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U 194

IP/IP descrambler



Operating Manual

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Before starting operation of the device

HINWEIS: *Read this operating manual attentively! It contains important information about installation, ambient conditions and maintenance of the device. Keep this operating manual for future use and for handover in the event of a change of owner. A PDF version of this manual is available to download on the ASTRO website (there may be a more recent version).*

The ASTRO company confirms that the information in this manual was 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 and conventions used

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.



Warning about thermal dangers (risk of burns).



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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All other parts of the software used with this product are subject to the copyright owned by

Proper use

The devices of the U 1xx- and U 2xx series are only used for converting signals of different modulation to / from IP data streams in multimedia cable networks. The power supply unit U 100 SNT eco / U 100 SNT eco+ may only be used for the power supply of the U 1xx- and U 2xx units within the base unit U 100-230. Modification of the devices or use for any other purpose is not permitted, and will immediately void any guarantee provided by the manufacturer.

Target group of this manual

Installation and starting operation

The target group for installation and starting operation of the ASTRO headend technology are qualified experts who have training enabling them to perform the work required in accordance with EN 60728-11 and EN 60065. Unqualified person are not allowed to install and start operation of the device.

Device configuration

Target group for the configuration of the ASTRO headend are persons who have received instructions and have training enabling them to perform a configuration. Knowledge of EN 60728-11 and EN 60065 is not necessary for configuration.

Device description

The delivery consists of the following parts:

- ☐ U 194 IP/IP descrambler including a display module and backplane
- ☐ Operating manual

The U 194 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 194, installed in the U 100 base unit
(fitted with three plug-in modules)



Figure 1, middle:
U 194, front panel
[1] Screw for the front panel
[2] Display for management IP addresses,
data IP addresses, status messages, etc.
[3] Status display
[4] Control and data knob, menu switch



Figure 1, bottom:
U 194, front panel after removal
[5] Release button, CI-slot 1
[6] Release button, CI-slot 2
[7] Release button, CI-slot 3
[8] Release button, CI-slot 4

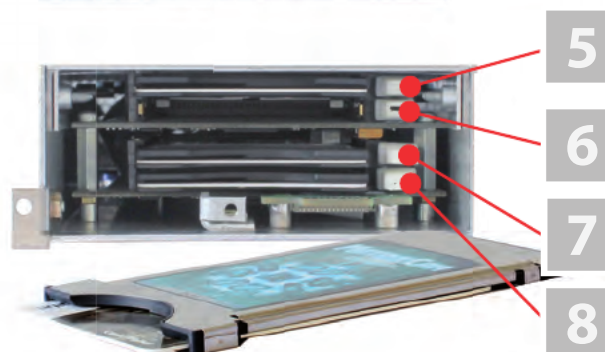


Figure 1: U 194

HINWEIS: Turning the data knob [4] (fig. 2, above) allows you to navigate through the individual menu items in the U 194 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

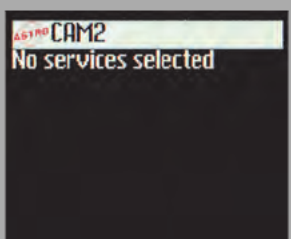
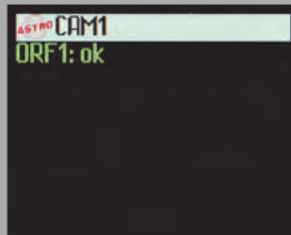
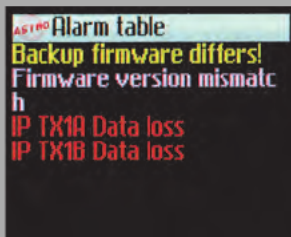
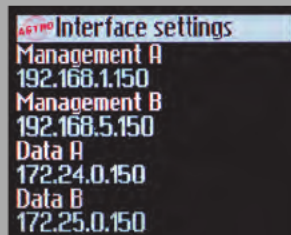
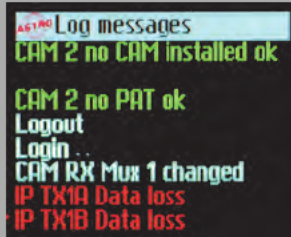
☐ Software versions: The version of the plug-in module software currently installed is displayed.

☐ Alarm table: The current error messages are displayed.

☐ CAM (example at left: CAM 1 and 2): The services selected for the CAM module 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")





Important safety information

To avoid any potential risks to the greatest extent possible, you must adhere to the following safety information:

ACHTUNG: *Failure to observe this safety information may result in personal injury due to electrical and thermal dangers!*

Proper use

- ☐ Only use the device at the approved operating sites and in the ambient conditions allowed (as described in the following), and only for the purpose described in the section "Proper use".

Before starting operation of the device

HINWEIS: *Read this operating manual attentively! It contains important information about installation, ambient conditions and maintenance of the device. Keep this operating manual for future use and for handover in the event of a change of owner or operator. A PDF version of this manual is available to download on the ASTRO website (there may be a more recent version).*

- ☐ Check the packaging and the device for transport damage immediately. Do not start operation of a device that has been damaged.
- ☐ Transporting the device by the power cable may damage the mains cable or the strain relief, and is therefore not permitted.

Installation and operation

- ☐ The device may only be installed and operated by qualified persons (in accordance with EN 60065) or by persons who have been instructed by qualified persons. Maintenance work may only be carried out by qualified service personnel.
- ☐ The module can only be installed in U 100-230 and U 100-48 base units. The safety information in the operating manuals of the base units must be obeyed in addition to the safety information described in this manual.
- ☐ The installation site must be planned in a way that prevents children from playing with the device and its connections.
- ☐ In order to prevent inadmissible operating statuses from occurring, only the components described in this manual, or components approved by the manufacturer for the base unit, may be used.
- ☐ The ambient temperatures specified in the technical data must be complied with, even when climatic conditions change (e.g. due to sunlight). If the device overheats, the insulation used to isolate the mains voltage may be damaged.
- ☐ The device and its cable may only be operated away from radiant heat and other sources of heat.
- ☐ To avoid trapped heat, ensure there is good ventilation on all sides (minimum interval of 20 cm to other objects). Installing the device in a niche or covering the ventilation openings is not permitted.
- ☐ The device does not feature protection against water and may therefore only be operated and connected in dry rooms. It must not be exposed to splash water or drip water, condensation or similar effects of water, as this may impair the isolation from the mains voltage.
- ☐ Do not install the unit in locations with excessive dust formation, as this may impair the isolation from the mains voltage.

Electromagnetic compatibility (EMC)

In order to avoid malfunctions from occurring when operating radio and telecommunications equipment, as well as other operating units or broadcasting services, the following points must be observed:

- ☐ Before installation, the device must be checked for mechanical damage. Damaged or bent covers or housings may not be used.
- ☐ During operation, the device must always be covered by the components provided for this purpose. Operation with an opened cover is not permitted.
- ☐ The braided line or the contact springs may not be damaged or removed.



Maintenance

- ☐ The operating display only shows whether the DC current, which supplies the device components, has been disconnected. However, operating displays (on the power supply unit or the device) that are not lit up in no way indicate that the device is completely disconnected from the mains. There may still be voltages in the device that are dangerous to touch. You may therefore not open the device.
- ☐ Read carefully: EN 60728-11 – Part 1, Safety requirements / No service tasks during electrical storms!

Repair

- ☐ Repairs may only be performed by the manufacturer. Improperly performed repairs may result in considerable dangers for the user.
- ☐ If malfunctions occur, the device must be disconnected from the mains and authorised experts must be consulted. The device may need to be sent to the manufacturer.

General information

- ☐ Store or use the device in a safe location, well out of reach of small children. It may contain small parts that can be swallowed or inhaled. Dispose of any small parts that are not needed.
- ☐ Plastic bags may have been used for packaging the device. Keep these plastic bags away from babies and children in order to avoid any danger of suffocation. Plastic bags are not toys.
- ☐ Do not store the device near chemicals or in places in which a leakage of chemicals may occur. Organic solvents or fluids in particular may cause the housing and/or cables to melt or disintegrate, presenting a danger of fire or electric shock. They may also cause device malfunctions.

Warranty conditions

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

Disposal

All our packaging materials (cardboard boxes, insert sheets, plastic films and bags) are fully recyclable. After use, this device must be disposed of as electronic waste in an orderly manner according to the current disposal regulations of your district / country / state.

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

Description of performance

The U 194 can receive up to four video data streams and channels encapsulated in accordance with Internet Protocol (IP). The encrypted services these contain can be decrypted when the device has been fitted with four CI modules and been individually configured. The two Ethernet data ports in the U 194 can then be used to output four IP video data streams.

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

The U 194 plug-in module features the following performance characteristics:

- ☐ Multi-service descrambling
- ☐ 4 transport streams
- ☐ Decryption level: service-based, PID-based
- ☐ 4 CI slots; self-contained and cascading
- ☐ Easy configuration using web browser interface

Connecting and installing the module

HINWEIS: How to prepare the base unit for installing the module is described in the operation manual of the U 100 base unit!

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.

