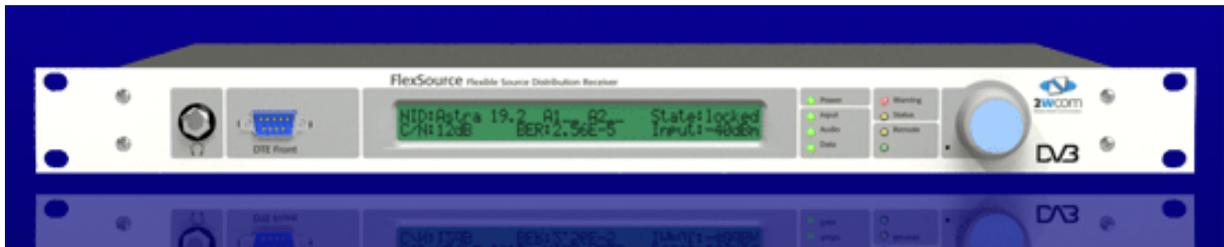


FlexSource Distribution Receiver Decoder

Professional Multiformat Audio Decoder



User Manual

February 2013

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1. Symbols in this manual

1.1. 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.

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

2. Introduction

The 2wcom FlexSource is a professional distribution receiver decoder based on DSR02 DVB Satellite Receiver for the reception mainly of audio files over UDP/RTP/TCP/Multicast/Icecast, also of a MPEG2 transport stream via DVB-S/DVB-S2/DVB-ASI, 1000 Base-T and audio files uploaded to the Internal Storage as well as for decoding of included audio signals and auxiliary data. The audio data, received over different available sources, can be output on several different digital and analog interfaces.

In contrast to the DSR02, any of the available input sources of the FlexSource can be the main source for one of the audio outputs. Additionally it is possible to define up to three backup sources in case of an input source failure.

The FlexSource is available in different variants. The basic functionality is shown in the following table:

	Feature List / Model	FlexSource
Standard	Audio Input: UDP or UDP/RTP audio streaming input on 1000Base-T interface as alternate audio channel source	✓
	Audio Input: IP audio input on 10/100Base-T interface using an Icecast ¹ Server (backup audio)	✓
	Headphone output	✓
	2 x serial output for RDS	✓
	XLR AES/EBU audio interface group (Analog L, Analog R and Digital)	✓
	15 kHz low pass filter	✓
	Adjustable audio delay	✓
	10/100Base-T interface (control/monitoring)	✓
	1000Base-T interface (data)	✓
	Display and jog dial	✓
	Web interface (10/100Base-T interface)	✓
	SNMPv2c	✓
	RDS/UECP decoder in web interface	✓

¹ or „SHOUTcast“; in the following only „Icecast“ will be used for a better readability

Optional functionality is also available:

Options	Feature List / Model	FlexSource	
	Transport stream input		
	Tuner module with DVB-S2 and low symbol rates (min 50k)	✓	
	Tuner module with DVB-S2, 16APSK & 32APSK and advanced functionality (VCM/ACM, multi stream, ...)	✓	
	DVB-ASI	✓	
	Transport stream input over 1000Base-T interface		
	Transport stream output		
	DVB-ASI	✓	
	DVB-S tuner module (1-45 MSym/s)	✓	
	Transport stream output over 1000Base-T interface	✓	
	Audio output		
	second XLR AES/EBU audio interface group (Analog L, Analog R and Digital)	✓	
	Data output		
	2 additional RS232 outputs	✓	
	Low speed IP data output (i.e. RDS, DRM)	✓	
	High speed IP data output (MPE IP data)	✓	
	Monitoring		
	IP audio streaming server for monitoring	✓	
	Remote Control		
	Control via satellite carrier (i.e. relay switching, firmware update, etc.)	✓	
Decoding			
Audio decoding: MP2/4/AAC-LC/AAC+ HE v1 & v2	✓		
Hardware			
DVB Common Interface (DVB-CI)	✓		
SD Card for audio file storage (advertising and backup audio)	✓		
Additional relay outputs	✓		
Demultiplexing			
MPE demux: IP data output of demultiplexed MPE data (IP datagrams) over 1000BASE-T interface	✓		
Advanced advertisement			
Integrated Add Manager: Scheduler functionality, playback and upload of audio files and playlists via In-Band Remote Control and via FTP, Report management ...	✓		

Important notice



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

Further notices



NOTE: The graphics of the manual may differ from the supplied model or the actual appearance.
Configurations, functions and specifications can be changed without prior notice.
This manual does not cover basics about the transmission of audio and auxiliary data via DVB-S/DVB-S2/DVB-ASI, nor does it cover basics about the usage of web browsers or IP networks. Thus, relating basic knowledge is required.
Some functions described may not be applicable to the device ordered.

If you require further assistance please contact our support team.

3. Safety Instructions

For a secure operation of FlexSource 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 FlexSource or operation of the parts not having been proved and released by the manufacturer can lead to unforeseen damage.

Every improper use of FlexSource 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 FlexSource or give it to another person, attach this user manual to the device.

Never operate FlexSource, 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, sent 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 electrical 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.

	<p>FIRE HAZARD of overheating or electric shock</p> <p>Ensure sufficient heat dissipation during operation. Avoid following when installing the device:</p> <ul style="list-style-type: none"> - non-ventilated environment, for example a narrow shelf or built-in wardrobe; - 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>FlexSource may not be used in an explosive environment; otherwise there is a risk of the explosion hazard.</p>
	<p>WARNING of hot surface</p> <p>The surface of the device can heat up during operation. FlexSource is equipped with a passive cooling system. However, it does not switch off automatically, if it is overheated.</p> <p>Do not touch the surface of the device during operation.</p>

NOTICE	
	<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> <p><i>Installation:</i></p> <p>Use only a grounded three-wire power supply cord and -plug that complies</p>

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

- FlexSource
- Power supply cord
- Patch cable
- CD with supplementing data (SNMP MIB files, handbook as PDF)



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

5. Manufacturer

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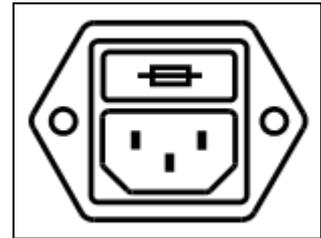
6. Installation

6.1. Best setup location

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

6.2. Power supply

The device is designed for operation with 100 to 240 V AC, 50 Hz 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 power off the device. 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 the precautions on page 9.

7. First Steps

The following section contains instructions for quick start.

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

7.1. Power supply

NOTICE

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

1. 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 then turn on.

7.2. Network configuration

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

To configure the IP settings:

1. Use the jog wheel to select "**Interface**→**IP**".
2. Configure the settings for your existing IP network (IP address, netmask, gateway etc.; consult the responsible network administrator if applicable).
3. 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 network.

7.3. Web interface

The device can be fully operated with an internet browser via the integrated web interface. To operate the device via the web interface:

1. Use a computer that is connected to the same IP network that the FlexSource device is connected to.
2. Start an internet browser (e.g. Firefox/Mozilla ≥ Version 3.0 or Microsoft Internet Explorer ≥ Version 7.0 (both with Java Script activated)).

3. Enter the configured IP address in the address bar of the browser. If the IP address has not been changed in step 7.2, please enter the default address in the address bar of the browser: 192.168.14.250.
 4. A login screen with *Username/Password* appears. Use the default accounts:
 - for a read-only access use "guest"/"guest"
 - for a full access use "admin"/"admin"
- ⇒ After entering the correct login data (case sensitive), the main FlexSource page appears.



NOTE: Change the login data as soon as possible to avoid unauthorized access to the device and document the login data in a safe place.

7.4. Adjust volume levels

1. Select **Interface Settings**→**XLR** or →**Headphone** in the web interface menu.
 2. Or use the jog wheel to select "**Interface**→**XLR**" and "**Headphone**".
- Configure the audio volume for the XLR outputs and the headphone output.

7.5. Connect satellite antenna cable

1. Connect the antenna cable that has a connection to the receiving LNB of the satellite antenna to the "A" RF-IN F-type jack.
2. (Only for tuner option 16PSK): Connect another antenna cable that has a connection to the second receiving LNB of the satellite antenna to the "B" RF-IN F-type jack.



NOTE: A well aligned satellite antenna is required for signal reception.

7.6. Tuning

To activate and to configure the tuner for each audio output:

1. Select **Input Source**→**Audio Output 1/Audio Output 2** in the web interface menu. The dialog box *Input Source for Audio Output 1/2* appears.

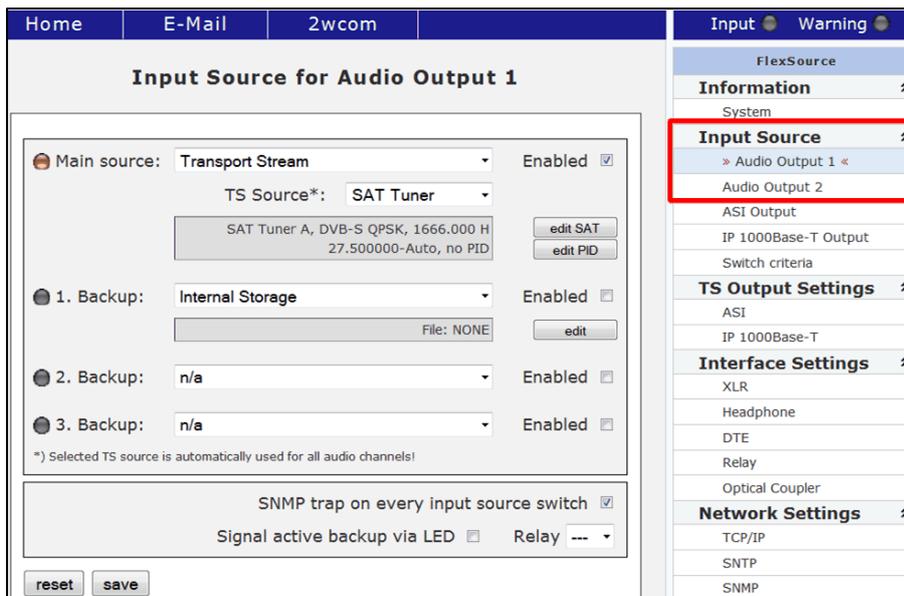


Fig. 1: FlexSource web interface: Audio Output 1/Audio Output 2 – Settings.

- Activate the **Main source** by ticking **Enabled**.
 - Choose “Transport Stream” in the dropdown list **Main source**.
 - Choose “SAT Tuner” in the dropdown list **TS Source**.
2. Open the dialog box *SAT Tuner settings–Main Source* by clicking the  button.
 3. Configure satellite transponder signal reception:
 - Modulation type;
 - L-band (LNB IF) tuner frequency: LO frequency, LO e.g. 9.75GHz for lower band and 10.6GHz for upper band on universal LNBs;
 - symbol rate;
 - TS ID: only if symbol rate <1 MSym/s;
 - Polarization;
 - Roll-Off factor used by the receiver filter (35 automatically for DVB-S 20/25/35 options for DVB-S2);
 - Frequency Range (22 kHz) signal;
 - Viterbi function (FEC).

EXAMPLE:

Modulation:	DVB-S QPSK
L-band frequency:	2032 MHz,
Symbol rate:	22 MSym/s
Polarization:	horizontal
22 kHz:	on
Viterbi:	5/6 or Auto

4. Click on the button to save the changes.

⇒ The virtual "RF"-LED in the upper right corner and the real "RF"-LED (green color) of the device turns on to indicate the reception of a signal.

7.7. Configure input source for audio outputs

For manual or automatic configuration via SID (Service ID) of the PID settings proceed as follows:

1. Select **Input Source**→**Audio Output 1/Audio Output 2** in the web interface menu. The dialog box *Input Source for Audio Output 1/2* appears (see Fig. 1).
2. Make sure that the **Main source** is activated in the box **Enabled**.
3. Open the dialog box *Demux – Audio Output 1/2* by clicking the button.
4. If you select the mode "PID (manual)", use the buttons to configure the processing (audio decoding, data retrieval) of up to 3 PIDs out of the received transport stream.

EXAMPLE: PID mode, configure the first three PIDs (only the listed functions are active):

Name: PCR1; PID Number:1035; Audio 1 Synchronisation: PCR1.
Name: AUDIO1; PID Number:1036; Output activated: Audio 1; , Delay: 10 ms.
Name: DATA1; PID Number:1037; DTE1: Data source - Private Data,
Parameter: ES.

5. Click on the button to save the changes.

[For more information about input source settings for different outputs see section 11.2](#)

7.8. Connect audio and/or data cables

1. Make the connections to the output interfaces on the back panel of the device to use the signals as configured at step 7.7 (Digital Audio: AES/EBU 1; Analog Audio: Analog L-1 and Analog R-1, Analog Audio: Headphone; Data: DTE1).
2. With the outputs 1 and outputs 2 (Analog L/R + Digital) it is possible to output up to two individual audio signals (PIDs) of a single transponder signal simultaneously.



NOTE: The second audio interface group is only available with hardware option second XLR AES/EBU audio interface group enabled.

7.9. Use station presets

All previous settings 7.2-7.7 are automatically stored in the active preset.

To configure another station:

1. Select **System Settings**→**Preset** in the web interface menu.
2. Select the next unused preset memory.
3. Use "Preset name" to define a name for the active preset.

⇒ Save changes by clicking and you're done! FlexSource is ready to be used.

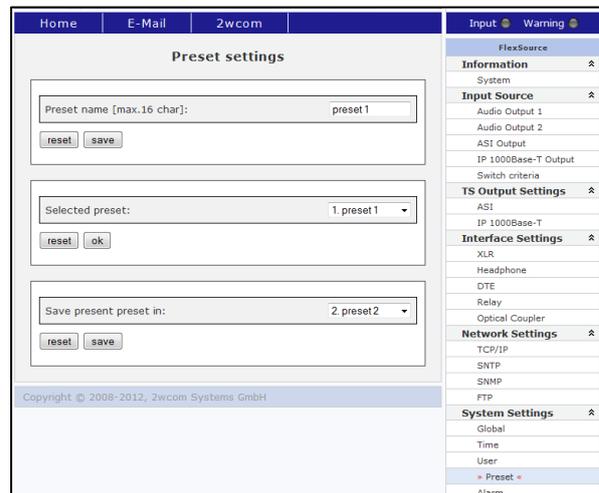


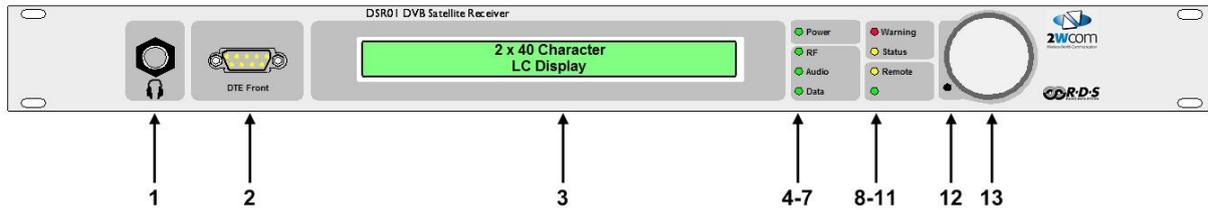
Fig. 2: FlexSource web interface: Preset memory settings.



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. Control Elements and Connectors

8.1. Front Panel

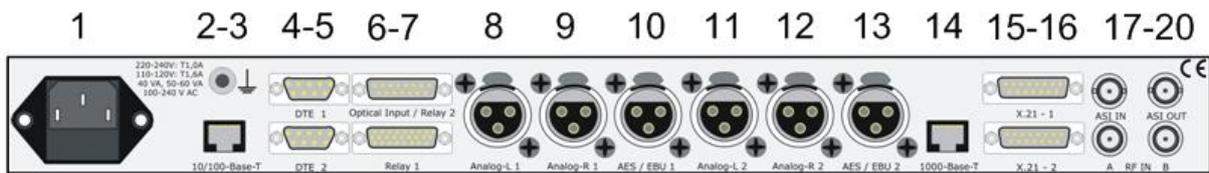


- | | | |
|----|---|---|
| 1 | Headphones | 6.3 mm / 1/4" socket for the connection of headphones. The device can be configured to output the received audio data on this output. |
| 2 | [DTE Front] | 9 pole D-Sub male connector; only for device servicing purposes. |
| 3 | LCD screen | Illuminated, Liquid Crystal Display (LCD) with two rows of up to 40 characters. |
| 4 | [Power] LED | Activated (green color) if the power supply is ok. |
| 5 | [RF] LED | Activated (green color) if the receiver detects a signal that can be decoded. |
| 6 | [Audio] LED | Activated (green color) if the receiver detects audio data that can be decoded. |
| 7 | [Data] LED | Activated (green color) if a data monitoring is activated for the DTE1 interface and data on this interface is detected. |
| 8 | [Warning] LED | Flashes (red color) if the monitoring function detected the triggering of a configured alarm. |
| 9 | [Status] LED | No function |
| 10 | [Remote] LED | No function |
| 11 | LED | LED to the right side of the DATA LED. Activated (green color) if a data monitoring is activated for the DTE2 interface and data on this interface is detected. |
| 12 | <input type="button" value="reset"/> button | Recessed <input type="button" value="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.

- 13 Jog dial Jog dial 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.

8.2. Back Panel



- 1 IEC power supply connector Standardized IEC supply connector with integrated fuse holder.
Fuse ratings depending on mains supply voltage:
100-120V: T1.6A, time lag type, 5x20 mm, 250 V
220-240V: T1A, time lag type, 5x20 mm, 250 V
- 2 [Grounding stud] The stud can be used to connect a grounding system if necessary.



