Control Cockpit

Control Software

PDF Export of the Original HTML Manual

Contents

1. Preface

PDF Export of the Original HTML Manual

This PDF document is an automatic export of an interactive set of HTML manuals. Some content and interactive elements may not be included in the PDF because they cannot be displayed in this format. In addition, automatically generated page breaks may cause related content to be slightly shifted. We can therefore only guarantee the completeness of the information in the HTML manual and recommend using it. You can find it in the Documentation Portal at www.sennheiser.com/documentation.

2. Release Notes

Latest information on the newest versions of the Control Cockpit with detailed information on included features.

The Sennheiser Control Cockpit team is constantly delivering new features via software updates. Check out the release notes and the user documentation for more details on how to install and to use the Control Cockpit software.

Sennheiser Control Cockpit 9.2

This release introduces new features and improvements:

SSCv2 support for CHG 70N-C (secure) chargers:

- Starting with firmware version 4.x.x, CHG 70N-C (secure) chargers now only support SSCv2, using a new product identifier. All features previously available with SSCv1 remain available.
- With this firmware, downgrading to earlier versions is no longer possible to prevent compatibility issues and reduce security risks.
- The chargers can now be accessed by third-party systems via the Access tab using an API.

Recognition of potential Man-in-the-middle attacks

- Control Cockpit now detects potential man-in-the-middle attacks and blocks affected devices with a red warning. Administrators can resolve the issue either by fixing the problem on the network or by explicitly accepting the new certificate (see Man-in-the-middle attack).

Sennheiser Control Cockpit 9.1.2

This release introduces new features and improvements:
General:

- An information text is displayed above the device list to inform the user about DeviceHub (https://devicehub.sennheiser.com/).

TC Bar features:

- For TC Bar devices running firmware that includes Local Web UI and cloud connectivity, an information text is shown on the device details page to inform users about these new configuration options and to provide direct links to DeviceHub and the device's dedicated Local Web UI.
- You can open the Local Web UI by clicking the dedicated link in this information banner, as long as the device is in the same network as the Control Cockpit server.

Bug fixes

- When using static IP addresses, performing a factory reset on the device let the devices disappear after claiming. This issue is fixed and devices are automatically rediscovered if mDNS is enabled.

Sennheiser Control Cockpit 9.1.0

This release introduces new features and improvements:
TC Bar features:

- **Default camera mode:**
  A persistent mode that the device always starts in, ensuring a consistent experience without manual adjustments, even after a reboot or when waking from sleep.
- **Continuous Dante® stream**
  This function enables continuous streaming of microphone audio over Dante®.
- **Dante® speaker output**
  When enabled, this function routes the audio stream to external Dante® speakers and disables the TC Bar's internal speakers.
- **Energy saving modes**
  With this setting, the standby behavior of the TC Bar can be adjusted depending on the desired scenario. The device can, by default, be set to
  Low Power Mode
  ,
  Eco Mode
  , or
  Always On Mode
  .

Improvements

Evolution Wireless Digital

- **3rd party usability improvement for EW-DX:**
  Improved user guidance on state and configuration of 3rd party access for EW-DX devices.

Sennheiser Control Cockpit 9.0.0

This release introduces new features and improvements:

- EW-DX:
  - As of firmware version 4.0.0 for EW-DX EM 2 / EM 2 Dante / EM 4 Dante devices, the new secure Sound Control Protocol v2 (SSCv2) will be applied automatically (see Updating EW-DX EM 2 / EM 2 Dante / EM 4 Dante rack receiver).

- After the firmware update, the devices must then be claimed for the Control Cockpit instance at the first start (see Claiming devices).
- To use the device with 3rd parties, an encrypted connection can now be activated via the SCCv2 protocol (see 3rd party media control access).

Sennheiser Control Cockpit 8.3.0

This release introduces new features and improvements:

- TC Bar
  - The new Audio Settings feature detects and suppresses unwanted static background noise (e.g. HVAC, fans etc.).
  - The Audio Settings feature has been extended by a new **Range** parameter. The parameter defines the degree of noise suppression below the set threshold for the entire Noise Gate.
  - Additional muting functions make it possible to mute only the device's internal microphone input (see Audio Settings) or to mute all internal and external microphone channels (see Audio Settings).
  - The use of the infrared remote control can now be activated and deactivated remotely (see Device Settings).

Sennheiser Control Cockpit 8.2.0

This release introduces new features and improvements:

- An additional indicator to show the active channel of the TC Bar has been implemented (see Audio Settings).
- Priority Zone's weight for TeamConnect Ceiling Medium has been changed (see Zones).
- The reclaiming for SSCv2 has been optimized.

Sennheiser Control Cockpit 8.1.0

This release introduces new features and improvements:

- **Support for the New Product of theTeamConnect Family:**
  - TeamConnect Bar S and M – the most flexible all-in-one device for small and mid-sized meeting rooms and collaboration spaces.
  - See TeamConnect Bar

- **New Audio Feature for TCC M: Intelligent Noise Control:**
  - The Intelligent Noise Control suppresses unwanted noise in a specific frequency range. Depending on the intensity of the noise, you can choose between Low, Medium and High to suppress the noise.
  - See Intelligent Noise Control

- **New Log Settings for the Control Cockpit Tray Application:**
  - The log level for the Control Cockpit Tray application can now be configured between 'normal' and 'verbose'.
  - All log and settings files can then be collected and saved as a compressed file.
  - See Log Level Configuration

3. Product Information

Information about supported devices, design, functionality and the main features of the software at a glance.

Sennheiser Control Cockpit is the central software for easy set-up, control and maintenance of Sennheiser devices.

The easy-to-use Sennheiser Control Cockpit gives you a comprehensive overview of your network-enabled Sennheiser devices. It presents status information at a glance and allows you to make adjustments for one or multiple devices simultaneously with ease.

The software is browser-based and can be opened on all laptops or tablets that are connected to the same network as the host PC and the Sennheiser devices to be operated.

Main Features

Setup

- Device discovery & device management
- Initial device configuration
- Notification Services
- Setup & security settings

Monitoring and Control

- Battery status monitoring
- Oversight of battery charging progress
- Device identification
- Device search and filtering
- Remote control of device settings
- Wireless microphone pairing

Maintenance

- Email & on-screen notification of software and firmware updates and system alerts
- Batch update of multiple devices
- Battery health indication and count of charging cycles

Assistance

- Pre-emptive alerts via email and SMS
- Ability to provide remote user support
- Remotely pair microphones

Software design

The software is browser-based and can be opened on all laptops or tablets that are connected to the same network as the host PC and the Sennheiser devices to be operated.

One network

- All devices, the host PC and all clients must be in the same network range.

> **i** Please note that you only need to install the Sennheiser Control Cockpit on one host PC. All devices, which are in the same network as the host PC and the Sennheiser devices, can access the Sennheiser Control Cockpit remotely via the browser-based application.

Components inside

- The Sennheiser Control Cockpit consists of the Sennheiser Control Cockpit Tray App and the Web browser UI.

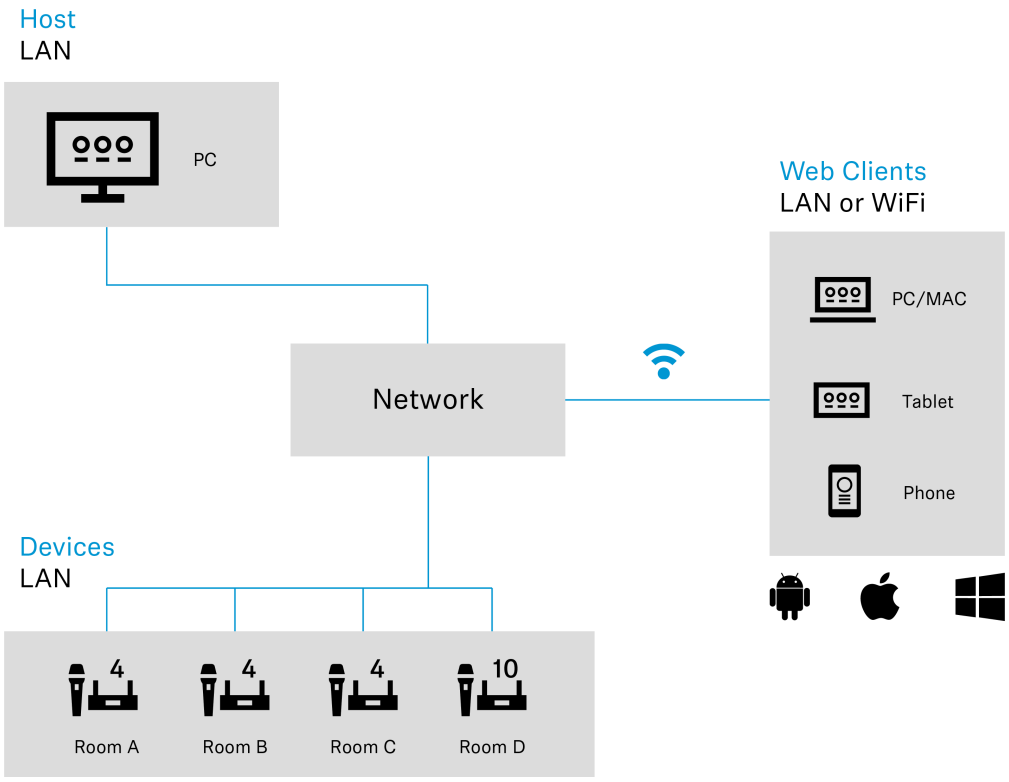
Sennheiser Tray App

- The Tray App starts and stops the Sennheiser Control Cockpit Service on the host PC. You can find the Tray App in the Windows Tray in the lower right corner.

Sennheiser Web Browser UI

- When the service is running on the host PC, you can access the service via any device with a browser.

Illustration of components


Host
LAN
PC
Web Clients
LAN or WiFi
PC/MAC
Tablet
Phone
Network
Devices
LAN
4
4
4
10
Room A
Room B
Room C
Room D

Compatible Sennheiser products

A range of Sennheiser products are compatible with the Sennheiser Control Cockpit.

The following Sennheiser products are compatible with the Sennheiser Control Cockpit:

Evolution Wireless Digital

- EW-DX EM 2 rack receiver
- EW-DX EM 2 Dante rack receiver
- EW-DX EM 4 Dante rack receiver
- EW-DX SK | EW-DX SK-3 PIN bodypack transmitter
- EW-DX SKM | EW-DX SKM-S handheld transmitter
- EW-DX TS 3-pin | EW-DX TS 5-pin wireless table stand
- CHG 70N - 2 bay network charger
- CHG 70N-C - cascadeable network charger

SpeechLine Digital Wireless

- SL Rack Receiver DW stationary receiver
- SL Multi-Channel Receiver DW
- SL Handheld DW handheld transmitter
- SL Bodypack DW bodypack transmitter
- SL Tablestand 133-S DW wireless table stand
- SL Tablestand 153-S DW wireless table stand
- SL Boundary 114-S DW wireless boundary microphone
- CHG 4N - network-enabled charger
- CHG 2N - 2 bay network charger

TeamConnect

- TeamConnect Bar S / M
- TeamConnect Ceiling 2 ceiling microphone array
- TeamConnect Ceiling Medium ceiling microphone array

evolution wireless G4

ew 300-500 G4

- EM 300-500 G4 stationary receiver
- SK 300 G4-RC bodypack transmitter
- SK 500 G4 bodypack transmitter
- SKM 300 G4-S handheld transmitter
- SKM 500 G4 handheld transmitter

ew IEM G4

- SR IEM G4 stationary in-ear monitoring transmitter
- EK IEM G4 bodypack receiver

evolution wireless G3

ew 300 G3

- EM 300 G3 stationary receiver
- SK 300 G3 bodypack transmitter
- SKM 300 G3 handheld transmitter

ew 500 G3

- EM 500 G3 stationary receiver
- SK 500 G3 bodypack transmitter
- SKM 500 G3 handheld transmitter

ew 300 IEM G3

- SR 300 IEM G3 stationary in-ear monitoring transmitter
- EK 300 IEM G3 bodypack receiver

Digital 6000

- EM 6000 Digital 2-channel receiver
- SK 6212 bodypack transmitter
- SK 6000 bodypack transmitter
- SKM 6000 handheld transmitter

MobileConnect

- MobileConnect Manager

Sennheiser Sound Control Protocols (SSCv1 and SSCv2)

Sennheiser offers two different protocols for managing, controlling and encrypting devices.

> **i** Depending on the functional scope of the implemented device firmware and the supplied software, there are two different protocols that can be used:
>
> - Secure API (SSCv2): New protocol with a high security standard for Sennheiser devices that are delivered with a password.
> - Legacy API (SSCv1): Unsecure legacy protocol based on UDP/TCP

Sound Control Protocol v2 (SSCv2)

Sennheiser 3rd party API protocol

The latest Sennheiser 3rd party API protocol enables configuration and monitoring of devices via encrypted REST API calls, allowing the user to control the device via HTTPS commands and integrate the products into any IT environment. It offers end-to-end security, utilizing HTTPS (TLS 1.3).

In order to activate the secure SSCv2 protocol:

- update your firmware, which supports SSCv2 (see Updating device firmware) and
- enable the secure SSCv2 protocol in the control software under: **Devices** > **your device** > **Access** > **3rd Party Access** > **Edit** > **Secure**.

In addition to encryption, SSCv2 also provides an authentication scheme. By using HTTP basic authentication, a compatible and well-established mechanism of username and password is employed to ensure that no unauthorized changes are made to the device's settings and that no data is read from it.

Password protection

The feature is supported by the following Sennheiser devices which come equipped with a device configuration password:

- TeamConnect Ceiling Medium (see Access for TCC M devices)
- TeamConnect Bar S and M (see Access for TC Bar devices)
- Evolution Wireless Digital (see Access for EW-DX devices)

Detailed information

- For more information on updating the firmware, please refer to the chapter Updating device firmware.
- For more information on the claiming topic, please refer to the chapter Claiming devices.
- For more information on the SSCv2, please refer to the website 3rd Party API for Sennheiser Products.

Sound Control Protocol v1 (SSCv1)

The legacy protocol (Sennheiser Sound Control protocol v1) can still be utilized by the user, and is provided for interoperability reasons.

> **i** We strongly recommend that you switch to the new and secure protocol, which is supported in the latest 3rd party modules provided by Sennheiser. Nevertheless, to ensure that your room is fully functional at all times, you can use the unencrypted protocol.

The following Sennheiser devices are supported:

- SL Rack Receiver
- CHG 4N - network-enabled charger
- CHG 2N - 2 bay network charger
- Multi-channel receiver (SL MCR2 & MCR4)
- EW-DX EM 2 rack receiver (EW-DX EM 2)
- EW-DX EM 2 rack receiver Dante (EW-DX EM 2 Dante)
- EW-DX EM 4 rack receiver Dante (EW-DX EM 4 Dante)
- CHG70N - 2 bay network charger
- TeamConnect Ceiling 2 (TCC 2)

For more information on SSCv1, please refer to the website 3rd Party API for Sennheiser Products.

Specifications

Server System requirements and ports requirements for inbound and outbound traffic.

