X-4sd
User Manual

Professional switch and splitter for digital audio

X-4sd User Manual V1

October 2021

Your audio. Our solution.

Contents

1 About this manual

This user manual is available in PDF format to download and on request by paper.

You can download the latest version of this user manual here:

https://download.2wcom.com/products/X-4s_IZJG/

1.1 References and hyperlinks in this PDF file

If you are reading this manual as a non-print version, please note that this PDF file contains bookmarks. You can navigate through the document via the content overview in your PDF viewing software if you enable bookmarks view.

All references to pages, sections, figures, and tables in the text identify a location within this PDF file. Click on the reference to jump to the referred passage in the text.

1.2 Tags and their meanings

The following signal words and signs warn you about risks and dangers:

DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	Describes precautions necessary to protect the equipment.
	Contains useful information for the user.

Warning of general danger situation

Warning of electric shock

Warning of hot surface

Warning of fire hazard

2 For your safety

The device conforms to the relevant European directives and is safely constructed. Nevertheless, some residual dangers remain. 2wcom Systems GmbH accepts no liability for any damage caused by non-observance of the safety instructions.

- Read through this user manual carefully before using the device. If you pass on the device, be sure to also include this user manual.
- Any improper use of the device and all actions on the device not described in this user manual are considered as misuse outside the statutory limits for liability of the manufacturer.
- Only operate the device if it is in a technically perfect condition. If the device or a part of it is defective, take the device out of operation. Do not repair the device yourself. In case of any damages, send the device to 2wcom immediately for inspection or dispose of it properly according to the regional disposal regulations.
- Keep the device away from unauthorized persons.

Danger from electric current!

- Plug the device into a grounded power socket only. Never remove the grounding wire/contact.
- Do not open the housing of the device by yourself. Do not 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 when your hands are wet.
- Never expose the device to liquids. If any liquid gets inside the housing, immediately disconnect the device completely from the power supply. Do not continue operating the device.

Fire hazard due to overheating or electric current!

- Ensure sufficient heat dissipation during operation. Avoid the following when installing the device:
  - Non-ventilated environment, e.g. a narrow shelf or built-in cabinet
  - Extremely warm or cold place
  - Direct exposure to sunlight
  - Too high or too low temperatures
  - Extremely wet or dusty environment
- Do not cover the ventilation openings of the device to avoid heat accumulation.
- Do not operate the device in the presence of flammable gases.
- Do not place objects with open flames, such as burning candles, on the device.
- Do not place any heavy objects on the supply cord. A damaged cord can lead to fire or electric shock hazards.
- When disconnecting the supply cord, always pull on the plug, never on the cable, to avoid cord damage.

Danger from explosive atmosphere!

- Do not use the device in an explosive environment.

Warning of hot surface!

The device may heat up greatly during normal operation despite an active cooling system.

- Do not touch the surfaces of the device during or shortly after operation.

Risk of equipment damage!

- Before each use, check the housing, the front panel, the cable and the power plug for visible damage and defects (e.g. scratches, cracks, wear and tear, damaged insulation, improper plug connections or extension cables).
- If the power cord is damaged, immediately disconnect the power plug. Never use the device with a damaged power cord.
- All damaged components must be replaced immediately.
- Only use a grounded three-wire power supply cord and plug that complies with the national regulations.
- Make sure that the power socket is next to the device and readily accessible to the user.
- 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.
- Do not use corrosive detergents on the device such as benzene, thinner, alcohol or acetone. Clean the surface of the device with a soft, dry cloth only.

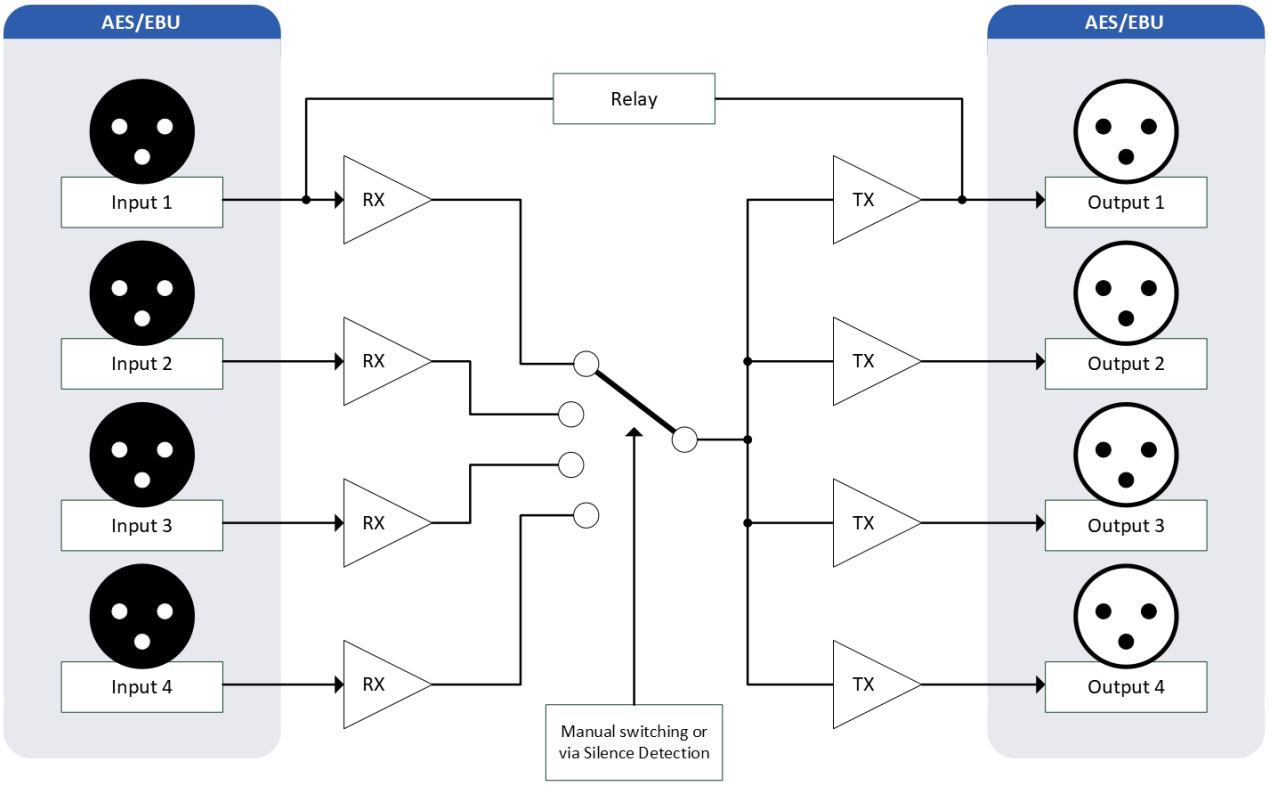
3 Product overview

3.1 About the X-4sd

The X-4sd is a professional switch and splitter for digital audio. The device can switch between its inputs according to individually defined switch criteria, split the signal and forward it to several outputs. This makes the X-4sd your perfect companion for redundant audio streaming.

