U 125

IP to FM Converter

Operating Manual

Version 06-2014A

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General information

HINWEIS: This operating manual was created to provide the most important instructions for operating the U 125 module. We expressly recommend reading this manual before installing or operating the devices.
The ASTRO company confirms the information in this manual to be correct at the time of printing, but it reserves the right to make changes, without prior notice, to the specifications, the operation of the device and the operating manual.

Symbols used in these instructions

Pictograms are visual symbols with specific meanings. You will encounter the following pictograms in this installation and operating manual:

Warning about situations in which electrical voltage and non-observance of the instructions in this manual pose a risk of fatal injuries.

Warning about various dangers to health, the environment and material.

Recycling symbol: indicates components or packaging materials which can be recycled (cardboard, inserts, plastic film and bags). Used batteries must be disposed of at approved recycling points. Batteries must be completely discharged before being disposed of.

This symbol indicates components which must not be disposed of with household rubbish.

Copyright information

Parts of the software used with this product originate from third-party vendors and were developed under a variety of licensing conditions. Detailed information on the licences can be found on the device's web user interface. If you select the menu item “Licensing” on the web browser interface of the device, you will find a link to a page with detailed information.
You can obtain the source code for licence-free parts of the software upon request and against payment of a processing fee.
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Tel.: (+49) 2204 405-0

Important!

Before using the device, read the operating manual carefully and store it for future reference.

ACHTUNG: This device is Class A equipment. It may cause radio interference in living areas. In this case, the operator may be obliged to take appropriate precautions!

General safety

ACHTUNG: ***Disconnect both power plugs before opening the device!***

To avoid any potential risks to the greatest extent possible, it is very important that you observe the safety instructions in the operating manual for the U100-230 / U-100-48 base unit.

Assembly instructions

WICHTIG: The outputs of the signal converter must not be operated without connecting a combining network or terminating impedance!

The module U 125 may only be operated in the base units U 100-230 and U 100-48 made by ASTRO.

Observe the assembly instructions in the operating manual for the U 100-230 / U 100-48 base unit.

Warranty conditions

The general terms and conditions of ASTRO Strobel GmbH apply. You will find these in the current catalogue or on the Internet under www.astro-kom.de.

Disposal

All of our packaging material (cardboard boxes, inserts, plastic film and bags) is completely recyclable. Electronic devices must not be disposed of with household waste, but rather – according to DIRECTIVE 2002/96/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL from January 27, 2003, on waste electrical and electronic equipment – must be properly disposed of. When it is no longer in use, please bring the device for disposal to one of the public collection points for this purpose.

ASTRO Strobel is a member of the Elektro system solution for the disposal of packaging materials. Our contract number is 80395.

Performance description

The U 125 is a plug-in module, which is only intended for use in the base units U 100-230 and U 100-48. It can receive up to 16 MPEG data streams and channels encapsulated in accordance with Internet Protocol (IP). Two FM modulators convert these in up to 20 standard-compliant FM output signals, which are output through the two HF outputs in the U 125.

To use the devices properly, read the following safety and operating instructions attentively.

The U 125 plug-in module features the following performance characteristics:

- Conversion of up to 16 IP gigabit Ethernet multicast groups
- FM programmes are guided out as two groups of up to 20 channels each
- Support for static and dynamic RDS (radio text, PTY, PS and CT)

The delivery is comprised of the following parts:

- U 125 Edge FM module and backplane
- Operating manual

The U 125 plug-in module and the U 100 base unit feature a CE marking. This confirms that the products conform to the relevant EC directives and adhere to the requirements specified therein.

Figure 1, top:
U 125, installed in the U 100 base unit (fitted with three plug-in modules)

Figure 1, middle:
U 125, front panel
[1] Display for management IP addresses, data IP addresses, status messages, etc.
[2] Status display
[3] Control and data knob, menu switch

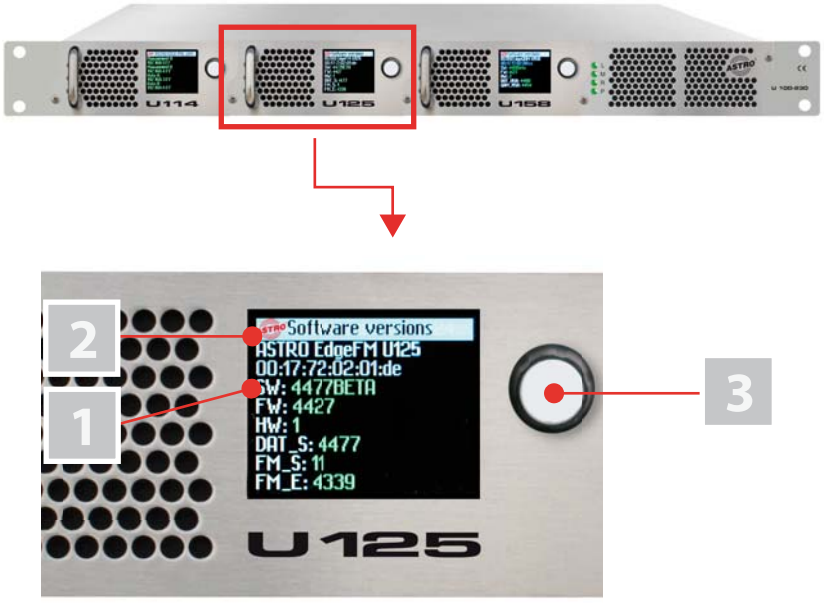
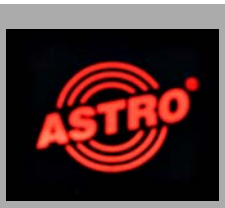


Figure 1: U 125



HINWEIS: Turning the data knob [3] (fig. 2, above) allows you to navigate through the individual menu items in the U 125 display. Press the data knob to activate the display.

The ASTRO logo will be the first display to appear following activation.

Turning the data knob clockwise allows to you access the individual displays:

- ☐ Log messages: The last messages entered in the log book are displayed.
- ☐ Interface settings: IP addresses of the network interface.
- ☐ Software versions: The version of the plug-in module software currently installed is displayed.
- ☐ Alarm table: The current error messages are displayed.
- ☐ RF output: The programs currently selected are displayed.

The different text colours refer to:

- ☐ Red: Error (the corresponding display in the web interface log book is: “error”)
- ☐ Yellow: Warning (the corresponding display in the web interface log book is: “warning”)
- ☐ Purple: Critical error (the corresponding display in the web interface log book is: “critical / alert / emergency”)
- ☐ Light blue: Info (the corresponding display in the web interface log book is: “info”)
- ☐ Light green: Notice (the corresponding display in the web interface log book is: “notice”)

Connecting and installing the module

HINWEIS: The instructions for the base unit U 100 include a description of how to prepare the base unit for installation.
Observe that you need to insert an SD memory card into the module prior to installation in the base unit (see figure at left).

Coding and installing the backplane

A backplane is included with every U 1xx signal converter. This is used to establish a mechanical connection between the signal converter and the base unit. Both the mains HF connections and the network connections are connected to this
backplane. There is usually a temperature-controlled fan for cooling the signal converter on the backplane. This can be replaced while the device is operating.
To ensure the position of the backplane, and therefore the position of the respective signal converter in the U 100 base unit, is correct, you must plug a corresponding jumper into the circuit board on the backplane. Proceed as described in the following.

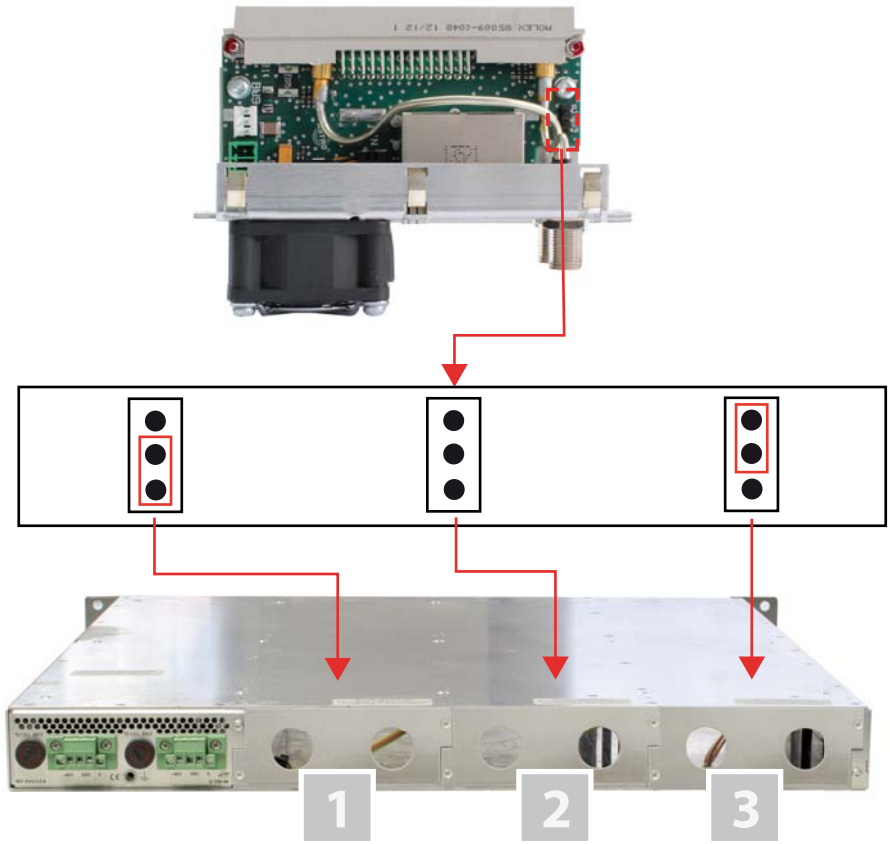


Figure 2: Coding the backplane by plugging in the jumper

[1] Left slot
[2] Middle slot
[3] Right slot

To prepare the backplane for installation, proceed as follows:

Plug the jumper into the installation position provided in accordance with figure 3 (page 9).

HINWEIS: A jumper which has not been correctly plugged into the corresponding installation position will result in incorrect LED displays on the front of the U 100 base unit (see section "Device description"). Furthermore, the correct position cannot be displayed on the web browser user interface.

You can now install the backplane in the base unit. To do so, proceed as follows:

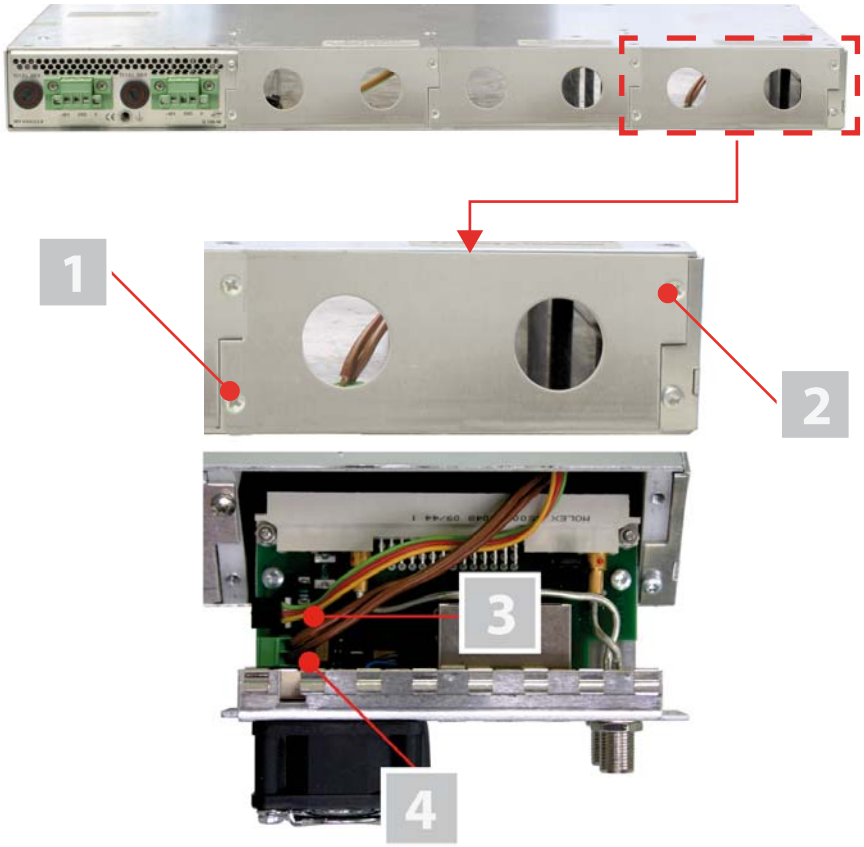


Figure 3: Installing the backplane in the base unit

[1, 2] Phillips-head screws
[3] Cable for signal supply
[4] Cable for power supply

AUFGABE

1. When the U 100 base unit is in its delivery state, the three installation slots for the backplanes are covered by dummy plates (see figure 3, above). Start by removing the Phillips-head screws [1] and [2] from the dummy plate at the required installation position (left, middle or right) and remove the dummy plate.
2. You can now see the two connection cables for the selected slot (power supply and signal cable). Connect the cables to the backplane as shown in figure 3 (above).
3. Now carefully insert the backplane into the slot of the U 100. Make sure the cables are not jammed. You can push the backplane into the housing by applying light pressure.

ERGEBNIS:

The backplane is now connected and installed. Once installed, it should correspond to the figure at the left.

Quick start - starting operation of the U 125

Connecting the U 125 to a PC or laptop

To be able to configure the U 125, you now need to connect the network sockets (Management A or Management B) on the backplane of the device (see figure at left) to your PC or laptop using a network cable.