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

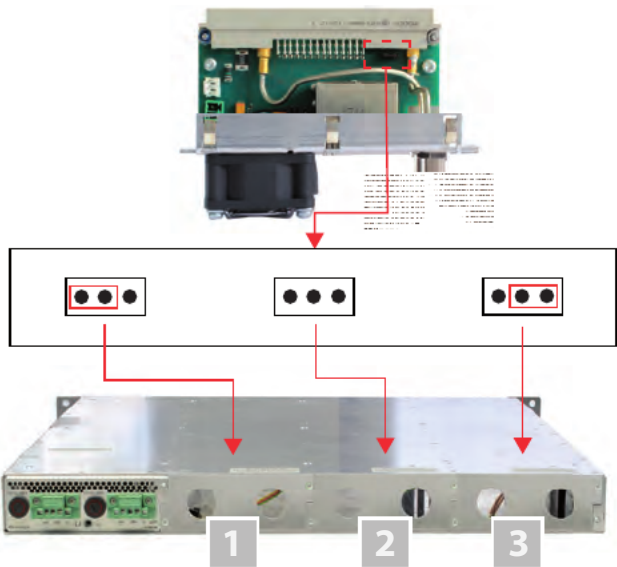


Figure 2a: Coding the backplane by plugging in the bridge

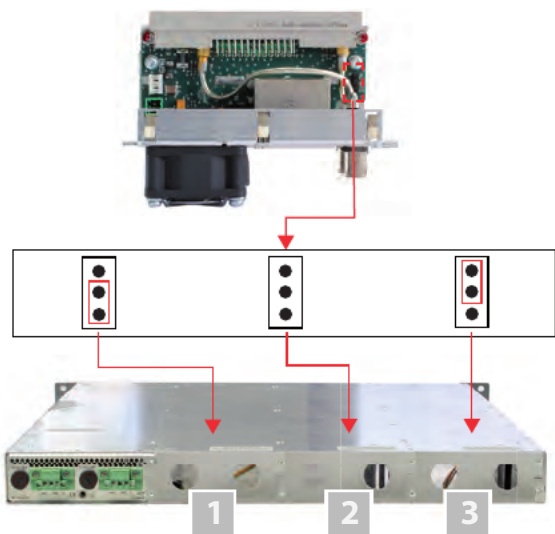


Figure 2b: Coding the backplane by plugging in the bridge

To prepare the backplane for installation, proceed as follows:

Plug the bridge into the installation position provided in accordance with figure 2a and 2b (page 11). Depending on your hardware version you may have to follow the installation instruction of figure 2a or 2b.

HINWEIS: A bridge 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:

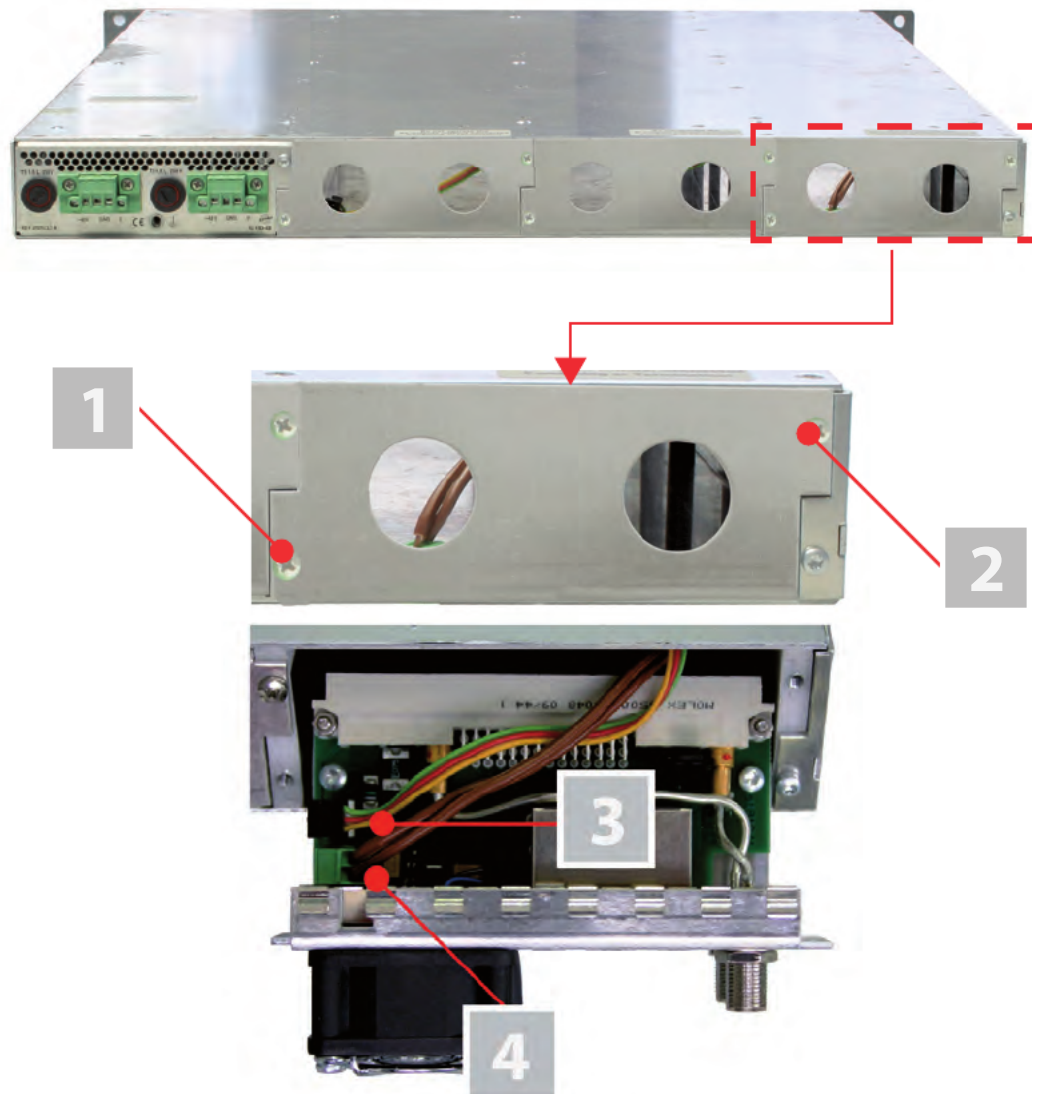


Figure 3: Installing the backplane in the base unit

- [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:

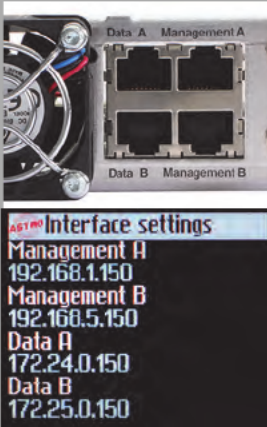
The backplane is now connected and installed. Once installed, it should correspond to the figure at the left.

HINWEIS: You can learn how to connect a plug-in module to your PC or laptop by reading the operating manual for the respective signal converter.

Quick start - starting operation of the U 194

Connecting the U 194 to a PC or laptop

To be able to configure the U 194, 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 194 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 194! The sub-network mask of the U 194 is set to 255.255.255.0 upon delivery. The PC or laptop which is connected must therefore be given an IP address 192.168.1x.

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:

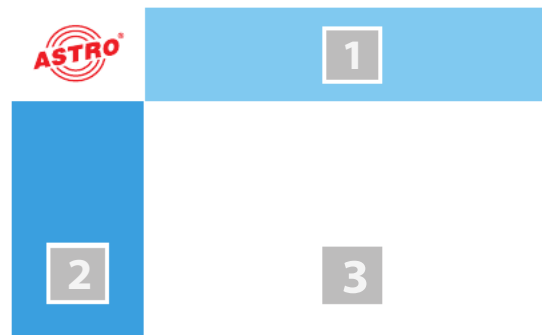


Figure 5: Structure of the web browser interface

- ☐ **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 194 shown in the device display into the address line of the browser. The menu page “Main” 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

HINWEIS: If you wish to change the IP address, then the settings on the PC must be changed accordingly.



Figure 6: Log in

After logging in, the start page of the U 194 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 194 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

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 pane:

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	<input checked="" type="radio"/> on <input type="radio"/> off				<input checked="" type="radio"/> on <input type="radio"/> off				<input checked="" type="radio"/> on <input type="radio"/> off				<input checked="" type="radio"/> on <input type="radio"/> 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”.

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 194

The overview on page 11 shows the possible signal paths for the U 194. The specific signal flow can be split into the following sub-areas:

- ☐ The IP receivers (1 to 4) receive a signal via data port A or B (each is switchable).
- ☐ The signals from the four IP receivers are forwarded to the CAM modules (1 to 4) via a multiplexer (the overview shows, as an example, the signal from receiver 1 to CAM 1 and the signal from receiver 3 to CAM 2; see the red line connecting them).
- ☐ Each output signal from the four CAM modules can also be forwarded to the IP transmitters (1 to 4) via another multiplexer (the overview shows, as an example, the signal from CAM 2 to transmitter 1, the signal from CAM 3 to transmitter 3; see the red line connecting them).
- ☐ Each output signal from the four IP transmitters can be forwarded to data port A and/or data port B respectively.

HINWEIS: *It is also possible to feed the output signals from the four CAM modules to another CAM module again via the first multiplexer (cascading).*

The output signal from the four IP receivers can – if required – be looped through to the second multiplexer by bypassing the CAM modules.

