. Usually, it is much faster than the conventional teletext. It can be used also with TV monitors or projectors that don't have an integrated teletext decoder.

- An other option is called "VBI Text" that leaves decoding up to a teletext decoder that is built into the TV set. In this case, all teletext functions must be operated through the remote control unit of the TV set.
- To enter "OSD Text" press the TXT button on the remote control unit of this receiver.
- To select the teletext pages use the numeric or ▼▲ buttons. The purpose of the color buttons on the remote control unit is explained in the bottom line of the teletext window.
- To switch off teletext, press the EXIT button.

6.6 Listening to the Radio

Besides TV channels, DVB-T transmitters are designed to emit radio programs, too. This receiver also enables you to listen to radio stations that can provide excellent digital HiFi quality that is close to CD performance standards.

However, in many areas DVB-T radio broadcasts have not yet been introduced by the providers. Please check your local receiving conditions.

- To listen to the radio, press the RADIO button on the remote control.
- To return to TV viewing, press the RADIO button again.
- Radio channels as well can be managed in channel list as described above for TV channels.
- Many radio stations come with extended program information, same as described above for TV channels. To view this information please press EPG or INFO button.
- If there are no DVB-T radio broadcasts on the air, the RADIO button is disabled.

7. Additional Operating Functions

Besides the fundamental and most frequently used functions, this receiver is offering an additional variety of convenient features that will be briefly introduced in this section.

7.1 Volume Control / MUTE

Use the VOL (+) and VOL (-) buttons on the remote control to adjust the basic volume level of your TV. When either button is pressed, the volume indicator appears on the TV screen. When you have finished adjusting the volume, the volume indicator disappears automatically.

- Press the MUTE button on the remote control to disable the sound temporarily. This icon will appear on the screen:
- Press the MUTE button again to restore the sound.



7.2 Last Channel

To return to the last channel you were watching, press the LAST button on the remote control.

7.3 Audio Mode

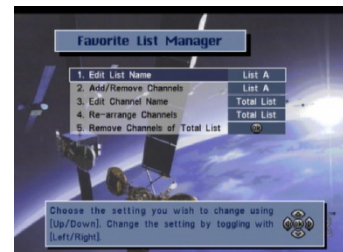
Audio Language and the Audio Mode can be selected if the Service Provider supports this feature.

- Press the AUDIO button on the remote control.
- To change the audio language, use ◀▶ buttons to select one of the languages provided by the broadcaster.
- Use the ▼▲ buttons to select the Audio Mode you want. You may select analogue STEREO, MONO (L), MONO (R) .
- To return to viewing mode, press the AUDIO button again or press the EXIT button.

7.4 Create / Edit Favorite Channel Lists

The Favorite List is a collection of your favorite channels. You can group special channels into one or more favorite channel list(s).

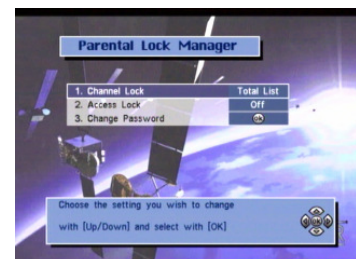
- Enter "Favorite List Manager" menu.
- Select "Add / Remove Channels"
- Add channels from the Total List to your Favorite List.
- You can also remove channels from your Favorite List.
- Follow the on-screen instructions.
- You can re-name your favorite lists. Enter "Edit List Name".



7.5 Parental Lock

This allows you to lock particular channels or the receiver itself. For example, you can prevent your children from accessing adult programs using this function.

- Select "Parental Lock Manager" from the Main Menu.
- When the "Enter Password" message appears, enter the password.
- The factory default user password is '0000'
- Select "Channel Lock" when you wish to lock specific channels only. (if someone switches to a locked channel, the password screen will appear.)
- Select "Access Lock" when you wish to lock the receiver when it is powered on. The password will be required before starting up.



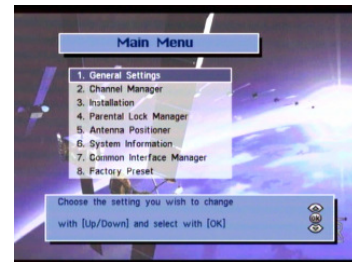
7.6 Change Password

The factory default user password is '0000'. For improved security we recommend to create an individual password, if needed.

- Select "Parental Lock Manager" from the Main Menu.
- Select "Change Password"
- Follow the instructions on the screen.

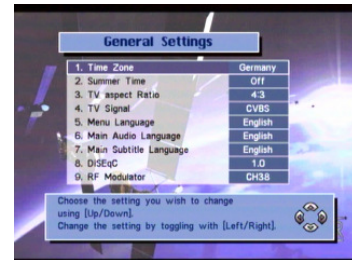
If you have lost your individual password you will need a master password which will unlock your system again. Please contact your dealer or your nearest service station.