Server system requirements

Recommended for host PC

- Intel i5 Dual Core processor or similar
- 8 GB RAM (16 GB for large setups)
- at least 1 GB hard disk space
- JavaScript must be activated
- Windows 11, Windows Server 2022, or higher
- IPv4 network

Client

Browser:

- Google Chrome (latest version)
- Mozilla Firefox (latest version)
- JavaScript must be activated

Port requirements (→ inbound | ← outbound)

Table 1. Application layer

Port	Protocol	Service
→ 443	HTTPS	Web UI / Update service
444	HTTPS	Internal Communication Port

i The WEB UI and internal communication ports are set to 443 and 444 respectively by default but can be changed by the user during installation.

Table 2. Transport layer

Port	Protocol	Service	Product
← 22	SCP/SSH	Certificate management	TeamConnect Ceiling 2 TeamConnect Ceiling Medium

Table 2. Transport layer (continued)

Port	Protocol	Service	Product
			SpeechLine Digital Wireless Multi-Channel
← 22	S CP/SSH	SCP Firmware update	TeamConnect Ceiling 2
			Evolution Wireless Digital EW-DX EM 2 /2 Dante /4 Dante (Firmware Version < 4.0.0)
			SpeechLine Digital Wireless Multi-Channel Receiver
← 45 | 6970	UDP | TCP	SSC Sound Control Protocol	TeamConnect Ceiling 2
			Evolution Wireless Digital EW-DX EM 2 /2 Dante /4 Dante (Firmware Version < 4.0.0)
			SpeechLine Digital Wireless
			Digital 6000
← 69	TFTP	Firmware Update	Digital 6000
← 443	TCP	SSC Sound Control Protocol v2	TeamConnect Ceiling Medium
			Evolution Wireless Digital EW-DX EM 2 /2 Dante /4 Dante (Firmware Version ≥ 4.0.0)
← 443	TCP	SSC / Firmware Update	TeamConnect Ceiling Medium
←→ 5353	UDP	mDNS (Multicast 224.0.0.251)	TeamConnect Ceiling 2
			TeamConnect Ceiling Medium
			Digital 6000
			Evolution Wireless Digital EW-DX EM 2 /2 Dante /4 Dante (Firmware Version ≥ 4.0.0)
→ 5353	UDP	mDNS	SpeechLine Digital Wireless
← 57811	UDP	Firmware Update	SpeechLine Digital Wireless Rack Receiver
← 57811	UDP	Firmware Update	Network-enabled chargers CHG 2N/4N/70N
← 6970	UDP	SSC Sound Control Protocol	Digital 6000

Table 2. Transport layer (continued)

Port	Protocol	Service	Product
← 8133	UDP	All IP-Communikation	evolution wireless G4
← 8133	UDP	mDNS (Multicast 224.0.0.225)	evolution wireless G4

Language support

- English
- German
- French
- Spanish
- Chinese

Compatible Sennheiser products

Evolution Wireless Digital:

- EW-DX EM 2 rack receiver
- EW-DX EM 2 Dante rack receiver
- EW-DX EM 4 Dante rack receiver
- EW-DX SK | EW-DX SK-3 PIN bodypack transmitter
- EW-DX SKM | EW-DX SKM-S handheld transmitter
- EW-DX TS 3-pin | EW-DX TS 5-pin wireless table stand
- CHG 70N - 2 bay network charger
- CHG 70N-C - cascadeable network charger

SpeechLine Digital Wireless

- EM 6000 Digital 2-channel receiver
- SK 6212 bodypack transmitter
- SK 6000 bodypack transmitter
- SKM 6000 handheld transmitter

evolution wireless G3

- **ew 300 G3**
  - EM 300 G3 stationary receiver
  - SK 300 G3 bodypack transmitter
  - SKM 300 G3 handheld transmitter

evolution wireless G4

- **ew 300-500 G4**
  - EM 300-500 G4 stationary receiver
  - SK 300 G4-RC bodypack transmitter
  - SK 500 G4 bodypack transmitter

- SKM 300 G4-S handheld transmitter
- SKM 500 G4 handheld transmitter

MobileConnect

- MobileConnect Manager

SpeechLine Digital Wireless

- SL Rack Receiver DW stationary receiver
- SL Multi-Channel Receiver DW
- SL Handheld DW handheld transmitter
- SL Bodypack DW bodypack transmitter
- SL Tablestand 133-S DW wireless table stand
- SL Tablestand 153-S DW wireless table stand
- SL Boundary 114-S DW wireless boundary microphone
- CHG 4N - network-enabled charger
- CHG 2N - 2 bay network charger

TeamConnect

- TeamConnect Bar S / M
- TeamConnect Ceiling 2 ceiling microphone array
- TeamConnect Ceiling Medium ceiling microphone array

4. Getting Started

First steps for the initial start of the software, including download, installation and management of the tray app.

Downloading and installing the software

The installation file of the Sennheiser Control Cockpit software can be downloaded from different locations of the Sennheiser website.

In order to download the software:

- Navigate to sennheiser/control-cockpit.
- Complete the form and accept the terms and conditions.
- Click on **Download**.

In order to install Sennheiser Control Cockpit

- Save the downloaded installation file SennheiserControlCockpitInstaller.exe on the host PC and start the installation process.
- Agree to the license terms and conditions and click on **Next**.

  > The default secure port is 443. Please make sure to enter `https://` for the proxy URL.

- Choose between **Local setup** or **Server setup** and adjust the settings as desired. In the **Server setup** configuration you can decide which certificate should be used for the application:
  - Self-signed certificate
    - This certificate will be created automatically during the installation.
    - The first time the encrypted Control Cockpit interface is started, a security message is displayed via the browser (see next step).
  - Own certificate
    - You can upload your own trusted certificate and use it for the application.
    - A trusted certificate, issued by your certificate authority (CA), is classified as secure and the application is started via a secure `https://` URL without displaying the warning message.

Since the certificate is unknown to your browser, a security warning is displayed the first time you run the application. The security warning depends on the browser you are using (for detailed information see Security information).

- Read the security message and acknowledge that you know how to start the Control Cockpit application with SSL encryption. Click **Next** to continue.
- Choose whether you want to create a desktop shortcut and click **Next**.
- Click **Install** to start the installation process.
  - A self-signed certificate is automatically created during the installation.
- Click **Finish** to complete the installation.

✓ The software has been downloaded and installed.

Starting the software

In order to work with the software you need to start the service and to open the web browser ui.

To start the service:

- In the Windows® tray right-click the icon of the Sennheiser Control Cockpit.
- Select **Start service**.
  - ✓ The Sennheiser Control Cockpit service starts. All supported Sennheiser devices in the same network range can be controlled via the web browser UI of the Sennheiser Control Cockpit.

    > **i** The service is also started automatically when the host PC boots.

If you want to stop the service:

- Right-click the icon of the Sennheiser Control Cockpit and select **Stop running service**.
  - ✓ The service has been stopped.

To open the web browser ui:

> **i** Since the Control Cockpit user interface is protected by SSL encryption by default, you may see a security message in your browser when you first start it. This occurs because the certificate used for the encrypted connection is self-signed and created locally on your computer. The web browser is not able to verify the certificate authority. Follow the steps described in the chapter Security information.

- In case of a host PC double-click the icon of the Sennheiser Control Cockpit in the Windows® tray. Alternatively, right-click on the icon of the Sennheiser Control Cockpit in the Windows Tray and select Open Cockpit. The Sennheiser Control Cockpit will be opened in the standard browser.
- In case of a client, identify the IP address of the host PC. Enter the IP address in the client's browser according to the following scheme: `https://ip-adress`.

  > **i** If you configured a different port during installation (see Downloading and installing the software), please enter this port.

✓ You have successfully started the software service.

Example:

The IP address of the host PC is `192.168.69.36`.

Enter the following in the browser of the client: `https://192.168.69.36`.

The Sennheiser Control Cockpit Web Browser UI will open.

Security information

The Control Cockpit user interface is protected by SSL using a self-signed certificate by default.

> **i** Since the certificate is unknown to your browser, a security warning is displayed the first time you run the application. The security warning depends on the browser you are using. This occurs because the certificate used for the encrypted connection is self-signed and created locally on your computer. The web browser is not able to verify the certificate authority.

To open the SSL-encrypted Control Cockpit interface:

- Follow the steps described below for the browser you are using.
- Alternatively, you can use your own trusted certificate for the SSL encryption to no longer display the security message. To do this, simply upload your `.pe` certificate during the installation process when the respective step is displayed. If you want to upload the certificate after you have completed the installation, you need to reinstall the application. For more information see Downloading and installing the software.
- Update your bookmarks for Sennheiser Control Cockpit, as the URL has changed:
  - For a local setup the URL references to localhost. Example: `https://localhost`
  - For a server setup, the URL contains the IP address or DNS name of the server on which Control Cockpit is installed. Example: `https://192.168.0.11`

Microsoft Edge:

- Click on **Advanced** and then on **Continue to localhost (unsafe)**.

Google Chrome:

- Click on **Advanced** and then on **Proceed to localhost (unsafe)**.

Firefox:

- Click on **Advanced** and then on **Accept the Risk and Continue**.

Setting user password

The Control Cockpit user interface is protected by SSL encryption by default.

When you start the application for the first time, you will be prompted to enter a password for the user interface.

To set a user password:

- Set the initial user password for your Control Cockpit instance.
  - The Sennheiser Control Cockpit service starts.

The password has been set.

Resetting user password

If you have forgotten your password and cannot log in to the Sennheiser Control Cockpit application, you can reset the password.

> **i** Before the reset, make sure that the service has been started.

To reset a user password:

- Log in as local admin.
- Right-click on the icon of the Sennheiser Control Cockpit in the Windows® tray and select **Reset Password**.
  - A new **Reset Password** icon appears:
- Meet the displayed minimum requirements and set a new password.

✓ The password has been reset.

> **i** For more information on changing the password in the application, see chapter Setting system password.

Configuring log level

You can set the log level for recording log information and save all data as a compressed file.

To set the log level:

- Right-click on the icon of the Sennheiser Control Cockpit in the Windows Tray and select **Log level**.
- Choose the recording level between **Normal** or **Verbose**.

To save the log information:

- Right-click on the icon of the Sennheiser Control Cockpit in the Windows® tray and select **Save log and setting files**.
- Select the storage location and confirm with **Save**.
  - The log information has been saved in a ZIP file.

✓ The log level has been configured.

5. User Manual

Detailed description of software setup, navigation and configuration of connected Sennheiser devices.

Structure and navigation

The following features of the software will be displayed constantly: **navigation bar**, **application bar** and **main views**.

Move the mouse over the image to find out more about the layout structure:

Navigation bar

The navigation bar serves as the main navigation to obtain an overview of connected devices, their locations and incoming system messages.

In the Navigation Bar the following features are available:

Navigation

Navigates to the Cockpit View, the Devices View and the Locations View.

- **The Cockpit View**, is a general overview of the status of all devices in the network range. See Cockpit view.
- **The Devices View**, is a detailed list of all devices in the network range. See Devices view.
- **The Locations View**, is a list of all locations containing devices. See Locations view.

Messages

The in-box contains messages and notifications about the following events:

- availability of firmware and software updates
- information about added or lost devices
- notifications about battery status
- you can set up the type of notifications in the Settings menu. For details see Notification settings:

Logout

Logout button in the top right corner.

Application bar

The application bar is used to obtain detailed software information and user-related profile settings in the system.

In the Application Bar the following features are available:

- User Manual
- Settings
- Info and language selection

User Manual

Click on the User Manual link to open this user manual in a separate browser tab.

Settings

In the Settings menu you can adjust the system preferences and notification settings. For details see System preferences and settings

Privacy

The privacy policy describes the principles of processing personal data provided to SENNHEISER electronic SE & Co. KG by customers in connection with the use of the Control Cockpit software and its accompanying services. For detailed information please click on "Privacy" in the application bar.

Info

Displays information on version and registration of the Control Cockpit as well as a link to the license agreement, which will open as a PDF file in a separate browser tab.

Language Selection

Select the desired language of the software. Currently, the following languages are supported:

- EN: English
- DE: German
- FR: French
- ES: Spanish
- ZH: Chinese

Feature Request

Customer satisfaction is very important to us. If you miss a feature or have an idea to improve the software, you can always tell us your opinion. To do this, click on the link in the Control Cockpit.

Please do not use this function for support requests, as we cannot guarantee a quick response.

Main Views

The Main views section displays all adjustable software and device information.

- **The Cockpit View**, is a general overview of the status of all devices in the network range. See Cockpit view.
- **The Devices View**, is a detailed list of all devices in the network range. See Devices view.
- **The Locations View**, is a list of all locations containing devices. See Locations view.

Cockpit view

The Cockpit view is shown as the start screen and provides an overview of the overall system status.

To return to the Cockpit view from any other view of the software, click on Cockpit in the navigation bar.

The Cockpit view displays the dashboard with the following status information:

- Known devices
- Available receivers
- Batteries in use
- Batteries in chargers

Batteries in chargers

Displays the number of devices that have already been detected by the software or added manually and that are available in the database.

Available receivers

Displays the number of receivers that are currently visible in the network. In addition, the following status information is shown:

- **Active Link**: The link between the transmitter and receiver is good.
- **No Link**: The receiver is visible in the network. The transmitter is either switched off, out of range or not paired.
- **Bad Link**: The link between the transmitter and receiver is disturbed.

Batteries in use

Displays the remaining battery life of the transmitters paired with the receivers visible in the network (only when BA 10, BA 30 or BA 40 accupacks are used):

- **>4 h**: More than 4 hours of battery life
- **<4 h**: Less than 4 hours of battery life, remaining battery life sufficient for short meetings
- **<0.5 h**: The accupack or the transmitter must be replaced or recharged

Batteries in chargers

Displays the number of SpeechLine Digital Wireless transmitters which are currently being charged in the CHG 4N /CHG 2N network charger. In addition, the remaining time until the accupacks are fully charged is displayed.

- **<0.5 h**: Less than half an hour until the accupack is fully charged
- **<2 h**: Less than 2 hours until the accupack is fully charged
- **>2 h**: More than 2 hours until the accupack is fully charged

> **i** This statistic appears as soon as at least one network-enabled charger has been detected or added to the device pool.

Devices view

The Devices view provides a detailed listing of all the devices available in the network.

To open the Devices view, click on **Devices** in the navigation bar.

> **i** You can use the filter function to display specific devices in the Devices view by specific criteria. See Using the filter.

The Devices view lists all the devices that are currently visible in the network. The list can be sorted by clicking on the name of a column.

> **i** Known devices, which are currently not reachable in the network, will be displayed with a grey line on the left.

Device list

The Device List shows detailed information on device types, states, names, locations and additional device information.

Type

The icon indicates the device type and the corresponding device state:

 wireless microphone receiver

 Multi-channel receiver

 network charger

 stationary in-ear monitoring transmitter

 TeamConnect Bar

 TeamConnect Ceiling 2 ceiling microphone array

 TeamConnect Ceiling Medium ceiling microphone array

 MobileConnect Manager

 The connection with the device cannot be established. Please check the network setup of the device.

