

FlexNsert DAB Distribution Inserter



User Manual FlexNsert DAB V01.33

Screenshots: ARM firmware version 5.54, 6.08, 6.16

December 2019

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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.



Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



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 FlexNsert is a professional DAB distribution inserter and is able to receive a DAB ETI signal via E1 in order to embed the DAB data into a MPEG Transport Stream (TS) and forward it via ASI and 1000Base-T. Alternatively, ETI can also be converted to EDI and forwarded via 1000Base-T. The FlexNsert can handle all three ETI input formats: ETI(G.703,NI), ETI(G.704,NA)⁵⁵⁹² and ETI(G.704,NA)⁵³⁷⁶. The ETI signal is processed and embedded into a MPEG TS, optionally generating PAT and PMT tables. ETI processing includes uncompressed mode (RAW data), compressed mode (bandwidth saving technology with bit identical reassembly at destination FlexXtract) and third party mode. If the ETI signal is converted to EDI, a customizable error protection is applied and the EDI then output via 1000Base-T.

Control

HTTP Web interface

The unit is controlled via a built-in web user interface (see chapter 8.4)

LCD and jog wheel

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

The screenshot displays the web interface for the FlexNsert DAB. At the top left, there is a navigation bar with links for Home, E-Mail, and 2wcom. The main content area is titled 'System information' and contains three sections: 'Name: 2wcom FlexNsert DAB', 'Location: 2wcom FlexNsert DAB', and 'Description: 2wcom FlexNsert DAB'. Below this is the 'Operational State' section, showing 'State: Locked - ETI(NA)' and 'Interface bitrate: 1265366 bit/s'. The bottom section shows 'Last reboot [dd.mm.yyyy hh:mm:ss]: 25.07.2017 10:11:46' and 'Uptime [days, hh:mm:ss]: 0 days, 00:05:06'. The right-hand sidebar features the 2wcom logo and a menu with 'Input' (green indicator) and 'Warning' (grey indicator). The menu items include: FlexNsert DAB, Information, System, TS Input Settings (IP 1000Base-T), TS Output Settings (ASI, IP 1000Base-T), Data Processing (Multiplexer), Interface Settings (Relay), Network Settings (TCP/IP, SNMP, SNMP), System Settings (Global, Time, User, Preset, Alarm), and Status (TS, IP 1000Base-T, DAB, Event Log). A copyright notice at the bottom left reads 'Copyright © 2008-2017, 2wcom Systems GmbH'.

Figure 1: Web interface of FlexNsert DAB

SNMP

Additional remote monitoring of the device using SNMPv.2c as well as over relays (ETI/EDI parameters) is possible. Rudimentary device control, status information and alarm trap generation is featured.

Functions

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

Standard	Feature List/Model	FlexNsert DAB
	10/100Base-T interface (control/monitoring)	X
	Web interface (10/100Base-T interface)	X
	SNMPv2c	X
	ETI input	X
	1000Base-T interface (data)	X
	DVB-ASI output	X
	Transport stream output over 1000Base-T interface	X

The optional functions are shown in the following table:

Optional	Encoding	
	ETI to EDI over IP conversion	0
	Flex optimized bandwidth saving technology	0
	2wcom 64Bit encryption	0
	Third party encapsulation modes (on request)	0
	Pro MPEG FEC for 1000Base-T TS in- and output	0

User

Only experienced technical personal or engineers should operate the FlexNsert 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:

	<ul style="list-style-type: none"> – non-ventilated environment, for example a narrow shelf or built-in rack; – extremely warm or cold place; – direct sunlight exposure; – too high or too low temperature; – extremely wet or dusty environment. <p>Do not operate the device in the presence of flammable gases.</p> <p>Do not cover the ventilation openings of the device to avoid heat accumulation.</p> <p>Do not put objects with open flames such as burning candles on the device.</p> <p>Do not put heavy objects on the supply cord. A damaged cord can lead to fire or electric shock hazards.</p> <p>To disconnect the supply cord, drag always the plug and never the cable to avoid the cord damage.</p>
--	---

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

<h2 style="margin: 0;">NOTICE</h2>	
	<p>CAUTION: Risk of equipment damage</p> <p><i>Before the first operation:</i></p> <p>Check the housing, the front panel, the supply cord and the plug for visible damage (e.g. scratches, cracks, damaged isolation and abrasion)</p> <p>In case of damage, unplug immediately the supply cord. Never operate device with a damaged supply cord.</p> <p>All damaged components must be replaced immediately.</p>

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

- FlexNsert DAB
- Power supply cord*
- PC Software to download: "FlexNsert DAB" for Win98, 2000, XP and Vista for configuring and remote operation
- User manual in PDF format to download; on request by paper

*available for different countries



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

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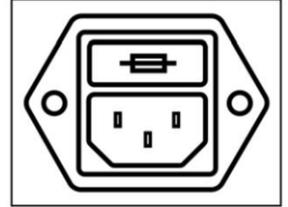
6. Installation

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 the power supply cord fully to the IEC power connector at the back panel of the device and a mains power outlet.

⇒ The "Power" LED will turn on.

8.2. 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. If necessary, use the ETI/ASI connectors for data stream output.



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.

8.3. 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 FlexNsert DAB device without a LC-Display, you can change the network settings only via the web interface.

3. Use the jog wheel to select `Interface`→`TCP/IP`.
4. Configure settings for your existing IP network (IP address, netmask, gateway etc.; consult the responsible network administrator if applicable).
5. Save the settings by using the jog wheel and reboot the device confirming the reboot question.
6. 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.

8.4. 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 (always use an up-to-date version with Java Script activated).
2. Enter the configured 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 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 (case sensitive), the main FlexNsert 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 42).

8.5. Set up input

To receive a DAB ETI signal via E1 in order to embed the DAB data into a MPEG Transport Stream (TS), activate and configure TS Input in the web interface of the device under **TS Input Settings→IP 1000Base-T**.

Save the changes by clicking the “save” button.

For more information, see section 10.1.2 “Configure data interface (1000 Base-T)” on page 22.

8.6. Set up outputs

To forward the MPEG TS via ASI, activate ASI output under **TS Output Settings→ASI** in the web interface of the device.

To forward the MPEG TS via 1000Base-T, activate and configure IP output under **TS Output Settings→IP 1000Base-T** in the web interface of the device.