NOTE: The required protection earth (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 LED's 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 Input / Relay 2] 15 pole D-Sub female connector optical input / or optional: D-Sub male connector, high density, 26 pole. Switch contacts of the integrated relays.
- 7 [Relay 1] D-Sub male connector, high density, 26 pole (former

		version 15 pole D-Sub male connector); Switch contacts of the integrated relays.
8-9	[Analog-L1/R1]	XLR male socket; Output of the left/right channel of the analog output number 1 with configurable signal level.
10	[AES/EBU 1]	XLR male socket; AES/EBU interface for the output of the digital audio signal number 1 in the "Professional Format". The sample rate of the signal depends on the received signal.
11-12	[Analog-L2/R2]	XLR male socket; Output of the left/right channel of the analog output number 2 with configurable signal level.
13	[AES/EBU 2]	XLR male socket; AES/EBU interface for the output of the digital audio signal number 2 in the "Professional Format". The sample rate of the signal depends on the received signal.
14	[1000-Base-T]	RJ-45 connector for Gigabit Ethernet data communication. This interface is used to transceive MPEG2 transport streams as well as decoded MPE IP data. The LED's at the socket show the link status (green; active if a physical network connection exists) and the activity status (yellow, blinks if data communication is active).
15-16	[DTE 3/4]	Optional: 9 pole D-Sub male connector for the serial RS-232 data communication, e.g. the output of application data of the received signal.
17	[ASI-In]	BNC connector; for the input of a DVB-ASI data stream (270 MHz) to be decoded by the device.
18	A	[RF-In]: F-type jack; Input for the connection to the receiving LNB of the satellite antenna (Tuner A) (IF: 950 MHz...2150 MHz, L-band).
19	[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.
20	B	[Loop Through Output/RF-In]: F-type socket; RF-In only for the option DVB-S2 16PSK available (Tuner B).

9. Operation

9.1. 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 FlexSource via web interface:

1. **Connection:** connect the Ethernet (10/100Base-T) port of the device and of the computer with installed internet browser to your existing IP network. See also sections 7.2-7.3.
2. **Browser:** use the web browser Firefox/Mozilla Mozilla \geq Version 3.0 or MS Internet Explorer \geq Version 7.0. Activate java-script within the browser.
3. **IP address:** enter the IP address of the device in the address bar of the browser. Upon delivery the default IP address is 192.168.14.250 and the network mask is on 255.255.255.0. To find the IP address of the device, see section 7.2).
4. **Access:** the device is protected by *username / password* against unauthorized access.
 - Upon delivery the read-only account is predefined to username: 'guest' and password: 'guest' (without the apostrophes).
 - For full-access it is 'admin/'admin'.

⇒ After the correct log-in (case sensitive) you can see the main page of the FlexSource web interface.



NOTE: to prevent unauthorized access and to document these data in a safe place, change the access accounts to individual *username / password*.
To change the access data, select **System Settings**→**User**.

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

5. **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).

6. Buttons:

- if you want to save any changes made in the configuration of the device, press the button ;
- if you don't want to save the changes, press the button  in the input fields of the web interface. Saved changes cannot be reset by this button to a default.



NOTE: Each field has to be saved individually.

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

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

7. **Numbers:** use a decimal point as the decimal separator in numbers in the input fields (i.e. "6.5" for six and a half).
8. **Input fields:** After entering a number or text in an input field, you must click on the corresponding  or  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 dial and LCD on the device is similar to these descriptions.

9.2. Operation via LCD / jog dial

Most functions of the device can also be operated via the LCD/jog dial at the device. The operation works analogously to the web interface descriptions. If a function of the web interface is applicable for the LCD/ jog dial, 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 dial.
- To move the cursor "" in the menu structure, turn the jog dial.
- To open a menu entry or to confirm a setting, push the jog dial.
- If a configurable menu entry is selected, it is displayed in brackets "> <" and you can adjust it by turning the jog dial.
- To confirm the adjustment, push the jog dial.
- To return to a previous menu level, activate the menu entry "**Back**".
- To change the operating language of the LCD-menu select "**Settings**→**Language**" (or in German Language: "**Einstellung**→**Sprache**") in the main menu. The available languages are English and German.

10. Audio and Data Processing Flow

The following section describes audio and data processing flows for the FlexSource device. The FlexSource has different input sources and outputs that can be individually specified by the user. That is why understanding data flow in the FlexSource is the key for successful operation.

10.1. Audio processing

FlexSource has two audio channels that each feed into dedicated analog and digital audio outputs or stream the raw audio data via IP network. Each channel can be fed from different inputs: Audio over IP (UDP), Audio over IP (Icecast), Tuner Transport Stream (TS), ASI TS, IP 1000Base-T TS and audio files uploaded to the Internal Storage. Additionally it is possible to define up to three backup sources in case of an input source failure. All available input sources can be used as the main as well as the secondary input.

10.1.1. Primary inputs

All available inputs can be used as a primary input for audio data and for MPEG2-TS (see Fig. 3 and Fig. 4). The 1000Base-T Ethernet interface receives audio data directly via UDP or UDP/RTP instead of decoding MPEG2-TS for that channel. It is also possible for one channel to be fed directly, while the other channel processes MPEG2-TS (see Fig. 3), because audio channels share the same MPEG2-TS input. Thus audio channel 2 has to use the same MPEG2-TS source as does channel 1 because FlexSource is equipped only with one audio-TS demultiplexer. That is why you can set up only one input (SAT Tuner, ASI or IP 1000Base-T) for both audio outputs if the data source consists of MPEG2-TS. However this feature does not apply for the Internal Storage: it can be combined with any other TS sources for audio output 1 as well as for audio output 2 (please consider this during configuring input source for audio output 1 and 2, see section 11.2.1.1.1).

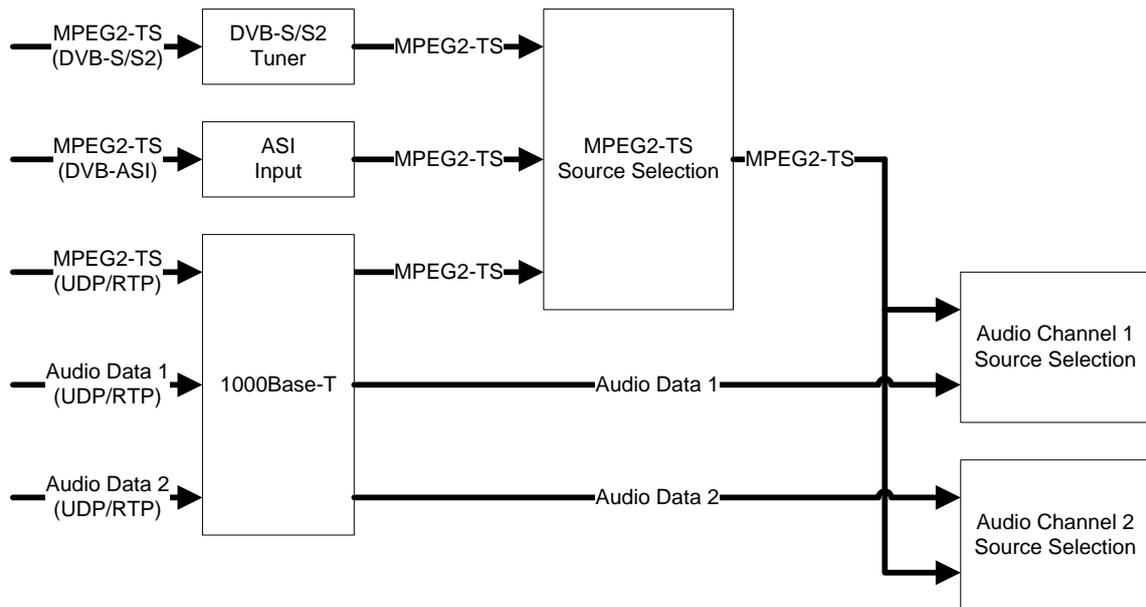


Fig. 3: MPEG2-TS and Audio Data processing via available inputs (primary and secondary): DVB-S/S2, DVB-ASI and 1000Base-T Ethernet in the FlexSource.

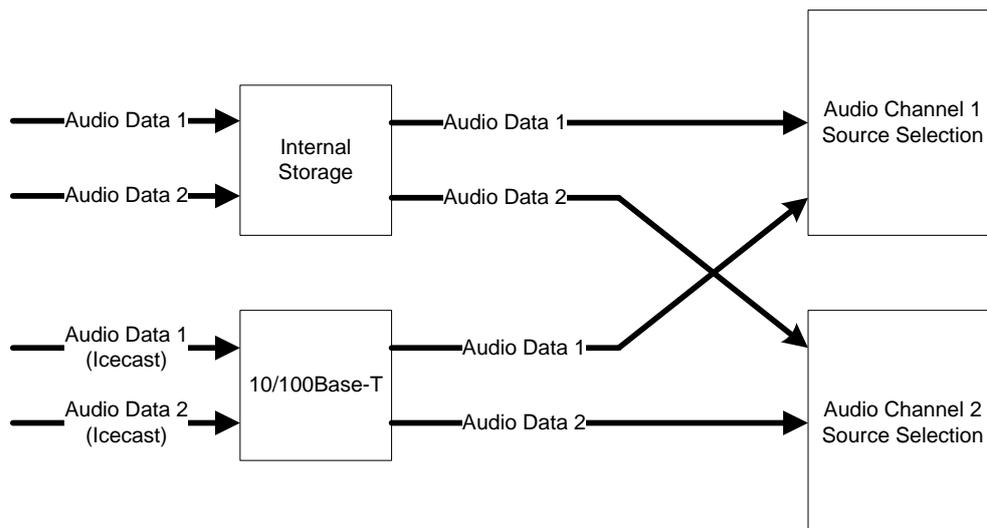


Fig. 4: Audio Data processing via available inputs (primary and secondary): Icecast and internal storage in the FlexSource.

Both channels can receive audio data from the 1000Base-T input at the same time. Moreover, primary input can be either audio files stored in an internal storage or audio streams from an Icecast server in the local network or the internet (see Fig. 4).

10.1.2. Secondary inputs

There are scenarios where the need arises to fall back to an alternate input, for example bad or no satellite reception due to weather conditions. In this case, the FlexSource can be configured to use a fallback audio source, or secondary input.

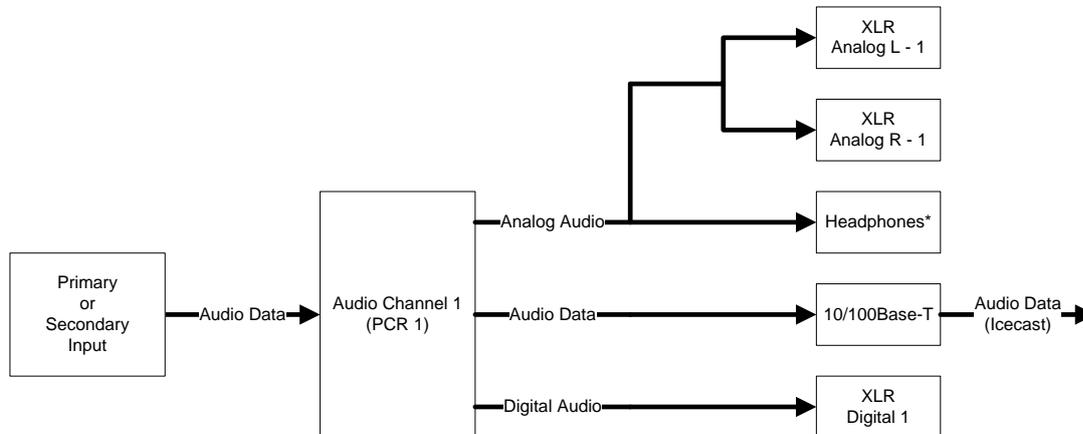
You can configure up to three backup sources for each audio channel. All available primary inputs can serve as secondary inputs (see Fig. 3 and Fig. 4). Via the web interface you can specify the criteria for switching from the main source to the different backup sources.

It is possible to temporarily disable a chosen input source without the need to alter the source order; when e.g. disabling the main source, the FlexSource will immediately switch to the backup source so that you are able to check the corresponding settings (please note however, that it will only switch, if the backup source is available).

Additionally, the FlexSource’s alarm system can be used to configure the device for cases when secondary inputs should be used and when the receiver should return to normal operation.

10.1.3. Audio outputs

Once primary and secondary inputs for each audio channel have been configured, outputs for each channel need to be set up. Each audio channel is connected to a dedicated set of outputs: three XLR connectors for analog (left and right) and digital audio. Headphones can only be used by one audio channel at a time. If both channels are configured to use headphones, channel 1 takes precedence.



*Headphones can only be used by one audio channel at a time

Fig. 5: Possible outputs for audio data in one audio channel in the FlexSource

Note that this figure only shows audio channel 1. Audio channel 2 is set up in exactly the same way, except it uses PCR2 and connectors XLR Analog L/R - 2, Digital - 2 and X21 - 2 instead.

10.2. Auxillary and IP Data processing & forwarding

Data processing works similar to the way audio processing does, except it employs different outputs. Data processing in the FlexSource be extracted from all MPEG2-TS inputs. As is the case with audio processing, all data processing shares the same source.

There are two typical scenarios for data processing:

- a) control or other data being transported in ancillary data sections of the audio streams or in the private data sections of the MPEG2 TS, i.e. RDS data for radio transmission or satellite in-band control data to control, among other things, relays or
- b) IP data encapsulated in MPEG TS (MPE) or DVB-S2 satellite stream (GSE).

The FlexSource is able to handle both scenarios and to extract, filter and forward IP data from MPE sections in the MPEG2 TS to the 1000Base-T interface (see Fig. 6).

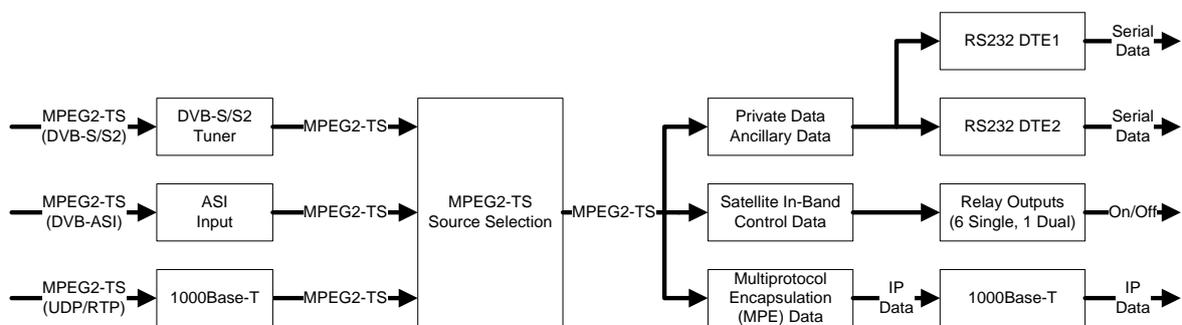


Fig. 6: Data processing in the FlexSource.

10.3. MPEG TS Data distribution

In the FlexSource 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 audio and data 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 (see Fig. 7).

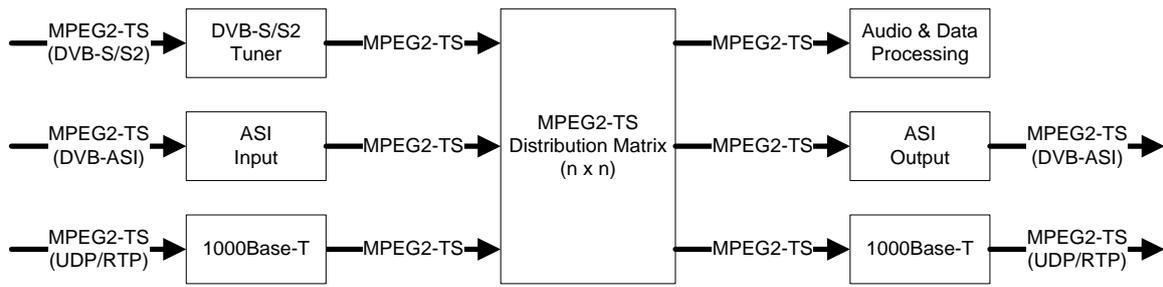


Fig. 7: Data distribution from inputs to outputs in the FlexSource.

11. Control via the Web Interface

The following section describes all menu items of the web interface and navigates you through the possibilities of the FlexSource device. Depending on the device configuration ordered, certain menu items might not be visible to the user. Menu items that depend on hardware or software options have references to the option. A complete list of available options can be found on page 6.



NOTE: The web interface of the device is dynamic, i.e. menu options are variable and can be hidden, depending on individual settings and activated options.

11.1. System Information

This menu item is available under **“Information→System”** and provides a status page for the device. It includes some fields with short information about the FlexSource, including:

1. **Device identification:** In this field you can see the device name, location and description. You can change these parameters under **System Settings→Global**.
2. **Input Sources:** In this field you can see which input sources are currently active for the different outputs plus the settings and status for these inputs: the currently active input sources, audio codec, bit rate and sample rate (see Fig. 8).



Fig. 8: System information page: the currently active input sources.

The color of the status LEDs will signal the following:

- - the main input source is active, everything OK
- - one of the backup sources is active; the state of the backup source is OK
- - input source failure; no available backup source

In case of tuner input the status page will also show the relevant tuner settings. You can change these parameters for each output in the main menu item **“Input Source”**.

3. **Audio Levels:** In this field you can see the audio levels of the two audio outputs. You can change volume levels for each output in the main menu item **Interface Settings→XLR** (see section 7.4).