Device state

The device state is indicated by the color to the left of the icon:

green: (normal) - The device is working flawlessly.

yellow: (warning) - Pay attention to this device, as there is some activity in progress (e. g. audio mute, firmware update, etc.). A label in the Device Information column will provide further information.

red: (alert) - There is an error with the device and action is required. A label in the Device Information column will provide further information.

gray: (offline) - The device is known but not reachable via network at the moment.

Name

Name of the radio link or of the device.

Location

Name of the location where the device is installed.

Device Information

Additional information on the respective device if the device is in yellow warning or red alert state.

Device status

Click on the three dots to select the desired option for display in the two custom columns for device status.

You can select the following options in both custom columns:

Battery Health

Indicates the health of the battery in %. This value is generated in the battery based on charging cycles and usage.

Battery Level

Indicates the current charging level in %.

Battery Remaining

- Displays the remaining battery life of the transmitter's accupack. This information is only displayed when the original Sennheiser BA 10, BA 30, BA 40 and BA 70 accupacks are used.
- For the CHG 2N/CHG 4N/CHG 70N-C the remaining time is indicated for all four/two charging bays.
- For the Multi-Channel Receiver the remaining time is indicated for all four transmitters.

Charging Cycles

Indicates the number of times the battery has been fully recharged.

Firmware Version

Indicates the currently installed firmware version of the selected device.

Frequency Range

Indicates the currently used frequency range of the selected device.

IP Address

Indicates the IP address of the selected device.

Last Online

If a device is switched off, the time it was last seen in the software is indicated here.

MAC Address

Indicates the MAC address of the selected device.

Product Family

Indicates which product family the device belongs to:

- **EW-DX (Evolution Wireless Digital)**
    - EW-DX EM 2 rack receiver
    - EW-DX EM 2 Dante rack receiver
    - EW-DX EM 4 Dante rack receiver
    - EW-DX SK | SK-3 PIN bodypack transmitter
    - EW-DX SKM | EW-DX SKM-S handheld transmitter
    - EW-DX TS 3-pin | EW-DX TS 5-pin wireless table stand
    - CHG 70N - 2 bay network charger
    - CHG 70N-C - cascaded network charger
- **SL DW (SpeechLine Digital Wireless)**
    - SL Handheld DW handheld transmitter
    - SL Bodypack DW bodypack transmitter
    - SL Tablestand 133-S DW wireless table stand
    - SL Tablestand 153-S DW wireless table stand
    - SL Boundary 114-S DW wireless boundary microphone
    - CHG 4N - network-enabled charger
    - CHG 2N - 2 bay network charger
    - Multi-channel receiver
- **TeamConnect:**
    - TeamConnect Bar S/M
    - TeamConnect Ceiling 2
    - TeamConnect Ceiling Medium
- **ew G4: evolution wireless G4**
- **ew G3: evolution wireless G3**
- **digital-6000: Digital 6000**

RF Power

Indicates the RF transmission power for the selected device.

RF Quality

Indicates the level of the RF signal of the selected device.

Serial Number

Indicates the serial number of the selected device.

Sync Status

Indicates the RF sync status.

Time to Full

Indicates the time remaining until the accupack is fully charged.

Transmitter Type

> The icon will change its color according to the device state (see Device state).

Indicates the type of the linked transmitter:

 handheld transmitter

 (with BA 70 rechargeable battery pack)

 bodypack transmitter

 wireless table stand

 wireless boundary microphone

 no transmitter / transmitter switched off

Device interaction

Click on the three dots to select the desired option for display in the custom column.

You can select the following options:

Identify

Clicking on the Identify button triggers the Identify function on the receiver. This function allows you to find out, on-site, which transmitter is paired with which receiver.

The Identify function can also be activated directly on the receiver by pressing the PAIR button shortly. This is also displayed in the software. The Identify function allows you to easily find and identify devices.

Pairing

Clicking on the Pairing button triggers the Pairing function of the receiver. This allows you to pair devices remotely out of the software.

The Pairing function can also be activated directly on the receiver by pressing the PAIR button for at least 3 seconds.

Delete

Clicking on the Delete button allows you to delete a device completely from the Control Cockpit.

> **i** If mDNS is enabled for the device, it cannot be deleted.

Selecting devices

A single or multiple selection can be made to view and/or configure devices.

To change the settings of a single device:

- Click on the name of the desired device.
  - The Properties window opens, where you can change the settings of the selected device.

To change the settings of multiple devices:

- Tick the check boxes of all the devices in the list whose settings you want to change and click on **Edit Properties**.

  > To edit all devices in one location you can also click on the name of the location.

- To expand or collapse the list of all selected devices, click on the three dots on the right side of the **Properties** navigation bar.

Devices have been selected.

Locations view

The Locations view provides a detailed overview of all the locations where you have installed devices and of the devices installed in each location.

To open the Locations view, click on Locations in the navigation bar.

The overview displays the locations used for installation as well as the number of the installed devices per location.

The list can be sorted by clicking on the name of a column. Click on the name of a location to open a multi selection of all devices in that location.

Room in use

The Locations view contains an indicator for each location that shows the current activity of supported devices in real time. The indicator shows whether the room (= location) is in use (blue state) or not (grey state).

- **Blue:** currently in use
- **Grey:** currently not in use or no supported device at this location

> **i** This function is currently supported for TeamConnect Ceiling 2, TeamConnect Ceiling Medium, SL Rack Receiver DW and SL Multi-Channel Receiver DW only.

Monitoring View

The Monitoring View is a consolidated view of the most important features of all devices of one location. This allows for a overview of the performance of all devices in one location at all times.

The following devices are supported for the Monitoring View:

- EW-DX EM 2 | EW-DX EM 2 Dante | EW-DX EM 4 Dante rack receiver
- EW-DX TS 3-pin | EW-DX TS 5-pin
- SL Rack Receiver DW stationary receiver
- SL Multi-Channel Receiver DW
- SL Handheld DW handheld transmitter
- SL Bodypack DW bodypack transmitter
- SL Tablestand 133-S DW wireless table stand
- SL Tablestand 153-S DW wireless table stand
- SL Boundary 114-S DW wireless boundary microphone
- TeamConnect Ceiling 2
- TeamConnect Ceiling Medium
- EM 6000 Digital 2-channel receiver

Activating monitoring view

The Monitoring View is a consolidated view of the most important features of all devices of one location.

To activate the monitoring view:

- Select your devices you want to monitor and click on **Edit Properties**.
- Click on the Monitoring View icon in the column of the respective location.

✓ The Monitoring View of that location is displayed.

Adding devices

Devices can be added automatically via mDNS or manually.

Adding devices manually

Here you will learn how to add the devices manually.

> **i** Devices of the evolution wireless G4 and G3 series cannot be added manually. They only support automatic device identification via mDNS.

To add a new device to the Device List:

- Click on the **Add Device** button in the upper part of the Device List.
- In the Add Device dialog box, enter the IP information for the device.
  - ✓ The device will be added to the list of known devices. When the device is switched on, it will be displayed in the Device List and can be configured there.

> **i** The IP address must be entered without any leading zeros, which might be displayed in the receiver: for example `192.168.1.10` instead of `192.168.001.010`

To add multiple devices from the same IP address range:

- Click on **Range**.
- In the **IP from** field, enter the first IP address of the IP range.
- In the **IP to** field, enter the last IP address of the IP range.
  - ✓ The device will be added to the list of known devices. When the device is switched on, it will be displayed in the Device List and can be configured there.

> **i** The device will be added to the list of known devices. When the device is switched on, it will be displayed in the Device List and can be configured there.

✓ Devices have been added manually.

Adding devices via CSV

You can also add devices via a prepared csv file.

Alternatively, you can prepare a CSV file with a list of IP addresses and add these devices by clicking on the Import CSV link in the top right corner of the window.

To add devices via csv:

- Prepare a csv file with a list of IP adresses.

  > Use only one column within the CSV file and specify the IP addresses one below the other. Start entering the IP addresses directly in the first row. Do not leave the first row empty and do not enter any headings or text.

- Click on **Add Device** on the navigation bar.
- Click on **Import CSV**.
- Select the prepared file with valid IP addresses.
- Click on **SAVE** to import the IP addresses to the application.

✓ The devices have been added via a CSV file.

Adding MobileConnect Manager

It is not possible to add the MobileConnect Manger by using the **Add device** function in the Device List.

> **i** You have the option to establish the connection between the Control Cockpit and the MobileConnect Manager either via https (recommended) or http (not recommended). For security reasons, the application is running over https (port 443) by default.

To add your MobileConnect Manager to the Device List:

- Click on the **Settings** link to open the Settings menu.
- Click on **System** and navigate to the tab **MobileConnect Manager**.
- In the field **Hostname**, enter the DNS name of the MobileConnect Manager.

  > **i** If you activate 'Show status', the current online status of the added MobileConnect Manager is read out and displayed under **Device List**.

- Optional: Deactivate **Use https**, if you want to run the application over http via port `80` (not recommended).

  > **i** For secure communication with the web interface, it is recommended to use https, as the data is transmitted encrypted in this way. As with all security measures, this does not guarantee security, but it does significantly increase the barrier to attacks.

Exporting device information

You have the option to read out information about your registered devices from Control Cockpit and export a summary of this information in CSV format.

Depending on the device type, the following information is read out and exported:

- Type
- Name
- Location
- Battery level
- Battery remaining
- Battery health
- Firmware
- IP
- MAC
- Product family
- Transmission power
- Serial number
- Sync state
- Last online

To export device information in a CSV file:

- From the list of devices, select the devices for which you want to export the information.
- Click **Export selection** in the navigation bar of the device list.
  - A CSV file named “export.csv” will be downloaded.

✓ The device information have been exported.

System preferences and settings

In the Settings menu you can set password protection, activate the demo mode and define the notifications the Control Cockpit will send you.

Notification settings

The Control Cockpit can send notifications about certain events to the Control Cockpit inbox or to email and SMS recipients.

The following settings can be adjusted in the Notifications tab.

Type

- Battery low:
    - The software will send an alert when the battery of a device needs to be changed or recharged.
- New application software version:
    - The software will send a message that a new version of the Control Cockpit is available. A link for updating the software will be provided.
- Device added:
    - The software will send a message that a new device has been added to the Device List.
- Device lost:
    - The software will send a message that the connection to a certain device has been lost.
- Battery fully charged:
    - The software will send a message that the battery of a certain device has been fully charged.
- New firmware version available:
    - The software will send a message that a new firmware version for the devices is available. It will be available on the internal update server of the Control Cockpit (also see Updating device firmware for further details on firmware updates).
- Unsynchronized SL DW follower:
    - The software will send a message that an SL DW device set as a follower is not synchronized.
- SL DW follower synchronized:
    - The software will send a message that an SL DW device set as a follower has been synchronized.
- SL DW out of range detection:
    - The software will send a message that an SL DW microphone is out of range. For this feature the Out of Range Detection needs to be activated in the System settings.

Locations

Select the locations for which the software will send messages. You can select all locations or only some of the locations.

Time range

Set a time range during which messages will be sent.

> **i** Note: You will not be notified about any events that occur outside the specified time range.

Email recipient

Specify the email addresses, which the messages will be sent to. You can specify two email addresses. All messages will also be sent to the inbox of the Control Cockpit.

> **i** For the Control Cockpit to send emails, you need to enter the server details for the sender address (see System settings).

SMS recipient

Specify a phone number, which the messages will be sent to. You can specify two phone numbers. All messages will also be sent to the inbox of the Control Cockpit.

Defining notification settings

You can define different notification profiles for different purposes.

To create a new notifications profile:

- Click on Settings in the application bar.
- Create a new profile or edit an existing profile.
- Adjust the desired settings (see Notification settings).
- In the **Activation** box, set the button to **Active** for the settings to be used.
- Click on **OK** in the bottom right corner to save any settings you have changed.

✓ The notification settings have been defined.

System settings

In the System tab you can define provider settings for email and sms notifications, set password protection for the Control Cockpit and activate the demo mode.

SMTP Settings

Enter the account details of the email account from which the Control Cockpit will send email notifications.

SMS Settings

When you want the Control Cockpit to send SMS messages to the users, you need to specify a provider here. Currently, the Control Cockpit supports CM Telecom. Please register online at in order to use this function. After registering, you receive a product token which you need to enter in the SMS Settings box.

System Password

A password for the Control Cockpit must be set at the first start (see Setting user password). The password must be retyped each time the Control Cockpit is opened.

If you have forgotten your password and cannot log into the Sennheiser Control Cockpit application, you can reset the password via the Sennheiser Control Cockpit tray icon (see Resetting user password).

MobileConnect Manager

Here you can manually add your MobileConnect Manager to the Control Cockpit via a valid hostname.

For details please refer to the chapter Adding MobileConnect Manager.

Usage Data Settings

Enable this feature if you allow sending anonymous usage data to improve the Control Cockpit software with the collected data. For details please refer to the Privacy chapter.

Out of Range Detection

Activate this feature if you want to be able to receive notifications if an SL DW microphone is out of range, for example when someone leaves the room and takes the microphone with them. The notification for this feature can be activated in the notification profile. See above under Notification settings.

Demo Mode

The Control Cockpit offers a demo mode which simulates the setup of devices. This allows you to test the software and learn how to use it. Depending on the firmware version, not all functions may be available in the demo mode.

Defining system settings

In the System tab you can define provider settings for email and sms notifications, set password protection for the Control Cockpit and activate the demo mode.

To define the system settings:

- Click on **Settings** in the application bar.
- Define your settings according to your needs. For more details see chapter System settings.

✓ The system settings have been defined.

Setting system password

You can set a new system password for your Control Cockpit instance within the application.

To set a new system password:

- Click on the **Settings** link to open the menu.
- Click on System and navigate to the **System Password** tab.
- Click on **Edit** to set the password.
  - You will be prompted to set a new password.

> Please note that the new password must meet the following requirements:
> - At least ten characters
> - At least one lowercase (a..z)
> - At least one uppercase letter (A..Z)
> - At least one number (0..9)
> - At least one special character: !#$%&()*+,-./:;<=>?@[]^_{|}~
> - Maximum length: 64 characters

- Enter your new password and confirm it.
- Click **OK** to save the password.

The new system password has been set.

Activating demo mode

The Control Cockpit offers a demo mode which simulates the setup of devices. This allows you to test the software and learn how to use it.

To activate the Demo Mode:

- Click on **Settings** in the application bar.
- Set the Demo Mode button to **Active**.
- Click **OK**.
  - The Demo Mode is started. As long as the Demo Mode is active, it is indicated in the application bar.

✓ The demo mode has been activated.

Updating device firmware

When the PC running the Sennheiser Control Cockpit software is connected to the Internet, the most recent firmware versions for all update-able devices is automatically made available.

