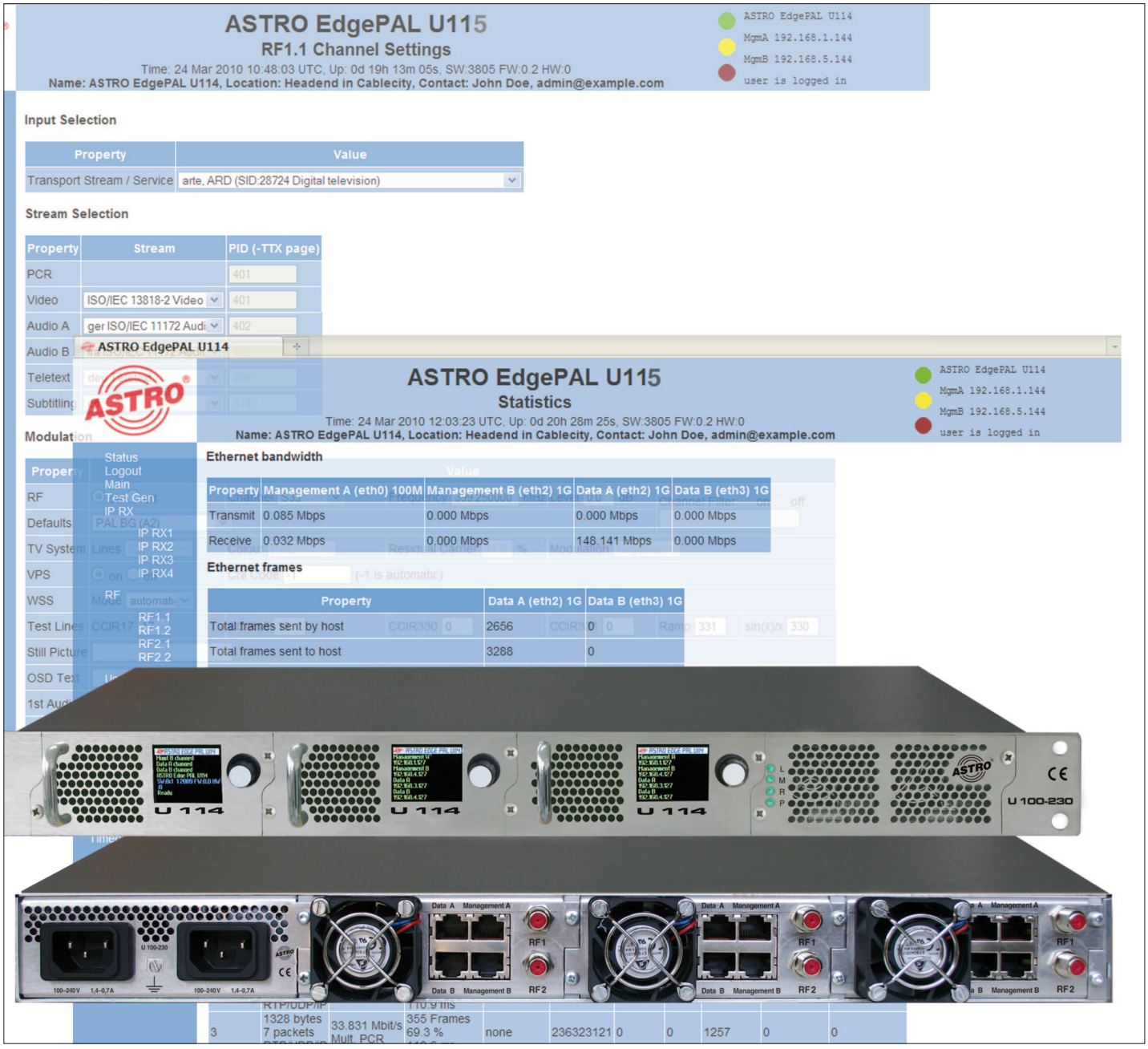
Operating manual



U 115 quad IP / PAL converter

U 100 - 230 Base unit

General

Note concerning the U 100-230 base unit:
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution!

Changes or modifications of the device not expressly approved by ASTRO Strobel Kommunikationssysteme GmbH or any licensed party responsible for compliance will void the user's authority to operate the equipment!

This operating manual was created to provide the relevant instructions for operating the U 115. We expressly recommend reading this manual before installing or operating the device.

The ASTRO company confirms the information in this manual to be correct at the time of printing, but it reserves the right to make changes, without prior notice, to the specifications, the operation of the device and the operating manual. The ASTRO company is not responsible for printing errors. The contents of this operating manual are confidential and protected by copyright. This manual may not be reproduced in any form - not even in part - without prior written permission from the ASTRO company.

Pictograms and safety instructions

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

Warning about life-endangering situations due to dangerous electrical voltage or non-adherence to this manual.

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

Recycling: all of our packaging material (cardboard boxes, accompanying papers, plastic film and bags) is completely recyclable.

Used batteries must be disposed of at approved recycling points. Batteries must be completely discharged before being disposed of.

Electronic devices must not be disposed of with household waste, but rather – according to directive 2002/96/EG OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL from January 27, 2003, on waste electrical and electronic equipment – must be properly disposed of. When they are no longer of use, please bring these devices for disposal to one of the public collection points for this purpose.

Copyright notice

Some of the software of this product is third-party software, which was developed under several different licensing conditions. Detailed information concerning the licences can be found via the Web interface of the device.

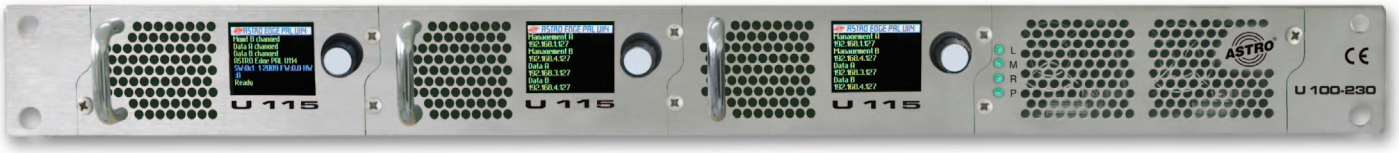
The source code of the free parts of the software is distributed on request for an administration fee.

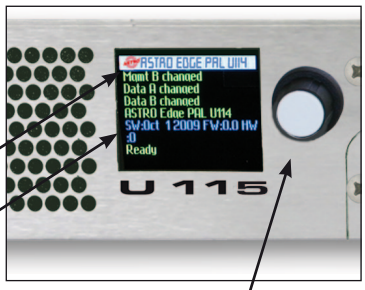
Please contact:

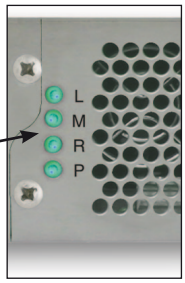
kontakt@astro-strobel.de
ASTRO Strobel Kommunikationssysteme
Olefant 1-3
D-51427 Bergisch Gladbach (Germany)
Tel.: (+49) 2204 405-0

1 Figure

The figures show the U 115 installed in the U 100 - 230 base device.







Control
and data wheel, menu switch

Display of management IP addresses,
data IP addresses, status messages, etc.

Status display

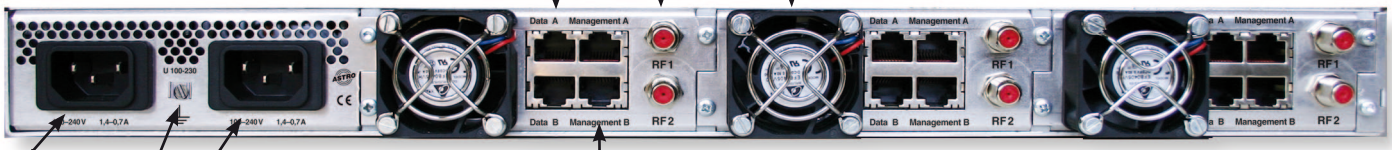
Status display
for slots
L = left
M = middle
R = right
P = power supply

Data ports

HF outputs

Fan

230 V Power supply:



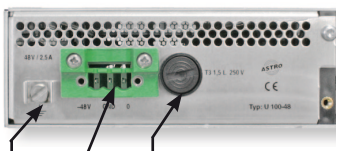
Mains supply

Earthing connection

Mains supply

Management ports

48 V Power supply:



Fuse

Mains supply

Eaerthing connection

2 Introduction

The instructions in chapter 2 mainly apply to the U 100 - 230 base device.

2.1 Description of functions

The U 100 series is used to convert IP data streams into CATV signals. The U 100-230 base device can accommodate up to three U 1xx signal converters, as well as up to two U 100-SNTs for supplying the voltage to the U 1xx signal converters. The U 115 receives up to four video data streams encapsulated according to the internet protocol (IP) and converts them into up to four standardised PAL output signals.

2.2 Safety instructions

Disconnect both mains plugs before opening the device!

The device must not be opened - for exceptions, see the maintenance and repair, and the service tasks! Power supply units must not be opened!

The device must be connected to a power supply with an earth contact, and should be positioned close to the mains socket.

The electrical system supplying current to the device, e.g. a house installation, must incorporate safety devices against excessive current, short-circuiting and earth leakages in accordance with EN 60950-1.

Both mains plugs are used to disconnect the device from the mains, therefore they must be easy to access and use at all times. The device is already in operation when one power unit is connected to the operating voltage. When the second power unit is also put into operation, one of the power units runs in idle mode as long as the other unit is supplying power to the device.
The device may only be repaired by sending it to ASTRO along with a precise description of the error.

Displays indicate the status of the device operation, as well as the existence of DC voltages separate from the mains that are supplying the components of the device. However, operation displays that are not lit up in no way indicate that the device is completely disconnected from the mains or is voltage-free.

Read carefully:
EN 60 728 – Part 11, Safety requirements / No service tasks during electrical storms!

2.3 Mounting instructions

The U 100 base device may only be mounted using guide rails! If the device is only fastened by means of the screws in the front panel, this will damage the base device!

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

Protection from environmental factors:
The device must only be connected and operated in dry rooms. It must not be exposed to spraying or dripping water, or to similar phenomena. If condensation appears, wait until the device is completely dry. Objects containing liquid must not be placed on top of the device.

The permitted ambient temperature range is 0 … 45°C (ETS 300 019-1-3 class 3.1).

Mounting environment:
The device is designed for operation in, preferably, metallically conductive 19" racks with sufficient air convection. It should be operated away from heat radiation and other heat sources. The device my only be installed in rooms in which the permitted ambient temperature can be adhered to, even under changing climatic conditions. To avoid trapped heat, it must be freely ventilated on all sides. You absolutely must avoid mounting the device in a niche or covering the ventilation openings.

2.4 Potential equalisation / earthing

The subscriber network must be earthed correctly in accordance with EN 50083-1, and must remain earthed even when the device is removed.
The potential equalisation on the U 100 is effected via the fastening plates of the device, or via the earthing connection on the back of the device. Devices within hand's reached must be incorporated into the potential equalisation among one another.

It is not permitted to operate the device without an earth conductor, device earthing or device potential equalisation!