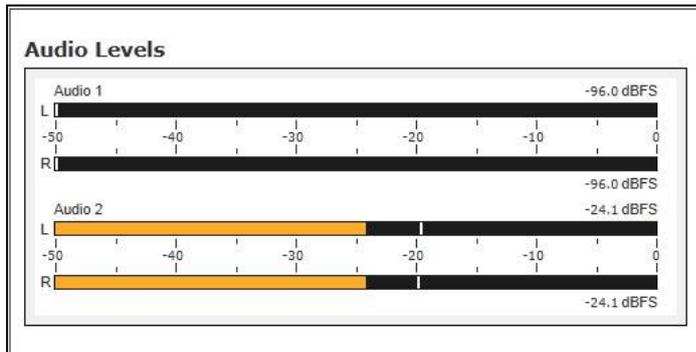


Fig. 9: System information page: Audio Levels.

4. **Tuner State:** In this field you can find the reception information. In case of the reception of a valid DVB-S/S2 signal, network ID (**NID**), tuner state (**State**) and signal bit error rate (**BER**) are shown here. The bar graphs underneath this block represent the channel to noise ratio (**C/N (dB)**) and level of the received signal.
5. **Device run time:** In this field you can find the device run time and date of last system startup.



NOTE: This menu shows only the status of parameters, outputs and inputs, only if they are activated.

LCD-menu: main menu (reception information as stated above only).

11.2. Input Source

In this menu item you can activate and configure input sources for the different outputs (see Fig. 10). The settings for the audio input sources can be centrally controlled via this one separate menu option under **Input Source→Audio Output 1** or **Input Source→Audio Output 2**.

For each input source you can activate and configure one main source which serves as a primary input and several backup (secondary) input sources which should replace the original audio source when the original source does not work properly. If backup sources are enabled and configured, they will be automatically switched to in the order they are listed in the menu, also when the previous backup source fail. As soon as the primary input or the previous backup source is reestablished, the system switches automatically back to it. The criteria for switching to the alternative source (e.g. delay time and quality of the signal) and back to the main source can be configured manually via the same menu option under **Input Source**→**Switch criteria**.

11.2.1. Audio Output 1

This menu item is available under **Input Source**→**Audio Output 1** and is used to set up the primary as well as 3 secondary (backup) input sources for Audio Output 1.

The following sections describe these configuration options.

11.2.1.1. Main source settings

To activate and to set up the main input source for Audio Output 1 use the following menu options:

1. Activate the **Main source** by ticking the box **Enabled**.
2. Choose one of the following input source options in the dropdown list **Main source**:
 - [Transport Stream as a main input source](#)
 - [Audio over IP \(UDP\), Channel 1, as a main input source](#)
 - [Audio over IP \(Icecast\). 1. Server as a main input source](#)
 - [Internal Storage as a main input source](#) (if available)
 - n/a – not available

11.2.1.1.1. Transport Stream as an input source

If you choose “Transport Stream” as a main input source for Audio Output 1 and want to set up this input, select one of the following source options in the dropdown list **TS Source**:

- a) [SAT Tuner](#)
- b) [ASI](#)

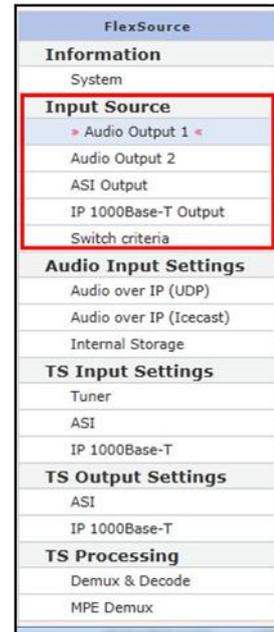


Fig. 10: Input source settings menu.

c) [IP_1000Base-T](#)

To set up SNMP monitoring functions for Transport Stream see section 11.2.1.3.

a) SAT Tuner as a TS Source

If you choose „SAT Tuner“ as an input source for the transport stream, the following menu will appear:

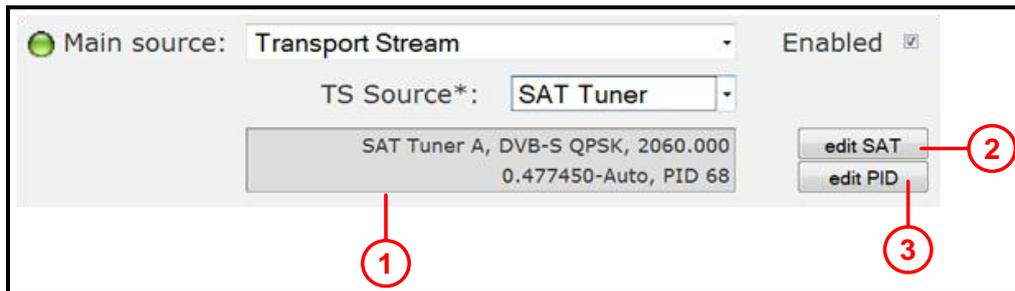


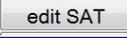
Fig. 11: TS Source for Audio Output: SAT Tuner.

(1) – Current setting of the SAT Tuner

(2) – Satellite Tuner Settings

(3) – Configuration of the individual PIDs containing MPE data to be processed

In this menu you can:

- [set up tuner by clicking](#)  **(2)**
- [set up PIDs by clicking](#)  **(3)**

Set up SAT Tuner Input

This menu item is used to configure all necessary parameters for satellite signal reception.

To open the tuner settings:

1. Select **Input-Source→Audio Output 1**.
2. Choose **Transport Stream** as a main input source.
3. Choose **SAT Tuner** as a TS Source.
4. Click the  button (see Fig. 11 **(2)**).

⇒ The window *SAT Tuner Settings – Main Source* appears (see Fig. 12).

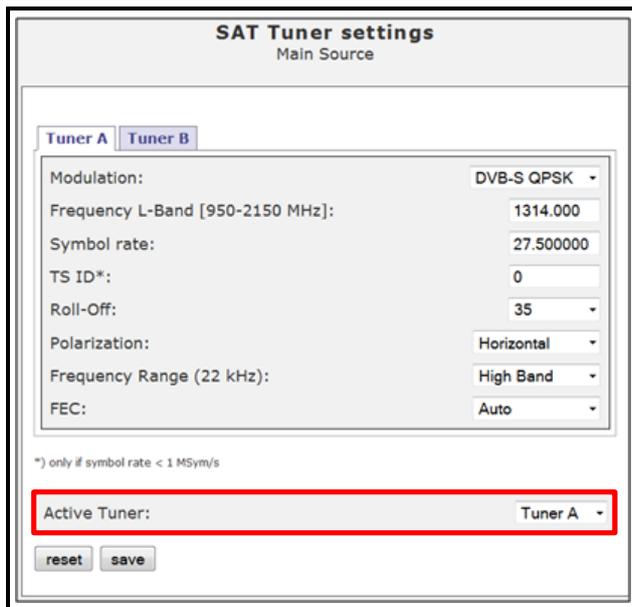


Fig. 12: SAT Tuner settings for TS.

To set up the SAT Tuner for MPEG-TS, enter the following data in the menu fields:

Tuner A/B:

Choose between Tuner A and Tuner B on twin tuner boards. (This menu item is only available when device is equipped with a 16APSK tuner board).

Activation:

Activate or deactivate tuner in the bottom field by choosing the tuner in the dropdown list (see red box in Fig. 12).



NOTE: You can set up both tuners and save the settings, if the option is available in your device.

Note, that you can activate only one tuner as a main input source at the same time.

However, you can activate the second tuner as a backup input (see 11.2.1.2).

Modulation:

Select a modulation type of the signal to be received in this dropdown list: DVB-S BPSK, DVB-S QPSK or DVB-S2 XPSK.

Frequency L-Band: Enter the frequency of the signal after it leaves the low noise block converter (LNB) ranging from 950-2150MHz.



NOTE: For standard universal LNBs the frequency is typically 9750MHz lower than the sending frequency for lower band transponders (10700-11750MHz) and 10600MHz lower for upper band transponders (11800-12750MHz), i.e. if the sending frequency of a transponder is 12600, then the frequency L-Band value is 2000MHz, assuming that a universal LNB is used.

Symbol rate: Enter the symbol rate used by the transponder in mega symbols per second (MSym/s).

TS ID: You can enter Transport Stream ID for low symbol rate transponders with symbol rates below 1MSym/s.

Roll-Off: Roll-Off factor used by the receiver filter.

Polarization: Choose either horizontal or vertical polarization used by the transponder or deactivate it in this dropdown list.

Frequency Range: 22kHz signal used to tell the LNB via Digital Satellite Equipment Control (DiSEqC) to pass on lower band (22kHz off) or upper band (22kHz on) signals.

S2 Frame Type and Pilot Mode: You can use these settings, in order to speed up tuning.

Viterbi (FEC): Viterbi code puncture rate used by the transponder, if unknown the option "Auto" can be used, resulting in slightly increased tuning times.

PLS: Physical layer scrambling code in case transmission is scrambled using PLS, for unscrambled transmissions use 0. (This menu item is only available when device is equipped with a 16APSK tuner board).

⇒ Save the settings by clicking the  button.

- ✓ The RF-LED in the upper right corner and the RF-LED on the front plate, lit up.
In case of low symbol rate signals, this can take up to a few seconds to happen.

Incoming signals from the LNB are subject to frequency tolerances, thus check the "CFO Error" under menu item **Status**→**SAT Tuner**. This value represents the margin by which the entered frequency deviates from the actual frequency. In order to maximize reception quality the CFO error should be minimized.

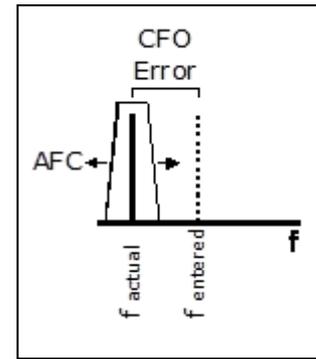


Fig. 13:
Determination of the frequency tolerance "CFO Error".

LCD-menu: **Input**→**Tuner Settings**

LCD-menu: **Status**→**Tuner**→**Signal**

Edit PIDs

In FlexSource you can manually define the PIDs to be decoded for different TS Inputs:

- [SAT Tuner](#)
- [ASI](#)
- [IP 1000Base-T](#)

To open the PID settings for SAT Tuner:

1. Select **Input-Source**→**Audio Output 1**.
2. Choose **Transport Stream** as a main input source.
3. Choose **SAT Tuner** as a TS Source.
4. Click the button (see Fig. 11 **(3)**).

⇒ The window *Demux - Main Source* appears.

This menu item is used to make the necessary settings for distributing and processing of up to three PIDs.

To configure PID settings choose the **mode** of operation:

- [SID \(automatic\)](#)
- [PID \(manual\)](#)



NOTE: You can choose only one mode because the modes are mutually exclusive.

i. Configure SID (automatic)

If you select the automatic mode of operation by service ID (SID) and activate the option button **SID (automatic)**, the following window will appear:

- You can configure one SID for automatic processing. PIDs to be decoded are chosen automatically using the service ID number.
- “1.SID” is associated with the first audio interface group (Analog L1/R1, AES/EBU1).
- Settings take effect only when SID mode is enabled.

ii. Configure PID (manual)

If you select the manual mode of operation and activate the option button **PID (manual)**, the following window will appear:

Mode:
<input type="radio"/> SID (automatic) <input checked="" type="radio"/> PID (manual)
<input type="button" value="reset"/> <input type="button" value="save"/>
1. [68] [AUDIO1] [PCR1] <input type="button" value="configure"/>
2. [0] <input type="button" value="configure"/>
3. [0] <input type="button" value="configure"/>
<input type="button" value="back"/>

Fig. 14: Demux – Main Source: manual mode of operation for PID configuration.

- Settings take effect only when the **PID (manual)** mode is enabled (see Fig. 14) and saved by clicking the button.
- You can configure up to three individual PIDs manually for further processing instead of selecting them by a service ID. Manual PID configuration offers advanced and special decoding options.
- To configure PIDs manually, click the button.

⇒ The window *Configure* appears (see Fig. 15).

These settings can also be made via the **LCD-menu**.

To set up PIDs to be decoded, enter the following data in the menu fields (see Fig. 15):

General Data

Prerequisite for MPE: FlexSource with MPE option

This field is used to define the PID to be decoded. For FlexSource with MPE option this menu also allows to extract data from a MPEG TS stream encapsulated within MPE.

Configure Audio Output 1 - PID1
Main Source

Name [max. 12 char]:
Number [0 - 8191]: 68
Mode: PES MPE
IP: 0.0.0.0
Port: 5555

Audio
Output: Audio 1
Decoder: MPEG
Delay [10 - 2000ms]: 10
Audio Synchronization: PCR

Audio Output Stream
Output Format: None

DTE1
Data source: None

DTE2
Data source: None

DTE3
Data source: None

DTE4
Data source: None

In-Band Control Data
Data source: None

Fig. 15: Manual configuration of PIDs

Name:	Associate a PID with a name using this field.
Number:	PID number to be processed.
Mode:	Choose between packetized elementary stream (PES) for standard audio and data decoding or multi protocol encapsulation (MPE) decoding when the PID is containing multiprotocol encapsulated IP data (if available).
IP:	Destination IP address of MPE IP audio stream to be decoded.
Port:	Destination Port of MPE IP audio stream to be decoded.

Audio

Prerequisite for Analog/Digital/Headphone 2 and PCR2: second audio interface group

In case the selected PID is an audio data carrying PID, outputs for the decoded audio can be configured in this block.

Output:	Assign outputs to the decoded audio signal. Note that each output can only be assigned once and has to be reassigned by first unchecking the box in the currently assigned PID first, before being able to assign it to a new PID. Note also that you choose the correct outputs, if a PCR is used (see Audio 1-2 Synchronisation above).
Decoder:	Choose the audio decoder to be used in case there is more than one option.
Delay:	Choose an audio delay that is applied to the output signal.
Audio 1-2 Synchronisation:	Choose the type of synchronization for the audio data within the first and the second audio interface group. You can assign a PCR (Program Clock Reference) to a PID or disable this option by choosing „off“. Note that each PCR can only be assigned once and has to be reassigned by first unchecking the box in the currently assigned PID first, before being able to assign it to a new PID. There is no explicit need to assign a PCR, however in doing so the time before processing starts can be decreased and stability is increased. Note also that PCR 1 is associated only with the first audio interface group (Analog L1/R1, AES/EBU1 and X21.1), PCR 2 with the second group (provided hardware option was ordered).

Audio Output Stream

Prerequisite: IP audio streaming server for monitoring

This function can be used to stream audio data streams (one per PID) over IP for monitoring purposes. Streams are based on the SHOUTcast or Icecast protocol and contain the original, unprocessed (audio) data contained in the PID. To receive streams clients like Winamp or VLC can be used, using the 10/100-Base-T's IP address and the port configured for this stream (see below). Note that it is possible to stream other data than audio, as long as the receiving application extracts the data from the Icecast stream. This however is not supported by the manufacturer. Note also that the 10/100-Base-T Ethernet interface is used for audio streaming, so the bandwidth might not suffice for data other than audio.

Output Format	Enable audio streaming for current PID by choosing "Icecast" or disable it by choosing "None". The streaming
---------------	--

	protocol used by Icecast is TCP.
Streaming Port:	Choose port for audio streaming server.

DTE1 and DTE2

Prerequisite for RDS over IP: IP data output

These two fields can be used to configure DTEs 1 and 2 to output data extracted from the PID. DTEs 3 and 4 are optional.

Data source:	Choose type of data to be output or "None" to disable data output. Note that DTEs can only be used once; in order to reassign a DTE it needs to be deactivated in the PID it is currently being used in.
Parameter:	Depending on the data source additional parameters can be set.
Enable Data over IP (e.g. RDS):	Enable or disable IP streaming of RDS UECP data extracted from data source over the 10/100-Base-T network interface. The stream is send using UDP. Note that when RDS over IP is enabled, RDS data is still put out on the DTE interface.
Destination IP:	Destination IP address of RDS data stream.
Destination Port:	Destination Port of RDS data stream.

In-Band Control Data

This block can be used to configure In-Band Control Data processing, in case the PID is carrying such data. 2wcom's Satellite In-Band Control System can be used to remotely control FlexSource's by inserting the control data into the transport stream. Remote control can be used for example to update settings, update firmware, upload files or switch outputs and relays. For further information on the Satellite In-Band Control System please contact us.

Data Source:	Choose type of data to be processed or "None" to disable data processing for In-Band Control Data.
Parameter:	Depending on the data source additional parameters can be set.

⇒ Save the settings by clicking the  button.

b) ASI as a TS Source

If you choose „ASI“ as an input source for the transport stream, the following menu will appear:

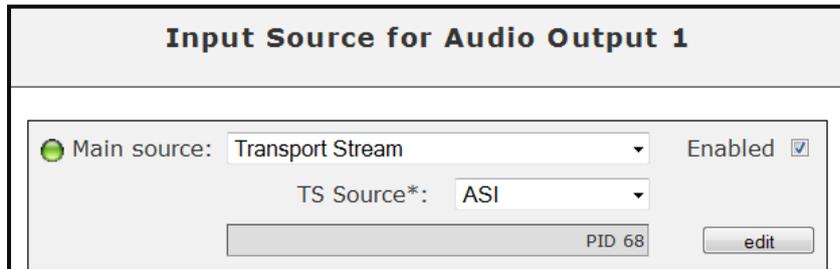


Fig. 16: TS Source for Audio Output: ASI.

In this menu you can similarly to SAT Tuner settings choose the mode of operation and configure up to three PIDs for ASI as a TS Source.