Save the changes after each change by clicking the “save” button.

For more information see section 12 “TS Output Settings” on page 27.

8.7. Configure Data Processing

Configure the processing of the DAB ETI signal under **Data Processing→Multiplexer**.

For more information see section 11 “ETI and EDI processing” on page 26

8.8. 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.

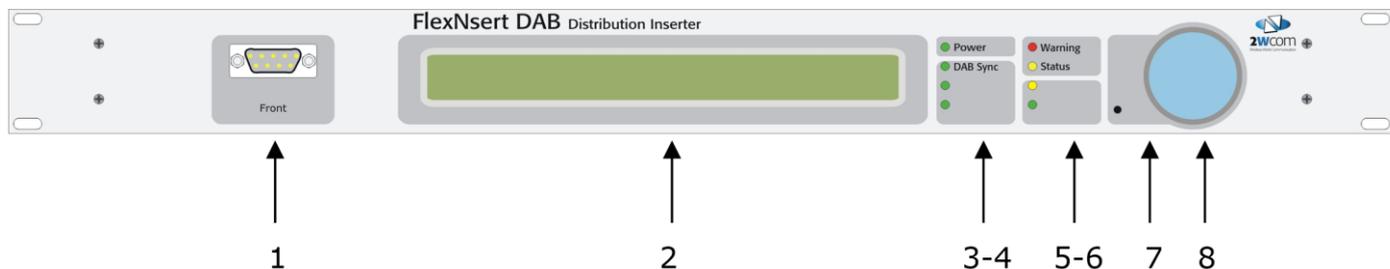
To set up alarm for the available parameters, proceed as follows:

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.

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	[DAB Sync] LED	Activated (green color) if the receiver is synchronized to a DAB ETI data stream.
5	[Warning] LED	Flashes (red color) if the monitoring function detected the triggering of a configured alarm.
6	[Status] LED	No function
7	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.
8	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	2-3	4-5	6-7		8	9	10		11	
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.									
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">  </div> <div> <p>NOTE: The required protection grounding (PE) is accomplished via the 3-wire mains supply cord.</p> </div> </div>											
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	[Optical Coupler Input]	15 pole D-Sub female connector; no function									
7	[Relay Output]	15 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	[ETI 1]	BNC connector; for the input of an ETI data stream.									
9	[ETI 2]	BNC connector; for the input of an ETI data stream (optional).									
10	[1000-Base-T]	RJ-45 connector for Gigabit Ethernet data communication. This interface is used to output MPEG2 transport streams as well as forward EDI data streams. 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).									
11	[ASI-Out]	BNC connector; For the output of a DVB-ASI data stream (270 MHz) containing the encoded ETI data embedded in the MPEG TS.									

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 8.4 section on page 16).

10.1. TCP/IP: Configuration of the Ethernet interfaces

The FlexNsert 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).

The screenshot shows the web interface for configuring network settings. The main content area is titled "TCP/IP" and contains three sections: "Control Interface (10/100Base-T)", "Data Interface (1000Base-T)", and "VLAN".

Control Interface (10/100Base-T)

DHCP:	on
MAC address:	00:11:99:00:4F:44
IP address:	192.168.14.176
Subnet mask:	255.255.255.0
Gateway:	192.168.14.14
Primary DNS:	192.168.14.100
Secondary DNS:	0.0.0.0
MTU:	1500
Http port:	80

Data Interface (1000Base-T)

MAC address:	00:11:99:00:4F:45
IP address:	192.168.30.1
Subnet mask:	255.255.255.0
Gateway:	0.0.0.0
Ethernet speed selection:	Autonegotiation

VLAN

no.	enabled	ID (1- 4094)	Priority
1	off	1	0
2	off	1	0
3	off	1	0
4	off	1	0
5	off	1	0

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The right sidebar shows a navigation menu with the following items: FlexNsert DAB, Information, System, TS Input Settings, IP 1000Base-T, TS Output Settings, ASI, IP 1000Base-T, Data Processing, Multiplexer, Interface Settings, Relay, Network Settings (selected), * TCP/IP * (highlighted), SNTP, SNMP, System Settings, Global, Time, User, Preset, Alarm, Remote Control, Status, TS, IP 1000Base-T, DAB, Event Log.

Figure 2: Network settings – TCP/IP

Following parameters can be configured or changed in this menu:

<i>IP-address:</i>	Individual address that is necessary to identify hardware in an IP network like the internet or intranet.
<i>Subnet mask:</i>	Bit mask, which separates an IP address into a network part and a host part.
<i>Gateway:</i>	Address of the local system that is used for the internet access (e.g. the router).
<i>Primary DNS:</i>	IP address of the primary Domain Name Service (DNS) server.
<i>Secondary DNS:</i>	IP address of the secondary Domain Name Service (DNS) server.
<i>MTU:</i>	Maximum Transmission Unit - The largest physical packet size, measured in bytes that the network can transmit.
<i>Http port:</i>	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:

<i>IP-address:</i>	Individual address that is necessary to identify hardware in an IP network like the internet or intranet.
<i>Subnet mask:</i>	Bit mask, which separates an IP address into a network part and a host part.
<i>Gateway:</i>	Address of the local system that is used for the internet access (e.g. the router).
<i>Ethernet speed selection</i>	Available settings in the dropdown menu: Autonegotiation/10/100/1000 Mbit/s.
<i>VLAN:</i>	Activate or deactivate the Virtual Local Area Network (VLAN) 1-5.



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).

