FlexXtract DAB Distribution Extractor

User Manual

Screenshots: FlexXtract DAB Version 4.68/5.68

November 2018

User Manual FlexXtract DAB V01.43

Content

1.Symbols in this manual

1.1. References and Hyperlinks in this PDF File

The original text document of this manual uses bookmarks for reference purposes. If you read this manual as a non-print version, please note that this PDF file also contains all bookmarks! So you can navigate through the document via the content overview in your PDF viewing software if you activate "bookmarks view".

All references to pages, sections, figures and tables as well as hyperlinks in the text identify a location within this PDF file. Just click the reference to find the referred passage in the text!

1.2. Warning signs and their meaning

The following warning signals are used in this user manual:

	Warning of general danger location
	Warning of electric shock
	Warning of hot surface
	Warning of fire hazard

1.3. Tags and their meaning

The following signal words are used in the product documentation in order to warn the reader about risks and dangers. The tags described here are always used only in connection with the related product documentation and the related product.

⚠ DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
NOTICE	Describes precautions necessary to protect the equipment.
	**NOTE:** Useful information for the user.

2. Introduction

Description

The FlexXtract is a professional DAB distribution satellite receiver for the reception of an MPEG2transport stream via DVB-S/DVB-S2/DVB-ASI and extraction of herein included DAB ensemble(s). The FlexXtract supports following data inputs as well: IP (EDI) and GSE - Generic Streaming Encapsulation (EDI). The FlexXtract supports a variety of input formats from several encapsulation devices, such as the 2wcom FlexNsert DAB.

Control

HTTP Web interface

The unit is controlled via a built-in web user interface (see chapter 8.3)

LCD and jog wheel

Simple configurations can be made via LCD menu and jog wheel.

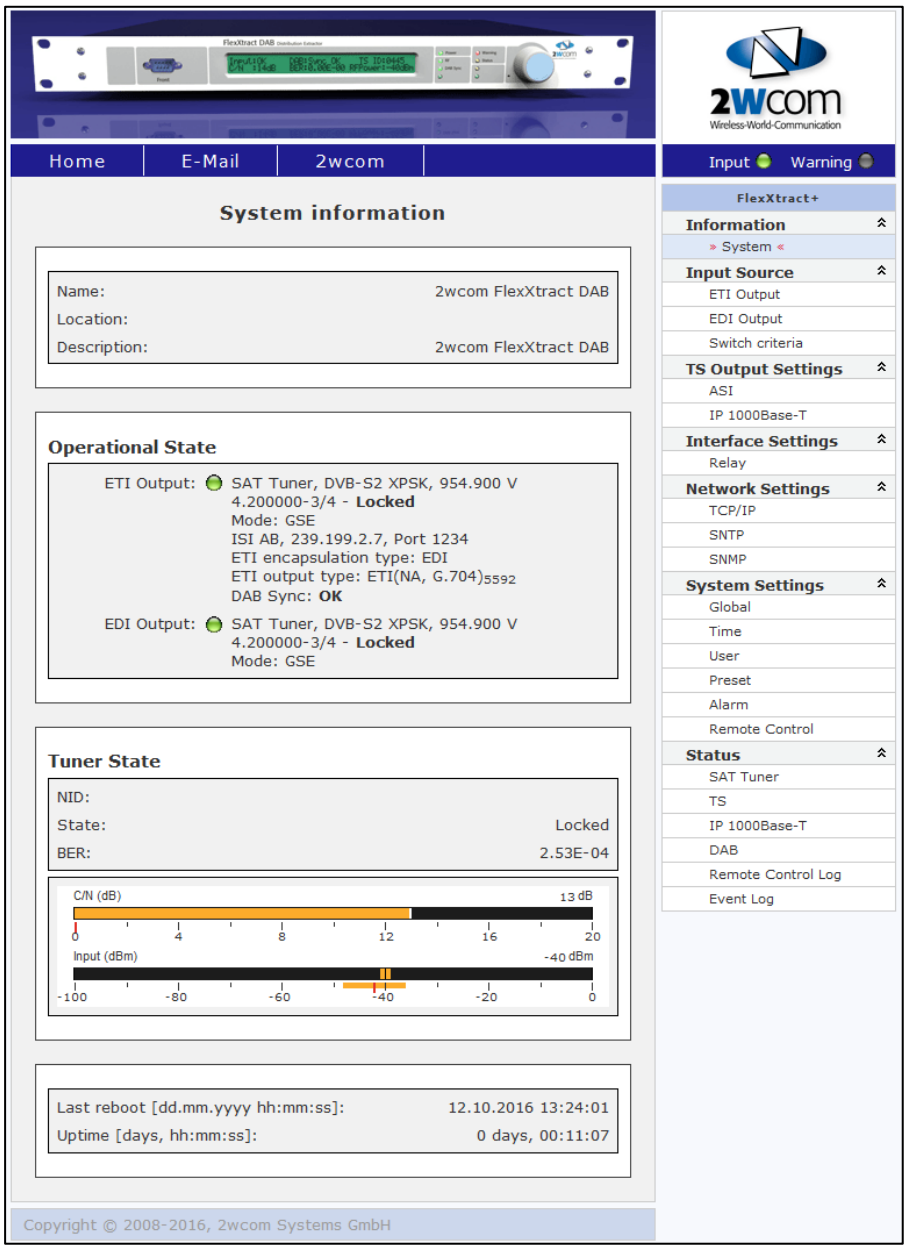


Figure 1: Web interface of FlexXtract DAB

Functions

The FlexXtract DAB is available in different variants with varying functions. The basic functions are shown in the following table:

	Feature List/Model	FlexXtract DAB
Standard	DVB-S tuner module (1-45 MSym/s)	x
	2 x serial outputs	x
	10/100Base-T interface (control/monitoring)	x
	Web interface (10/100Base-T interface)	x
	SNMPv2c	x
	ETI output	x
	1000Base-T interface (data)	x
	DVB-ASI (in- and output)	x
	Transport stream output over 1000Base-T interface	x

The optional functions are shown in the following table:

Optional	**Transport stream input**	
	Tuner module with DVB-S2 and low symbol rates (min 128k)	o
	Tuner module with DVB-S2, 16APSK & 32APSK and advanced functionality (VCM/ACM, multi stream, …)	o
	Transport stream input over 1000Base-T interface	o
	Decoding	
	Decoding of additional DAB ETI encapsulation formats to match specific encapsulation devices	o
	Data output	
	EDI output over 1000Base-T interface	o
	Second ETI output	o
	Demultiplexing	
	MPE demux: IP data output of demultiplexed MPE data (IP datagrams) over 1000BASE-T interface	o

User

Only experienced technical personal or engineers should operate the FlexXtract DAB. Basic knowledge about IP networks is required.

NOTE: Read this user manual carefully before attempting to operate the unit. Save this user manual for future reference – it contains important safety and operating instructions for the device.

3. Safety Instructions

For a secure operation of the device the user should read and hold on all safety instructions mentioned in this manual before the first operation.

⚠ WARNING	Non-compliance with the safety instructions can lead to serious injury.

Any changes on the device or operation of the parts not having been proved and released by the manufacturer can lead to unforeseen damage.

Every improper use of the device and all actions on the device not mentioned in this user manual are regarded as a not allowed misuse outside the statutory limits for liability of the manufacturer.

If you sell the device or give it to another person, attach this user manual to the device.

Never operate the device, if it does not function properly. If the device or its part is out of order, put it out of operation. Never repair the device by yourself. If there are any damages in the device, send it immediately to 2wcom Systems for maintenance or dispose it professionally according to the regional disposal regulations.

Keep the device away from unauthorized persons.

⚠ DANGER	
	**DANGER of electric shock** Plug the device into a grounded power socket only. Never remove the grounding wire/contact. Never open the housing of the device by yourself. Never touch open electrical parts. Dangerously high voltages are present inside the housing. Even after disconnecting the mains supply, dangerously high voltage levels may be present for a certain time. Do not touch the device with wet hands. Never expose the device to liquids. If any liquid comes inside the housing, immediately disconnect the device completely from the power supply. Do not continue operating the device.
	**FIRE HAZARD of overheating or electric shock** Ensure sufficient heat dissipation during operation. Avoid following when installing the device: – non-ventilated environment, for example a narrow shelve or built-in rack; – extremely warm or cold place; – direct sunlight exposure; – too high or too low temperature;

	– extremely wet or dusty environment. Do not operate the device in the presence of flammable gases. Do not cover the ventilation openings of the device to avoid heat accumulation. Do not put objects with open flames such as burning candles on the device. Do not put heavy objects on the supply cord. A damaged cord can lead to fire or electric shock hazards. To disconnect the supply cord, drag always the plug and never the cable to avoid the cord damage.

⚠ WARNING	
	**WARNING of explosive atmosphere** Risk of the explosion hazard. Do **not** use the device in an explosive environment.
	**WARNING of hot surface** The surface of the device can heat up during operation. The device is equipped with a passive cooling system. Do not touch the surface of the device during operation.

NOTICE	
	CAUTION: Risk of equipment damage *Before the first operation:* Check the housing, the front panel, the supply cord and the plug for visible damage (e.g. scratches, cracks, damaged isolation and abrasion) In case of damage, unplug immediately the supply cord. Never operate device with a damaged supply cord. All damaged components must be replaced immediately. *Installation:* Use only a grounded three-wire power supply cord and -plug that complies with the national regulations.

	If necessary, another than the supplied supply cord has to be used, in compliance with the regulations of the country where the device is operated. Make sure that the AC power outlet is next to the device and readily accessible to the user. *Installation of other devices:* External devices which are connected to the device could be damaged by the device or damage the device itself if the output levels exceed the specified limits. *Cleaning:* Do not use corrosive detergents on the device such as benzine, thinner, alcohol or acetone. Clean the surface of the device only with a soft dry cloth.

4. Supplied Parts

- FlexXtract DAB
- Power supply cord
- CD with supplementing data (SNMP MIB files, handbook as PDF)

NOTE: The scope of delivery may deviate in special cases.

5. Manufacturer

2wcom Systems GmbH • Am Sophienhof 8 • 24941 Flensburg • Germany

Phone (+49) 461 – 662830-0 • Fax (+49) 461 – 662830-11

contact@2wcom.com • www.2wcom.com

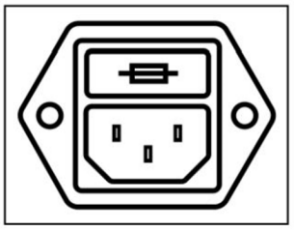
6. Installation

Best setup location

The device should be installed in a 19” rack. Avoid direct sunlight, proximity to radiators and air conditioning, dust, water, and chemicals. Choose a rack location that permits a clear view of the indicators on the device and ensure a sufficient heat dissipation of the device.

Mains supply connection

The device is designed for operation with 100 to 240 V AC, 50 to 60 Hz. Check the corresponding device labeling for compatibility to the domestic line voltage and frequency before connecting the IEC power connector to the mains supply!



No power switch is available; unplug mains supply connector to remove power. Keep the mains supply plug readily accessible to the user.

⚠ WARNING

WARNING
Disconnect mains power plug before you open the housing.
Repair of the equipment must only be carried out by authorized and qualified personnel.
Read also Section „Safety Instructions”.

7. Operation

7.1. Device Control via Web Interface

The device has an integrated web interface. All configurations and operations can be made using a web browser.

To control the device via web interface:

Connection: for network configuration and access to the web interface see Section 8.2.

NOTE: To maintain security, you are automatically logged out after 15 minutes of no activity.

Navigation: to navigate through the web interface, use only the menu buttons of the web interface and not those of the web browser (i.e. forward and back).

Buttons:

- if you want to save any changes made in the configuration of the device, press the "Save" button;
- if you don't want to save the changes, press the "Reset" button

NOTE: Each field has to be saved individually.

If you change data in several fields, you must click "Save" under each field, in order to save all changed data.

Otherwise, the unsaved field will be reset to the previously saved status.

Numbers: use a decimal point as the decimal separator in numbers in the input fields (i.e. "6.5" for six and a half).

Input fields: After entering a number or text in an input field, you must click on the corresponding "Save" or "Ok" button to activate the changes. Alternatively you can use the ENTER-key of your computer keyboard.

The next sections explain the separate web interface functions. The operation via jog wheel and LCD on the device is similar to these descriptions.

7.2. Operation via LCD/jog wheel

Some basic functions of the device can also be operated via the LCD/jog wheel at the device.

Via LCD and jog wheel you can:

- configure network settings for the first access to the device over the web user interface

- view the device status and the level of the input/output signal

If a function of the web interface is applicable for the LCD/ jog wheel, the corresponding **menu path** is shown at the web interface description.

- To change from the default status screen to the main menu screen, push the jog wheel.
- To move the cursor in the menu structure, turn the jog wheel.
- To open a menu entry or to confirm a setting, push the jog wheel.
- To select a configurable menu entry, turn the jog wheel.
- To adjust a menu entry, push and then turn the jog wheel.
- To confirm the adjustment, push the jog wheel.
- To return to a previous menu level, activate the menu entry "<<".
- Some settings need a restart of the device to be activated.

8. First Steps

The minimum parameters are preset in the device. The following sections describe the first required steps for a quick start.

✓ You already have unpacked and installed the device in an appropriate place (see chapter 6).

8.1. Power supply

NOTICE	
	Make sure that the device and the contained cords are compatible to the domestic line voltage and frequency!

If the device is compatible, connect two power supply cords fully to both IEC power connectors at the back panel of the device and two independent mains power outlets.

⇒ The "Power" LED will turn on.

8.2. Network configuration

For delivery the device is configured with default settings for the first connection via the IP interface.

To configure the IP settings with LC-Display, proceed as follows:

NOTE: If you have a FlexXtract DAB device without a LC-Display, you can change the network settings only via the web interface.

1. Use the jog wheel to select `Interface→TCP/IP`.
2. Configure settings for your existing IP network (IP address, netmask, gateway etc.; consult the responsible network administrator if applicable).
3. Save the settings by using the jog wheel and reboot the device confirming the reboot question.
4. Connect a network patch cable to the "10/100-Base-T" connector on the back panel of the device and your existing IP network.

⇒ Your device is now connected to the network.

8.3. Web interface

The device can be fully operated with an internet browser via the integrated web interface. For this purpose use a computer that is connected to the same IP network that the device is connected to.

To operate the device via the web interface, proceed as follows:

1. Start any internet browser (e.g. Firefox/Mozilla from version 3.0 or Microsoft Internet Explorer from Version 7.0 (both with Java Script activated)).

2. Enter the IP address in the address bar of the browser. If the IP address has not been changed, please enter the default address in the address bar of the browser: `192.168.14.250`.

3. Alternatively you can you can watch and change your existing network over LCD Menu and jog wheel under **`Interface→IP`**.

4. A login screen with *Username/Password* appears. Use the default accounts (consider lower and upper case):

    i. for a read-only access use “guest”/”guest”

    ii. for a access with write permission use “admin”/”admin”

⇒ After entering the correct login data, the main FlexXtract DAB page appears.

NOTE: Change the login data as soon as possible to avoid unauthorized access to the device. You can change your login data under **Systems Settings→User** (for further information please see 16.7 on page 57).

8.4. Set up alarm

You can set up monitoring of certain device, input/output, encoder and decoder parameters such as *Tuner Output*, *ASI Input*, *IP 1000Base-T Input*, *DAB Data*, *Reference clock* which should be measured. In case of failure, an alarm can be sent over SNMP, relay switching and/or will be indicated by a warning LED in the front of the device and/or through an entry in the log.

To set up alarm for the available parameters, proceed as follows:

1. Select System **Settings→Alarm** in the web interface to open the monitoring setup page.

2. Activate monitoring for each parameter separately by selecting the corresponding checkboxes in the column “Enabled”.

3. Some alarms need a threshold value. Change or enter the threshold value in the corresponding fields.

4. For each parameter default values are already preset. T1 vs. T2 is the time a parameter has to be “bad” vs. “good” before an alarm will be generated vs. retracted.

5. Activate the way of the alarm distribution (SNMP, Relay, LED) by selecting the corresponding checkboxes.

6. In the same menu you can set up the alarm in case of LAN connection failure or device overheating.

7. Click the "Save" button to save the changes.

8. In the same menu you can see status LEDs of each monitoring parameter and under **Status→ Event Log** details about the sent alarms.

8.5. Connecting the device

For data distribution, connect the devices as follows:

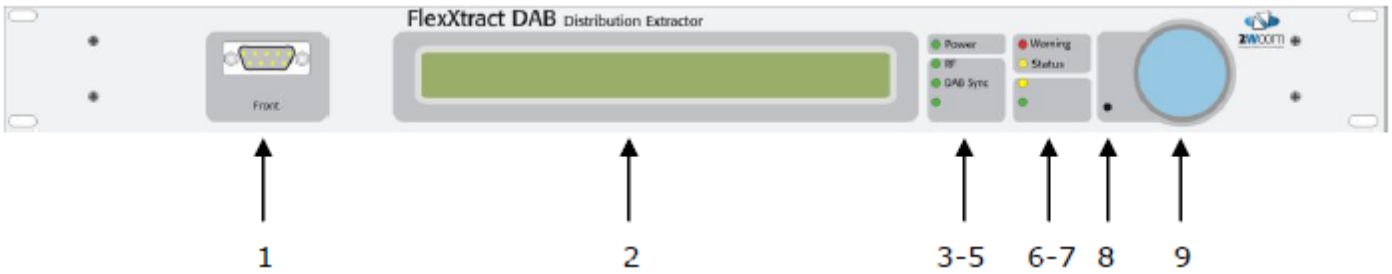
1. Connect a network patch cable to the "10/100-Base-T" connector on the rear side of the device and your existing IP network.