NOTE: Independently from the chosen TS Source, the last saved PIDs' settings are displayed in the PID configuration menu.

You can change these settings at any time.

To open the PID settings for ASI Tuner:

1. Select **Input-Source**→**Audio Output 1**.
2. Choose **Transport Stream** as a main input source.
3. Choose **ASI Tuner** as a TS Source.
4. The current settings are displayed in the grey field near the  button.
5. Click the  button (see Fig. 16) to open the setting window.
6. To configure PIDs and SIDs see the instructions in section [Edit PIDs](#) on page 36.

c) IP 1000Base-T as a TS Source

Prerequisite: Transport stream input over 1000Base-T

If you choose processing of an incoming transport stream via 1000Base-T Ethernet input, the following menu will appear:

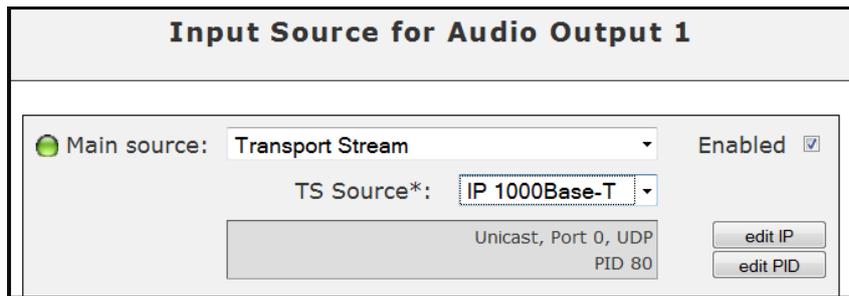


Fig. 17: TS Source for Audio Output: IP 1000Base-T.

In this menu you can:

- [edit IP](#)
- [edit PIDs](#)

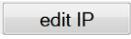
Edit IP 1000Base-T Input

In this menu item you can configure the 1000Base-T Ethernet input parameters for one UDP or UDP/RTP encapsulated Transport Stream over IP.

The following instructions will help you:

- [to open the IP 1000Base-T settings](#)
- [to configure 1000Base-T input](#)

To open the IP 1000Base-T settings:

1. Select **Input-Source**→**Audio Output 1**.
2. Choose **Transport Stream** as a main input source.
3. Choose **IP 1000Base-T** as a TS Source.
4. Click the  button (see Fig. 17).

⇒ The window *IP 1000Base-T – Main Source* appears:

IP 1000Base-T
 Main Source

Transport Stream Input

Data source: Unicast ▾
 Port: 0
 Protocol: UDP ▾

Fig. 18: Configuration of the TS Input over IP 1000Base-T as a main source for Audio Output.

To configure the 1000Base-T Ethernet input parameters, enter the following data in the menu fields:

Data source:	Use this option to declare the transmission method of the incoming transport stream, Unicast (point to point) or Multicast (point to multipoint)
Port:	Port number that incoming transport streams need to be sent to for further processing.
Protocol:	Protocol type used to encapsulate incoming transport stream. Needs to be set manually for correct decoding.

NOTE: It is always possible to ping the interface, even if its activation is disabled.

⇒ Save the settings by clicking the button.

Edit PIDs for IP 1000Base-T Input

In this menu you can similarly to SAT Tuner settings choose the mode of operation and configure up to three PIDs for ASI as a TS Source.

NOTE: Independently from the chosen TS Source, the last saved PIDs' settings are displayed in the PID configuration menu.

You can change these settings at any time.

To open the PID settings for IP 1000Base-T:

1. Select **Input-Source**→**Audio Output 1**.

2. Choose **Transport Stream** as a main input source.
3. Choose **IP 1000Base-T** as a TS Source.
4. The current settings are displayed in the grey field near the  button.
5. Click the  button (see Fig. 17) to open the setting window.
6. To configure PIDs and SIDs see the instructions in section [Edit PIDs](#) on page 36.

11.2.1.1.2. Audio over IP (UDP) as an input source

This menu item is used to configure the 1000Base-T Ethernet input parameters for corresponding Raw Audio over IP streams.

To configure the 1000Base-T input for Audio over IP output:

1. Select **Input Source**→**Audio Output 1**.
2. Choose **Audio over IP (UDP). Channel 1** as a main input source for Audio Output 1 as described in section 11.2.1.1. The following menu appears:

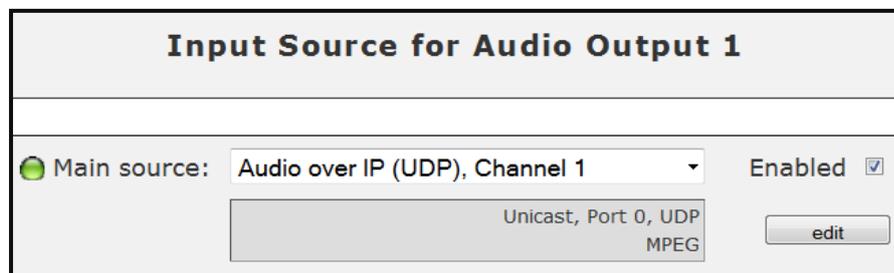


Fig. 19: Main source for Audio Output 1: Audio over IP (UDP).

3. Click the  button.
4. Enter the following data in the menu fields:

Data source:	Use this option to declare the transmission method of the incoming IP audio stream, Unicast (point to point) or Multicast (point to multipoint).
Port:	UDP Port number that incoming raw audio streams need to be sent to for further processing.
Protocol:	Protocol type used to encapsulate incoming transport stream. Needs to be set manually for correct decoding.

Decoder:	Choose the audio decoder to be used in case there is more than one option.
Delay:	Time in milliseconds before audio is put out.

To set up SNMP monitoring functions for Audio over IP Output see section 11.2.1.3

11.2.1.1.3. Audio over IP (Icecast) as an input source

Prerequisite for second client: second audio interface group

In this menu item you can define one Icecast compatible audio streaming server per a corresponding channel.

To configure the 10/100Base-T input for Audio over IP (Icecast) output:

1. Select **Input Source**→**Audio Output 1**.
2. Choose **Audio over IP (Icecast). 1. Server** as a main input source for Audio Output 1 as described in section 11.2.1.1. The following menu appears:

Fig. 20: Main source for Audio Output 1: Audio over IP (UDP).

3. Click the  button.
4. Enter the following data in the menu fields:

Name:	Assign a name to the Icecast server for better reference.
IP or URL:	Icecast server IP address or URL, i.e. "247.56.38.14" or "www.backup-audio.com"
Port:	Icecast server port, i.e. "8080".
Ignore First Streaming data:	Ignore the first 0 to 20 seconds of audio data. Can be used to ignore burst audio data transfers that usually start each new audio data transmission from Icecast servers, after a few seconds, the incoming data is more streamlined,

Delay:

resulting in better and especially synchronized audio playback.

Delay time from 10 to 2000ms before playback is started. Note that the delay timer is started after the "ignore first streaming data timer" has expired.



NOTE: It is necessary to configure a gateway under "Network Settings→TCP/IP" in order for the clients to reach the servers. Clients use the 10/100-Base-T Ethernet interface (control and monitoring). If an URL is chosen instead of an IP address at least one DNS server needs to be configured ("Network Settings→TCP/IP").

To set up SNMP monitoring functions for Audio over IP Output see section 11.2.1.3.

11.2.1.1.4. Internal Storage as an input source

Prerequisite: Internal Storage Option

The internal storage can be used as a primary source to store audio files to be played back to the correspondent audio channel. Audio files can be uploaded to the internal storage using a FTP client connecting to the 10/100Base-T interface (same as web interface) using the login data of the web interface. Alternatively, the 2wcom Satellite In-Band Control System can be used to download files via satellite onto the internal storage. For further information on 2wcom's Satellite In-Band Control System contact us.

To configure a file for an audio slot:

1. Select **Input Source→Audio Output 1**.
2. Choose **Internal Storage** as a main input source for Audio Output 1 as described in section 11.2.1.1.
3. Click the  button.
4. Select the audio file to be played back from the dropdown list **File**.
5. Save the settings by clicking .



NOTE: Upload a file to the internal storage directory, in order to make a file visible in the dropdown list.

To set up SNMP monitoring functions for internal storage see section 11.2.1.3.

11.2.1.2. Backup source settings

Additionally to the main source it is possible to define up to three backup sources in case of an input source failure. All possible main input sources can be used as backup sources (see section 10.1.2): Tuner Transport Stream (TS), ASI TS, IP 1000Base-T TS, Audio over IP (UDP), Audio over IP (Icecast) and audio files uploaded to the Internal Storage.

There are some examples for different setting combinations, which have to be regarded:

1. Different sources (see Fig. 21):

The screenshot shows the configuration for 'Input Source for Audio Output 1'. It features a main source and three backup sources, each with an 'Enabled' checkbox and an 'edit' button. The main source is 'Audio over IP (UDP), Channel 1' with details 'Unicast, Port 0, UDP MPEG'. Backup 1 is 'Transport Stream' with 'SAT Tuner' as the source and details 'SAT Tuner A, DVB-S QPSK, 1666.000 H 27.500000-Auto, no PID'. Backup 2 is 'Audio over IP (Icecast), 1. Server' with details 'Port 0'. Backup 3 is 'Internal Storage' with details 'File: NONE'. A note at the bottom states: '*) Selected TS source is automatically used for all audio channels!'

Fig. 21: Example for different backup source settings.

For example, "Audio over IP (UDP)" is chosen as the main source for Audio Output 1 and the Tuner Transport Stream is used as the first backup source. If even the tuner input does fail, an Icecast server and the internal storage are configured as additional backups. It is possible to temporarily disable a chosen input source without the need to alter the source order; when e.g. disabling the main source in the above example (Fig. 21), the FlexSource will immediately switch to the backup source so that you are able to check the corresponding settings.

If you have configured different main and backup sources, the system will be continuously checking for all available prior sources and switches automatically back as soon as the signal is good again.



NOTE: The device will only switch, if the backup source is available.

2. Several identical sources (see

3. Fig. 22):

For example, two identical input sources for Audio Output 1 are chosen, e.g. SAT Tuner as a main source and as the first backup with different frequencies. If the main source fails, the system switches to the first backup by tuning to the configured frequency.

Input Source for Audio Output 1

Main source: Transport Stream Enabled

TS Source*: SAT Tuner

SAT Tuner A, DVB-S QPSK, 1250.000
3.000000-Auto, PID 101

edit SAT
edit PID

1. Backup: Transport Stream Enabled

TS Source*: SAT Tuner

SAT Tuner A, DVB-S QPSK, 1666.000 H
27.500000-Auto, no PID

edit SAT
edit PID

2. Backup: Audio over IP (Icecast), 1. Server Enabled

Port 0

edit

3. Backup: n/a Enabled

*) Selected TS source is automatically used for all audio channels!

SNMP trap on every input source switch

Signal active backup via LED Relay ---

reset save

Fig. 22: Example for identical main and backup input source.

But note (!), that the system is not checking, if the main source (also SAT Tuner) is again available, because there is only one tuner and it cannot tune on different frequencies at the same time. Therefore, the second SAT Tuner backup remains active, till it fails. The system does not switch back automatically to the main source.

This applies to all other identical input sources: the system switches further to the next or prior source automatically only if the active backup source fails.

You can only switch back to the main source, if you re-enable the active backup source manually.

Input Source for Audio Output 1

Main source: Audio over IP (Icecast), 1. Server Enabled

SAT Tuner A, DVB-S QPSK, 1250.000
3.000000-Auto, PID 101

edit

1. Backup: Audio over IP (Icecast), 1. Server Enabled

SAT Tuner A, DVB-S QPSK, 1666.000 H
27.500000-Auto, no PID

edit

2. Backup: Internal Storage Enabled

SAT Tuner A, DVB-S QPSK, 1666.000 H
27.500000-Auto, no PID

edit

3. Backup: n/a Enabled

SNMP trap on every input source switch

Signal active backup via LED Relay ---

reset save

Fig. 23: Example for two identical and one different input source.

4. Two identical backup sources and one different/distinguishing backup source (Fig. 23):

If you set up two identical sources as well as one different backup source and both inputs fail, the system switches to the different backup and continues checking the prior sources.

The red blinking lamp near the source means, that this source is now being checked for the signal quality.

If one of the identically configured prior sources is again available, the system switches to it automatically.

You can configure backup sources in a similar way as the main source because all sources can be used also as secondary inputs.

To configure the backup sources:

1. Select **Input Source**→**Audio Output 1**.
2. In the red box in Fig. 24 you can activate and configure up to three backup sources.
3. Follow the same steps as in the main source settings in section 11.2.1.1.

Input Source for Audio Output 1		
Main source:	n/a	Enabled <input checked="" type="checkbox"/>
1. Backup:	n/a	Enabled <input checked="" type="checkbox"/>
2. Backup:	n/a	Enabled <input checked="" type="checkbox"/>
3. Backup:	n/a	Enabled <input checked="" type="checkbox"/>
SNMP trap on every input source switch <input checked="" type="checkbox"/>		
Signal active backup via LED <input type="checkbox"/> Relay ---		
reset save		

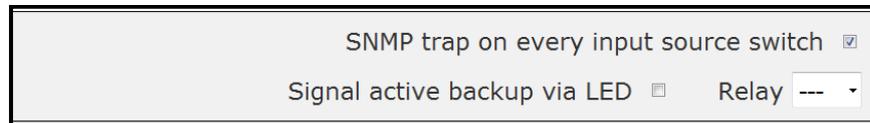
Fig. 24: Backup source settings for Audio Output 1.

For each source you can set up the monitoring functions via SNMP manager (see section 11.2.1.3).

11.2.1.3. Activate Monitoring Function

In every settings menu for Input Sources there is a field (e.g. under the red frame in Fig. 24), in which you can activate monitoring function of the SNMP

manager for the current input source and enable the signal for active backup via LED which will be blinking red, if a backup source is active. You can also set up the relays' number for alarm signal. Note that you can choose only the relay, which is activated under **Interface Settings → Relay** for alarm.



SNMP trap on every input source switch

Signal active backup via LED Relay --- ▾

Fig. 25: Monitoring activation menu.

11.2.2. Audio Output 2



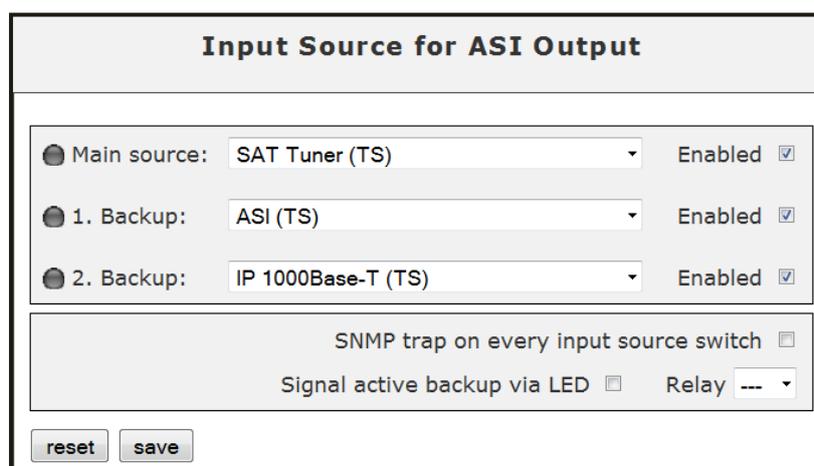
NOTE: If the main input source for audio outputs is Transport Stream, both audio outputs can use only one input except for the internal storage (see section 10.1.1). It means that you can set up the same TS Source for Audio Output 1 and Audio Output 2: SAT Tuner, ASI or IP 1000Base-T.

You can set the primary and secondary Input Sources for the Audio Output 2 in a similarly way as for Audio Output 1. Follow the analog steps for the configuration of the Audio Output 1 in section 11.2.1 and apply the instructions correspondently for the Audio Channel 2 and IP Server 2.

11.2.3. ASI Output

This menu item is used to set up the primary (main) as well as two secondary (backup) data input sources for ASI Output.

This menu item is available under **Input Source → ASI Output** and is used to configure the DVB-ASI output.



Input Source for ASI Output

● Main source:	SAT Tuner (TS) ▾	Enabled <input checked="" type="checkbox"/>
● 1. Backup:	ASI (TS) ▾	Enabled <input checked="" type="checkbox"/>
● 2. Backup:	IP 1000Base-T (TS) ▾	Enabled <input checked="" type="checkbox"/>

SNMP trap on every input source switch

Signal active backup via LED Relay --- ▾

Fig. 26: Input Source Settings for ASI Output.

1. Activate the main and backup sources for the DVB-ASI output by ticking **Enabled**.
2. Choose the main and two backup sources of the MPEG2 transport stream from the dropdown lists to be transmitted over DVB-ASI: SAT Tuner, ASI or IP 1000Base-T.



NOTE: Don't set up identical sources.
Use three different input sources to ensure seamless transmission.

3. Save the settings by clicking the button.

For ASI Output you can also set up SNMP monitoring (see section 11.2.1.3).

11.2.4. IP 1000Base-T Output

This menu item is used to set up the primary (main) as well as two secondary (backup) data input sources for IT 1000Base-T Output.

This menu item is available under **Input Source**→**IP 1000Base-T Output** and is used to configure the data source for the MPEG2 transport stream and the targets IP address data. IP address parameters for the Gigabit-Ethernet output itself can be configured under **Network Settings**→**TCP/IP** (see section 11.6.1).

To configure IP 1000Base-T Output, follow the same steps as for ASI Output (see section 11.2.3):

1. Activate the main and backup sources for the IT 1000Base-T Output by ticking **Enabled**.
2. Choose the main and two backup sources of the MPEG2 transport stream from the dropdown lists to be transmitted over Gigabit-Ethernet output: SAT Tuner, ASI or IP 1000Base-T.