> **i** In order to use all the latest features of the software and in order for all devices to work properly, we strongly recommend updating the firmware of all devices to the latest version (see product-specific firmware update instructions in the following chapters).
> Depending on the functional scope of the implemented device firmware and the supplied software, there are two different protocols that can be used:
>
> - Secure API (SSCv2): New protocol with a high security standard for Sennheiser devices that are delivered with a password.
> - Legacy API (SSCv1): Unsecure legacy protocol based on UDP/TCP

Firmware Update Service

- The latest firmware versions are available via the internal update server of the Sennheiser Control Cockpit. Alternatively, they can be downloaded from the respective product pages.
- If you are running a closed network, you have to download the firmware from the Internet. In order to import the downloaded firmware into the Sennheiser Control Cockpit software, please navigate to **Devices** > **'your device'** > **Device** > **Fw Information** > **Select firmware** > **Upload**.

> **i** Please make sure that your firewall is configured correctly before you start the update:
>
> - 443 (TCP) inbound/outbound
> - 5353 (mDNS multicast 224.0.0.251) inbound/outbound
>
> After the update, select the correct 3rd party protocol to ensure that your 3rd party integrations are not left broken. We recommend to update all 3rd party modules and use the new secure protocol.
> A full list of ports can be found in chapter Port requirements (→ inbound | ← outbound).

Sound Control Protocol v2 (SSCv2)

Sennheiser 3rd party API protocol

The latest Sennheiser 3rd party API protocol enables configuration and monitoring of devices via encrypted REST API calls, allowing the user to control the device via HTTPS commands and integrate the products into any IT environment. It offers end-to-end security, utilizing HTTPS (TLS 1.3).

In order to activate the secure SSCv2 protocol:

- update your firmware, which supports SSCv2 (see Updating device firmware) and
- enable the secure SSCv2 protocol in the control software under: **Devices** > **your device** > **Access** > **3rd Party Access** > **Edit** > **Secure**.

In addition to encryption, SSCv2 also provides an authentication scheme. By using HTTP basic authentication, a compatible and well-established mechanism of username and password is employed to ensure that no unauthorized changes are made to the device's settings and that no data is read from it.

Password protection

The feature is supported by the following Sennheiser devices which come equipped with a device configuration password:

- TeamConnect Ceiling Medium (see Access for TCC M devices)
- TeamConnect Bar S and M (see Access for TC Bar devices)
- Evolution Wireless Digital (see Access for EW-DX devices)

Detailed information

- For more information on updating the firmware, please refer to the chapter Updating device firmware.
- For more information on the claiming topic, please refer to the chapter Claiming devices.
- For more information on the SSCv2, please refer to the website 3rd Party API for Sennheiser Products.

Sound Control Protocol v1 (SSCv1)

The legacy protocol (Sennheiser Sound Control protocol v1) can still be utilized by the user, and is provided for interoperability reasons.

> **i** We strongly recommend that you switch to the new and secure protocol, which is supported in the latest 3rd party modules provided by Sennheiser. Nevertheless, to ensure that your room is fully functional at all times, you can use the unencrypted protocol.

The following Sennheiser devices are supported:

- SL Rack Receiver
- CHG 4N - network-enabled charger
- CHG 2N - 2 bay network charger

- Multi-channel receiver (SL MCR2 & MCR4)
- EW-DX EM 2 rack receiver (EW-DX EM 2)
- EW-DX EM 2 rack receiver Dante (EW-DX EM 2 Dante)
- EW-DX EM 4 rack receiver Dante (EW-DX EM 4 Dante)
- CHG70N - 2 bay network charger
- TeamConnect Ceiling 2 (TCC 2)

For more information on SSCv1, please refer to the website 3rd Party API for Sennheiser Products.

Updating EW-DX EM 2 / EM 2 Dante / EM 4 Dante rack receiver

The latest firmware versions are available via the internal update server of the Sennheiser Control Cockpit.

CAUTION

As of firmware version 4.0.0, all control communication over the network is encrypted and authenticated

The devices are password protected and must be claimed in the control software before use (see Sound Control Protocol v2 (SSCv2) and Claiming devices).

The firmware version can then no longer be downgraded!

After the update, you will be able to set up the encryption method for the 3rd party access (see 3rd party media control access).

- ▶ Please make sure that your firewall is configured correctly before you start the update. After the update, select the correct protocol for 3rd party providers to ensure that the integration of 3rd party providers is not broken. We recommend to update all 3rd party modules and use the new secure protocol.

In order to update the EW-DX EM 2 (2 Dante/4 Dante) rack receiver:

- ▶ From the **Device List**, select the device whose firmware you want to update (see Devices view).
- ▶ Open the Device Settings menu of the respective device.
  - ✓ The dialog **Firmware Info** indicates the available firmware versions.
- ▶ From the drop-down list, select the firmware version you want to install.

> **i** To add a manually downloaded firmware, click on **Add firmware file** and select the downloaded file.

> Firmware versions downloaded automatically by the Control Cockpit are marked **via update server**. Firmware versions downloaded manually by yourself are marked **added manually**.

- Agree to the license terms and conditions and click on **update**.

> To update the transmitter's firmware, go to **System** > **TX Update** in the menu on the receiver.

✓ The firmware of the selected EW-DX device is updated.

Updating CHG 70N(S)-C charger

The latest firmware versions are available via the internal update server of the Sennheiser Control Cockpit.

In order to update the CHG 70N(S)-C charger:

- From the **Device List**, select the device whose firmware you want to update (see Devices view).
- Open the **Device Settings** menu of the respective device.
  - The dialog **Firmware Info** indicates the available firmware versions.
- From the drop-down list, select the firmware version you want to install.

  > To add a manually downloaded firmware, click on **Add firmware file** and select the downloaded file.

  > Firmware versions downloaded automatically by the Control Cockpit are marked **via update server**. Firmware versions downloaded manually by yourself are marked **added manually**.

- Agree to the license terms and conditions and click on **update**.

  > In case of cascaded devices the update starts with the last displayed cascaded device and continues in ascending order up to the master device. The update process may take up to 15 minutes. Devices that display dashes are unreadable due to an error. If one or more devices in a cascade are not reachable, perform troubleshooting as described in chapter Devices in the cascade not reachable.

✓ The firmware of the charger has been updated.

Updating SpeechLine Digital Wireless link

The latest firmware versions are available via the internal update server of the Sennheiser Control Cockpit.

In order to update the SpeechLine Digital Wireless link:

- From the **Device List**, select the device whose firmware you want to update (see Devices view).
- Open the **Device Settings** menu of the respective device.
  - The dialog Firmware Info indicates the available firmware versions.
- From the drop-down list, select the firmware version you want to install.

  > To add a manually downloaded firmware, click on **Add firmware file** and select the downloaded file.

  > Firmware versions downloaded automatically by the Control Cockpit are marked **via update server**. Firmware versions downloaded manually by yourself are marked **added manually**.

- Click on **update**.

  > The firmware of the paired transmitter is not updated automatically. You first have to confirm the update for the paired transmitter.

✓ The firmware of the receiver is updated.

> Make sure to update only one transmitter at a time. Updating multiple transmitters simultaneously in the same frequency range may produce interferences which may cause the update to fail.

Updating Single SL DW transmitters using the CHG 2N / CHG 4N

If you want to update the firmware of single or multiple transmitters independently from their paired receivers, you can do that using the CHG 2N / CHG 4N.

In order to update the transmitters:

- From the **Device List**, select the device whose firmware you want to update (see Devices view).
- Open the **Device Settings** menu of the respective device.
  - The dialog Microphone Firmware indicates the available firmware versions for the transmitters in each of the charging bays of the CHG 2N / CHG 4N:
- From the drop-down list, select the firmware version you want to install.

> To add a manually downloaded firmware, click on **Add firmware file** and select the downloaded file.

> Firmware versions downloaded automatically by the Control Cockpit are marked **via update server**. Firmware versions downloaded manually by yourself are marked **added manually**.

- Click on **update**.

The firmware of the transmitters is updated.

Updating Network-enabled charger CHG 2N / CHG 4N

The latest firmware versions are available via the internal update server of the Sennheiser Control Cockpit.

In order to update the CHG 2N/4N charger:

- From the **Device List**, select the device whose firmware you want to update (see Devices view).
- Open the **Device Settings** menu of the respective device.
  - The dialog Firmware Info indicates the available firmware versions.
- From the drop-down list, select the firmware version you want to install.

  > To add a manually downloaded firmware, click on **Add firmware file** and select the downloaded file.

  > Firmware versions downloaded automatically by the Control Cockpit are marked **via update server**. Firmware versions downloaded manually by yourself are marked **added manually**.

- Click on **update**.

✓ The firmware of the charger is updated.

Updating TeamConnect Bar

The latest firmware versions are available via the internal update server of the Sennheiser Control Cockpit.

In order to update the TC Bar:

- From the **Device List**, select the device whose firmware you want to update (see Devices view).
- Open the **Device Settings** menu of the respective device.
  - The dialog Firmware Info indicates the available firmware versions.
- From the drop-down list, select the firmware version you want to install.

> To add a manually downloaded firmware, click on **Add firmware file** and select the downloaded file.

> Firmware versions downloaded automatically by the Control Cockpit are marked **via update server**. Firmware versions downloaded manually by yourself are marked **added manually**.

- Agree to the license terms and conditions and click on **update**.

The firmware of the selected TC Bar is updated.

Updating TeamConnect Ceiling 2 / Medium

The latest firmware versions are available via the internal update server of the Sennheiser Control Cockpit.

In order to update the TeamConnect Ceiling device:

- From the **Device List**, select the device whose firmware you want to update (see Devices view).
- Open the **Device Settings** menu of the respective device.
  - The dialog Firmware Info indicates the available firmware versions.
- From the drop-down list, select the firmware version you want to install.

  > To add a manually downloaded firmware, click on **Add firmware file** and select the downloaded file.

  > Firmware versions downloaded automatically by the Control Cockpit are marked **via update server**. Firmware versions downloaded manually by yourself are marked **added manually**.

- Agree to the license terms and conditions and click on **update**.

✓ The firmware of the selected TeamConnect Ceiling device is updated.

Device Error Codes

In some cases, errors may occur during an update.

0 None

The device is ready to be updated.

1 DeviceNotReady

The device is not ready to be updated.

The device is not in the 'Processing' update state and therefore cannot be updated. Please wait until the device is fully loaded (not grayed out in the Control Cockpit).

2 CannotSetDeviceProperty

The device is not ready to be updated.

The device could not enable the update property. Please check the connection to the device.

3 DeviceReportsError

Update error.

The device reports an update error. Please read the error message and react accordingly / contact the Sennheiser support.

4 NoDeviceReaction

Error after image upload.

The device does not react after firmware image upload. Please check the connections / contact the Sennheiser support.

5 GeneralError

A general error has occurred. Please check the connection and restart the device.

Claiming devices

This feature was introduced to bind the device to a specific Control Cockpit installation, preventing any unauthenticated device control within the network.

The feature is supported by the following Sennheiser devices which come equipped with a device configuration password:

- TeamConnect Ceiling Medium (see Access for TCC M devices)
- TeamConnect Bar S and M (see Access for TC Bar devices)
- Evolution Wireless Digital (see Access for EW-DX devices)

> **i** Once a device is claimed, its settings can only be viewed and modified via an encrypted connection which requires entry of the configuration password.

Benefits at a glance

- Encrypted connection
- Password protected devices
- Encrypted and protected 3rd party media control access

Verification of the claiming status

> **i** We strongly recommend that you switch to the new and secure protocol, which is supported in the latest 3rd party modules provided by Sennheiser (see Sound Control Protocol v2 (SSCv2). Nevertheless, to ensure that your room is fully functional at all times, you can use the unencrypted protocol (see Sound Control Protocol v1 (SSCv1).

- If the device is in a factory default state and the original password is still assigned, it will be automatically detected and applied.
- If the device was previously claimed by another Control Cockpit instance, the previously set password must be entered. If you cannot remember the previously set password, please perform a hardware reset of the device. After the reset, the default password will be automatically applied.

Claiming options

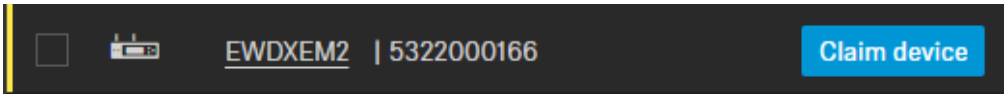
You can claim either a single device or several devices simultaneously for your Control Cockpit instance.

Claiming single device

This chapter describes the general procedure for claiming devices for a Control Cockpit instance.

To claim a single device for your Control Cockpit instance:

- Connect the device's control network port to the network.
- Open Control Cockpit and click on the "Device list" view.
  - The new unclaimed device is automatically detected and displayed as "Claim device"



  . If the device does not appear in the device list, add the device manually by entering an IP address (see Adding devices).
- Click on **Claim device**.
- Read and agree to the software licenses and click on **Next**.
- Enter the device's default password.

> **i** If the device was previously claimed by another Control Cockpit instance, enter the previously set password. If you do not remember the previously set password, please perform a hardware reset of the device and try again with the default password. For information on how to find the default password, see the device's instruction manual.

  - Next to ensure secure access to the device, you will be asked to enter a new password.

> **i** Please note that the new password must meet the following requirements:
> - At least ten characters
> - At least one lowercase letter
> - At least one uppercase letter
> - At least one number
> - At least one special character: !#$%&()*+,-./:;<=>?@[]^_{|}~
> - Maximum length: 64 characters

- Enter the new password for your device and click **Set password**.
  - The device has now been claimed by your Control Cockpit instance. You can now use all available functions (see Monitoring and controlling devices).

i You can view and change the device password on the "Access" tab on the device page. You are also able to install a new Control Cockpit instance and claim the device by entering the set device password.

Claiming multiple devices

This chapter describes the general procedure for claiming multiple devices for a Control Cockpit instance.

To claim multiple devices for your Control Cockpit instance at once

- Connect the devices' control network ports to the network.
- Open Control Cockpit and click on the **Device list** view.
  - The new device is automatically detected and displayed as "Not claimed." If the device does not appear in the device list, add the device manually by entering an IP address (see Adding devices manually).
- Select the desired devices from the list and then click on **Claim devices** at the top right of the Device List.
  - You will then be guided through the claim process in the multiple selection.

The devices have now been claimed by your Control Cockpit instance. You can now use all available functions (see Monitoring and controlling devices).

Using the filter

You can filter the displayed devices according to the following criteria.

Filter by type

- **Ceiling Mic**: lists all ceiling microphone arrays
- **Network Charger**: lists all network-enabled chargers
- **Double Receiver**: lists all double receivers
- **Multi-Channel Receiver**: lists all Multi Channel Receivers
- **Receiver**: lists all wireless microphone receivers
- **Soundbar**: lists all audio/video bars
- **Stationary Transmitter**: lists all ew G3 and ew G4 in-ear monitoring transmitters
- **MobileConnect Manager**: lists the added MobileConnect Manager

Filter by location

The filtering options depend on the locations you have assigned.

Filter by device state

- **Normal**: lists all devices which are working flawlessly
- **Warning**: lists all devices in yellow warning state
- **Alert**: lists all devices in red alert state
- **Offline**: lists all devices which are offline at the moment
- **Unclaimed**: shows all devices that must be claimed before first use (see Claiming devices).