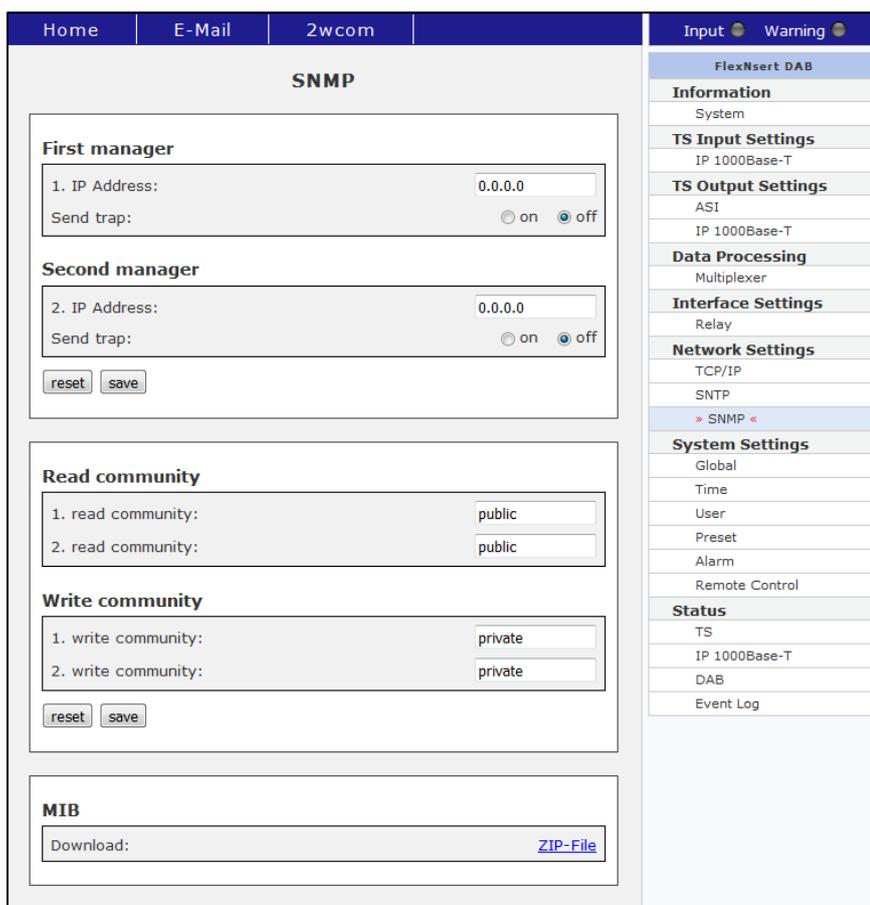


Figure 4: Network settings – SNMP

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.

In current versions of the FlexNsert ARM firmware, the MIB file can directly be downloaded from the SNMP webpage as a zip-file. For older versions the following note describes what to do:



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	e1SyncEvent	E1 synchronization status
2	asiTsSyncEvent	ASI input TS signal status (detected/not detected)
3	ipTsSyncEvent	IP input TS signal status (detected/not detected) (SFN variant only)
4	sfnClockEvent	1PPS synchronization status (detected/not detected) (SFN variant only)

11. ETI and EDI processing

The following chapter describes ETI and EDI data processing within the FlexNsert DAB.

The FlexNsert DAB inserts an ETI data stream into a MPEG2-TS or converts it into EDI (see Figure 5). Transport Streams can be forwarded using the ASI and 1000Base-T interfaces, whereas EDI can only be forwarded via 1000Base-T. ETI can be forwarded uncompressed (raw data, 2.048 mbps E1 data), but can also be processed into compressed format (bit identical reassembly in FlexXtract) in order to save bandwidth. For compatibility, ETI can also be converted into other formats (optional, on request). A 64Bit encryption can also be applied to the MPEG2-TS, however only FlexXtracts are able to decode the encryption.

For EDI conversion, network adaption (ETI(NI), ETI(NA)) is removed from the ETI data and frame by frame converted to EDI IP frames with customizable FEC levels.

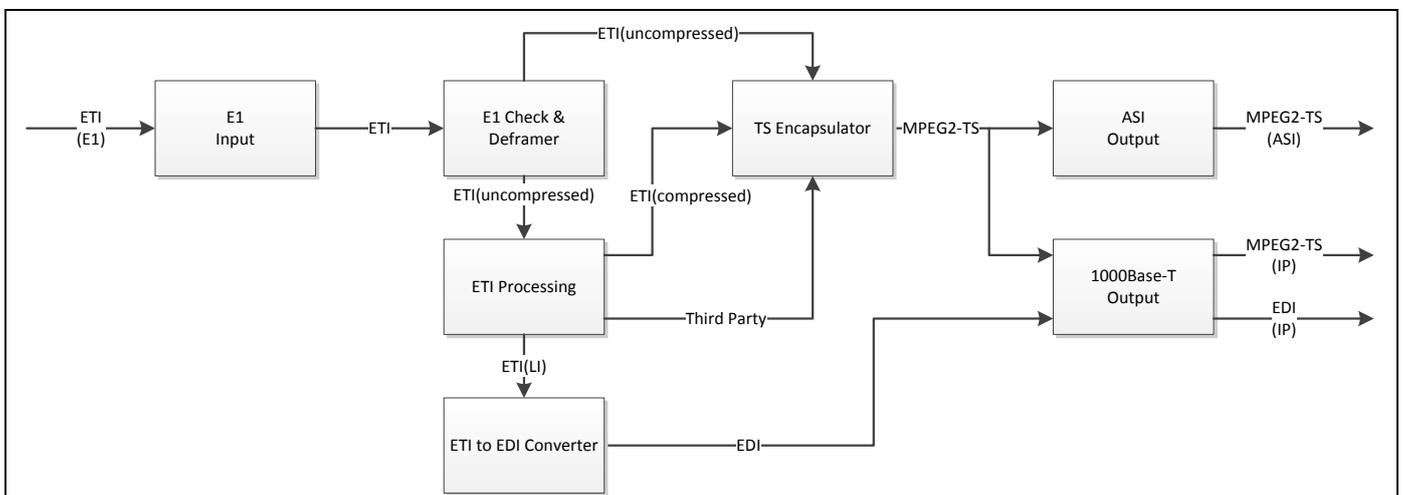


Figure 5: Processing of the ETI signal

12. TS Output 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, select "on" in the **Activation** field, and to disable the DVB-ASI output, select "off" (see Figure 6).



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

The screenshot shows a web interface for configuring the ASI output. The main area is titled 'ASI' and contains an 'Activation' field with radio buttons for 'on' and 'off', where 'off' is selected. Below the field are 'reset' and 'save' buttons. The right sidebar is a navigation menu with the following items: 'FlexNsert DAB', 'Information' (System), 'TS Input Settings' (IP 1000Base-T), 'TS Output Settings' (» ASI «, IP 1000Base-T), 'Data Processing' (Multiplexer), 'Interface Settings' (Relay), and 'Network Settings' (TCP/IP, SNTP, SNMP). The top navigation bar has 'Home', 'E-Mail', '2wcom', 'Input', and 'Warning'.