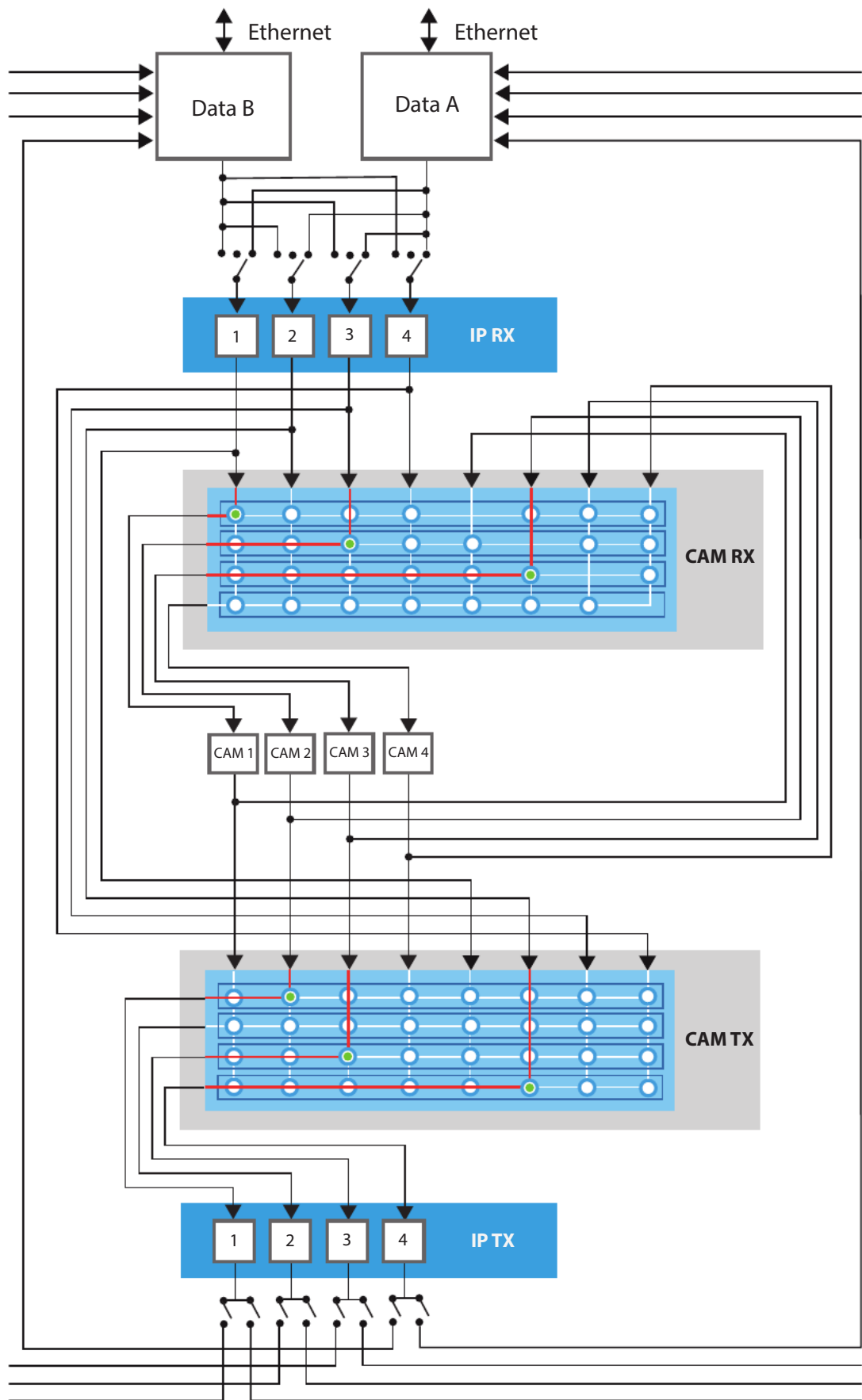


Figure 8: The signal flow in the U 194

Configuring the IP receiver

Now start configuring a signal path in the U 194. 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
Primary Source Select	0	0	0	0	12 Highest/Hot

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	<input checked="" type="radio"/> on <input type="radio"/> off	
Port	Data A <input type="text"/> Primary <input type="text"/> static <input type="text"/>	
Timeouts	in case of failure switch after <input type="text"/> seconds, switch back to higher priority after <input type="text"/> seconds	
Encapsulation	<input checked="" type="radio"/> RTP/UDP/IP <input type="radio"/> UDP/IP <input type="radio"/> automatic <input type="radio"/> manual	
Bitrate	Single PCR (SPTS) <input type="radio"/> Mult. PCR (MPTS) <input type="radio"/> automatic <input type="radio"/> manual	
FEC	<input checked="" type="radio"/> on <input type="radio"/> off	
TSID / ONID	1117	1
Alias manual / automatic	<input type="text"/>	CRF1, CRF

Figure 10: Activating the connection to the data port

Checking the data reception rate

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

Ethernet bandwidth

Property	Management A (eth0) 1G full	Management B (eth1) 1G full	Data A (eth2) 1G full	Data B (eth3) 1G full
Transmit	0.0 Mbit/s	0.0 Mbit/s	0.0 Mbit/s	0.0 Mbit/s
Receive	0.0 Mbit/s	0.0 Mbit/s	35.4 Mbit/s	35.5 Mbit/s

Ethernet frames

Property	Data A (eth2) 1G	Data B (eth3) 1G
Total frames sent by host	117	69
Total frames sent to host	1727	1727
Total exception frames sent to host	313	29
Total errored frames received	0	0
Total frames discarded by deencapsulator	2365105	145
Total frames discarded because of lack of buffers	0	0
Total receive frames forwarded to IP RX 1 / per sec.	4180910 / 3214 0 / 0 0 / 0	4180912 / 3214 0 / 0 0 / 0

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 bandwidth” table.

The number of frames forwarded to the receiver RX 1 should now appear in the “Total receive frames to RX 1” line in the “Ethernet frames” table. The value behind the slash indicates the frame rate per second.

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 transmitter statistics

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.

Setting the signal routing to the CAM modules

Now insert the required CI module into the first slot of the U 194 if you have not already done so. Proceed as described in the section “Connecting and installing the module”.

Click on the item “CAM RX” in the web browser interface menu. You will now see the following table:

CAM RX Settings

	Alias	ORF1 ORF				ORF1 ORF	ORF1 ORF	ASTR O ASTR O	ASTR O ASTR O	ASTRO
	TSID ONID	1117 1	0 0	0 0	0 0	1117 1	1117 1	65535 65535	65535 65535	65535 65535
	Status	IP RX1	IP RX2	IP RX3	IP RX4	CAM 1	CAM 2	CAM 3	CAM 4	Test Gen.
CAM 1	running	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAM 2	not installed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAM 3	not installed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAM 4	not installed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 13: Signal routing to the CAM modules

In the switch matrix, click on the radio button which connects the receiver IP RX 1 to CAM module 1.

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

More information on signal routing can be found in the section “Configuring signal paths using the switch matrix”.

Now click on the item “CAM 1” in the menu at the left. (You may have to press the refresh button in your browser several times to update the page.) You will now see the following table:

CAM Module Information

Name	Status	Action
AlphaCrypt Pro	running	Menu

Decryption Settings

#	Service				Elements	Status	Action
	Select	Primary active	Secondary	Tertiary			
<input type="checkbox"/>	Please select	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/> all <input type="radio"/> selective		

Reset Form

Status

SID	Service	Status
13001	ORF1, ORF	no processing
13002	ORF2, ORF	no processing
13003	ORF2 W, ORF	no processing
13004	ORF2 N, ORF	no processing
13005	ORF2 B, ORF	no processing
13006	ORF2 O, ORF	no processing
13007	ORF2 S, ORF	no processing
13008	ORF2 T, ORF	no processing
13009	ORF2 V, ORF	no processing
13010	ORF2 St, ORF	no processing

Figure 14: CAM settings

A list of the individual services which the module CAM 1 is receiving appears in the “Status” table. You can select the service for decryption in the “Decryption Settings” table. To add a service, click on the plus symbol in the right-hand column.

More information on decryption settings can be found in the section “Setting the decryption”.

When decryption is successful, a text which is highlighted in green appears in the status column (example: see figure at left).

Status
descrambling 4 PIDs (6 of 6 PIDs selected)

Setting the signal routing to the IP transmitters

You can now connect the decrypted signal to an IP transmitter. To do so, click on the item “CAM TX” in the web browser interface menu. You will now see the following table:

CAM TX Settings

Alias	ORF1 ORF	ORF1 ORF	ASTR O ASTR O	ASTR O ASTR O	ORF1 ORF				ASTRO
TSID ONID	1117 1	1117 1	65535 65535	65535 65535	1117 1	0 0	0 0	0 0	65535 65535
	CAM 1	CAM 2	CAM 3	CAM 4	IP RX1	IP RX2	IP RX3	IP RX4	Test Gen.
IP TX1									
IP TX2									
IP TX3									
IP TX4									

Figure 15: Signal routing to the IP transmitters



Submit

Reset Form

In the switch matrix, activate the radio button which connects CAM module 1 to the IP transmitter IP TX 1.

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

More information about signal routing can be found in the section “Configuring signal paths using the switch matrix”.

Configuring the IP transmitter

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

IP TX1 Channel Settings

Property	Data A (eth2) 1 G	Data B (eth3) 1 G
Enable	<input checked="" type="radio"/> on <input type="radio"/> off	<input checked="" type="radio"/> on <input type="radio"/> off
Transmit IP:Port	<div>1722401500</div>	<div>1722501500</div>
Destination IP:Port	<div>2322210012810000</div>	<div>2322110012810000</div>
Destination MAC	01:00:5e:16:64:80	01:00:5e:15:64:80
TOS / TTL	<div>1841</div>	<div>1841</div>
VLAN (Set 0 to disable)	<div>0</div>	<div>0</div>

Enter the IP address and UDP port that the traffic is to be sent to.
For an IP multicast, use an address in the range 224.0.0.0 to 239.255.255.255.
The TOS and TTL entries are the values used for the IP "Type of Service" and "Time To Live" fields

Property	Data A (eth2) + Data B (eth3)
TS Packets per Frame	<div>7</div>
Protocol Encapsulation	<input checked="" type="radio"/> RTP/UDP/IP <input type="radio"/> UDP/IP
FEC (L Cols / D Rows / Interleaving)	<div>OffOffCol onlyPlain</div>

Figure 16: Configuring the IP transmitter

In the line “Destination IP Port”, enter the IP address of a reception device (e.g. for one of the signal converters from the U 1xx series).

In the table at the top, click on the radio button “on” to activate signal transmission to one of the data ports A or B.

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

More information on setting the IP transmitter can be found in the section “Configuring IP outputs”.

Submit

Reset Form

Checking the data transmission rate

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

Ethernet bandwidth

Property	Management A (eth0) 1G full	Management B (eth1) 1G full	Data A (eth2) 1G full	Data B (eth3) 1G full
Transmit	0.0 Mbit/s	0.0 Mbit/s	35.5 Mbit/s	35.5 Mbit/s
Receive	0.0 Mbit/s	0.0 Mbit/s	35.5 Mbit/s	35.5 Mbit/s

Ethernet frames

Property	Data A (eth2) 1G	Data B (eth3) 1G
Total frames sent by host	118	70
Total frames sent to host	1746	1746
Total exception frames sent to host	313	29
Total errored frames received	0	0
Total frames discarded by deencapsulator	2365108	145
Total frames discarded because of lack of buffers	0	0
Total transmit frames generated from IP TX 1 / per sec.	30426244 / 3208	30426245 / 3209
Total receive frames forwarded to IP RX 1 / per sec.	4411544 / 3208 0 / 0 0 / 0	4411545 / 3208 0 / 0 0 / 0

Ethernet TX

Property	Value
Minimum FEC Freelist	254
Maximum output queue depth	0

Figure 17: IP transmitter statistics

A value > 0 should now appear for the data transmission rate in the line “Transmit” in the “Ethernet bandwidth” table.

A corresponding value should appear in the line “Total transmit frames generated from IP TX 1” in the “Ethernet frames” table.

More information about the values in the “Statistics” overview can be found in the section “Displaying statistics”.