2.5 Maintenance and repair

Disconnect both mains plugs before opening the device!
The device must not be opened other than for repair purposes. In general, power units must not be opened. Repairs may only be carried out at the plant or at workshops, or by persons, authorised by ASTRO Strobel Kommunikationssysteme GmbH.

Read carefully: DIN VDE 0701- 0702, Repairs

Note: The device must not be opened by the user!

2.6 Service tasks

The following tasks, in which screw connections have to be opened, can be performed by appropriately instructed service personnel: removal and installation of signal converters (e.g. U 115) and power units, also in the operating mode of the U 100.

Replacing power units
After the screws on the cover of the power unit chamber (ASTRO logo) are removed,
the power units can be pulled out by hand, forwards along the mounting panel.
When power units are being installed, there should be no contact with the ventilator or the fan grid,
and only the mounting panel attached to the power unit should be used.
When the tasks are complete, the cover of the power unit chamber must be replaced; continuous operation of the device is not permitted without this cover.

Note: Do not put your hand or any objects into the power unit chamber.

The U 100 must only be operated with the original power unit(s)!

Replacing converter modules:
Converter modules can be pulled outwards after the safety screw on the front panel has been unscrewed.

2.7 Technical data for the mains supply (U 100 SNT 230 V version)

Mains voltage:	100 – 240 V
Mains frequency:	50 / 60 Hz
Current consumption:	1.4 – 0.7 A per power unit
Protection class according to EN 60529:	IP 20
Permitted ambient temperature range:	0 … 45°C
Secondary fuse in U100-230:	T3,15A L 250 V IEC 60127-2/3
Secondary fuses in U114:	SMD, various values

2.8 Installing and coding the backplane

The scope of delivery of every U 1xx signal converter includes a backplane to create the physical connection between the signal converter and the base device. Both the mains HF connections and the network connections are connected to this backplane. The temperature controlled fan for cooling the U 1xx signal converter is located on the backplane.

2.8.1 Coding the backplane

To correctly define the position of the backplane, and thus the position of the related signal converter in the U 100 base device, the jumper on the board of the backplane, which is described in the following section, must be configured.

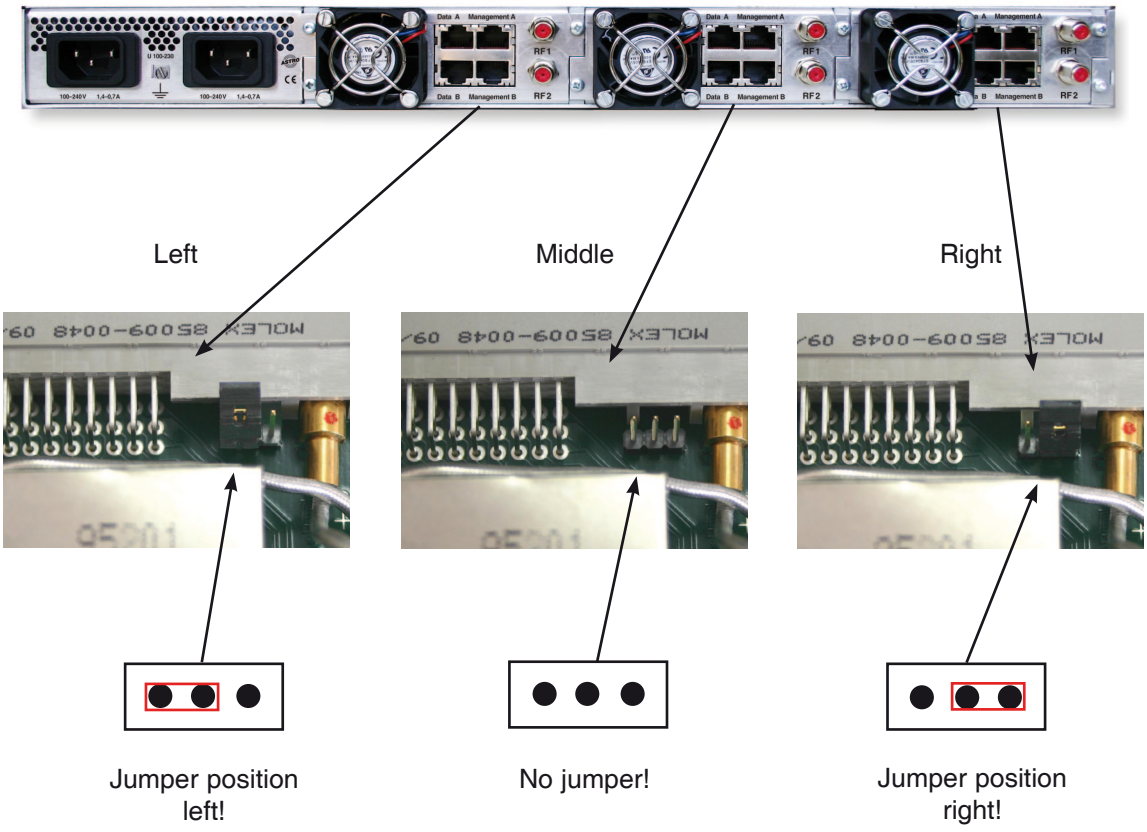


Figure 1: Coding the backplane using the jumper

Note:
An incorrectly configured jumper leads to incorrect displays in the front LEDs.
Additionally, it is not possible to display a correct position on the Web user interface!

2.8.2 Installing the backplane

In its state on delivery, the back of the U 100 base device is covered with blind panels:

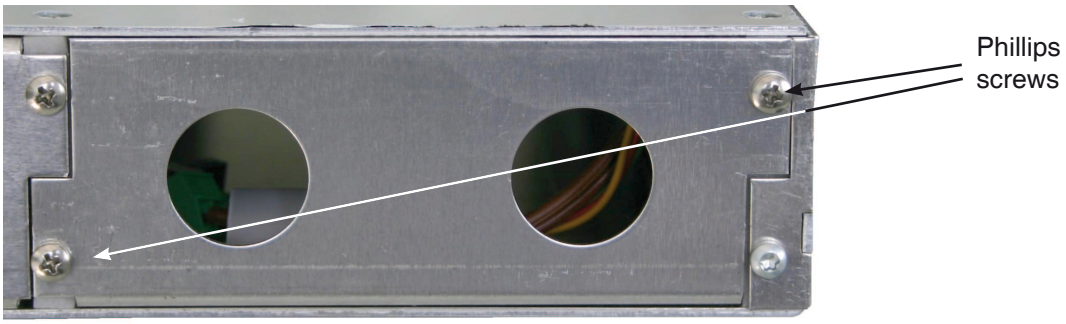


Figure 2: Position of the blind panel on delivery of U 100

To remove the blind panel, unscrew the two Phillips screws indicated in the above figure and remove the blind panel. The cables now visible must be connected to the backplane coded according to chapter 2.8.1, as shown in the following figure:

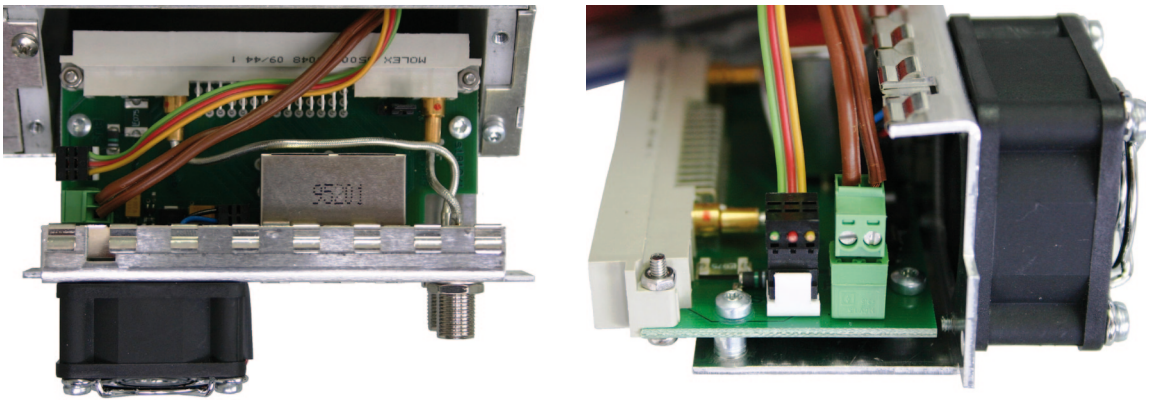


Figure 3: Connecting the voltage supply and signal lines

The backplane is now carefully inserted into the free slot of the U 100 base device and screwed in with the Phillips screws of the backplane. Here you must ensure that the cables are not jammed and that the backplane can be installed in the housing with only a small amount of pressure.

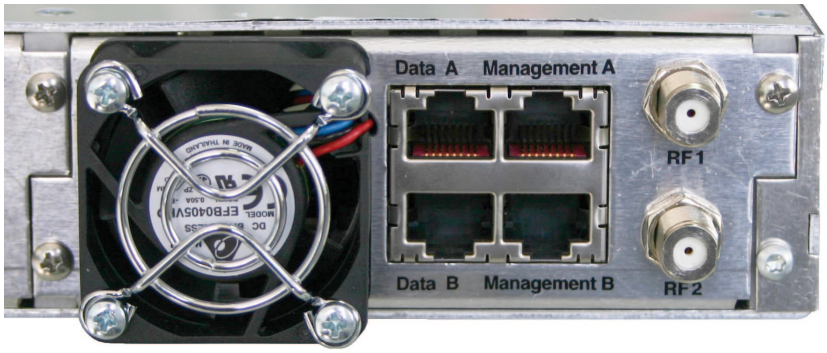


Figure 4: Correctly installed backplane

3 General introduction

3.1 Connecting the U 115 to a PC / laptop

When the operating voltage is connected, or after it is inserted into the slot of the base device, the U 115 switches on automatically. After the boot phase (ca. 90 seconds), the two management IP addresses appear in the display, along with other status messages.
If the device is connected to a PC / laptop via one of the network ports, and if the PC / laptop is suitably configured via the network settings, after you enter the IP address in the address line of the Web browser you can start configuring the U 115.

3.2 The Web browser user interface

The Web browser user interface is divided into the top frame, the left frame and the main frame.

The top frame contains general information about the U 115.

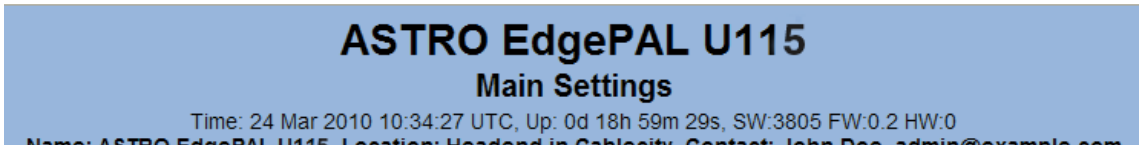


Figure 1: General information in the top frame of the Web browser user interface

This information is as follows:

“SW: 3777” indicates the software level of the U 115 EdgePAL,
“FW: 0.2” is the level of the firmware in the U 115 EdgePAL,
“HW: 0” is the hardware version of the U 115 EdgePAL,
“Up: 0d 10h 06m 58s” is the duration of the connection, measured from the moment of the login,
“Time (UTC):” displays the time of the U 115.