2. Connect the antenna cable that has connection to the receiving LNB of the satellite antenna to the "RF-In" F-type jack. A well aligned satellite antenna is required for signal reception.

Note: These "first steps" are only intended for a quick first start and do not cover all device functions. Please read carefully the entire manual to be able to use all functions of the device.

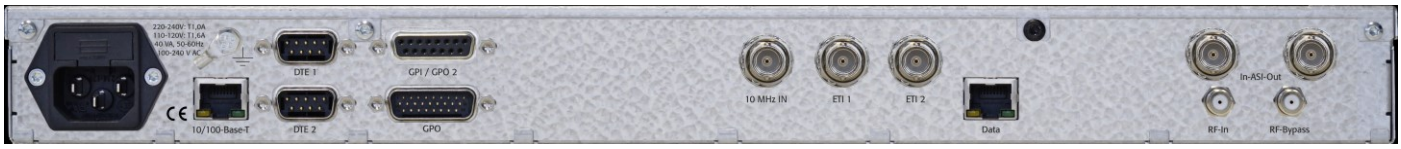
9. Control Elements and Connectors

9.1. Front Panel



1	[DTE Front]	9 pole D-Sub male connector; only for device servicing purposes.
2	LCD screen	Illuminated, Liquid Crystal Display (LCD) with two rows of up to 40 characters.
3	[Power] LED	Activated (green color) if the power supply is ok.
4	[RF] LED	Activated (green color) if the receiver detects a signal that can be decoded.
5	[DAB Sync] LED	Activated (green color) if the receiver is demultiplexing and synchronized to a DAB ETI data stream.
6	[Warning] LED	Flashes (red color) if the monitoring function detected the triggering of a configured alarm.
7	[Status] LED	No function
8	Reset button	Recessed reset button for resetting the device in the case of malfunction. To activate the protected button, please use a metal pin or an unbent paper clip.
9	Jog wheel	Jog wheel for the device operation via the LCD screen on the device. Turn the jog dial to place the cursor on the desired menu entry and push the jog dial to activate the highlighted menu entry.

9.2. Back Panel



1	IEC power supply connector	Redundant power supply. First and second IEC power supply connector with integrated fuse holder. Fuse ratings depending on mains supply voltage: 110-120 V: T1,6 A, 5x20 mm, 250 V 220-240 V: T1 A, 5x20 mm, 250 V.
2	[Grounding stud]	The stud can be used to connect a grounding system if necessary. Note that the required protection earth (PE) is accomplished via the 3 wire mains supply cord.

NOTE: The required protection grounding (PE) is accomplished via the 3-wire mains supply cord.

3	[10/100-Base-T]	RJ-45 connector for control and monitoring the device via Ethernet. The device can communicate with the IP network and can be configured with an internet browser via the integrated web interface. The LEDs at the socket show the link status (green; active if a physical network connection exists) and the activity status (yellow, active if data communication is active).
4-5	[DTE 1/2]	9 pole D-Sub male connector for the serial RS-232 data communication, e.g. the output of application data of the received signal.
6	[GPI/GPO 2]	15 pole D-Sub female connector; no function.
7	[GPO]	26 pole D-Sub male connector; Switch contacts of the integrated relays. The relays can be activated by the monitoring function in case of an alarm.
8	[10MHz IN]	BNC connector; For the input of an external 10MHz reference clock signal.
9	[ETI 1]	BNC connector; For the output of an ETI data stream.
10	[ETI 2]	BNC connector; For the output of an ETI data stream (optional).
11	[Data]	RJ-45 connector for Gigabit Ethernet data communication. This interface is used to transceive MPEG2 transport streams as well as decoded EDI data streams and MPE IP data. The LEDs at the socket show the link status (green; active if a physical network connection

		exists) and the activity status (green, blinks if data communication is active).
12	[ASI-In]	BNC connector; For the input of a DVB-ASI data stream (270 MHz) to be decoded by the device.
13	[RF-In]	F-type jack; Input for the connection to the receiving LNB of the satellite antenna (IF: 950 MHz…2150 MHz, L-band).
14	[ASI-Out]	BNC connector; For the output of a DVB-ASI data stream (270 MHz) received via DVB-S/DVB-S2 tuner, ASI input or 1000Base-T.
15	[RF-Bypass]	F-type socket; no function

10. Network settings

✓ You have already connected the device to the network [10/100/1000-Base-T] and configured the access to the web user interface (see section 8.3 section on page 17).

10.1. TCP/IP: Configuration of the Ethernet interfaces

The FlexXtract has two Ethernet interfaces: one control interface and one data interface.

10.1.1. Configure control interface (10/100Base-T)

You can configure under **Network Settings→TCP/IP** the Ethernet interface control interface (see Figure 2).

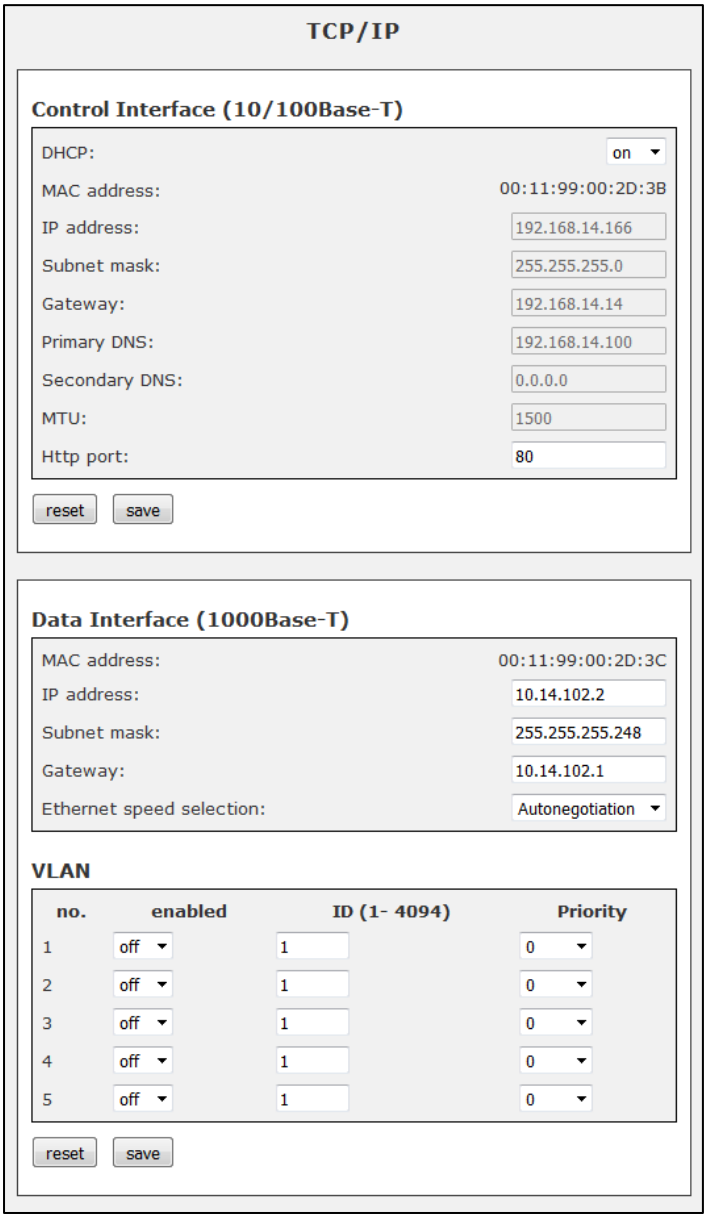


Figure 2: Network settings – TCP/IP

Following parameters can be configured or changed in this menu:

IP-address: Individual address that is necessary to identify hardware in an IP network like the internet or intranet.

Subnet mask: Bit mask, which separates an IP address into a network part and a host part.

Gateway: Address of the local system that is used for the internet access (e.g. the router).

Primary DNS: IP address of the primary Domain Name Service (DNS) server.

Secondary DNS: IP address of the secondary Domain Name Service (DNS) server.

MTU: Maximum Transmission Unit - The largest physical packet size, measured in bytes that the network can transmit.

Http port: The port that is used for the data connection between device and the internet browser (default port: 80).

NOTE: The necessary address settings above depend on the individual network and should be assigned by the responsible network administrator if applicable.

⇒ Click on the "Save" button to save the changes

LCD-menu: Interface→TCP/IP

10.1.2. Configure data interface (1000 Base-T)

You can configure and change under **Network Settings→TCP/IP** the Ethernet interface data interface (see Figure 2).

Following parameters can be configured or changed in this menu:

IP-address: Individual address that is necessary to identify hardware in an IP network like the internet or intranet.

Subnet mask: Bit mask, which separates an IP address into a network part and a host part.

Gateway: Address of the local system that is used for the internet access (e.g. the router).

NOTE: The necessary address settings above depend on the individual network and should be assigned by the responsible network administrator if applicable.

10.2. SNTP: Configuration of date and time

This menu item is available under **Network Settings→SNTP** and is used to enable the synchronization of the device date and device time with an external SNTP server (see Figure 3). It is also possible to setup the date and time manually.

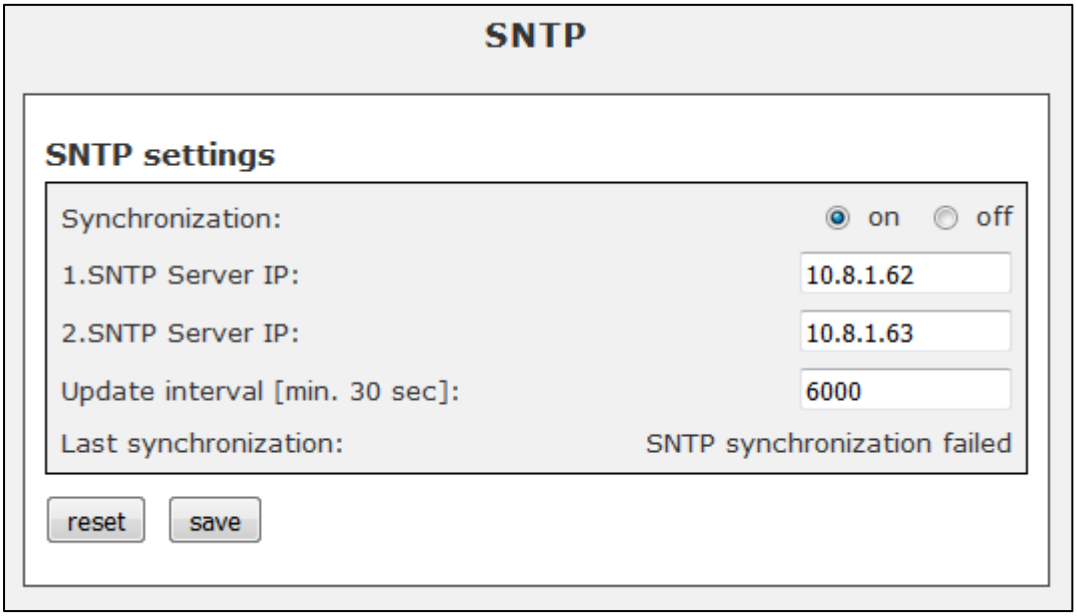


Figure 3: Network settings - SNTP

You can configure or change in the block **Control Interface (10/100Base-T)** the following parameters:

Synchronization: Selection if the device clock should be synchronized via SNTP or not.

1. SNTP Server IP: IP address of the first NTP server to be used.

2. SNTP Server IP: IP address of the second NTP server to be used.

Update interval [min. 30 sec]: Time interval for synchronizing the device clock with the NTP server in seconds.

⇒ Click on the "Save" button to save the changes

10.3. Monitoring function: Configuration of SNMP

As part of the monitoring function, the device is capable to send SNMP traps to the defined IP addresses of the SNMP managers. It is also possible to readout device settings via SNMP Get.

This menu item is available under **Network Settings→SNMP** and is used to setup the IP addresses of the SNMP managers (see Figure 4).

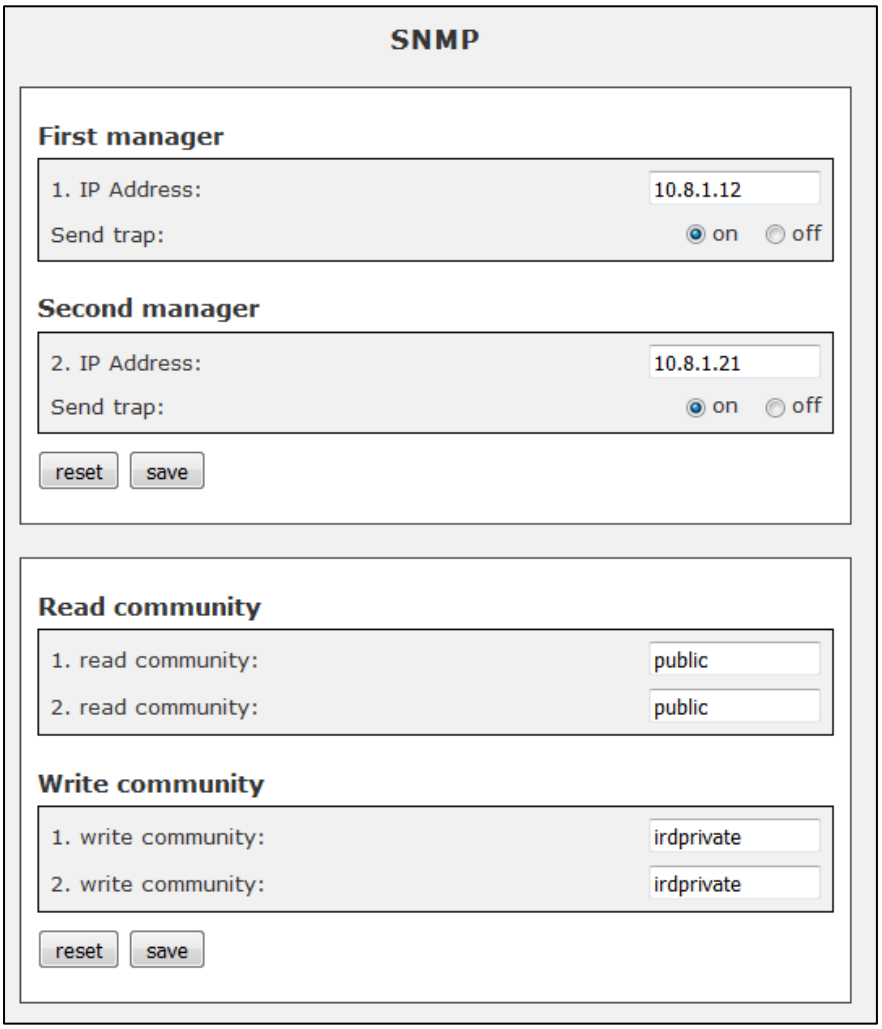


Figure 4: Network settings – SNMP

Additionally, access data (read community/write community) that is necessary for external SNMP requests to the device can be configured in this block.

You can configure or change in this menu the following parameters for SNMP:

First manager — IP address of the first SNMP manager that receives SNMP traps. The trap sending to this address can also be deactivated by a checking "off" at "Send trap:".

Second manager — IP address of the second SNMP manager that receives SNMP traps. The trap sending to this address can also be deactivated by a checking "off" at "Send trap:".

Read community — SNMP access data for the external read SNMP access to the device.

Write community — SNMP access data for the external write SNMP access to the device.

⇒ Click on the "Save" button to save the changes.

NOTE: In order for the SNMP manager tool to operate correctly, it requires the specific MIB files. These MIB files need to be compiled by the SNMP manager tool and are provided on the setup CD or via email.

Trap No.	Trap Name	Monitoring Function
1	rfPowerEvent	RF Level (value in dBm)
2	inputEvent	RF signal status (detected/not detected)
3	fecBerEvent	Viterbi, LDPC (Value)
4	cnEvent	Calculated Carrier/Noise Ratio (Value in dB)
5	tsEvent	Transport Stream Detection (detected/not detected)
6	dabSyncEvent	DAB Synchronization Status (detected/not detected)

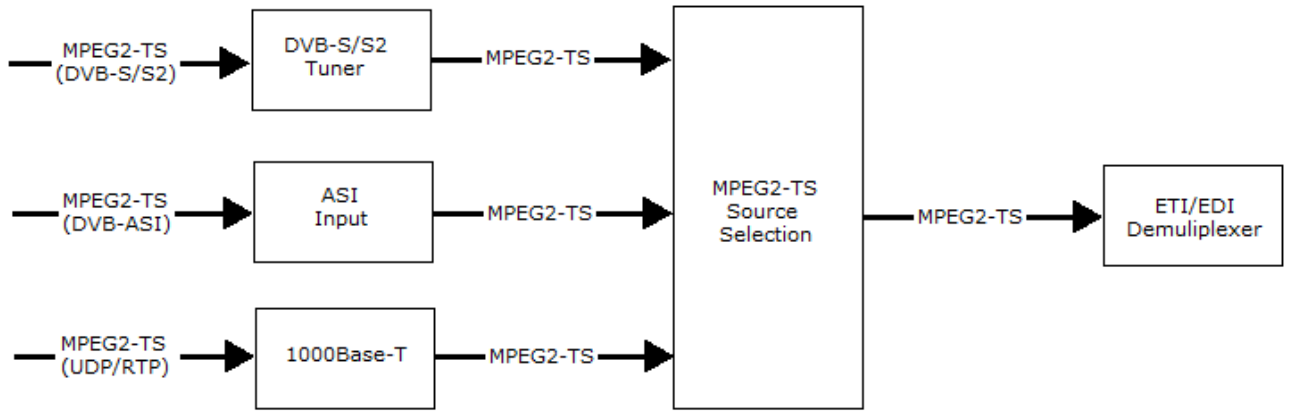
11. ETI and EDI processing

11.1. Process description

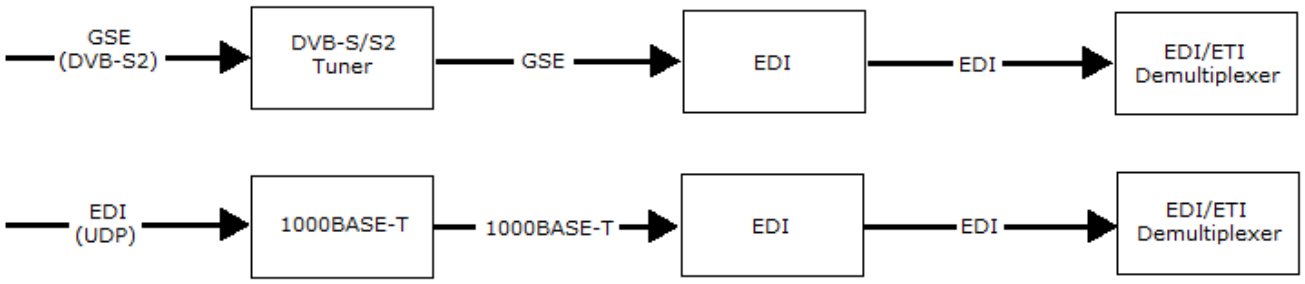
The following pages describe ETI and EDI data processing within the FlexXtract DAB.