Figure 6: TS Output Settings – ASI

3. 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 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**.

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

Figure 7: TS Output Settings – IP 1000 Base-T



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

- When Protocol "RTP/UDP" is chosen, a new field will appear underneath to enable or disable the Pro MPEG FEC for the TS output (see Figure 7).
- FEC parameters can have an immense impact on network load and also data delay. For easy measure: greater dimensions ($L \cdot D$) will reduce overhead, which is roughly calculated by the formula $((L \cdot D) + (L + D)) / (L \cdot D)$. In turn smaller dimensions will increase overhead, but decrease delay: the destination FEC decoder will have to buffer at least two matrices for safe operation, so the time needed to send two times ($L \cdot D$) packets is the minimum delay. By decreasing the TS packets per IP packet count, packets are sent sooner and more often, but at the cost of less efficient IP overhead to payload ratios.
- Click the "Save" button to save the changes or the "Reset" button to restore the last settings.

13. Data Processing

13.1. Configuration of Multiplexer

This menu item is available under **Input Source**→**Multiplexer** and is used to change the operation mode of the FlexNsert.

13.1.1. E1->SCPC(TS) conversion

To generate a SCPC TS containing the ETI data stream (no PIDs):

1. Open the window *Multiplexer* under **Data Processing**→**Multiplexer** (see Figure 8).
2. Select mode: E1->SCPC(TS).

The screenshot shows the 'Multiplexer' configuration window. The 'Mode' dropdown is set to 'E1 -> SCPC (TS)'. The 'Input' dropdown is set to 'ETI 1'. The 'ETI encapsulation type' dropdown is set to 'Uncompressed'. The 'Encrypt Transport Stream' option is selected with a radio button. The 'Encryption Key' field contains '0000000000000000'. The 'reset' and 'save' buttons are visible at the bottom left. The right sidebar shows the 'FlexNsert DAB' configuration tree with 'Data Processing' > 'Multiplexer' selected.

Figure 8: SCPC generation dialog

3. Select ETI input: ETI1



NOTE: If there is no ETI input selected in the Multiplexer menu for any mode, no ETI signal is decoded even if connected and the status screen on the main index page will show operational state as: no signal.

4. Select ETI encapsulation type: uncompressed (E1 data is encapsulated without processing), compressed (E1 data is decoded as ETI and processed to reduce bandwidth needs) or third party (optional, on request).

- If the option "64-Bit Encryption" is available in your device, the SCPC or MCPC TS can be encrypted. For this purpose activate the radio button "yes" in the "Encrypt Transport Stream" block and enter the "Encryption Key" (16 hexadecimal digits).

Note: The same encryption key should be set for this input TS in the corresponding DAB receiver.

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

13.1.2. E1->MCPC(TS) conversion

To generate a MCPC TS containing the ETI data stream:

The screenshot displays the 'Multiplexer' configuration window. The main area contains the following settings:

- Mode:** E1 -> MCPC (TS)
- Input:** ETI 1
- ETI encapsulation type:** Compressed
- Insert PAT/PMT:** on off
- PID Number [32 - 8190, 0=off]:** 1001
- TS output rate adaption:** auto manual
- Encrypt Transport Stream:** yes no
- Encryption Key (hex., 16 digits):** 0000000000000000

At the bottom left, there are 'reset' and 'save' buttons. The footer of the window reads 'Copyright © 2008-2018, 2wcom Systems GmbH'. The right sidebar shows a navigation menu with 'Multiplexer' selected under 'Data Processing'.

Figure 9: MCPC generation dialog

- Open the window *Multiplexer* under **Data Processing**→**Multiplexer** (see Figure 9).
- Select mode: E1->MCPC(TS).
- Select ETI input: ETI1



NOTE: If there is no ETI input selected in the Multiplexer menu for any mode, no ETI signal is decoded even if connected and the status screen on the main index page will show operational state as: no signal.

4. Select ETI encapsulation type: uncompressed (E1 data is encapsulated without processing), compressed (E1 data is decoded as ETI and processed to reduce bandwidth needs) or third party (optional, on request).
5. Select whether PAT/PMT tables should be generated and multiplexed into the outgoing MPEG2-TS. PID 100 is used for PMT automatically, unless ETI PID is set to 100 as well, then 101 is chosen.
6. Select the PID number to which the outgoing ETI data is to be encapsulated (2 to 4 digits).
7. The output TS data rate is calculated automatically, if a higher data rate is required, the TS output rate adaption can be set to manual and a bitrate up to 10 mbps can be entered.
8. If the option "64-Bit Encryption" is available in your device, the SCPC or MCPC TS can be encrypted. For this purpose activate the radio button "yes" in the "Encrypt Transport Stream" block and enter the "Encryption Key" (16 hexadecimal digits).

Note: The same encryption key should be set for this input in the corresponding DAB receiver.



NOTE: If the selected data rate is less than is required for operation, it will automatically be overwritten internally to the minimum value required without updating the web interface!

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

13.1.3. E1->EDI(IP) conversion

To convert the incoming ETI data stream into EDI:

Home	E-Mail	2wcom	Input ● Warning ●
Multiplexer			FlexNsert DAB
Mode: E1 -> EDI (IP) ▾ TIST: <input checked="" type="radio"/> LI-TIST <input type="radio"/> NA-TIST FEC level: 5 ▾ Enable IP 1: off ▾ 1. IP: 0.0.0.0 1. Port: 0 Enable IP 2: off ▾ 2. IP: 0.0.0.0 2. Port: 0			Name: 2wcom FlexNsert DAB Location: LAB Description: 2wcom FlexNsert DAB
<input type="button" value="reset"/> <input type="button" value="save"/>			Information System TS Output Settings ASI IP 1000Base-T Data Processing » Multiplexer « Interface Settings Relay Network Settings TCP/IP SNTP SNMP System Settings
Copyright © 2008-2019, 2wcom Systems GmbH			

Figure 10: ETI to EDI conversion dialog

1. Open the window *Multiplexer* under **Data Processing**→**Multiplexer** (see Figure 9).
2. Select mode: E1->EDI(IP).
3. Select which timestamp (TIST) to reuse for EDI: LI-TIST (timestamp included in DAB frame before network adaption) or NA-TIST (timestamp added when DAB frame was adapted to network). It's not uncommon that NA-TIST is a copy of LI-TIST. If the ETI input format isn't ETI(NA) and NA-TIST is chosen, the timestamp will be all ones.
4. You can now select the FEC protection level for the outgoing FEC stream: 0 (no error protection) to 7 (highest error protection). Increasing FEC levels will generate more packets and more overhead, compared to decreasing FEC levels, which will reduce packets count and bandwidth usage.
5. Two output destinations can be selected and enabled in the following two sections. For each destination an unicast or multicast IP address is required, as well as a destination port number.
6. Click on the "Save" button to save the changes or the "Reset" button to restore the last settings.