The line in bold for the “name”, “location” and “contact” is made up of the settings in the “User” chapter.

In the right section of the top frame, status information for the U 115 is displayed, i.e. in the Web browser user interface, the latest error message is visible.

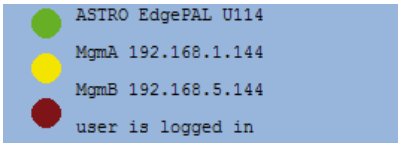


Figure 2: View of U 115 Display of the Web browser user interface

The left frame
contains the navigation bar for the various submenus, which are described in detail in the following chapters.

In the main frame,
the submenu is displayed according to the selection made in the navigation bar in the left frame.

4 Login

Before the U 115 can be configured there must be a login. This is performed in the “Login” submenu.

In the state on delivery, the login data is as follows:

User: admin or user
Password: astro

After correctly entering the login data, you can proceed with the configuration.

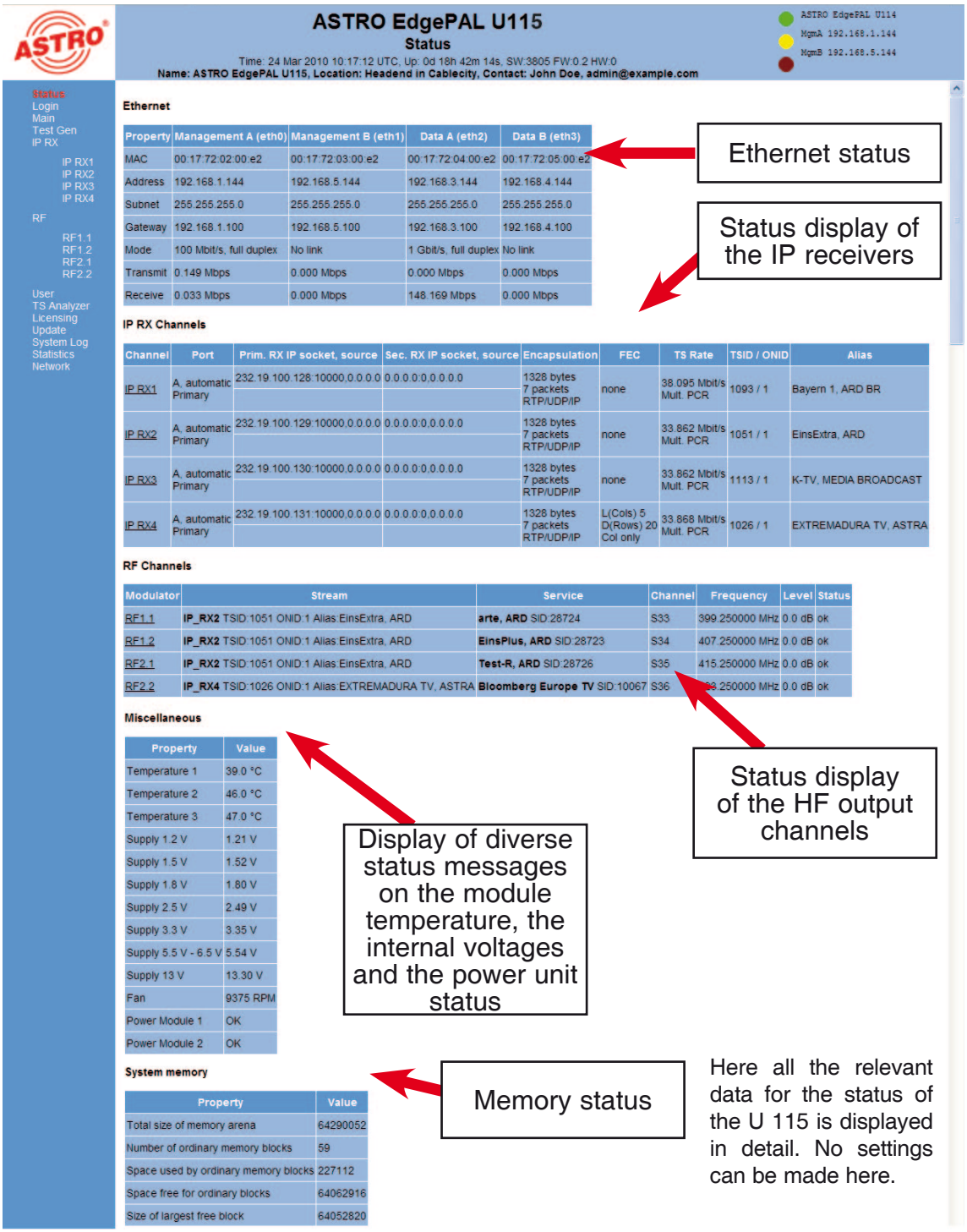
Note:

For security reasons, the user names and passwords should be changed from the state on delivery. This prevents unauthorized access.

Only one user / BC 4 can ever be logged into the U 115. At the very bottom of the left frame of the Web browser user interface, the user currently logged in is displayed.

5 Status

When you click on the “Status” submenu in the left frame, the following window appears (example):



Property	Management A (eth0)	Management B (eth1)	Data A (eth2)	Data B (eth3)
MAC	00:17:72:02:00:e2	00:17:72:03:00:e2	00:17:72:04:00:e2	00:17:72:05:00:e2
Address	192.168.1.144	192.168.5.144	192.168.3.144	192.168.4.144
Subnet	255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0
Gateway	192.168.1.100	192.168.5.100	192.168.3.100	192.168.4.100
Mode	100 Mbit/s, full duplex	No link	1 Gbit/s, full duplex	No link
Transmit	0.149 Mbps	0.000 Mbps	0.000 Mbps	0.000 Mbps
Receive	0.033 Mbps	0.000 Mbps	148.169 Mbps	0.000 Mbps

Channel	Port	Prim. RX IP socket, source	Sec. RX IP socket, source	Encapsulation	FEC	TS Rate	TSID / ONID	Alias
IP RX1	A, automatic Primary	232.19.100.128:10000.0.0.0.0	0.0.0.0:0.0.0.0.0	1328 bytes 7 packets RTP/UDP/IP	none	38.095 Mbit/s Mult. PCR	1093 / 1	Bayern 1, ARD BR
IP RX2	A, automatic Primary	232.19.100.129:10000.0.0.0.0	0.0.0.0:0.0.0.0.0	1328 bytes 7 packets RTP/UDP/IP	none	33.862 Mbit/s Mult. PCR	1051 / 1	EinsExtra, ARD
IP RX3	A, automatic Primary	232.19.100.130:10000.0.0.0.0	0.0.0.0:0.0.0.0.0	1328 bytes 7 packets RTP/UDP/IP	none	33.862 Mbit/s Mult. PCR	1113 / 1	K-TV, MEDIA BROADCAST
IP RX4	A, automatic Primary	232.19.100.131:10000.0.0.0.0	0.0.0.0:0.0.0.0.0	1328 bytes 7 packets RTP/UDP/IP	L(Cols) 5 D(Rows) 20 Col only	33.868 Mbit/s Mult. PCR	1026 / 1	EXTREMADURA TV, ASTRA

Modulator	Stream	Service	Channel	Frequency	Level	Status
RF1.1	**IP_RX2** TSID:1051 ONID:1 Alias:EinsExtra, ARD	**arte, ARD** SID:28724	S33	399.250000 MHz	0.0 dB	ok
RF1.2	**IP_RX2** TSID:1051 ONID:1 Alias:EinsExtra, ARD	**EinsPlus, ARD** SID:28723	S34	407.250000 MHz	0.0 dB	ok
RF2.1	**IP_RX2** TSID:1051 ONID:1 Alias:EinsExtra, ARD	**Test-R, ARD** SID:28726	S35	415.250000 MHz	0.0 dB	ok
RF2.2	**IP_RX4** TSID:1026 ONID:1 Alias:EXTREMADURA TV, ASTRA	**Bloomberg Europe TV** SID:10067	S36	[illegible] 250000 MHz	0.0 dB	ok

Property	Value
Temperature 1	39.0 °C
Temperature 2	46.0 °C
Temperature 3	47.0 °C
Supply 1.2 V	1.21 V
Supply 1.5 V	1.52 V
Supply 1.8 V	1.80 V
Supply 2.5 V	2.49 V
Supply 3.3 V	3.35 V
Supply 5.5 V - 6.5 V	5.54 V
Supply 13 V	13.30 V
Fan	9375 RPM
Power Module 1	OK
Power Module 2	OK

Property	Value
Total size of memory arena	64290052
Number of ordinary memory blocks	59
Space used by ordinary memory blocks	227112
Space free for ordinary blocks	64062916
Size of largest free block	64052820

Figure 3: Status display in the “Status” submenu

6 Settings for the IP interfaces, IP management and base device

When you click on the “Main” submenu in the left frame, the following window appears (example):