Once you have connected the base unit to the power supply, the U 125 will switch on automatically. Once it has booted (approx. 90 seconds), the ASTRO logo initially appears in the display.
Turn the knob to the right of the display clockwise until the menu item “Interface settings” is displayed. The two management IP addresses (Management A and Management B) for the device now appear in the upper lines.
Make a note of the address of the management connection which you are using for your PC or laptop to ensure you can enter this in the address line of your web browser later on.

HINWEIS: Please note that your PC or laptop must be in the same sub-network as the U 125! The sub-network mask of the U 125 is set to 255.255.255.0 upon delivery. The PC or laptop which is connected must therefore be assigned an IP address 192.168.1.x.

HINWEIS: Version 8 of Internet Explorer is not supported, and cannot be used for configuring the U 125.

You can now start the configuration using the web browser user interface.

General information on the structure of the web browser interface

The configuration interface is divided into the following sub-areas:

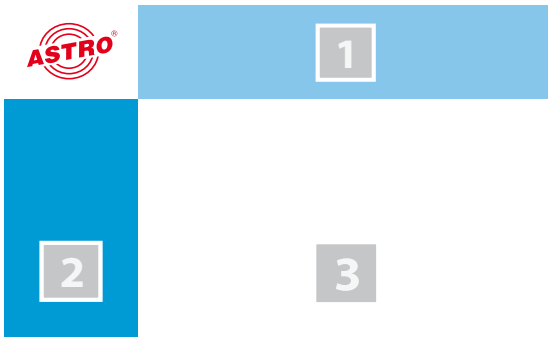


Figure 5: Structure of the web browser interface

- **Status line (header) [1]:** displays general information on the module.
  SW: Software status
  FW: Current version of the software installed
  HW: Hardware version
  Up: Runtime since the system was booted
  Time: Date and time
  Name, location, contact: corresponds to the settings made in the configuration area “User settings”
- **Navigation menu [2]:** displays the individual configuration areas which you can select by clicking the mouse. A detailed description of these areas can be found on the following pages of this chapter.
- **Content area [3]:** The respective configuration form – depending on the menu item selected – is displayed here.

HINWEIS: The browser display is not updated automatically. Use the corresponding button in the menu of your browser to update the display.

Logging in

To log in, copy the IP address of the U 125 shown in the device display into the address line of the browser. The menu page “Status” will then appear. Select the item “Log in” from the navigation menu at the left. The input mask for the log in should then appear (see figure 6, below). In delivery state, you must use the following log-in data:

- **User name:** “user” or “admin” (input without inverted commas)
- **Password:** astro

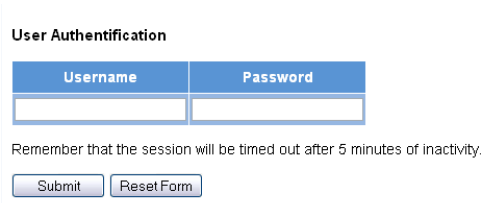


Figure 6: Log in

After logging in, the start page of the U 125 with all relevant system information will appear. The navigation menu and the log in status display will appear at the left.

Only one user can be logged into the user interface of the U 125 at a time. The current user is displayed in the column at the left, below the menu.

The device status is indicated by a green or red circle. If a green circle is displayed, the device is operational. If the circle is red, then a fault has occurred.

A list of current errors is available under the menu item “Active Alarms”.

HINWEIS: For reasons of security, you should change the access data valid upon delivery (user name and password) to prevent unauthorised access!
The procedure is described in the section “Changing user data”.

Changing the IP address

HINWEIS: If you wish to change the IP address, then the settings on the PC must be changed accordingly. IP addresses can only be changed by the administrator!

Start by changing the IP addresses for the management and the data port. To do so, click on the item “Main” in the menu at the left. You will now see the following table in the content area:

IP Interface Settings

Property	Management A (eth0)	Management B (eth1)	Data A (eth2)	Data B (eth3)
MAC	00:17:72:02:00:d0	00:17:72:03:00:d0	00:17:72:04:00:d0	00:17:72:05:00:d0
Active	on off	on off	on off	on off
Mode	1 Gbit/s, full duplex	1 Gbit/s, full duplex	1 Gbit/s, full duplex	1 Gbit/s, full duplex
Address	192 . 168 . 1 . 150	192 . 168 . 5 . 150	172 . 24 . 0 . 150	172 . 25 . 0 . 150
Subnet	255 . 255 . 255 . 0	255 . 255 . 255 . 0	255 . 255 . 0 . 0	255 . 255 . 0 . 0
Broadcast	192.168.1.255	192.168.5.255	172.24.255.255	172.25.255.255
Gateway	192 . 168 . 1 . 100	0 . 0 . 0 . 0	0 . 0 . 0 . 0	0 . 0 . 0 . 0

Figure 7: Changing the IP address

You can enter the IP addresses for management ports A and B as well as for data ports A and B in the “Address” line. Make sure that you activate the ports being used by activating the corresponding radio button in the line “Active”.

Submit Reset Form

To save your changes, click on the “Submit” button below the last table.

More information on configuring the IP address can be found in the section “Configuring IP interfaces, IP management and base unit”.

The signal flow in the U 125

The overview on page 12 shows the possible signal paths for the U 125. The specific signal flow can be split into the following sub-areas:

- The IP receivers (1 to 16) receive a signal via data port A or B (each can be switched).
- There are two FM modulators, each of which features a transport stream selector for selecting a transport stream for each FM program.
- The level of the output signal from the two FM modulators (each with up to 20 FM programs) are each adapted, filtered and amplified, and are forwarded to an HF output on the backplane.

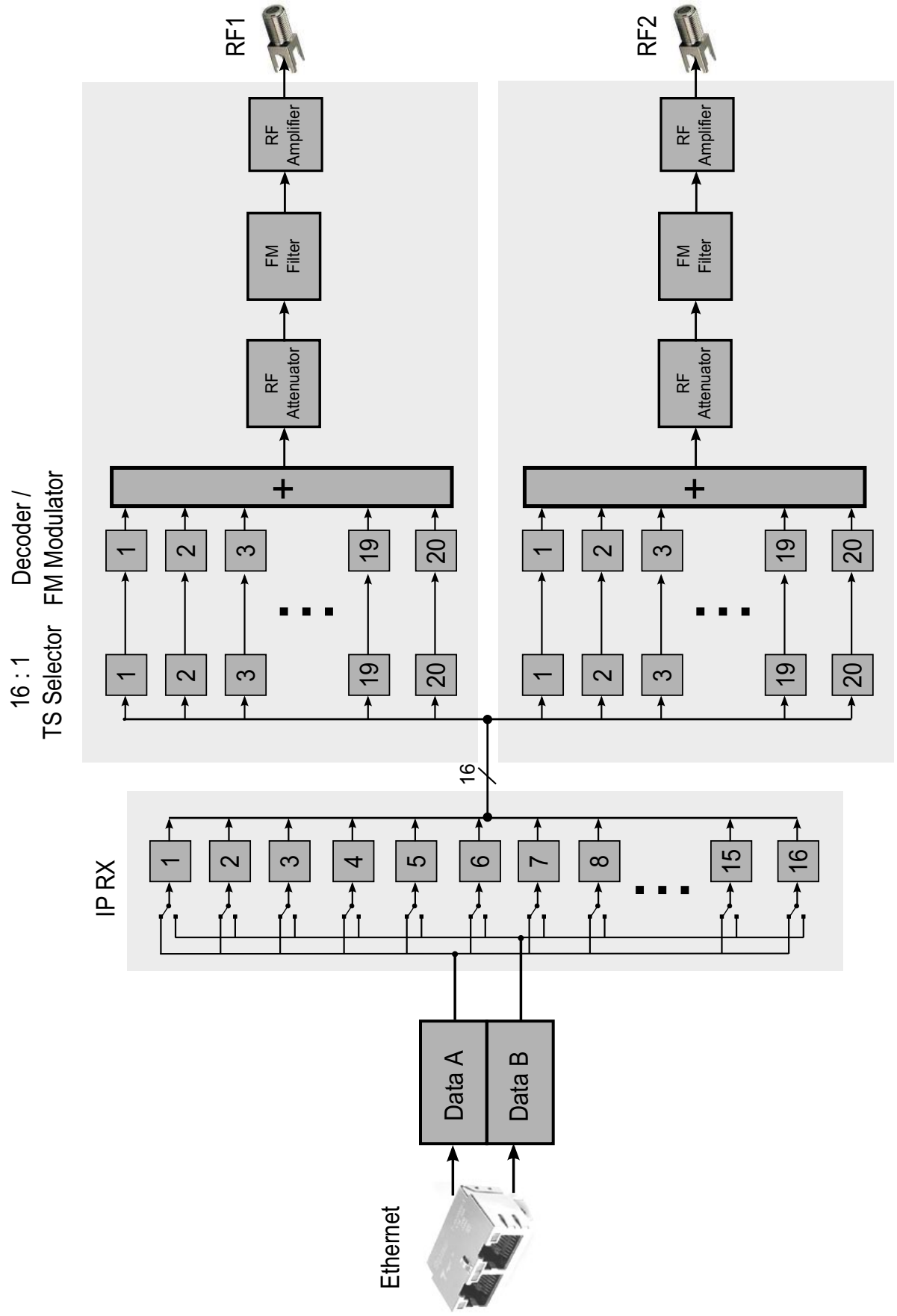


Figure 8: The signal flow in the U 125

Configuring the IP receiver

Now start configuring a signal path in the U 125. Start by clicking on the item “IP RX 1” in the web browser interface menu. You will now see the following table:

IP RX1 Channel Settings

Property	Data A (eth2) 1G	
Primary Receive IP:Port	232 . 19 . 100 . 136 : 10000	Priority 12 Highest/Hot
Primary Source Select	0 . 0 . 0 . 0	

Figure 9: Setting the source for the data stream

Enter the IP address and port for the data source in the first line. Optionally, you can also enter a source select address in the second line.
Further information about configuring the receiver can be found in the section “Configuring IP inputs”.
There is another table below the “IP RX 1 Channel Settings” table. Activate the radio button “on” to switch on the receiver.

Property	Data A (eth2) + Data B (eth3)	
Enable	on off	
Port	Data A Primary static	
Timeouts	in case of failure switch after 0 seconds, switch back to higher priority after 300 seconds.	
Encapsulation	RTP/UDP/IP UDP/IP	automatic manual
Bitrate	Single PCR (SPTS) Mult. PCR (MPTS)	automatic manual
FEC	on off	
TSID / ONID	1117	1
Alias manual / automatic		ORF1, ORF

Figure 10: Activating the connection to the data port

Checking the data reception rate

Now click on the menu item “Status” in the menu at the left. You will now see the following overview:

Ethernet

Property	Management A (eth0)	Management B (eth1)	Data A (eth2)	Data B (eth3)
MAC	00:17:72:02:00:d0	00:17:72:03:00:d0	00:17:72:04:00:d0	00:17:72:05:00:d0
Address	192.168.1.150	192.168.5.150	172.24.0.150	172.25.0.150
Netmask	255.255.255.0	255.255.255.0	255.255.0.0	255.255.0.0
Gateway	192.168.1.100	0.0.0.0	0.0.0.0	0.0.0.0
Mode	1 Gbit/s, full duplex	1 Gbit/s, full duplex	1 Gbit/s, full duplex	1 Gbit/s, full duplex
Transmit	0.0 Mbit/s	0.0 Mbit/s	76.6 Mbit/s	76.6 Mbit/s
Receive	0.0 Mbit/s	0.0 Mbit/s	70.9 Mbit/s	70.9 Mbit/s

Figure 11: Displaying reception statistics

A data reception rate > 0 at data ports A or B should now appear in the line “Receive” in the “Ethernet” table.

Ethernet RX

Channel	Encap	TS Rate	Buffer depth	FEC	Valid	Missing	Fixed	Duplicate	Reordered	Out of range
IP RX1	1328 bytes 7 packets RTP/UDP/IP	33.8 Mbit/s Mult. PCR	255 Frames 49.8 % 79.5 ms	none	4410949	0	0	0	0	0

Figure 12: IP receiver statistics

Now click on the menu item “Statistics” in the menu at the left. Details about the transport stream received are provided in the “Ethernet RX” table. A TS rate of > 0 should be displayed. If this is not the case, check the receiver settings.