Once you have successfully completed all the steps described, then the most important settings required to decrypt a data stream have been entered in the device.
To ensure error statuses entered in the log book are easy to follow, you should configure a time source. This can be done under the menu item “Main” in the “IP Management Settings” table (also see the section “Configuring IP interfaces, IP management and base unit”).



“Status” menu

To have the current settings for the U 194 displayed, click on the item `Status` in the menu at the left. The overview shown in figure 14 appears:

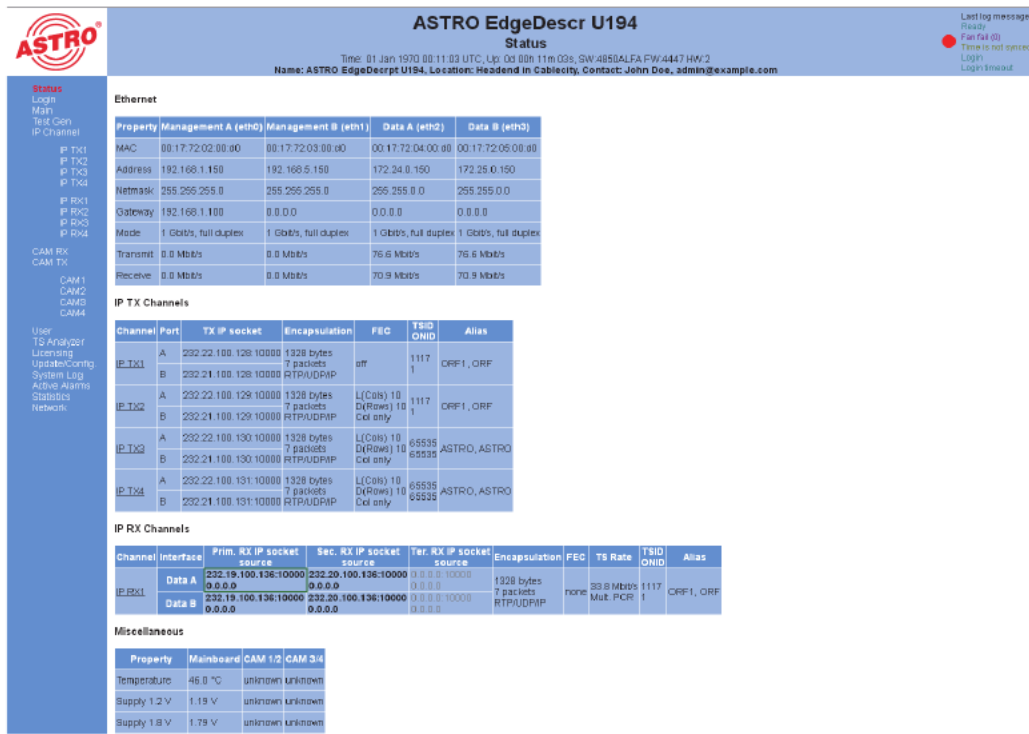


Figure 18: Status display

The following tables appear:

Ethernet status

Ethernet port settings and status data

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 19: Status display – Ethernet

In accordance with the four connections on the backplane of the U 194 (Data A, Data B, Management A and Management B, see section "Device description"), the values for the following parameters are displayed, or set, here:

- ☐ MAC: MAC address (display value)
- ☐ Address: IP address (can be set)
- ☐ Netmask: Net mask (can be set)
- ☐ Gateway: Gateway IP address (can be set)
- ☐ Mode: Ethernet mode (display value)
- ☐ Transmit: Transmission data rate (display value)
- ☐ Receive: Reception data rate (display value)

IP transmitter status display:

IP TX Channels

Channel	Port	TX IP socket	Encapsulation	FEC	TSID ONID	Alias
IP TX1	A	232.22.100.128:10000	1328 bytes 7 packets RTP/UDP/IP	off	1117 1	ORF1, ORF
	B	232.21.100.128:10000				
IP TX2	A	232.22.100.129:10000	1328 bytes 7 packets RTP/UDP/IP	L(Cols) 10 D(Rows) 10 Col only	1117 1	ORF1, ORF
	B	232.21.100.129:10000				
IP TX3	A	232.22.100.130:10000	1328 bytes 7 packets RTP/UDP/IP	L(Cols) 10 D(Rows) 10 Col only	65535 65535	ASTRO, ASTRO
	B	232.21.100.130:10000				
IP TX4	A	232.22.100.131:10000	1328 bytes 7 packets RTP/UDP/IP	L(Cols) 10 D(Rows) 10 Col only	65535 65535	ASTRO, ASTRO
	B	232.21.100.131:10000				

Figure 20: Status display – IP TX channels

The values set for the following parameters are displayed in the "IP TX Settings" table for the four IP transmitters – for port A and B respectively:

- ☐ TX IP socket: Target IP address / port
- ☐ Encapsulation: Data encapsulation
- ☐ FEC: Forward error correction
- ☐ TSID/ONID: Transport stream ID / original network ID
- ☐ Alias: Alias name

Details on the parameters can be found in the section "Menu IPTX"

IP receiver status display:

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	232.19.100.136:10000 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	33.8 Mbit/s Mult. PCR	1117 1	ORF1, ORF
	Data B	232.19.100.136:10000 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	232.21.100.128:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0	0 bytes 0 packets UDP/IP	none	0.0 Mbit/s Mult. PCR	0 0	
	Data B	232.21.100.128:10000 0.0.0.0	0.0.0.0:0 0.0.0.0	0.0.0.0:0 0.0.0.0					

Figure 21: Status display – IP RX channels

The text formatting has the following meaning:

- 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 "IP RX Channels" table for the four IP receivers – for Data A and B outputs 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

Details on the parameters can be found in the section "Menu IPTX"

Status messages on temperature, internal voltages and the power supply unit:

Miscellaneous

Property	Mainboard	CAM 1/2	CAM 3/4
Temperature	46.0 °C	unknown	unknown
Supply 1.2 V	1.19 V	unknown	unknown
Supply 1.8 V	1.79 V	unknown	unknown
Supply 2.5 V	2.49 V	unknown	unknown
Supply 3.3 V	3.31 V	unknown	unknown
Supply 5.0 V	4.99 V	unknown	unknown
Supply 13 V	12.95 V	n/a	n/a
Fan	0 RPM		
Power Module 1	OK		
Power Module 2	OK		

Figure 22: Status display – Miscellaneous

The following parameters, which are of a general nature, are displayed in the "Miscellaneous" table:

- ☐ Temperature: Temperature display in °C for the mainboard, as well as CAM 1/2 and CAM 3/4
- ☐ Supply 1.2 V: Supply voltage 1.2 volts
- ☐ Supply 1.8 V: Supply voltage 1.8 volts
- ☐ Supply 2.5 V: Supply voltage 2.5 volts
- ☐ Supply 3.3 V: Supply voltage 3.3 volts
- ☐ Supply 5.0 V: Supply voltage 5.0 volts
- ☐ Supply 13 V: Supply voltage 13 volts (mainboard only)
- ☐ Fan: Speed of fan rotation
- ☐ Power Module 1: Function status (OK or error message)
- ☐ Power Module 2: same as module 1

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 23: Status display – System resources

A number of items of information about the internal resources of the operating system are visible 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 describes how you can make general settings for the interfaces and management of the U 194, as well as for the U 100 base unit.
Click on the item "Main" in the menu at the left.

Setting IP interfaces

You can configure, activate and deactivate the IP interfaces in the upper table ("IP Interface Settings"). The connection type is automatically identified and displayed by the U 194 (in this example: 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	<input checked="" type="radio"/> on <input type="radio"/> off	<input checked="" type="radio"/> on <input type="radio"/> off	<input checked="" type="radio"/> on <input type="radio"/> off	<input checked="" type="radio"/> on <input type="radio"/> 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 24: 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 it.
- ☐ **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 are not already allocated within your network. Address conflicts lead to malfunctions in the network. (Please set any unused parameters to 0.0.0.0.)

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

Entering management settings

The second table ("IP management settings") allows you to configure the following 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 25: Configuring management settings

Submit

Reset Form

- ☐ **DNS** : If required, enter a DNS server 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 - 4".

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").

U100 Rack Settings

Property	Value
Base Address	<input type="text" value="0"/>
Slot Address	<input type="text" value="2"/>
Power Modules	<input type="text" value="0"/>

Figure 26: 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. If the U 194 is managed using the U 100-C controller and there are several U 100 base units in use, then you must allocate an individual address to each base unit. This setting only needs to be entered for one module each per base unit.
- ☐ **Slot Address** : An address corresponding to the previous coding of the backplane of the U 194 (see section "Installation and connection") is displayed for the slot in the base unit.
- ☐ **Power Modules** : Select the number of power supply units being used from the drop-down menu ("0" for 48-volt operation, "1" or "2" for 230-volt power supply units).

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

Saving and loading configurations / default and reboot

Save settings to flash / Load settings from flash / Default settings / Reboot system

Save 2nd: All settings are saved to an alternative config.
 Load 2nd: All settings are loaded from an alternative config.
 Default: Load factory default settings.
 Reboot: Force reboot.

Figure 27: Saving and loading configurations

Any changes to the configuration of the U 194 are written to the device using the "Submit" button, which activates them 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 194. Clicking on the "Load 2nd" button allows you to open this status again. Saving the configuration to a local computer or FTP server is explained in the "Software update and configuration files" chapter. Click on the "Default" button if you wish to restore the default settings.

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

Click on the "Reboot" button to perform a restart using the last settings saved.



“Test generator” menu

The U 194 features an integrated test generator for checking the functions when an input signal is still not available. Null packets with a predefined packet ID are generated. The maximum data rate that can be set is 67 MBit/s.

Status

Logout

Main

Test Gen

IP Channel

IP TX1

IP TX2

IP TX3

IP TX4

IP RX1

Test Generator Settings

Property	Value
Date rate	1.000000 Mbit/s (40420)
Packet ID	0
Packet length	188

Figure 28: Test generator

The following settings are displayed and can be entered:

- ☐ Data rate: Enter the required data rate in MBit/s in the input field.
- ☐ Packet ID: Enter the packet ID here.
- ☐ Packet length: Displays the packet length.