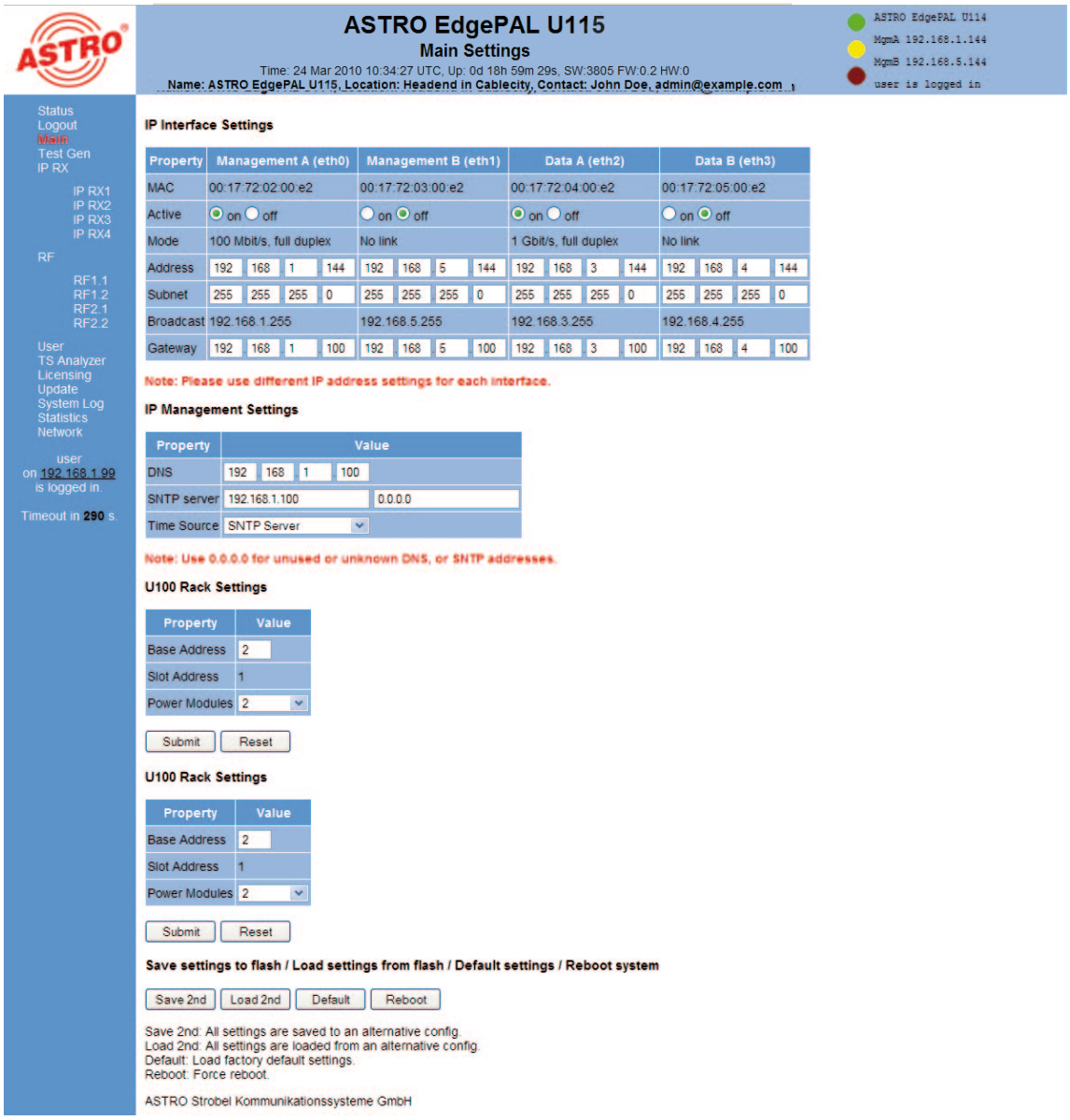


Figure 4: Overall view

The settings available are described in detail in the following sections.

6.1 Configuration of the IP interfaces

In the area of the user interface displayed below you can activate and deactivate the IP interfaces. The connection type is automatically detected and displayed by the U 115.
(Here: 1 GBit/s, full duplex for Data A and 100 MBit/s, full duplex for Management A).

IP Interface Settings

Property	Management A (eth0)	Management B (eth1)	Data A (eth2)	Data B (eth3)
MAC	00:17:72:02:00:e2	00:17:72:03:00:e2	00:17:72:04:00:e2	00:17:72:05:00:e2
Active	(•) on ( ) off	( ) on (•) off	(•) on ( ) off	( ) on (•) off
Mode	100 Mbit/s, full duplex	No link	1 Gbit/s, full duplex	No link
Address	192 . 168 . 1 . 144	192 . 168 . 5 . 144	192 . 168 . 3 . 144	192 . 168 . 4 . 144
Subnet	255 . 255 . 255 . 0	255 . 255 . 255 . 0	255 . 255 . 255 . 0	255 . 255 . 255 . 0
Broadcast	192.168.1.255	192.168.5.255	192.168.3.255	192.168.4.255
Gateway	192 . 168 . 1 . 100	192 . 168 . 5 . 100	192 . 168 . 3 . 100	192 . 168 . 4 . 100

Note: Please use different IP address settings for each interface.

Figure 5: IP interface configuration

Changes to the IP addresses must be transferred to the U 115 using the “Submit” button.

Note:

When programming the IP addresses, make sure the addresses are not already allocated in your network. Address conflicts lead to malfunctions in the network.

6.2 IP management configuration

In the IP management configuration, the DNS server and the SNTP server are entered. If a valid entry is made under “SNTP server”, this can be used as a time reference. The MPEG flows (TDT) are additional time references.

IP Management Settings

Property	Value
DNS	192 . 168 . 1 . 100
SNTP server	192.168.1.100 0.0.0.0
Time Source	SNTP Server

Note: Use 0.0.0.0 for unused or unknown DNS, or SNTP addresses.

Figure 6: IP management configuration

6.3 U 100 settings

Under “U 100 Rack Settings” an address can be allocated to the relevant base device. The number of the currently selected slot is displayed below it:

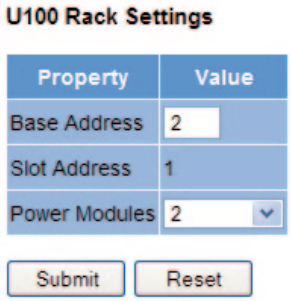


Figure 7: Rack settings

6.4 Saving and loading a configuration, default and reboot

The current configuration of the U 115 is always written to the device using the “Submit” buttons, and is therefore activated immediately. If you want to save the current status, you press the “Save 2nd” button. This current status is then saved on the SD card in the U 115. You can call up this status again using the “Load 2nd” button. Saving the configuration on the local computer or FTP server is explained in the “Update” chapter.

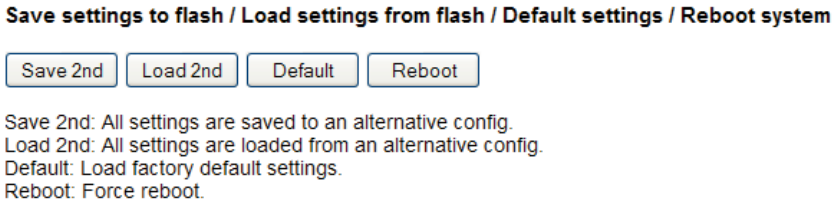


Figure 8: Saving and loading / default and reboot

The “Default” button is used to restore the factory settings.

Note:

With the factory settings, all the settings apart from the user and network settings of the data and management ports are reset to the state on delivery!

The “Reboot” button restarts the U 115 with the last settings that were entered.

7 Test generator

The U 115 has an integrated test generator for checking the functions of the PAL modulators when no input signal is available yet. The max. data rate that can be set is 67 MBit/s.

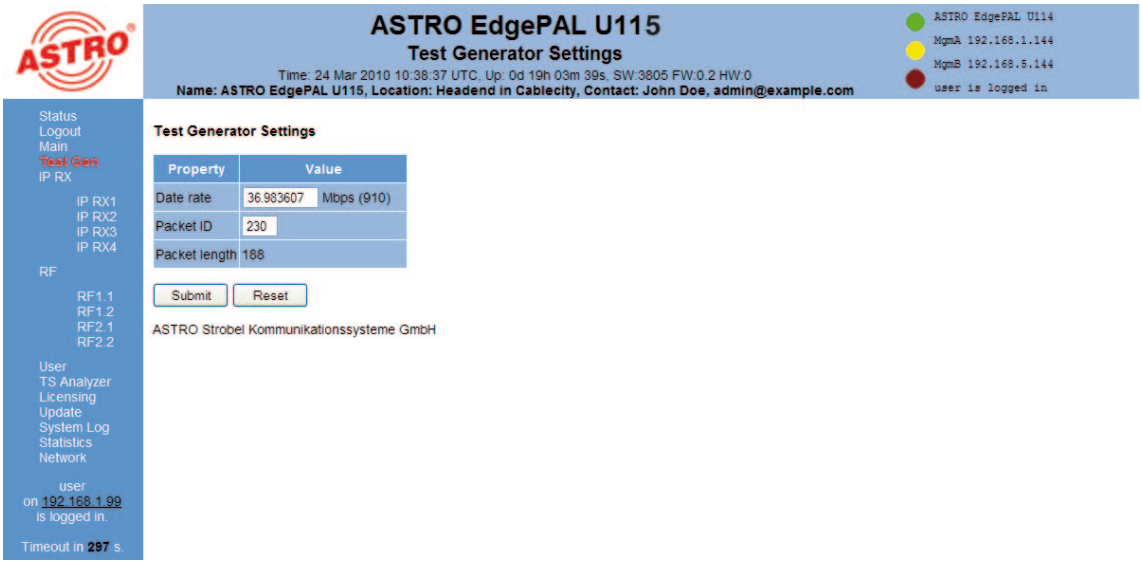


Figure 9: Test generator settings

8 Configuration of the IP inputs

When you click on the “IP RX” submenu in the left frame, the following window appears (example):

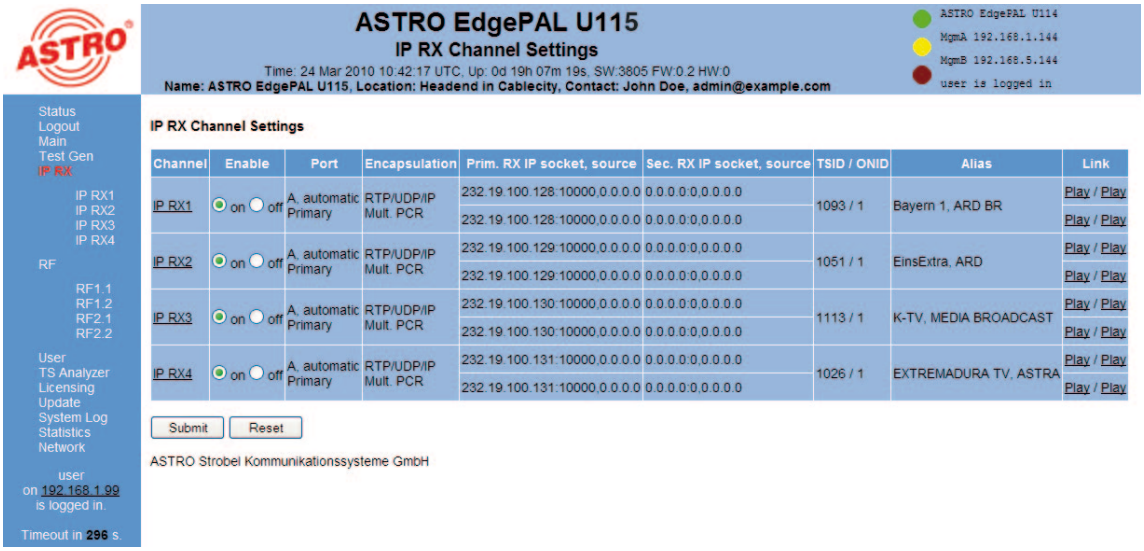
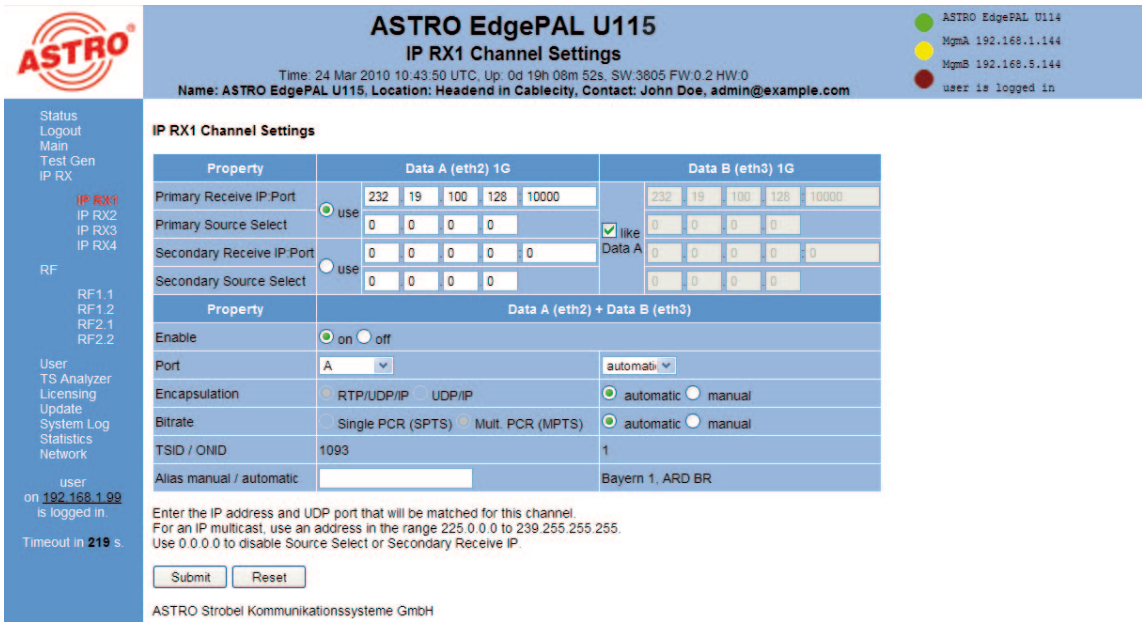


Figure 10: Overview of the IP input configuration

Here the four IP inputs to be configured are activated or deactivated, and their current configuration is displayed. You go to the detailed settings either by clicking the relevant channel (e.g. IP RX3) or clicking the relevant submenu in the left frame.