Configuring HF output channels

To complete the process, you should configure and activate the HF output channels. To do so, click on the menu item “RF 1” in the web browser interface menu. You will now see the following table:

RF Channels

Modulator	Enable	Service	Frequency	Level	Reference	Status
RF1.1	on stdby off	BAYERN 3, ARD BR (SID:28402 digital radio sound)	87.55 MHz	0.0 dB		ok
RF1.2	on stdby off	hr2, ARD HR (SID:28420 digital radio sound)	87.85 MHz	0.0 dB		ok
RF1.3	on stdby off	RTL2, CSAT (SID:8538 digital radio sound)	88.40 MHz	0.0 dB		ok
RF1.4	on stdby off	BBC ARABIC, CSAT (SID:8559 digital radio sound)	88.90 MHz	0.0 dB		ok
RF1.5	on stdby off	DRadio DokDeb, ZDFvision (SID:28015 digital radio sound)	89.65 MHz	0.0 dB		ok
RF1.6	on stdby off	BFM BUSINESS, CSAT (SID:8534 digital radio sound)	90.40 MHz	0.0 dB		ok
RF1.7	on stdby off	SWR4 BW, ARD SWR (SID:28469 digital radio sound)	90.90 MHz	0.0 dB		ok
RF1.8	on stdby off	SWR1 BW, ARD SWR (SID:28465 digital radio sound)	91.45 MHz	0.0 dB		ok
RF1.9	on stdby off	NDR 90,3, ARD NDR (SID:28441 digital radio sound)	91.90 MHz	0.0 dB		ok
RF1.10	on stdby off	BAYERN plus, ARD BR (SID:28405 digital radio sound)	92.35 MHz	0.0 dB	Set	ok
RF1.11	on stdby off	SWRinfo, ARD SWR (SID:28472 digital radio sound)	92.95 MHz	0.0 dB	Δ 0.0 dB	ok
RF1.12	on stdby off	Bayern 1, ARD BR (SID:28400 digital radio sound)	94.05 MHz	0.0 dB		ok
RF1.13	on stdby off	SR 3 Saarlandwelle, ARD SR (SID:28463 digital radio sound)	94.55 MHz	0.0 dB		ok
RF1.14	on stdby off	DRadio DokDeb, ZDFvision (SID:28015 digital radio sound)	95.45 MHz	0.0 dB		ok
RF1.15	on stdby off	RADIO COURTOISIE, CSAT (SID:8566 digital radio sound)	96.15 MHz	0.0 dB		ok
RF1.16	on stdby off	FRANCE CULTURE, CSAT (SID:8563 digital radio sound)	97.25 MHz	0.0 dB		ok
RF1.17	on stdby off	DLF, ZDFvision (SID:28013 digital radio sound)	97.85 MHz	0.0 dB		ok
RF1.18	on stdby off	DRadio Wissen, ZDFvision (SID:28017 digital radio sound)	98.85 MHz	0.0 dB		ok
RF1.19	on stdby off	JAZZ RADIO, CSAT (SID:8535 digital radio sound)	99.35 MHz	0.0 dB		ok
RF1.20	on stdby off	MC DOUALIYA, CSAT (SID:8531 digital radio sound)	99.95 MHz	0.0 dB		ok

Show all service types

Changing service will affect primary, secondary and tertiary sources.

Submit

RF Detector

	Mode	Level
warnings	on off	±4.0 dB
Lock RF relevant settings	on off	

Submit Reset Form

Figure 13: Configuring HF output channels

To exemplify this, select one of the modulators by clicking on the “On” radio button in the “Enable” column.

Now select the preferred service from the drop-down menu in the “Service” column. Enter the preferred values for the frequency and the level in the corresponding input field in the “Channel Frequency” and “Level” columns respectively.

To save your changes, click on the “Submit” button below the table.

More information on setting the HF modulators can be found in the section “Configuring HF outputs”.

Submit Reset Form

"Status" menu

To have the current settings for the U 125 displayed, click on the `Status` item in the menu at the left. You can now see the overview shown in figure 14:

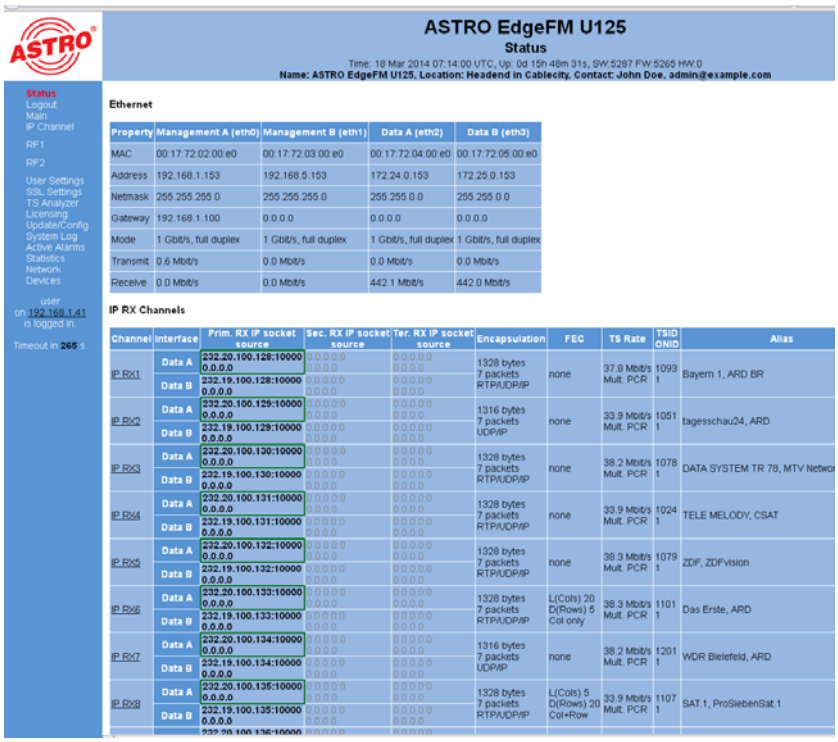


Figure 14: Status display

The following tables are displayed:

Ethernet status:
Configuration data and status of the Ethernet port

Ethernet

Property	Management A (eth0)	Management B (eth1)	Data A (eth2)	Data B (eth3)
MAC	00:17:72:02:00:d0	00:17:72:03:00:d0	00:17:72:04:00:d0	00:17:72:05:00:d0
Address	192.168.1.150	192.168.5.150	172.24.0.150	172.25.0.150
Netmask	255.255.255.0	255.255.255.0	255.255.0.0	255.255.0.0
Gateway	192.168.1.100	0.0.0.0	0.0.0.0	0.0.0.0
Mode	1 Gbit/s, full duplex	1 Gbit/s, full duplex	1 Gbit/s, full duplex	1 Gbit/s, full duplex
Transmit	0.0 Mbit/s	0.0 Mbit/s	76.6 Mbit/s	76.6 Mbit/s
Receive	0.0 Mbit/s	0.0 Mbit/s	70.9 Mbit/s	70.9 Mbit/s

Figure 15: Status display - Ethernet

The values for the following parameters are displayed and configured here respectively in accordance with the four connections on the backplane of the U 125 (Data A, Data B, Management A and Management B, see section "Device description").

- `MAC:` MAC address (display value)
- `Address:` IP address (configurable)
- `Netmask:` Net mask (configurable)
- `Gateway:` Gateway IP address (configurable)
- `Mode:` Ethernet mode (display value)
- `Transmit:` Data transmission rate (display value)
- `Receive:` Data reception rate (display value)

Status display of the IP receiver:

IP RX Channels

Channel	Interface	Prim. RX IP socket source	Sec. RX IP socket source	Ter. RX IP socket source	Encapsulation	FEC	TS Rate	TSID ONID	Alias
IP RX1	Data A	232.20.100.128:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0	1328 bytes 7 packets RTP/UDP/IP	none	37.8 Mbit/s Mult. PCR	1093 1	Bayern 1, ARD BR
	Data B	232.19.100.128:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0					
IP RX2	Data A	232.20.100.129:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0	1316 bytes 7 packets UDP/IP	none	33.9 Mbit/s Mult. PCR	1051 1	tagesschau24, ARD
	Data B	232.19.100.129:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0					
IP RX3	Data A	232.20.100.130:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0	1328 bytes 7 packets RTP/UDP/IP	none	38.2 Mbit/s Mult. PCR	1078 1	DATA SYSTEM TR 78, MTV Networ
	Data B	232.19.100.130:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0					
IP RX4	Data A	232.20.100.131:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0	1328 bytes 7 packets RTP/UDP/IP	none	33.9 Mbit/s Mult. PCR	1024 1	TELE MELODY, CSAT
	Data B	232.19.100.131:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0					
IP RX5	Data A	232.20.100.132:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0	1328 bytes 7 packets RTP/UDP/IP	none	38.3 Mbit/s Mult. PCR	1079 1	ZDF, ZDFvision
	Data B	232.19.100.132:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0					
IP RX6	Data A	232.20.100.133:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0	1328 bytes 7 packets RTP/UDP/IP	L(Cols) 20 D(Rows) 5 Col only	38.3 Mbit/s Mult. PCR	1101 1	Das Erste, ARD
	Data B	232.19.100.133:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0					
IP RX7	Data A	232.20.100.134:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0	1316 bytes 7 packets UDP/IP	none	38.2 Mbit/s Mult. PCR	1201 1	WDR Bielefeld, ARD
	Data B	232.19.100.134:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0					
IP RX8	Data A	232.20.100.135:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0	1328 bytes 7 packets RTP/UDP/IP	L(Cols) 5 D(Rows) 20 Col+Row	33.9 Mbit/s Mult. PCR	1107 1	SAT.1, ProSiebenSat.1
	Data B	232.19.100.135:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0					

Figure 16: Status display - IP RX channels

The different text formats refer to:

- Green: active
- Grey: inactive ("off")
- Black (bold): priority "hot", no errors
- Red (bold): priority "hot", errors
- Black (standard): priority "cold", no errors
- Red (standard): priority "cold", errors

The values set for the following parameters are displayed in the table "IP RX channels" for the 16 IP receivers – for outputs Data A and B respectively:

- `Prim. RX IP socket source:` Primary source
- `Sec. RX IP socket source:` Secondary source
- `Ter. RX IP socket source:` Tertiary source
- `Encapsulation:` Data encapsulation
- `FEC:` Forward error correction
- `TS Rate:` Data rate
- `TSID ONID:` Transport stream ID / original network ID
- `Alias:` Alias name

For details on the parameters: see the section "Menu IPTX"

Status display of the FM output programs:

RF Channels

Modulator	Stream	Service	PIDs	Frequency Level	Reference	Status	Dynamic RD
RF1.1	**IP_RX1** TSID:1093 ONID:1 Alias:Bayern 1, ARD BR	**BAYERN 3** SID:28402	PMT:120, Audio:121 320 kbit/s, Layer: 2 , 48 kHz, Stereo	**87.55 MHz** 0.0 dB		ok	RT: Sie hören "Frühaufdreher-Lieblingsmix"
RF1.2	**IP_RX1** TSID:1093 ONID:1 Alias:Bayern 1, ARD BR	**hr2** SID:28420	PMT:410, Audio:411 320 kbit/s, Layer: 2 , 48 kHz, Stereo	**87.85 MHz** 0.0 dB		ok	PS: hr2 RT: Heinrich Marschner: Klaviertrio Nr.2 g-m
RF1.3	**IP_RX4** TSID:1024 ONID:1 Alias:TELE MELODY, CSAT	**RTL2** SID:8538	PMT:1298, Audio:238 192 kbit/s, Layer: 2 , 48 kHz, Joint Stereo	**88.40 MHz** 0.0 dB		ok	
RF1.4	**IP_RX4** TSID:1024 ONID:1 Alias:TELE MELODY, CSAT	**BBC ARABIC** SID:8559	PMT:1298, Audio:1946 96 kbit/s, Layer: 2 , 48 kHz, Mono	**88.90 MHz** 0.0 dB		ok	
RF1.5	**IP_RX5** TSID:1079 ONID:1 Alias:ZDF, ZDFvision	**DRadio DokDeb** SID:28015	PMT:500, Audio:510 128 kbit/s, Layer: 2 , 48 kHz, Joint Stereo	**89.65 MHz** 0.0 dB		ok	
RF1.6	**IP_RX4** TSID:1024 ONID:1 Alias:TELE MELODY, CSAT	**BFM BUSINESS** SID:8534	PMT:1298, Audio:1918 64 kbit/s, Layer: 2 , 48 kHz, Mono	**90.40 MHz** 0.0 dB		ok	
RF1.7	**IP_RX1** TSID:1093 ONID:1 Alias:Bayern 1, ARD BR	**SWR4 BW** SID:28469	PMT:1040, Audio:1041 320 kbit/s, Layer: 2 , 48 kHz, Stereo	**90.90 MHz** 0.0 dB		ok	PS: SWR4 BW RT: SWR4 BW - Guten Morgen von 06:00 bis
RF1.8	**IP_RX1** TSID:1093 ONID:1 Alias:Bayern 1, ARD BR	**SWR1 BW** SID:28465	PMT:1000, Audio:1001 320 kbit/s, Layer: 2 , 48 kHz, Stereo	**91.45 MHz** 0.0 dB		ok	PS: SWR1 BW RT: SWR1 - Guten Morgen Baden-Wuerttem
RF1.9	**IP_RX1** TSID:1093 ONID:1 Alias:Bayern 1, ARD BR	**NDR 90,3** SID:28441	PMT:640, Audio:641 320 kbit/s, Layer: 2 , 48 kHz, Stereo	**91.90 MHz** 0.0 dB		ok	RT: Vom selben Stern - Ich + Ich
RF1.10	**IP_RX1** TSID:1093 ONID:1 Alias:Bayern 1, ARD BR	**BAYERN plus** SID:28405	PMT:150, Audio:151 320 kbit/s, Layer: 2 , 48 kHz, Stereo	**92.35 MHz** 0.0 dB		ok	RT: PETER KRAUS: SUGAR BABY
RF1.11	**IP_RX1** TSID:1093 ONID:1 Alias:Bayern 1, ARD BR	**SWRinfo** SID:28472	PMT:1070, Audio:1071 320 kbit/s, Layer: 2 , 48 kHz, Stereo	**92.95 MHz** 0.0 dB	Δ 0.0 dB	ok	
RF1.12	**IP_RX1** TSID:1093 ONID:1 Alias:Bayern 1, ARD BR	**Bayern 1** SID:28400	PMT:100, Audio:101 320 kbit/s, Layer: 2 , 48 kHz, Stereo	**94.05 MHz** 0.0 dB		ok	RT: Sie hören "Smokie" mit "For a few dolla
RF1.13	**IP_RX1** TSID:1093 ONID:1	**SR 3 Saarlandwelle**	PMT:920, Audio:921	**94.55 MHz**		ok	PS: SR 3

Figure 17: Status display - RF channels

The values set for the following parameters are displayed in the table "RF channels" for the 2 x 20 FM output programs:

- `Modulator:` Output program
- `Stream:` Transport stream received
- `Service:` Service selected
- `PIDs:` Packet identifier
- `Frequency / Level:` Frequency / level selected

Details on the parameters can be found in the section "Menu RF1 and RF2".