NOTE: Don't set up identical sources.
Use three different input sources to ensure seamless transmission.

3. Save the settings by clicking the button.

For IT 1000Base-T Output you can also set up SNMP monitoring (see section 11.2.1.3).

11.2.5. Switch Criteria

This menu item is available under **Input Source**→**Switch criteria** and is used to define the criteria for switching between the main and different backup input sources:

11.2.5.1. Switch criteria for SAT Tuner

To define the switch criteria for SAT Tuner input source:

1. Select **Input Source**→**Switch criteria**.

⇒ The following menu for **Tuner (TS)** appears (see Fig. 27):

Input source switch criteria			
Tuner (TS)			
RF power	Enabled <input type="checkbox"/>		
-40 dBm +/- 10 dBm	T1 60 s	T2 30 s	
C/N	Enabled <input type="checkbox"/>		
< 10 dB	T1 30 s	T2 10 s	
Vit./LDPC BER	Enabled <input type="checkbox"/>		
> 1.00E-4	T1 60 s	T2 30 s	
TS Sync	Enabled <input checked="" type="checkbox"/>		
	T1 30 s	T2 30 s	

Fig. 27: Switch criteria for main and backup input source - SAT Tuner

2. Enter the following data in the menu field **Tuner (TS)**:

RF power	<ul style="list-style-type: none"> – Activate the criteria by ticking Enabled. – Enter the acceptable interval “good” for radio frequency (minimum/maximum). If the signal does not match to this interval, the system will regard it as “bad” and will switch to the backup source. – Define the delay time T1 (in seconds) when the system should switch to the backup source, if the RF signal is “bad”. – Define the time T2 (in seconds), how long a “good” RF signal should be available, before the system switches
----------	---

back to the main source.

C/N

- Activate the criteria by ticking **Enabled**.
- Enter the minimal “good” value for the Channel to Noise Ratio. The signal under this defined value will be regarded by the system as “bad”, so that after the delay time T1 it will switch to the backup source.
- Define the time T2 (in seconds), how long a “good” C/N signal should be available, before the system switches back to the main source.

Vit./LDPC BER

- Activate the criteria by ticking **Enabled**.
- Enter the maximal “good” value for the Bit Error Rate, e.g. $1,00 \cdot e^{-4}$. The received signal above this defined value will be regarded by the system as “bad”, so that after the delay time T1 it will switch to the backup source.
- Define the time T2 (in seconds), how long a “good” BER signal should be available, before the system switches back to the main source.

TS Sync

- Activate the criteria by ticking **Enabled**.
- Define the delay time T1 (in seconds), when the system should switch to the backup source, if TS synchronization fails.
- Define the time T2 (in seconds), how long TS synchronization should be available, before the system switches back to the main source.

3. Save the settings by clicking the  button on the bottom of the page.



NOTE: If you define several switching criteria for SAT Tuner, the system will switch to the backup source, as soon as at least one enabled function is applied. However, the system will switch back to the main source, only when all defined criteria for switching back are again fulfilled.

11.2.5.2. Switch criteria for ASI Input (TS)

To define the switch criteria for ASI input source:

1. Select **Input Source**→**Switch criteria**.

⇒ The following menu for **ASI Input (TS)** appears (see Fig. 28):

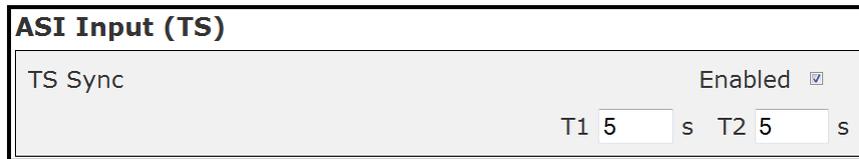


Fig. 28: Switch criteria for main and backup input source - ASI Input (TS).

2. Enter the following data in the menu field **ASI Input (TS)**:

TS Sync	<ul style="list-style-type: none">– Activate the criteria by ticking Enabled.– Define the delay time T1 (in seconds), when the system should switch to the backup source, if TS synchronization fails.– Define the time T2 (in seconds), how long TS synchronization should be available, before the system switches back to the main source.
---------	--

3. Save the settings by clicking the button on the bottom of the page.

11.2.5.3. Switch criteria for IP 1000Base-T Input (TS)

To define the switch criteria for IP 1000Base-T input source:

1. Select **Input Source**→**Switch criteria**.

⇒ The following menu for **IP 1000Base-T Input (TS)** appears (see Fig. 29):

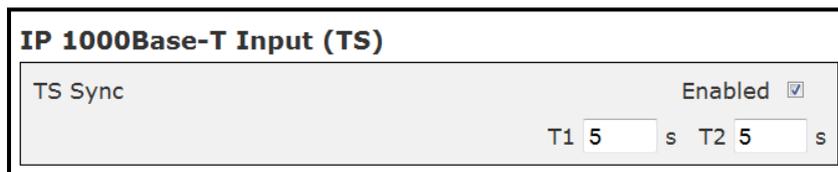


Fig. 29: Switching criteria for main and backup input source - IP 1000Base-T Input (TS)

2. Enter the following data in the menu field **IP 1000Base-T Input (TS)**:

TS Sync	<ul style="list-style-type: none">– Activate the criteria by ticking Enabled.– Define the delay time T1 (in seconds), when the system should switch to the backup source, if TS synchronization
---------	---

fails.

- Define the time T2 (in seconds), how long TS synchronization should be available, before the system switches back to the main source.

3. Save the settings by clicking the button on the bottom of the page.

11.2.5.4. Switch criteria for Audio over IP (UDP)

To define the switch criteria for Audio over IP (UDP) Input:

1. Select **Input Source**→**Switch criteria**.

⇒ The following menu for **Audio over IP Input (UDP)** appears (see Fig. 30):

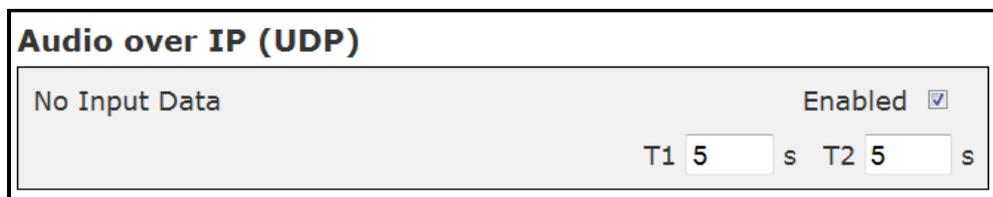


Fig. 30: Switching criteria for main and backup input source – Audio over IP Input (UDP).

2. Enter the following data in the menu field **Audio over IP (UDP)**:

No Input Data	<ul style="list-style-type: none">- Activate the criteria by ticking Enabled.- Define the delay time T1 (in seconds), when the system should switch to the backup source, if no input data is being received.- Define the time T2 (in seconds), how long the input data should be available, before the system switches back to the main source.
---------------	---

3. Save the settings by clicking the button on the bottom of the page.

11.2.5.5. Switch criteria for Audio over IP (Icecast)

To define the switch criteria for Audio over IP (Icecast):

1. Select **Input Source**→**Switch criteria**.

⇒ The following menu for **Audio over IP Input (Icecast)** appears (see Fig. 31):

Fig. 31: Switching criteria for main and backup input source – Audio over IP Input (Icecast)

2. Enter the following data in the menu field **Audio over IP (Icecast)**:

<p>No Input Data</p>	<ul style="list-style-type: none"> – Activate the criteria by ticking Enabled. – Define the delay time T1 (in seconds), when the system should switch to the backup source, if no input data is being received. – Define the time T2 (in seconds), how long the input data should be available, before the system switches back to the main source.
----------------------	---

3. Save the settings by clicking the button on the bottom of the page.

11.2.5.6. Switch criteria for Internal Storage

To define the switch criteria for Internal Storage:

1. Select **Input Source**→**Switch criteria**.

The following menu for **Internal Storage** appears (see Fig. 32).

Fig. 32: Switching criteria for main and backup input source – Internal Storage.

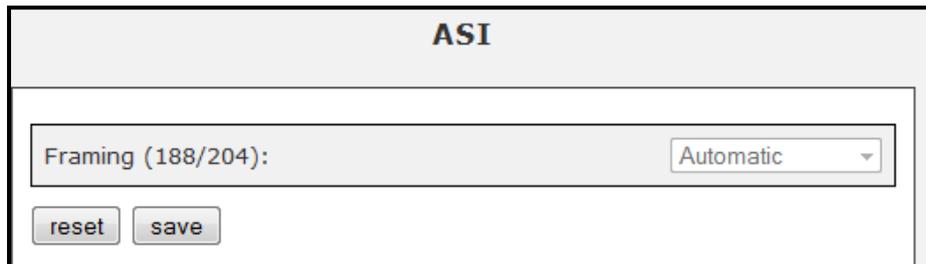
2. Activate the criteria by ticking **Enabled** in the menu field **Internal Storage**, and the system will switch to the backup source as soon as internal storage fails.

3. Save the settings by clicking the button on the bottom of the page.

11.3. TS Output Settings

11.3.1. ASI: configuration of DVB-ASI output

This menu item is available under **TS Output Settings→ASI** and is used to configure framing for the DVB-ASI output. The TS framing is usually 188 bytes long and can be enforced to 204 bytes. However, the default ASI output configuration "Automatic" is already set by the system:



The screenshot shows a web-based configuration window titled "ASI". Inside the window, there is a label "Framing (188/204):" followed by a dropdown menu currently set to "Automatic". Below the dropdown are two buttons: "reset" and "save".

The main settings for the DVB-ASI output can be adjusted under [Input Source→ASI Output](#).

11.3.2. IP 1000Base-T: Configuration of the Gigabit-Ethernet MPEG-TS output

This menu item is available under **TS Output Settings→IP 1000Base-T** and is used to configure the data source for the MPEG2 transport stream and the target IP address data. IP address parameters for the Gigabit-Ethernet output itself can be configured under **Network Settings→TCP/IP**.

Enter the following data in the menu field IP 1000Base-T:

Destination address:	Destination IP address.
Destination port:	Destination UDP port. Usually 1234 for DVB streaming.
Source port:	Sender UDP port.
Protocol:	MPEG2 transport stream encapsulation, either UDP only or UDP/RTP. Note that with UDP/RTP, RTCP packets are generated also and send in 5 second intervals.

⇒ Save the settings by clicking the  button.

11.4. TS Processing

11.4.1. MPE Demux: demultiplexing of MPE data

Prerequisite: MPE demux option

This menu item is available under **TS Processing**→**MPE Demux** and is used to make the necessary settings for distribution of IP packets to an attached IP network by processing of up to 16 PIDs containing MPE data (see Fig. 33).

MPE Demux			
MPE / Data Piping:		<input type="radio"/> on	<input checked="" type="radio"/> off
Layer 2 -- Bridge to LAN Settings:		<input type="button" value="configure bridging"/>	
Layer 3 -- IP Routing:		<input type="button" value="configure routing"/>	
Layer 3 -- IP Filtering:		<input type="button" value="configure filtering"/>	
MPE MAC Address:		00-00-00-00-00-00	
MPE MAC Filter:		Deactivate ▼	
<input type="button" value="reset"/>		<input type="button" value="save"/>	
1. PID	<input type="text" value="0"/>	9. PID	<input type="text" value="0"/>
2. PID	<input type="text" value="0"/>	10. PID	<input type="text" value="0"/>
3. PID	<input type="text" value="0"/>	11. PID	<input type="text" value="0"/>
4. PID	<input type="text" value="0"/>	12. PID	<input type="text" value="0"/>
5. PID	<input type="text" value="0"/>	13. PID	<input type="text" value="0"/>
6. PID	<input type="text" value="0"/>	14. PID	<input type="text" value="0"/>
7. PID	<input type="text" value="0"/>	15. PID	<input type="text" value="0"/>
8. PID	<input type="text" value="0"/>	16. PID	<input type="text" value="0"/>
<input type="button" value="reset"/>		<input type="button" value="save"/>	

Fig. 33: MPE Demux menu.

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 FlexSource 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.

To configure MPE demultiplexing, enter the following data in the menu field in Fig. 33:

In the first block, general settings are made and packet filtering can be set up.

MPE / Data Piping:	Enable or disable MPE demultiplexing functionality.
Layer 2 -- Bridge to LAN Settings	Click on <input type="button" value="configure filtering"/> to get to the sub-menu to set up Layer2 bridging. See below for further explanation.
Layer 3 IP Routing	Click on <input type="button" value="configure routing"/> to get to the sub-menu to set up Layer 3 routing. See below for further explanation.
Layer 3 IP Filtering	Click on <input type="button" value="configure filtering"/> to get to the sub-menu to set up Layer 3 filtering. See below for further explanation
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"
MPE MAC Filter:	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.

⇒ Save the settings by clicking the button.

In the second block, the individual PIDs containing MPE data to be processed are configured.

PID: Up to 16 PIDs containing MPE sections can be configured for MPE demultiplexing. 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.

⇒ Save the settings by clicking the button.



NOTE: MPE is decoded from the same source, that is used in “Demux” (see menu item [Edit PIDs](#) on page 36).

11.4.1.1. MPE Packet Filtering in General

The following Fig. 34 illustrates how MPE IP packets are filtered:

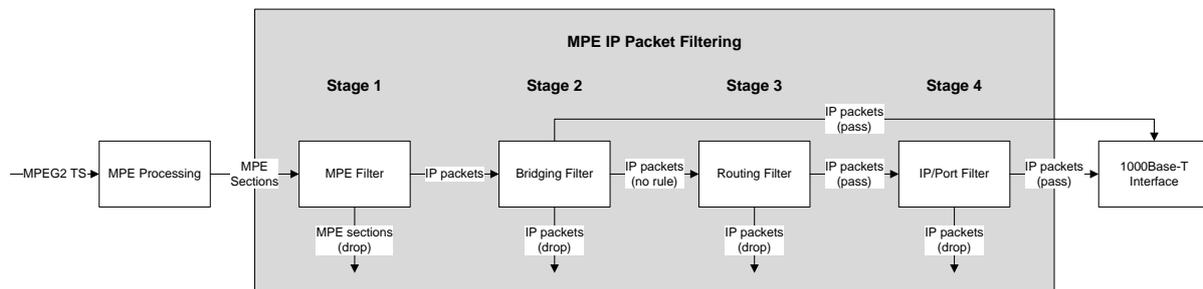


Fig. 34: MPE Packet Filtering.

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.

11.4.1.2. MPE Layer 2 - Bridge to LAN Settings

This menu is used to configure MPE Layer 2 bridging (see Fig. 35).

Bridge to LAN Settings		
Broadcast Bridging:	<input type="radio"/> on	<input checked="" type="radio"/> off
Multicast Bridging:	<input type="radio"/> on	<input checked="" type="radio"/> off
Unicast Bridging:	<input type="radio"/> on	<input checked="" type="radio"/> off
<input type="button" value="reset"/> <input type="button" value="save"/>		
Bridging Filter Tables		
Dst. Address	Mask	Action
192.168.14.90	0	unused

Fig. 35: MPE Demux - Menu with Bridge to LAN Settings.

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.

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 Fig. 35).

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.

⇒ Save the settings by clicking the  button.

The second block is used to configure up to 16 bridging filter rules.

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).

⇒ Save the settings by clicking the  button.

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 Fig. 34). 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)

11.4.1.3. MPE Layer 3 - IP Routing

This menu is used to configure MPE Layer 3 IP routing (see Fig. 36).

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 Fig. 36):

Fig. 36: 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.

⇒ Save the settings by clicking the button.

The second block "Multicast Routing" is used to configure multicast routing rules. IP address "0.0.0.0" in combination with netmask "0" act as a wildcard.

Source Address:	Source IP address of IP packet.
Source 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.
Destination Address:	Destination IP address of IP packet.
Destination 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

⇒ Save the settings by clicking the  button.

11.4.1.4. 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 Fig. 37):

Src. Address	Port	Dst. Address	Port	Action
0.0.0.0	0	0.0.0.0	0	unused
0.0.0.0	0	0.0.0.0	0	unused
0.0.0.0	0	0.0.0.0	0	unused
0.0.0.0	0	0.0.0.0	0	unused
0.0.0.0	0	0.0.0.0	0	unused

Fig. 37: 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.

⇒ Save the settings by clicking the button.

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

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

⇒ Save the settings by clicking the  button.

11.5. Interface Settings

11.5.1. XLR: configuration of audio level and 15kHz low pass filter

This menu item is available under **Interface Settings**→**XLR** and is used to adjust the output level of the XLR outputs, separately for the analog outputs and digital AES/EBU outputs. Adjustable range: -36...+6 dB (related to the received signal) (see Fig. 38):

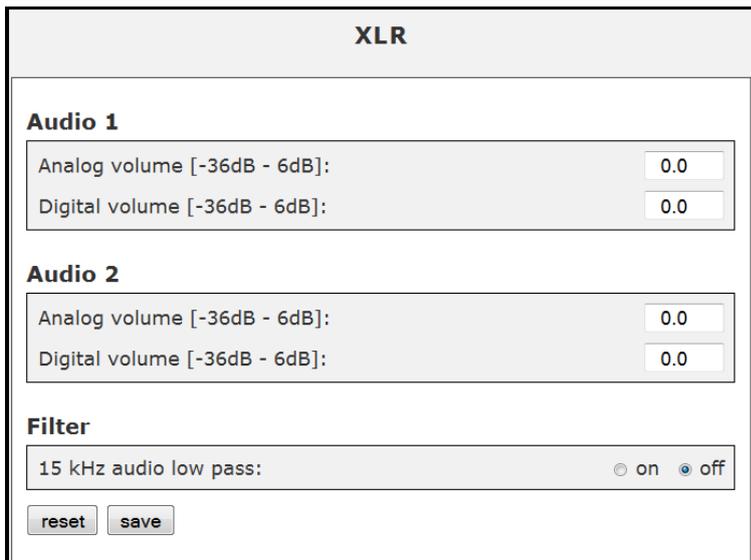


Fig. 38: Interface Settings Menu - XLR

Additionally a 15 kHz low pass filter can be activated to suppress unwanted audio signals that may exist above this frequency, useful when feeding audio directly into FM-transmitters or older stereo encoders.