To suit your needs, the X-4sd can be used as a splitter to feed up to 4 outputs and as a switch for up to 2 independent audio switches.

The X-4sd is fully remotely operable via a IP (SNMP/WebGUI) and GPIO.



3.2 Rights options

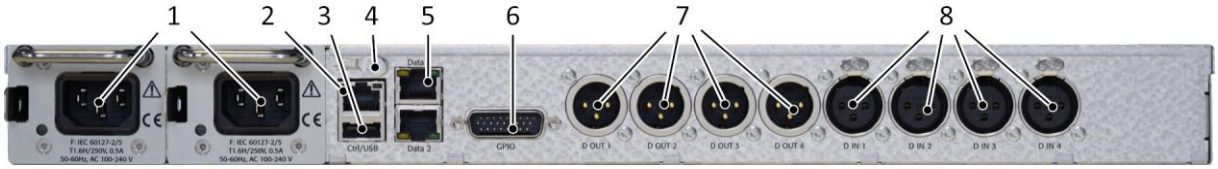
The following table displays an overview of the rights options that are available for your X-4sd:

Right	Description
n Channels	Number of channels
Automatic Switch	Option to use device as automatic audio switch
MPX	Option to output audio with a sampling rate of up to 192 kHz to output MPX. Without this right, the maximum sampling rate is 48 kHz.

3.3 Front panel

1	Headphone	6.3 mm / 1/4” socket for the connection of headphones
2	LCD Screen	Illuminated LCD screen, graphical, 264x64 pixels
3	[Warning] LED	LED indicator; will be red if alarm is triggered
4	[Input] LED	LED indicator; will correspond to the sum of the alarm status for the inputs: - off if no input alarms are enabled - green if input alarms are enabled and all inputs are OK - yellow if one or more inputs are bad but at least one is good - red if all inputs are bad
5	[Output] LED	LED indicator; will correspond to the sum of the alarm status for the outputs. - off if no output alarms are enabled - green if output alarms output alarms are enabled and all outputs are OK - yellow if one or more outputs are bad, but at least one is good - red if all outputs are bad
6	[Power] LED	LED indicator: - green if all power supply cords are connected and the power supply is OK. - flashes (green/red) if only one power supply cord is connected and the power supply is OK (only when there is more than one power supply)
7	Reset pin hole	Recessed button for resetting the device (warm start and recovery mode)
8	Jog wheel	Jog wheel for the device operation via the LCD screen on the device

3.4 Back panel



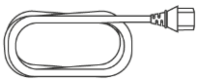
1	Power supply unit	Mains supply voltage IEC socket. Optional redundant power supply through a second power supply unit: - Option 1: standardized IEC hot-swappable power supply connector; 90-260 V, 47-63 Hz; automatic switchover. - Option 2: power supply 48 V DC. Combination of power supply 230VAC and 48VDC is possible.
2	[Ctrl]	RJ-45 connector, 10/100/1000 Base-T interface for controlling and monitoring the device via Ethernet. The device can communicate with the IP network and can be configured via the integrated web interface using an internet browser. The LEDs show the link status (green, active if a physical network connection exists) and the activity status (yellow, active if data communication is active).
3	[USB]	USB 2.0 interface for service, configuration and firmware.
4	Grounding stud	This stud can be used to connect a grounding system if necessary.
5	[Data]	2x RJ-45 connector; 10/100/1000 Base-T interface for two redundant outputs for data, audio and GPIO transmission via Ethernet.
6	[GPIO]	26-pole D-Sub male connector; combined connector for inputs (GPI) and outputs (GPO)
7	[D OUT]	male AES/EBU, 110 Ω bal., integrated XLR
8	[D IN]	female AES/EBU, 110 Ω bal., integrated XLR

4 First steps

4.1 Checking the delivery contents

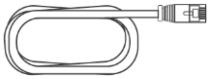
Use the following list to check the completeness of delivery. The delivery contents may vary in exceptional cases.

X-4sd



Power cord

Link to product data



Network patch cable

4.2 Installing the device

For the device to operate securely, note the following regarding the location:

- Mount the device securely and stable in a 19-inch rack designed for this purpose.
- Avoid direct sunlight, direct proximity to radiators and air conditioners, dust, water and chemicals
- When setting up the device, make sure that it is placed at a suitable viewing angle to the displays and that the device has sufficient heat dissipation.

4.3 Connecting the device

Before connecting the device to the power supply, first connect the inputs and outputs of the device to the corresponding connectors:

1. Connect the signal inputs to [D IN].
2. Connect the signal outputs to [D OUT].
3. Connect a network patch cable to [Ctrl] and to your existing network.
4. Connect network patch cables to [Data] and to your existing network.
5. Optionally, connect the interfaces [DTE] and [GPIO].

✓ You have connected the device. Continue with 4.4 Connecting the power supply.

4.4 Connecting the power supply

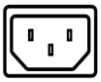
NOTICE

Risk of equipment damage!

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

Optionally, the device comes with two exchangeable plug-in power supply units which can be equipped with different redundant power supply connectors.

IEC socket



IEC socket: 230 V AC, 90-260 V AC, 47-63 Hz

- Connect the power supply cord fully to the IEC socket at the back panel of the device and to an independent mains power outlet.

✓ You have connected the power supply to the device. The [Power] LED is green if both power supply cords are connected. The [Power] LED flashes green/red if only one power supply cord is connected.

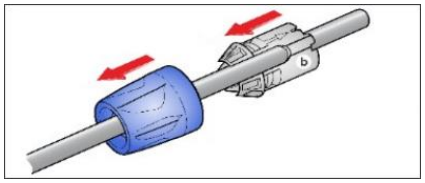
Neutrik powerCON socket

48 V DC Neutrik powerCON socket with aut. switchover (NAC3MPA 1) and Neutrik powerCON connector (NAC3FCA)

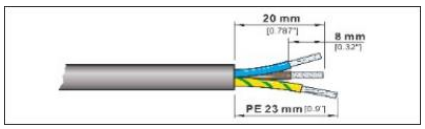
NOTE: The corresponding power cords are not part of the delivery contents!

The PowerCON device connector system is used to transmit supply voltages of 48 V DC to a device or between individual devices.

1. Slide the clamping sleeve and collet onto the cable.

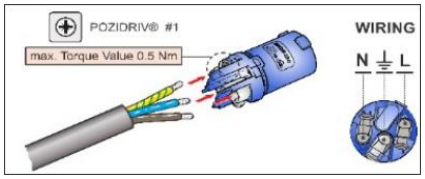


2. Remove part of the insulation.

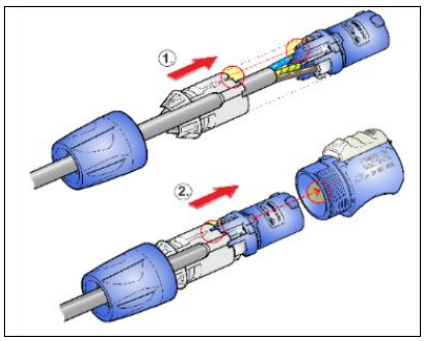


3. Insert the wires into the clamping holes on the inset and fasten them with screw and clamping plate using a screwdriver.