Status messages on temperature, internal voltages and the power module:

Miscellaneous

Property	Mainboard
Temperature 2 (front)	57.0 °C
Temperature 3 (rear)	71.5 °C
Temperature 4 (PA)	59.5 °C
Supply 1.2 V	1.18 V
Supply 1.8 V	1.78 V
Supply 2.5 V	2.48 V
Supply 3.3 V	3.28 V
Supply 5.5 V	5.46 V
Supply 12 V	12.06 V
Fan	10714 RPM
Power Module	OK

Figure 18: Status display - Miscellaneous

The following, general parameters are displayed in the "Miscellaneous" table:

- `Temperature 2 (front):` Temperature displayed in °C for the mainboard
- `Temperature 3 (rear):` Temperature displayed in °C for the mainboard
- `Temperature 4 (PA):` Temperature displayed in °C for the HF output stage
- `Supply 1.2 V:` 1.2 V supply voltage
- `Supply 1.8 V:` 1.8 V supply voltage
- `Supply 2.5 V:` 2.5 V supply voltage
- `Supply 3.3 V:` 3.3 V supply voltage
- `Supply 5.5 V:` 5.5 V supply voltage
- `Supply 12 V:` 12 V supply voltage
- `Fan:` Fan rotation speed
- `Power Module:` Functional status (OK or error message)

Memory status:

Property	Value
Total size of memory arena	63213380
Number of ordinary memory blocks	126
Space used by ordinary memory blocks	795952
Space free for ordinary blocks	62417404
Size of largest free block	62377284
Number of left files FOPEN_MAX	27
Number of left files NFILE	18
Number of free file descriptors NFD	18
CPU load 0.1s	0 %
CPU load 1s	3 %
CPU load 10s	11 %

Figure 19: Status display - System resources

Information on the internal resources of the operating system can be viewed in the “System resources” table. No settings can be made here.

File resources:

- ☐ `Number of left files FOPEN_MAX`
- ☐ `Number of left files NFILE`
- ☐ `Number of free descriptors NFD`

CPU load, averaged over XXs:

- ☐ `CPU load 0.1 s`
- ☐ `CPU load 1 s`
- ☐ `CPU load 10 s`

"Main" menu

This section explains how to make general settings for the interfaces and the management of the U 125, as well as for the U 100 base unit.
Click on the item "Main" in the menu at the left.

Setting IP interfaces (administrator only)

You can configure IP interfaces and activate or deactivate them using the table shown above ("IP interface settings"). The connection type is automatically identified and displayed by the U 125 (in this case: 1 GBit/s, full duplex).

IP Interface Settings

Property	Management A (eth0)	Management B (eth1)	Data A (eth2)	Data B (eth3)
MAC	00:17:72:02:00:d0	00:17:72:03:00:d0	00:17:72:04:00:d0	00:17:72:05:00:d0
Active	on off	on off	on off	on off
Mode	1 Gbit/s, full duplex	1 Gbit/s, full duplex	1 Gbit/s, full duplex	1 Gbit/s, full duplex
Address	192 . 168 . 1 . 150	192 . 168 . 5 . 150	172 . 24 . 0 . 150	172 . 25 . 0 . 150
Subnet	255 . 255 . 255 . 0	255 . 255 . 255 . 0	255 . 255 . 0 . 0	255 . 255 . 0 . 0
Broadcast	192.168.1.255	192.168.5.255	172.24.255.255	172.25.255.255
Gateway	192 . 168 . 1 . 100	0 . 0 . 0 . 0	0 . 0 . 0 . 0	0 . 0 . 0 . 0

Figure 20: Configuring IP interfaces

The following parameters are displayed, and can be configured:

- `MAC`: MAC address of the respective interface
- `Active`: Activate the radio button "on" to activate the interface. Activate the radio button "off" to deactivate the interface.
- `Mode`: Connection type (identified automatically)
- `Address`: IP address
- `Subnet`: Netmask
- `Broadcast`: Broadcast address
- `Gateway`: Gateway IP (if required)

HINWEIS: When programming the IP addresses, make sure the addresses have not already been allocated within your network. Address conflicts result in network malfunctions. (Please set unused parameters to 0.0.0.0.)

Submit Reset Form

To save your changes, click on the "Submit" button below the last table.

Configuring management settings

You can configure the following management settings in the second table ("IP management settings"):

IP Management Settings

Property	Value
DNS	0 . 0 . 0 . 0
SNTP server	0.0.0.0 0.0.0.0
Time Source	SNTP Server

Figure 21: Configuring management settings

- DNS: Enter a DNS server, if required, in the input fields.
- SNTP server: You can enter one or two time servers here (SNTP protocol).
- Time Source: Select the preferred time reference from the drop-down menu. The following options are available for selection: "SNTP server" and "IP RX 1 - 16".

To save your changes, click on the "Submit" button below the last table.

Configuring the base unit

You can enter settings for the U 100 base unit in the third table ("U 100 Rack settings").

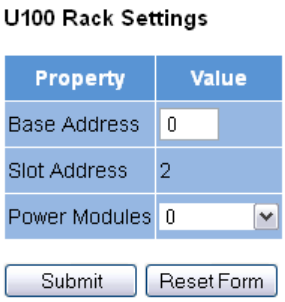


Figure 22: Configuring the U 100 base unit

The following parameters are displayed, and can be configured:

- Base Address: Enter an address for the base unit being used here. If the U 125 is managed using the U 100-C controller and several U 100 base units are being used, then each base unit must be allocated an address of its own.
  This setting only has to be entered for one module per base unit.
- Slot Address: In accordance with the coding of the backplane of the U 125 performed previously (see section "Installing and connecting"), the address corresponding to the slot in the base unit is displayed here.
- Power Modules: Select the number of the power modules used from the drop-down menu ("0" for 48 V operation, "1" or "2" 230 V power modules).

To save your changes, click on the "Submit" button below the last table.

Saving and loading configurations / default and reboot

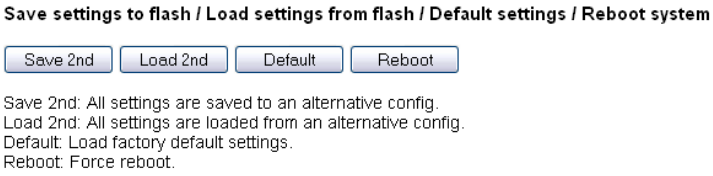


Figure 23: Saving and loading configurations

Changes to the configuration of the U 125 are written to the device by clicking the "Submit" button, and are activated immediately. If you wish to save the current status to a separate memory, click on the "Save 2nd" button (below the tables). This current status is then saved on the SD card in the U 125. (Please note that prior to installing the module, an SD memory card must be plugged in; see figure at left.)

You can retrieve this status again by clicking on the "Load 2nd" button. How to save the configuration onto the local computer or FTP server is explained in the section "Software update and configuration files".

Click on the "Default" button if you wish to restore the default settings.

ACHTUNG: If you click the "Default" button, all settings except for the user and network settings for the data and management ports are reset to the delivery state.

Click on the "Reboot" button to restart the unit with the last settings saved.

"IP Channel" menu

To have the input masks for configuring the input and output channels displayed, click on the item "IP Channels" in the menu at the left.

You can check the settings for the input channels in the table at the bottom, "IP RX channel settings".

IP RX Channel Settings

Channel	Enable	Interface	Prim. RX IP socket source	Sec. RX IP socket source	Ter. RX IP socket source	Encapsulation	TSID ONID	Alias
IP RX1	on / off	Data A	232.19.100.136:10000 0.0.0.0	232.20.100.136:10000 0.0.0.0	0.0.0.0:10000 0.0.0.0	RTP/UDP/IP Mult. PCR	1117 1	ORF1, ORF
		Data B	232.19.100.136:10000 0.0.0.0	232.20.100.136:10000 0.0.0.0	0.0.0.0:10000 0.0.0.0			
IP RX2	on / off	Data A	232.19.100.129:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0	UDP/IP Mult. PCR		
		Data B	232.19.100.129:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0			
IP RX3	on / off	Data A	232.19.100.130:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0	RTP/UDP/IP Single PCR		
		Data B	232.19.100.130:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0			
IP RX4	on / off	Data A	232.19.100.132:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0	RTP/UDP/IP Mult. PCR		
		Data B	232.19.100.132:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0			

Figure 24: IP RX channel settings table

You can activate or deactivate the respective IP inputs here by clicking on the corresponding radio button. The following parameters are displayed for ports A and B respectively for the four IP input channels:

- Prim. RX IP socket source
- Sec. RX IP socket source
- Ter. RX IP socket source
- Encapsulation TSID / ONID
- Alias

HINWEIS: *These parameters are explained in more detail in the section "IP RX menu".*

Submit Reset Form

If you change the activation or deactivation status of inputs or outputs in one of the two tables, then click on the "Submit" button below the last table to save your changes. Click on "Reset form" to restore the original settings.

"IP RX" menu

To configure the 16 IP inputs, start by clicking on the item "IP RX1", "IP RX2", "IP RX3" and so forth, in the menu at the left. The following table will then appear in the content area at the top:

IP RX1 Channel Settings

Property	Data A (eth2) 1G	
Primary Receive IP:Port	232 . 19 . 100 . 136 : 10000	Priority
Primary Source Select	0 . 0 . 0 . 0	12 Highest/Hot
Secondary Receive IP:Port	232 . 20 . 100 . 136 : 10000	Priority
Secondary Source Select	0 . 0 . 0 . 0	11 Higher/Hot
Tertiary Receive IP:Port	0 . 0 . 0 . 0 : 10000	Priority
Tertiary Source Select	0 . 0 . 0 . 0	0 Off

Figure 25: Table 1 "IP RX1 channel settings"

"Receive IP" and "Port" (see lines 1, 3 and 5 in the table) form a socket on which the incoming data stream is received. This also allows the Receive IP address to be a multicast address or a unicast address of its own.
The IGMP protocol is used to request an IP multicast. If version 3 of this protocol is used, then you can select a specific source using the Source Select IP address (see lines 2, 4 and 6 in the table). If this function is to remain unused, please enter four zeroes in the input field. (This is, for example, the case when IGMP version 2 or IBMP version 3 from any source is being used as the protocol).

You can make a priority setting for the primary, secondary and tertiary IP address / port respectively using a drop-down menu. There are 13 options (from "off" to "highest/hot") available for selection. The priorities are divided into three groups:

- Hot standby (higher priorities) Levels 7 - 12: data streams are requested permanently
- Cold standby (medium priorities): Levels 1 - 6
- "Off"

As a rule – providing there are no network provider problems – the data stream with the highest priority is received and used for processing. In the event of a fault – failure of the incoming signal – a switch-over is made to the data stream with the next-highest priority.

If a priority level from the "Hot standby" group is allocated to a data stream, then this will continue to be requested even during network provider problems. As soon as the problem has been rectified, it switches back to this data stream.

Another table is shown in the following in which settings valid for Data Port A and B can be entered.

Property	Data A (eth2) + Data B (eth3)	
Enable	on / off	
Port	Data A / Primary / static	
Timeouts	in case of failure switch after 0 seconds, switch back to higher priority after 300 seconds.	
Encapsulation	RTP/UDP/IP / UDP/IP	automatic / manual
Bitrate	Single PCR (SPTS) / Mult. PCR (MPTS)	automatic / manual
FEC	on / off	
TSID / ONID	1117	1
Alias manual / automatic		ORF1, ORF

Figure 26: Table 2 "IP RX1 channel settings"

- `Enable:` Activate or deactivate the IP input by clicking on the corresponding radio button.
- `Port:` Configure the reception source for the IP channel here.
  Select either Data A or Data B as the port from the first drop-down menu.
  Select either the "Primary", "Secondary" or "Tertiary" option from the second drop-down menu.
  Select the "static" option from the third drop-down menu if you do not wish to use an automatic replacement circuit for the data streams. Select the "automatic" option when the replacement circuit should be used as described above.
- `Timeouts:` Enter a time frame, in seconds, in the first input field after which a switch-over to the data stream with the next-lowest priority should occur in the event of a fault.
  Enter a time frame, in seconds, in the second input field after which it should switch back to the data stream with the higher priority after the problem has been rectified. (This is only the case when a priority level from the "Hot standby" group was allocated to the data stream - see explanation above).
- `Encapsulation:` When the radio button "RTP / UDP / IP" has been activated, the corresponding RTP / UDP / IP data streams are received. If you activate the radio button "on" in the line "FEC", then the additional receive IP ports +2 and +4 will be received (example: apart from 10000, also 10002 and 10004). This also includes additional redundancy information for fault correction.
  When the radio button "UDP / IP" has been activated, either UDP / IP data streams or RTP / UDP / IP data streams without an evaluation from RTP are received.
  Select either "automatic" or "manual" for the data encapsulation by clicking the corresponding radio button.
- `Bitrate:` Select either "automatic" or "manual" by clicking the corresponding radio button. If "manual" is selected and the radio button "Single PCR" has been selected at the same time, then the receive data stream is regulated using a single PCR. This is not suitable for transport streams with several PCRs.
  If you activate the radio button "Multi PCR", then the data rate is used for regulation. This is not possible for data streams with a variable bit rate.
- `FEC:` Activate or deactivate the FEC by clicking the radio button "on" or "off". (See "Encapsulation" above.)
- `TSID / ONID:` The respective value is displayed but cannot be changed.
- `Alias manual / automatic:` You can enter an alias name for the data stream in the input field at the left. The automatically generated alias name is displayed at the bottom right. This is the name of the first transmitter in the data stream. This is used if no name is entered manually.