The FlexXtract DAB extracts an ETI or EDI data stream that was encapsulated into MPEG2-TS. By default the source for the MPEG2-TS is the FlexXtracts internal DVB-S/S2 tuner. However, it is possible to use either the 1000Base-T interface to receive a UDP or UDP/RTP encapsulated MPEG2-TS over an IP network or the DVB-ASI input instead.

Receiving side – ETI

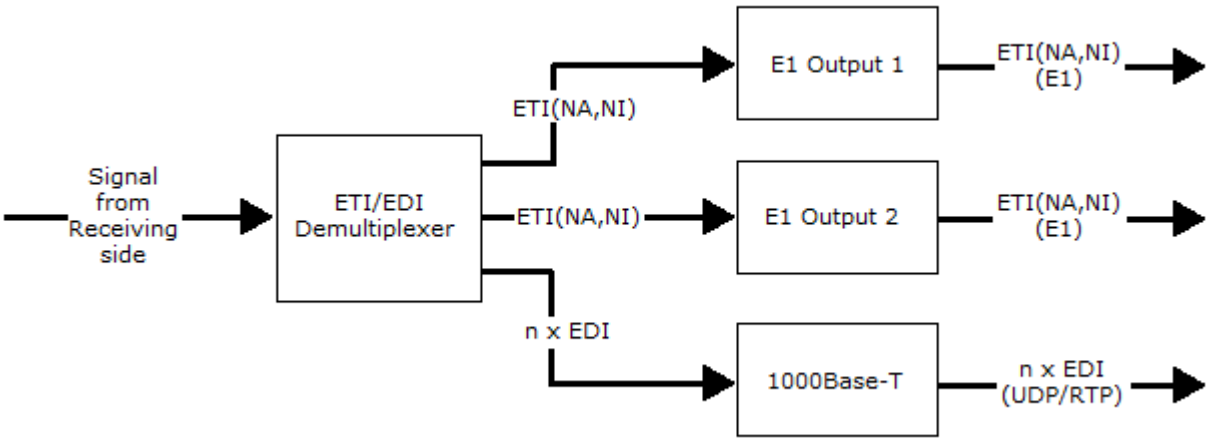


Receiving side – EDI

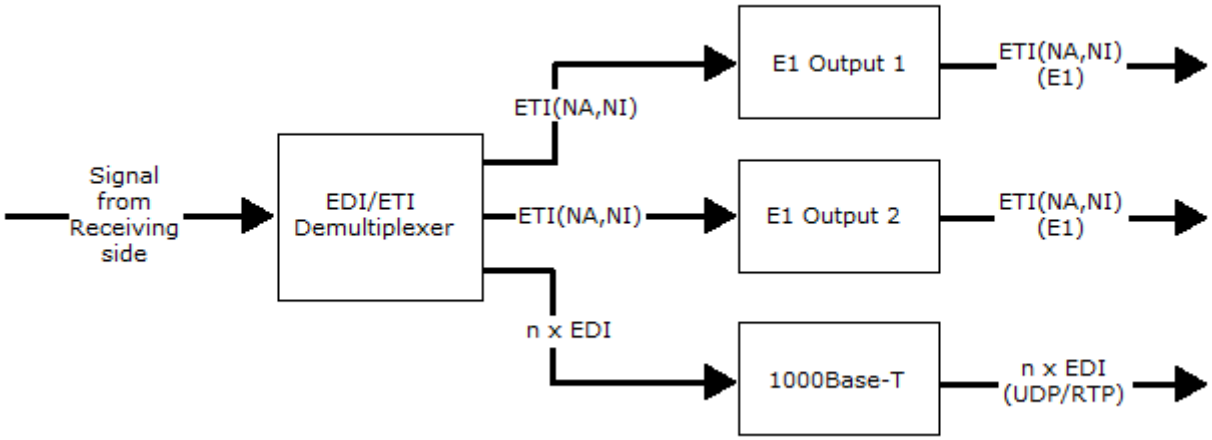


Transmitting side – ETI

After the ETI and EDI data streams are extracted from the MPEG2-TS they can then be put out using the ETI interface(s) in the case of ETI or the 1000Base-T interface in the case of EDI respectively. The *E1 Output 1* and the *E1 Output 2* is a double output but they have the same signal.

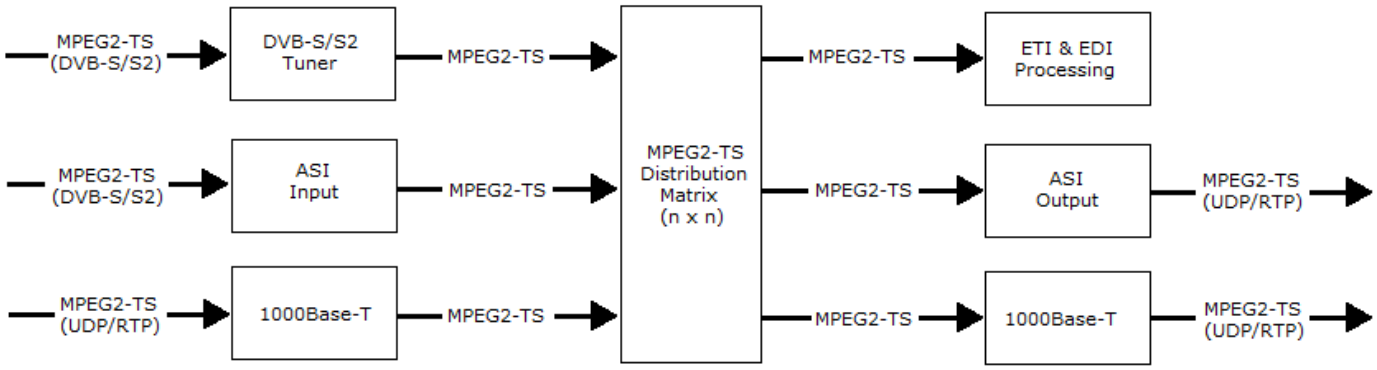


Transmitting side – EDI



MPEG2-TS Data Distribution

Using the FlexXtract DAB, it is possible to forward MPEG2-TS data from inputs to outputs. This can be used for instance to convert a transport stream from DVB-ASI to DVB over IP (transport media conversion) or to reshape a DVB-ASI signal (repeater). Each output is independent of the other, so that for instance while the 1000Base-T input delivers the MPEG2-TS for ETI and EDI processing, the DVB-ASI input acts as source for the 1000Base-T output, while the DVB-S/S2 tuner delivers a transport stream to an external device using the DVB-ASI output.



11.2. MPE Demux: demultiplexing of MPE data

11.2.1. Configuration over Web Interface

Prerequisite: MPE demux option

Multiprotocol Encapsulation (short MPE), defined in EN 301 192, allows among other things, to transport IP datagrams using the MPEG transport stream (TS). IP datagrams are fitted into MPE sections, which in turn are fitted into TS-size packets and later multiplexed into the stream. On the receiver side, MPE sections are reassembled and IP datagrams are restored for further processing, usually to be sent into a connected network. This for instance is used to provide asymmetric internet services via satellite, where the downlink is provided using MPE and a telephone modem as an uplink. The FlexXtract is also able to decode MPE IP datagrams that contain audio data.

In order to control distribution of data, as all receivers receive the same data, MPE sections include a DVB Media Access Control (MAC) address, similar to the Ethernet MAC address. This DVB MAC address can be used to filter MPE sections, because each receiver can be given a unique DVB MAC address and receivers with no corresponding address will drop the section in question. Filtering can be applied to target single, a group of or all devices by selecting how many of the DVB MAC address bytes are used for filtering by the receiver. Note, that filtering is always setup and applied on the receiving end, not by the sending side.

Decoded IP packets are put out on the 1000Base-T Interface.

This option is used for distribution of IP packets to an attached IP network by processing of up to 16 PIDs containing MPE data. The necessary settings are available under Input Source Settings for EDI Output: **Input Source→EDI Output** (see Figure 5).

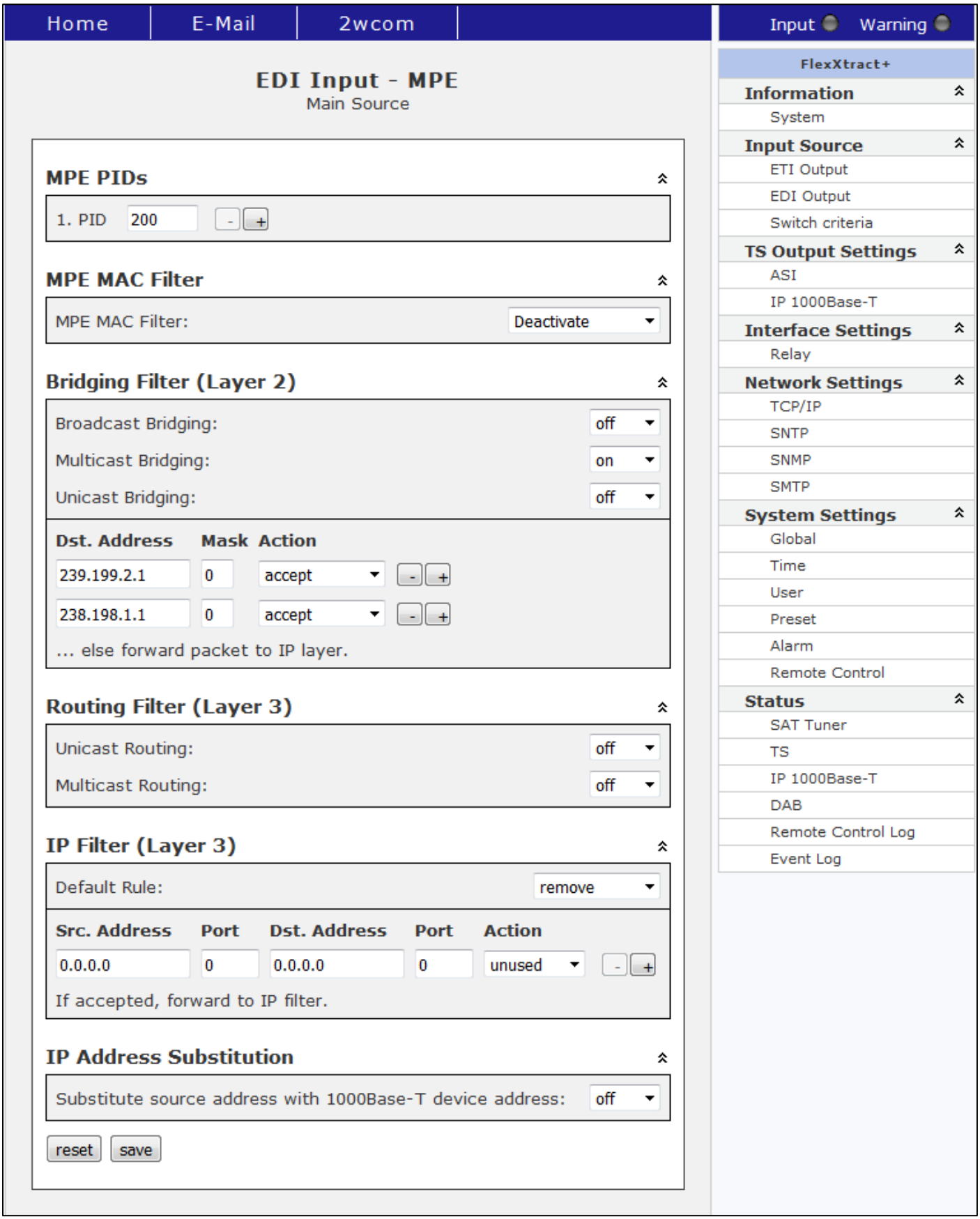


Figure 5: MPE demultiplexing menu

To open this menu item and to configure MPE demultiplexing:

1. Open the window *Input Source for EDI Output* under **Input Source→EDI Output** (see Figure 5).
2. Select the checkbox "Enable" in the field **Main Source** to activate the main input source.
3. Choose "Transport Stream (EDI Input – MPE)" in the dropdown menu **Main Source**.
4. Click the "edit MPE" button to open the MPE settings.
5. Enter the following configuration data in the menu field in Figure 5:

PID:	Up to 16 PIDs containing MPE sections can be configured for MPE demultiplexing. To add a new PID configuration, click the "+" button. PIDs are entered in decimal format. In order to deactivate MPE demultiplexing for a certain PID, set the PID to 0. Entering a wrong PID has no negative effect, apart from using up one demultiplexing slot.
MPE MAC Filter:	Enable or disable MPE demultiplexing functionality in the corresponding dropdown menu. Defines how many of the DVB MAC address bytes (MPE MAC Address) of the receiver are compared to the MAC address included in the MPE table. Options are no filtering (deactivate) or one to six bytes, counting from most significant byte to least significant byte, i.e. a setting of 2 bytes will only compare the "FE-00" portion of above example with the address in the MPE section table.
MPE MAC Address:	If you activate MPE MAC Filter in the previous field, the menu will be extended to the field "MPE MAC Address". Six byte DVB MAC address in hexadecimal representation. Note that each byte has to be represented by two characters, i.e. hex "0" by "00", 12 characters in total. The address can be entered with or without dashes in between each byte, as they will be added automatically upon successful saving. Example: "FE-00-11-99-DC-BA"
Bridging Filter (Layer 2)	Bridge to LAN Settings. For further explanation see section 11.2.3 "MPE Layer 2 - Bridge to LAN Settings" on page 32.
Routing Filter (Layer 3)	Settings for Layer 3 IP Routing. For further explanation see section 11.2.4 "MPE Layer 3 - IP Routing" on page 34.
IP Filter (Layer 3)	Settings for Layer 3 IP Filtering. For further explanation see section 11.2.5 "MPE Layer 3 IP Filtering" on page 36.
IP Address Substitution	Activate this function in the dropdown menu to substitute the source address of the EDI output stream with the configured 100Base-T device address (as configured under **Network Settings→TCP/IP,** see 10.1.2 on page 23)

⇒ Save the settings by clicking the save button.

11.2.2. MPE Packet Filtering in General

The following Figure 6 illustrates how MPE IP packets are filtered:

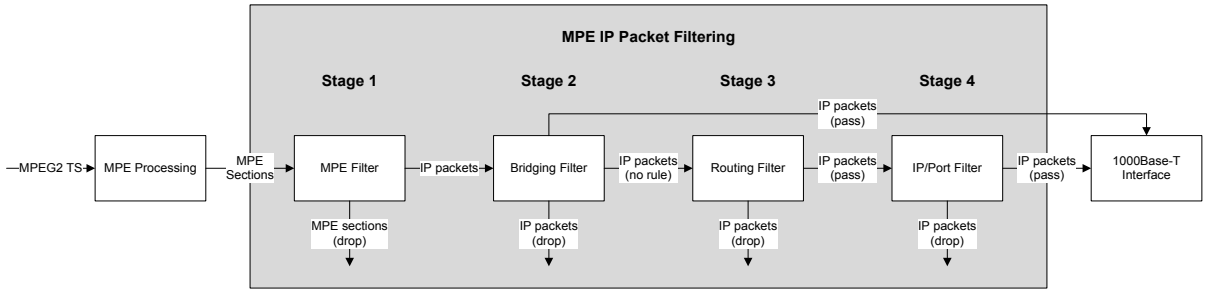


Figure 6: MPE Packet Filtering.

There are four filtering stages an IP packet can pass through:

Stage 1 — MPE sections are first compared with the MPE MAC Filter. If a section passes through the filter, the MPE section is disassembled and the included IP packet is forwarded to the next stage. MPE sections that do not pass this filter are dropped.

Stage 2 — The destination address of the IP Packet is checked for type and then compared with the Layer 2 bridging table. If the type of the destination address (unicast, multicast or broadcast) is deactivated, the packet is dropped, otherwise the address is compared to the bridging table and the packet will be dropped or passed on to the 1000Base-T interface. If there is no active rule, the packet is passed to the next stage.