NOTE: If you use the voltage of 48+ V and 0 V, fasten the +48 V wire to **L** in the connector.
If you use the voltage 0 V and 48 V, fasten the 0 V wire to **L** in the connector.



4. Push the inset and collet into the housing (observe guide ribs and guide slot).



5. Tighten the clamping sleeve with a wrench.
6. Connect the power supply cord fully to the powerCON socket at the back panel of the device and to an independent mains power outlet.

✓ You have connected the power supply to the device. The [Power] LED is green if both power supply cords are connected. The [Power] LED flashes green/red if only one power supply cord is connected.

4.5 Configuring the network

NOTICE

False connection of the Ethernet interfaces will lead to incorrect operation!

- Use the [Data] interfaces only for data transfer.
- Use the [Ctrl] interface only for the access to the device via the web interface and for SNMP.

To transfer data over IP and access the device via the web interface, you must connect the device to your IP network.

For the [Ctrl] interface, DHCP is enabled by default. When you connect the device to your DHCP-enabled network, it will automatically get the IP configuration for the [Ctrl] interface. To view the obtained IP address, turn the jog wheel to the left to see the “System Info” display. Here you will find the obtained IP address and further system information.

To connect the device to your IP network and change the IP setup via the LCD menu:

1. Push the jog wheel to enter the configuration menu.
2. Turn the jog wheel to focus the **Network** tab and push the jog wheel.
3. Push the jog wheel to enter the menu for the [Ctrl] interface.
4. Configure the settings for your existing IP network (IP address, netmask, gateway etc.). Consult the responsible network administrator if applicable.
5. Turn the jog wheel until the **Save** menu item is selected and push the jog wheel.
6. In the dialog window, select **Yes** to save the settings and restart the device.

✓ The device is now connected to the IP network.

4.6 Accessing the web interface

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

Requirement: You have already connected the [Ctrl] interface to the network.

1. Access the web interface by entering the IP address of the device into a web browser.
   ➢ A login screen appears.
2. Enter the username and password.

✓ The main page of the web interface appears.

The default login data (case sensitive) are:

- For read-only access: **user** / **user**
- For full access: **manager** / **manager** or **admin** / **admin**

Change the login data as soon as possible to avoid unauthorized access to the X-4sd and document the login data in a safe place.

4.7 General operation

4.7.1 Operation via web interface

The X-4sd has an integrated web interface. You can make all configurations and operations using a web browser.

Note the following rules when operating the device via web interface:

- If you want to keep any changes made in the configuration of the device, click the corresponding **Save** button.
  The changes in each block must be saved individually. If you changed data in several blocks or tabs, click the **Save** button under each block to save all changed data. Otherwise, any unsaved block will be reset to the previously saved status when leaving the page.
- If you do not want to keep the changes, leave the page without saving or reload the page.
- Use a decimal point as the decimal separator in numbers in the input fields (i.e. “6.5” for “six and a half”).

4.7.2 Operation via LCD menu

Some basic functions of the device can be operated via the LCD menu and jog wheel.

The display has 2 main menus:

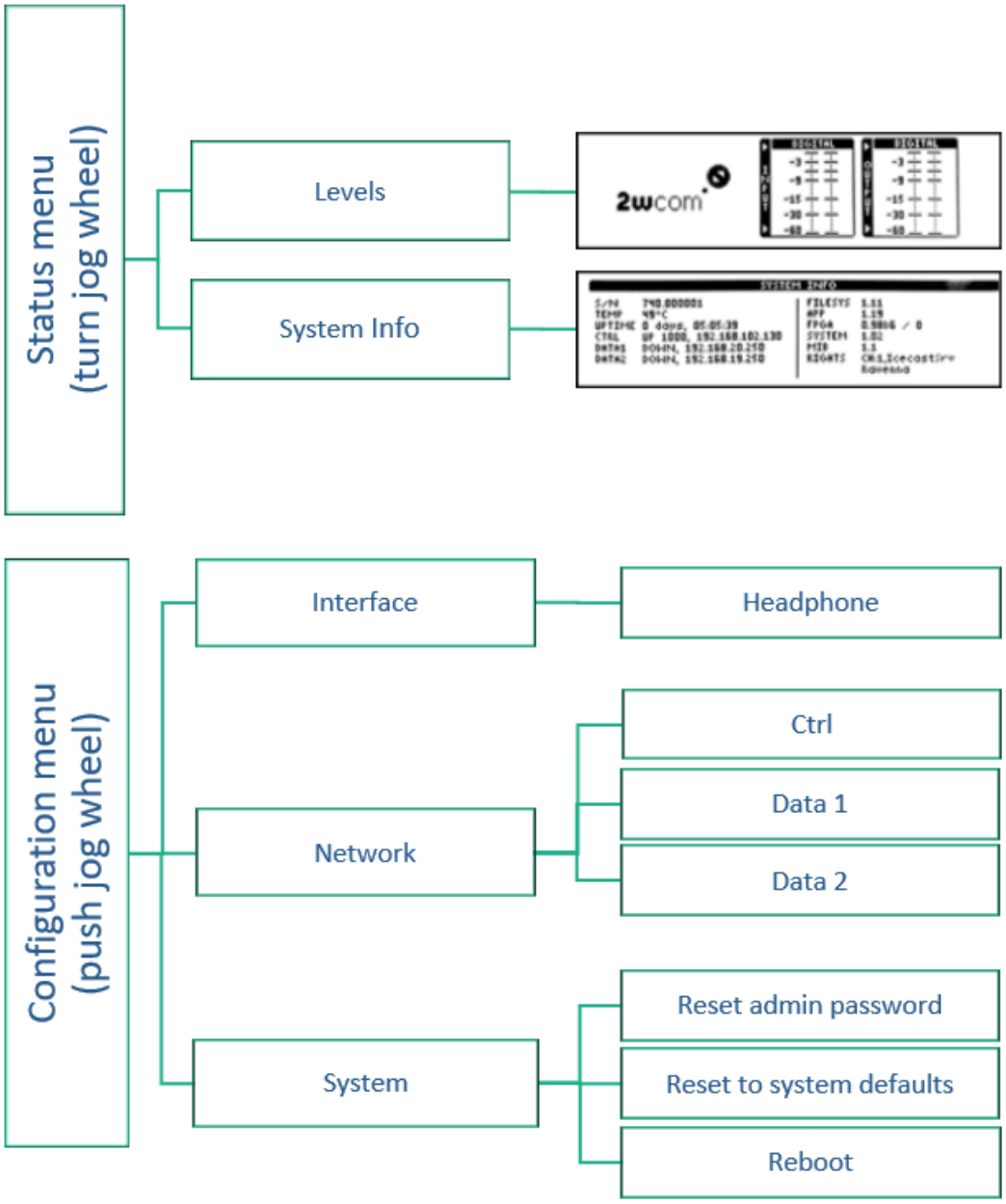
- Status menu (turn jog wheel left or right)
- Configuration menu (push jog wheel)

After a warm or cold start of the device, the display shows the default screen of the status menu. When you navigate in the LCD menu, the display returns to the Status Overview after few minutes of inactivity.