Filter by battery life

- **> 4 h**: lists all wireless links with a remaining runtime of more than 4 hours
- **< 4 h**: lists all wireless links with a remaining runtime of less than 4 hours
- **< 0.5 h**: lists all wireless links with a remaining runtime of less than half an hour

> **i** Clicking on underlined statistics in the cockpit view will also add a filter and lead to individual selection of the device list. You can reset the filter by clicking on the **Show all** button.

Filter using remote identify

This function allows you to filter the Device List by hardware.

This can be helpful when you are in a certain location and want the Device List to display certain devices from that location.

In order to filter on remote identify:

- Activate the **Filter by remote identify** function: shortly press the Pair button on the actual receiver or transmitter (Identify function).

  > With Multi-Channel Receiver, you can also trigger the „identify“ action when the receiver is currently in "Pairing Mode".

✓ The devices will be added to the filtered Device List.

Filter using the search field

Instead of using the filter you can also use the text search above the device list.

In order to filter using the search field:

- Click on **Devices**.
- In the **Search** field, enter the name of the device you are looking for.

✓ The devices are filtered according to the name entered.

Filtering & sorting in pairing mode

In pairing mode, you can filter and sort the devices displayed in the list using additional parameters and/or values.

You can filter and sort the following columns:

- Type
- Name
- Battery
- Charging unit
- Charging slot
- Location
- Information

You can filter or sort by using a specific parameter or value together with one of the following operators:

- Contains
- Does not contain
- Equals
- Not equal
- Less than
- Less than or equal
- Greater than
- Greater than or equal
- In range
- Starts with
- Ends with

In order to filter in pairing mode:

- In pairing mode, click on the parameter displayed in the list.
- Press **SHIFT** + **the desired column name** to assign sorting priorities to the columns in ascending order.

✓ The devices are filtered and sorted in pairing mode.

Filter using the messages

You can filter messages and notifications about the events that have occurred.

> **i** You can set up the type of notifications in the Settings menu. For details see Notification settings.

The in-box contains messages and notifications about the following events:

- availability of firmware and software updates
- information about added or lost devices
- notifications about battery status

In order to filter by notifications:

1. Click on **Messages** in the right-hand corner of the application.
2. In the field **Search messages**, enter the keyword you are searching for.

✓ The messages are filtered according to the keyword.

Monitoring and controlling devices

EW-DX EM rack receiver

The following settings can be adjusted for wireless links with the EW-DX EM 2, EW-DX EM 2 Dante and EW-DX EM 4 Dante.

i

Evolution Wireless Digital

- Link Density mode
- Audio Settings
- Device Settings
- Network Settings
- RF Settings

Link Density mode

LD mode doubles the number of usable carrier frequencies in the available spectrum, as the minimum distance for the equidistant frequency grid is halved.

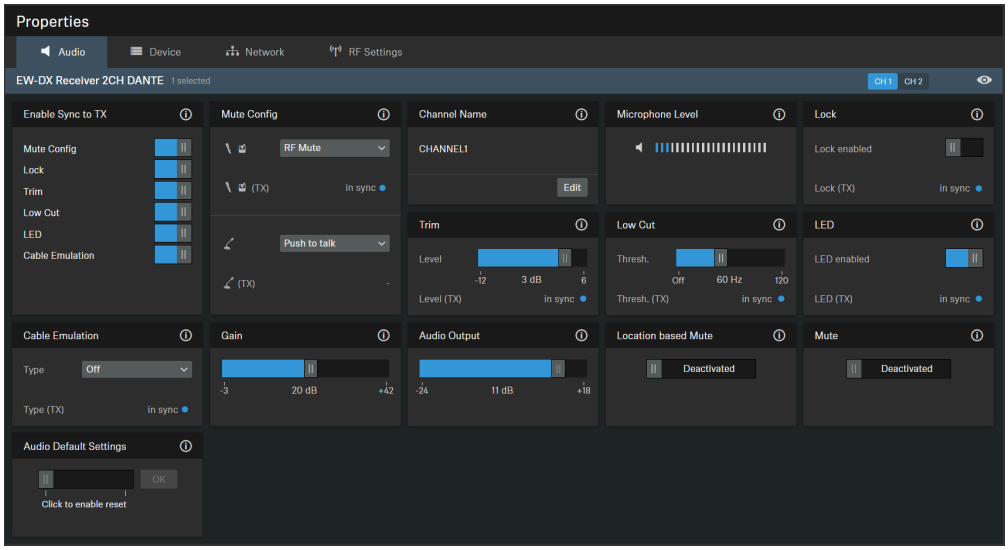
This is achieved by reducing the modulation bandwidth of the transmitter. This means that a much smaller frequency spacing between neighboring frequencies can be selected, and therefore more frequencies can be used in the same available spectrum without intermodulation.

LD mode is recommended if the following criteria are met:

- The required number of channels cannot be achieved using the normal mode, as there may be only a small spectrum available.
- The distance between the transmitters and the antennas is not too great.

Audio settings

The following settings can be adjusted for wireless links with the EW-DX EM 2, EW-DX EM 2 Dante and EW-DX EM 4 Dante in the audio tab.



Enable Sync to TX

Activates or deactivates synchronization of the displayed audio settings on the transmitter.

> **i** To send value changes to the transmitter, you have to press the “Sync” button on the receiver and the transmitter. Settings that are synchronized between the transmitter and the receiver are indicated with a blue dot and the informational text “in sync” in the settings box.

Mute Config

> **i** This function is only available for transmitters with a mute button (SK, SKM-S and TS).

Activates the transmitter’s mute function for AF or HF.

- Activates the following mute functions of the table stand transmitter:
  - **OFF**: No mute function activated.
  - **AF Mute**: Activates the transmitter’s mute function for AF.
  - **Push to talk:**
    - The microphone is muted.
    - The microphone button lights up red.
    - Press and hold the button on the table stand to activate the audio signal.

- **Push to mute**:
  - The microphone is activated.
  - The microphone button lights up green.
  - Press and hold the button on the table stand to mute the audio signal.

Channel Name

Displays the name of the channel.

Trim

The trim function lets you adjust the level of multiple transmitters connected to a single receiver channel, in steps of 1 dB each.

Microphone Level

Displays the microphone level.

Low Cut

A low cut filter cuts out all sounds below a certain frequency in order to filter out wind or handling noise.

- **On**: The low cut filter is activated. Low-frequency noise is filtered out.
- **Off**: The low cut filter is deactivated.

Lock

If this option is activated, the user interface on the transmitter is locked.

LED

Activates or deactivates the LED that indicates an active connection on paired handheld and bodypack transmitters. If the transmitter LED is deactivated, the green LED does not indicate an active connection.

- **Activated**: The LED indicates an activate connection.
- **Deactivated**: The LED does not indicate an active connection.

Location based mute

Part of group: Activate this function to add the transmitter to a mute group. If then one of the transmitters in this mute group is muted or unmuted, all other transmitters in the same mute group of the same location will also be muted and unmuted simultaneously. This allows you to create a separate mute group for each location.

Deactivated: The transmitter is not part of a mute group. Muting or unmuting does not affect other transmitters.

> **i** The most recently saved status is retained even after you reset the device or the audio settings to the factory defaults.

Mute

Immediately mutes the audio outputs of the selected device.

Audio Default Settings

Resets the audio settings (Low Cut and Sound Profiles) to the factory defaults.

> **i** The last status saved in the “Location-based mute” field is retained even after you reset the audio settings to the factory defaults.

Cable Emulation

This menu option allows you to determine how a cable will affect your sound.

> **i** This function is only available for SK bodypack transmitters.

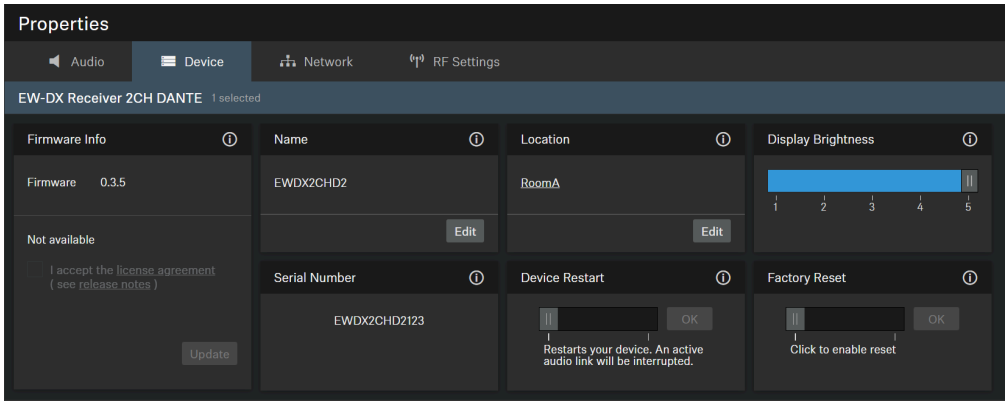
Amplification

Sets the output volume of the selected device channel (CH1 or CH2) from -3 dB to +42 dB in steps of 3 dB.

Audio Output

Slider for setting the audio output level.

Device Settings



Firmware Info

Displays the current firmware version.

For information on how to update the firmware, refer to Updating device firmware.

Name

Edits the name of a device. The name will be stored on the device. If you change the name on the device itself, it will be displayed here accordingly.

Location

Sets the location of the selected device.

The field is limited to 255 bytes length including any UTF-8 characters.

Display Brightness

Slider for adjusting the display brightness of the selected receiver.

Serial Number

Displays the serial number.

Device Restart

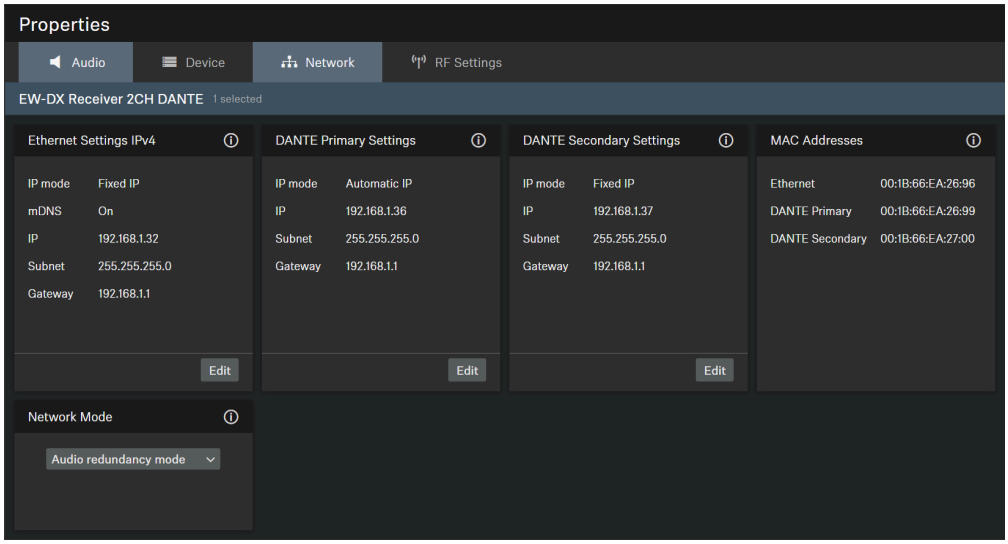
Restarts the selected device.

Factory Reset

All settings of the selected device are reset to the factory defaults.

> The last saved status of the **Location-based mute** function is retained even after you reset the device to the factory default.

Network Settings



Ethernet Settings

IP Mode

- **Automatic**: The IP address is automatically assigned using DHCP. If no DHCP server is available, the IP address is assigned by the SL Rack Receiver DW itself.
- **Fixed IP**: The IP address has to be entered manually.

mDNS

- **Off**: Deactivates mDNS to reduce the data volume transferred across the network. This option is recommended for larger systems.
- **On**: Activates mDNS to allow for automatic device detection. This option is recommended for smaller systems with up to 30 devices.

IP

- Input of the IP address in Fixed IP mode.

Subnet

- Input of the subnet mask in Fixed IP mode.

Gateway

- Input of the gateway in Fixed IP mode.

MAC Address

Displays the unique MAC addresses of the device according to the connected ports.

Network Mode

The network mode defines how the different network interfaces on the device shall be used.

- **Single cable mode**
  - When a device is set to **Single cable mode**, the secondary Ethernet port will behave as a standard switch port, allowing daisy-chaining through the device.
- **Audio redundancy mode**
  - When a device is set to **Audio redundancy mode**, the device will duplicate Dante media traffic to both Ethernet ports, allowing the implementation of a redundant network via the secondary port.
- **Split mode**
  - When a device is set to **Split mode**, the first Ethernet port will be used to control and configure the device via the network. The secondary Ethernet port will be used for the output of digital audio.

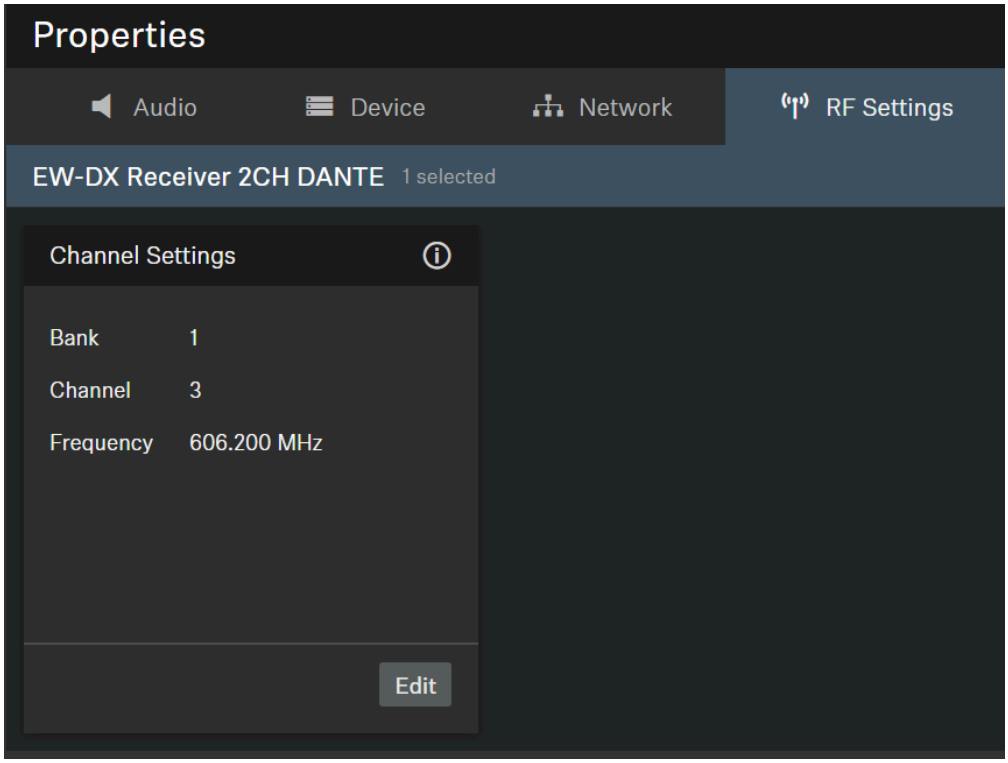
DANTE Primary Settings

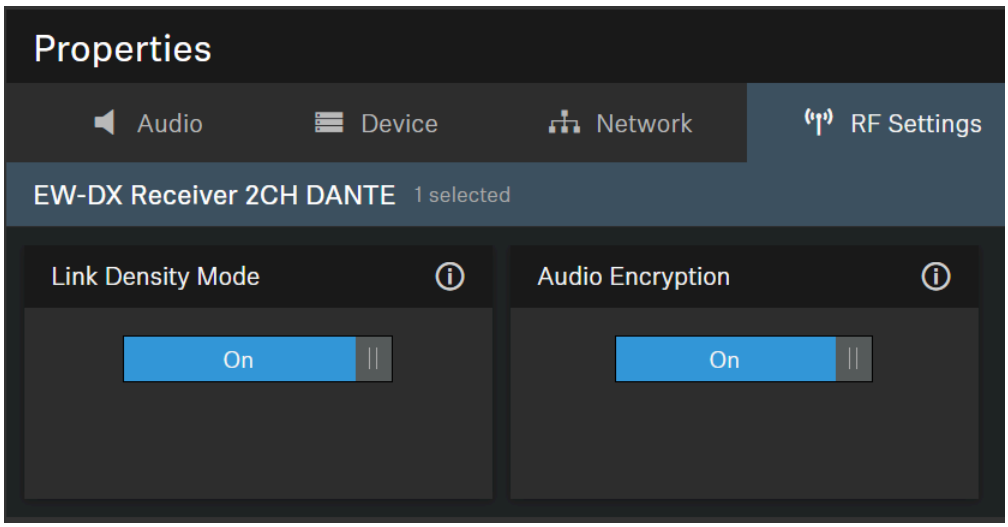
Displays editable IP address, Subnet and Gateway of the Primary DANTE port.