Stage 3 — In this stage rules can be set up to further narrow down packet output. A general rule regarding Unicast or Multicast can be applied or if those rule don't apply or are activated, IP packets can be filtered by source and destination IP address ranges. Packets that pass through this filter stage are then passed on to the last stage, others are dropped.

Stage 4 — The last stage is used to filter outgoing traffic by IP address and/or port of source and/or destination address. Packets that pass the filter are then passed on to the 1000Base-T interface.

11.2.3. MPE Layer 2 - Bridge to LAN Settings

This menu is used to configure MPE Layer 2 bridging filter (see Figure 7).

As there are no MAC addresses in multiprotocol encapsulated IP packets, the destination IP addresses are used as a. First of all, bridging can be enabled for broadcast, multicast and/or unicast packets. If a packet falls under one of these three categories and the category is enabled, the packet is then compared to the bridging filter table. Packets can either be accepted or removed by the filter. If accepted, a packet is then forwarded to the 1000Base-T Interface. Packets in an enabled category that have no filter rule are passed on to the routing filter.

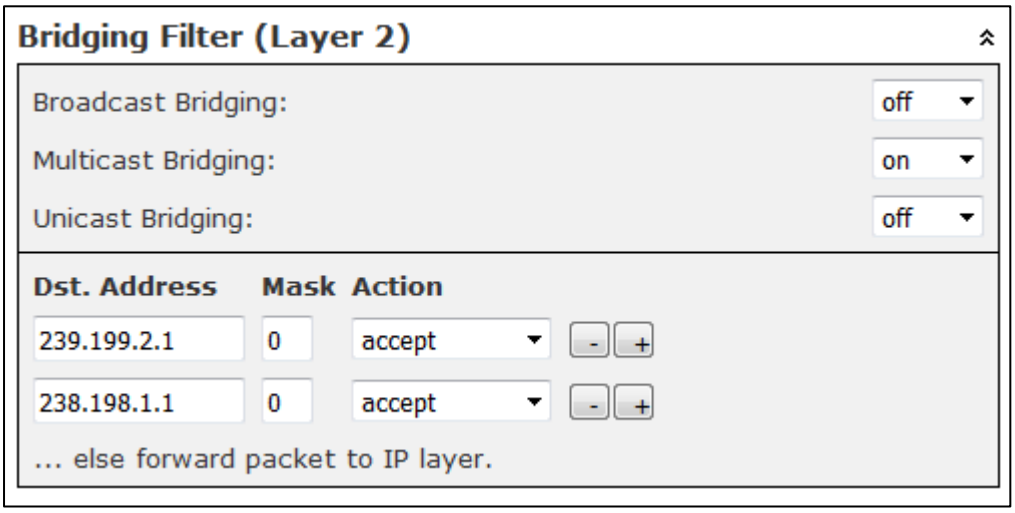


Figure 7: MPE Demux - Menu with Bridge to LAN Settings.

Rules are executed from top to bottom. If a packet fits, i.e. the first rule, then the other rules will not be applied anymore!

There are two blocks in this menu, each of which needs to be saved individually after changes were made (see Figure 7).

The first block is used to control bridging categories.

Broadcast Bridging:	When enabled, all broadcast traffic will be forwarded to the bridging filter table.
Multicast Bridging:	When enabled, all multicast traffic will be forwarded to the bridging filter table.
Unicast Bridging:	When enabled, all unicast traffic will be forwarded to the bridging filter table.

The second block is used to configure up to 16 bridging filter rules. To add an new rule, click the "+" button.

Destination Address:	Destination IP address of IP packet.
Netmask:	Netmask corresponding to the IP address. The netmask is entered in decimal corresponding with the number of bits set in the netmask, i.e. 8 for 255.0.0.0 or 24 for 255.255.255.0.
Action:	Choose between "accept" (forward to 1000Base-T Interface), "remove" (drop packet) or "unused" (disable filter rule).

There is one special rule, when choosing address "0.0.0.0" and netmask "0" this rule is applied to any packet. As rules are executed from top to bottom, you can use this special rule to drop all other packets by putting this rule at the bottom of the rule set. In this case, set Action to "remove". Alternatively, you can forward all other packets by choosing "accept", in case the previous rules were set to remove packets. This is necessary when there are no routing and IP

filters set up, since all packets without a rule will be passed on by a configured filter and dropped by an unconfigured filter (see Figure 6). This way, the next two stages can be bypassed.

Example 1

Dest. Address	Mask	Action	Comment
192.168.45.0	24	Accept	Forward any packet from 192.168.45.0 to 192.168.45.255
192.168.46.0	24	Remove	Drop any packet from 192.168.46.0 to 192.168.46.255
0.0.0.0	0	unused	Forward all other packets to routing filter stage

Example 2

Dest. Address	Mask	Action	Comment
192.168.45.0	24	Accept	Forward any packet from 192.168.45.0 to 192.168.45.255
0.0.0.0	0	Remove	Drop all other packets (no further filtering necessary)

Example 3

Dest. Address	Mask	Action	Comment
192.168.45.0	24	Remove	Drop any packet from 192.168.45.0 to 192.168.45.255
192.168.46.0	24	Remove	Drop any packet from 192.168.46.0 to 192.168.46.255
0.0.0.0	0	Accept	Forward all other packets (bypassing further filtering)

11.2.4. MPE Layer 3 - IP Routing

This menu is used to configure MPE Layer 3 IP routing (see Figure 8).

IP packets that are forwarded by the bridging filter are processed by the routing filter. Packets that pass the routing filter are passed on to the IP filter, all other packets are dropped. Thus it is important to make sure, that packets that are to be processed by the IP filter, need to clear the routing filter first.

There are two blocks to configure routing parameters, each block needs to be configured and saved individually (see Figure 8):

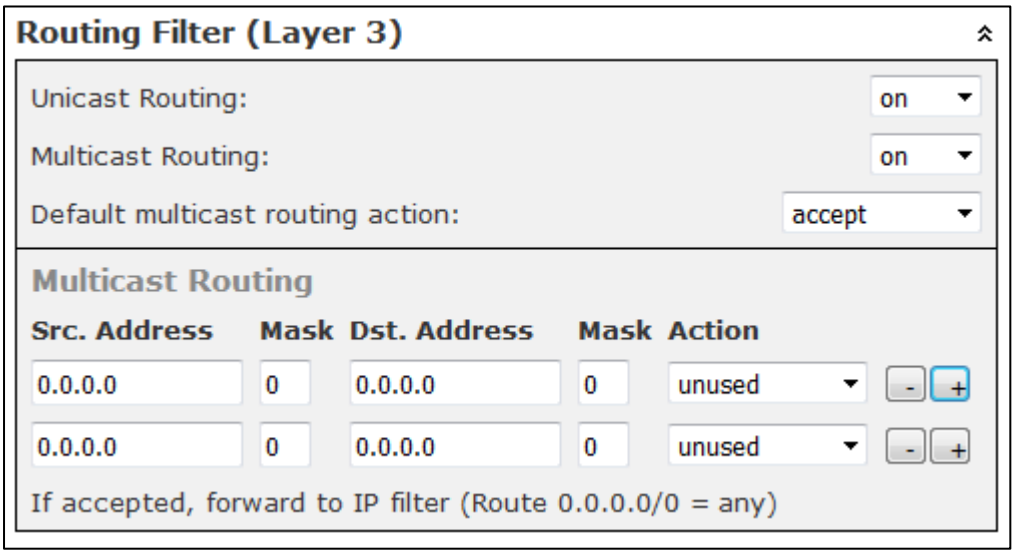


Figure 8: Demux - Menu with IP Routing Settings.

The first block is used to set up general routing processing.

Multicast Routing:	When enabled, all multicast packets forwarded from the previous filter will be processed. "Default Multicast Route" selects the general behavior: "Accept" meaning, forward all packets unless a filter applies, "Remove" meaning, forward only packets that a filter allows to pass.
Unicast Routing:	When enabled, all unicast packets forwarded from the previous filter will be processed. Here "Default Unicast Route" works different: "Accept" forwards all unicast packets to the IP filter in the next stage, whereas "Remove" only forwards packets to the next stage that are in the same subnet as the 1000Base-T interface.

The second block "Multicast Routing" is used to configure multicast routing rules. To add a new routing, click the "+" button. IP address "0.0.0.0" in combination with netmask "0" act as a wildcard.

Src. Address:	Source IP address of IP packet.
Mask:	Netmask corresponding to the source IP address. The netmask is entered in decimal corresponding with the number of bits set in the netmask, i.e. 8 for 255.0.0.0 or 24 for 255.255.255.0.
Dst. Address:	Destination IP address of IP packet.
Dst. Mask:	Netmask corresponding to the destination IP address. The netmask is entered in decimal corresponding with the number of bits set in the netmask, i.e. 8 for 255.0.0.0 or 24 for 255.255.255.0.
Action:	Choose between "accept" (forward to next filter stage), "remove" (drop packet) or "unused" (disable filter rule).

Example 1

Src. Addr.	Mask	Dest. Addr.	Mask	Action	Comment
0.0.0.0	0	228.0.0.18	24	Accept	Accept all packet to destinations 228.0.0.0 till 228.0.0.255 from any source address

Example 2

Src. Addr.	Mask	Dest. Addr.	Mask	Action	Comment
192.168.0.45	32	0.0.0.0	0	Accept	Accept packets from source address 192.168.0.45 to all destinations

Example 3

Src. Addr.	Mask	Dest. Addr.	Mask	Action	Comment
192.168.0.45	32	228.0.0.18	32	Accept	Accept packets from source address 192.168.0.45 to destination address 228.0.0.18

11.2.5. MPE Layer 3 IP Filtering

This menu is used to configure MPE Layer 3 IP Filtering. Filter rules consist of source IP address, source port, destination IP address and/or destination port in any given combination. IP packets that are forwarded by the routing filter are processed by the IP filter. Packets that pass the IP filter are passed on to the 1000Base-T interface, all other packets are dropped. Thus it is important to make sure, that packets that are to be processed by the IP filter, need to clear the bridging and routing filters first.

There are two blocks to configure IP filtering parameters, each block needs to be configured and saved individually (see Figure 9):

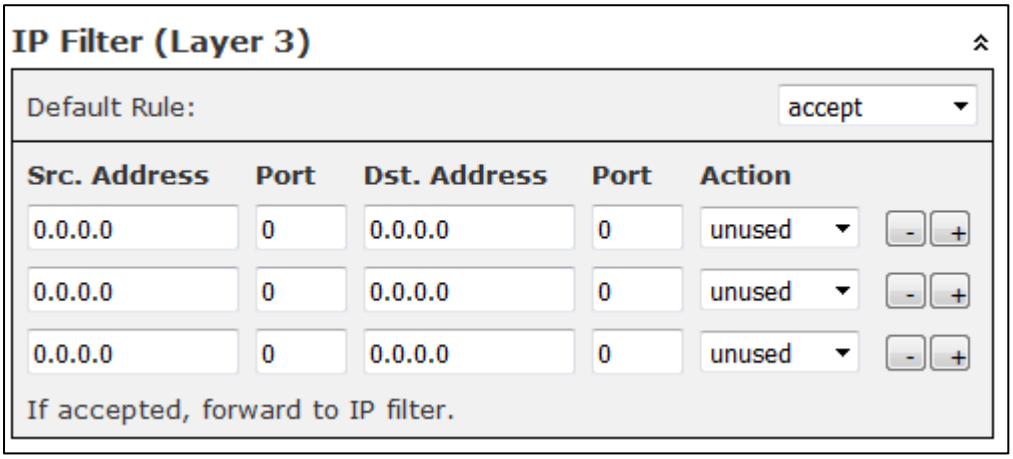


Figure 9: Demux - Menu with IP Filtering Settings.

The first block is used to set up general filter processing.

Default Rule:	"Default Rule" selects the general behavior: "Accept" meaning, forward all packets unless a filter applies, "Remove" meaning, forward only packets that a filter specifically allows to pass.

The second block is used to set up filter rules. IP address "0.0.0.0" and port "0" act as wildcards.

To add a new rule, click the "+" button.

Source Address:	Source IP address of IP packet.
Source Port:	Source port address of IP packet.
Destination Address:	Destination IP address of IP packet.
Destination Port:	Destination port address of IP packet.
Action:	Choose between "accept" (forward to 1000Base-T interface), "remove" (drop packet) or "unused" (disable filter rule).

Example 1

Src. Addr.	Port	Dest. Addr.	Port	Action	Comment
0.0.0.0	0	228.0.0.18	1024	Accept	Accept all packets to destination IP address 228.0.0.18 port 1024

Example 2

Src. Addr.	Port	Dest. Addr.	Port	Action	Comment
192.168.0.45	2000	0.0.0.0	0	Accept	Accept all packet from source address 192.168.0.45 port 2000

Example 3

Src. Addr.	Port	Dest. Addr.	Port	Action	Comment
192.168.0.45	2001	0.0.0.0	0	Remove	Drop all packets from source address 192.168.0.45 port 2001

11.3. GSE configuration for EDI Input

DVB-GSE (Generic Stream Encapsulation) allows among other things, to transport IP datagrams using generic streams. The necessary settings for GSE are available under Input Source Settings for EDI Output: **Input Source→EDI Output** (see Figure 10).

You can configure up to 8 ISI values (Input Stream Identifier, the second byte of the header of a Baseband frame).

GSE Label Filter can be deactivated or set to 3 and 6 Bytes.

Further settings are identical to the "MPE Demux" configuration. For more information about separate settings see section 11.2 "MPE Demux: demultiplexing of MPE data" on page 29.

To open this menu item and to configure GSE:

1. Open the window *Input Source for EDI Output* under **Input Source→EDI Output**.
2. Select the checkbox "Enable" in the field **Main Source** to activate the main input source.
3. Choose "Transport Stream (EDI Input – MPE)" in the dropdown menu **Main Source**.
4. Click the "edit MPE" button to open the MPE settings.
5. Enter the following configuration data in the menu field in Figure 10:

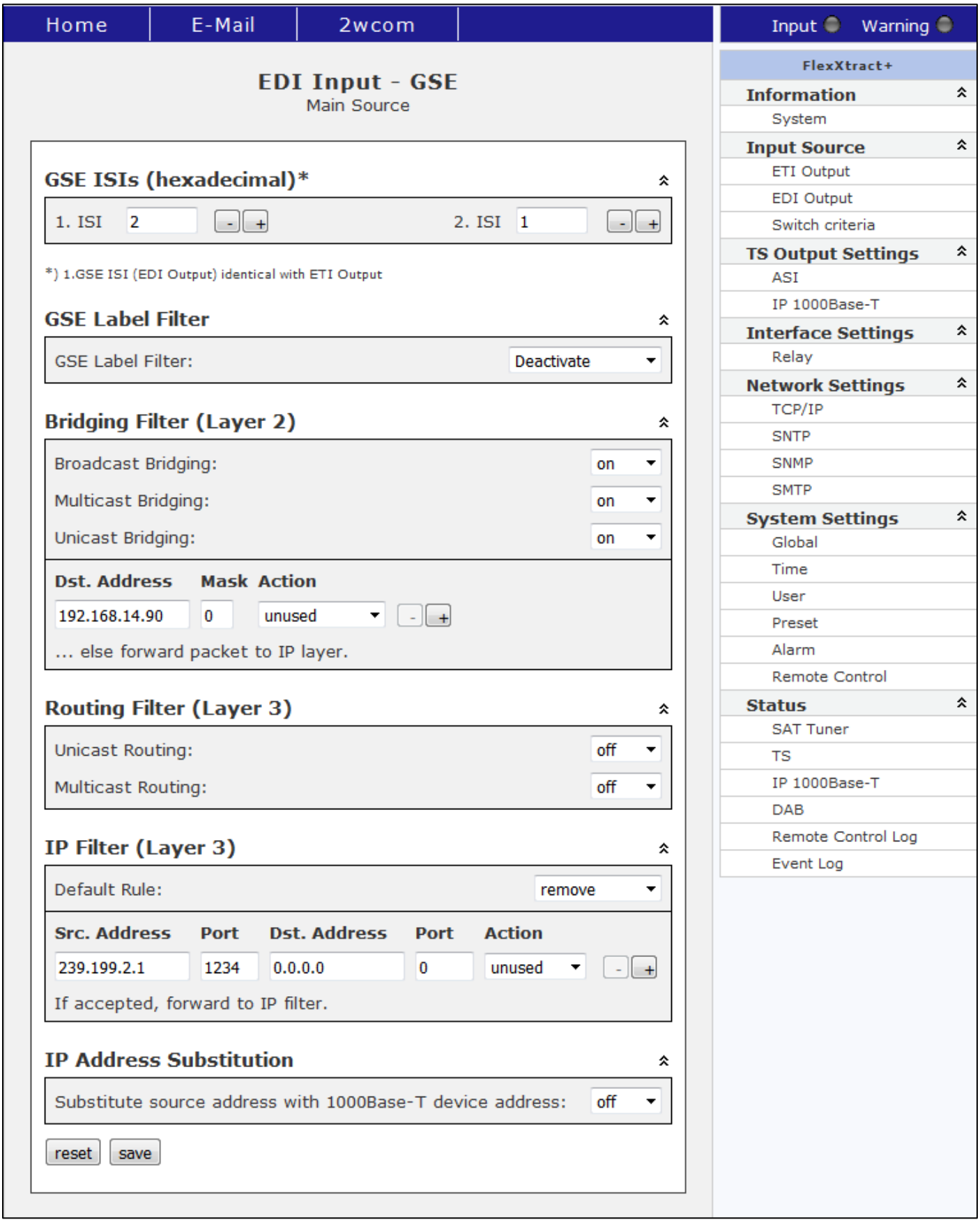


Figure 10: Configuration of GSE packets

12. TS Ouput Settings

12.1. Configuration of DVB-ASI output

To configure the DVB-ASI output, proceed as follows:

1. Open the window *ASI* under **TS Output Settings→ASI**.

2. To enable the DVB-ASI output, click in the field **Activation** on "on", and to disenable the DVB-ASI output, click in the field **Activation** on "off" (see Figure 11).