Figure 11: Detailed settings of the IP receiver



To enable the greatest possible path redundancy, the U 115 has various different configuration options for the IP receivers. The Data A and Data B ports can be configured completely independently of one another. IGMPv3 enables what is known as “Source Select”, i.e. the IP receiver can request the data from a preferred source.

Figure 12: Setting the Multicast addresses

IP RX1 Channel Settings

Property	Data A (eth2) 1G		Data B (eth3) 1G	
Primary Receive IP:Port	◉ use	232 . 19 . 100 . 128 : 10000	☑ like Data A	232 . 19 . 100 . 128 : 10000
Primary Source Select		0 . 0 . 0 . 0		0 . 0 . 0 . 0
Secondary Receive IP:Port	○ use	0 . 0 . 0 . 0 : 0		0 . 0 . 0 . 0 : 0
Secondary Source Select		0 . 0 . 0 . 0		0 . 0 . 0 . 0

The “use” selection box defines the data source used. This data source is defined via the Multicast address and can - if this Multicast address is provided by multiple senders - be used preferentially by the IP receiver. The IP address of the preferred source is entered under “Primary / Secondary Source Select”. If 0.0.0.0 is displayed here, the Source Select function is deactivated.
If different signal paths are supplied by the same sending equipment, it can make sense to configure Data B exactly like Data A. This is easily performed by activating “like Data A”.

Figure 13: Settings for the IP input signal format

Property	Data A (eth2) + Data B (eth3)	
Enable	◉ on ○ off	
Port	A	automati
Encapsulation	○ RTP/UDP/IP ○ UDP/IP	◉ automatic ○ manual
Bitrate	○ Single PCR (SPTS) ○ Mult. PCR (MPTS)	◉ automatic ○ manual
TSID / ONID	1093	1
Alias manual / automatic		Bayern 1, ARD BR

In the “Enable” line, the IP receiver is activated or deactivated.

In the “Port” line, the data interface is selected (A or B) and the preferred data interface is set. This function enables the U 115 to switch to the second interface after an input signal has failed, and to switch back when the failed signal has been re-established (prefer A or B). If you select the “auto” option, the IP receiver remains on the substitute interface until it is manually switched back, or until this interface also fails.

Under “Encapsulation” the protocol used in the sender is set: RTP/UDP/IP or UDP/IP. However, the U 115 is also able to detect the protocol automatically and evaluate it accordingly.

For the “Bitrate” you can choose between “Single PCR (SPTS)” and “Multiple PCR (MPTS)”. Here the U 115 can also detect the status automatically and process it.

To have a better overview during the configuration of the HF parameters, you have the option of entering an alias. If this entry option is not used, the first service in the transport stream is automatically used as the alias.

9 Configuration of the HF outputs

You go to the overview of the HF parameters via the “RF” submenu in the left frame. All four output channels with the related data on the data flow are displayed, as well as the status of the respective output channel. Here the output channel can be activated or deactivated. If you select “Standby” here, only the HF is deactivated. However, the configuration of the output signal remains active, along with the analysis of the input data flow.
Changes must be written to the device by pressing the “Submit” button.

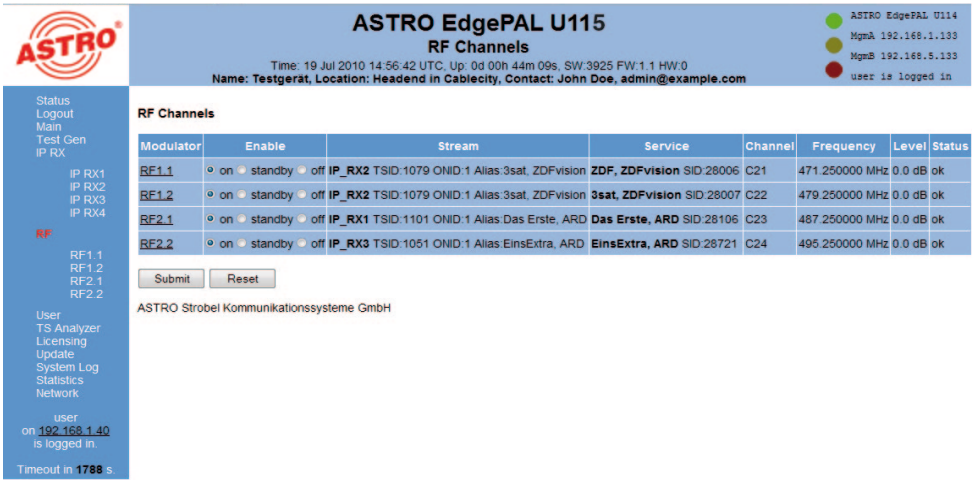
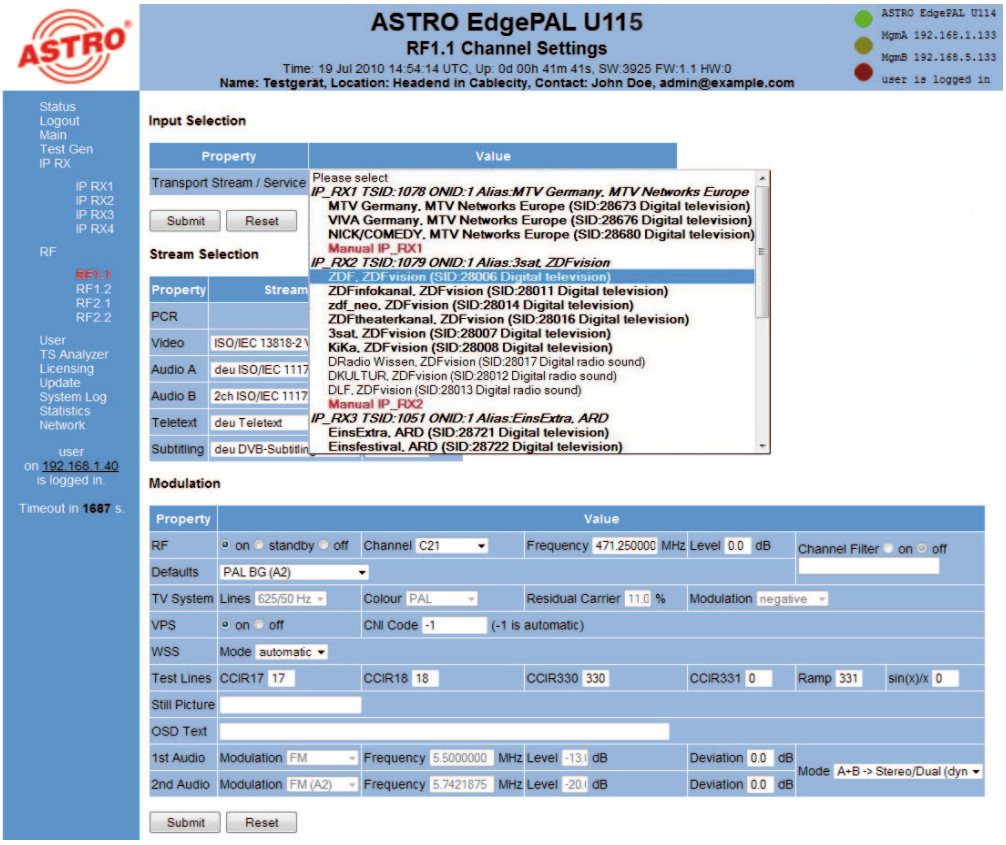


Figure 14: Overview of the HF parameters

You go to the detailed settings either by clicking the relevant channel (e.g. RF 1.1) or clicking the relevant submenu in the left frame.

In the detailed view of a channel, the programme to be applied in PAL is selected under “Input Selection”. This programme can be applied from any of the four IP receivers.
Figure 15: Output channel setting



In the “Stream Selection” area, the PIDs of the PCR are displayed, along with the PIDs of the selected video and audio stream. The teletext can be selected or deactivated, as can the subtitles.

Stream Selection

Property	Stream	PID (-TTX page)
PCR		110
Video	ISO/IEC 13818-2 Video	110
Audio A	deu ISO/IEC 11172 Audi	120
Audio B	2ch ISO/IEC 11172 Audic	121
Teletext	deu Teletext	130
Subtitling	deu DVB-Subtitling	131

Figure 16: Stream selection

Modulation

Property	Value				
RF	on / standby / off	Channel C21	Frequency 471.250000 MHz	Level 0.0 dB	Channel Filter on / off
Defaults	PAL BG (A2)				
TV System	Lines 625/50 Hz	Colour PAL	Residual Carrier 11.0 %	Modulation negative	
VPS	on / off	CNI Code -1	(-1 is automatic)		
WSS	Mode automati				
Test Lines	CCIR1	CCIR18 18	CCIR330 330	CCIR331 0	Ramp
Still Picture					
OSD Text					
1st Audio	Modulation FM	Frequency 5.5000000 MHz	Level -13.(dB	Deviation 0.0 dB	
2nd Audio	Modulation FM (A2)	Frequency 5.7421875 MHz	Level -20.(dB	Deviation 0.0 dB	

WSS: off, automatic, decoder, 4:3, 16:9

Ramp: Please select, A -> Mono L+R, A -> Mono L, A -> Mono R, A -> Stereo, A -> Dual (L is main), A -> Dual (R is main), A -> Automatic, A+B -> Dual (static), A+B -> Stereo/Dual (dynamic)

Mode: A+B -> Stereo/Dual (dyn

Figure 17: Setting the PAL modulator

“RF” line:
- Activating and deactivating the output signal / Standby: output signal selected and configured, but HF deactivated
- Selection of the output channel
- Setting the output level
- Activating and deactivating the channel filter

“Defaults” line:
- Selecting the standard used (PAL B/G, PAL D/K, SECAM, Nicam, etc.)
- In the text input field under “Channel Filter”, in the state on delivery ASTRO has entered the channel filter used

“TV System” line:
- Display the number of lines and the picture frequency
- Display the colour standard
- Display the residual carrier
- Display the modulation start
- Correspond respectively to the standard selected in the “Defaults” line

“VPS” line:
- Activating and deactivating the VPS signal
- Enter the CNI (Country & Network Identifier)

“WSS” line:
- Select the WSS mode: off, 16:9, 4:3, decoder and automatic

“Test Lines” line:
- Enter the picture lines into which the respective test line is to be keyed in

“Still Picture” line:
- Reserved for future applications

“OSD Text” line:
- The text entered here is keyed into the current picture as OSD text

“1st Audio” and “2nd Audio” lines:
- Setting the audio mode and the audio hub (deviation)

10 User management

You reach the user management by clicking on the “User” submenu. The U 115 allows you to create four different users. In the state on delivery, “admin”, “user” and “bc4” are created, all with the password “astro”.