⇒ Save the settings by clicking the button.

LCD-menu: Interface → XLR

11.5.2. Headphone: adjusting headphone audio volume

This menu item is available under **Interface Settings → Headphone** and is used to adjust the volume at the headphone output (see Fig. 39).

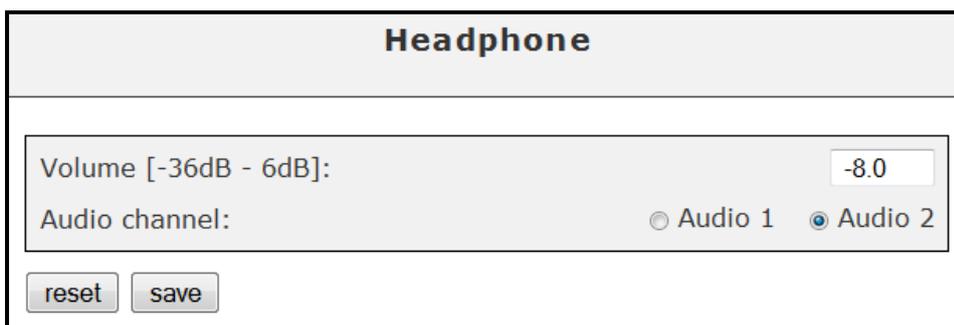


Fig. 39: Interface Settings Menu - Headphone.

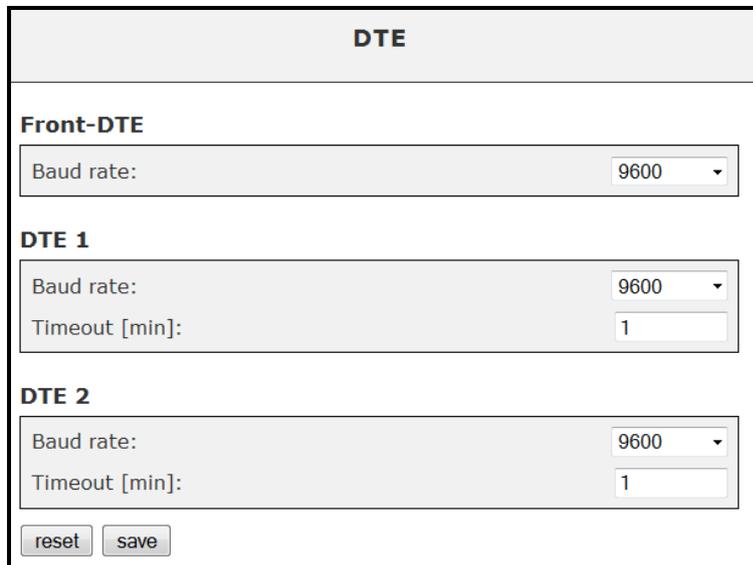
Adjustable range: -36...+6 dB (related to the received signal).

⇒ Save the settings by clicking the button.

LCD-menu: Interface → Headphone

11.5.3. DTE: configuration of the serial RS-232 interfaces

This menu item is available under **Interface Settings**→**DTE** and is used to configure the serial RS-232 interfaces Front-DTE, DTE1 and DTE2 of the device.



The screenshot shows a configuration window titled "DTE". It contains three sections: "Front-DTE", "DTE 1", and "DTE 2". Each section has a "Baud rate" dropdown menu set to "9600". The "DTE 1" and "DTE 2" sections also have a "Timeout [min]" input field set to "1". At the bottom of the window are "reset" and "save" buttons.

Fig. 40: Interface Settings Menu - DTE.

Configurable settings are the baud rate and the data activity timeout (DTE1 and DTE2 only).

Possible baud rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 baud.

⇒ Save the settings by clicking the button.

LCD-menu: Interface→**Front-DTE / DTE1 / DTE2**

11.5.4. Relay: relay configuration

This menu item is available under **Interface Settings**→**Relay** and is used to configure the relay outputs of the device (see Fig. 41).

Relay			
State			
Relay 1 (1.1)	OFF	Relay 5	OFF
Relay 2 (1.2)	OFF	Relay 6	OFF
Relay 3 (1.3)	OFF	Relay 7	Pos.A
Relay 4 (1.4)	OFF		
Settings			
Name	Source	inverted	latch limit [0=off, min:500ms]
Relay 1 (1.1)	Alarm	no	0 00 ms
Relay 2 (1.2)	Alarm	no	0 00 ms
Relay 3 (1.3)	Alarm	no	0 00 ms
Relay 4 (1.4)	Alarm	no	0 00 ms
Relay 5	Alarm	no	0 00 ms
Relay 6	Alarm	no	0 00 ms
Relay 7	Alarm	no	0 00 ms
Power failed relay:		none	
Remote command relay pulse time:		500	ms
Relay command debounce period:		8053719	ms
<input type="button" value="reset"/> <input type="button" value="save"/>			

Fig. 41: Interface Settings Menu - Relay.

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:

Source:	<p>In this drop menu choose the source which should switch the correspondent relay:</p> <ul style="list-style-type: none"> • Alarm <ul style="list-style-type: none"> ○ see section 11.2.1.3 to activate monitoring functions for different sources ○ see section 11.7.5 to set up alarm • Q561 input – the corresponding GPIO Input of a Q561 MPEG encoder drives the relay. • Remote command – the commands via the remote control function.
inverted:	<p>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.</p>

Latch limit:	Enter the time, how long the relay should be on. 0 ms means that the relay will be switched of as soon as the alarm is off.
Power failed relay:	Define the relay which will be responsible for indicating power failure.
Remote command relay pulse time:	If necessary, define pulse time for switching the relay via remote command.
Relay command debounce period:	Define the period, in which the switching commands received via the remote control should be executed, for example to ignore the same commands being sent several times in a short period of time. 0 ms means that all commands will be executed.

⇒ Save the settings by clicking the button.

11.6. Network Settings

11.6.1. TCP/IP: configuration of the Ethernet interfaces

11.6.1.1. Control Interface (10/100)

This menu item is available under **Network Settings**→**TCP/IP** and is used to configure the Ethernet interface (control/monitoring) of the device (see Fig. 42).

Fig. 42: Network Settings: TCP/IP – Control Interface.

Configurable settings are the IP-address, subnet mask, gateway, and the http port.

DHCP:	Activate or deactivate the Dynamic Host Configuration Protocol which enables the device to get an IP Address automatically.
-------	---

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 internet browser (default port: 80).

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

⇒ Save the settings by clicking the button.

LCD-menu: **Interface**→**IP**

11.6.1.2. Data Interface (10/100/1000)

This menu item is available under **Network Settings**→**TCP/IP** and is used to configure the Gigabit-Ethernet interface (TS-streaming) of the device (see Fig. 43).

Data Interface (1000Base-T)

MAC address:	00:11:99:00:22:95
IP address:	<input style="width: 80%;" type="text" value="192.168.14.77"/>
Subnet mask:	<input style="width: 80%;" type="text" value="255.255.255.0"/>
Gateway:	<input style="width: 80%;" type="text" value="0.0.0.0"/>

Fig. 43: Network Settings: TCP/IP – Data Interface.

Configurable settings are the IP-address, netmask, and gateway.

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).

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

⇒ Save the settings by clicking the button.

11.6.2. SNTP Settings

This menu item is available under **Network Settings**→**SNTP** and is used to enable the synchronization of the devices date and time with an external SNTP server (see Fig. 44).

Fig. 44: Network Settings - SNTP.

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.
Time zone	Time shift between the time of the NTP server and the local time in hours.
Synchronisation	Selection if the device clock should be synchronized via SNTP or not.

⇒ Save the settings by clicking the button.

11.6.3. SNMP: SNMP configuration

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 Fig. 45).

Fig. 45: Network Settings – SNMP.

Additionally access data (read community / write community) that is necessary for external SNMP requests to device can be configured here.

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.

⇒ Save the settings by clicking the  button.

LCD menu: Interface→**IP**



NOTE: In order for the SNMP manager tool to operate correctly, it requires the FlexSource 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.

SNMP traps used by the monitoring function:

Trap No.	Trap Name	Monitoring Function
1	tunerRfPowerEvent	Signals the status of the SAT tuner RF power
2	tunerCnEvent	Signals the status of the SAT tuner C/N value
3	tunerBerEvent	Signals the status of the SAT tuner Viterbi/LDPC value
4	tunerTsSyncEvent	Signals the SYNC status of the TS received via the SAT tune
5	asiTsSyncEvent	Signals the SYNC status of the TS received via the ASI input
6	ipTsSyncEvent	Signals the SYNC status of the TS received via the IP 1000Base-T interface
7	etr290ConformityEvent	Signals the ETR 290 conformity of the currently active TS
8	aoipUdpInputDataEvent	Signals the input data status for Audio over IP (UDP)
9	aoipIcecastInputDataEvent	Signals the input data status for Audio over IP (Icecast)
10	audioEvent	Signals the audio data status (presence/absence of audio data)
11	audioLevelEvent	Signals the status of the audio level (silence detection)
12	dteEvent	Signals the status of the DTE (ancillary) data

13	internalStorageEvent	Signals the status of the internal storage
14	caseTemperatureEvent	Signals the case temperature status
15	inputSourceEvent	Signals the current input source for the different outputs



NOTE: Each activated trap will be sent once at startup for initialization.

1) audioEvent 1 and 2

11.6.4. FTP

This menu item is available under **Network Settings**→**FTP** and is used to setup the IP addresses of two FTP external servers for downloading files to the internal storage of the device and uploading health reports about the status of the device as well as other files to the server (see Fig. 46).

FTP

1. External FTP Server

IP Address or URL:

Login name:

Login password:

Login password (repeat):

FTP Mode: active ▼

2. External FTP Server (for report copies)

IP Address or URL:

Login name:

Login password:

Login password (repeat):

FTP Mode: active ▼

FTP Client behavior

Health report upload interval: Never ▼

Synchronization interval: Never ▼

Fig. 46: Network Settings – FTP.

Enter the following data in the menu field in Fig. 46:

1. External FTP Server:	The device can get files from an external FTP server and save them in the internal storage and send health reports to the FTP server with information about the status of the device. Enter the access data to the 1. FTP server such as the IP Address or URL, login name and password. Choose an active or passive FTP mode in the drop list.
2. External FTP Server:	It can be used only for uploading copies of the health reports additional to 1. External FTP Server. Configure the access data for the 2. External FTP server in the same way as the 1. FTP server above.
FTP Client behavior:	Health report upload interval - Choose the period of time, how often the device should upload the health reports with the status to the external FTP servers. Synchronization interval - Choose the period of time, how often the device should access to the server.

⇒ Save the settings by clicking the  button.

11.7. System Settings

11.7.1. Global settings: device parameters and settings

This menu item is available under **System Settings→Global** and is used to execute basic device functions and retrieve basic device data:

11.7.1.1. System parameter – device identification

This block can be used to assign a device description (i.e. "S/N:00001584"), name (i.e. "FlexSource") and location (i.e. "Tower X198,Y612"). These device identification parameters are also included in the SNMP traps. If the SNMP management application does not support special characters, they should not be used in the device identification parameters.

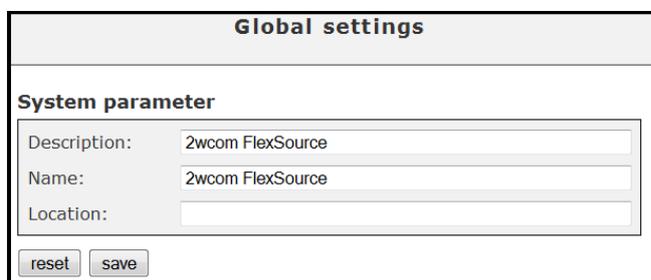


Fig. 47: Global settings – System parameter

⇒ Save the settings by clicking the  button.

11.7.1.2. System information

This block contains information about device uptime, serial number, device type, version numbers, device rights, firmware versions and device temperature.

System information	
Last reboot [dd.mm.yyyy hh:mm:ss]:	27.06.2012 15:23:02
Uptime [days, hh:mm:ss]:	0 days, 00:57:11
Serial number:	430.000184
Device type:	2wcom FlexSource
ARM firmware version:	02.36
DSP firmware version:	1.89
FPGA firmware version:	1.08
MIB version:	1.06
Customer:	Default
Rights:	Analog-1 Digital-1 Analog-2 Digital-2 Tuner ASI Audio over IP (out) RDS over IP AAC apt-X SFN Monitor RDS Data Gigabit IP Audio over IP (in) Display Audio fading Gigabit IP (in) Remote Control MPE
Device temperature:	41.5 °C

Fig. 48: System settings - System information

11.7.1.3. Upload Settings – restore device settings

This dialog can be used to upload a device settings file to the FlexSource. Settings can be downloaded from the device using the "Download settings" dialog on the same page. To upload a setting file, click "Browse..." locate and select the settings file and click . Note that upload times can vary and must not be interrupted. After a successful upload the user is prompted to reboot the device.

11.7.1.4. Firmware Update

This dialog can be used to update a devices firmware. To upload a firmware setting file, click "Browse..." locate and select the firmware file and click . Note that upload times can vary and must not be interrupted. After a successful upload the user is prompted to reboot the device. Accidental interruption (user or network) of the upload has no impact on the device's functioning. It can simply be restarted. Firmware uploads are protected by CRC.

11.7.1.5. Download Settings

This dialog can be used to download and backup the current device settings of the FlexSource (including all presets) to file in order to be able to upload them at a later date. Also this file can be used to configure others devices with the exact same settings, i.e. redundancy devices. Settings can be uploaded to the device using the "Upload settings" dialog on the same page. To download the current device settings to file, click and locate a folder to save it to.

11.7.1.6. Reboot and Factory Settings

These two dialogs can be used to manually reboot the device (click the button) and to reset the user configurable device parameters to factory settings (click the button). Note that in the latter case **all** user configurable data, with the exception of the device's control interface IP address data (web interface), is deleted! This also includes the user accounts, which will be reset to the default described in this manual.

11.7.2. Time: date and time setup

This menu item is available under **System Settings**→**Time** and is used to configure the time zone and the date of the device clock (see Fig. 49):

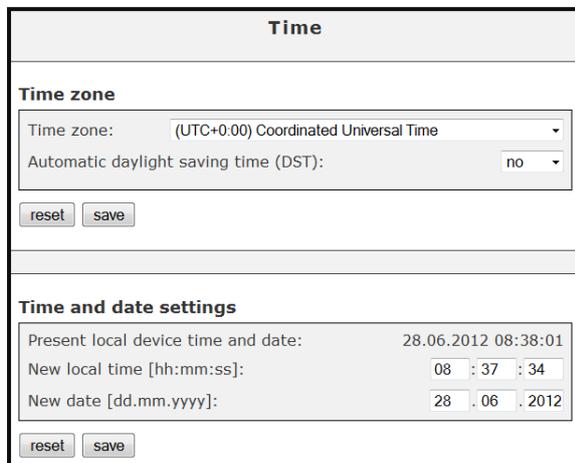


Fig. 49: System settings – Time

Time zone:

Time zone: Choose the present time zone of the device clock from the drop list.

Automatic daylight saving time (DST): You can activate a city-based time zone system separately for this device, which automatically detects daylight saving time

(summer time) periods and adjusts corresponding dates' outputs accordingly.

⇒ Save the settings by clicking the  button.

Time and date settings:

Present device time and date	The present time and date of the device clock.
New time [hh:mm:ss]	Input to manually set the device clock to a specific time (24h format).
New date [dd.mm.yyyy]	Input to manually set the device clock to a specific date.

⇒ Save the settings by clicking the  button.

11.7.3. User

This menu item is available under **System Settings→User** and is used to change user access control to the device. Note that without valid user access data, the device cannot be configured via web interface. The admin account has unlimited read/write control over the device, whereas the guest account is only able to read.

If you lost your login data please contact the manufacturer for further instructions how to regain access to the device.

⇒ Save the settings for each account by clicking the  button.

11.7.4. Preset station preset configuration, activation, and copying

This menu item is available under **System Settings→User** and is used to name, activate and copy the two presets. A preset is a complete device configuration set that can be used to switch in between different configurations (with 2 audio programs to be decoded each). Two 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.

Preset name:	Assign a name to the current preset.
Selected preset:	Select the desired station preset.
Save present preset in:	This can be used to copy the current preset select into another preset, overwriting it in the process.

⇒ Save the settings for each field individually by clicking the  button.



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.

LCD-menu: **Settings**→**Preset**

11.7.5. Alarm

This menu item is available under **System Settings**→**Alarm** and is used to configure a monitoring of RF parameter, PID parameter, as well as the RS-232 DTE interfaces. If monitoring triggers an alarm, the device can send SNMP traps, can switch one of the seven integrated relays and can activate the “Warning” LED on the web interface and the front panel of the device.

The monitoring functions have an alarm activation delay time (T1) and some also have an alarm reset delay time (T2) in seconds (see 11.2.5 “Switch Criteria”, page 51).