NOTE: If the field Activation is disabled, the output will still transmit K28.5 comma characters used to synchronize sender and receiver.

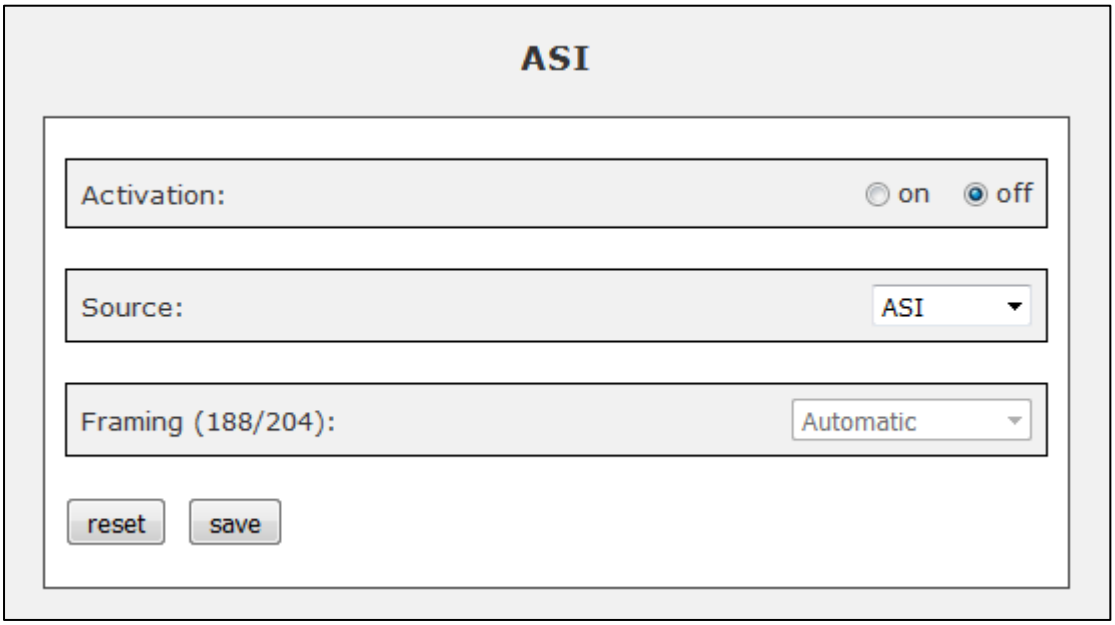


Figure 11: TS Output Settings – ASI

3. To change the source of the MPEG2 transport stream which should be transmitted over DVB-ASI, click in the field Source (see Figure 11).

4. Click the "Save" button to save the changes or the "Reset" button to restore the last settings.

12.2. Configuration of Gigabit-Ethernet output

To configure the data source for the MPEG2 transport stream and the targets IP address data, proceed as follows:

IP address parameters for the Gigabit-Ethernet output itself can be configured under **TS Output Settings→IP 1000Base-T.**

1. Open the window *IP 1000Base-T* under **TS Output Settings→IP 1000Base-T**.

2. To enable the Gigabit-Ethernet output, click in the field **Activation** on "on" and to disable the DVB-ASI output, click in the field **Activation** on "off".

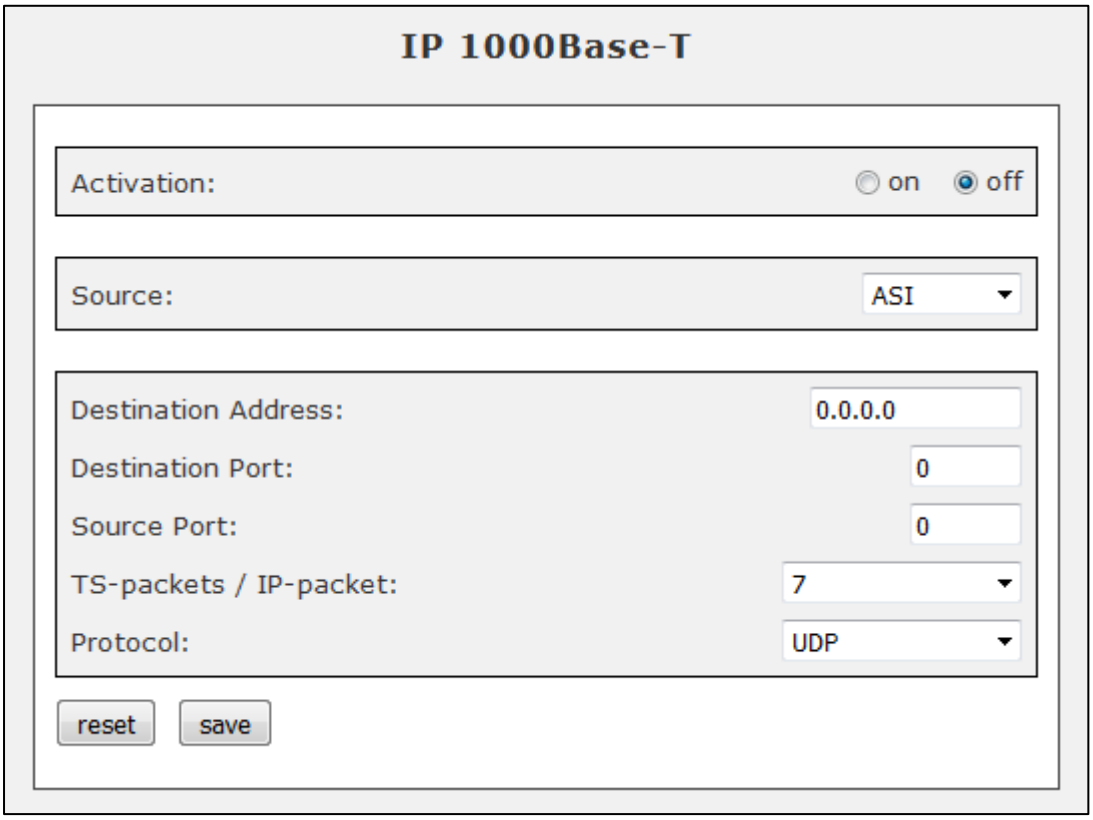


Figure 12: TS Output Settings – IP 1000 Base-T

NOTE: This only applies to MPEG2 transport stream data; standard ARP- or ping-requests are still answered.

3. Click the "Save" button to save the changes or the "Reset" button to restore the last settings.

13. Input Source

13.1. Configuration of ETI Output

This menu item is available under **Input Source→ETI Output** and is used to change the input sources for the ETI output.

13.1.1. Change main source for ETI Output

To change the main source for ETI output, proceed as follows:

1. Open the window *ETI Output* under **Input Source→ETI Output** (see Figure 13).

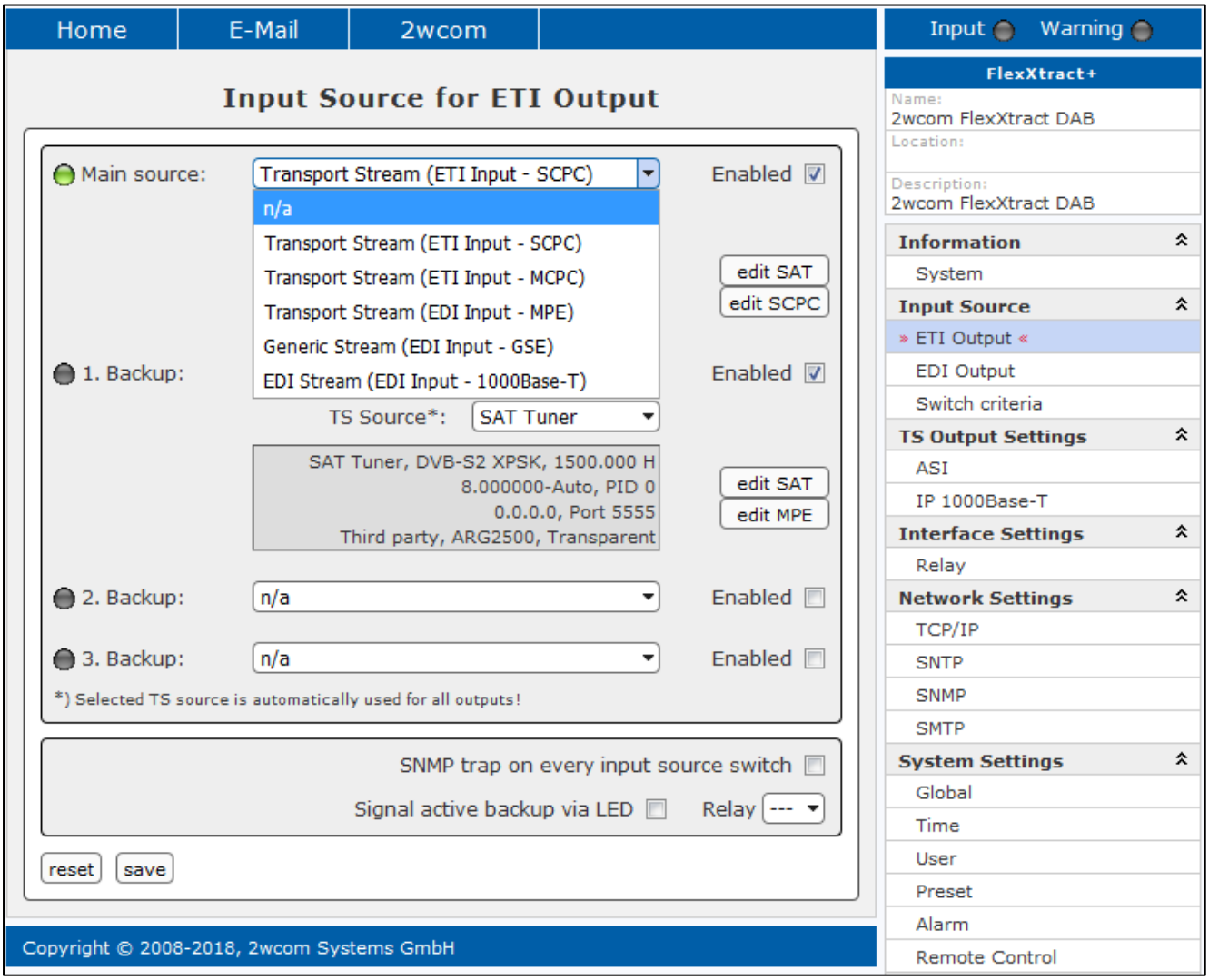


Figure 13: Input source – Input Source for ETI Output

2. Select the checkbox "Enabled" in the field **Main Source** to activate the main input source.

3. Choose the main source for the ETI output in the dropdown menu **Main Source**.

   You can choose between following main sources: Transport Stream (ETI Input – SCPC), Transport Stream (ETI Input – MCPC), Transport Stream (EDI Input – MPE), Generic Stream (EDI Input – GSE) and EDI Stream (EDI Input – 1000Base-T).

4. Click the "Edit SCPC/MCPC/MPE/GSE/IP" button, to configure the selected main source.

NOTE: If SCPC or MCPC input TS is encrypted and the option "64-Bit Encryption" is available in your device, enter the encryption key in the first configuration block (s. Figure 14):

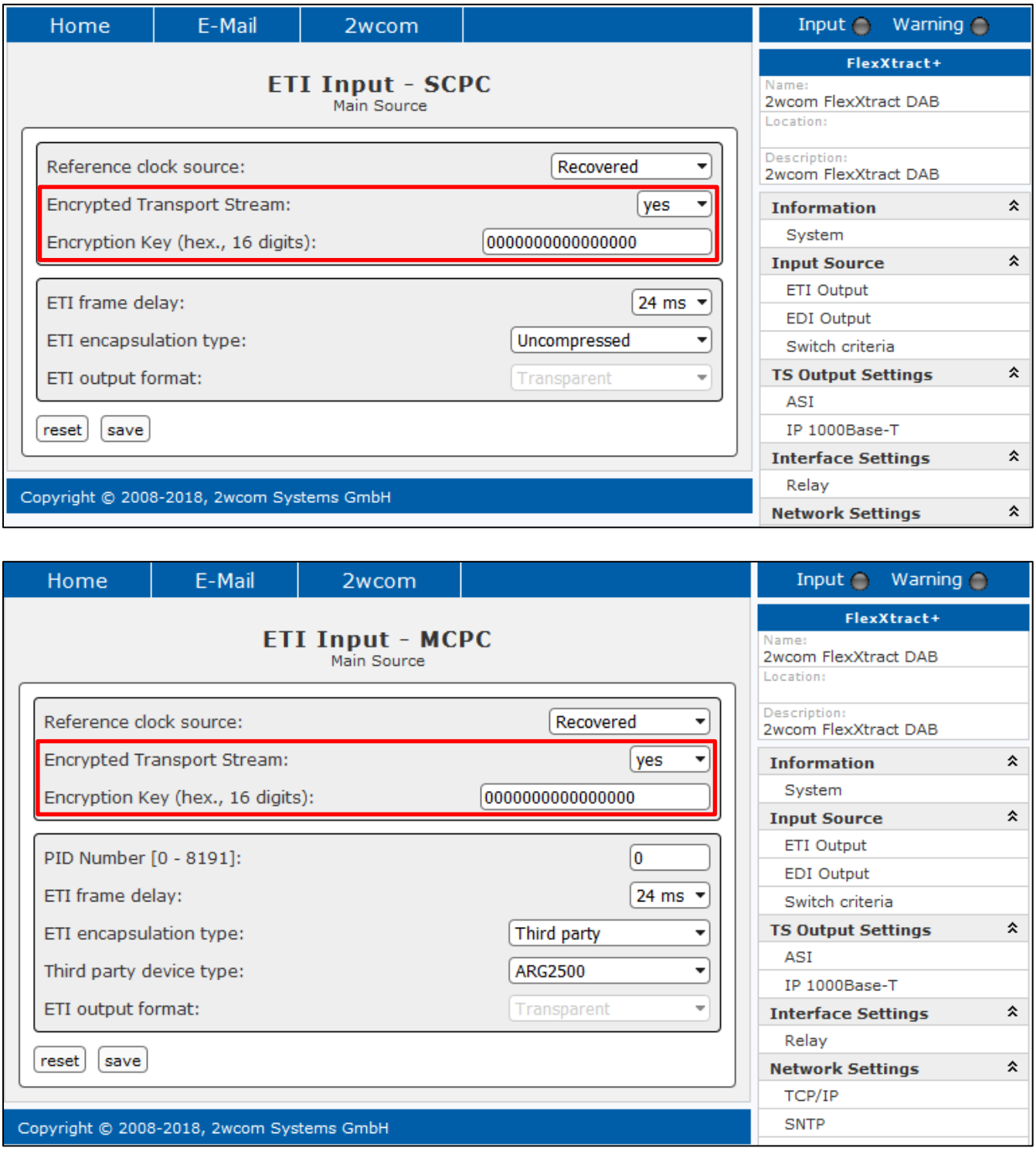


Figure 14: Main source configuration for ETI Output – SCPC and MCPC

5. In the "GS/TS Source" dropdown menu you can choose between following stream sources: SAT Tuner, ASI and IP 1000Base:

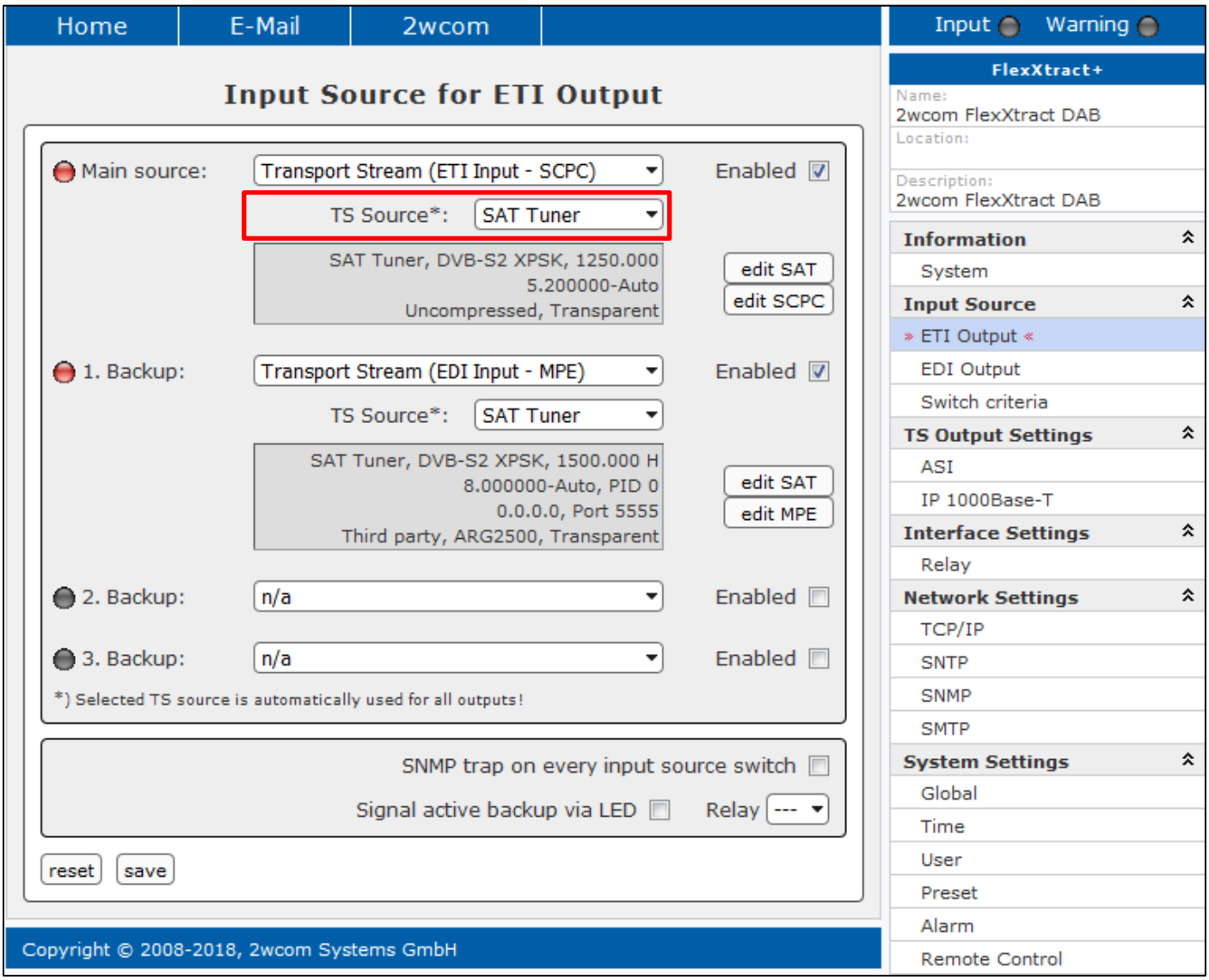


Figure 15: TS source configuration for ETI output (SAT Tuner/ASI/IP)