DANTE Secondary Settings

Displays the IP address, Subnet and Gateway of the Secondary DANTE port. You can edit the settings when using the network mode **Audio redundancy**.

RF Settings





Channel Settings

Displays the current frequency including bank and channel.

Link Density Mode

Switches Link Density mode on or off.

The device restarts after a change.

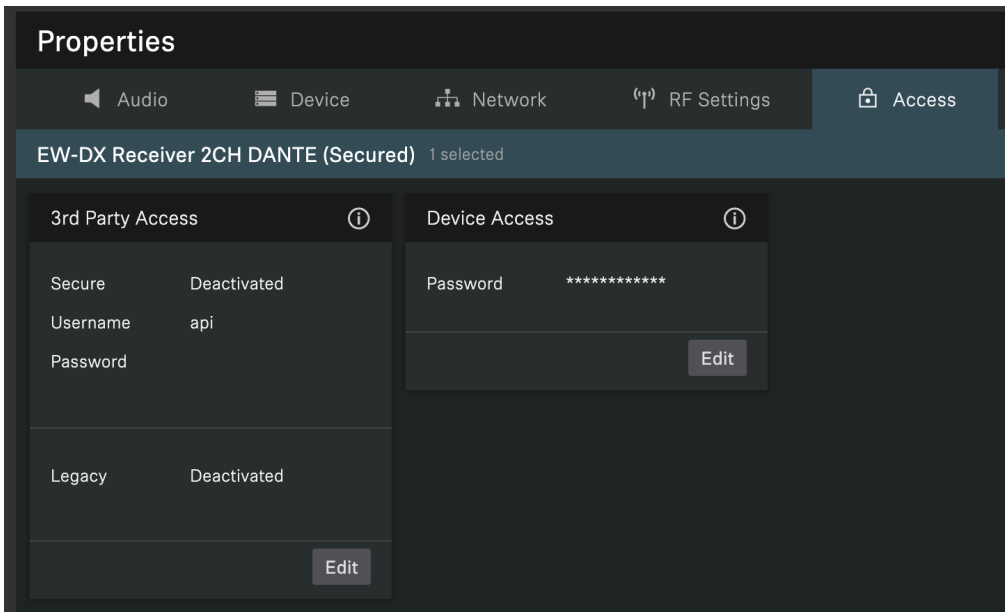
For more information about Link Density mode, see Link Density mode.

Audio Encryption

Activates or deactivates AES-256 encryption between the transmitter and the receiver.

Access

Here you can manage 3rd party access and device access.



3rd party media control access

The 3rd party media control access for EW-DX devices is deactivated by default. You can activate the access by using one of the two 3rd party protocols:

- **Secure**: encrypted protocol SSCv2 by using a username and password (recommended).
- **Unsecured/Legacy)**: unsecured control protocol SSCv1 without password protection and use at your own risk (not recommended).

> **i** For detailed information on SSC protocols, please refer to the chapter Updating device firmware or Sennheiser Sound Control Protocols (SSCv1 and SSCv2).

> **i** The full range of functions and list of callable methods can be found in the media control protocol for the EW-DX EM devices (see 3rd party for EW-DX devices).

In order to enable the 3rd party access:

- Click on **Edit** and activate **Secure** (recommended) for an encrypted device connection via Sound Control Protocol v2 (SSCv2).
- Alternatively, you can choose **Legacy** for unsecured communication at your own risk (not recommended). In this case the Sound Control Protocol v1 (SSCv1) will be applied.

- Enter a 3rd party device password and click on **OK**.

> **i** Please note that the new password must meet the following requirements:
>
> - At least ten characters
> - At least one lowercase letter
> - At least one uppercase letter
> - At least one number
> - At least one special character: !#$%&()*+,-./:;<=>?@[]^_{|}~
> - Maximum length: 64 characters

- You can use the username **api** and configured password for your API calls.

> **i** If you deactivate 3rd party access, the previously set password will be deleted.

Device Access

Changes the password for device access, used by Control Cockpit to authenticate to the device. The default password for EW-DX receiver is `sennheiser`.

> **i** Please note that the new password must meet the following requirements:
>
> - At least ten characters
> - At least one lowercase letter
> - At least one uppercase letter
> - At least one number
> - At least one special character: !#$%&()*+,-./:;<=>?@[]^_{|}~
> - Maximum length: 64 characters

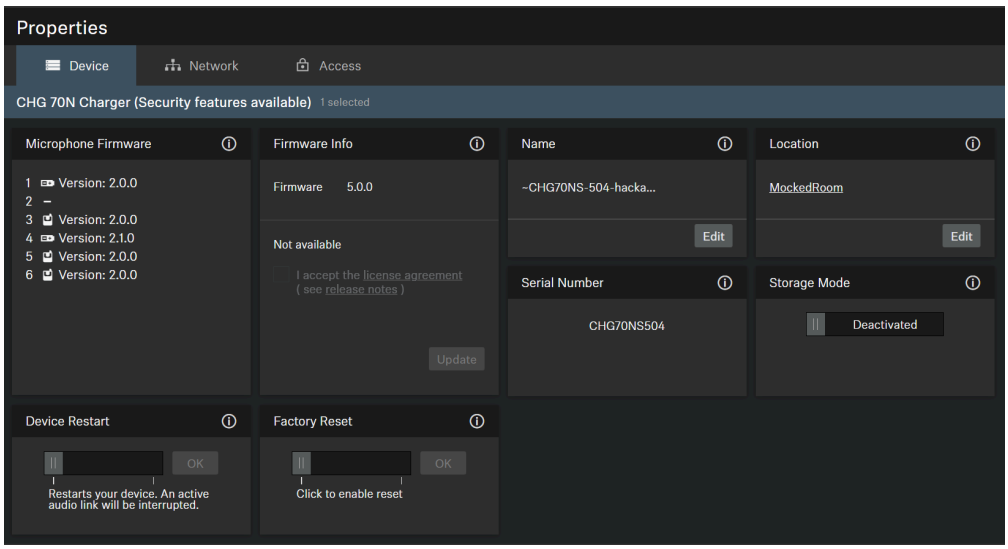
CHG 70N(S)-C network-enabled charger

The CHG 70N(S)-C network-enabled charger offers three settings.

Evolution Wireless Digital

- Device Settings
- Network Settings
- Access

Device Settings



1. Access

> The CHG 70N-C chargers are supported as cascaded devices. The cascade is displayed in a corresponding view in which you can see and configure all cascaded chargers from a single point in the "Device" and "Network" sub-tabs.

Microphone Firmware

Shows the current firmware of the transmitters in the selected charger.

Firmware Info

Displays the current firmware version.

For information on how to update the firmware, refer to Updating device firmware.

Name

Edits the name of a device. The name will be stored on the device. If you change the name on the device itself, it will be displayed here accordingly.

Location

Sets the location of the selected device.

The field is limited to 255 bytes length including any UTF-8 characters.

Display Brightness

Slider for adjusting the display brightness of the selected receiver.

Auto Lock

- **Mic On**: Sets the color of the LEDs when the microphone array is active.
- **Mic Mute**: Sets the color of the LEDs when the microphone array is muted.
- **Custom**: Sets the color of the LEDs for a status which can be customized via a media control system using the Sennheiser Sound Control Protocol.

Serial Number

Displays the serial number.

Device Restart

Restarts the selected device.

Factory Reset

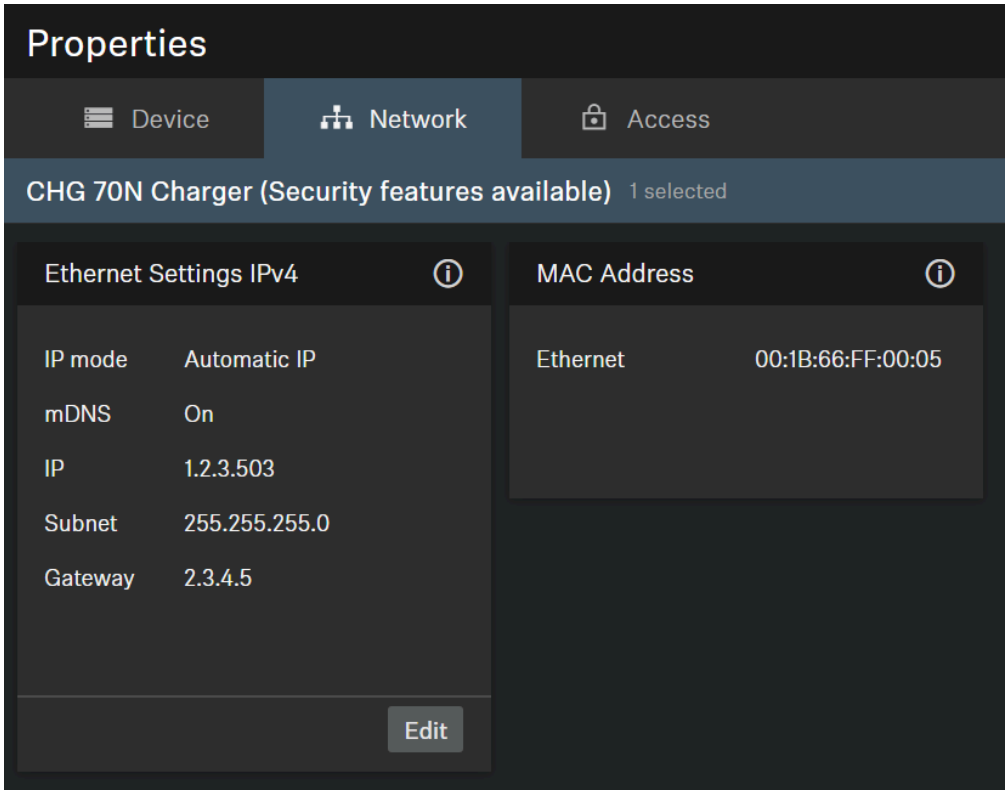
All settings of the selected device are reset to the factory defaults.

> The last saved status of the **Location-based mute** function is retained even after you reset the device to the factory default.

Storage Mode

The storage mode prevents the batteries from being constantly charged to 100%. This extends the battery life of products that are stored in the charging bay for a longer period of time.

Network Settings



1. Access

Ethernet Settings

IP Mode

- **Automatic**: The IP address is automatically assigned using DHCP. If no DHCP server is available, the IP address is assigned by the SL Rack Receiver DW itself.
- **Fixed IP**: The IP address has to be entered manually.

mDNS

- **Off**: Deactivates mDNS to reduce the data volume transferred across the network. This option is recommended for larger systems.
- **On**: Activates mDNS to allow for automatic device detection. This option is recommended for smaller systems with up to 30 devices.

IP

- Input of the IP address in Fixed IP mode.

Subnet

- Input of the subnet mask in Fixed IP mode.

Gateway

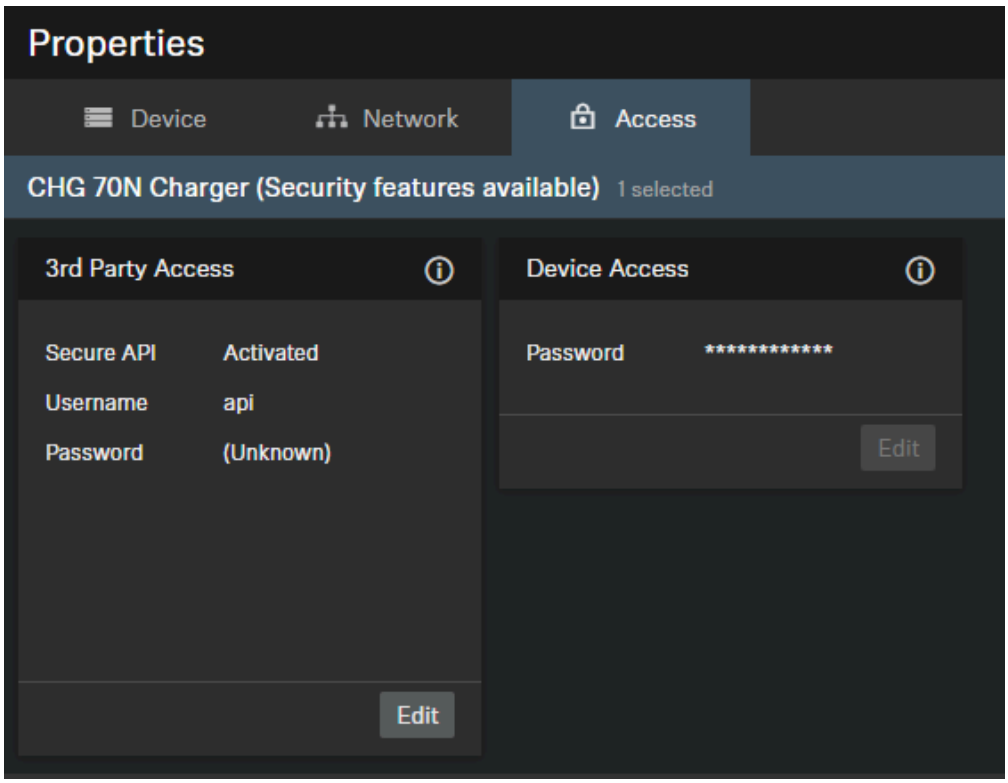
- Input of the gateway in Fixed IP mode.

MAC Address

Displays the unique MAC addresses of the device according to the connected ports.

Access

Here you can manage third-party access and device access.