Every monitoring function has a checkbox “warning LED on” to select if the “Warning” LED on the web interface and the front panel of the device is activated on alarms or not.

Every monitoring function can be activated or deactivated with the “alarm enable” checkbox.

Every monitoring function provides a red status LED that indicates a detected alarm if the corresponding alarm monitoring is active.



NOTE: As several alarms can be assigned to the same relay, on problems with a relay activation, it should be checked if the relay is already activated by another alarm.

11.7.5.1. Alarm Settings: Tuner (TS)

This menu item is available under **System Settings**→**Alarm** (see Fig. 50).

Alarm settings

Tuner (TS)

● RF power Enabled
-40 dBm +/- 10 dBm T1 60 sec T2 30 sec
SNMP LED Relay ---

● C/N Enabled
< 10 dB T1 30 sec T2 10 sec
SNMP LED Relay ---

● Vit./LDPC BER Enabled
> 1.00E-4 T1 60 sec T2 30 sec
SNMP LED Relay ---

● TS Sync Enabled
T1 30 sec T2 30 sec
SNMP LED Relay ---

Fig. 50: Alarm settings – Tuner (TS)

Enter the following data in the menu field shown in Fig. 50:

RF power:	<p>Monitors the RF level at the RF-IN input for significant variations. It is possible to define a reference level and a tolerance range. Unit: dBm</p> <ul style="list-style-type: none">– Activate the monitoring parameter by ticking Enabled.– Enter the acceptable interval “good” for radio frequency (minimum/maximum). If the signal does not match to this interval, the system will regard it as “bad” and will trigger the alarm.– Define the delay time T1 (in seconds) when the system should trigger the alarm, if the RF signal is “bad”.– Define the time T2 (in seconds), how long a “good” RF signal should be available, before the system switches off the alarm.– Activate the warning signal by ticking LED or/and
-----------	--

SNMP and choose a responsible relay.

- C/N: Monitors the calculated signal carrier/noise ratio. Unit: dB
- Activate the criteria by ticking **Enabled**.
 - Enter the minimal “good” value for the Channel to Noise Ratio. The signal under this defined value will be regarded by the system as “bad”, so that after the delay time T1 it will trigger the alarm.
 - Define the time T2 (in seconds), how long a “good” C/N signal should be available, before the system switches off the alarm.
 - Activate the warning signal by ticking **LED** or/and **SNMP** and choose a responsible relay.
- Vit./LDPC BER: Monitors the detected bit error rate (BER) in front of the Viterbi decoder of the decoded signal.
- Activate the criteria by ticking **Enabled**.
 - Enter the maximal “good” value for the Bit Error Rate, e.g. $1,00 \cdot e^{-4}$. The received signal above this defined value will be regarded by the system as “bad”, so that after the delay time T1 it will trigger the alarm.
 - Define the time T2 (in seconds), how long a “good” BER signal should be available, before the system switches off the alarm.
 - Activate the warning signal by ticking **LED** or/and **SNMP** and choose a responsible relay.
- TS Sync: Monitors for a loss of the positive transport stream (TS) detection.
- Activate the criteria by ticking **Enabled**.
 - Define the delay time T1 (in seconds), when the system should trigger the alarm, if TS synchronization fails.
 - Define the time T2 (in seconds), how long TS synchronization should be available, before the system switches off the alarm.
 - Activate the warning signal by ticking **LED** or/and **SNMP** and choose a responsible relay.

⇒ Save the settings by clicking the button.

11.7.5.2. Alarm Settings: ASI Input (TS)

This menu item is available under **System Settings**→**Alarm** (see Fig. 51).



Fig. 51: Alarm settings - IP 1000Base-T (TS).

You can set up alarm for the following criteria:

TS Sync:	Monitors for a loss of the positive transport stream (TS) detection.
----------	--

Enter the following data in the menu field shown in Fig. 51:

1. Activate the monitoring parameter by ticking **Enabled**.
2. Define the delay time T1 (in seconds), when the system should trigger the alarm, if TS synchronization fails.
3. Define the time T2 (in seconds), how long TS synchronization should be available, before the system switches off the alarm.
4. Activate the warning signal by ticking **LED** or/and **SNMP** and choose a responsible relay.

⇒ Save the settings by clicking the button.

11.7.5.3. Alarm Settings: IP 1000Base-T (TS)

This menu item is available under **System Settings**→**Alarm** (see Fig. 52).



Fig. 52: Alarm settings: IP 1000Base-T (TS).

You can set up alarm for the following criteria:

TS Sync:	Monitors for a loss of the positive transport stream (TS) detection.
----------	--

Enter the following data in the menu field shown in Fig. 52:

1. Activate the monitoring parameter by ticking **Enabled**.
2. Define the delay time T1 (in seconds), when the system should trigger the alarm, if TS synchronization fails.
3. Define the time T2 (in seconds), how long TS synchronization should be available, before the system switches off the alarm.
4. Activate the warning signal by ticking **LED** or/and **SNMP** and choose a responsible relay.

⇒ Save the settings by clicking the button.

11.7.5.4. Alarm Settings: Demuxed Data

This menu item is available under **System Settings**→**Alarm** (see Fig. 53).

Demuxed Data	
● Audio 1	Enabled <input type="checkbox"/>
T1 10 sec T2 5 sec	
SNMP <input checked="" type="checkbox"/> LED <input type="checkbox"/> Relay ---	
● Audio 2	Enabled <input type="checkbox"/>
T1 10 sec T2 5 sec	
SNMP <input checked="" type="checkbox"/> LED <input type="checkbox"/> Relay ---	
● DTE 1	Enabled <input type="checkbox"/>
T1 1 min T2 1 min	
SNMP <input checked="" type="checkbox"/> LED <input type="checkbox"/> Relay ---	
● DTE 2	Enabled <input type="checkbox"/>
T1 1 min T2 1 min	
SNMP <input checked="" type="checkbox"/> LED <input type="checkbox"/> Relay ---	

Fig. 53: Alarm settings: Demuxed Data.

You can set up alarm for the following criteria:

Audio 1:	Monitors the signal for a loss of the positive audio stream 1 detection.
----------	--

Audio 2:	Monitors the signal for a loss of the positive audio stream 2 detection.
DTE 1:	Monitors the DTE 1 interface for data inactivity. If the monitoring is activated and active data is detected, the green LED "data" on the front panel of device is activated.
DTE 2:	Monitors the DTE 2 interface for data inactivity. If the monitoring is activated and active data is detected, the green LED to the right side of the "Data" LED on the front panel of device is activated.

Enter the following data in the menu field for each function shown in Fig. 53:

1. Activate the monitoring parameter by ticking **Enabled**.
2. Define the delay time T1 (in seconds), when the system should trigger the alarm, if data processing fails.
3. Define the time T2 (in seconds), how long data processing should be available, before the system switches off the alarm.
4. Activate the warning signal by ticking **LED** or/and **SNMP** and choose a responsible relay.

⇒ Save the settings by clicking the button.

11.7.5.5. Alarm Settings: Audio over IP (UDP)

This menu item is available under **System Settings**→**Alarm** (see Fig. 56).

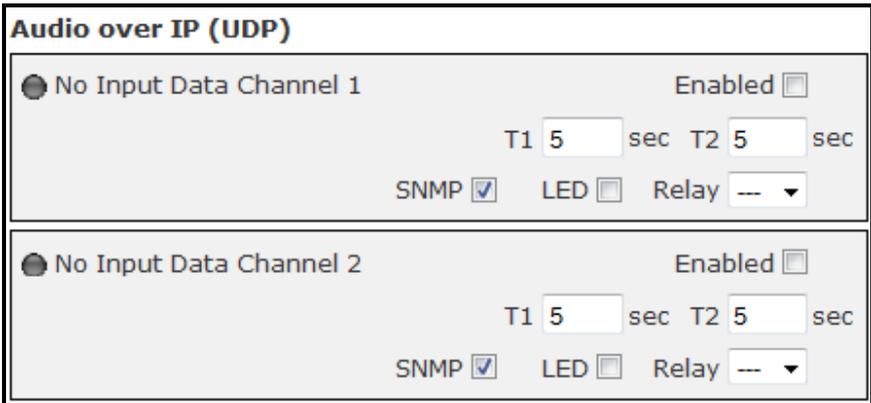


Fig. 54: Alarm settings: Audio over IP (UDP).

You can set up alarm for the following criteria:

No Input Data Channel 1	Monitors the 1000Base-T Ethernet interface for inactive audio data input for audio channel 1.
-------------------------	---

No Input Data Channel 2	Monitors the 1000Base-T Ethernet interface for inactive audio data input for audio channel 2.
-------------------------	---

Enter the following data in the menu field for each function shown in Fig. 56:

1. Activate the monitoring parameter by ticking **Enabled**.
2. Define the delay time T1 (in seconds), when the system should trigger the alarm, if data input is inactive.
3. Define the time T2 (in seconds), how long data input should be available again, before the system switches off the alarm.
4. Activate the warning signal by ticking **LED** or/and **SNMP** and choose a responsible relay.

⇒ Save the settings by clicking the button.

11.7.5.6. Audio over IP (Icecast)

This menu item is available under **System Settings**→**Alarm** (see Fig. 55).

Fig. 55: Alarm settings: Audio over IP (Icecast).

You can set up alarm for the following criteria:

No Input Data Channel 1	Monitors the 10/100Base-T interface for inactive audio data input for audio channel 1.
No Input Data Channel 2	Monitors the 10/100Base-T interface for inactive audio data input for audio channel 2.

Enter the following data in the menu field for each function shown in Fig. 56:

1. Activate the monitoring parameter by ticking **Enabled**.

2. Define the delay time T1 (in seconds), when the system should trigger the alarm, if data input is inactive.
3. Define the time T2 (in seconds), how long data input should be available again, before the system switches off the alarm.
4. Activate the warning signal by ticking **LED** or/and **SNMP** and choose a responsible relay.

⇒ Save the settings by clicking the button.

11.7.5.7. Audio silence detection

This menu item is available under **System Settings**→**Alarm** (see Fig. 56).

The screenshot shows the 'Audio silence detection' configuration interface. It is divided into two main sections, 'Audio 1' and 'Audio 2'. Each section contains the following controls:

- An 'Enabled' checkbox, which is currently checked.
- A threshold value field set to '-60 dBFS'.
- Two delay time fields, 'T1' and 'T2', both set to '30 sec'.
- Checkboxes for 'SNMP' (checked) and 'LED' (unchecked).
- A 'Relay' dropdown menu currently showing '---'.

Fig. 56: Alarm settings: Audio silence detection

You can set up alarm for the following criteria:

Audio 1	Monitors the decibel amplitude level of audio output 1 for silence and inactivity.
Audio 2	Monitors the decibel amplitude level of audio output 2 for silence and inactivity.

Enter the following data in the menu field for each function shown in Fig. 56:

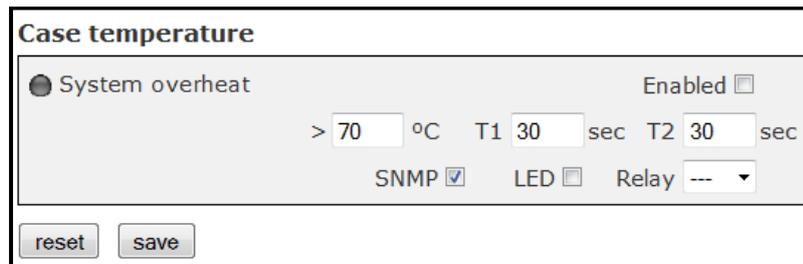
1. Activate the monitoring parameter by ticking **Enabled**.
2. Enter the minimal "good" value for the decibel amplitude level of the audio output. The signal under this defined value will be regarded by the system as "bad", so that after the delay time T1 it will trigger the alarm.
3. Define the time T2 (in seconds), how long a "good" audio signal should be "good" again, before the system switches off the alarm

4. Activate the warning signal by ticking **LED** or/and **SNMP** and choose a responsible relay.

⇒ Save the settings by clicking the button.

11.7.5.8. Case temperature

This menu item is available under **System Settings**→**Alarm** (see Fig. 57).



Case temperature

System overheat Enabled

> °C T1 sec T2 sec

SNMP LED Relay --- ▾

Fig. 57: Alarm settings: Case temperature.

You can set up alarm for the following criteria:

System overheat	Monitors the device temperature for overheating.
-----------------	--

Enter the following data in the menu field for each function shown in Fig. 57:

1. Activate the monitoring parameter by ticking **Enabled**.
2. Enter the minimal “good” value for the decibel amplitude level of the audio output. The signal under this defined value will be regarded by the system as “bad”, so that after the delay time T1 it will trigger the alarm.
3. Define the time T2 (in seconds), how long a “good” audio signal should be “good” again, before the system switches off the alarm.
4. Activate the warning signal by ticking **LED** or/and **SNMP** and choose a responsible relay.

⇒ Save the settings by clicking the button.

11.7.6. Remote Control

Prerequisite: Control via satellite carrier

Using remote control, it is possible to easily control and service a network of FlexSource devices from one single location. Remote control is primarily intended for servicing of remote locations, which often lack fast internet connections, via

satellite. But it can also be used to service the entire network via IP. Of course, a mixture of satellite and IP connections is also possible.

Devices can be addressed by device type, serial number, group name or group number, allowing the controller (the embedded 2wcom Controller EC01) to apply individual updates, i.e. change a devices preset, or target groups of devices, i.e. update the firmware of all tuned in FlexSource receivers.

Remote control can be used to do the following:

Firmware updates: New device firmware can be uploaded using remote control and is stored until the controller sends an activation command, enabling the controller to precisely time the update process in the network. All uploads are CRC protected and updates only take place if CRC check passes.

Change presets: Presets can be changed using remote control.

Switch relays: Relay states can be changed using remote control.

Device configurations: A new device configuration file can be uploaded using remote control and is stored until the controller sends an activation command, enabling the controller to precisely time the update process in the network. All uploads are CRC protected and updates only take place if CRC check passes.

Upload files: Different Files can be uploaded using remote control, for example audio files, playlists and audio scheduling files.

Switch programs: You can switch presets, play back audio files from the SD card, switch audio PID and switch the redundant audio source via remote control.

The remote control data can be transported via a special data channel with an own PID (in-band, when no IP connection is available).

If an IP connection to the device is available, it can also be transported via an UDP IP stream (out of band).

In order to use remote control, the remote control data web page needs to be configured (see [Edit PIDs](#) on page 36).

This menu item is available under **System Settings**→**Remote Control** and is used to configure the access control to the device via remote control (see Fig. 58).

Remote control settings

Group assignment

	Group name (max. 8 char)	Assigned to		
1. Group	<input type="text" value="NDR"/>	Device	-	+
2. Group	<input type="text" value="RadioNW"/>	Audio Output 1	-	+
3. Group	<input type="text" value="East"/>	Audio Output 1	-	+
4. Group	<input type="text" value="Group1"/>	Audio Output 2	-	+

In-Band Control Data PIDs

PID1 [0 - 8191]:	<input type="text" value="1254"/>
PID2 [0 - 8191]:	<input type="text" value="2897"/>

Fig. 58: System settings: Remote control settings.

You can set up alarm for the following criteria:

Group assignment	You can assign the device or individual channel to up to twelve groups of devices.
In-Band Control Data PIDs	In this field it is necessary to set the number of the PID containing the remote control data.

Enter the following data in the menu field shown in Fig. 58:

1. Enter the name of the device group which the device should be assigned to. Use max. 8 characters. Don't use such special characters as (/), (.), (§) etc.
2. Choose the device or an individual audio output in the drop list which should be assigned to the group for remote controlling.
3. Click the "+"-Button to add a new group.



NOTE: You can assign the same device or audio output to several groups.

4. Enter the numbers of max. two PIDs containing the remote control data.

⇒ Save the settings by clicking the button.

11.7.7. Crossfading

Prerequisite: Crossfading option

This menu item is available under **System Settings**→**Crossfading** and is used to configure the duration of a gradual increase or decrease in the level of an audio signal (**fading**) for both audio outputs (see Fig. 59). You can use this option, when the receiver switches from the main source to the internal storage for playing back the audio files. The function "Crossfading" enables parallel reduction (**fade-out**) of the previous audio signal and increase of the next audio signal from silence (**fade-in**) to the normal level, so that the crossing of two signals sounds equally.

The screenshot shows a window titled "Crossfading" with two sections: "Audio Output 1" and "Audio Output 2". Each section contains the following settings:

- Fade in mode: linear (dropdown)
- Fade out mode: linear (dropdown)
- Fade in time (0 - 5000 ms): 10 00 ms (spinner)
- Fade out time (0 - 5000 ms): 10 00 ms (spinner)
- Active level during cross-fade: 0 dB (spinner)
- Inactive level during cross-fade: -110 dB (spinner)

At the bottom of the window are "reset" and "save" buttons.

Fig. 59: System settings: Crossfading.

The following functions are available in the setting menu Fig. 59 for each audio output:

Fade in mode:	Temporally only linear mode of fade-in is available, it means that the level of the audio signal is decreasing steadily during the configured time.
Fade out mode:	Temporally only linear mode of fade-out is available, it means that the level of the audio signal is increasing steadily during the configured time.
Fade in time:	Duration of the fade-in.
Fade out time:	Duration of the fade-out.

Active level during cross-fade	This function indicates the loudness of the active audio signal during crossfading. Temporally only one default level is available: 0dB (normal loudness).
Inactive level during cross-fade:	This function indicates the level of the inactive signal during crossfading. Temporally only one default level is available: -110dB (silent).