Note:

For security reasons, the user names and passwords should be changed from the state on delivery. This prevents unauthorized access.

In the “Timeout” line the minutes are entered until the U 144 automatically logs the user out if no configuration change has been registered during this period.

In the lower area of the “User Administration” table, you can enter the name, location and responsible contact person. These entries also appear in the top frame.

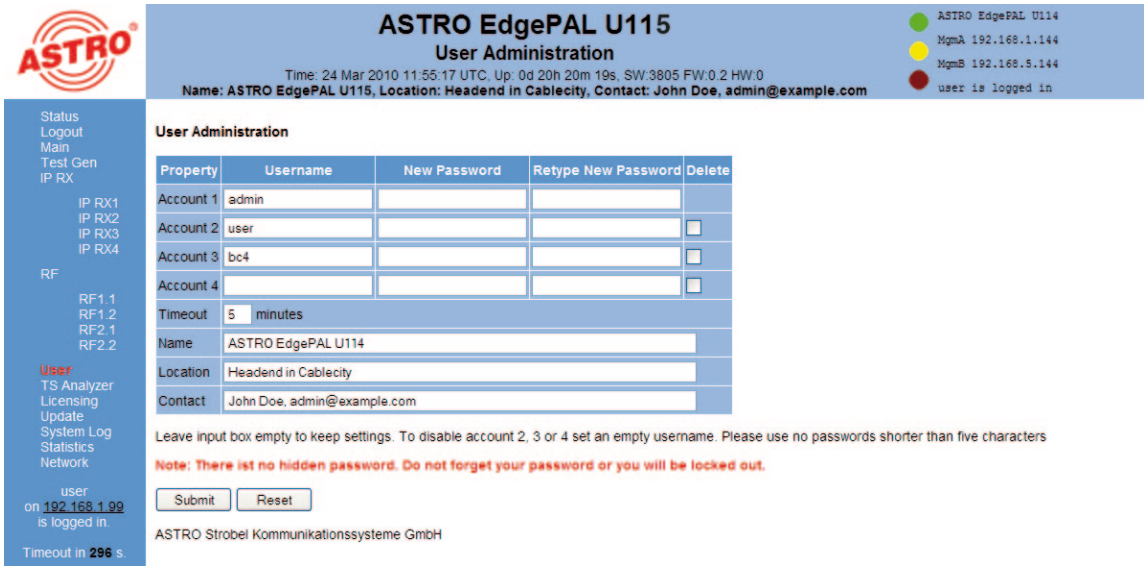


Figure 18: User management

Changes must be transferred to the U 115 using “Submit”.

11 Transport Stream (TS) Analyzer

The U 115 can be equipped with a Transport Stream Analyzer by obtaining a licence. This Analyzer displays the structure of the MPEG2 TS, from the tables to the individual PID and its service. You click on the “TS Analyzer” submenu to reach the selection of the transport stream to be analysed. When you select a TS in the “Analyze” line and press the “Submit” button, the selected transport stream is analysed.

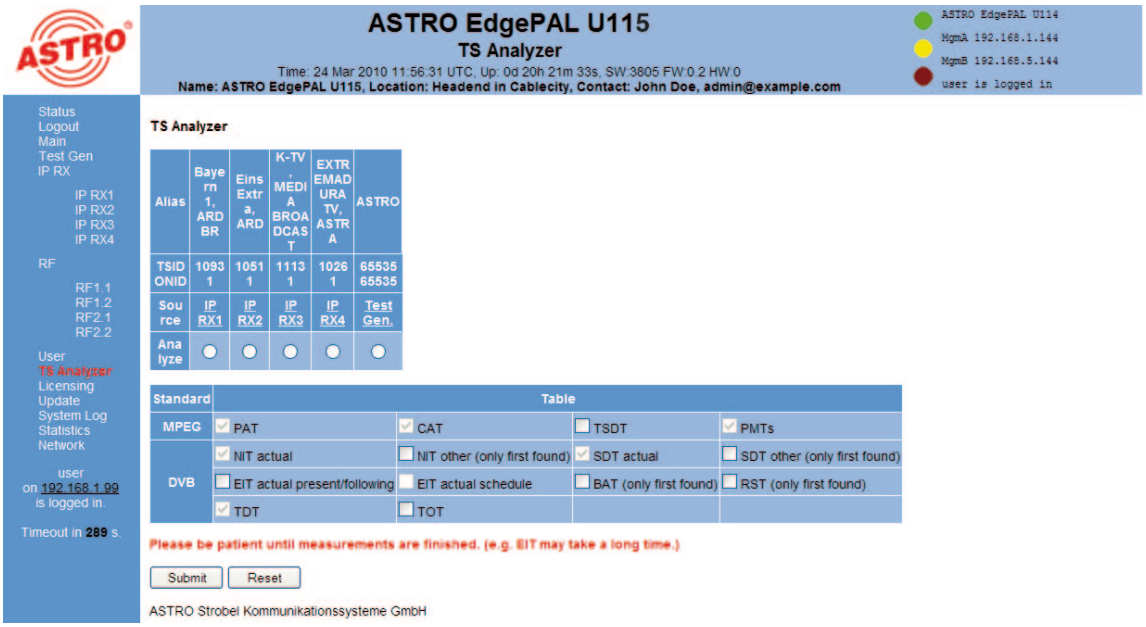


Figure 19: Transport Stream (TS) Analyzer view

The optionally available TS Analyzer provides an effective way of checking that the IP input signal is complete, as regards the services / tables it contains. When an analysis has been started, it can take several minutes to complete. In particular, the analysis of the EIT (Event Information Table) can take somewhat longer.
A data stream can be received with CBR (Constant Bit Ratio) in the U 261 gateway, or with VBR (Variable Bit Ratio). In any case, CBR is used in MPTS (Multiple Program Transport Stream), but also in SPTS (Single Program Transport Stream). However, SPTS can also be sent with VBR.

Under “Packet Mode” you can choose between “continuous” or “burst” for the configuration of the respective ASI outputs after the IP RX.
The TSID and ONID are displayed according to the transport stream selected, and an alias can be entered for a better overview of the transport streams (see also Figure 11). If no alias is entered, the name of the first service of the transport stream appears.

12 Licensing

Some functions of the U 115 (e.g. the TS Analyzer) must be activated using a licence key. The licence key can be obtained from ASTRO along with the function. The text sent is then copied into the text input field and transferred to the device using “Submit”.

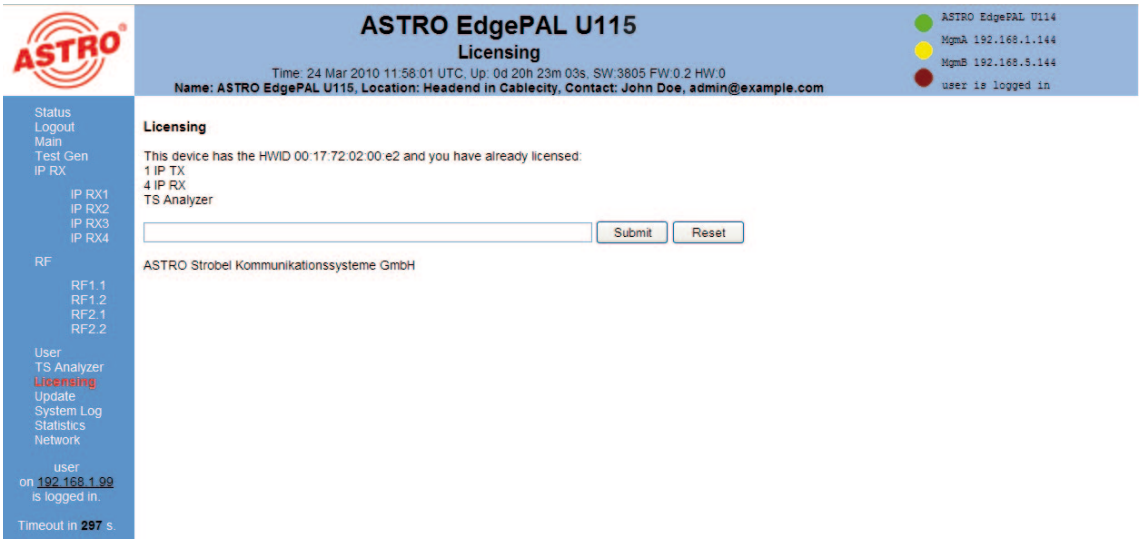


Figure 20: Input mask for licence key

To order additional licences, you must enter the MAC address of the device. You will find the MAC address on the Web browser interface, in the “Licensing” submenu (HWID). After the MAC address is passed on, the licence keys are generated at the ASTRO company and issued by e-mail or on a CD.
The format of a licence key is a text document (e.g. Lic001772000222.txt). You can use copy / paste to copy the key(s) into the input mask and press the “Submit” button to transfer the licences to the U 115. If the licence is valid, this is confirmed with the message “License is valid”. An error message is displayed for an invalid licence.