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

Submit

Reset Form

"IP channel" menu

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

Checking settings for the IP outputs

The table at the top, "IP TX Channel Settings", allows you to check the settings for the output channels and to activate or deactivate the individual channels.

IP TX Channel Settings

Channel	Enable	Length	Packets	Mode	Destination IP socket	UDP src	TOS	TTL	VLAN
IP TX1	Data A: <input checked="" type="radio"/> on <input type="radio"/> off	188	7	RTP/UDP/IP	232.22.100.128:10000	0	184	1	0
	Data B: <input checked="" type="radio"/> on <input type="radio"/> off				232.21.100.128:10000	0	184	1	0
IP TX2	Data A: <input checked="" type="radio"/> on <input type="radio"/> off	188	7	RTP/UDP/IP	232.22.100.129:10000	0	184	1	0
	Data B: <input checked="" type="radio"/> on <input type="radio"/> off				232.21.100.129:10000	0	184	1	0
IP TX3	Data A: <input checked="" type="radio"/> on <input type="radio"/> off	188	7	RTP/UDP/IP	232.22.100.130:10000	0	184	1	0
	Data B: <input checked="" type="radio"/> on <input type="radio"/> off				232.21.100.130:10000	0	184	1	0
IP TX4	Data A: <input checked="" type="radio"/> on <input type="radio"/> off	188	7	RTP/UDP/IP	232.22.100.131:10000	0	184	1	0
	Data B: <input checked="" type="radio"/> on <input type="radio"/> off				232.21.100.131:10000	0	184	1	0

Figure 29: IP TX Channel Settings table

The "Enable" column allows you to activate or deactivate re-routing of the output signal to ports A and B respectively by clicking the corresponding radio button.

The following parameters are displayed for the four IP output channels:

- ☐ Length: Packet length
- ☐ Packets: TS packets per IP packet
- ☐ Mode: Protocol encapsulation (RTP / UDP / IP or UDP / IP)
- ☐ Destination IP socket: Destination address / port
- ☐ UDP src: UDP source
- ☐ TOS: Type of service
- ☐ TTL: Time to live
- ☐ VLAN: Virtual LAN ID

Checking settings for the IP inputs

The table at the bottom, "IP RX Channel Settings", allows you to check the settings for the input channels.

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	<input checked="" type="radio"/> on <input type="radio"/> 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	<input type="radio"/> on <input checked="" type="radio"/> 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	<input type="radio"/> on <input checked="" type="radio"/> 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	<input type="radio"/> on <input checked="" type="radio"/> 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 30: IP RX Channel Settings table

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

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

HINWEIS: A description of these parameters can be found in the section "Menu IP RX".

If you change the activation or deactivation of inputs or outputs in one of the two tables, 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 four IP inputs, start by clicking on the item "IP RX1", "IP RX2", "IP RX3" or "IP RX4" in the menu at the left. You will then see the following table at the top of the content area:

IP RX1 Channel Settings

Property	Data A (eth2) 1 G					
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 31: "IP RX1 Channel Settings" table

"Receive IP" and "Port" (see rows 1, 3 and 5 in the table) form a socket for the reception of an incoming data stream. The receiver IP address can be a multicast address or an individual unicast address. To request an IP multicast, the IGMP protocol is used. If version 3 of this protocol is used, then a specific source can be selected using the source select IP address (see rows 2, 4 and 6 in the table). If this function should not be used, please enter zero in the input field four times. (This is, for example, the case when IGMP version 2 or IGMP version 3 from any source is being used as a protocol.)

You can use the drop-down menu to enter a priority setting for primary, secondary and tertiary IP addresses / ports respectively. There are 13 options (from "Off" to "Highest/Hot") to choose from. The priorities are divided into three groups:

- ☐ Hot standby (higher priorities): Levels 7 - 12: data streams are requested on an ongoing basis
- ☐ Cold standby (medium priorities): Levels 1 - 6
- ☐ "Off"

As a rule – providing the network provider is not affected by any faults – the data stream with the highest priority is received and used for subsequent processing. In the event of a fault – fallout of an incoming signal – a switch-over to the data stream with the next-highest priority will occur.

Should a priority level from the "Hot standby" group be allocated to a data stream, then this will continue to be requested when the network provider is affected by a fault. As soon as the fault has been eliminated, it will switch back to this data stream.

Another table follows in which you can enter settings valid for Data Port A and B:

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

Figure 32: "IP RX1 Channel Settings" table 2

- ☐ **Enable**: Activate or deactivate the IP input by clicking the corresponding radio button.
- ☐ **Port**: Configure the reception source for the IP channel here.
Select either port, Data A or Data B, from the first drop-down menu.
Select one of the options, "Primary", "Secondary" or "Tertiary", from the second drop-down menu.
Select the option "static" from the third drop-down menu if automatic data stream circuit replacement is not required. Select the option "automatic" if the replacement circuit should be used as described above.
- ☐ **Timeouts**: Enter a time span in seconds in the first input field, after which the unit should switch over to the data stream with the next-lowest priority in the event of a fault.
Enter a time span in seconds in the second input field, after which the unit should switch back to the data stream with the next-highest priority after the fault has been eliminated. (This is only the case when a priority stream from the "Hot standby" group was allocated to the data stream (see description further above).
- ☐ **Encapsulation**: When the radio button "RTP / UDOP / IP" is activated, the RTP / UDP / IP data streams are received accordingly. If you activate the radio button "on" in the "FEC" row, the receive IP ports +2 and +4 will also be received (example: 10002 and 10004 in addition to 10000). This includes additional redundancy information for fault correction.
When the radio button "UDP / IP" is activated, reception of either UDP / IP data streams or RTP / UDP / IP data streams without an evaluation of RTP is possible.
For data encapsulation, either select "automatic" or "manual" by clicking the corresponding radio button.
- ☐ **Bitrate**: For data encapsulation, select either "automatic" or "manual" by clicking the corresponding radio button. If "manual" was selected and the radio button "Single PCR" is activated at the same time, the reception data stream will be regulated using one single PCR. This is not suitable for transport streams with several PCRs.
When you activate the radio button "Multi PCR", regulation will occur using the data rate. This is not possible for data streams with variable bit rates.
- ☐ **FEC**: Activate or deactivate the FEC by clicking the radio button "on" or "off". (See "Encapsulation" further above.)
- ☐ **TSID / ONID**: The respective value is displayed, cannot however be changed.
- ☐ **Alias manual / automatic**: You can enter an alias for the data stream in the input field at the left. The automatically generated alias is displayed at the bottom right. This is the name of the first station in the data stream. This is used if you do not enter a name manually.

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

"IP TX" menu

To configure the four IP inputs, start by clicking on the item "IP TX1", "IP TX2", "IP TX3" or "IP TX4" in the menu at the left. You will then see the following table at the top of the content area:

IP TX1 Channel Settings

Property	Data A (eth2) 1G	Data B (eth3) 1G
Enable	<input checked="" type="radio"/> on <input type="radio"/> off	<input checked="" type="radio"/> on <input type="radio"/> off
Transmit IP:Port	172 . 24 . 0 . 150 . 0	172 . 25 . 0 . 150 . 0
Destination IP:Port	232 . 22 . 100 . 128 . 10000	232 . 21 . 100 . 128 . 10000
Destination MAC	01:00:5e:16:64:80	01:00:5e:15:64:80
TOS / TTL	184 . 1	184 . 1
VLAN (Set 0 to disable)	0	0

Figure 33: "IP TX1 Channel Settings" table 1

You can activate or deactivate re-routing of the selected IP output to ports A and B respectively by clicking the corresponding radio button. The respective MAC address is displayed for ports A and B ("Destination MAC").

You can enter a value for ports A and B respectively for the following parameters:

- ☐ Transmit IP: Port: Enter an IP transmission address
- ☐ Destination IP: Port: Enter the IP address of a reception device
- ☐ TOS / TTL: Enter a value for the „Type of service“ (serves the prioritisation of the IP data packets)./ Enter a value for lifetime („Time to live“).
- ☐ VLAN (Set 0 to disable) : Enter the address of a virtual local network.

Another table follows in which you can enter settings valid for Data Port A and B:

Property	Data A (eth2) + Data B (eth3)
TS Packets per Frame	7
Protocol Encapsulation	<input checked="" type="radio"/> RTP/UDP/IP <input type="radio"/> UDP/IP
FEC (L Cols / D Rows / Interleaving)	Off Off Col only Plain

Figure 34: "IP TX1 Channel Settings" table 2

- ☐ TS Packets per Frame: Number of transport stream packets per frame; Select a value between 1 and 7 from the drop-down menu.
- ☐ Protocol Encapsulation: Select either "RTP/UDP/IP" or "UDP/IP" by clicking the corresponding radio button.
- ☐ FEC: Forward Error Correction
Select the number of columns from the first drop-down menu ("off", or a value between 1 and 20). Select the number of rows from the second drop-down menu ("off", or a value between 4 and 20). Select one of the two options, "Columns and rows" (Col + Rows) or "Column only" (Col only), from the third drop-down menu.
Select one of the options "Plain", or "Annex A" or Annex B" respectively from the fourth drop-down menu.

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

Submit

Reset Form



"CAM RX" menu

This section describes how to route data onto a CAM module.

HINWEIS: An overview of the possible signal paths can be found in the section "Quick start – starting operation of the U 194".

Start by clicking on the item "CAM RX" in the menu at the left. You will now see the following table:

CAM RX Settings

	Alias	ORF1 ORF				ORF1 ORF	ORF1 ORF	ASTR O ASTR O	ASTR O ASTR O	ASTRO
	TSID ONID	1117 1	0 0	0 0	0 0	1117 1	1117 1	65535 65535	65535 65535	65535 65535
	Status	IP RX1	IP RX2	IP RX3	IP RX4	CAM 1	CAM 2	CAM 3	CAM 4	Test Gen.
CAM 1	running	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAM 2	not installed	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAM 3	not installed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
CAM 4	not installed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Figure 35: Input switch matrix "CAM RX Settings"

You can re-route an IP input signal to one, or several, CAM modules respectively by clicking on the corresponding radio button. In the example at the left, the signal from input 1 is re-routed to CAM modules 1 and 2.

The "Status" column displays whether the respective CAM module is installed. If this is the case, then "running" is displayed as the status when the module is functioning properly. Otherwise, an error message highlighted in red is displayed. If no module has been installed, the display shows "not installed".