14. Interface Settings

14.1. Relay

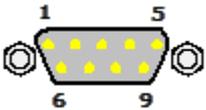
This menu item is available under **Interface Settings→Relay** and is used to configure the relay outputs of the device.

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: Relay 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

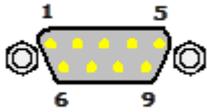
<i>Pin</i>	<i>Function</i>
1	DCD
2	RXD
3	TXD
4	DTR
5	GND

<i>Pin</i>	<i>Function</i>
6	DSR
7	RTS
8	CTS
9	not connected

14.3. Optical Coupler Input

D-Sub female connector, 15 pole

DTE 1 / DTE 2



<i>Optical Coupler No.</i>	<i>Control Pin No.</i>
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. 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 (see Figure 11).

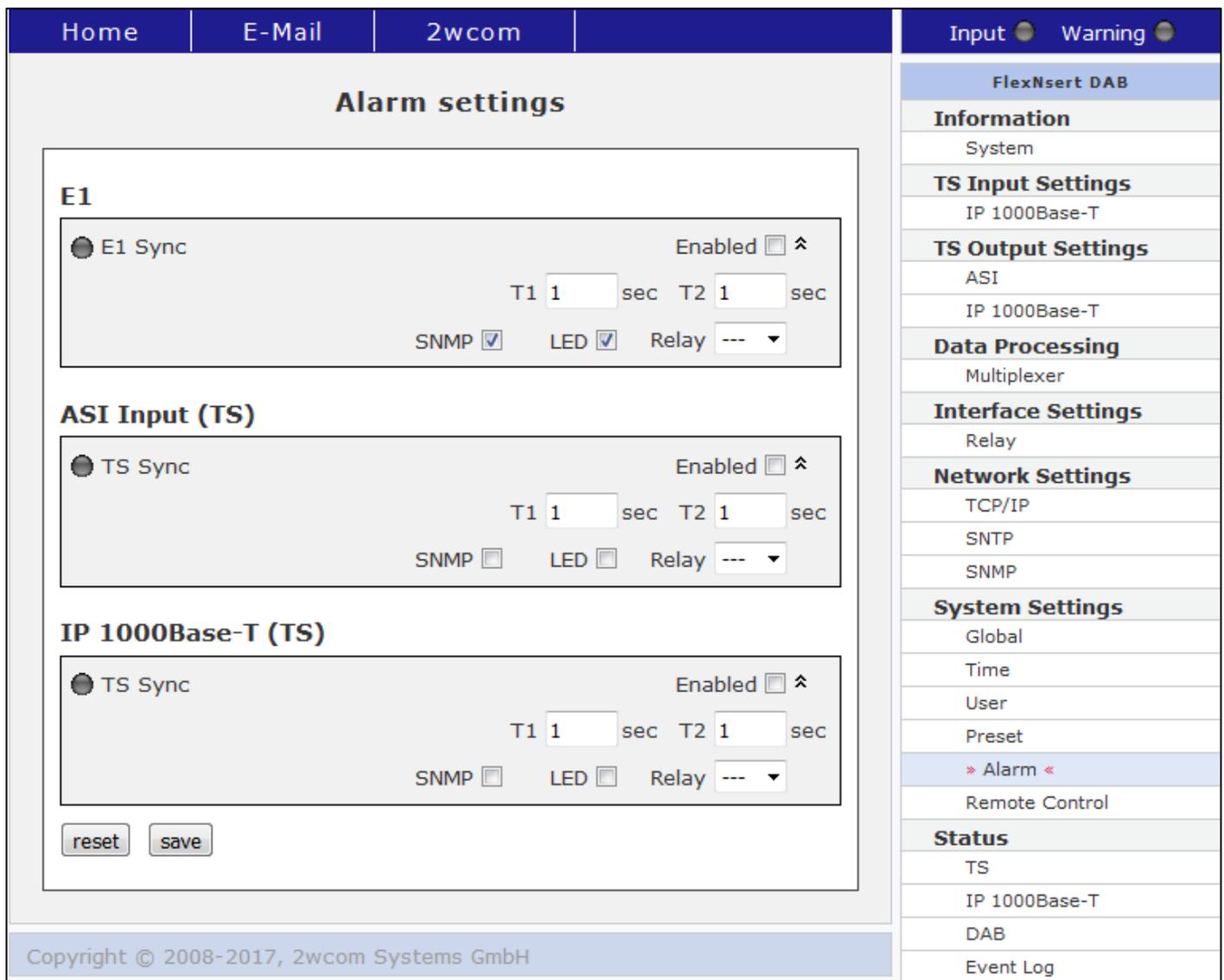


Figure 11: Alarm Settings

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.

15.2. TS: Display transport stream status

This menu item is used to display details of incoming transport streams in the web interface or directly in the LC Display (only useful in Nsert SFN variant).

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

State: 1000Base-T input receives a valid transport stream: "No" or "OK".

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

LCD Menu: **Status**→**TS**

15.3. IP 1000Base-T Status

This menu item is available under **Status**→**IP 1000Base-T** and is used to monitor the 1000Base-T input status and FEC status information (only useful in FlexNsert SFN variant).

15.4. DAB Status

This menu item is available under **Status**→**DAB** and is used to display information of the current DAB ETI input stream as well as the outgoing EDI stream, if used (see Figure 12).