13 Software update / saving & loading a configuration

When you click on the “Update” submenu in the left frame, the following window appears (example):

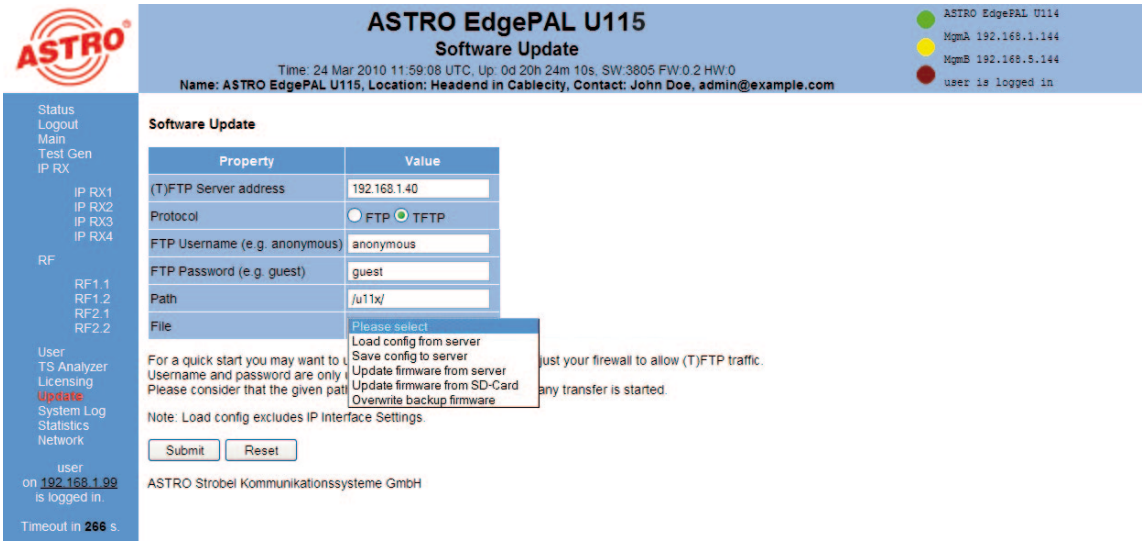


Figure 21: Action selection in the “Software Upgrade” submenu

Here you have the option to store the configuration of the U 115 on an FTP server.

Clicking on the “Update” submenu takes you to the settings for the U 115 software update. In the “(T)FTP Server address” line you enter the (T)FTP server address at which the current software for the U 115 is stored.

In the “Protocol” line you can choose between “FTP” (File Transfer Protocol) and “TFTP” (Trivial File Transfer Protocol). If you choose the “TFTP” option, it is not necessary to enter the user name and the password.

Under “Path” you must enter the path under which the U 115 software for the update was stored. You must ensure that the software is stored in the path entered (with “/” at the start and the end), otherwise no update is performed. You must also ensure that any firewall installed allows (T)FTP communication.

The “Update” submenu also provides the option to save the configuration of the U 115 on an FTP server, or to load a configuration into the U 115. Loading a configuration into the U 115 does not affect the settings of the IP interfaces.

13.1 Update using example of a TFTP server for Windows

If no fixed (T)FTP server is set up for the update, you also have the option to transfer locally saved update files onto the device. Here it is recommended to use a TFTP programme. The procedure is described in the following section using the “Tftpd32” programme.

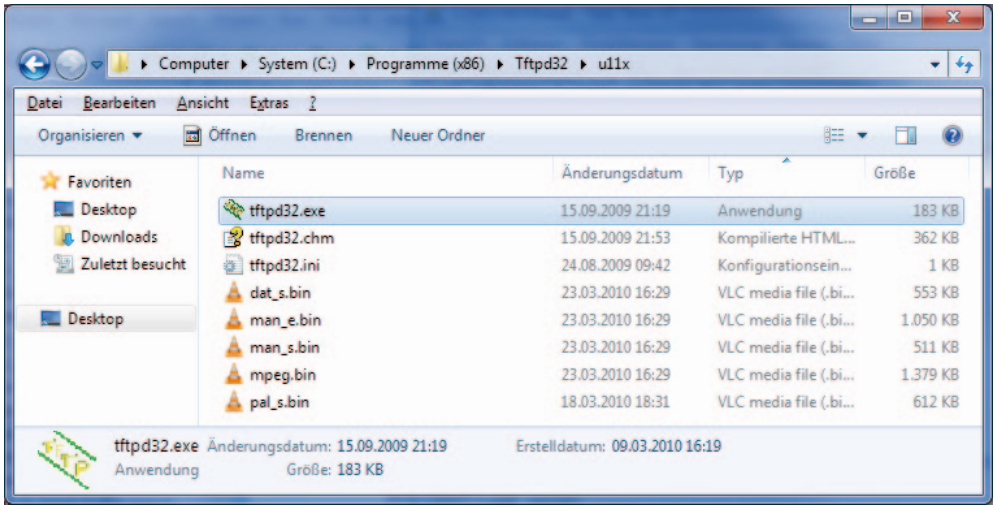


Figure 22: Example view of the U 115 update folder with update files and “tftpd32” TFTP programme

The “tftpd32” programme is started directly from the folder with the U 115 update files. In the window that appears, you first press the “Settings” button, then enter the settings according to Figure 21:

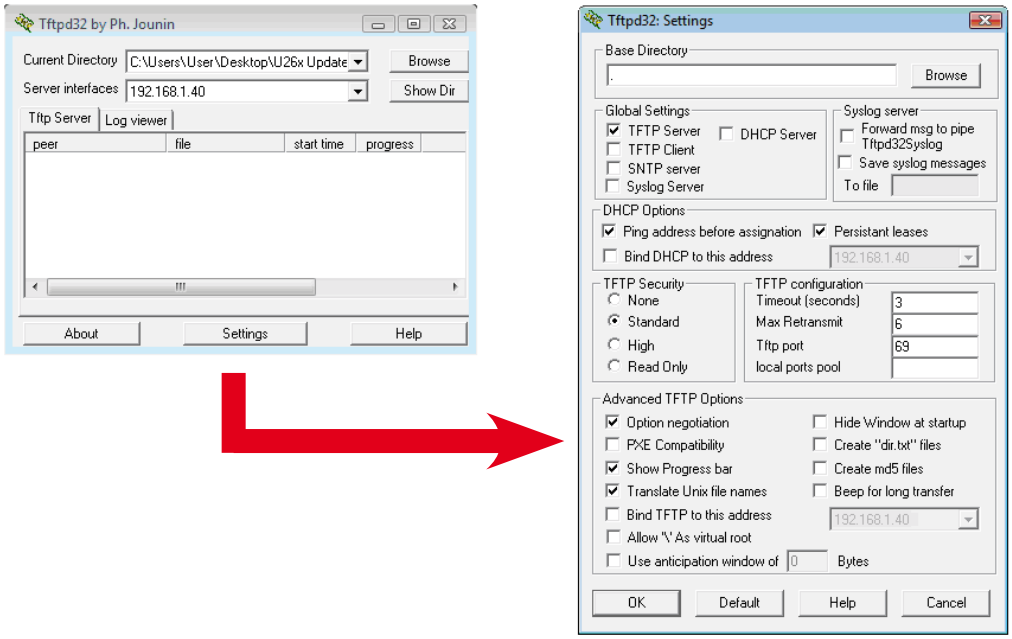


Figure 23: Settings for the tftpd32 TFTP programme

To start the update, the IP address of the local computer must be entered as the server address in the line “(T)FTP Server address” (Figure 23), and the protocol set to TFTP. Thus it is no longer necessary to enter a user name and a password. In the “File” line you now select the option “Update” and press the “Submit” button to start the update.

NOTE:

A reboot or a network failure during an update process can cause the U 115 software to crash irrevocably. The device then has to be returned to ASTRO for repair.

14 System log

Clicking on the “System Log” submenu takes you to the log of the U 115. All the procedures relevant to the operation of the device are documented here. Additionally, the SNMP settings are made here (defining the trap recipients, the trap community & the trap filter). Also, the “Log file filter” line can be used to define which events lead to an entry in the log.

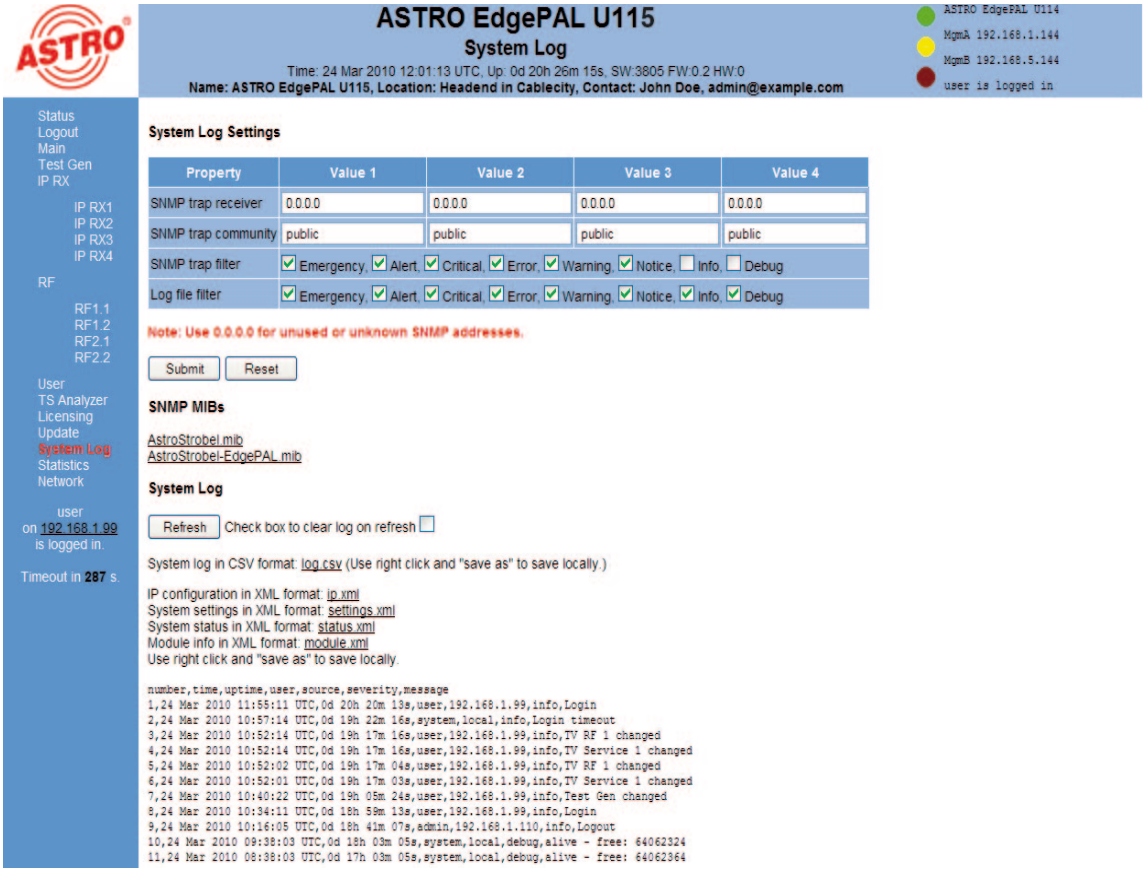


Figure 24: System log settings

The SNMP MIBs available are stored on the U 115 and can be downloaded from the device.