6. Click the "Edit SAT/IP" button, to configure the selected input source (s. Figure 16 and Figure 17.

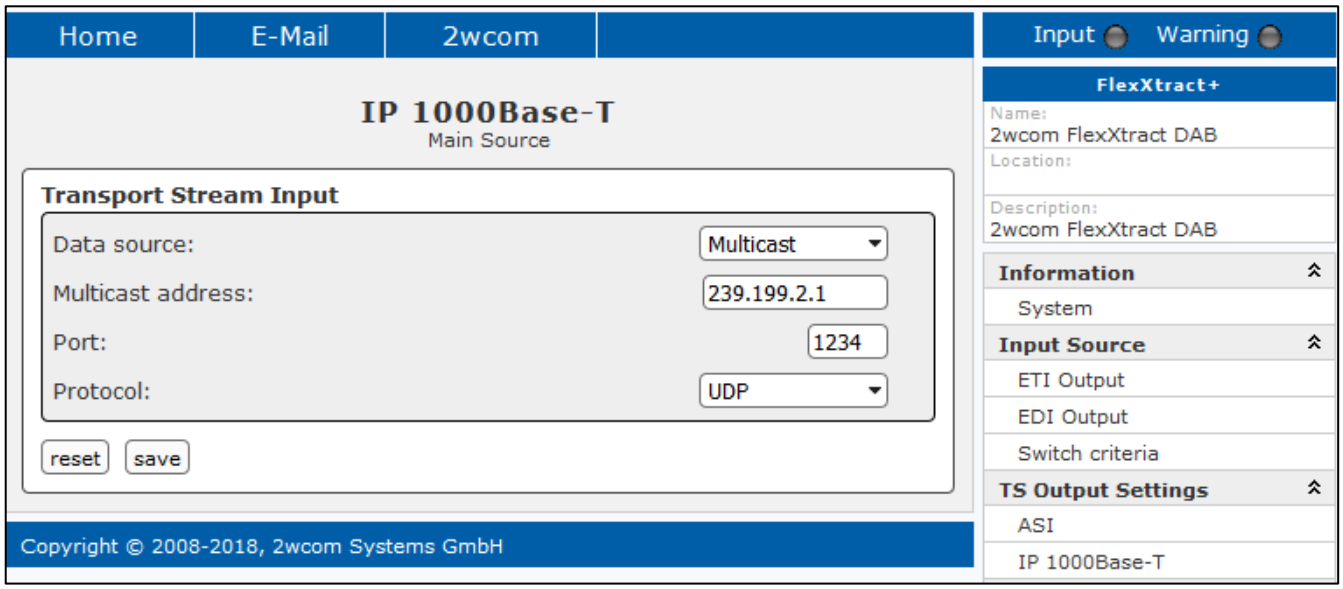


Figure 16: Transport Stream Source for ETI output configuration – IP 1000Base-T

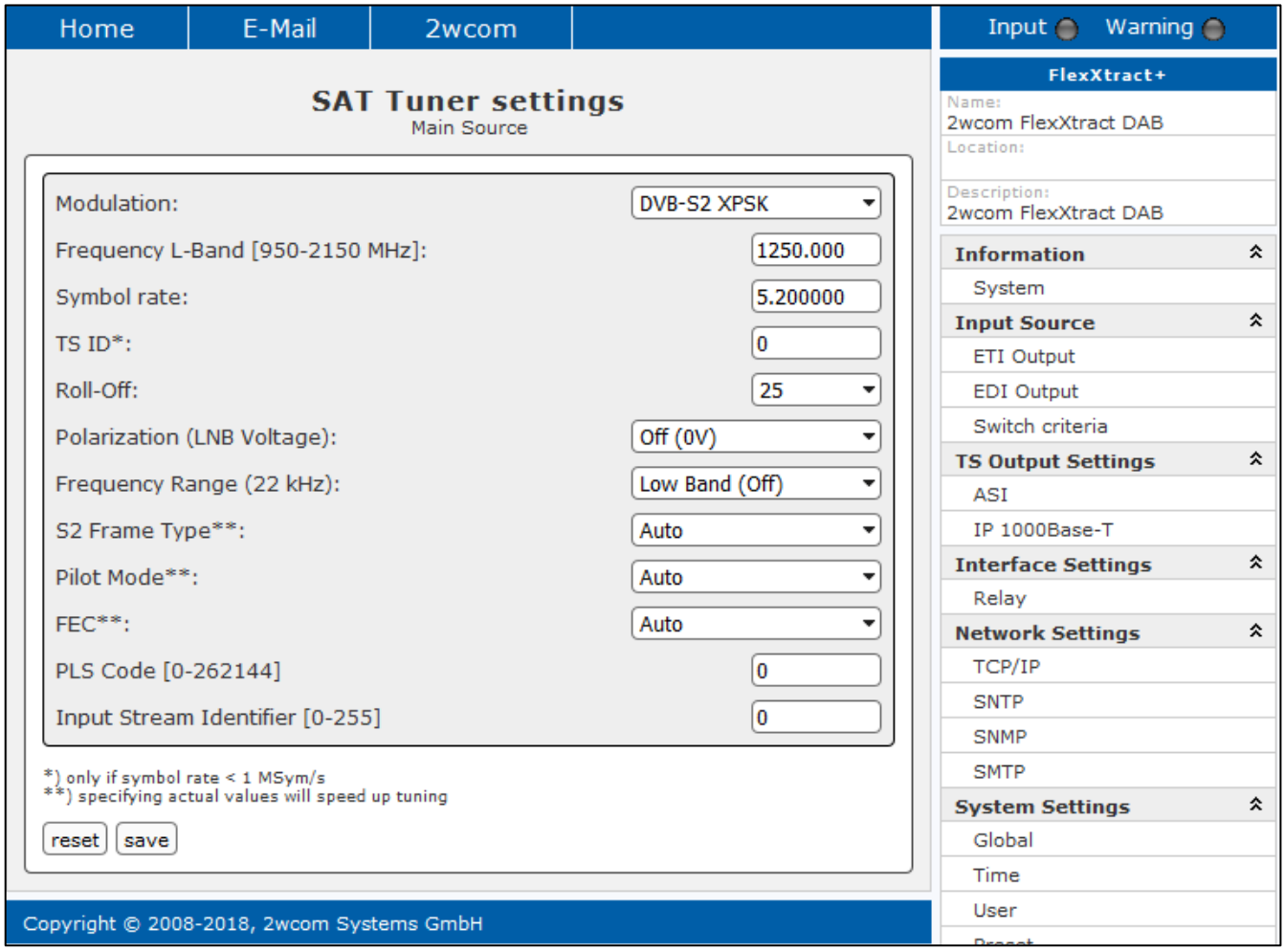


Figure 17: Transport Stream Source for ETI output configuration – SAT Tuner

7. Click the "Save" button to save the changes or the "Reset" button to restore the last settings.

13.1.2. Change backup sources for ETI Output

To change the backup sources for ETI output, proceed as follows:

1. Open the window *ETI Output* under **Input Source→ETI Output** (see Figure 13).
2. You can configure up to three different backup sources: 1. Backup, 2. Backup and 3. Backup.
3. Select the checkbox "Enable" in the field **1.-3. Backup** to activate backup input sources.
4. Choose the desired backup sources in the corresponding dropdown menus.
5. You can choose between following backup sources: Transport Stream (ETI Input – SCPC), Transport Stream (ETI Input – MCPC), Transport Stream (EDI Input – MPE), Generic Stream (EDI Input – GSE) and EDI Stream (EDI Input – 1000Base-T).
6. Click the "Save" button to save the changes or the "Reset" button to restore the last settings.

13.1.3. Edit SAT of 1. Backup for ETI Output

To edit the SAT of the ETI output for the 1.Backup, proceed as follows:

1. Open the window *ETI Output* under **Input Source→ETI Output**.
2. Click on the "edit SAT" button under *1. Backup* (see Figure 18).

   ⇒ The page SAT Tuner settings – 1.Backup appears.

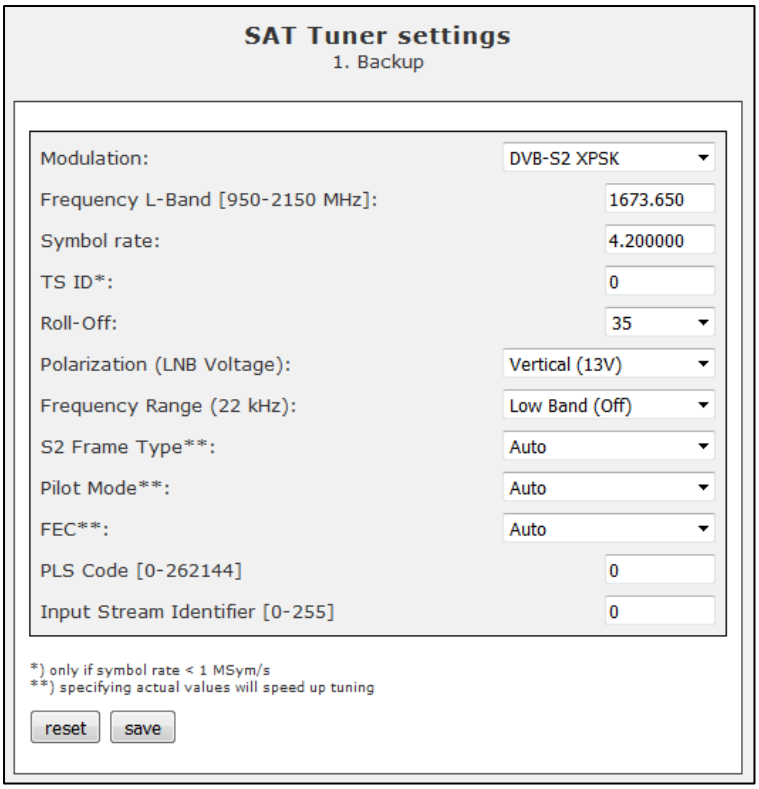


Figure 18: SAT Tuner settings – 1. Backup

3. You can now view or edit the SAT Tuner settings of the 1. Backup.

4. Click on the "Save" button to save the changes or the "Reset" button to restore the last settings.

13.2. EDI reordering depth

The EDI reordering depth is adjustable between 48 ms (milliseconds) and 144 ms (milliseconds). The EDI reordering depth defines the time range over the IP EDI packets can be reordered. This feature was especially developed for the spreading function which can be set up at the Fraunhofer Mux. By means of the spreading function, IP packets are interleaved according to a certain scheme at Fraunhofer Mux. This is intended to make the IP connection more robust. To use this feature at the FlexXtract+, the appropriate EDI reordering depth must be set compatible to the spreading value of the Fraunhofer Mux. If the spreading function is not used, the EDI reordering depth can be set to 24 ms (milliseconds).

13.3. ETI frame delay

The ETI frame delay is adjustable between 24 ms (milliseconds) and 504 ms (milliseconds). The ETI frame delay defines for which time range the ETI frames for the output over E1 is buffered. The output of the ETI frames can be delayed up to 504 ms (milliseconds).

13.3.1. Edit GSE of main source for ETI Output

To edit the GSE of the ETI output for the main source, proceed as follows:
1. Open the window ETI Output under **Input Source→ETI Output**.
2. Click on the "edit GSE" button under Main source (see Figure 19).
   ⇒ The page EDI Input – GSE - Main Source appears.

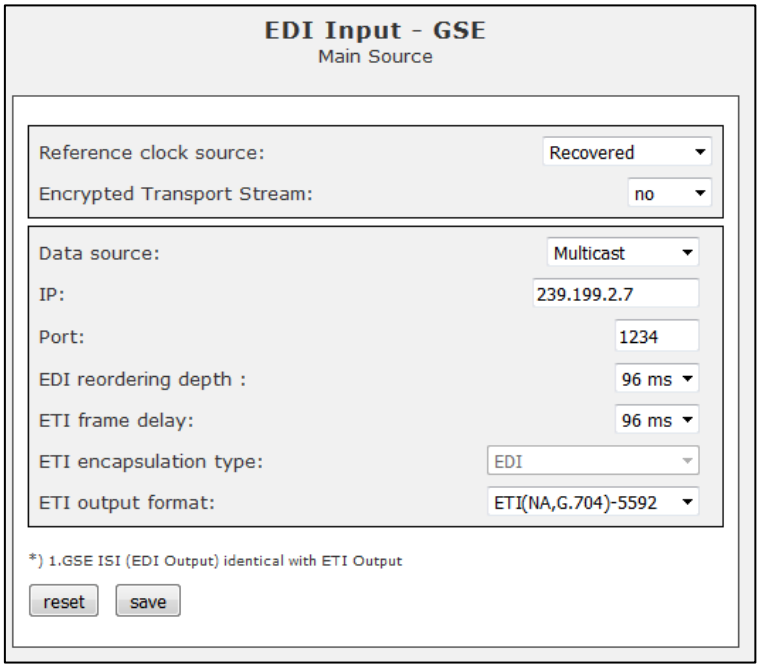


Figure 19: EDI Input – GSE (Main Source)

3. You can now view and edit the EDI Input Source settings of the main source.

4. Click on the "Save" button to save the changes or the "Reset" button to restore the last settings.

13.3.2. Edit GSE of 1. Backup source for ETI Output

To edit the GSE of the ETI output for the 1.Backup, proceed as follows:

1. Open the window ETI Output under **Input Source→ETI Output**.

2. Click on the "edit SAT" button under 1. Backup (see Figure 20).

   ⇒ The page EDI Input – GSE - 1. Backup appears.

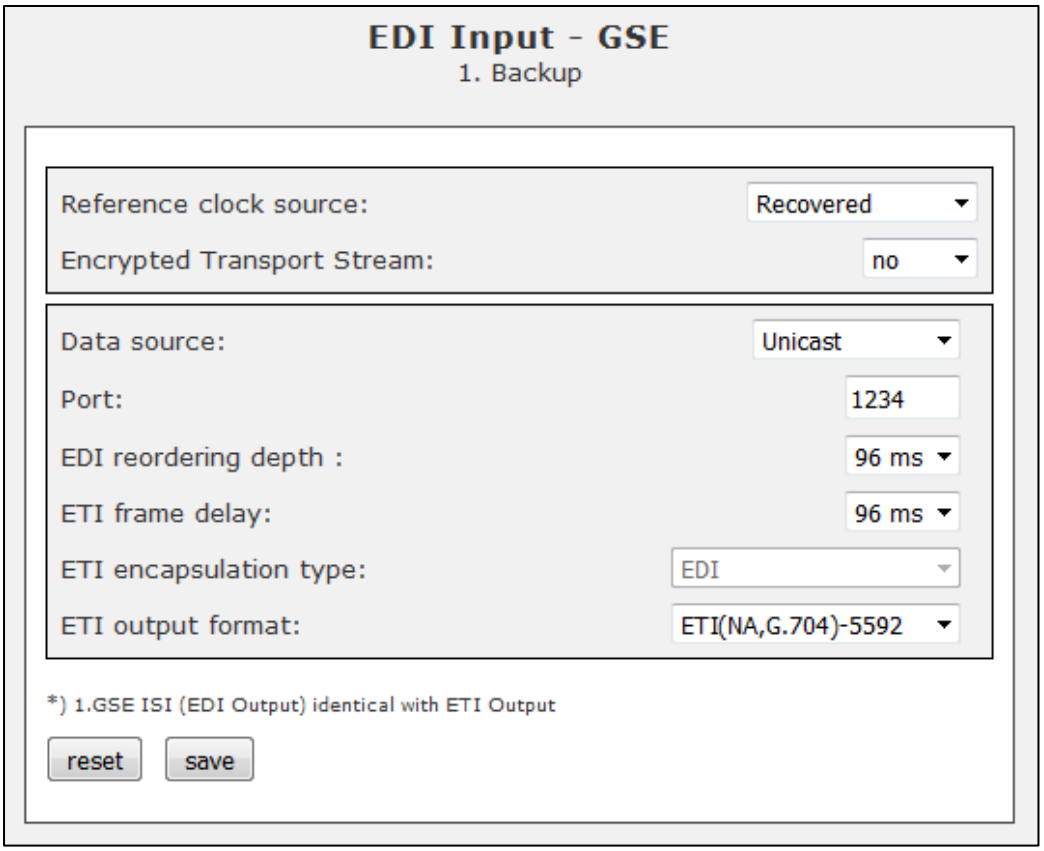


Figure 20: EDI Input – GSE (1. Backup)

3. You can now view or edit the EDI Input – GSE of the 1. Backup.

4. Click on the "Save" button to save the changes or the "Reset" button to restore the last settings.

13.4. Configuration of EDI Output

This menu item is available under **Input Source→EDI Output** and is used to change the input sources for the EDI output (see ***Figure 21***). The Settings menu is organized in the same way as

the configuration of ETI output. Follow the instructions from section 13.1 “Configuration of ETI Output” on page 41.