DAB ETI Input

ETI Input

Ensemble Label:	BR Bayern
No. of Subchannels:	15
FIC Included:	yes
DAB Mode:	I
Frame Length:	3448
Error Field:	Level 0
Error Field Counter for Level 1:	0
Error Field Counter for Level 2:	0
Error Field Counter for Level 3:	0
Frame Counter Error:	0
Header CRC Error:	0
Main Stream CRC Error:	0
RS Error:	0

DAB EDI Output

Total EDI Output

IP	Port	FEC	Sync Lost*	Data rate
1 239.199.2.7	1234	yes	0	1.722 Mbit
2				
Total Data rate:				1.722 Mbit

*) Sync Lost Counter for ETI Input error

Figure 12: DAB ETI input and DAB EDI output status page

15.5. Event Log

This menu item is available under **Status→Event Log** and is used to display a log with events that have occurred since the lists last reset (see Figure 13). A printable list with a description and a timestamp is shown.

Event Log		
Nr.	Timestamp	Message
1	2017-09-07 09:12:52	IP 1000Base-T PER alarm. State: OK
2	2017-09-07 09:12:52	SFN clock alarm. State: OK
3	2017-09-07 09:12:52	IP 1000Base-T TS Sync alarm State: OK
4	2017-09-07 09:12:52	ASI TS Sync alarm State: OK
5	2017-09-07 09:12:52	E1 Sync alarm. State: OK
6	2017-09-07 09:12:31	Coldstart (Power reset)
7	2017-09-06 11:03:31	IP 1000Base-T PER alarm. State: OK
8	2017-09-06 11:03:31	SFN clock alarm. State: OK
9	2017-09-06 11:03:31	IP 1000Base-T TS Sync alarm State: OK
10	2017-09-06 11:03:31	ASI TS Sync alarm State: OK
11	2017-09-06 11:03:31	E1 Sync alarm. State: OK
12	2017-09-06 11:03:10	Coldstart (Power reset)
13	2017-09-04 13:19:45	IP 1000Base-T PER alarm. State: OK
14	2017-09-04 13:19:45	SFN clock alarm. State: OK
15	2017-09-04 13:19:45	IP 1000Base-T TS Sync alarm State: OK
16	2017-09-04 13:19:45	ASI TS Sync alarm State: OK
17	2017-09-04 13:19:45	E1 Sync alarm. State: OK
18	2017-09-04 13:19:37	Coldstart (Power reset)
19	2017-01-19 13:38:12	IP 1000Base-T PER alarm. State: OK
20	2017-01-19 13:38:12	SFN clock alarm. State: OK
21	2017-01-19 13:38:12	IP 1000Base-T TS Sync alarm State: OK
22	2017-01-19 13:38:12	ASI TS Sync alarm State: OK
23	2017-01-19 13:38:12	E1 Sync alarm. State: OK
24	2017-01-19 13:38:07	Warmstart
25	2017-01-19 13:37:59	New DSP firmware
26	2017-01-19 13:37:25	IP 1000Base-T PER alarm. State: OK

FlexNsert DAB	
Information	
System	
TS Input Settings	
IP 1000Base-T	
TS Output Settings	
ASI	
IP 1000Base-T	
Data Processing	
Multiplexer	
Interface Settings	
Relay	
Network Settings	
TCP/IP	
SNTP	
SNMP	
System Settings	
Global	
Time	
User	
Preset	
Alarm	
Remote Control	
Status	
TS	
IP 1000Base-T	
DAB	
» Event Log «	

Figure 13: Status – Event Log

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 14).

System information	
Last reboot [dd.mm.yyyy hh:mm:ss]:	25.07.2017 10:11:46
Uptime [days, hh:mm:ss]:	0 days, 05:51:42
Serial number:	611.000008
Device type:	2wcom FlexNsert
BIOS firmware version:	3.02
ARM firmware version:	5.54
DSP firmware version:	3.71
FPGA firmware version:	2.27 b61
MIB version:	1.02
Customer:	Default
Rights:	E1 ASI Gigabit IP Display Gigabit IP (in) Pro-MPEG FEC ETI to EDI over IP ARG2500 TunerAB
Device temperature:	41.5 °C

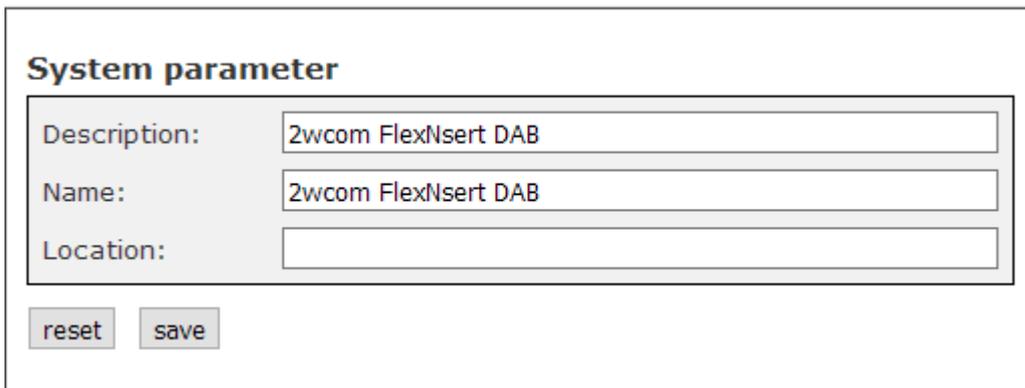
Figure 14: Global settings – System information

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 15).



System parameter

Description: 2wcom FlexNsert DAB

Name: 2wcom FlexNsert DAB

Location:

reset save

Figure 15: Global settings – System parameter

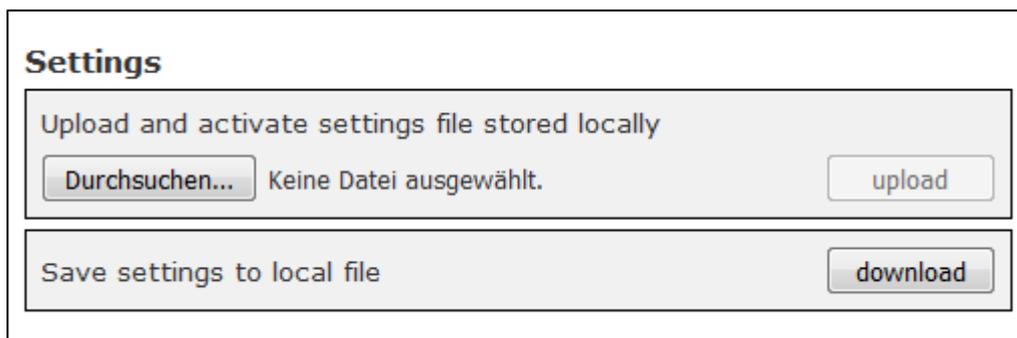
3. Click the "Save" button to save the changes or the "Reset" button to restore the last settings.
⇒ The saved information can be viewed under **Information→System** in the web interface.