Furthermore, you can re-route the signal from the output of each CAM module into one of the inputs for the three other CAM modules by activating the corresponding radio button (cascading).

If an input signal has not become available, you can also re-route the signal from the test generator (see section "Test generator") to the respective CAM module.

The respective transport stream ID, the network ID and the alias for every source is displayed in the upper part of the table.

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

HINWEIS: You will find an example of configuration in the section "Quick start – starting operation of the U 194".

	Status	IP RX1	IP RX2	IP RX3
CAM 1	running	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAM 2	not installed	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAM 3	not installed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAM 4	not installed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

CAM 1	CAM 2	CAM 3	CAM 4
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Submit

Reset Form

"CAM TX" menu

You can configure the routing to the IP transmitters using this menu item.

HINWEIS: An overview of the possible signal paths can be found in the section "Quick start – starting operation of the U 194".

Start by clicking on the item "CAM TX" in the menu at the left. You will now see the following table:

CAM TX Settings

Alias	ORF1 ORF	ORF1 ORF	ASTR O ASTR O	ASTR O ASTR O	ORF1 ORF				ASTRO
TSID ONID	1117 1	1117 1	65535 65535	65535 65535	1117 1	0 0	0 0	0 0	65535 65535
	CAM 1	CAM 2	CAM 3	CAM 4	IP RX1	IP RX2	IP RX3	IP RX4	Test Gen.
IP TX1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IP TX2	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IP TX3	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IP TX4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 36: Output switch matrix "CAM TX Settings"

You can re-route the respective output signal from a CAM module to an IP output by clicking on the corresponding radio button. In the example at the left, the signal from CAM module 1 is re-routed to IP output 1. Furthermore, the signal from CAM module 1 is re-routed to IP output 2, etc.

	CAM 1	CAM 2	CAM 3	CAM 4
IP TX1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IP TX2	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
IP TX3	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
IP TX4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

IP RX1	IP RX2	IP RX3	IP RX4
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In addition, you can also loop the IP input signals directly through to the IP outputs by activating the corresponding radio button.

If an input signal has not become available, you can also re-route the signal from the test generator (see section "Test generator") to the respective IP outputs.

The respective transport stream ID, the network ID and the alias for every source is displayed in the upper part of the table.

Click on the "Submit" button below the table to save your changes.

Click on "Reset Form" to restore the original settings.

HINWEIS: You will find an example of configuration in the section "Quick start – starting operation of the U 194".

Submit Reset Form

"CAM" menu

This section describes how you can enter decryption settings for the four CAM modules. The procedure is described in the following.

To display the input mask for module configuration, click on the items "CAM1", "CAM2", "CAM3" and "CAM4" respectively in the menu at the left.

CAM module information

The respective name of the module and its current status appear in the upper table. When the module is functioning properly, the message "running" is shown. If no CAM module is installed, then the message reads "no CAM installed". Other error messages are "CAM error temperature too high" and "voltage error".

CAM Module Information



	Name	Status	Action
	AlphaCrypt Pro	running	

Figure 37: CAM module information

Click on the "+" symbol in the left-hand column to have an overview of the CAM systems displayed. If you press the "Menu" button in the right-hand column, the MM menu of the module is opened.

Entering decryption settings

You can add the services for decryption using the second table and – when required – limit the decryption to individual elements.

Decryption Settings












	Service				Elements	Action
	Select	Primary active	Secondary	Tertiary		
	ORF1, ORF (SID:13001 TV)	13001	13001	13001	all  selective	 
	ORF2, ORF (SID:13002 TV)	13002	13002	13002	all  selective	 
	Please select				all  selective	

Figure 38: Selecting services for decryption

To add a service, start by selecting the service in the "Select" column or enter the SIDs in the input fields manually. Click on the "+" symbol in the right-hand column. The service will now be added.

You can set different SIDs for the redundant reception sources. Details on the redundancy concept can be found in the section "Menu IP RX".

Depending on the source which is active, either Primary, Secondary Tertiary will be marked as active.





HINWEIS: If you wish to delete a service from the list, click on the red symbol in the right-hand column.

If you wish to select individual elementary streams, click on the pencil symbol to activate the service. You can select whether the full service ("all") or only individual elements ("selective") should be decrypted in the "Elements" column. To do so, click on the corresponding radio button. If you select the option "selective", another table opens in which you can select the individual elementary streams.

Decryption Settings

Service				Elements	Action
Select	Primary active	Secondary	Tertiary		
<input checked="" type="checkbox"/> ORF1, ORF (SID:13001 TV)	13001	13001	13001	<input type="radio"/> all <input checked="" type="radio"/> selective	<div> <div>✓</div> <div>✗</div> </div>
Element					
Select by	Value(s)			Action	
Content	Video			<div>✗</div>	
Content	Audio Lang: all or			<div>✗</div>	
Please select				<div>+</div>	
<input checked="" type="checkbox"/> ORF2, ORF (SID:13002 TV)	13002	13002	13002	<input type="radio"/> all <input checked="" type="radio"/> selective	<div>✏</div> <div>✗</div>
<input type="checkbox"/> Please select				<input type="radio"/> all <input checked="" type="radio"/> selective	<div>+</div>

Figure 39: Selecting service elements selectively

You can choose between the options "PID", "Content" and "Stream Type" in the "Select by" column.

The option **"PID"** allows a selection to be made according to the elementary stream PID. Enter the required PID in the respective input field manually (for the fields "Secondary" and "Tertiary", see the section "Menu RP RX").

The option **"Content"** allows a selection to be made according to the content of the elementary streams. A drop-down menu appears in the "Value(s)" column with the following options:

- ☐ Video: All video elementary streams are decrypted.
- ☐ Audio: All audio elementary streams are decrypted.
- ☐ Teletext: The elementary streams for all languages are decrypted.
- ☐ Subtitling: When you select this option, the elementary streams for subtitles are decrypted.

To the right of the drop-down menu, two input fields for language selection appear, which allow you to enter the preferred language or an alternative language, as an abbreviation.

The option **"Stream Type"** allows you to select the elementary stream according to the DVB stream type.

Your changes will be applied as soon as you click the Plus button or the Tick button. Click on "Reset Form" to restore the original settings.

Reset Form

Status display

An overview of the decryption status appears in the third table (see figure 32, below). The left-hand column shows the respective SID, the middle column shows the selected service and the right-hand column shows the current status of the decrypted PIDs.

If a service is not being decrypted, then "no processing" is displayed.

Status

SID	Service	Status
13001	ORF1, ORF	descrambling 4 PIDs (4 of 6 PIDs selected)
13002	ORF2, ORF	descrambling 3 PIDs (5 of 5 PIDs selected)
13003	ORF2 W, ORF	no processing
13004	ORF2 N, ORF	no processing
13005	ORF2 B, ORF	no processing
13006	ORF2 O, ORF	no processing
13007	ORF2 S, ORF	no processing
13008	ORF2 T, ORF	no processing
13009	ORF2 V, ORF	no processing
13010	ORF2 St, ORF	no processing
13011	ORF2 K, ORF	no processing
13012	ATV, ATV+	no processing
13013	HITRADIO OES, ORF	no processing
13014	ORF2E, ORF	no processing
13019	RIC, -	no processing
13200	AlphaCrypt, ORF	no processing
13221	Crenova OTA Service, ORS	no processing

Figure 40: Status display of the decryption

Services marked in bold type include at least one encrypted service.

Click on the "+" symbol in the left-hand column to have the detailed settings for decryption displayed.

Status

SID	Service						Status
13001	ORF1, ORF						descrambling 4 PIDs (4 of 6 PIDs selected)
PID	Type	Content	Language	Input	Output	Status	
160	0x02	ISO/IEC 13818-2 Video		scrambled	free	descrambling	
161	0x03	ISO/IEC 11172 Audio	ger	scrambled	free	descrambling	
162	0x03	ISO/IEC 11172 Audio	eng	scrambled	free	descrambling	
163	0x06	ISO/IEC 13818-1 Private PES data packets	ger	scrambled	free	descrambling	
165	0x06	ISO/IEC 13818-1 Private PES data packets (Teletext)	ger	free	free	no processing	
169	0x06	ISO/IEC 13818-1 Private PES data packets		free	free	no processing	

Figure 41: Status display details

The extended view shows all settings made in the "Decryption Settings" table (encrypted PIDs, type, selected content, language). It also shows whether the content is encrypted or not encrypted ("scrambled" or "free").

The "Output" column shows you whether the content of the output signal is unencrypted for the respective PID. The "Status" column shows whether the PIC is being decrypted ("descrambling" or "no processing") or whether errors have occurred.

"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 secured version HTTPS. After input of the licence, the checkbox is activated.

Setting	Value
Redirect HTTP requests to HTTPS	<input type="checkbox"/>

Figure 36: "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	<input type="button" value="Download CSR"/>

Figure 37: "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	<input type="button" value="Durchsuchen..."/> Keine Datei ausgewählt.	<input type="button" value="Upload key"/>
Clear supplied key	<input type="button" value="Clear key"/>	
Upload device certificate in PEM format	<input type="button" value="Durchsuchen..."/> Keine Datei ausgewählt.	<input type="button" value="Upload certificate"/>
Clear supplied certificate	<input type="button" value="Clear certificate"/>	
Regenerate device key and certificate	<input type="button" value="Regenerate"/>	

Figure 38: "Key and certificate settings" table

“

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.