Note the following when operating the device via the LCD menu:

- To switch from the status menu to the configuration menu, push jog wheel.
- To move the focus in the menu structure, turn jog wheel.
- To open a menu tab, focus the tab and push jog wheel.
- To select a configurable menu entry, focus the entry and push jog wheel.
- To configure the selected menu entry, turn jog wheel.
- To confirm changes in a menu entry, push jog wheel.
- To return to the previous menu level, select ≪.

Navigation structure



5 Network settings

5.1 TCP/IP: Configuring the ethernet interfaces

The X-4sd has several Ethernet interfaces: 1 for configuration and the others for data exchange. Configure the interfaces for data transmission.

NOTICE

False connection of the Ethernet interfaces will lead to incorrect operation!

- Use the [Data] interfaces only for data transfer.
- Use the [Ctrl] interface only for the access to the device via the web interface and for SNMP.

To configure the ethernet interfaces:

1. Navigate to the page **TCP/IP**.
2. Configure the parameters for the DNS Server, Ctrl and Data interfaces.

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

3. Click **Save**.

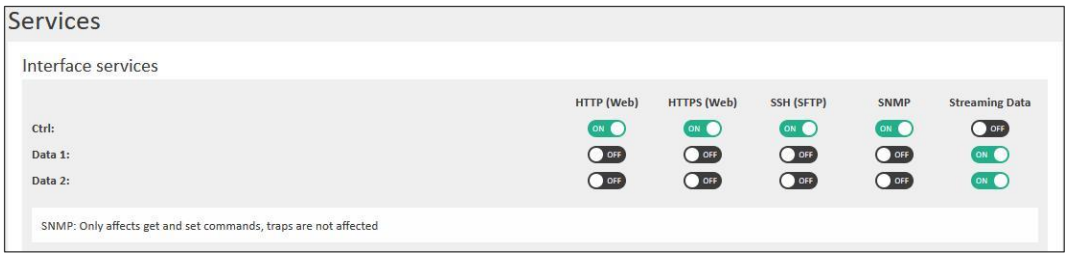
✓ The ethernet interfaces are now configured.

Parameters

VLAN	Enter the VLAN ID (1-4095). To disable VLAN, enter 0.
Priority	Assign a priority (1-7) to this stream to add a priority code point (PCP) according to the IEEE 802.1Q specification. Select 0 to disable the priority and use best-effort delivery.
IP Address	Assign an IP address to the interface.
Netmask	Enter the netmask for the IP address.
DHCP	Enable dynamic host configuration protocol (DHCP) which enables the device to get an IP address automatically.
Gateway	Enter the address of the local system that is used for the internet access (e.g. the router).
Speed	The speed is set to auto.
Mode	The mode is set to full duplex.
Primary	Enter the IP address of the primary domain name server (DNS).
Secondary	Enter the IP address of the secondary domain name server (DNS).
Routing	Enable the Routing, which enables the DNS server to send and answer the requests over different [Data] interfaces.

5.2 Configuring the interface services

For each ethernet interface, you can select the services by which the interface can receive and send data.



To select the supported services.

1. Navigate to the page **Services**.
2. For each individual interface, define which data can be received and sent.
3. Click **Save**.

✓ The interfaces now only support the selected services.

5.3 SNMP: Configuring access data for external requests

You can configure access data (read community/write community) that is necessary for external SNMP requests to the X-4sd.

1. Navigate to the page **SNMP**.
2. Configure the parameters in the block **Read/Write Community**.
3. Click **Save**.

✓ You have configured the access data for external SNMP requests.

Parameters

Read Community	Enter SNMP access data for the external read-only SNMP access to the device.
Write Community	Enter SNMP access data for the external write SNMP access to the device.

5.4 SNMP: Configuring trap managers

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.

For the SNMP manager tool to operate correctly, it requires the specific MIB files. These MIB files need to be compiled by the SNMP manager tool. You can save the active MIB files in the block **MIB File**.

1. Navigate to the page **SNMP**.
2. Configure the parameters in the block **Trap Manager**.
3. Click **Save**.

✓ You have set up IP addresses for SNMP managers. Each enabled trap will be sent once at startup for initialization.

Parameters

Version	Select the format version of the SNMP traps.

IP or Domain Name	Enter the IP address or domain name of the trap receiver.
Port	Enter the port number.

5.5 Ember+: Configuring access for monitoring

As part of the monitoring and remote-control function, the device is capable to be controlled via the Ember+ protocol.

1. Navigate to the page **Ember+**.
2. Configure the parameters in the block **Settings**.
3. Click **Save**.

✓ You have configured the Ember+ access.

Parameters

Mode	Select the mode from the dropdown menu.
Timeout	Enter the value for interval in seconds for a timeout.
Interface	Select an Ethernet interface from the dropdown menu.
Port	Enter the port number for the connection.

5.6 NTP: Synchronizing date and time

The X-4sd can automatically synchronize its date and time with an external NTP server.

1. Navigate to the page **NTP**.
2. Configure the parameters.
3. Click **Save**.

✓ You have synchronized the date and time with an external NTP server.

Parameters

1. NTP Server	Enter the IP address or network name of the first NTP server to be used.
2. NTP Server	Enter the IP address or network name of the second NTP server to be used.
Synchronization	Start or stop the synchronization with the NTP server.
Update interval	Enter the time interval for synchronization in seconds.

6 Interface settings

6.1 Adjusting the gain of the signal inputs and outputs

You can adjust the gain of the input and output signals. This is useful if the signal's level is too high or too low.

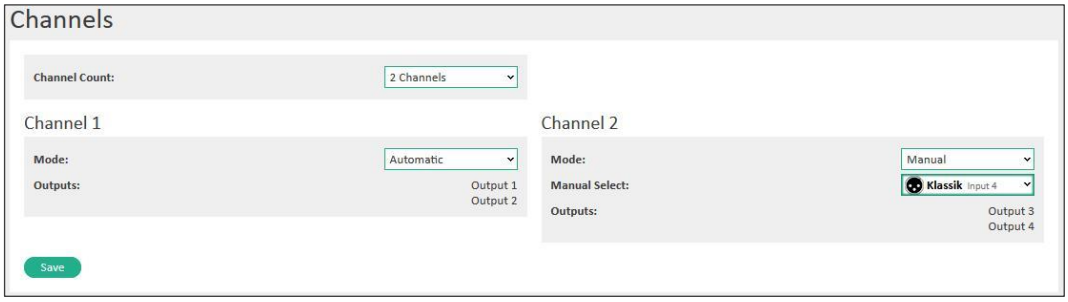
To adjust the gain of the signal inputs and outputs:

1. Navigate to the page **Input / Output**.
2. Configure the parameters in the blocks **Inputs** and **Outputs**.
3. Click **Save**.