Third-Party Access

The 3rd party media control access for CHG 70N(S) chargers is encrypted and protected using username and password. It has to be enabled using Control Cockpit before use.

- Enables or disables 3rd party media control access. In order to enable, select the **Edit** button, activate the toggle switch, enter a 3rd party device password and select the **OK** button.
- You can use the username **api** and configured password for your API calls.

> **i** If you deactivate 3rd party access, the previously set password will be deleted.

Please note that the new password must meet the following requirements:

- At least ten characters
- At least one lowercase letter
- At least one uppercase letter
- At least one number
- At least one special character: !#$%&()*+,-./:;<=>?@[]^_{|}~
- Maximum length: 64 characters

Device Access

Changes the password for device access, used by Control Cockpit to authenticate to the device.

Please note that the new password must meet the following requirements:

- At least ten characters
- At least one lowercase letter
- At least one uppercase letter
- At least one number
- At least one special character: !#$%&()*+,-./:;<=>?@[]^_{|}~
- Maximum length: 64 characters

SL DW: SL Rack Receiver DW

The following settings can be adjusted for wireless links with the SL Rack Receiver DW.

i

SpeechLine Digital Wireless HTML

- Out of Range Detection
- Audio Settings
- Device Settings
- Network Settings
- RF Settings

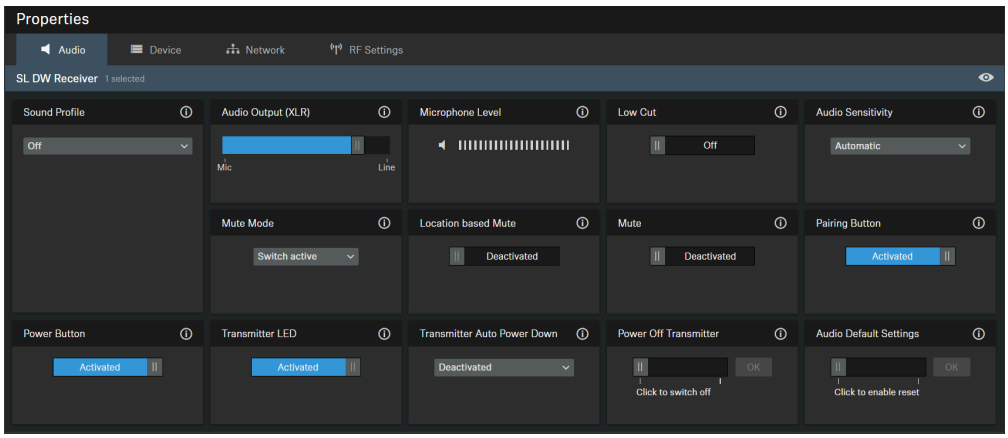
Out of Range Detection

You can receive notifications when a microphone is out of range. That might happen if someone leaves the room and takes the microphone with them.

- Activate the Out of range detection in the System settings. See System settings.
- Configure the notifications for Out of range detection in the Notification settings. See Notification settings.

Audio settings

The following settings can be adjusted for wireless links with the SL Rack Receiver DW in the audio tab.



Sound Profile

- **Female Speech**: Recommended sound profile for female speakers.
- **Male Speech**: Recommended sound profile for male speakers.
- **Media**: Recommended sound profile for audio devices.
- **Custom**: 7-band equalizer for manually adjusting the sound settings.
- **Off**: No sound profile is activated.

Audio Output

Slider for adjusting the audio output level of the XLR socket between Mic Level and Line Level. This setting does not affect the RCA output since a line level signal is always present at this output.

Channel Name

Displays the name of the channel.

Microphone Level

Displays the microphone level.

Low Cut

A low cut filter cuts out all sounds below a certain frequency in order to filter out wind or handling noise.

- **On**: The low cut filter is activated. Low-frequency noise is filtered out.
- **Off**: The low cut filter is deactivated.

Audio Sensitivity

- **Automatic**: The audio sensitivity will be adjusted automatically.
- **0 dB ... -30 dB**: The audio sensitivity can be adjusted manually in steps of 6 dB in the range between **0 dB** and **-30 dB**.

Mute Mode

- **Switch activated**: The MUTE switch of the paired transmitter is activated and can be used.
- **Switch deactivated**: The MUTE switch of the paired transmitter is deactivated and cannot be used. The receiver continuously outputs audio signals.
- **Push to talk**: Press and hold the MUTE switch of the paired transmitter to activate the audio signal (for SL Boundary 114-S DW and SL Tablestand 133/153-S DW only).
- **Push to mute**: Press and hold the MUTE switch of the paired transmitter to mute the audio signal (for SL Boundary 114-S DW and SL Tablestand 133/153-S DW only).

Location based mute

Part of group: Activate this function to add the transmitter to a mute group. If then one of the transmitters in this mute group is muted or unmuted, all other transmitters in the same mute group of the same location will also be muted and unmuted simultaneously. This allows you to create a separate mute group for each location.

Deactivated: The transmitter is not part of a mute group. Muting or unmuting does not affect other transmitters.

> **i** The most recently saved status is retained even after you reset the device or the audio settings to the factory defaults.

Mute

Immediately mutes the audio outputs of the selected device.

Power Button

Activates or deactivates the power button on the transmitter. This prevents the user from accidentally switching off the transmitter.

- **Activated**: The power button on the transmitter is unlocked.
- **Deactivated**: The power button on the transmitter is locked.

Transmitter LED

Activates or deactivates the LED that indicates an active connection on paired handheld and bodypack transmitters. If the transmitter LED is deactivated, the green LED does not indicate an active connection.

- **Activated**: The LED indicates an activate connection.
- **Deactivated**: The LED does not indicate an active connection.

Transmitter Auto Power Down

Sets the time after which the transmitter will be automatically switched off if no link is active.

- **Deactivated**: The feature is deactivated.
- **10 min**: The transmitter automatically switches off after 10 minutes.
- **20 min**: The transmitter automatically switches off after 20 minutes.
- **30 min**: The transmitter automatically switches off after 30 minutes.

Pairing Button

Activates or deactivates the pairing button on the transmitter. This prevents the user from accidentally pairing the transmitter with another receiver.

- **Activated**: The pairing button on the transmitter is unlocked.
- **Deactivated**: The pairing button on the transmitter is locked.

Power Off Transmitter

Immediately switches off the selected transmitter.

Audio Default Settings

Resets the audio settings (Low Cut and Sound Profiles) to the factory defaults.

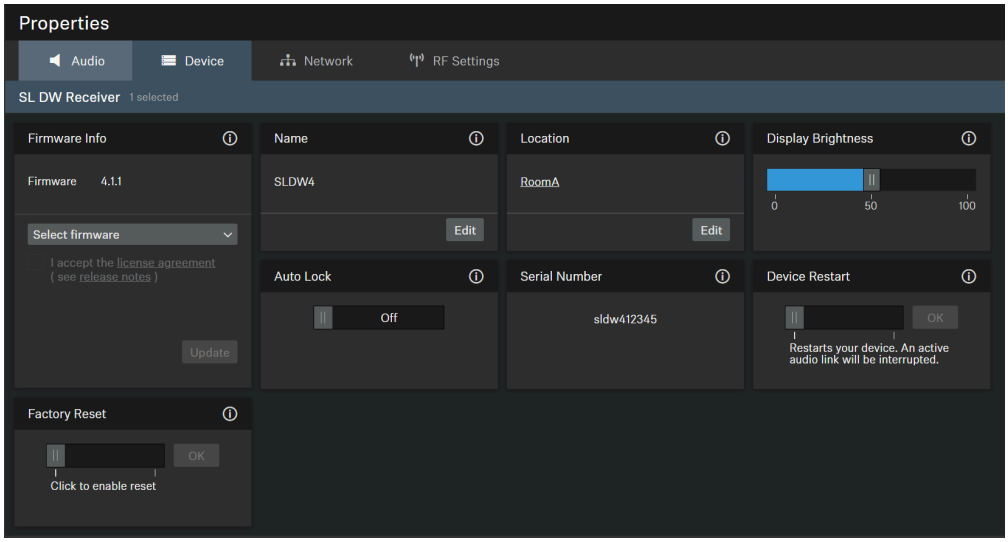
> **i** The last status saved in the “Location-based mute” field is retained even after you reset the audio settings to the factory defaults.

Mix Settings

Under Mix Settings you can adjust the levels of the channels in order to emphasize or attenuate them individually. All channels are mixed down to a sum signal.

- **Auto Mi**x: The audio sensitivity of all channels will be adjusted automatically.
- **Manual Mix**: The audio sensitivity of each channel can be adjusted manually.

Device Settings



Firmware Info

Displays the current firmware version.

For information on how to update the firmware, refer to Updating device firmware.

Name

Edits the name of a device. The name will be stored on the device. If you change the name on the device itself, it will be displayed here accordingly.

Location

Sets the location of the selected device.

The field is limited to 255 bytes length including any UTF-8 characters.

Display Brightness

Slider for adjusting the display brightness of the selected receiver.

Auto Lock

- **Mic On**: Sets the color of the LEDs when the microphone array is active.
- **Mic Mute**: Sets the color of the LEDs when the microphone array is muted.
- **Custom**: Sets the color of the LEDs for a status which can be customized via a media control system using the Sennheiser Sound Control Protocol.

Serial Number

Displays the serial number.

Device Restart

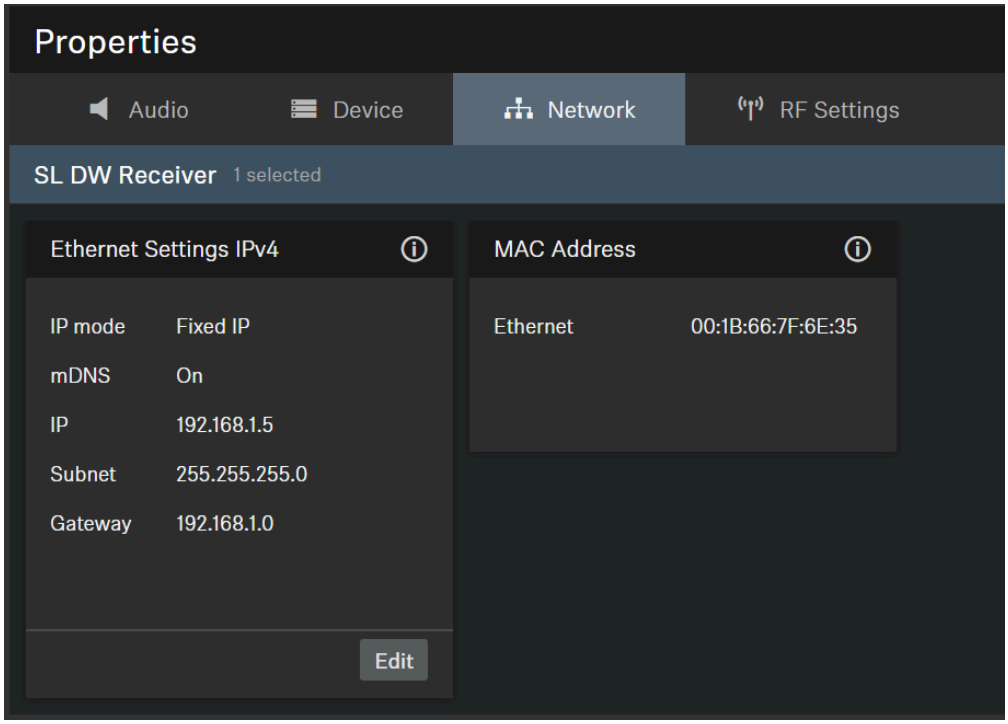
Restarts the selected device.

Factory Reset

All settings of the selected device are reset to the factory defaults.

> The last saved status of the **Location-based mute** function is retained even after you reset the device to the factory default.

Network Settings



> For further information on network settings of the SL Rack Receiver DW please refer to the SpeechLine Digital Wireless system instruction manual: SpeechLine Digital Wireless system instruction manual.

Ethernet Settings

IP Mode

- **Automatic**: The IP address is automatically assigned using DHCP. If no DHCP server is available, the IP address is assigned by the SL Rack Receiver DW itself.
- **Fixed IP**: The IP address has to be entered manually.

mDNS

- **Off**: Deactivates mDNS to reduce the data volume transferred across the network. This option is recommended for larger systems.
- **On**: Activates mDNS to allow for automatic device detection. This option is recommended for smaller systems with up to 30 devices.

IP

- Input of the IP address in Fixed IP mode.

Subnet

- Input of the subnet mask in Fixed IP mode.

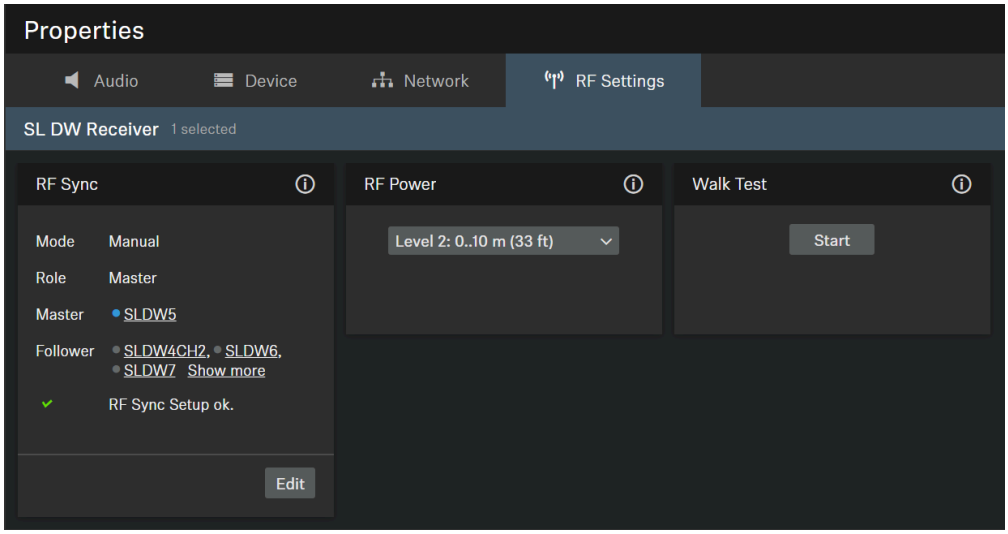
Gateway

- Input of the gateway in Fixed IP mode.

MAC Address

Displays the unique MAC addresses of the device according to the connected ports.

RF Settings



RF Sync

Allows the configuration of the RF synchronization of the devices:

- Defining devices as a master or a follower.
- **Automatic mode**: automatically defines the master and the followers.
    - This mode is recommended for a single-room setup.
- **Manual mode**: allows the manual configuration of master and follower devices.
    - This mode is recommended for larger setups in multiple rooms.

> **i** For detailed information on the “RF sync” function, please refer to chapter RF sync for SpeechLine Digital Wireless.

Transmission power

- **Automatic**: The transmission power is automatically adjusted.
- **Level 1 ... 5**: The transmission power can be manually reduced in 5 steps.
    - This function is required for operation in Multi-Room Mode.