NOTE: To further information about “MPE Demux” and “GSE” configuration see section 11.2 MPE Demux: demultiplexing of MPE data on page 29 and section 11.3 “GSE configuration for EDI Input” on page 37.

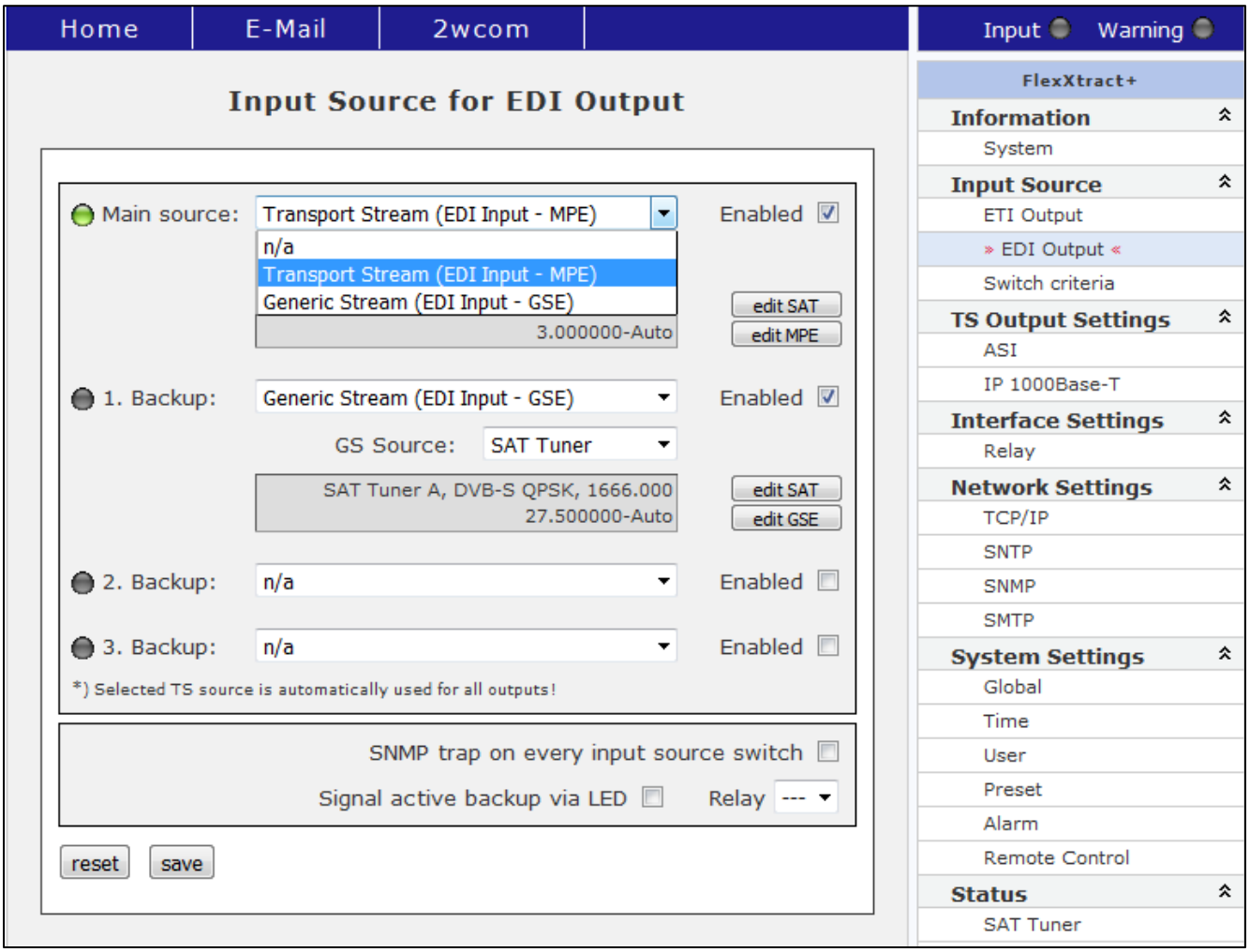


Figure 21: Input Source Settings for EDI Output

13.5. Set up Input source switch criteria

This menu item is available under **Input Source→Switch criteria** and is used to change all necessary parameters for satellite signal reception.

13.5.1. Configuration of ASI Input

This menu is available under **Input Source→Switch criteria** and is used to configure the DVB-ASI input.

13.5.2. Configuration of IP 1000Base-T Input

This menu is available under **Input Source→Switch criteria** and is used to configure the IP 1000Base-T Input (TS).

13.5.3. Retry main source(s)

This menu is available under **Input Source→Switch criteria** and is used to configure the Retry main source(s).

14. Interface Settings

14.1. Relay

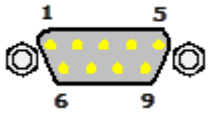
This menu item is available under **Interface Settings→Relay** and is used to configure the relay outputs of the device.

State: This block represents the actual state of the relays. Relays 1-6 are simple switches, whereas relay 7 is a dual pole relay.

Settings: Relays functions can be inverted here. Also the brownout function (typically assigned to relay 7) can be assigned to another relay. This will override its original function though.

14.2. Serial RS-232 Interfaces

DTE 1 / DTE 2



9 pole male D-Sub connectors for data communication. These can be used to output "Private Data" or "MPEG Ancillary Data (IRT)" of the received satellite signal.

Possible baud rates: 1200…115200 Baud.

Configuration: 8N1; Use a cross-over / null modem cable to connect.

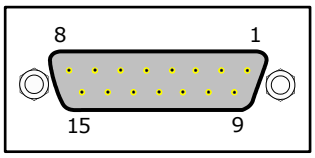
Pin configuration

Pin	*Function*
1	DCD
2	RXD
3	TXD
4	DTR
5	GND

Pin	*Function*
6	DSR
7	RTS
8	CTS
9	not connected

14.3. GPI/GPO 2

D-Sub female connector, 15 pole



Input No.	*Control Pin No.*
1	1
2	2
3	3
4	4

5	5
6	6
7	7

To actuate an optical coupler pull the corresponding control pin electrically to ground (pins 9, 10, 11, 12, 13, 14, 15). The control current is less than 5 mA.

NOTICE	
	CAUTION: Voltage on opto-isolated inputs must not be negative or exceeding +0.7 V!

15. Monitoring and alarm settings

15.1. View the tuner status

This menu item is used to display the status of the tuner in the web interface or on the LC display. The parameter of the received RF signal and the contained station signals including a signal quality statement (bit error rate) are shown.

1. You can view under **Status→SAT Tuner** the current status of the tuner and of the incoming audio signal at any time on the web user interface page.

C/N:	Calculated carrier/noise ratio of the signal. To avoid data errors, the decoding of a received signal requires a minimum C/N ratio that depends on the FEC rate. Unit: dB
CFO Error:	Level of the RF signal at the "RF-In" input. Unit: dBm
Input:	Monitors the detected bit error rate (BER) in front of the Viterbi decoder of the decoded signal and the low density parity check (LDPC).
AGC:	Tuner status AGC (Automatic Gain Control). "Bad" or "OK".
CE:	Tuner status CE (Carrier Frequency Offset Estimation). "Bad" or "OK".
Sym. Time:	Tuner status Symbol Timing. "Bad" or "OK" (configured symbol rate is detected).
Carr.:	Tuner status Carrier. "Bad" or "OK" (Phase & Frequency loop locked).
FEC:	Tuner status of the Viterbi error correction. "Bad" or "OK".
System:	Tuner status "Bad" or "OK" (all preceding OK).
Puncture Rate:	Ratio of protection bits and data bits of the Viterbi error correction.
Viterbi/LDPC BER:	Present bit error rate in front of the Viterbi error correction.
RS/BCH BER:	Present bit error rate in front of the Reed Solomon error correction.

2. You can also view the current status of some parameters directly on the LC display. To change the menu, turn the jog wheel left or right.

LCD-menu: State→Tuner→Signal

LCD-menu: State→Tuner→LockState

LCD-menu: State→Tuner→Viterbi+RS

15.2. TS: Display transport stream status

This menu item is used to display details of the satellite transport stream in the web interface or directly in the LC Display.

You can view under view under **Status→TS** the details of the satellite transport stream in the web interface.

State: Tuner detected the received data transport stream: "No" or "OK".

NID: Network Identification: Identity string of the received satellite (e.g. "Astra 19,2E").

LCD Menu: State→TS

15.3. Remote Control Log

This menu item is available under **Status→Remote Control Log** and is used to configure the remote Control command log.

1. Choose the desired entries type and click on the "switch display" button.

2. Choose the desired log type and click on the "change log type" button to save the settings.

15.4. Event Log

This menu item is available under **Status→Remote Control Log** and is used to display a log with events that have occurred since the lists last reset. A printable list with a description and a timestamp is shown.

16. Global Settings

On the web interface, you can view general settings of the device and current system information like uptime, serial number, firmware version, the temperature etc.

16.1. View the system information

To view the system information, proceed as follows:

1. Open the window *Global* under **System Settings→Global**.

2. The device information is displayed in the field **System information** (see Figure 22).

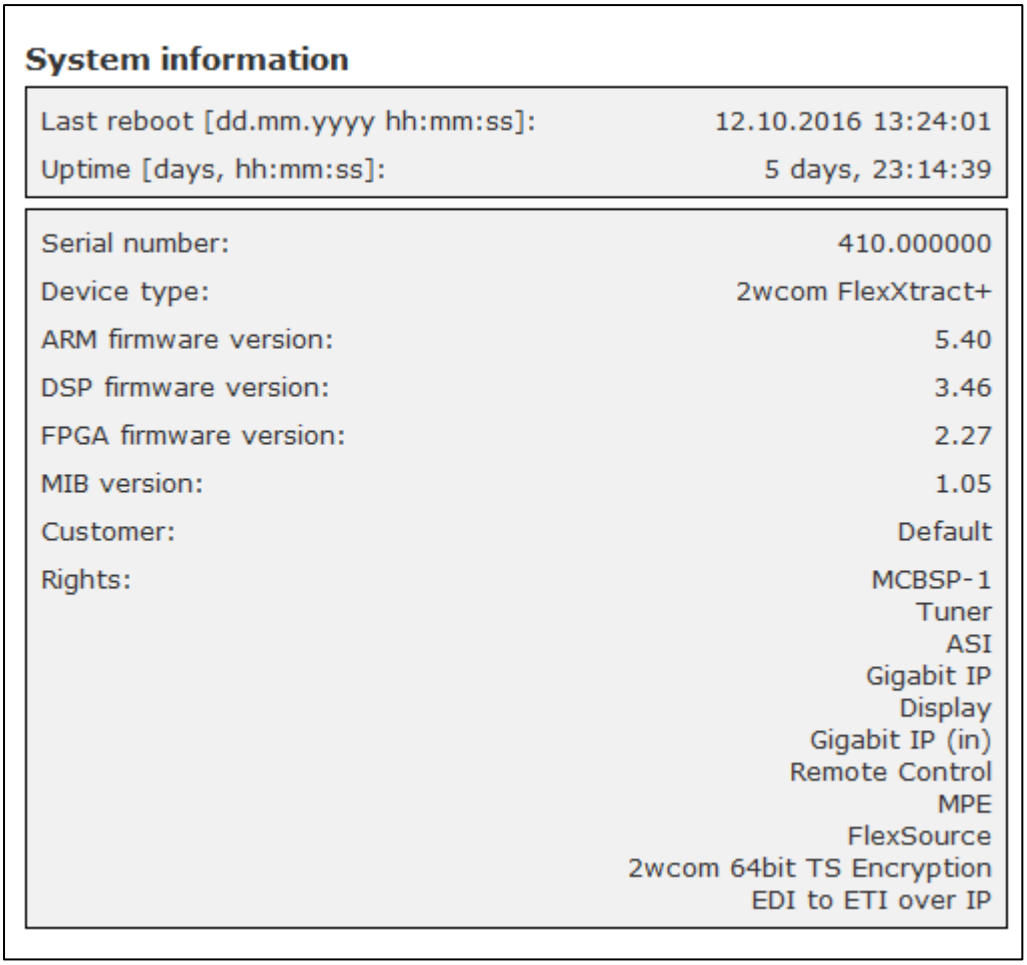


Figure 22: Global settings – System information

16.2. Enter the device information

To enter the name and description of the device for identification, proceed as follows:

1. Open the window *Global* under **System Settings→Global**.

2. Enter the identification information of the device in the field **System parameter** (see Figure 23).

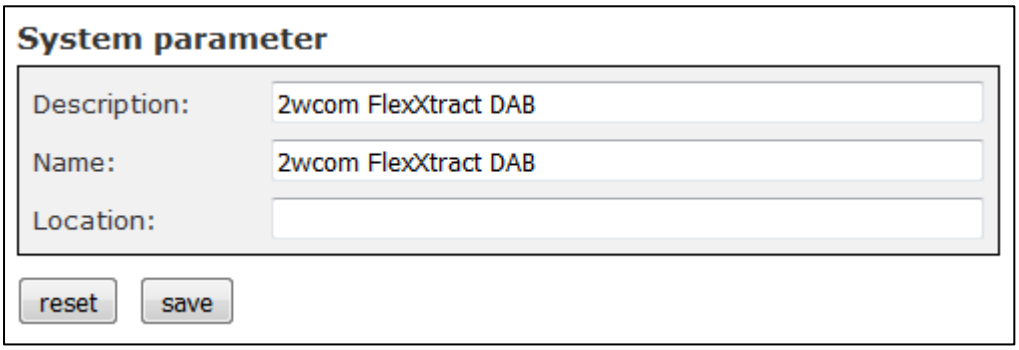


Figure 23: Global settings – System parameter

3. Click the "Save" button to save the changes or the "Reset" button to restore the last settings.

   ⇒ The saved information can be viewed under **Information→System** in the web interface.

16.3. Upload and activate settings stored

You can restore device settings saved locally.

To upload settings saved locally, proceed as follows:

1. Open the window *Global* under **System Settings→Global**.

2. Click the "Browse" ("Durchsuchen") button in the field **Settings** (see Figure 24). The "Open file" dialogue of your system software will be displayed.

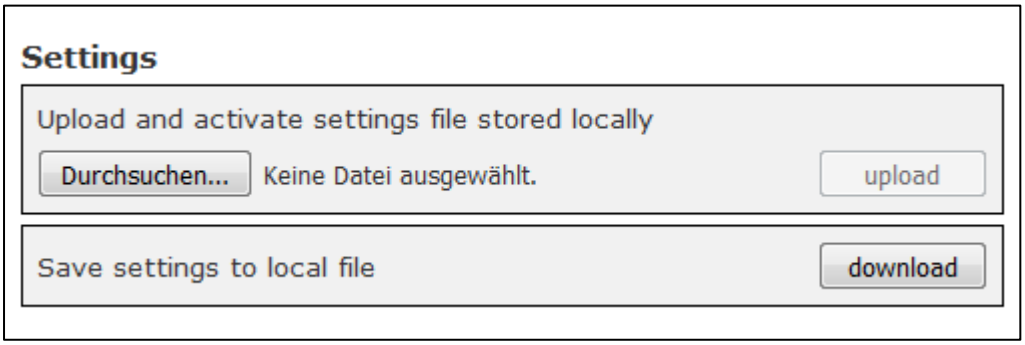


Figure 24: Global settings – Settings

3. Choose the settings file in your browser.

4. Click the "Upload" button to upload the file. The file upload can take longer and may not be interrupted.

5. Follow the prompt to restart the device after successful upload.

   ⇒ The new settings will be activated after the restart of the device.

16.4. Save settings to local file

You can download the current settings and save them as a file.

To save settings to local file, proceed as follows:

1. Open the window *Global* under **System Settings→Global**.
2. Click the "Download" button in the field **Settings** to start the file download in the web browser (see Figure 24).
3. Choose the archive location on the directory tree and confirm the choice.

   ⇒ The saved settings can be uploaded in the field **Upload Settings**.

16.5. Upload and activate firmware stored locally

You can upload an ARM firmware stored locally.

To upload and to activate the new firmware, proceed as follows:

1. Open the window *Global settings* under **System Settings→Global**.
2. Click the "Browse" ("Durchsuchen") button in the field **Firmware update** (see Figure 25). The "Upload file" dialog of your system software will be displayed.