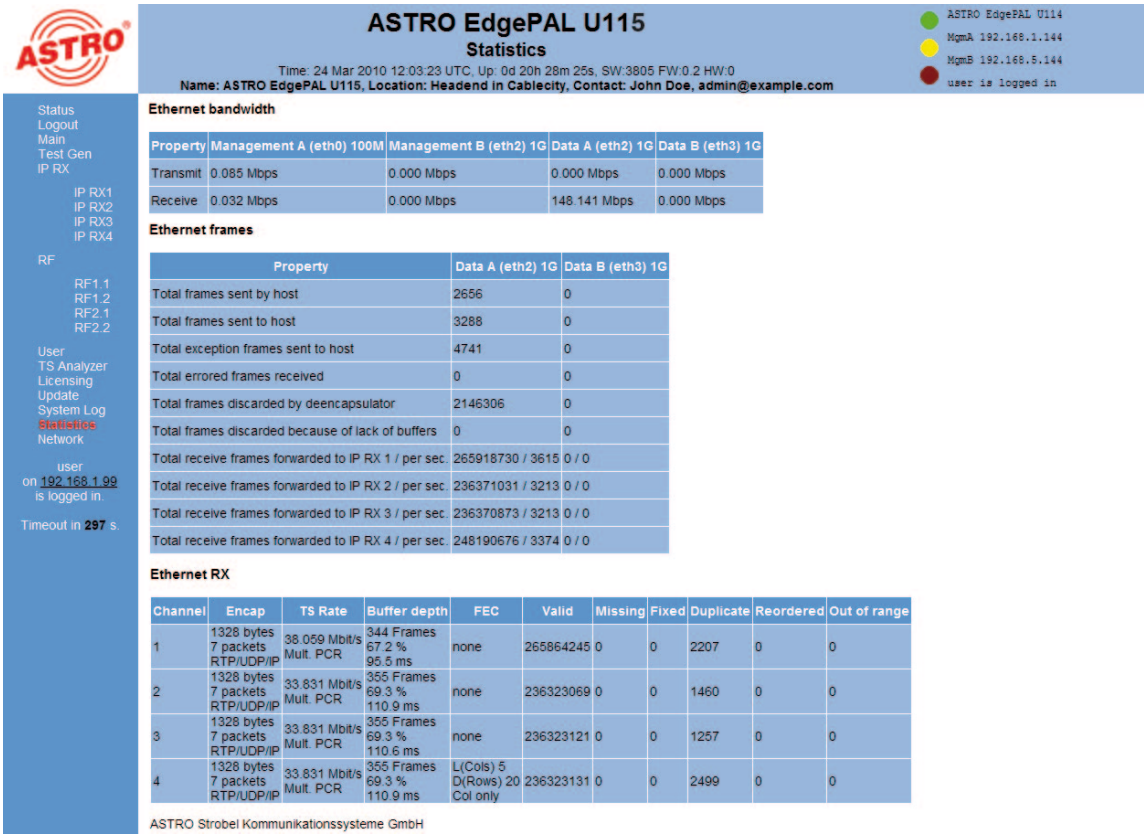
The operations in the system log are sorted by the time they occurred. To delete the log file, you set the flag for “Check box to clear log on refresh”, then click on the “Refresh” button. The first entry in the log is then the deletion operation, together with the time and the user account, as well as the IP address of the user.

NOTE:

- Downloading the IP configuration via the link “ip.xml”
- System settings via the link “settings.xml”
- System entries via the link “status.xml”
- Module information via the link “module.xml”

15 Statistics

Clicking on the “Statistics” submenu takes you to the statistics for the data transfer of the U 115. Here all the statistics relevant to the operation of the device and its analysis are displayed.



ASTRO EdgePAL U115

Statistics

Time: 24 Mar 2010 12:03:23 UTC, Up: 0d 20h 28m 25s, SW:3805 FW:0.2 HW:0

Name: ASTRO EdgePAL U115, Location: Headend in Cablecity, Contact: John Doe, admin@example.com

ASTRO EdgePAL U114
MgmA 192.168.1.144
MgmB 192.168.5.144
user is logged in

Status
Logout
Main
Test Gen
IP RX
IP RX1
IP RX2
IP RX3
IP RX4
RF
RF1.1
RF1.2
RF2.1
RF2.2
User
TS Analyzer
Licensing
Update
System Log
Statistics
Network

user
on 192.168.1.99
is logged in.

Timeout in 297 s.

Ethernet bandwidth

Property	Management A (eth0) 100M	Management B (eth2) 1G	Data A (eth2) 1G	Data B (eth3) 1G
Transmit	0.085 Mbps	0.000 Mbps	0.000 Mbps	0.000 Mbps
Receive	0.032 Mbps	0.000 Mbps	148.141 Mbps	0.000 Mbps

Ethernet frames

Property	Data A (eth2) 1G	Data B (eth3) 1G
Total frames sent by host	2656	0
Total frames sent to host	3288	0
Total exception frames sent to host	4741	0
Total errored frames received	0	0
Total frames discarded by deencapsulator	2146306	0
Total frames discarded because of lack of buffers	0	0
Total receive frames forwarded to IP RX 1 / per sec.	265918730 / 3615	0 / 0
Total receive frames forwarded to IP RX 2 / per sec.	236371031 / 3213	0 / 0
Total receive frames forwarded to IP RX 3 / per sec.	236370873 / 3213	0 / 0
Total receive frames forwarded to IP RX 4 / per sec.	248190676 / 3374	0 / 0

Ethernet RX

Channel	Encap	TS Rate	Buffer depth	FEC	Valid	Missing	Fixed	Duplicate	Reordered	Out of range
1	1328 bytes 7 packets RTP/UDP/IP	38.059 Mbit/s Mult. PCR	344 Frames 67.2 % 95.5 ms	none	265864245	0	0	2207	0	0
2	1328 bytes 7 packets RTP/UDP/IP	33.831 Mbit/s Mult. PCR	355 Frames 69.3 % 110.9 ms	none	236323069	0	0	1460	0	0
3	1328 bytes 7 packets RTP/UDP/IP	33.831 Mbit/s Mult. PCR	355 Frames 69.3 % 110.6 ms	none	236323121	0	0	1257	0	0
4	1328 bytes 7 packets RTP/UDP/IP	33.831 Mbit/s Mult. PCR	355 Frames 69.3 % 110.9 ms	L(Cols) 5 D(Rows) 20 Col only	236323131	0	0	2499	0	0

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Figure 25: Statistics for the data transfer

16 Network properties

You reach the network properties by clicking the “Network Monitor” submenu. The properties displayed are purely for information purposes, and are used to describe the network.

ASTRO EdgePAL U115

Network Monitor

Time: 24 Mar 2010 12:07:33 UTC, Up: 0d 20h 32m 35s, SW:3805 FW:0.2 HW:0

Name: ASTRO EdgePAL U115, Location: Headend in Cablecity, Contact: John Doe, admin@example.com

ASTRO EdgePAL U114
MgmA 192.168.1.144
MgmB 192.168.5.144
user is logged in

Status
Logout
Main
Test Gen
IP RX
IP RX1
IP RX2
IP RX3
IP RX4
RF
RF1.1
RF1.2
RF2.1
RF2.2
User
TS Analyzer
Licensing
Update
System Log
Statistics
Network

user
on 192.168.1.99
is logged in.

Timeout in 289 s.

Logical Interfaces

Interface	Status	
eth2	Flags	UP BROADCAST RUNNING SIMPLEX MULTICAST
	Address	192.168.3.144
	Broadcast	192.168.3.255
eth0	Flags	UP BROADCAST RUNNING SIMPLEX MULTICAST
	Address	192.168.1.144
	Broadcast	192.168.1.255
lo0	Flags	UP LOOPBACK RUNNING MULTICAST
	Address	127.0.0.1

Protocols

IPv4		ICMPv4		IGMP		UDP		TCP	
		Received		Received				Connections	
Received		ECHO	622	Total	1179			Initiated	3680
Total	83463	ECHO REPLY	0	Too long	0			Accepted	8675
Bad	1179	UNREACH	0	Too short	0	Received		Established	12355
Reassembled	0	REDIRECT	0	Bad sum	0	Total	212	Closed	12383
Delivered	81909	Other	0	Queries	1179	Bad	128	Received	
Sent		Bad	0	Bad queries	0	Sent		Packets	81076
Total	80799	Sent		Reports	0	Total	84	Data Packets	22283
Raw	0	ECHO	0	Bad reports	0			Bytes	269736
Fragmented	0	ECHO REPLY	622	Our reports	0			Sent	
		UNREACH	0	Sent				Packets	77727
		REDIRECT	0	Reports	2368			Data Packets	32005
		Other	0					Bytes	30301825

Mbufs

Summary		Types	
Mbufs	19		
Clusters	9	FREE	17
Free Clusters	8	DATA	2
Drops	0	HEADER	0
Waits	0	SONAME	0
Drains	0	FTABLE	0
Copy Fails	0		
Pullup Fails	0		

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Figure 26: Example view of the network properties in the “Network Monitor” submenu

17 Logout

Clicking on the “Logout” submenu (only available when you are logged in) takes you to the logout of the U 115.

Figure 27: Logging out of the U 115

If you confirm the request by clicking “Yes”, you are logged out. No further settings can be made without logging in again, but you do have the option to view the settings of the U 115. However, the setting elements are inactive.

18 Technical data

Type		U 100 - 48	U 100 - 230
Order number		380 100	380 101
EAN-Code		4026187611064	4026187611149
Network interfaces (passive routing to U 1xx)			
Management		2 x 100 Base-T Ethernet (RJ 45)	
Data		2 x 1000 Base-T Ethernet (RJ 45)	
Protocol		IEEE802.3 Ethernet, RTP, ARP, IPv4, TCP/UDP, HTTP, SNTP, IGMPv3	
Transport stream editing			
TS capsulation		UDP, UDP / RTP, 1-7 packets, FEC	
Transport stream editing		transparent (188 oder 204 packets)	
Control and management			
Features		Control via HTTP / WEB	
Protocol		HTTP / SNMP (Fehlermeldungen)	
Common data			
Voltage supply	[V]	- 48 V DC	100 - 230 V AC
Power consumption	[W]	depends on mounting	
Dimensions		19“ / 1 HE	
Ambient temperature	[°C]	0…+45	

Type		U 115
Order number		380 115
Network interfaces (passive routing to U 1xx)		
Management		2 x 100 Base-T Ethernet (RJ 45)
Data		2 x 1000 Base-T Ethernet (RJ 45)
Protocol		IEEE802.3 Ethernet, RTP, ARP, IPv4, TCP/UDP, HTTP, SNTP, IGMPv3
Transport stream editing		
TS Decapsulation		UDP, UDP / RTP, 1-7 packets, FEC
Packet length	[Bytes]	188 / 204
Decoding		
Video		MPEG 2 Main Profile @ Main Layer MP @ ML und H.264 MP @ L30 (SD)
Audio		2 x MPEG 1 Layer 2, Mono / Stereo, 2-channel audio / Audio Description
Data		Teletext, VPS, WSS, Teletext subtitles, DVB Subtitling
PAL modulator		
Connectors	[Ω]	75, 2 x F-jack
Frequency range	[MHz]	47 - 862, digital modulation
Output level	[dBµV]	118
Return loss	[dB]	≥ 14
Spurious frequency dist.	[dB]	≥ 60
Stereo cross talk	[dB]	> 55
Residual carrier accuracy	[%]	1
TV standard		PAL/SECAM, B/G, D/K, SECAML, A2/NICAM
Video-signal to noise ratio	[dB]	typ. 65
Common data		
Power consumption	[W]	28
Dimensions		19´´, 1 HE
Ambient temperature	[°C]	0…+45

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