Click on the "Submit" button below the last table to save the changes.
Click on "Reset form" to restore the original settings.

"RF" menu

To configure the FM outputs, start by clicking on the "RF 1" or "RF 2" item in the menu at the left. The following table will then appear in the content area at the top:

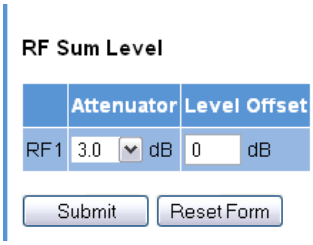


Figure 27: Table 1 "RF sum level"

You can set the output level for all FM programs here, regardless of the settings made for the individual programs.
You can enter one value each for the following parameters:

- `Attenuator: Port:` Select an attenuation value between 0 dB and 15.5 dB from the drop-down menu.
- `Level Offset:` Enter a value in dB for the level offset in the input field. The offset is added to all individual levels respectively.

Click on the "Submit" button below the last table to save the changes.
Click on "Reset form" to restore the original settings.

Another table follows in which you can enter the most important settings for all 20 output channels:

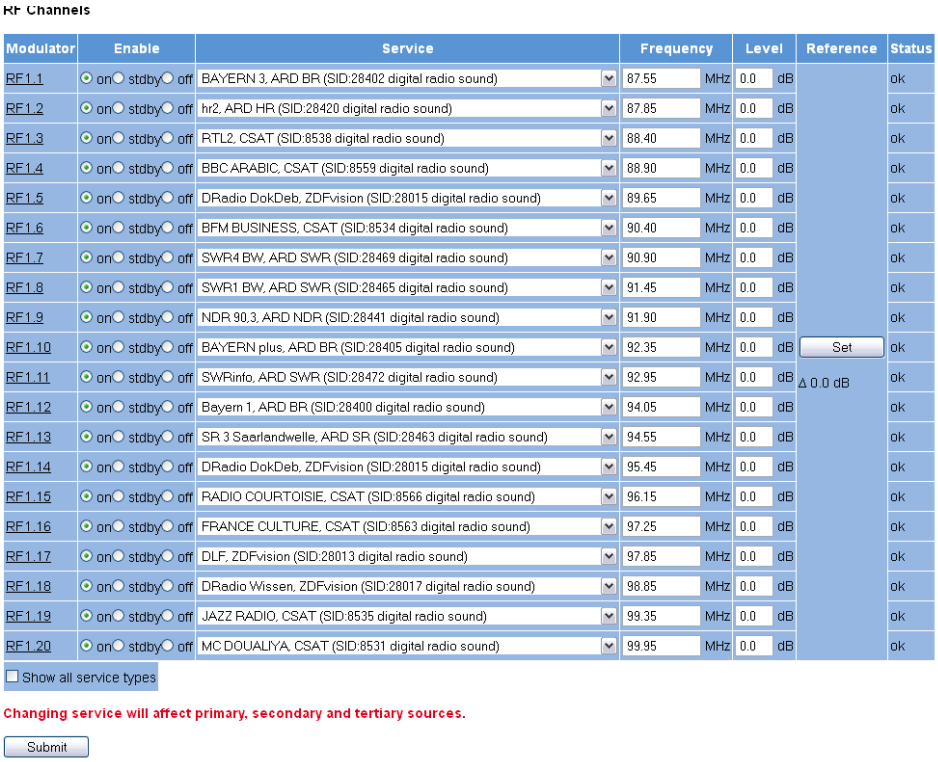


Figure 29: Table 2 "RF channels"

- `Enable:` To activate or deactivate an output channel, click the corresponding radio button. If you select the "Standby" option, the decoder will run, but the corresponding output will be switched off. This may be practical when, for example, the module is being used as a replacement module in a redundant circuit.
- `Service:` Select the preferred service from the drop-down menu. Activate the "Show all service types" checkbox below the table to have a complete list of all services available displayed in the drop-down menu.
- `Frequency:` Enter the preferred frequency for the service in the input field.
- `Level:` Enter the preferred output level for the service in the input field.
- `Reference:` Click on the "Set" button to select the value entered within the modulation parameters as the reference. A 2.5 dB deviation from the output signal will result in a warning message being issued.

Submit Reset Form

Click on the "Submit" button below the last table to save the changes.
Click on "Reset form" to restore the original settings.

The table "RF Detector" is found below the table "RF Channels".

RF Detector

	Mode	Level
warnings	on off	±4.0 dB
Lock RF relevant settings	on off	

Submit Reset Form

Figure 30: "RF Detector" table

You can activate or deactivate the warning message for the level deviation by clicking on the corresponding radio button.
You can also block access to HF-relevant settings here.

Submit Reset Form

Click on the "Submit" button below the last table to save the changes.
Click on "Reset form" to restore the original settings.

"RF 1 X" and "RF 2 X" menu

To enter detailed settings for the individual output channels, start by clicking on the item "RF 1" or "RF 2" in the main menu at the left, and then clicking on one of the submenu items "RF 1.1 to RF 1.20" or "RF 2.1 to RF 2.20". The following table now appears in the upper part of the content area:

Service Settings

BAYERN 3, ARD BR (digital radio sound)	Primary active	Secondary	Tertiary
Transport Stream	**SID**	**SID**	**SID**
IP_RX1 TSID:1093 ONID:1 Alias:Bayern 1, ARD BR	28402	28402	28402
ES	**PIDs**	**PIDs**	**PIDs**
Audio	0	0	0
RDS	0	0	0

Note: Use SID = 0 for manual PID selection.

Submit Reset Form

Figure 31: "Service settings" table

You can select the program to be converted to FM here. This program can be converted from any of the 16 IP receivers. The following settings can be entered individually.

- `Transport Stream:` Select the preferred transport stream from the drop-down menu.
- `Primary active:` Enter the primary active SID and PIDs (audio, RDS) for the transport stream selected in the input fields here.
- `Secondary:` Enter the secondary SID and PIDs (audio, RDS) for the transport stream selected in the input fields here.
- `Tertiary:` Enter the tertiary SID and PIDs (audio, RDS) for the transport stream selected in the input fields here.

Enter the value 0 in the "SID" input field if the PID should be selected manually.

Submit Reset Form

Click on the "Submit" button below the last table to save the changes.
Click on "Reset form" to restore the original settings.

Another table follows in which you can complete all the settings relating to the FM output signal.

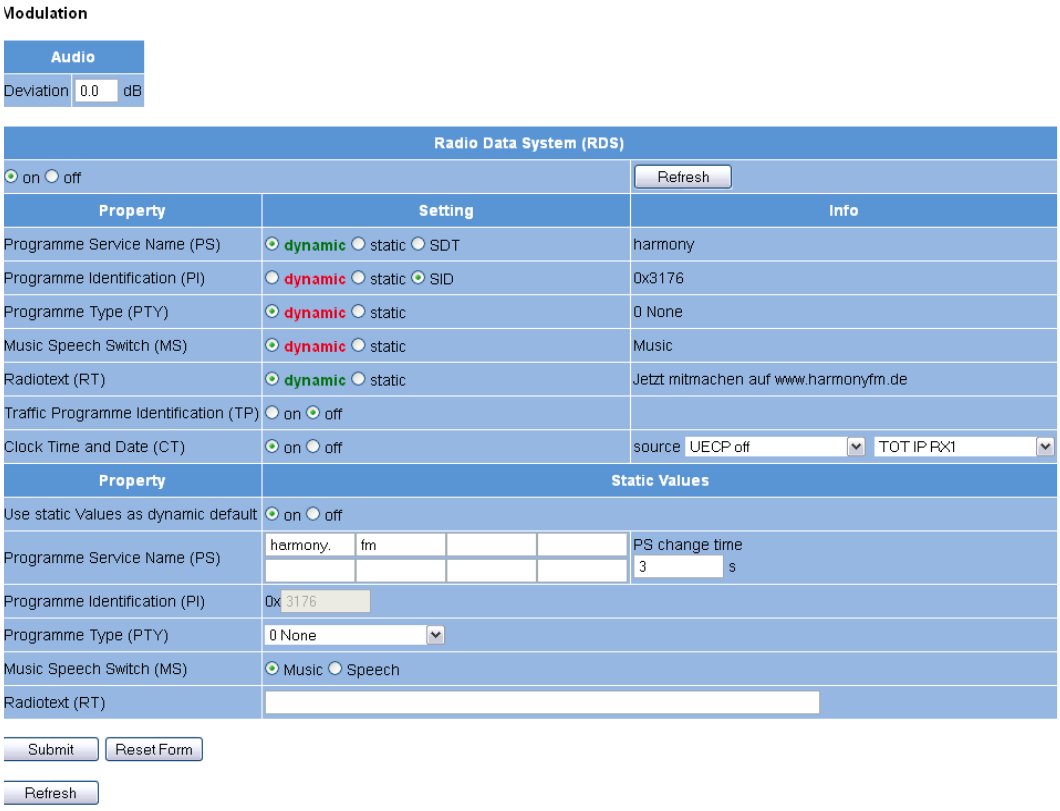


Figure 32: "Modulation" table

The following settings can be entered individually.

- `Audio Deviation:` Enter the preferred FM span (audio level) in the input field.
- `RDS ON /OFF:` Activate the corresponding radio button to switch the RDS function on or off.
- `Refresh:` Click on the button to refresh the information in the table.
- `Programme Service Name (PS):` Activate the corresponding radio button to select one of the settings "dynamic", "static" or "SDT" for the program name display.
- `Programme Identification (PI):` Activate the corresponding radio button to select one of the settings "dynamic", "static" or "SID" for the program identification.
- `Programme Type (PTY):` Activate the corresponding radio button to select one of the settings "dynamic" or "static" for the program type display.
- `Music Speech Switch (MS):` Activate the corresponding radio button to select one of the settings "dynamic" or "static" for the music/speech switch.
- `Radio text:` Activate the corresponding radio button to select one of the settings "dynamic" or "static" for the radio text display.
- `Traffic Programme Identification (TP):` Activate the corresponding radio button to switch the function on or off.
- `Clock, Time and Date (CT):` Activate the corresponding radio button to switch the function on or off. Select the source (transport stream) for the time signal from the two drop-down menus.

- `Use static Values as dynamic default:` Activate the corresponding radio button when the values selected for the static display should be used until information for the dynamic display is received.
- `Programme Service Name (PS):` Enter up to 8 programme names of your choice in the input fields for the static display. You can enter a period in seconds after which the display changes in the “PS change time” input field.
- `Programme Identification(PI):` Enter the preferred static programme identification in the input field.
- `Programme Type(PTY):` Select the preferred static designation for the programme type from the drop-down menu.
- `Music Speech Switch(MS):` Activate the corresponding radio button to select either music or speech.
- `Radio text(RT):` Enter the preferred information text in the input field.

Click on the “Submit” button below the last table to save the changes.
Click on “Reset form” to restore the original settings.
If you click on the “Refresh” button, all information in the table is updated.

"SSL Settings" menu

HINWEIS: A licence is required to use the SSL functions.

To enter SSL settings, click on the item "SSL Settings" in the main menu at the left.

There is a checkbox in the upper table "SSL Settings" which displays the rerouting of HTTP requests to the secure protocol HTTPS. After input of the licence, the checkbox is activated.

Setting	Value
Redirect HTTP requests to HTTPS	☐

Figure 33: SSL Settings table

In the following table, "Generate a CSR for this device", individual items of information about the device can be entered ("Certificate Signing Request": address, organisation, etc.).

Generate a CSR for this device

CSR Attribute	Value
Private key in use	generated by device
Country (C)	DE
State (ST)	
Locality (L)	
Organization (O)	
Organizational Unit (OU)	
Common Name (CN)	192.168.1.153
Generate CSR with above data	Download CSR

Figure 34: Generate a CSR for this device table

By clicking the "Download CSR" button, you can create a "Certificate Signing Request" with which your CA can issue a certificate for the device. The input field "Private key use" shows you whether the device's own key, or the key which was entered and saved, is being used.

There is a third table, "Key and certificate settings", below this.

Key and certificate settings

Upload device key in PEM format	Durchsuchen... Keine Datei ausgewählt.	Upload key
Clear supplied key	Clear key	
Upload device certificate in PEM format	Durchsuchen... Keine Datei ausgewählt.	Upload certificate
Clear supplied certificate	Clear certificate	
Regenerate device key and certificate	Regenerate	

Submit Reset Form

Figure 35: Key and certificate settings table

Submit Reset Form

This table allows you to:

- ☐ Upload a device key (click on the "Search" button and select the preferred file; then click on the "Upload key" button)
- ☐ Delete an existing device key (click the "Clear key" button)
- ☐ Upload a device certificate (click on the "Search" button and select the preferred file; then click on the "Upload certificate" button)
- ☐ Delete an existing device certificate (click the "Clear certificate" button)
- ☐ Regenerate a device key and device certificate (click the "Regenerate" button)

If you change the activation or deactivation status of inputs or outputs in one of the two tables, then click on the "Submit" button below the last table to save your changes. Click on "Reset form" to restore the original settings.