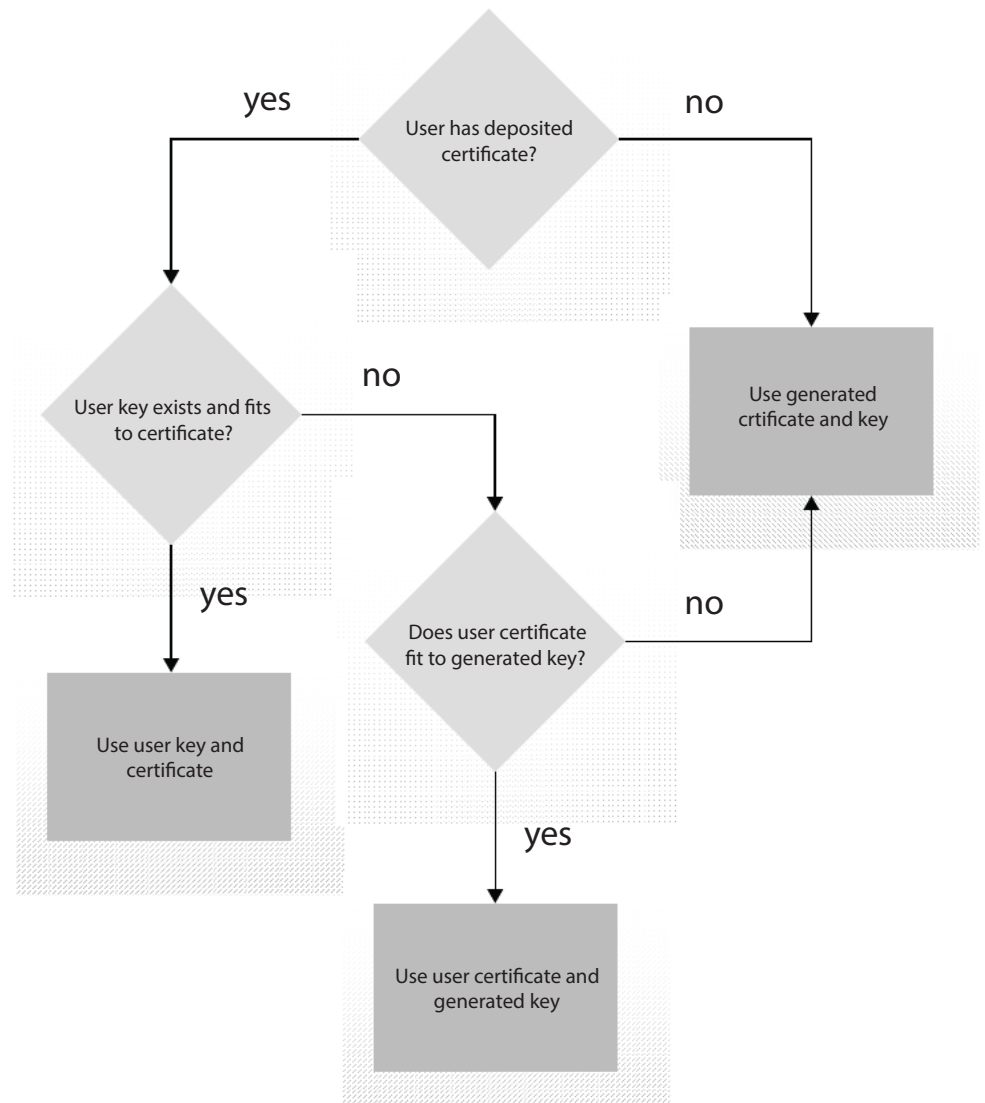


Figure 39: Using the certificates/keys

"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 38 now appears.

Property	Username	New Password	Retype New Password	Delete
Admin account	admin			
User account 1	user			<input type="checkbox"/>
User account 2	controller			<input type="checkbox"/>
User account 3				<input type="checkbox"/>
Timeout	5 minutes			
Name	ASTRO EdgeDecrpt U194			
Location	Headend in Cablecity			
Contact	John Doe, admin@example.com			

Figure 40: User administration

You can create up to four users for the user interface of the U 118. 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 the checkbox „Enforce password policy“ is activated, a password must contain at least 8 characters and special 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.
- ☐ **Enforced Password Policy:** Activate the checkbox when a password should have a minimum of 8 characters, and include at least one lower-case letter, one upper-case letter, one number and one special character.
- ☐ **Disallow anonymous access:** Activate the checkbox when access to the content area (tables) should only be possible after logging in.

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

Submit

Reset Form

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

RADIUS Server Address	0.0.0.0
RADIUS Server Port	1812
RADIUS Shared Secret	
RADIUS Retries	3
RADIUS Timeout	10

To disable RADIUS login, set address to 0.0.0.0 or retries to 0

Figure 41: RADIUS administration

The following individual items of information can be entered:

- ☐ RADIUS Server Address
- ☐ RADIUS Server Port
- ☐ RADIUS Shared Secret
- ☐ RADIUS Server Retries
- ☐ RADIUS Server Timeout

HINWEIS: Users that are configurated on the device will be deactivated when a RADIUS server is configurated!
The RADIUS server must be configurated. Users with service type „Administrative“ are administrators of the device.
When the checkbox „Enable Radius Login“ is clicked, the RADIUS function is activated, if the RADIUS Server is accessible. If this is not the case,, the RADIUS function remains inactive and the following message appears: „RADIUS logins have not been enabled because the connection check failed“.

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.

	Address				Netmask			
IP Whitelist 1	0	0	0	0	0	0	0	0
IP Whitelist 2	0	0	0	0	0	0	0	0
IP Whitelist 3	0	0	0	0	0	0	0	0
IP Whitelist 4	0	0	0	0	0	0	0	0

Figure 42: White list administration

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

- ☐ IP address
- ☐ Netmask

“TS Analyzer” menu

The U 118 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 the selection of the transport stream for analysis. The following input mask now appears:

TS Analyzer

Alias	Bayern 1 ARD BR	tageschau 24 ARD	DATA SYST EM TR 78 MTV Networks Europe	TELE MELO DY CSAT	ZDF ZDFvision	Das Erste ARD	WDR Bielfeld ARD	SAT. 1 ProSiebenSat.1	DATA SYST EM TR 78 MTV Networks Europe	ORF1 ORF	Bayrisches Fernsehen ARD	WDR Köln ARD	CNN Int. CNN		Juwelo pur MEDI A BROADCAST		ASTRO
TSID ONID	1093 1	1051 1	1078 1	1024 1	1079 1	1101 1	1201 1	1107 1	1078 1	1117 1	3101 1	2101 1	8707 8468	0 0	1113 1	0 0	65535 65535
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	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Standard	Table			
MPEG	<input checked="" type="checkbox"/> PAT	<input checked="" type="checkbox"/> CAT	<input type="checkbox"/> TSMT	<input checked="" type="checkbox"/> PMTs
	<input checked="" type="checkbox"/> NIT actual	<input type="checkbox"/> NIT other (only first found)	<input checked="" type="checkbox"/> SDT actual	<input type="checkbox"/> SDT other (only first found)
DVB	<input type="checkbox"/> EIT actual present/following	<input type="checkbox"/> EIT actual schedule	<input type="checkbox"/> BAT (only first found)	<input type="checkbox"/> RST (only first found)
	<input checked="" type="checkbox"/> TDT	<input type="checkbox"/> TOT		

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

Figure 43: 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”).

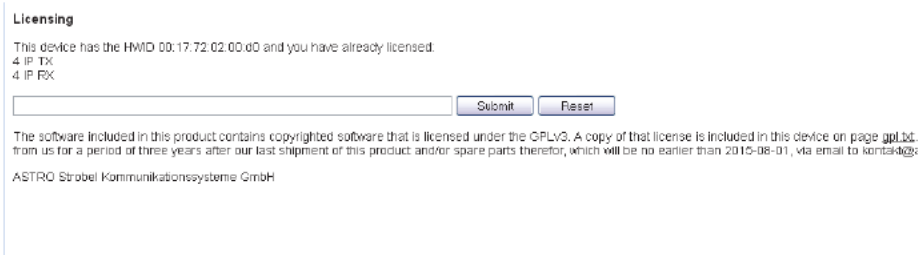
"Licensing" menu

A number of functions of the U 118 (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 the 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:



Licensing

This device has the HWD 00:17:72:02:00:00 and you have already licensed.

4 IP TX
4 IP RX

The software included in this product contains copyrighted software that is licensed under the GPLV3. A copy of that license is included in this device on page [gpl.txt](#).
from us for a period of three years after our last shipment of this product and/or spare parts therefor, which will be no earlier than 2015-08-01, via email to kontakt@astro-strobel.de

ASTRO Strobel Kommunikationssysteme GmbH

Figure 44: 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.

Submit

Reset Form

"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 118) and a four-digit version number.

Once the update archive has been downloaded, start by selecting the item "Update/Config." in the menu of the user interface. The "Software update" table then appears in the content area at the top.

Software Update

Property	Value
File	<input type="button" value="Durchsuchen..."/> Keine Datei ausgewählt <input type="button" value="Update and reboot"/>
Software archive	u168xxxx.up

Figure 45: 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.

Available Update Archives

The table tabelle „Available Update Archives“ shows an overview update-archives already stored in the module (up to ten). Users can have access to older software versions (Installation or deleting).

Available Update Archives

Filename	Size	Version	Install	Delete
U1165294.UP	7.64 MiB	5294	<input type="button" value="install"/>	<input type="button" value="delete"/>
U1165325.UP	7.86 MiB	5325	<input type="button" value="install"/>	<input type="button" value="delete"/>
U1165341.UP	7.92 MiB	5341	<input type="button" value="install"/>	<input type="button" value="delete"/>

Bild 46: Firmware Update

Uploading and downloading configuration files

Config files (download/upload)

Property	Value
File	<input type="button" value="Durchsuchen..."/> Keine Datei ausgewählt <input type="button" value="Upload"/>
System settings	settings.xml

Figure 47: 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 48: 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	<input type="text" value="astro-firmware.de"/>
Protocol	<input checked="" type="radio"/> FTP <input type="radio"/> TFTP
FTP Username (e.g. anonymous)	<input type="text" value="anonymous"/>
FTP Password (e.g. guest)	<input type="password" value="....."/>
Path	<input type="text" value="/Headend-Firmware/u1xx/"/>
Version	<input type="text"/>
Mode	<input type="text" value="Please select"/>

Figure 49: 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 individual actions are available for selection:

- ☐ **"Load config from server"** action: A configuration stored on the (T)FTP server is transmitted to the U 118 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 118.
- ☐ **"Save config to server"** action: The current configuration of the U 118 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). Once 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. The following overview will now appear:

System Log Settings

Local logfile

Log file filter: ☒ Emergency ☒ Alert ☒ Critical ☒ Error ☒ Warning ☒ Notice ☒ Info ☒ Debug

Debug log file: ☐ on ☒ off

Delete log files after: 90 days

Syslog

Syslog server: 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0

Syslog filter: ☒ Emergency ☒ Alert ☒ Critical ☒ Error ☒ Warning ☒ Notice ☒ Info ☒ Debug

SNMP traps

SNMP trap receiver: 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0

SNMP trap community: public

SNMP trap filter: ☒ Emergency ☒ Alert ☒ Critical ☒ Error ☒ Warning ☒ Notice ☒ Info ☒ Debug

SNMP agent

SNMP access: ☐ on ☒ off

SNMP GET/SET community: public

Access permission: ☒ Read ☐ Write ☐ Read ☐ Write ☐ Read ☐ Write ☐ Read ☐ Write ☐ Read ☐ Write

SNMP authentication failure trap: ☐ on ☒ off

Enforce community policy: ☒

Note: Use empty fields for unused SNMP addresses or communities
Note: To enforce community policy login as admin.