✓ You have adjusted the gain of the signal inputs and outputs.

6.2 Configuring the channel settings

You can configure which input feeds which output(s). If the right *Automatic Switch* is enabled, the device can automatically switch between input sources according to the configured switch criteria. If the right *Automatic Switch* is not enabled, you must switch manually.



To configure the switch settings:

1. Navigate to the page **Channels**.
2. In the dropdown menu **Channel Count**, select the number of channels to be used.
3. Click **Save**.
4. Select the switch mode: Manual or Auto.
5. If you have selected manual switch, select the input to be used.
6. Click **Save**.

✓ You have configured the audio switch.

6.3 Defining switch criteria

This option is only available if the right *Switch* is enabled.

The X-4sd can automatically switch between alternative input sources as a redundancy solution in case of failure. The device receives and processes all input sources and uses the audio signal of the highest priority (input 1-n) that is error-free.

You can enable the following switch criteria for input sources:

Audio silence detection	The input source will be switched to the next backup source if silence in the audio signal of the input stream is detected.
AES/EBU no signal	The input source will be switched to the next backup source if no signal is detected in the active input.

To define switch criteria for each audio input:

1. Navigate to the page **Switch Criteria**.
2. If any of the listed criteria should be monitored, enable the corresponding switch.
3. In the field **Value**, enter the threshold above or below which the input source should be switched.
4. For each enabled criterion, define the delay time **T1** for switching release. After this delay time, the input source switches to the next backup source.
5. For each enabled criterion, define the delay time **T2** for switching end. After this delay time, the input source switches back to the previous source, if its signal is good.
6. Click **Save**.

✓ The X-4sd now automatically switches to the next good input source. For some switch criteria, you can set an alarm (see 7.1 Setting up alarms).

6.4 Changing the headphone volume

The input signal can be monitored via the headphone interface.

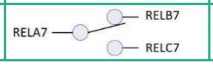
To change the volume of the headphone output:

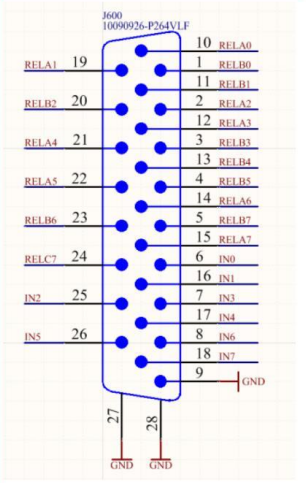
1. Navigate to the page **Headphone**.
2. In the block **Headphone**, select the source for the headphone output.
3. Set the volume for the headphone output in a range from -40.0 to 0.0 dB.

✓ The volume of the headphone output is now lowered.

6.5 Configuring GPO settings

The X-4sd features 8 GPOs: 7 SPST relays (form A) and 1 SPDT relay (form C). You can use the relays for alarms of the monitoring function. For more information, see 7.1 Setting up alarms.

GPO Nr.	Switch contacts	Switch type
1	RELA0, RELB0	SPST, NO
2	RELA1, RELB1	SPST, NO
3	RELA2, RELB2	SPST, NO
4	RELA3, RELB3	SPST, NO
5	RELA4, RELB4	SPST, NO
6	RELA5, RELB5	SPST, NO
7	RELA6, RELB6	SPST, NO
8		SPDT



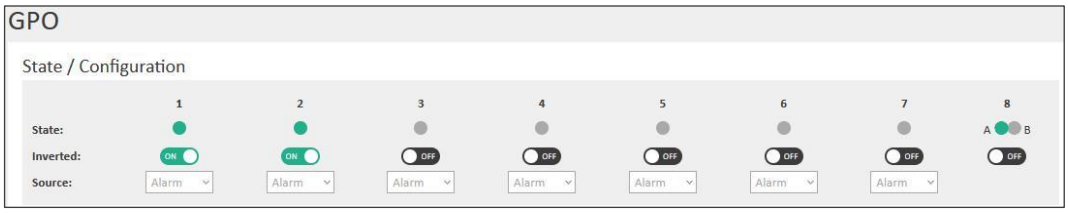
- SPST: a simple on/off switch: single pole, single throw
- SPDT: single pole, double throw
- NO: normally open

NOTICE Risk of equipment damage! The relay contacts have a maximum load of 0.5A at 30VDC. Do not exceed these values.

To configure the GPO settings an view the status of the GPOs:

1. Navigate to the page **GPO**.
2. To invert a GPO, enable the corresponding switch.
3. Select the source for the GPO switch in the field **Source**. Only GPOs that are selected for the source **Alarm** can be used to indicate a triggered alarm.
4. Click **Save**.

✓ You have configured the GPO settings.



The virtual LED **State** indicates the status of the GPOs (green: ON, grey: OFF). The state of a relay is ON if the alarm which is assigned to this relay is triggered.

7 System settings

7.1 Setting up alarms

You can set several alarms that trigger in case of defined events. You can monitor the following:

Temperature	Alarm is triggered if the device temperature exceeds the configured value.
Power failure	Alarm is triggered in case of an error in a power supply unit.
LAN Link	Alarm is triggered in case of an error in Ethernet data communication.
AES/EBU No Signal	Alarm is triggered if no decoded digital audio is available in the audio input.
Silence Detection	Alarm is triggered if the device detects silence in the left and/or right channel of the audio output.

To set up alarms:

1. Navigate to the page **Alarm**.
2. For each alarm, configure the corresponding parameters.
3. Click **Save**.

✓ Enabled alarms will now be saved in a log entry and signaled over SNMP, LED or GPO if triggered.

Parameters

Enable	Enable or disable an alarm.
Priority	Select the priority of the alarm message.
Values	Enter the value below or above which the alarm triggers.
T1	Set the delay time for alarm trigger.
T2	Set the delay time for alarm end.
SNMP, LED, GPO	Enable the corresponding switch if the alarm should be signaled by SNMP traps, an LED or GPO switch. The corresponding GPO must be activated for the source “Alarm” (see 6.5 Configuring GPO settings).

7.2 Adapting the access for user accounts

You can configure the access to certain web interface pages for the manager and guest accounts.

To adapt the access for manager and guest accounts each individual X-4sd menu:

1. Navigate to the page **User**.
2. In the blocks **Manager-** and **Guest adapted menu access**, enable or disable the access to the separate menus by setting the corresponding switch to either **ON** or **OFF**.
3. Click **Save**.