The device administers two keys/pairs of certificates: "generated" and "user". The following figure shows which certificate and which key are used.

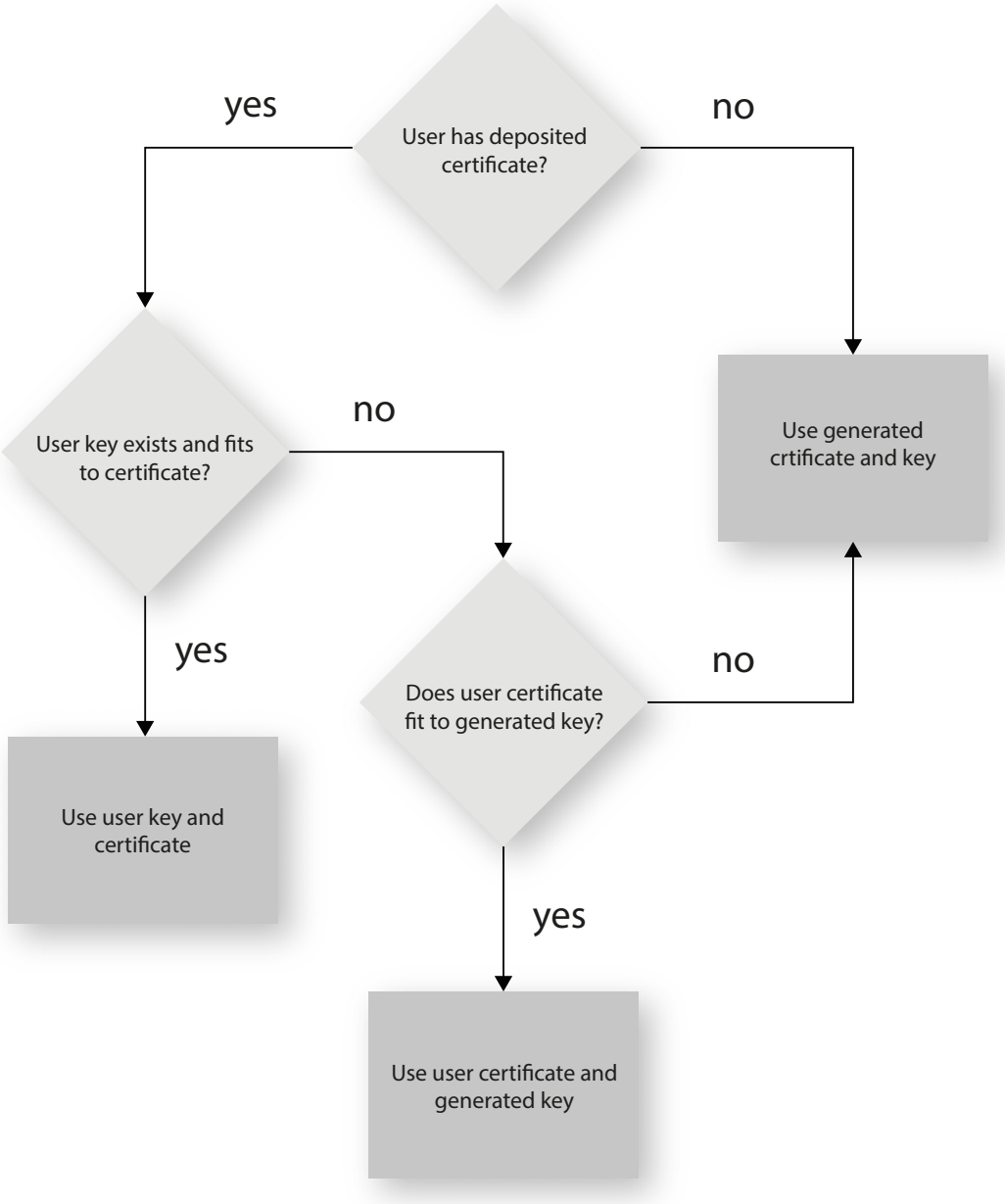


Figure 36: Using the certificates/keys

"User Settings" menu

Click on the menu item "User Administration" in the main menu at the left to have the corresponding input mask displayed. The input mask shown in figure 37 now appears.

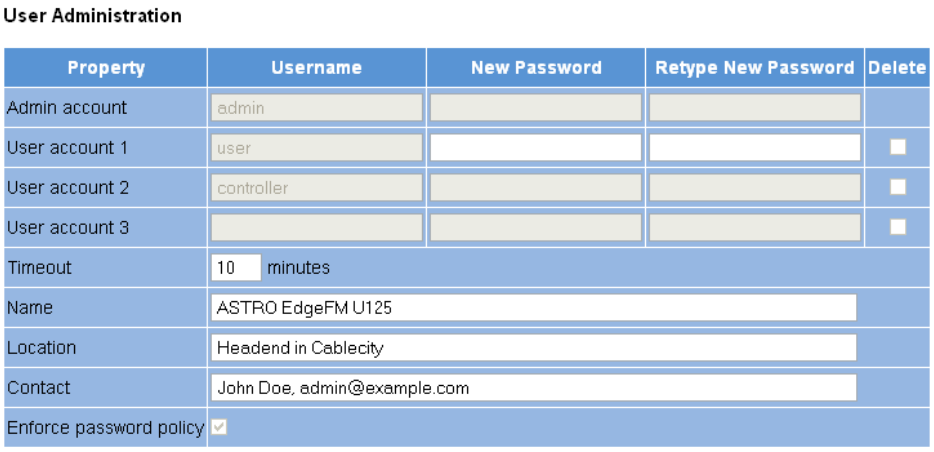


Figure 37: User administration

You can create up to four users for the user interface of the U 125. The following three users have been created as the default setting:

- user
- admin
- controller

The password for all three users is "astro".

To change the access data for a user account, or to create a new one, enter the preferred user name in the input field `User name`. Then enter the preferred password in the input field `New Password`, and confirm it by typing it in the input field `Retype New password` again.

HINWEIS: *A password must contain at least 5 characters. If you activated the checkbox "Enforce password policy" in the table, a password must have a minimum length of 8 characters and include certain types of characters.*

To delete a user account, activate the corresponding checkbox `Delete` for the respective account in the right column of the table.

The following settings can also be entered:

- `Timeout:` You can enter a time for the automatic logout, in minutes, in this input field. If no more inputs are made in the user interface, then automatic logout will occur once the time entered here has elapsed.
  The time remaining until automatic logout is displayed under the main menu, in the left column of the user interface.
- `Name, Location, Contact:` You can save a name for the system, the location and the contact data for a person in these input fields. They are displayed in the status line.

WICHTIG: *All changes will only be applied after you have clicked on the "Submit" button below the input mask. Click on the "Reset Form" button to delete the input values again.*

Another table follows in which you can enter information for a RADIUS server. A licence is also required for the RADIUS server function.

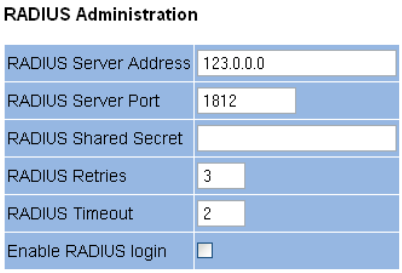


Figure 38: RADIUS administration

The following items of information can be entered individually:

- RADIUS Server Address
- RADIUS Server Port
- RADIUS Shared Secret
- RADIUS Server Retries
- RADIUS Server Timeout
- Enable RADIUS Log-in

HINWEIS: *Users who have been configured on the device will be deactivated when a RADIUS server has been configured.*
The RADIUS server must be configured accordingly. Users with the service type "Administrative" are the device administrators.
When you click the checkbox "Enable Radius Log-in", the RADIUS function is activated if the RADIUS server is able to be reached. If this is not the case, the RADIUS function remains inactive, and the message "RADIUS logins have not been enabled because the connection check failed" appears.

You can create a white list for all incoming IP data in a further table. In this case, only IP data will be processed which come from a source entered in the white list.

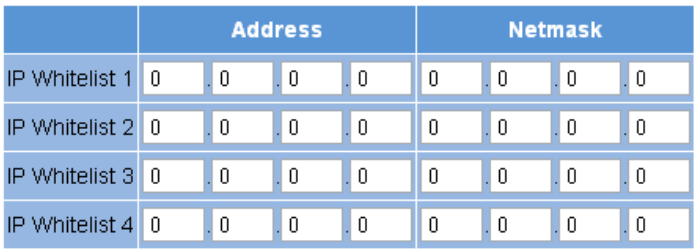


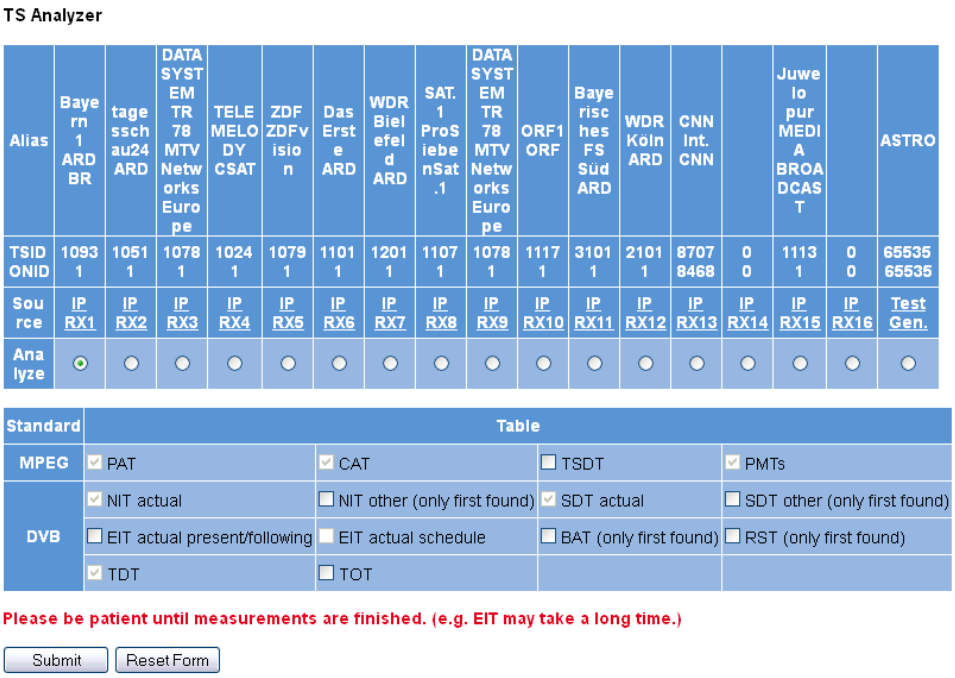
Figure 39: White list administration

The following parameters can be specified for four IP sources respectively:

- IP address
- Netmask

"TS Analyzer" menu

The U 125 descrambler can be equipped with a Transport Stream Analyzer by purchasing a licence. This Analyzer displays the structure of the MPEG2 TS, from the tables to the individual PID and its service. Click on the "TS Analyzer" submenu to access and select the transport stream for analysis. The following input mask now appears:



TS Analyzer

Alias	Bayern 1 ARD BR	tagesschau24 ARD	DATA SYSTEM TR 78 MTV Networks Europe	TELE MELODY CSAT	ZDF ZDFvision	Das Erste ARD	WDR Bielefeld ARD	SAT.1 ProSiebenSat.1	DATA SYSTEM TR 78 MTV Networks Europe	ORF1 ORF	Bayerisches FS Süd ARD	WDR Köln ARD	CNN Int. CNN		Juwelo pur MEDIA BROADCAST		ASTRO
TSID ONID	10931	10511	10781	10241	10791	11011	12011	11071	10781	11171	31011	21011	87078468	00	11131	00	6553565535
Source	IP RX1	IP RX2	IP RX3	IP RX4	IP RX5	IP RX6	IP RX7	IP RX8	IP RX9	IP RX10	IP RX11	IP RX12	IP RX13	IP RX14	IP RX15	IP RX16	Test Gen.
Analyze	◉	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Standard	Table			
MPEG	☑ PAT	☑ CAT	☐ TSDT	☑ PMTs
DVB	☑ NIT actual	☐ NIT other (only first found)	☑ SDT actual	☐ SDT other (only first found)
	☐ EIT actual present/following	☐ EIT actual schedule	☐ BAT (only first found)	☐ RST (only first found)
	☑ TDT	☐ TOT		

Please be patient until measurements are finished. (e.g. EIT may take a long time.)

Submit Reset Form

Figure 40: Transport stream analyzer

To analyse a transport stream, click on the corresponding radio button in the "Analyze" line and then click on the "Submit" button. If you wish to reset your inputs, click on the "Reset" button.

HINWEIS: The two buttons "Submit" and "Reset" are only visible when this module has been licensed. If this is not the case, the link "No licence" will appear instead. Click on this, or the item "Licence" in the menu at the left, to access the "Licensing" input mask (more detailed explanation of this is found in the section "Licensing").

"Licensing" menu

A number of functions of the U 125 (e.g. the TS Analyzer) can only be used after being enabled by means of a licence key.