System Log

☐ 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	Source	Severity	Message
1	09. Jul 2014 11:20:09 UTC	hd 00h 00m 00s system 0.0.0.0	notice	Fan good (0000)
2	09. Jul 2014 11:20:09 UTC	hd 00h 00m 00s system 0.0.0.0	notice	Fan good (0000)

Figure 50: System log

You can check or configure the following parameters individually:

System log settings

System Log Settings

Local logfile

Log file filter: ☒ Emergency ☒ Alert ☒ Critical ☒ Error ☒ Warning ☒ Notice ☒ Info ☒ Debug

Debug log file: ☐ on ☒ off

Delete log files after: 90 days

Syslog

Syslog server: 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0

Syslog filter: ☒ Emergency ☒ Alert ☒ Critical ☒ Error ☒ Warning ☒ Notice ☒ Info ☒ Debug

SNMP traps

SNMP trap receiver: 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0

SNMP trap community: public

SNMP trap filter: ☒ Emergency ☒ Alert ☒ Critical ☒ Error ☒ Warning ☒ Notice ☒ Info ☒ Debug

SNMP agent

SNMP access: ☐ on ☒ off

SNMP GET/SET community: public

Access permission: ☒ Read ☐ Write ☐ Read ☐ Write ☐ Read ☐ Write ☐ Read ☐ Write ☐ Read ☐ Write

SNMP authentication failure trap: ☐ on ☒ off

Enforce community policy: ☒

Note: Use empty fields for unused SNMP addresses or communities
Note: To enforce community policy login as admin.

Figure 51: 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 NSMP MIBs available are stored on the device and can be downloaded by using the download link below the table "System Log Settings".

System log

System Log

☐ 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 l

Figure 52: 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 "Check-box 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)

Downloading log files

Download Log Files

Logfile	Last modified at	Size
/0216da.csv	09.07.2014 11:20:12	2.20 kiB

Figure 53: Downloading log files

A maximum of 2,500 lines is displayed in the "Log files" table. The complete log file can be downloaded from the "Download Log Files" table by clicking on the file name XX.csv.

“Alarm severities” menu

You can change the alarm settings for diverse parameters or deactivate the alarm display for a parameter, when preferred. To do so, click on the item “Alarm Severities” in the menu at the left. A set of tables for different parameter groups then appears:

Status of power supply, temperature, fan

Code	Message	emergency	alert	critical	error	warning	notice	info	debug	off
0x1000002	Temp 1 fail (%.1f)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000002	Temp 1 good (%.1f)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000003	Temp 2 fail (%.1f)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000003	Temp 2 good (%.1f)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000004	Temp 3 fail (%.1f)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000004	Temp 3 good (%.1f)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000005	Temp 4 fail (%.1f)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000005	Temp 4 good (%.1f)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000006	Fan fail (0)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000006	Fan good (%.0f)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000007	Supp 1.2 fail (%.2f)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000007	Supp 1.2 good (%.2f)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000008	Supp 1.5 fail (%.2f)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000008	Supp 1.5 good (%.2f)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000009	Supp 1.8 fail (%.2f)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000009	Supp 1.8 good (%.2f)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x100000a	Supp 2.5 fail (%.2f)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x100000a	Supp 2.5 good (%.2f)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x100000b	Supp 3.3 fail (%.2f)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x100000b	Supp 3.3 good (%.2f)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0x1000010	Supp 5.2 fail (%.2f)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 54: Alarm Severities

The preset options for the alarm messages are identified by a green frame. Retaining these settings is recommended.

“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

number	time	uptime	user	source	severity	message	TSID	SID	alias
--------	------	--------	------	--------	----------	---------	------	-----	-------

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Figure 55: 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 have data transmission statistics for the U 118 displayed, click on the "Statistics" item in the menu at the left. All statistics relevant to the operation of the device and which can be used for analysis are displayed here. The following individual tables are displayed:

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 56: 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	2814150 / 3214
	2814152 / 3214	2814149 / 3214
	0 / 0	0 / 0

Figure 57: 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 58: 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 (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 (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. The following overview will now appear:

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: 1600, 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: 1600, 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: 1600, Metric: 0
	Rx - Packets: 30, Bytes: 2340, Tx - Packets: 0, Bytes: 0
eth0	IPv4: 192.168.1.100, Broadcast: 192.168.1.255, Netmask: 255.255.255.0
	UP BROADCAST RUNNING MULTICAST MTU: 1600, Metric: 0
	Rx - Packets: 3414, Bytes: 314564, 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: 367, Bytes: 32207, Tx - Packets: 367, 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 59: 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.

„Documentation” menu

To have a list of operating manuals, XML-Files and license texts displayed, click on „Documentation“ in the menu at the left. The following overview will now appear:

Manuals

Description	Link
English manual	u125mane.pdf
German manual	u125mang.pdf

Annotated XMLs

Description	Link
Annotated settings.xml	settings-doc.xml
Annotated status.xml	status-doc.xml

License texts

The software included in this product consists of a number of separate binaries. Each of it has it's own software license as a result of the components it consists of. Each binary can be found and clicked here to view it's license and the licenses of the components it consists of:

-->

[FM](#)

-->

[Management](#)

Figure 66: Menu „Documentation“

To open a file, just click on the desired item.

Troubleshooting

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

- ☐ Check whether the bas unit has been connected to the required mains voltage (230 V~, 50 Hz for U 100-230 and 48 V for U 100-48).
- ☐ 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 ASTROBit 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 116) and power modules, even when the U 100 is operating.

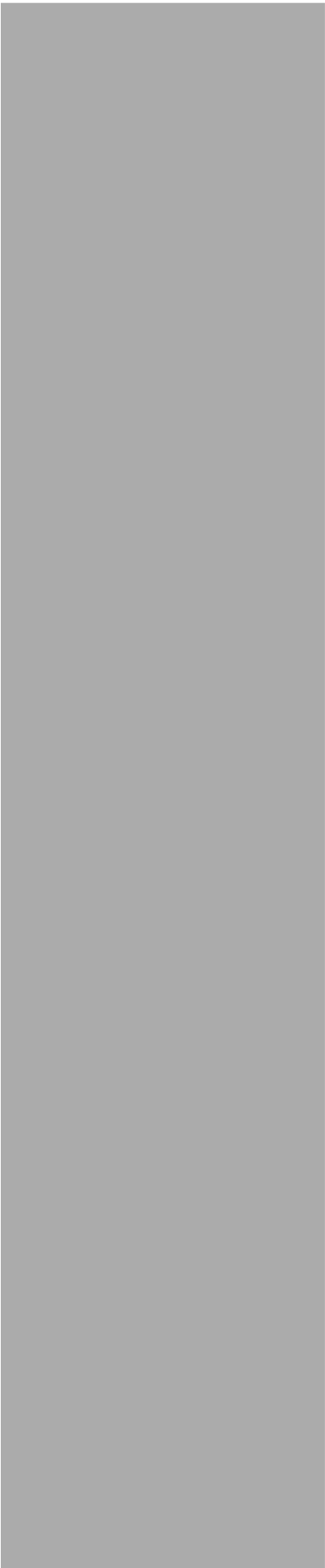
Replacing converter modules

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 194
Order number		380 161
EAN-Code		4026187161095
Network data interfaces		
Interface type		100FD/1000Base-T Ethernet IEEE 802.3
Protocol		IP v4, ARP, UDP, RTP, ICMP, IGMPv2
Connector		2 x 8p8C "RJ-45" (redundant)
TS Receiver		4 x (unicast / multicast)
TS Transmitter		4 x (unicast / multicast)
CI interfaces		
CI slots		4 x (front access)
Unterstützte Module	Auszug	Al Jazeera Sports, Alphacrypt, Aston Conax, Cryptoworks Diablo, Dragon, Dreamcrypt, Entavio CAM, Free-X TV, Giga, GkWare BISS CAM, Homecast CAM, ICECrypt, Ideto Access, Joker, Kid CAM, Magic Module, Mascom Cryptoworks, Matrix CAM, Mediaguard Canal Digitaal, Nagravision, Oasis CAM, PCMCIA CAM, PowerCam Pro, Premiere, Worldcam, T-Rex Twin Module, TechniCam Beta2, Technicrypt, TPS, Reality CAM, SMI-T, Ultimate CAM, Universal CAM, Viaccess, Videoguard CAM, X-Cam, Zetacam Blue
Connectors		4 x PCMCIA
Transportstream		
TS encapsulation		UDP/IP, RTP/UDP/IP, FEC
TS type		MPTS
TS functionality		Receiver, decode, and transmit up to 4 MPTS via IP
Control and Management		
Interface type		100FD/1000Base-T Ethernet IEEE 802.3
Features		Element control via HTTP/Web-GUI, SNMP traps for integration with network management systems (NMS), software update via FTP or TFTP
Protocol		IP v4, ARP, UDP, TCP, ICMP, HTTP, SNMP v2c, FTP, TFTP, DNS, DHCP, SNTP
Connectors		2 x 8P8C "RJ-45" (redundant)
Common data		
use in U 100-48 base unit:		
Stromaufnahme bei 48 V	mA	505
Power consumption at 48 V	W	24,3 per module
Input voltage	V	- 48
use in U 100-230 base unit:		
Input voltage	VAC	100 - 240 (50 / 60 Hz)
Input power consumption	W / VA	one power supply unit, three modules: 108 / 119; two power supply units, three modules: 124 / 142
Dimensions		1 HU, 19 "
Ambient temperature	°C	0 ... +45







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