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 16). The "Open file" dialogue of your system software will be displayed.



Settings

Upload and activate settings file stored locally

Durchsuchen... Keine Datei ausgewählt. upload

Save settings to local file download

Figure 16: 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 16).
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 17). The "Upload file" dialog of your system software will be displayed.

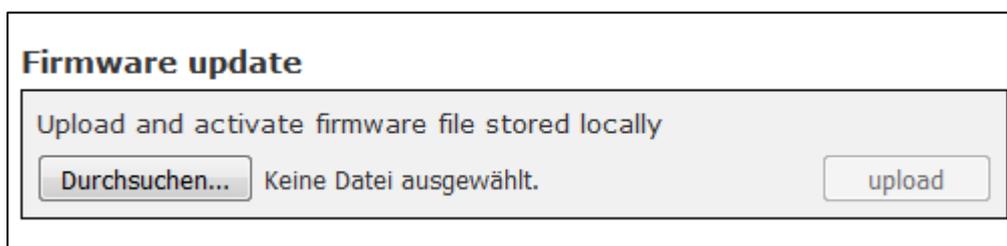


Figure 17: Global settings – Firmware update

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 18).

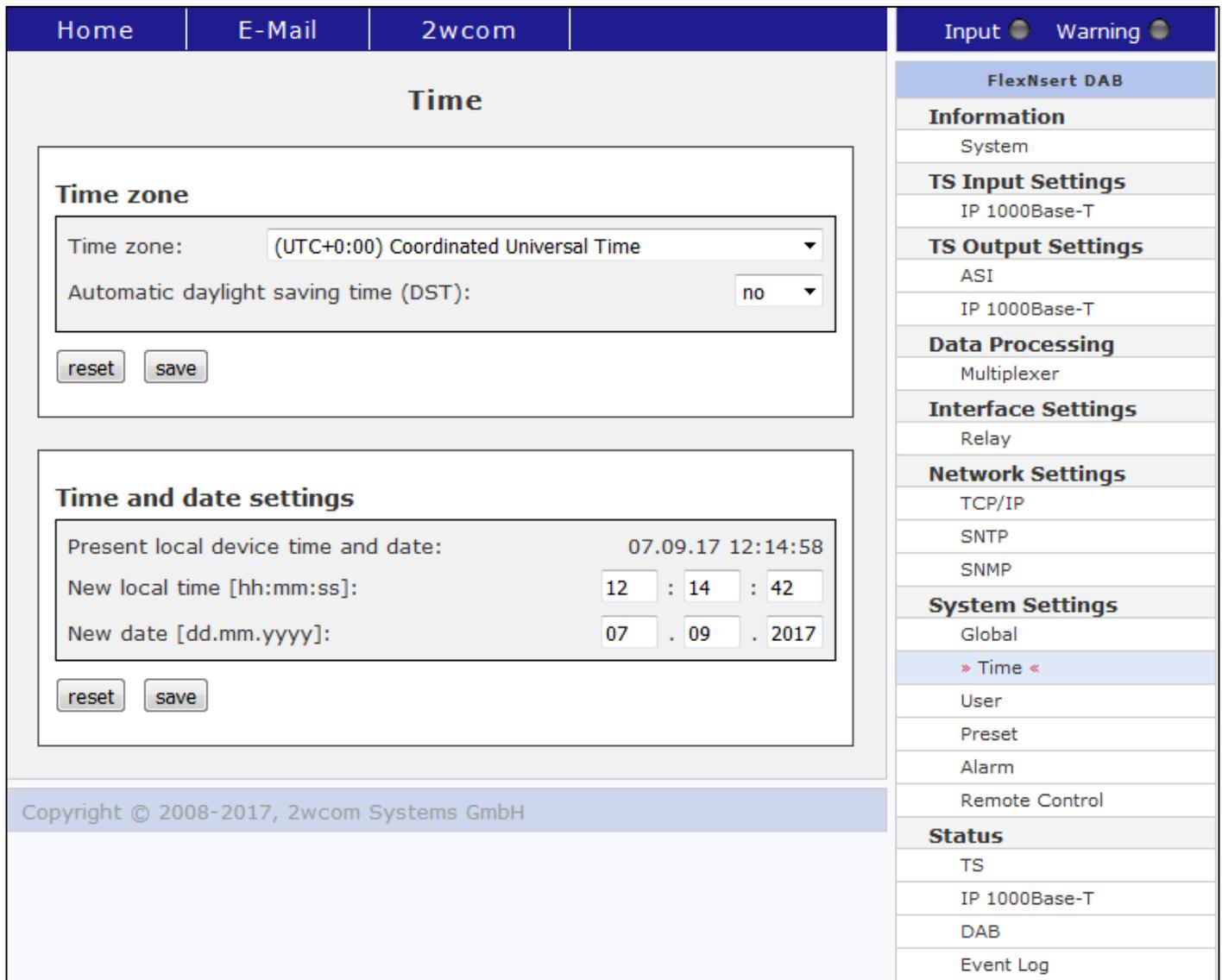


Figure 18: Global settings – Time

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 19).

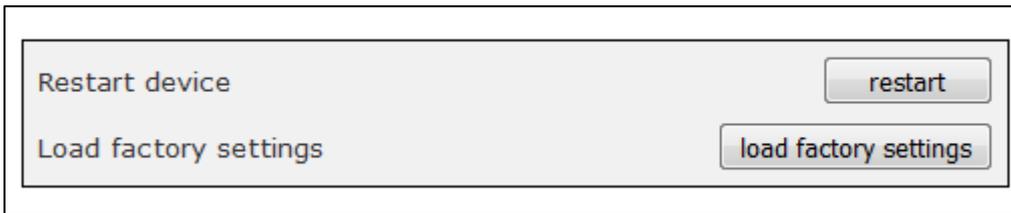


Figure 19: Global settings – Restart the device

⇒ 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 19).

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 20).
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 20).
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 20).
7. Click the "Save" button to save the changes or the "Reset" button to restore the last settings.