The licence key with the respective function can be purchased from ASTRO. You will receive a licence key with which you can activate the functions using the web browser interface.
The format of a licence key is a text document (e.g. Lic001772000222.txt).
To activate the functions, start by clicking on the "Licensing" item in the menu at the left. The following input mask now appears:

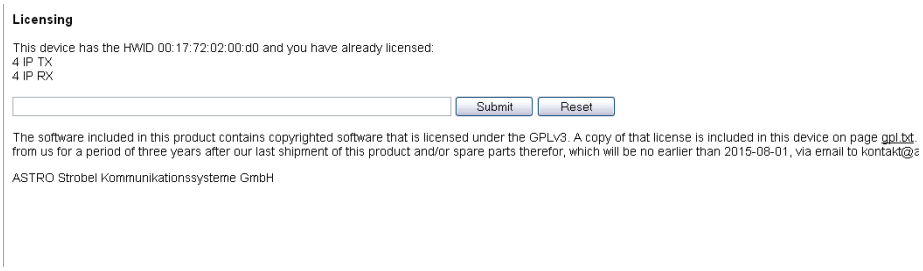


Figure 41: Enabling licences using the licence key

Now enter the licence key sent to you in the input field. The key or keys can be entered in the input mask using "Copy & Paste". Then click on the "Submit" button to transmit the text to the device. If the licence is valid, this is confirmed with the message "License is valid". An error message is displayed for an invalid licence.

To order additional licences, the MAC address of the device must be specified.
You will find the MAC address on the web browser interface in the "Licensing" submenu (HWID). After the MAC address has been submitted, the licence keys are generated by ASTRO are sent by e-mail or on a CD.

"Update/config." menu

The menu item "Update/config." allows you to update the firmware version of your device and upload and download a variety of configuration data.

Firmware update from a local memory location

You will require an update archive for updating the device firmware. This can be downloaded from the ASTRO firmware server (address: "http://astro-firmware.de/Headend-Firmware/u1xx"). The file name of the archive required ends in ".up". The name is comprised of the type designation of the device (U 125) and a four-digit version number.
Once the update archive has been downloaded, start by selecting the item "Update/Config." in the user interface menu. The "Software update" table then appears in the content area at the top.

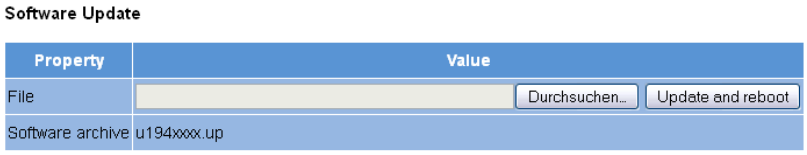


Figure 42: Firmware update

Now click on the "Search" button and select the path to the memory location of the update archive downloaded beforehand.
Then click on the "Update and Reboot" button to start the update process. Please wait for the process to be completed, and for the device to reboot.

Uploading and downloading configuration files

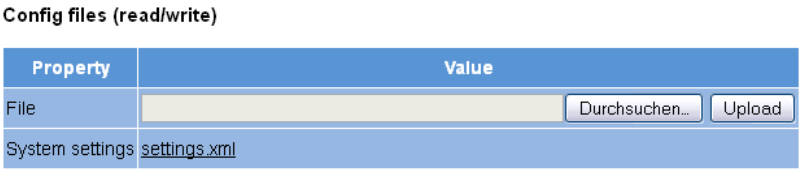


Figure 43: Loading/saving configuration files

Configuration files can be uploaded and downloaded.
To upload files, use the "Search" button to select the preferred file.
Then click on the "Upload" button to start the uploading process.
The following files are available for download:

- `System settings` (XML format)

Simply click on the corresponding file link to download the file.

Downloading configuration/status files

Config/status files (read only)

Property	Value
Module info	module.xml
IP configuration	ip.xml
System status	status.xml
System measurements	measure.xml

Figure 44: Loading status files

The following files are available for download:

- `Module info` (XML format)
- `IP configuration` (XML format)
- `System status` (XML format)
- `System measurements` (XML format)

Simply click on the corresponding file link to download the file.

Loading/saving firmware and configurations using (T)FTP

You can update firmware using a (T)FTP server using the table "Firmware update and configuration via server" and load or save configuration files.

Firmware update and configuration via server

Property	Value
(T)FTP Server address	astro-firmware.de
Protocol	◉ FTP ○ TFTP
FTP Username (e.g. anonymous)	anonymous
FTP Password (e.g. guest)	●●●●●
Path	/Headend-Firmware/u1xx/
Version	
Mode	Please select

Figure 45: Loading/saving firmware updates and configurations using (T)FTP

To carry out the preferred action, start by selecting an action from the drop-down menu in the "Mode" line. The action can only be carried out when the server path specified does actually exist. Furthermore, any firewalls that have been installed must be configured in a way that allows (T)FTP communication.

The following actions can be selected individually:

- "**Load config from server**" action: A configuration stored on the (T)FTP server is transmitted to the U 125 and can be activated immediately. The IP settings for the data and management interfaces on the device are not changed. The file "settings.xml" are written onto the U 125.
- "**Save config to server**" action: The current configuration of the U 125 is written to the (T)FTP server. The configuration includes the following files:
  - "ip.xml" (IP settings for the data and management interfaces)
  - "settings.xml" (all other settings, e.g. IP receiver and modulator settings)
  - "user.xml" (user data)
- "**Update firmware from server**" action: If you select this action, you must specify the preferred software version under `Version` (a 4-character maximum applies). One the update is successful, the message "Firmware update OK. Please reboot to use the new firmware version" appears.
- "**Load firmware from server**" action: If you select this action, you must specify the preferred software version under `Version` (a 4-character maximum applies). The software selected is written to the SD memory card, but will not be unpacked.
- "**Unpack *.up archive**" action: If you select this action, the update archive is unpacked and saved to the SD memory card (specify the version number).
- "**Update firmware from SD card**" action: If you select this action, the update archive is unpacked, saved to an SD memory card and programmed into the module (enter the version number).
- "**Overwrite backup firmware**" action: The device software is saved in two partitions. The software saved in the first partition is used for operating the module, while the second partition is used to keep a backup copy ready for the event that the update process fails. As long as both partitions are different, the information "Backup differs" will be displayed in the menu "Active Alarm Table". The current software is copied to the backup partition when this action is carried out.

Once you have selected an action, you can add any information still missing from the remaining lines of the table:

- `(T)FTP Server address:` Address of the server
- `Protocol:` Activate the radio button "FTP" if you wish to use the more comprehensive FTP protocol. Activate the radio button "TFTP" if you wish to use the more basic TFTP protocol.
- `FTP User name:` This depends on the settings for the FTP server used (for astro-firmware.de e.g. "anonymous").
- `FTP Password:` This depends on the settings for the FTP server used (for astro-firmware.de e.g. "astro").
- `Path:` Path to the location where data are saved, or from where the data can be loaded. The path must be specified in relation to the root directory of the FTP server, and must always begin with a "/" and end with a "/" as well (enter without quotation marks).
- `Version:` Enter the version number of the software which you wish to download or save here.

HINWEIS: If the update is carried out using the TFTP protocol, then filling in the input fields "FTP User name" and "FTP Password" is not necessary.

"System Log" menu

To have the system log displayed, click on "System log" in the menu at the left. You will now see the following overview:

Figure 46: Logbook

You can check or configure the following parameters individually:

System log settings

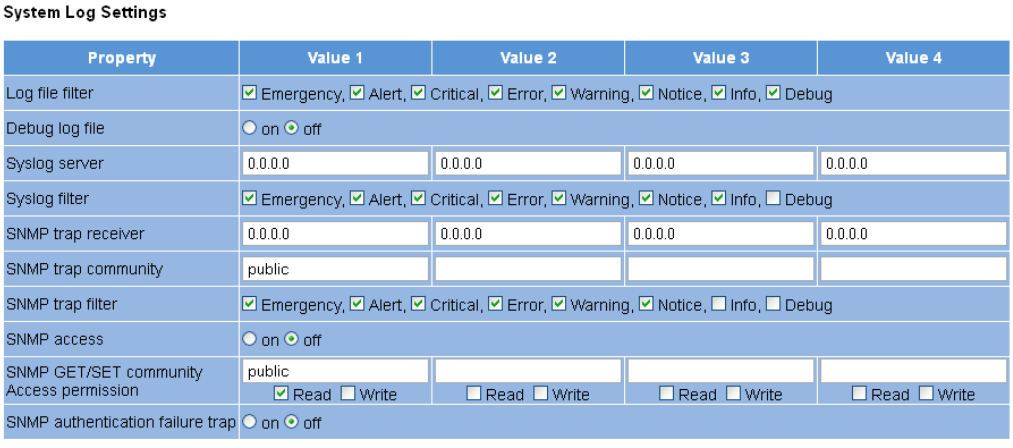


Figure 47: Filter settings for the system log display

You can activate or deactivate filters for displaying the log entries here. To have messages from the corresponding category displayed, activate the checkbox allocated to the category.

HINWEIS: You can connect to higher-level management systems using the "Syslog" and "SNMP" parameters.

Management Information Base (MIB)

The SNMP MIBs available are stored on the device and can be downloaded by using the download link below the table "System Log Settings".

Logbook

System Log

Refresh Check box to clear log on refresh ☐

System log in CSV format: log.csv
Debug log in CSV format: debug.csv
Use right click and "save as" to save locally.

number	time	uptime	user	source	severity	message
1	01 Jan 1970 00:14:05 UTC	0d 00h 14m 05s	user	192.168.1.26	info	Login
2	01 Jan 1970 00:14:00 UTC	0d 00h 14m 00s	admin	192.168.1.26	info	Logout
3	01 Jan 1970 00:12:41 UTC	0d 00h 12m 41s	admin	192.168.1.26	info	Login
4	01 Jan 1970 00:10:19 UTC	0d 00h 10m 19s	system	local	info	Login timeout
5	01 Jan 1970 00:01:41 UTC	0d 00h 01m 41s	admin	192.168.1.26	info	Login
6	01 Jan 1970 00:01:31 UTC	0d 00h 01m 31s	system	local	warning	Time is not synced
7	01 Jan 1970 00:00:32 UTC	0d 00h 00m 32s	system	local	critical	Fan fail (0)
8	01 Jan 1970 00:00:26 UTC	0d 00h 00m 26s	boot	local	info	Ready
9	01 Jan 1970 00:00:26 UTC	0d 00h 00m 26s	system	local	warning	Backup firmware differs!

Figure 48: Logfiles

Click on the "Refresh" button to update the system log display. The entries in the system log are sorted chronologically according to the time at which the event occurred.
If you do not wish for the existing entries to be displayed after a refresh, activate the checkbox "Checkbox to clear log on refresh". Once the checkbox has been activated, after a refresh, the process of deleting the old log entries is listed as the first entry (specified the user account and the current time upon deletion).

You can also download the following logfiles:

- `System log` (CSV format)
- `Debug log` (CSV format)

"Active alarms" menu

To have the "Active Alarm" table displayed, click on the corresponding item in the menu at the left. The following table now appears:

Active Alarm Table

Device	Ident	Code	Type	Message	Severity	Count	Status	Username	User IP	TSID	SID	Alias
	0x0b00001c	0x0b00001c	1	Backup firmware differs!	4	1	4	system	local	-1	-1	
	0x01000006	0x01000006	1	Fan fail (0)	2	2	2	system	local	-1	-1	
	0x0b00004b	0x0b00004b	1	Time is not synced	4	3	2	system	local	-1	-1	

Figure 49: Active alarm table

The table provides information about error messages currently active. The "Message" column shows the error message in plain text.

HINWEIS: *You can also access the "Active Alarm Table" by clicking the red point in the status line in the upper section of the user interface.*

"Statistics" menu

To retrieve data transmission statistics for the U 125, click on the "Statistics" item in the menu at the left. Here all the statistics relevant to the operation of the device and its analysis are displayed. The following tables are displayed individually:

Ethernet bandwidth

Ethernet bandwidth

Property	Management A (eth0) 1G full	Management B (eth1) 1G full	Data A (eth2) 1G full	Data B (eth3) 1G full
Transmit	0.8 Mbit/s	0.0 Mbit/s	76.6 Mbit/s	76.6 Mbit/s
Receive	0.0 Mbit/s	0.0 Mbit/s	71.0 Mbit/s	70.9 Mbit/s

Figure 50: Ethernet bandwidth

The transmission rates for sending (transmit) and reception (receive) are specified for the respective interfaces Management A, Management B, Data A and Data B.

Ethernet frames

Property	Data A (eth2) 1G	Data B (eth3) 1G
Total frames sent by host	19	19
Total frames sent to host	284	272
Total exception frames sent to host	87	0
Total errored frames received	0	0
Total frames discarded by deencapsulator	108776	130563
Total frames discarded because of lack of buffers	0	0
Total transmit frames generated from IP TX 1 / per sec.	2792023 / 3214	2792023 / 3214
Total transmit frames generated from IP TX 2 / per sec.	3071235 / 3535	3071235 / 3535
Total transmit frames generated from IP TX 3 / per sec.	91130 / 103	91130 / 103
Total transmit frames generated from IP TX 4 / per sec.	91130 / 103	91130 / 103
Total receive frames forwarded to IP RX 1 / per sec.	2814153 / 3214 2814152 / 3214 0 / 0	2814150 / 3214 2814149 / 3214 0 / 0

Figure 51: Ethernet frames

The following parameters are displayed for the interfaces Data A and Data B, in this order:

- The number of IP frames transmitted to the processor is specified in the first three lines of the table.
- Number of defective frames.
- Number of frames which could not be allocated.
- Number of frames which could not be allocated due to exceeding the total buffer depth.
- The number of frames transmitted per transport stream in total or per second is displayed in lines 7 to 10 for each IP transmitter.
- The number of frames forwarded to the IP receiver (primary, secondary and tertiary respectively) are displayed in the last line.