✓ The new access configuration is now active.

7.3 Entering device information

For better identification of the X-4sd, you can enter device-specific data.

1. Navigate to the page **Global**.
2. Configure the parameters in the block **System info**.
3. Click **Save**.

✓ The saved information is now displayed in the banner.

Parameters

Name	Enter the name of the device for better reference.
Location	Enter the location of the device.
Description	Enter further important information on the device.

7.4 Setting up session timeout

Session timeout is a security feature that automatically logs out the user after a period of inactivity. You can define the period of inactivity or disable session timeout.

1. Navigate to the page **Global**.
2. In the field **Session timeout**, enter the value in minutes for the period of inactivity necessary to automatically log out the user. Enter “0” to disable this function.
3. Click **Save**.

✓ You will now be automatically logged out after the set period of inactivity.

7.5 Changing the title of the browser tab

You can change the title of the browser tab to display the information you need for better reference.

1. Navigate to the page **Global**.
2. In the field **Browser Tab Title**, enter the information you want to display. You can use variables for specific information. Variables will update automatically if the corresponding information changes. View the possible variables by hovering over the input filed.
3. Click **Save**.

✓ The title of the browser now displays the configured information.

7.6 Updating the firmware

You can upload ARM firmware stored locally or from a TFTP server to the device.

1. Navigate to the page **Global**.
2. In the block **Firmware** update, click **Browse/Drop file**.
3. Select the firmware file you want to upload.
4. Click **Upload** to upload the firmware file. The upload may take a while. Do not interrupt this process.
5. After a successful upload, follow the prompt to restart the device.

✓ After the restart of the device, the new firmware is active.

7.7 Checking for updates

You can check for updates and install them, if available. You can also view the release notes and details about the available updates. Additionally, it is possible to download the firmware file to install at a later point of time.

To install an available update:

1. In the menu **Support**, click **Check for updates**.
   - ➢ The window **Available Firmware Versions** opens.
2. Select the update you want to install.
   - ➢ The dialog window **Firmware Update** opens.
3. Click **Yes, update now**. The update may take a while. Do not interrupt this process. Since the device reboots during this process, you will be logged out.

✓ The firmware is now updated.

In the window **Available Firmware Versions**, firmware bundles that are newer than the currently installed one are marked with ★. Important updates are marked with ❗. Click **Open** to view the change notes and details about a bundle version. To download a firmware bundle for later installation, click ⬇.

7.8 Setting up rights

Some functions of the X-4sd are optional. To use these functions, you must activate additional rights by uploading a rights file. To receive rights files, please contact your 2wcom sales representative.

1. Navigate to the page **Global**.
2. In the block **Rights**, click **Browse/Drop file**.
3. Select the rights file (*.2wcom_key) you want to upload.
4. Click **Upload**. The upload may take a few minutes. Do not interrupt this process.
5. After a successful upload, follow the prompt to restart the device.

✓ The new rights will be active after restart. You can view the current rights in the block **System information**.

7.9 Uploading and activating an SSL-Certificate

An SSL certificate is a digital certificate that provides authentication for a website and enables an encrypted connection.

To upload and activate an SSL certificate:

1. Navigate to the page **Global**.
2. In the block **SSL-Certificate**, click **Browse/Drop file**.
3. Select the SSL certificate file (*.pem) you want to upload.
4. Click **Upload**. The upload may take a while. Do not interrupt this process.

✓ You have uploaded an SSL certificate.

7.10 Saving settings to a local file

You can download the current settings and save them as a file. You can upload this file later to restore the settings or upload it to another device to copy the settings.

1. Navigate to the page **Global**.
2. In the block **Settings download**, click **Generate**.
   - ➢ A file is being created. This may take a few seconds.
   - ➢ The download option with the time and date of file creation appears.
3. Click **Download**.
4. Save the file to a location of your choice.
5. Click **Save**.

✓ You have saved settings to a local file. To upload and activate the settings stored locally, see 7.11 Uploading and activating settings from a file.

7.11 Uploading and activating settings from a file

You can upload a settings file to restore previous settings or copy the settings from another device. For information on how to generate a settings file, see 7.10 Saving settings to a local file.

1. Navigate to the page **Global**.
2. In the block **Settings update**, click **Browse/Drop file**.
3. Select the settings file you want to upload.
4. Click **Upload** to upload the settings file. The file upload may take a while. Do not interrupt this process.
5. After a successful upload, follow the prompt to restart the device.

✓ After the restart of the device, the new settings are active.

7.12 Generating and downloading a diagnostic report

In case of any problems or failures, you can generate and download a diagnostic report to send to 2wcom.

To generate and download a diagnostic report:

1. Navigate to the page **Global**.
2. In the block **Diagnostic Report**, select the time period for which the device captures all activities.
3. Click **Generate**. A file is being created. This may take a while. Do not interrupt this process.
   - ➢ The download option with the time and date of file creation appears.
4. Click **Download**.
5. Save the file to a location of your choice.

✓ You have generated and downloaded a diagnostic report.

7.13 Uploading a debug script

To identify a specific error, you can upload a debug script that you have received from 2wcom. Depending on the expected error, the debug script monitors extra status information and records the incoming data. When the error occurs, the recording stops and a debug.log file is generated which contains all information that 2wcom needs to fix it.

To upload a debug script:

1. Navigate to the page **Global**.
2. In the block **Debug Report**, click **Browse/Drop file**.
3. Select the debug script file (*.upd) you want to upload.
4. Click **Upload**. The upload may take a while. Do not interrupt this process.
5. To start the debugging process, click **Start**. This may take a while. Do not interrupt this process.
   - ➢ When an error occurs, the script is automatically stopped. A download link for the debug.log file appears.
6. To download the debug.log file, click on the link.
7. Send the file to your 2wcom contact person.

✓ 2wcom can now identify the error and determine further action.

7.14 Rebooting the device

To reboot the device:

1. Navigate to the page **Global**.
2. In the block **Control**, click **Now** in the field **Reboot Device**.

✓ The device restarts. After the restart, you will have to log in again.

7.15 Restoring factory settings

NOTICE Restoring factory settings will delete all configurations made by a user except for the IP address of the CTRL interface! This also applies to the access accounts!

To reset the device to factory settings:

1. Navigate to the page **Global**.
2. In the block **Control**, click **Now** in the field **Load Factory Settings**.

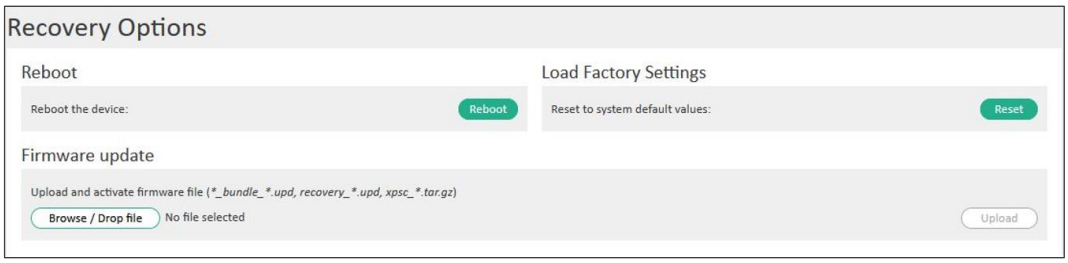
✓ You have restored the factory settings.