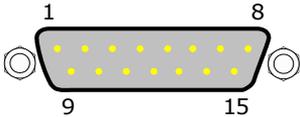
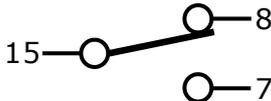
Home	E-Mail	2wcom	Input <input type="radio"/>	Warning <input type="radio"/>
Preset settings			FlexNsert DAB	
Preset name [max.16 char]: <input type="text" value="preset 1"/> <input type="button" value="reset"/> <input type="button" value="save"/>			Information	
Selected preset: <input type="text" value="1. preset 1"/> <input type="button" value="reset"/> <input type="button" value="ok"/>			System	
Save present preset in: <input type="text" value="2. preset 2"/> <input type="button" value="reset"/> <input type="button" value="save"/>			TS Input Settings	
Copyright © 2008-2017, 2wcom Systems GmbH			IP 1000Base-T	
			TS Output Settings	
			ASI	
			IP 1000Base-T	
			Data Processing	
			Multiplexer	
			Interface Settings	
			Relay	
			Network Settings	
			TCP/IP	
			SNTP	
			SNMP	
			System Settings	
			Global	
			Time	
			User	
			» Preset «	
			Alarm	
			Remote Control	
			Status	

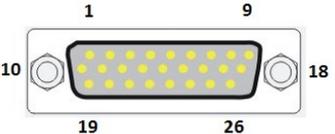
Figure 20: System settings – Preset settings

17. Relay Output

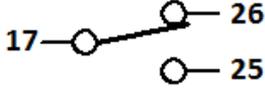
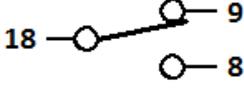
The FlexNsert is either equipped with a D-Sub 15 pole male connector or a high density D-Sub 26 pole male connector on newer hardware revisions for more relays. Additional relay outputs have to be ordered with the unit or the unit has to be sent back for servicing/upgrading at a later date (26 pole connectors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

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

D-Sub male connector, 15 pole		
 <p>Relay Output</p>		
<i>Relay No.</i>	<i>Switch contacts</i>	<i>Switch type</i>
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		
		
<i>Relay No.</i>	<i>Switch contacts</i>	<i>Switch type</i>
	Option ¹	
1	1,10	SPST, NO
2	11,19	SPST, NO
3	2,20	SPST, NO
4	3,12	SPST, NO
5	13,21	SPST, NO
6	4,22	SPST, NO
	5,14	SPST, NO
	15,23	SPST, NO
	6,24	SPST, NO
	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	Ref.
Power does not turn on	<ul style="list-style-type: none"> • Power cable is improperly connected • Mains supply failure • Blown fuses 	<ul style="list-style-type: none"> • Check supply cord • Check mains supply • Replace the fuses by the same type (accessible at mains connect. of the unit) 	Page 15
Device does not work	<ul style="list-style-type: none"> • System halted 	<ul style="list-style-type: none"> • Disconnect and reconnect the device from/to mains supply 	Page 15
Device does not communicate via RS232C to connected units	<ul style="list-style-type: none"> • Data cable not properly connected • Wrong cable type • Wrong COM port of the PC selected 	<ul style="list-style-type: none"> • Check connections • Use correct cable type (crossover/null modem cable) • Select the correct COM port in the PC software 	Page 33
TCP/IP communication does not work	<ul style="list-style-type: none"> • TCP/IP settings (IP-address, Port, Netmask, Gateway) wrong • Network does not work at all. • Computer Network settings not correct • Firewall/Protection software configuration on computer not correct 	<ul style="list-style-type: none"> • Check TCP/IP settings • Check network • Check settings • Check configuration 	Page 21
SNMP Get requests are not working	<ul style="list-style-type: none"> • SNMP community strings of the device and the SNMP management tool are not aligned. 	<ul style="list-style-type: none"> • Check/Align the SNMP community strings 	Page 23
Relay output is not actuated as desired	<ul style="list-style-type: none"> • Relay output is not actuated as desired 	<ul style="list-style-type: none"> • Check/Change programming of the relay functions 	Page 33
Opto-isolated input does not activate the desired function	<ul style="list-style-type: none"> • Missing/Wrong programming of the opto-isolated input function 	<ul style="list-style-type: none"> • Check/Change programming of the opto-isolated input functions 	Page 34

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

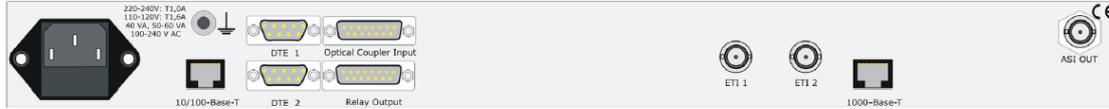
The modules of the device are complex and should be serviced only by authorized personnel.

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



FlexNsert+ DAB+ Distribution Inserter – Technical Details

Inputs

ETI

Protocol	ETI (NI, G.703), ETI (NA, G.704)
Data rate	2,048 kbps
Coding format	HDB3
Connectors	2x BNC, 75 Ω

EDI (optional)

Data Format	RTP, UDP - Unicast/Multicast
Connector	RJ45
Type	Auto switching 10/100/1000 BASE-T

Outputs

ASI

Data Connector	MPEG2-TS BNC 270 Mbps
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Ethernet

Data Protocol Connector Type FEC	MPEG2-TS and/or EDI RTP/UDP or UDP RJ45 Auto switching 10/100/1000 BASE-T TS: ProMPEG FEC Practice #3 release 2 EDI: FEC level 0..7
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Processing

Encapsulation

Format	MPEG-TS
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Conversion

Format	E1-ETI to IP (EDI)
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2wcom FlexOptimized Bandwidth Saving Technology (optional)

Control & Monitor

Ethernet

Connector Type	RJ45
Data format Application	Auto switching 10/100 BASE-T HTTP, SNMPv2c, SMTP, UDP Webbased GUI (at least 3 users, 2 levels) SNMPv2c

Contact closure

Inputs	7 opto isolated inputs 15 pole sub-D female
Outputs	10 standard (SPST), 2 change-over (SPDT) relays (for DC: max. 30 V, 1 A, 10 W), 26 pole sub-D male

Front panel

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

Power consumption	20 VA
Case dimensions	19", 1 HU, depth: 310 mm, width: 424 mm, front panel: 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 25.07.2017
These data are subject to
modifications and amendments.
Errors excepted