Enter the following data in the menu field shown in Fig. 59 for both audio outputs:

1. Enter the fade-in time in Milliseconds, i.e. the duration of the signal decreasing.
2. Enter the fade-out time in Milliseconds, i.e. the duration of the signal increasing.

⇒ Save the settings by clicking the button.

11.8. Status

11.8.1. SAT Tuner – Tuner Status

This menu item is available under **Status**→**SAT Tuner** and is used to display the status of the tuner. The parameter of the received RF signal and the contained station signals including a signal quality statement (bit error rate) are shown in this menu (see Fig. 60).

SAT Tuner	
C/N:	0dB
CFO Error:	0.0 MHz
Input:	-99 dBm
AGC:	BAD
CE:	BAD
Sym. Time:	BAD
Carr:	BAD
FEC:	BAD
System:	BAD
Puncture Rate:	--
Viterbi/LDPC BER:	--
RS/BCH BER:	--

Fig. 60: Status – SAT Tuner

The following parameters are displayed in this status menu in Fig. 60

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:	Carrier Frequency Offset – shows the frequency offset in respect to the current tuner frequency. Unit: MHz
Input:	Level of the RF signal at the "RF-In" input. Unit: dBm
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).
Viterbi (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.

LCD-menu: State→Tuner→Signal

LCD-menu: State→Tuner→LockState

LCD-menu: State>Tuner→Viterbi+RS

11.8.2. TS: display transport stream status

This menu item is available under **Status→TS** and is used to display details of the satellite transport stream.

The following parameters are displayed in the status menu:

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").

Data Rates: This field shows the current rates of the transport stream over for different TS inputs: Tuner, ASI and IP 1000Base-T.

LCD Menu: **Status**→**Tuner**→**TS**

11.8.3. IP 1000Base-T

This menu item is available under **Status**→**IP 1000Base-T** and is used to display parameter details about the uplink data over of the Ethernet and the current Ethernet speed.

11.8.4. Audio: display MPEG status

This menu item is available under **Status**→**MPEG** and is used to display parameter details of the received MPEG / AAC data.

The following parameters are displayed in the status menu for both audio channels:

Version:	MPEG version of the received signal.
Layer:	MPEG layer of the received signal or term "AAC".
Bit rate:	Bit rate of the received signal. Unit: bit/s
Sample rate:	Sample rate of the received MPEG signal. Unit: kHz

LCD Menu: **Status**→**Tuner**→**MPEG**

11.8.5. RDS Data

Prerequisite: [RDS decoder via web interface](#)

This menu item is available under **Status**→**RDS Data** and is used to display details of UECP-encapsulated RDS data that is transmitted via DTE1 and DTE2. In case the transmitted data is not RDS data, the display fields stay empty.

11.8.6. FTP: External FTP server status

This menu item is available under **Status**→**FTP** and is used to display the current connection with the first and the second external FTP server and the time of the last synchronization as well as the time of the last health report upload for each server (see Fig. 61).

FTP	
1. External FTP Server	
Current connection status:	Disconnected
Last successful health report upload:	--
Last successful synchronization:	09. Jul 2012 - 11:06:30

Fig. 61: Status: External FTP Server status.

To set up the connection with external FTP servers see Section 11.6.4.

11.8.7. Scheduler

This menu item is available under **Status**→**Scheduler** and is used to display the schedule of the audio files which should be played back from the internal storage of the device (see Fig. 62).

Scheduler				
09. July 2012 - 11:08:06				
09. July 2012				
State	Start	End	Group	Filename
Waiting	11:00:00	11:15:00	2WCOMA	Party Rock Anthem.mp3
Waiting	11:30:00	11:45:00	2WCOMA	Fields of Gold.mp3
10. July 2012				
State	Start	End	Group	Filename
Waiting	11:44:00	---	2WCOMA	Englishman in New York.mp3

Fig. 62: Status – Scheduler.

You can define the schedule commandos (destination, filename, start time, duration and event) for playing back audio files from the internal storage via a special FlexSource scheduling file. The file can consist of multiple lines. Each line refers to one audio file (see Fig. 63). Each commando is separated by the | - Symbol.

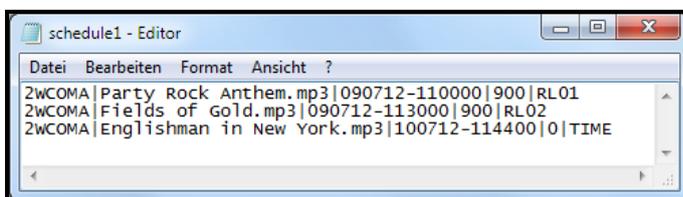


Fig. 63: Example of a scheduling file.

The following instructions will help you:

- [to create a scheduling file](#)

- [to upload the scheduling file to the internal storage](#)

To create a scheduling file:

1. Create a new text file, e.g. with Microsoft Editor.
2. Save the file with an extension .SHD
3. Write one of the following commando types for destination on the device:
 - APIDXXXX: will be played on output that is currently using PID XXXX
 - OUTPUT_X: will be played on output X
 - Groupname: will be played on assigned output by a group name
4. Write one of the following commando types for the file name which should be played back (suffix of filename indicates type of file):
 - mp2,mp3,mp4: audio files
 - plst: playlist file
5. Write the start time in the following format: DDMMYY-HHMMSS
6. Write the duration of valid time in seconds:
 - Files are only started when trigger is received within valid time frame.
 - Ignored for TIME event
7. Define the activation event:
 - RLXX: will be triggered by relay cue
 - TIME: will be automatically started at start time
 - PLAY: will be triggered by SIRC play command

You can upload a scheduling file to the internal storage of the device via the following three ways:

1. From an FTP server
2. Via synchronization of the internal audio folder with an external audio folder on the FTP server.
3. Via SIRC, i.e. remote control.

When an audio file from the schedule is being played back, the corresponding entry in the menu is marked green (Fig. 64).

Scheduler				
10. July 2012 - 11:44:42				
10. July 2012				
State	Start	End	Group	Filename
Playing	11:44:00	---	2WCOMA	Englishman in New York.mp3

Fig. 64: Status - Scheduler - active audio file.

11.8.8. Error Log

This menu item is available under **Status**→**Error 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. You can print it out by clicking the -Button, save as a text file or delete it by clicking the -Button.

12. Interfaces

12.1. RF Inputs

RF - In F-type jack; Input for the connection of the receiving LNB of the satellite antenna. The LNB supply voltage can be set to 13 V, 18 V, or 0 V (off) to set the LNB polarization*. $Z=75 \Omega$.

Admissible RF signal input range -82...-10 dBm

* Depending on the hardware version, the LNB supply voltage may only be present if an LNB is connected.

RF - Bypass No function.

12.2. Audio Outputs

Analog - L 1 /
Analog - R 1 XLR male sockets; Outputs for the analog audio signal 1 with adjustable analog audio level, separately for the left (L) and the right (R) channel. ($Z<20 \Omega$ balanced)

AES/EBU 1 XLR male socket; Output for the digital audio signal 1 with adjustable digital audio level. ($Z=110 \Omega$ balanced)

The sample rate of the signal depends on the received signal. The device supports 8...96 kHz.

X.21 - 1 15 pole male D-Sub interface for the output of an MPEG data stream in X.21 protocol format.

Analog - L 2 /
Analog - R 2 XLR male sockets; Outputs for the analog audio signal 2 with adjustable analog audio level, separately for the left (L) and the right (R) channel. ($Z<20 \Omega$ balanced)

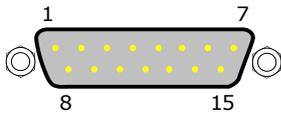
AES/EBU 2 XLR male socket; Output for the digital audio signal 2 with adjustable digital audio level. ($Z=110 \Omega$ balanced)

The sample rate of the signal depends on the received signal. The device supports 8...96 kHz.

X.21 - 2 15 pole male D-Sub interface; No function

Headphone jack 6.3 mm / 1/4" jack for the output of the audio signal 1 or 2 with adjustable signal level to connected headphones. (L/R, $Z<10 \Omega$ unbalanced)

Pin configuration of the X.21 connector



X-21-1 / X-21-2

<i>Pin</i>	<i>Function</i>	<i>Pin</i>	<i>Function</i>
4	Receive +	3	Indication +
11	Receive -	10	Indication -
5	Control +	6	Signal Timing +
12	Control -	13	Signal Timing -
2	Transmit +	8	GND
9	Transmit -		

12.3. ASI Connectors

ASI In BNC connector for the input of a DVB-ASI data stream (270 MHz) to be decoded by the device. Cable impedance: 75 Ω

ASI Out BNC connector for the output of the DVB-ASI data stream from the ASI Input as a DVB-ASI data stream (270 MHz) after decoding, processing and encoding. Cable impedance: 75 Ω

It is also possible to output the DVB-S/DVB-S2 data from the tuner in the DVB-ASI format.

12.4. Ethernet Sockets

10/100/1000-Base-T RJ-45 socket for the connection to an IP network. The IP connection is used to output a MPEG2 transport stream, that was previously captured with the DVB-ASI input or DVB-S/S2 tuner card.

10/100-Base-T RJ-45 socket for the connection to an IP network. The IP connection can be used for SNMP and to operate the device via the integrated web interface.

As an option a function for the output of "Private Data", "MPEG ancillary data (IRT)" or MPEG audio is available.

The default IP address / network mask of the 10/100-Base-T interface is "192.168.14.250" / "255.255.255.0". If these setting were changed but not documented and so you cannot access the web interface of the device, you can do the following:

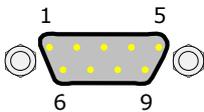
Devices with LCD/jog dial: Configure the IP settings at the device with the LCD/jog dial (**LCD: Interface→IP**).

Devices without LCD/jog dial: Connect the "DTE Front" interface of the device with an RS-232 cross-over/ null modem cable to an RS-232 interface of a computer. Open a terminal software (e.g. Microsoft HyperTerminal), make a connect with the "DTE Front" baud rate as configured in the device (default: 9600 baud) and the parameter 8N1, and use the following commands to setup the IP parameter: "set ipaddress=", "set gateway=", "set netmask=" (each without spaces and supplemented with the IP address to be set). Then enter and hit ENTER for the changes to take effect.

Example: "set ipaddress=192.168.14.250","set netmask=255.255.255.0", then .

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

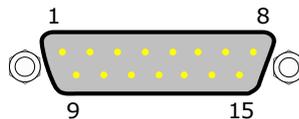
Pin	Function
1	DCD
2	RXD
3	TXD
4	DTR
5	GND

Pin	Function
6	DSR
7	RTS
8	CTS
9	not connected

12.5. Relay Output

The DSR0x 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 relay outputs ($\geq V1.22$ for DSR01, $\geq V1.11$ for DSR02). 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.

D-Sub male connector, 15 pole



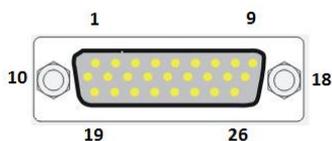
Relay Output (former versions)

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

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

NOTICE

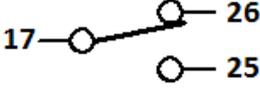
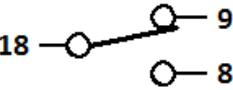
The relay contacts have a rating of 0.5 A at 125 V AC / 60 V DC. The maximum current is 1 A!



Relay Output

D-Sub male connector, high density, 26 pole

Relay No.	option*	Switch contacts	Switch type
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
7	11		SPDT
	12		SPDT

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

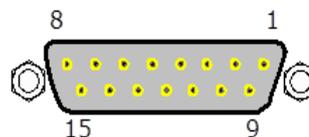
^{option*} Relay numbers 7, 8, 9, 10, 11 and 12 are available only when the additional relay outputs hardware option was purchased.

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

12.6. Optical Input

There are two possible hardware functions for the unit "Optical Input / Relay 2" (see page 21). 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. If an additional relay is installed, the option "optical input" is deactivated.

D-Sub female connector, 15 pole



Optical Input / Relay 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

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

13. Maintenance & Servicing

13.1. Maintenance

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

13.2. Servicing

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

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

13.3. Calibration

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

14. 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	<ul style="list-style-type: none"> • Power cable is improperly connected • Mains supply failure • Blown fuse 	<ul style="list-style-type: none"> • Check supply cord • Make sure that the power plug at the device is fully inserted • Check mains supply • Replace fuse by same type
No satellite reception	<ul style="list-style-type: none"> • Antenna cable improperly connected • Alignment of satellite antenna not correct • The LNB outputs an L-band signal with a high frequency offset. 	<ul style="list-style-type: none"> • Connect antenna cable with F-type plug to the RF-In jack of the device. • Precisely align the satellite antenna to satellite azimuth and elevation setting with the lobe area free of obstacles. • Try to alter the tuner frequency ± 250 kHz, use a high quality LNB.
Faulty reception	<ul style="list-style-type: none"> • L-Band signal interference 	<ul style="list-style-type: none"> • Use only high quality, double-shielded antenna cable to avoid coupling of other signals (e.g. DECT cordless phones, GSM1800/1900 mobile phones etc.).
Device cannot be operated via Ethernet	<ul style="list-style-type: none"> • Network cable not connected • IP address / TCP port is not known. 	<ul style="list-style-type: none"> • Connect the network cable. • Use the default address 192.168.14.250. If the address was changed and is not known please see page

	<ul style="list-style-type: none">• 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.	100. <ul style="list-style-type: none">• 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.
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15. Technical Data



Rear view FlexSource Distribution Receiver Decoder

FlexSource Distribution Receiver Decoder - Technical Details

Inputs

RF (satellite)

Frequency 950 ... 2.150 MHz
Input Level -75 ... -20 dBm

ASI

Data MPEG2 TS
Connector BNC 270 Mbps

Gigabit IP

Data MPEG TS or RTP, UDP, Audio

IP

Data Shoutcast Streaming Audio
Type Auto Switching 10/100 BASE-T

Internal Storage

Data internal Audio Files
Size 256 MB, 1 GB, 2 GB
Type Professional FlashCard

Outputs

X.21

Data MPEG Audio
Connector 15 poie sub-D male
(X.21 outputs can be changed for RS232 interfaces alternatively)

ASI

Data MPEG2 TS
Connector BNC 270 Mbps

Gigabit IP

Data MPEG TS or MPE
Connector RJ 45
Type Auto switching 10/100/1000 BASE-T

Audio

Digital reference -9 dBFS (adjustable)
Volume -32...+6 dB
Filtering Switchable 15 kHz Low-Pass
Digital AES/EBU, 110 Ω bal., XLR
1 x Stereo (optional 2 x Stereo)
L/R, < 20 Ω bal., XLR
1 x Stereo (optional 2 x Stereo)
L/R, < 10 Ω, 6.3 mm

Control & Monitor

Ethernet

Data Controlling and Setup functions
optional: Forwarding of MPEG TS content:
Private data, MPEG ancillary data (IRT), MPEG audio
Connector RJ 45
Type Auto Switching
Protocol 10/100 BASE-T
HTTP, SNMPv2c, SMTP, UDP

Contact closure

Inputs 7 opto isolated inputs
Outputs 15 pole sub-D female
7 floating relays contacts (for DC: max. 24 V, 1 A, 10W),
26 pole sub-D male
Serial 3 x RS-232C (1 front, 2 rear)
Data Forwarding of MPEG TS content:
Private data or MPEG ancillary data (IRT)
Connector 9 pole sub-D male
Transmission rate 1200 to 115200 baud,
asynchronous

Front panel

LCD Display
Jog Wheel
7 LEDs
2x 40 characters
Impulse, ENTER button
Power, Input, Audio, Data,
Warning, Status, Remotec

Satellite Modulation

Tuner option 1: DVB-S/S2

DVB-S

Modulation/Symbol rate QPSK (0.256 ... 45 MSym/s)
Roll-off 0.20, 0.35
FEC Viterbi, Reed Solomon
1/2, 2/3, 3/4, 5/6, 6/7, 7/8

DVB-S2

Modulation/Symbol rate QPSK (0.256 ... 35 MSym/s)
FEC LDPC, BCH
1/2, 3/5, 2/3, 3/4, 4/5,
5/6, 8/9, 9/10
8PSK (0.1 ... 31 MSym/s)
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: DVB-S/S2

(High performance & Advanced DVB-S2 processing functions)

DVB-S

Modulation/Symbol rate QPSK (0.05...45 MSym/s)
Roll-off 0.20, 0.35
FEC Viterbi, Reed Solomon
1/2, 2/3, 3/4, 5/6, 6/7, 7/8

DVB-S2

Modulation/Symbol rate QPSK (0.05 ... 45 MSym/s)
8PSK (0.05 ... 45 MSym/s)
16PSK (0.05 ... 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 A/B switch

Advanced processing functions (optional):

Modulation/Symbol rate 32 APSK (0.05 ... 38 MSym/s)
Modulation Type VCM, ACM
Transport stream processing Single and Multiple Transport stream / Single and Multiple Generic stream

MPEG decoding

No. of decoders Up to 2
adjustable Delay 10...1000 ms
Codescs MPEG 1&2 Layer 1, 2, 3
optional: MPEG 2/4 AAC LC
MPEG 4 AAC HE v1 & v2
apt-X
linear PCM
ask for other codescs

General data

Power consumption 20 VA
Case dimensions 19", 1 HU, depth: 310 mm,
width: 424 mm,
front panel: 484 mm
Weight 5.5 kg
Housing steel plate
Rated temp. range +5 ... +45°C
Operating temp. range 0 ... +50°C
Storage temp. range -40 ... -70°C
Power supply Internal, 100 ... 230 V (±10%),
50 ... 60 Hz
Languages English

Version 16.05.2012
These data are subject to modification
and amendments. Errors excepted.