7.16 Accessing the recovery mode via reset pin hole

If you cannot access the X-4sd via the web interface, you can reboot the device using the reset pin hole. You can also use the reset pin hole to access the recovery mode in which you can flash the device or restore factory settings.

- To restart the device, press the reset button for a second.

1. To access the recovery mode, press the reset button for a few seconds until all LEDs on the front panel turn off and only power LED starts flashing quickly.
   - ➢ The device starts in recovery mode.
2. Access the recovery web interface by entering the IP address of the device into a web browser.
   In recovery mode, you can upload and activate firmware, reset the system to factory settings or reboot the device.



3. After flashing or resetting the device, reboot the device by clicking **Reboot**.

✓ After a few seconds, the device will be ready for operation.

7.17 Setting the time and date

You can set the time, time zone and date of the internal clock.

1. Navigate to the page **Time**.
2. In the block **Local time**, select the present time zone in the dropdown menus.
3. Click **Save**.
4. In the block **Time and date settings**, enter the current date and time.
5. Click **Save**.

✓ You have set the time and date. The current time and date of the internal clock is shown in the field **Present local date and time**.

7.18 Changing login data

The default accounts are a read-only access (Guest account), a full access without a permission to manage the user accounts (Manager account), and a full access (Admin account). The user account SFTP service is used only for the access from an external SFTP client for uploading audio files and saving them in the internal storage.

Change the login data after the first login to the web interface.

The default login data for the first login are (case sensitive):

- Guest account: “guest”/ “guest”
- Manager account: “manager”/ “manager”
- Admin account: “admin”/ “admin”
- FTP service: “sftpuser”/ “sftpuser”

To change the login data:

1. Log in as an admin.
2. Change the login data for an account in the corresponding block and repeat the new password.
3. Click **Save**.

✓ You have changed the login data.

8 Status information

8.1 Status LEDs

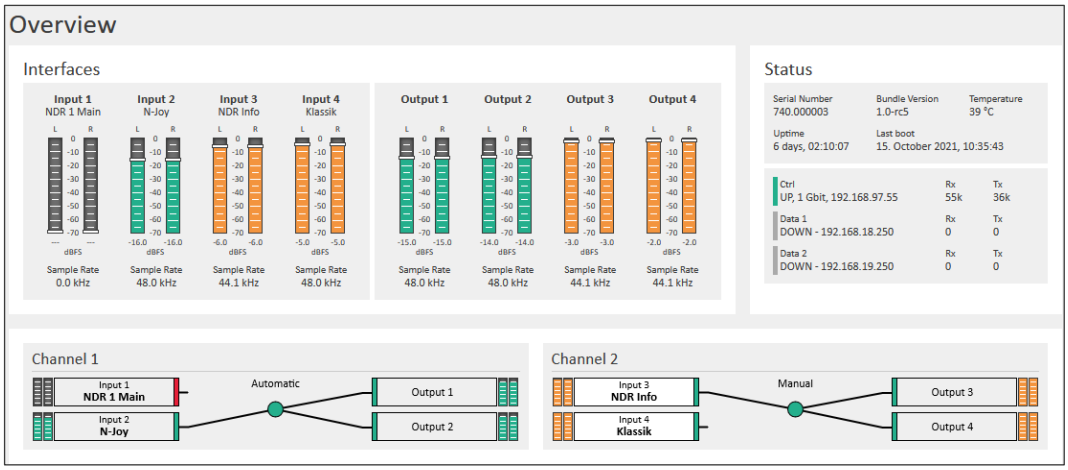
The X-4sd is equipped with 4 status LEDs on the banner of the web interface that display the status of the inputs, outputs, power supply and alarms.

The following table displays the meaning of each LED:

LED	Color	Meaning
Power	●	All supply cords are connected and the power supply is OK.
	● ●	Toggles (green/red) if only one power supply is connected or OK.
Warning	●	LED is off if no alarms are triggered.
	●	At least one alarm is triggered.
Input	●	No input monitoring alarms are enabled.
	●	Input monitoring alarms are enabled and all inputs are OK.
	●	One or more inputs are bad, but at least one is good.
	●	All inputs are bad.
Output	●	No decoder output monitoring alarms are enabled.
	●	Output monitoring alarms are enabled and all outputs are OK.
	●	One or more outputs are bad, but at least one is good.
	●	All outputs are bad.

8.2 General overview

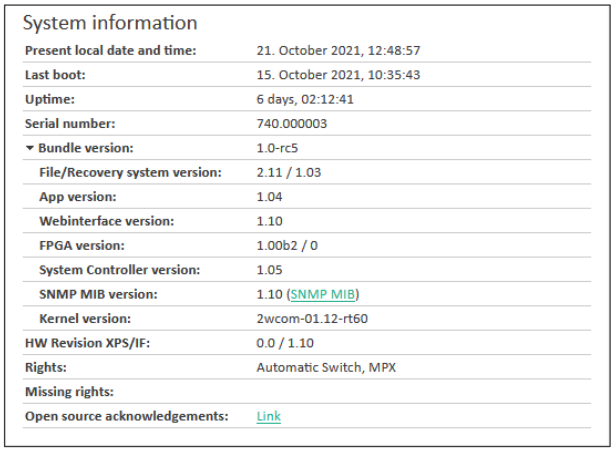
The page **Overview** gives you general information on the status of your X-4sd. The appearance of this page might differ depending on the activated rights, built in modules and settings.



The audio levels of the inputs and outputs are displayed in the left block.

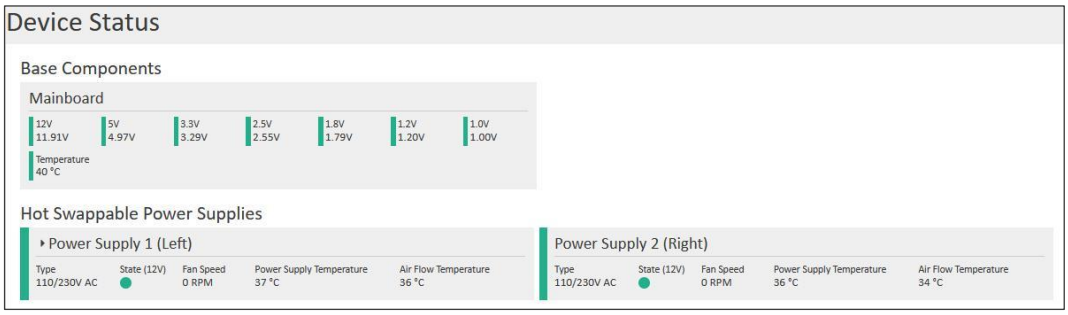
The block **Status** gives general device-specific information as well as information on the ethernet interfaces.