8. Menu Structure (Main Menu)



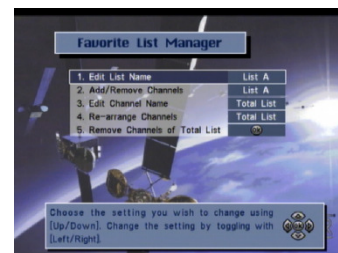
1. General Settings

1. Time Zone
2. Summer Time
3. TV Aspect Ratio
4. TV Signal
5. Menu Language
6. Main Audio Language
7. Main Subtitle Language
8. Antenna Booster Power
9. Banner Timeout



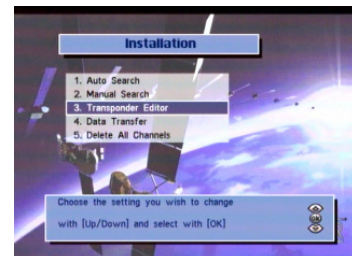
2. Favorite List Manager

1. Edit List Name
2. Add / Remove Channels
3. Edit Channel Name
4. Rearrange Channels
5. Remove Channels of Total List



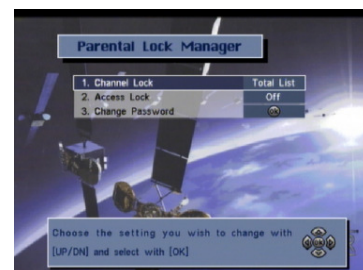
3. Channel manager

1. Auto Search
2. Manual Search
3. Delete all Channels
5. Reinstallation



4. Parental Lock Manager

1. Channel Lock
2. Access Lock
3. Change Password



5. System Information



9. Advanced Operation

In this section some operations are described that do not necessarily belong to the basic functions of this unit and they need not to be carried out for normal TV viewing. However, from time to time it may become necessary to use one of these functions.

9.1 Auto Search Function

When you set up your receiver for the first time, an "Auto Search" process will start automatically. If it should fail for some reasons or you wish to search for new TV channels, please follow the steps listed below.

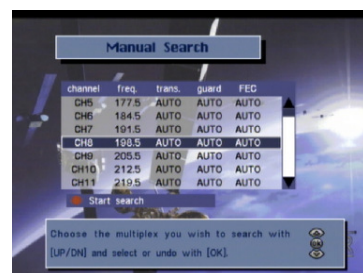
- Select "Auto Search" in the "Channel Manager" menu and then press the OK button.
- TV (and radio broadcast channels, if available) will be searched.
- The names of the found channels will be listed.
- After the search process has been finished, the unit automatically turns to normal TV viewing mode.



9.2 Manual Search Function

Use this channel search by entering the multiplex information manually to the receiver. This channel search is often used to search for a particular channel or those channels that "Auto Search" has missed, but it requires comparatively more expertise.

- Select "Manual Search" and then press the OK button.
- Select the multiplexes (TV channel packages) you want to search, using the ▼▲(Up/Down) buttons and OK.
- After the settings are completed, press the RED button to start "Manual Search".
- The names of the found channels will be listed.
- After the search process has been finished, the unit automatically turns to normal TV viewing mode.



9.3 Delete Channels from Total List

When performing an "Automatic Search" also some unwanted channels may be caught. To delete individual channels from the "Total List" :

- Go to "Favorite List Manager" and select "Remove Channels of Total List".
- Select unwanted channel(s) with the ▼▲(Up/Down) buttons and OK.
- Shift selected channel(s) into the trash can "Recycled", using the ►(Right) button.
- Press GREEN button to move to the trash can "Recycled".
- Press OK to shift back channels from trash can to the "Total List", if needed.
- Press EXIT to delete all channels from the trash can. A warning message appears. Press OK for delete, press EXIT to cancel the delete process.

9.4 Delete all Channels

This function will delete all channel data from the receiver. All other individual settings will be kept.

- Go to the Main Menu, select "Channel Manager", select "Delete All Channels".
- Enter password upon request
- A warning message appears. Press "EXIT" to cancel or OK to confirm.
- Start your individual channel search process, using "Auto Search" or "Manual Search" in the "Channel Manager" menu.

9.5 Reinstallation

This function will delete all channel data and all individual settings from the receiver, and all settings will be reset to their default values.

- Go to the Main Menu, select "Channel Manager", select "Reinstallation".
- Enter password upon request
- A warning message appears. Press "EXIT" to cancel or OK to confirm.
- Start your individual channel search process, using "Auto Search" or "Manual Search" in the "Channel Manager" menu.
- Make sure to set the "Antenna Booster Power" option to "ON" in the "General Settings" menu before starting channel search.

9.6 Software Update

If required, the latest development of the receiver operating software can be loaded to this unit by software update.