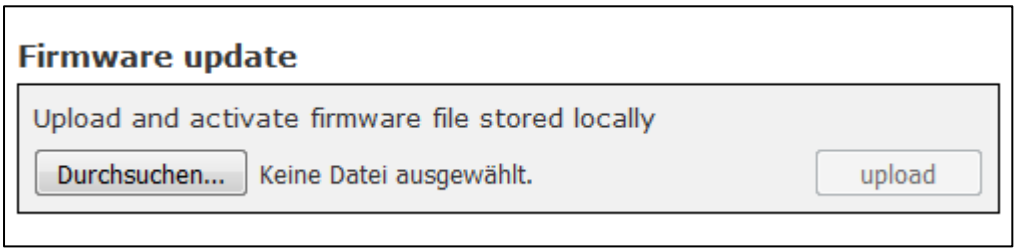


Figure 25: Global settings – Firmware update

3. Choose the firmware file.
4. Click the "Upload" button, to start the file upload in the web browser. The file upload can take longer and may not be interrupted.
5. Follow the prompt to restart the device after successful upload.

   ⇒ The new firmware will be activated after the restart of the device.

16.6. Set up time and date

You can set up or change manually the present local time zone and date of the internal clock of the device.

To set up the internal clock of the device, proceed as follows:

1. Open the window *Time* under **System Settings→Time**.
2. In the field **Time and date settings**, set up the internal time in the 24h format and the datum (see Figure 26).

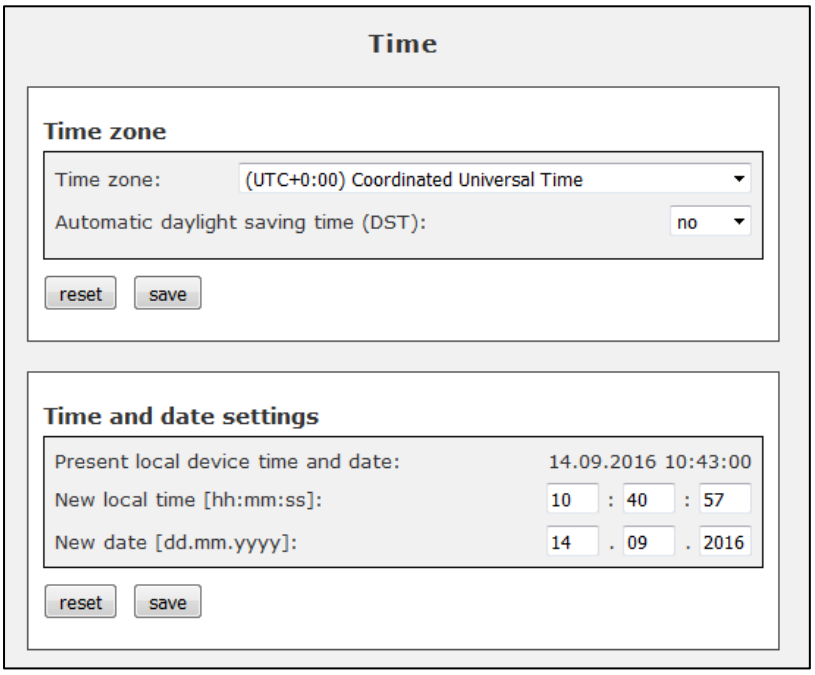


Figure 26: Global settings – Time

16.7. Configure user accounts

The default accounts are a read-only access (Guest account) and a full access (Admin account). Change the login data for the access after the first login to the web user interface. To change the login data, proceed as follows:

1. Open the window *User* under **System Settings→User**.
2. Change the login data for the full access in the field **Admin account** and repeat the new password.
3. Click the "Save" button to save the changes or the "Reset" button to restore the last settings.
4. Change the login data for the read-only access in the field **Guest account** and repeat the new password.
5. Click the "Save" button to save the changes or the "Reset" button to restore the last settings.

NOTE: Consider lower and upper case when entering a new password!

16.8. Restart the device

To restart the device, proceed as follows:

1. Open the window *Global* under **System Settings→Global**.
2. Click the "Restart" button in the last field on the web interface page to reboot the device (see Figure 27).

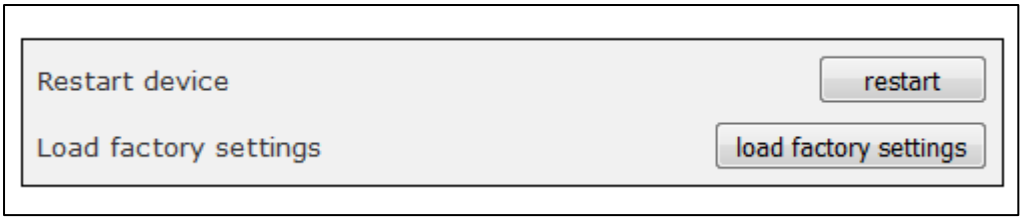


Figure 27: Global settings – Restart the device

⇒ The device restarts.

16.9. Restore factory settings

NOTICE	
	CAUTION: If you restore factory settings, all saved configurations made earlier by user will be deleted except for the IP address! This applies also for the access accounts!

To reset the device to the factory settings, proceed as follows:

1. Open the window *Global* under **System Settings→Global**.
2. Click the "Load factory settings" button in the last field of the web page to restore factory settings (see Figure 27).

16.10. Preset settings

The presets are used to name, activate and copy the eight presets. A preset is a complete device configuration set that can be used to switch between different configurations (with 2 audio programs to be decoded each). Up to 8 different presets can be used per device. Presets enable a quick and comfortable switching between different device configurations, i.e. switching from a national broadcast to a localized news broadcast or localized advertisement broadcast. In this scenario the audio fading option is helpful, as it allows for a smooth (audio) transfer in between preset switches, by fading out the old broadcast, switching the preset and fading in the new broadcast.

Preset changes can also be triggered by the relay inputs, allowing the device to be used for redundancy purposes by an external device.

NOTE: Any change in any setting is stored to the current preset immediately and as such there is no need to save changes to a preset.

IP interface settings are excluded from preset data however, as those are meant to be static.

To change the preset settings, proceed as follows:

1. Open the window *Preset* under **System Settings→Preset**.
2. To assign a name to the current preset, enter the preset name in the field **Preset name** (see Figure 28).
3. Click the "Save" button to save the changes or the "Reset" button to restore the last settings.
4. To select the desired station preset, click in the field **Selected preset** (see Figure 28).
5. Click the "Ok" button to save the changes or the "Reset" button to restore the last settings.
6. To copy the current preset select into another preset, click on the field **Save present preset in** (see Figure 28).
7. Click the "Save" button to save the changes or the "Reset" button to restore the last settings.

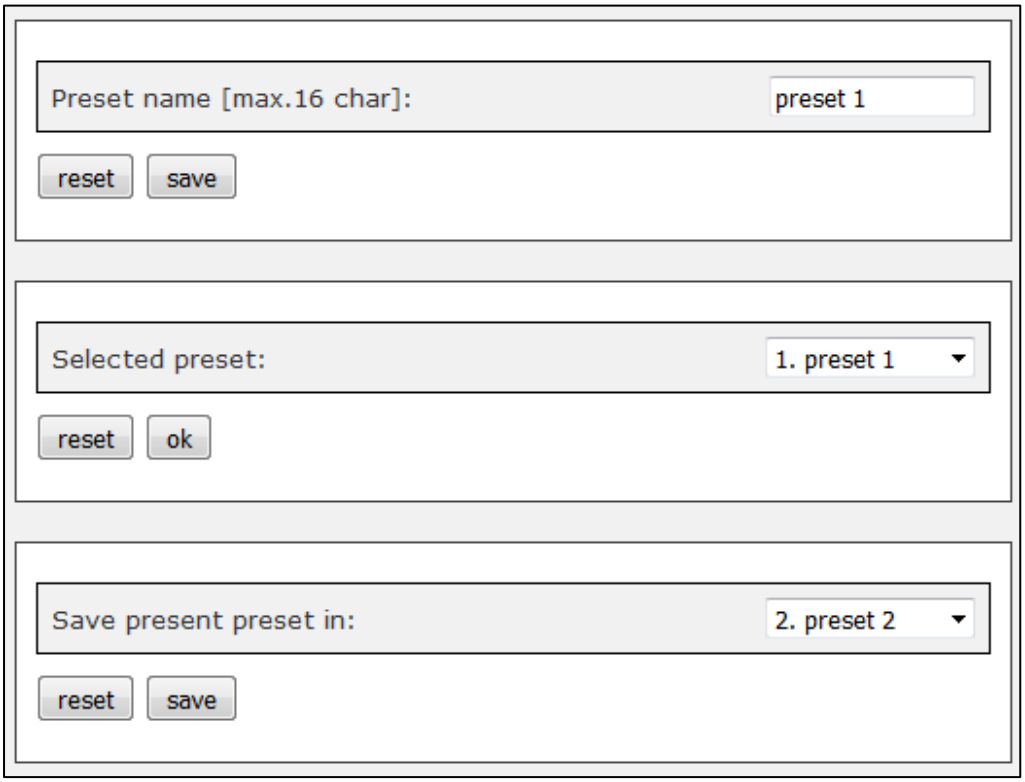
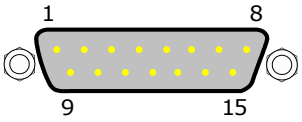
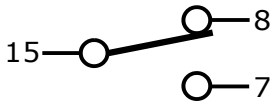


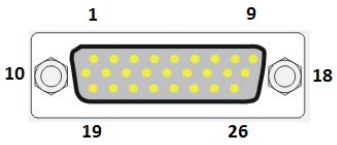
Figure 28: System settings – Preset settings

17. Relay Output

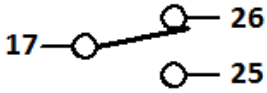
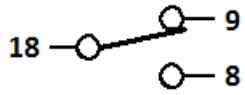
The FlexXtract is either equipped with a D-Sub 15 pole male connector or a high density D-Sub 26 pole male connector on newer hardware revisions for more relays. Additional relay outputs have to be ordered with the unit or the unit has to be sent back for servicing/upgrading at a later date (26 pole connectors only).

The relays can be used for alerts of the monitoring function.

D-Sub male connector, 15 pole		
 Relay Output		
Relay No.	*Switch contacts*	*Switch type*
1	1,9	SPST, NO
2	2,10	SPST, NO
3	3,11	SPST, NO
4	4,12	SPST, NO
5	5,13	SPST, NO
6	6,14	SPST, NO
7		SPDT

D-Sub male connector, high density, 26 pole			
			
Relay No.		*Switch contacts*	*Switch type*
	Option[1]		
1	1	1,10	SPST, NO
2	2	11,19	SPST, NO
3	3	2,20	SPST, NO
4	4	3,12	SPST, NO
5	5	13,21	SPST, NO
6	6	4,22	SPST, NO
	7	5,14	SPST, NO
	8	15,23	SPST, NO
	9	6,24	SPST, NO
	10	7,16	SPST, NO

[1] Relay numbers 7, 8, 9, 10, 11 and 12 are available only when the additional relay outputs hardware option was purchased.

7	11		SPDT
	12		SPDT

NOTICE	
	CAUTION: The relay contacts have a rating of 0.5 A at 125 V AC / 60 V DC. The maximum current is 1 A!

18. Troubleshooting

The following chart is designed to help you to correct minor problems with the use of the device prior to contact our service department (report failures by email to *contact@2wcom.com* or fax to +49 461-662830-11). Also be sure to read the entire manual carefully, as this often helps in understanding and fixing typical problems.

Problem	**Possible Cause**	**Solution**
Device does not turn on	• Power cable is improperly connected • Mains supply failure • Blown fuse	• Check supply cord • Make sure that the power plug at the device is fully inserted • Check mains supply • Replace fuse by same type
Device cannot be operated via Ethernet	• Network cable not connected • IP address / TCP port is not known. • A device with the same IP address was connected a few minutes before. Then the ARP table still assigns the old MAC address to the IP address.	• Connect the network cable. • Use the default address 192.168.14.250. If the address was changed and is not known please see page 8. • Usually the ARP table is refreshed automatically after a few minutes by the operation system. For an instant access to the device please reset the ARP table of your computer e.g. by entering “arp –d” in the Windows Command Prompt.

19. Maintenance and servicing

Maintenance

No special maintenance is necessary on the device. Dust can be removed with a dry duster. For cleaning use only neutral, non-corrosive detergents applied to a cloth - not the device.

Servicing

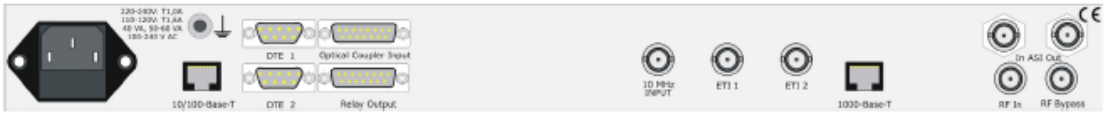
The modules of the device are complex and should be serviced only by authorized personnel.

The 2wcom Systems GmbH is equipped with special measurement and repair kits. Therefore a repair by the user is not intended.

Calibration

Due to the design and construction of the device, no calibration is necessary.

20. Technical data



FlexXtract+ – Technical Details

Inputs

RF / SAT

Data	MPEG TS (EDI MPE) MPEG TS (ETI SC/PC, MC/PC) GSE (EDI)
Frequency	950 .. 2.150 MHz
Input Level	-75 .. -20 dBm
LNB Control	13 V vertical, 18 V horizontal 0 kHz low band, 22kHz high band

ASI

Data	MPEG TS (ETI)
Connector	BNC 270 Mbp

Ethernet (optional)

Data	EDI, MPEG TS (ETI)
Connector	RJ45
Type	Auto switching 10/100/1000 BASE-T
Data Format	UDP/RTP UDP (MPEG2-TS)

Outputs

Data

Protocol	E1 (G.703/G.704)
Data rate	2.048 kbps
Coding format	HDB3
Output connector	1x BNC, 75 Ω

ASI

Data	MPEG TS (ETI)
Connector	BNC 270 Mbps

Ethernet (optional)

Data	MPEG TS (ETI) EDI
Connector	RJ45
Type	Auto switching 10/100/1000 BASE-T
Data Format	UDP/RTP UDP (MPEG2-TS UDP/RTP (when converted from ETI source) any IP protocol (EDI data format determined by uplink)

Control & Monitor

Ethernet

Data	Controlling and Setup funct.
Connector	RJ45
Type	Auto Switching 10/100 BASE-T
Protocol	HTTP, SNMPv2c, SMTP, UDP
Application	Webbased GUI (at least 3 users, 2 levels) SNMPv2c

Satellite In-Band Remote Control (SIRC)

2wcom professional SIRC	optional: request for information

Contact closure

Inputs	7 opto isolated inputs (excludes option: 24 relay contacts) 15 pole sub-D female
Outputs	12 floating relays (10x SPST, 2x SPDT) (for DC: max. 30 V, 1 A, 10 W) 26 pole sub-D male
optional:	24 floating relays (excludes: 7 opto isolated inputs)

Serial

	3x RS-232C (1 front, 2 rear)
Connector	9 pole sub-D male
Transmission rate	1200 to 115200 baud, asynchronous

Front panel

LCDisplay	2x 40 characters
Jog Wheel	Impulse, ENTER button
8 LEDs	Power, Signal, Status, Alarm, Warning, Remote, DAB Sync, Data

Satellite Modulation

Tuner option 1 (standard)

DVB-S (EN 300 421)

Standard Modulation/Symbol rate	QPSK (0.128 .. 45 MSym/s)
Roll-off	0.35
FEC	Viterbi, Reed Solomon 1/2, 2/3, 3/4, 5/6, 6/7, 7/8

DVB-S2 (EN 302 307)

Standard Modulation/Symbol rate	QPSK (0.128 .. 35 MSym/s)
FEC	LDPC, BCH 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
Modulation/Symbol rate	8PSK (0.128 .. 31 MSym/s)
FEC	LDPC, BCH 3/5, 2/3, 3/4, 5/6, 8/9,9/10
Roll-off	0.20, 0.25, 0.35

Tuner option 2 (optional)
(High performance & Advanced DVB-S2 processing functions)

DVB-S (EN 300 421)

Modulation/Symbol rate	QPSK (0.064 .. 45 MSym/s)
Roll-off	0.35
FEC	Viterbi, Reed Solomon 1/2, 2/3, 3/4, 5/6, 6/7, 7/8

DVB-S2 (EN 302 307)

Modulation/Symbol rate	QPSK (0.064 .. 45 MSym/s) 8PSK (0.064 .. 45 MSym/s) 16 APSK (0.064 .. 45 MSym/s)
Modulation type	CCM
Frame type	Short, Normal
Roll-off	0.20, 0.25, 0.35
FEC	LDPC, BCH 1/4, 1/3, 2/5,1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
Transport stream processing	Single Transport Stream
PL scrambling	ID 0 .. 262144
Input switching	loop through, A/B switch (optional)

Advanced processing functions (optional)

Modulation/Symbol rate	32 APSK (0.064 .. 38 MSym/s)
Modulation Type	VCM, ACM
Transport stream processing	Single and Multiple Transport stream / Single and Multiple Generic stream

All tuners

IF filter bandwidth	automatic selection

General data

Power consumption	40 VA
Case dimensions	19", 1 HU, 310/424/484 mm
Weight	<4 kg
Housing	steel plate (aluminum-zinc coated)
Operating temp. range	0 .. +45°C
Storage temp. range	-40 .. +70°C
Power supply	internal, 90 .. 260 V, 47 .. 63 Hz
Languages	English

Version 30.05.2016
These data are subject to modifications and amendments.
Errors excepted.

2Wcom
Wireless-World-Communication

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