The page **Global** gives specific information on the device, such as the uptime and time of the last boot, serial number, activated rights and software version. The current version of your X-4sd is the **App Version**.



8.3 Device status

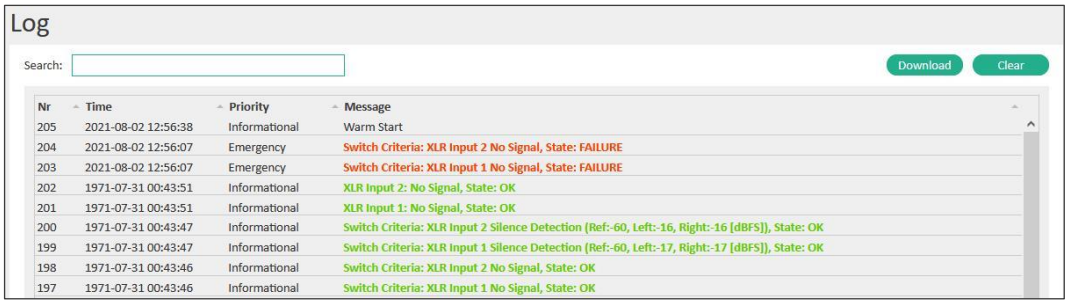
The page **Device** gives information on the current status of the hardware such as voltages on the mainboard, temperature, fan speed and status of the power supply units.



8.4 Log

The X-4sd records all important system events, such as restart and error messages in a log. You can view the log, sort the entries, search for a specific entry, save the list as a log file, and clear the log.

- To sort the log entries, click on the column header of the parameter by which you want to sort the entries. To reverse the order, click that header again.
- To search for a specific entry, enter a term into the search bar.
- To save the list to a log file, click **Download**.
- To delete all log entries, click **Clear**. Confirm your choice in the dialog window.



For more information on alarm messages, see 8.5 Priority of alarm messages.

8.5 Priority of alarm messages

Priority	ID/Code	Definition
Emergency	0	System is unusable
Alert	1	Actions must be taken immediately
Critical	2	Critical condition
Error	3	Error condition
Warning	4	Warning condition
Notice	5	Normal but significant condition
Informational	6	Informative message
Debug	7	Debug-level message

In case of an alarm, an error report with the priority of the error will be sent to the Network Operations Center (NOC). The responsible second-level support will decide by means of this information how urgent the alarming case is and what measures are necessary. The event will be recorded in a log entry.

9 Further information

9.1 Maintenance and disposal

No special maintenance is necessary on the device. Do not use corrosive detergents on the device such as benzene, thinner, alcohol or acetone.

Remove dust on the housing of the device with a soft, dry cloth.

9.2 Troubleshooting, support and warranty

More often than not, it is only a small detail that has been overlooked and leads to a problem. Therefore, read the entire user manual carefully, as this will help you to understand, prevent and eliminate typical problems. Use the following table to self-check common error sources prior to contacting our support.

Report failures by email to **support@2wcom.com**. For a support request to 2wcom, please have the serial number of the device ready. You can find the serial number of your device on the page **Global** and on the sticker on the rear side of the device: “S/N xxx.xxxxxx”.
For information on the warranty of 2wcom products, visit *https://www.2wcom.com/terms-and-conditions/*.

Problem	Possible Causes	Solution
Device does not turn on	• Power cable is connected improperly • Mains supply failure • Blown fuse	• Check power supply cord. • Make sure that the power plug is fully inserted. • Check mains supply. • Replace fuse by same type.
Device is not accessible via Ethernet	• Network cable is not connected • IP address/TCP port is unknown • A device with the same IP address was connected a few minutes before. Thus, the ARP table thill assigns the old MAC address to the IP address.	• Connect the network cable. • Check IP address obtained from DHCP via LCD menu. • The operation system refreshes the ARP table every few minutes. For an instant access to the device, reset the ARP table of your computer, e.g. by entering `arp-d` in the Windows command prompt.
Device does not respond		• Reboot the device. • Update the software.

9.3 Manufacturer

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Germany

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10 Technical data

Technical details 1/2

Interfaces

Performance

Digital in	4x AES/EBU, 110 Ω bal., integrated XLR
Digital out	4x AES/EBU, 110 Ω bal., integrated XLR
Amplifier	3-way AES/EBU stereo digital distribution amplifier
Headphone (out)	L/R, < 10 Ω, 6,3 mm
Dynamic range	16 Bit, > 89 dB 24 Bit, > 130 dB
Sample rates	16 kHz...192 kHz
Insertion Loss	<0.1 dB
Impedance	110 Ω ±2%
Output Insulation	>40 dB
Max. voltage level	10 Vpp

Ethernet

Data	Controlling and setup functions
Connector	3x RJ45
Type	Auto switching 10/100/1000 BASE-T

Contact closure

Inputs	8 inputs 26 pole sub-D male
Outputs	7+1 floating relays 7 relays SPST (from A) 1 relay SPDT (from C) DC: max. 30 V, 1 A, 10 W 26 pole sub-D male

Control & monitor

Ethernet

User interface	Integrated WebGUI, LCD display
Data	Control and setup functions
Optional	Private data, MPEG ancillary data (IRT)
USB	USB 2.0 interface for service, configuration and firmware updates
Protocol	2wcom NMS, Telnet, HTTPS, SNMP, UDP, Reliable Transport, SFTP IGMP, ICMP, NTP, DHCP, SNMP, SSH, PTPv2, TCP

Front panel

LCDisplay	Graphical, 264x64 pixel
Jog wheel	Impulse, enter button
4 Duo LEDs	Power, input, output, warning

Your audio. Our solution.

Technical Details 2/2

General data

Power consumption	<20W
Case dimensions	19'', 1 HU, Depth: 310 mm, Width: 424 mm, Front panel: 484 mm
Weight	< 5 kg
Material	Steel plate (aluminium-zinc coated)
Operating temp. range	0...+45°C
Storage temp. range	-40...+70°C
Languages	English

Power supply

Standard	1x internal, 90...260 VAC, 47...63 Hz, 1x power port (EU Type- socket)
Optional version 1	Two internal redundant power supplies (230 VAC or -48 VDC), auto switchover
Optional version 2	Two hot swappable redundant power supplies (230 VAC or -48 VDC), auto switchover

Available models

X-4sd splitter	Basic
X-4sd switch	Option
MPX 192kHz	Option

Datasheet Version 06.09.2021
These data are subject to modifications and amendments. Errors excepted.

Your audio. Our solution.