You will need to have the latest software file as well as a special "loader" software for your PC. It will be available by download from SCHWAIGER website www.schwaiger.de . Please check availability

10. Trouble Shooting

Digital communications involve the simultaneous transfer and processing of large amounts of data. Changing channels may take longer in comparison to analogue devices. Also, digital TV receivers are "close relatives" to personal computers, and their lifestyle is somehow similar. That means that it may also happen to a digital receiver that it "hangs up" like a PC without prior warning and without a visible reason. If this should happen please disconnect the unit from the wall outlet / DC Power supply. After powering the receiver on again all function will be restored.

No.	Problem	Solution
1	No Video	<ul style="list-style-type: none"> • Channel data have changed. • Execute Manual / Auto Channel Search
2	No Audio	<ul style="list-style-type: none"> • Check the volume control and MUTE function • Check Audio Language, Press Audio key and try to change the language • Check Main Audio language in "General Settings" menu.
3	Receiver fails to boot	<ul style="list-style-type: none"> • Re-apply AC power • Contact A / S Center if this problem occurs continuously.
4	Channel search fails	<ul style="list-style-type: none"> • Antenna system is not efficient • For active antenna: Set Antenna Booster Power to "ON"
5	Screen continuously shows "No Signal"	<ul style="list-style-type: none"> • Antenna system is not efficient • For active antenna: Set Antenna Booster Power to "ON"
6	Video freezes	<ul style="list-style-type: none"> • Weak antenna signal • Check antenna position, re-adjust towards transmitter site
7	Remote control does not work	<ul style="list-style-type: none"> • Aim the receiver front panel correctly. Get closer to the unit (below 7 meters) • Check if the battery of Remote Control is still good.
8	No OSD menu visible	<ul style="list-style-type: none"> • Check SCART connector for safe connection to your receiver and to the TV
9	Data download through serial port does not work	<ul style="list-style-type: none"> • Check PC232 port or data cable for problems • Correct PC software settings?

11. Technical Specifications

DSR-404T

Tuner and Demodulator

RF Input Frequency	145 ~433MHz, 425 ~ 864MHz
RF Loop Through Output	51 ~ 858MHz
Antenna Input Impedance	75ohm
Antenna Input Signal Level	-85dbm ~ -20dbm
Channel Bandwidth	7 and 8 MHz
Demodulation	According DVB-T
Type	COFDM (2k, 8k)
Mode	4 QAM, 16 QAM, 64 QAM
FEC Viterbi Decoding Rates	1/2, 2/3, 3/4, 5/6, 7/8
Guard Interval Modes	1/32, 1/16, 1/8, 1/4 active symbol duration
Reed Solomon Decoding FEC :	204, 188, t=8

Transport Demultiplexer

De-multiplex	According to ISO/IEC 13818-1
Max. Input Stream	60MHz (serial) / 7.5MHz (parallel)
PID Handling Capability	32 PID
SI Filtering	According to DVB-SI spec (ETS 300 468)

Video Decoding Parameters

Video Decoding	ISO / IEC 13818-2 MP@ML
Aspect Ratio	4:3, 16:9
Resolution	Max. 720 x 576

Audio Decoding Parameters

Audio Decoding	ISO / IEC 13818-3 Layer I & II
Operating Mode	Mono, Stereo
Sampling Frequency	32, 44.1, 48 kHz

Base band Video/Audio Output

Video Output Impedance	75ohm
Video Output Level	1Vp_p
Audio Output Impedance	600ohm (unbalanced)
Audio Output Level	3.0Vp_p (with volume control)

Microprocessor and Main Memories

Microprocessor Type	ST20 (STi 5518)
Flash ROM (for program memory)	1 MB(16-bit)
SDRAM (for decoding)	4 MB(16-bit)

Data Service Port

Connector	9 Pin D-Female Type
Protocol	RS-232 (asynchronous)
Data Rate	115,200bps (max.)

Front Panel

LED Display	On / Stand-by display
3 Buttons	Power, Down, Up
IR Sensor	38 kHz

Rear Panel

Antenna Input	IEC Socket
Antenna Loop-Through Output	IEC Plug
SCART Connector	21 pole (TV)
RS-232 Serial Port	9 Pin D-Female Type
DC power input	12 volts, 1 Amp.

Remote Control Unit

Type	IR (Carrier Freq. 38 kHz)
Battery	2 x 1.5 V (AAA size)
33 keys	Power, 0~9, Mute, Info, Up, Down, Left, Right, Back, Radio, OK, Menu, Exit, EPG, Teletext, Timer, Subtitle, Audio, Last, Page up/down, Freeze, Volume up / down

General Data

Power supply	Ext. AC adapter (100~240 volts AC / 12 volts DC)
Power Consumption	10 watts (max.)
Dimension (W x D x H)	200 x 135 x 34 mm
Weight	0.5 kg