Ethernet RX

Channel	Encap	TS Rate	Buffer depth	FEC	Valid	Missing	Fixed	Duplicate	Reordered	Out of range
IP RX1	1328 bytes 7 packets RTP/UDP/IP	33.8 Mbit/s Mult. PCR	0 Frames 0.0 % 0.0 ms	none	2744031	0	0	0	0	0

Refresh Check box to clear statistics on refresh ☐

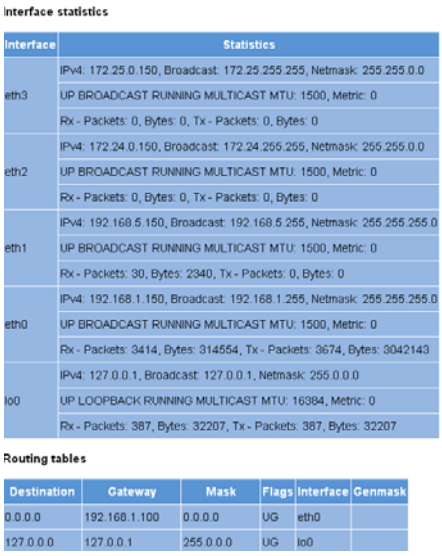
Figure 52: Ethernet RX

The following parameters are displayed for the individual IP receivers:

- `Encap:` The number of bytes in the IP payload for each frame is specified in the upper line; below this, the number of TS packets per frame is displayed. The lower line specifies whether the transmission occurs by UDP / IP or TRP / UDP / IP. The transmission protocol is selected under the menu item "IP RX" in the table line "Encapsulation".
- `TS Rate:` The net data rate is specified in the upper line; the lower line displays whether the transport stream includes one, or a multiple, PCR. This setting can be made under the menu item "IP RX" in the table "Channel settings", line "Bit rate".
- `Buffer depth:` The absolute buffer depth is displayed in the upper line (number of frames); below this, the relative buffer depth (in %) is displayed. The buffer depth is displayed in relation to the transport stream rate in the third line.
- `FEC:` If an RTP data stream is being used, the FEC configuration detected is displayed here. Prerequisite for this is that FEC has been activated in the "IP RX" menu (radio button "ON").
- `Valid:` Total number of valid IP frames.
- `Missing:` Total number of IP frames not received (this is only measured when RTP is used).
- `Fixed:` When Forward Error Correction (FEC) is activated, missing or defective frames can be restored. The number of frames which were restored is displayed.
- `Duplicate:` The number of IP frames received several times (this is only displayed when RTP is used).
- `Reordered:` The number of IP frames arriving in the wrong order, but which were able to be switched back due to a sufficient buffer depth (is only displayed when RTP is used).
- `Out of range:` The number of IP frames arriving in the wrong order and which could not be switched back due to an insufficient buffer depth.

"Network" menu

To have the network settings displayed, click on "Network" in the menu at the left. You will now see the following overview:



Interface statistics

Interface	Statistics
eth3	IPv4: 172.25.0.150, Broadcast: 172.25.255.255, Netmask: 255.255.0.0
	UP BROADCAST RUNNING MULTICAST MTU: 1500, Metric: 0
	Rx - Packets: 0, Bytes: 0, Tx - Packets: 0, Bytes: 0
eth2	IPv4: 172.24.0.150, Broadcast: 172.24.255.255, Netmask: 255.255.0.0
	UP BROADCAST RUNNING MULTICAST MTU: 1500, Metric: 0
	Rx - Packets: 0, Bytes: 0, Tx - Packets: 0, Bytes: 0
eth1	IPv4: 192.168.5.150, Broadcast: 192.168.5.255, Netmask: 255.255.255.0
	UP BROADCAST RUNNING MULTICAST MTU: 1500, Metric: 0
	Rx - Packets: 30, Bytes: 2340, Tx - Packets: 0, Bytes: 0
eth0	IPv4: 192.168.1.150, Broadcast: 192.168.1.255, Netmask: 255.255.255.0
	UP BROADCAST RUNNING MULTICAST MTU: 1500, Metric: 0
	Rx - Packets: 3414, Bytes: 314554, Tx - Packets: 3674, Bytes: 3042143
lo0	IPv4: 127.0.0.1, Broadcast: 127.0.0.1, Netmask: 255.0.0.0
	UP LOOPBACK RUNNING MULTICAST MTU: 16384, Metric: 0
	Rx - Packets: 387, Bytes: 32207, Tx - Packets: 387, Bytes: 32207

Routing tables

Destination	Gateway	Mask	Flags	Interface	Genmask
0.0.0.0	192.168.1.100	0.0.0.0	UG	eth0	
127.0.0.0	127.0.0.1	255.0.0.0	UG	lo0	

Figure 53: Network settings

The detailed interface statistic properties which are displayed are for information purposes only, and are used to describe the network. They could be useful for customer service in the event of a fault.

"Devices" menu

To have an overview of the local data memory in the device displayed, click on the item "Devices" in the menu at the left. Among other things, the total memory capacity, the capacity of the unused memory, and the files saved are displayed:

Block device: /

```
total size:   63024 blocks,   516292608 bytes
free size:    57138 blocks,   468074496 bytes
block size:    8192 bytes

  CHLISTBE.XML [mode 00000008 ino 00000002 nlink 1 size 13955]
  CHLISTDE.XML [mode 00000008 ino 00000004 nlink 1 size 13969]
  CHLISTFR.XML [mode 00000008 ino 00000006 nlink 1 size 13967]
  CHLISTRU.XML [mode 00000008 ino 00000008 nlink 1 size 13920]
  CHLISTUK.XML [mode 00000008 ino 0000000a nlink 1 size 13963]
      FM_E.BIN [mode 00000008 ino 00000054 nlink 1 size 359948]
      FM_S.BIN [mode 00000008 ino 0000007d nlink 1 size 955870]
     MPEG4.BIN [mode 00000008 ino 000002a3 nlink 1 size 1561616]
   U1144172.UP [mode 00000008 ino 000003b4 nlink 1 size 4751364]
   U1154172.UP [mode 00000008 ino 000005fa nlink 1 size 4679684]
   U1244172.UP [mode 00000008 ino 00000837 nlink 1 size 3768324]
     MAN_E.BIN [mode 00000008 ino 00000c91 nlink 1 size 1802492]
        IP.XML [mode 00000008 ino 00000a05 nlink 1 size 758]
      USER.XML [mode 00000008 ino 00000a06 nlink 1 size 427]
  SETTINGS.XML [mode 00000008 ino 0000000c nlink 1 size 26117]
   MEASURE.XML [mode 00000008 ino 00000a0a nlink 1 size 2261]
    CHLIST.XML [mode 00000008 ino 00000a0b nlink 1 size 13969]
     MAN_S.BIN [mode 00000008 ino 00000d4f nlink 1 size 611296]
     DAT_S.BIN [mode 00000008 ino 00000d92 nlink 1 size 655912]
     PAL_S.BIN [mode 00000008 ino 00000de1 nlink 1 size 578295]
      MPEG.BIN [mode 00000008 ino 00000e28 nlink 1 size 1595996]
     ASTRO.MIB [mode 00000008 ino 00000eeb nlink 1 size 806]
      U114.MIB [mode 00000008 ino 00000eec nlink 1 size 25676]
    UPDATE.LOG [mode 00000008 ino 00000c72 nlink 1 size 1736]
  ANALYZER.LOG [mode 00000008 ino 00000ef0 nlink 1 size 121538]
  U114MANE.PDF [mode 00000008 ino 0000165a nlink 1 size 2561759]
  U114MANG.PDF [mode 00000008 ino 00001794 nlink 1 size 4153326]
    STILL4.JPG [mode 00000008 ino 00000a09 nlink 1 size 37970]
  020105_0.CSV [mode 00000008 ino 000014bb nlink 1 size 37762]
      U124.MIB [mode 00000008 ino 000018fa nlink 1 size 25337]
    ERROR1.JPG [mode 00000008 ino 00002bdd nlink 1 size 126919]
    ERROR2.JPG [mode 00000008 ino 00004324 nlink 1 size 72307]
    ERROR3.JPG [mode 00000008 ino 0000432d nlink 1 size 119980]
    ERROR4.JPG [mode 00000008 ino 0000433c nlink 1 size 183334]
  CHLISTUS.XML [mode 00000008 ino 00000c7a nlink 1 size 14551]
  U115MANE.PDF [mode 00000008 ino 0000481b nlink 1 size 5305763]
  U115MANG.PDF [mode 00000008 ino 00004aa3 nlink 1 size 5276753]
  U124MANE.PDF [mode 00000008 ino 00004d28 nlink 1 size 4498595]
  U124MANG.PDF [mode 00000008 ino 00004f4e nlink 1 size 4050414]
```

Figure 54: List of the local data memories (part 1)

Block device: /conf

```
total size: 983040 blocks,     983040 bytes
free size:  859300 blocks,     859300 bytes
block size:      1 bytes

            . [mode 016f0001 ino 00000001 nlink 1 size 0]
           .. [mode 016f0001 ino 00000001 nlink 1 size 0]
       ip.xml [mode 016f0008 ino 00000002 nlink 1 size 758]
     user.xml [mode 016f0008 ino 00000003 nlink 1 size 427]
  measure.xml [mode 016f0008 ino 00000005 nlink 1 size 2261]
    chlist.xml [mode 016f0008 ino 00000006 nlink 1 size 13969]
 settings.xml [mode 016f0008 ino 0000002a nlink 1 size 26117]
```

Block device: /ramdisk

```
total size:    128 blocks,      65536 bytes
free size:     126 blocks,      64512 bytes
block size:    512 bytes

            . [mode 01ff0001 ino 08564ba4 nlink 2 size 64]
           .. [mode 01ff0001 ino 08564ba4 nlink 2 size 64]
```

Figure 55: List of the local data memories (part 2)

Troubleshooting

If the device is not functioning correctly, please perform the following checks:

- ☐ Check whether the device is connected to the required grid voltage (230 V~, 50 Hz for the U 100 base unit, and 48 V for the U 100-48 base unit).
- ☐ Check whether the signal cable is connected correctly, and that there are no breaks or short circuits in the connectors.

If the problem cannot be resolved, please contact the ASTRO customer service.

Maintenance and repair

The device must not be opened other than for repair purposes. Repairs may only be carried out at the factory or at workshops, or by persons, authorised by ASTRO Strobel GmbH.
Read carefully: EN 60728-11 Safety requirements: No service work during thunderstorms.

*HINWEIS: In the event of repairs, **DIN VDE regulations 0701 - 0702**, where applicable, must be adhered to, and these are secondary to the relevant data specifications in DIN EN 60950-1. **You must disconnect the power plug before opening the base unit!***

Service tasks

The following tasks, which involve the removal of screw connections, can be performed by appropriately instructed service personnel: Removal and installation of signal converters
(e.g. U 125) and power modules, even when the U 100 is operating.

Replacing power modules

After removing the screws from the cover of the power module chamber (ASTRO logo), the power modules can be pulled forwards by hand using the mounting tab. When installing power modules, do not touch the fan or fan grille and only use the mounting tab affixed to the power module.
When the tasks are complete, the cover of the power module chamber must be replaced. Continuous operation of the device is not permitted without this cover.

ACHTUNG: Never reach into the power module division of the U 100-230 base unit, or insert objects into it.

HINWEIS: The U 100-230 base unit must only be operated with the original power module(s)!

Replacing converter modules

Converter modules can be pulled out to the front after removing the safety screw in the front covers (see section “Connecting and installing the module”)

Technical data

Type		U 125
Order number		380 125
EAN-Code		4026187191337
Network interfaces (passive routing to U 1xx)		
Management		2 x 100 Base-T Ethernet (RJ 45)
Data		2 x 1000 Base-T Ethernet (RJ 45)
Protocol		IEEE802.3 Ethernet, RTP, ARP, IPv4, TCP/UDP, HTTP, SNTP, IGMP, SSL, RADIUS
Transport stream editing		
Decapsulation		UDP, UDP / RTP, 1-7 packets, FEC
Transport stream editing		transparent (188 oder 204 packets)
Decoding		
Audio		MPEG 1 Layer 2, Stereo
Input signal		16 x MPEG-2 TS
FM modulator		
Connectors		2 x F-jack
Output signal		2 x 20 FM stereo channels with RDS
Output frequency	[MHz]	87,5 - 108, digital modulated, 10 kHz steps
step width	[kHz]	10
RDS-Data static dynamic		TP / PI / RT / PS 8 x 8 signs RT / RT+ / PI / PTY / PS / MS / CT
Output level	[dBµV]	114
Intermodulation distance	[dBc]	60 @ 114 dbµV; 65 @ 112 dbµV
Return loss	[dB]	> 18
Signal to noise ratio	[dB]	> 65
Unweighted signal to noise ratio	[dB]	> 70
Stereo cross talk attenuation	[dB]	60
Harmonic factor	[%]	< 0,05
Frequency range	[dB]	< 1
Common data		
when mounted in base unit U 100-48:		
Stromaufnahme bei 48 V	mA	820
Power consumption at 48 V	W	39 per module
Input voltage	V	- 48
when mounted in base unit U 100-230:		
Input voltage	VAC	100 - 240 (50 / 60 Hz)
Input power consumption	W / VA	one power supply unit, three modules: 155,2 / 168; two power supply units, three modules: 175 / 192
Dimensions		1 HU, 19 inch
Ambient temperature	°C	0 ... +45

ASTRO Strobel Kommunikationssysteme GmbH

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