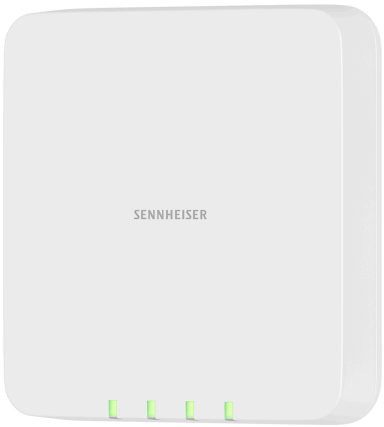
> **i** For further information on the Multi-Room Mode refer to the SpeechLine Digital Wireless system instruction manual: .

Walk Test

- **Start**: Starts the walk test.
- **Stop**: After starting the walk test, the Start button becomes the Stop button. Click on Stop to end the walk test.

SL DW: Multi-channel receiver

The following settings can be adjusted for wireless links with the Multi-Channel Receiver.



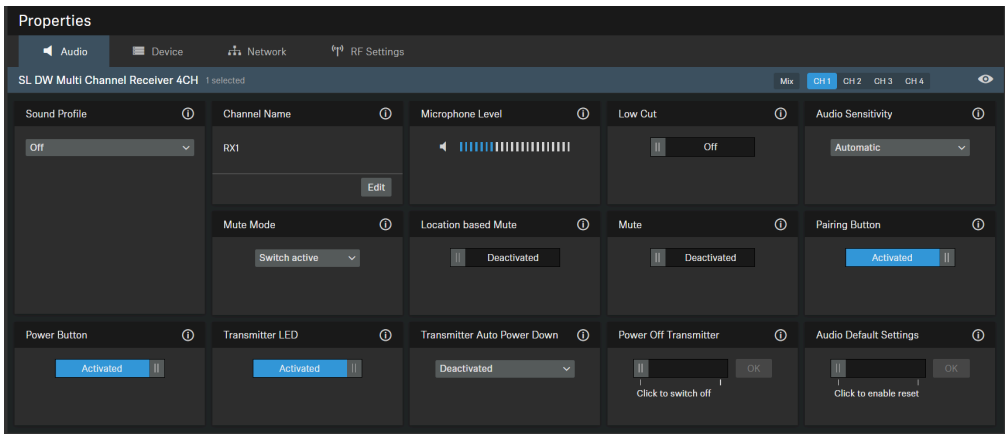
SpeechLine Digital Wireless

Out of Range Detection

You can receive notifications when a microphone is out of range. That might happen if someone leaves the room and takes the microphone with them.

- Activate the Out of range detection in the System settings. See System settings.
- Configure the notifications for Out of range detection in the Notification settings. See Notification settings.

Audio settings



Sound Profile

- **Female Speech**: Recommended sound profile for female speakers.
- **Male Speech**: Recommended sound profile for male speakers.
- **Media**: Recommended sound profile for audio devices.
- **Custom**: 7-band equalizer for manually adjusting the sound settings.
- **Off**: No sound profile is activated.

Channel Name

Displays the name of the channel.

Microphone Level

Displays the microphone level.

Low Cut

A low cut filter cuts out all sounds below a certain frequency in order to filter out wind or handling noise.

- **On**: The low cut filter is activated. Low-frequency noise is filtered out.
- **Off**: The low cut filter is deactivated.

Audio Sensitivity

- **Automatic**: The audio sensitivity will be adjusted automatically.
- **0 dB ... -30 dB**: The audio sensitivity can be adjusted manually in steps of 6 dB in the range between **0 dB** and **-30 dB**.

Mute Mode

- **Switch activated**: The MUTE switch of the paired transmitter is activated and can be used.
- **Switch deactivated**: The MUTE switch of the paired transmitter is deactivated and cannot be used. The receiver continuously outputs audio signals.
- **Push to talk**: Press and hold the MUTE switch of the paired transmitter to activate the audio signal (for SL Boundary 114-S DW and SL Tablestand 133/153-S DW only).
- **Push to mute**: Press and hold the MUTE switch of the paired transmitter to mute the audio signal (for SL Boundary 114-S DW and SL Tablestand 133/153-S DW only).

Location based mute

Part of group: Activate this function to add the transmitter to a mute group. If then one of the transmitters in this mute group is muted or unmuted, all other transmitters in the same mute group of the same location will also be muted and unmuted simultaneously. This allows you to create a separate mute group for each location.

Deactivated: The transmitter is not part of a mute group. Muting or unmuting does not affect other transmitters.

> **i** The most recently saved status is retained even after you reset the device or the audio settings to the factory defaults.

Mute

Immediately mutes the audio outputs of the selected device.

Power Button

Activates or deactivates the power button on the transmitter. This prevents the user from accidentally switching off the transmitter.

- **Activated**: The power button on the transmitter is unlocked.
- **Deactivated**: The power button on the transmitter is locked.

Transmitter LED

Activates or deactivates the LED that indicates an active connection on paired handheld and bodypack transmitters. If the transmitter LED is deactivated, the green LED does not indicate an active connection.

- **Activated**: The LED indicates an activate connection.
- **Deactivated**: The LED does not indicate an active connection.

Transmitter Auto Power Down

Sets the time after which the transmitter will be automatically switched off if no link is active.

- **Deactivated**: The feature is deactivated.
- **10 min**: The transmitter automatically switches off after 10 minutes.
- **20 min**: The transmitter automatically switches off after 20 minutes.
- **30 min**: The transmitter automatically switches off after 30 minutes.

Pairing Button

Activates or deactivates the pairing button on the transmitter. This prevents the user from accidentally pairing the transmitter with another receiver.

- **Activated**: The pairing button on the transmitter is unlocked.
- **Deactivated**: The pairing button on the transmitter is locked.

Power Off Transmitter

Immediately switches off the selected transmitter.

Audio Default Settings

Resets the audio settings (Low Cut and Sound Profiles) to the factory defaults.

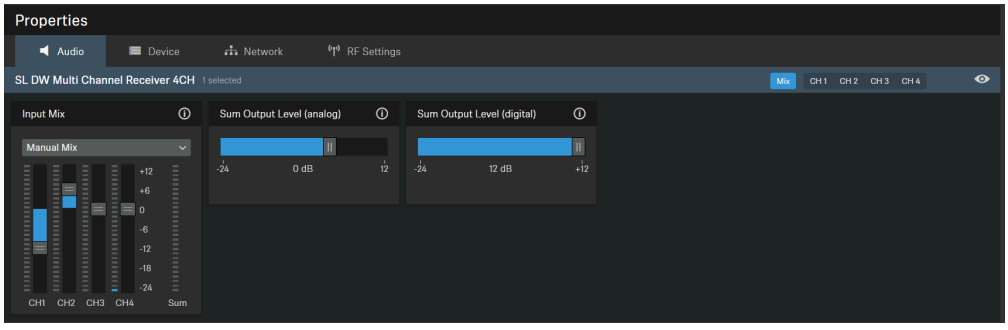
> The last status saved in the “Location-based mute” field is retained even after you reset the audio settings to the factory defaults.

Mix Settings

Under Mix Settings you can adjust the levels of the channels in order to emphasize or attenuate them individually. All channels are mixed down to a sum signal.

- **Auto Mix**: The audio sensitivity of all channels will be adjusted automatically.
- **Manual Mix**: The audio sensitivity of each channel can be adjusted manually.

Mix



Input Mix

Displays the input signals of all channels.

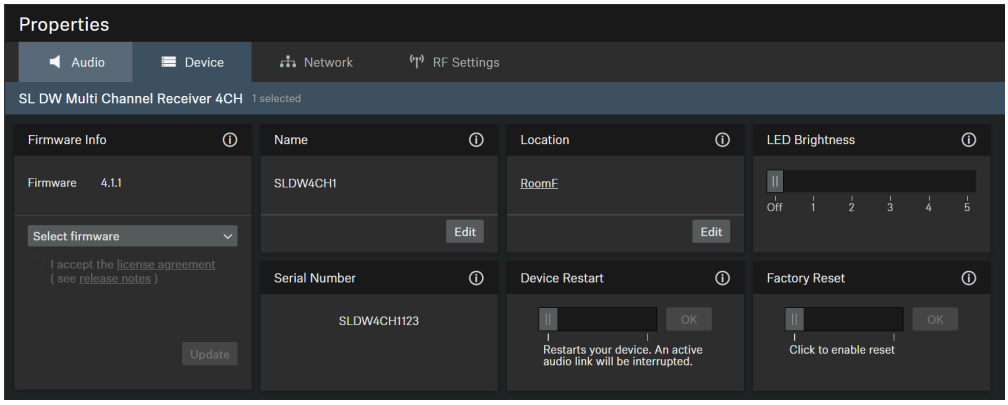
Sum Output Level (analog)

Slider for emphasizing or attenuating the analog audio output level from -24 dB to +12 dB in steps of 6 dB.

Sum Output Level (digital)

Slider for emphasizing or attenuating the digital audio output level via Dante® from -24 dB to +12 dB in steps of 3 dB.

Device Settings



Firmware Info

Displays the current firmware version.

For information on how to update the firmware, refer to Updating device firmware.

Name

Edits the name of a device. The name will be stored on the device. If you change the name on the device itself, it will be displayed here accordingly.

Location

Sets the location of the selected device.

The field is limited to 255 bytes length including any UTF-8 characters.

Display Brightness

Slider for adjusting the display brightness of the selected receiver.

Auto Lock

- **Mic On**: Sets the color of the LEDs when the microphone array is active.
- **Mic Mute**: Sets the color of the LEDs when the microphone array is muted.
- **Custom**: Sets the color of the LEDs for a status which can be customized via a media control system using the Sennheiser Sound Control Protocol.

Serial Number

Displays the serial number.

Device Restart

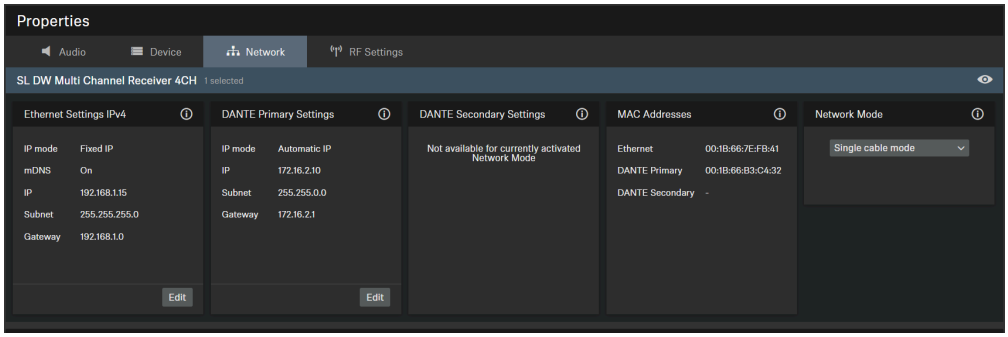
Restarts the selected device.

Factory Reset

All settings of the selected device are reset to the factory defaults.

> **i** The last saved status of the **Location-based mute** function is retained even after you reset the device to the factory default.

Network Settings



Ethernet Settings

IP Mode

- **Automatic**: The IP address is automatically assigned using DHCP. If no DHCP server is available, the IP address is assigned by the SL Rack Receiver DW itself.
- **Fixed IP**: The IP address has to be entered manually.

mDNS

- **Off**: Deactivates mDNS to reduce the data volume transferred across the network. This option is recommended for larger systems.
- **On**: Activates mDNS to allow for automatic device detection. This option is recommended for smaller systems with up to 30 devices.

IP

- Input of the IP address in Fixed IP mode.

Subnet

- Input of the subnet mask in Fixed IP mode.

Gateway

- Input of the gateway in Fixed IP mode.

MAC Address

Displays the unique MAC addresses of the device according to the connected ports.

Network Mode

The network mode defines how the different network interfaces on the device shall be used.

- **Single cable mode**
  - When a device is set to **Single cable mode**, the secondary Ethernet port will behave as a standard switch port, allowing daisy-chaining through the device.
- **Audio redundancy mode**
  - When a device is set to **Audio redundancy mode**, the device will duplicate Dante media traffic to both Ethernet ports, allowing the implementation of a redundant network via the secondary port.
- **Split mode**
  - When a device is set to **Split mode**, the first Ethernet port will be used to control and configure the device via the network. The secondary Ethernet port will be used for the output of digital audio.

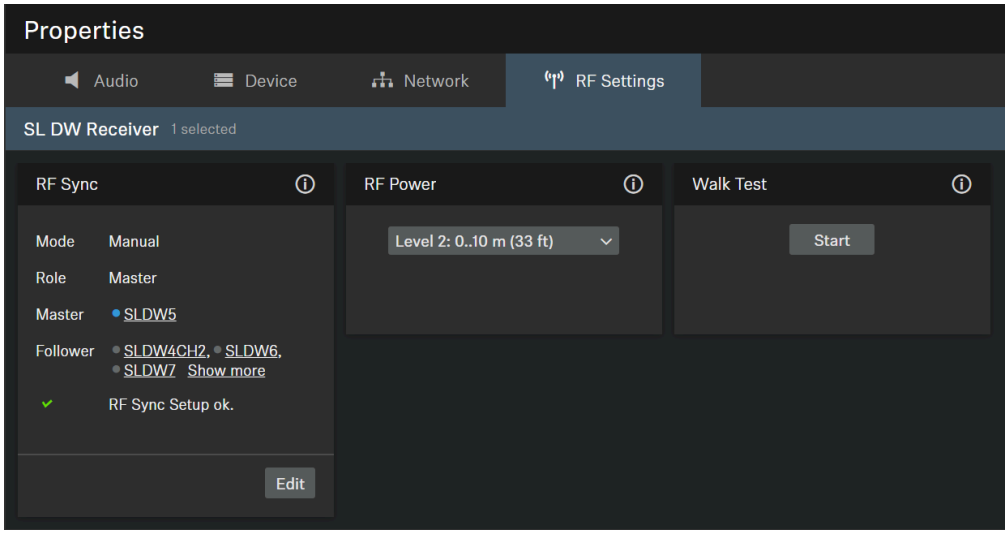
DANTE Primary Settings

Displays editable IP address, Subnet and Gateway of the Primary DANTE port.

DANTE Secondary Settings

Displays the IP address, Subnet and Gateway of the Secondary DANTE port. You can edit the settings when using the network mode **Audio redundancy**.

RF Settings



RF Sync

Allows the configuration of the RF synchronization of the devices:

- Defining devices as a master or a follower.
- **Automatic mode**: automatically defines the master and the followers.
    - This mode is recommended for a single-room setup.
- **Manual mode**: allows the manual configuration of master and follower devices.
    - This mode is recommended for larger setups in multiple rooms.

> **i** For detailed information on the “RF sync” function, please refer to chapter RF sync for SpeechLine Digital Wireless.

Transmission power

- **Automatic**: The transmission power is automatically adjusted.
- **Level 1 ... 5**: The transmission power can be manually reduced in 5 steps.
    - This function is required for operation in Multi-Room Mode.

> **i** For further information on the Multi-Room Mode refer to the SpeechLine Digital Wireless system instruction manual: .

Walk Test

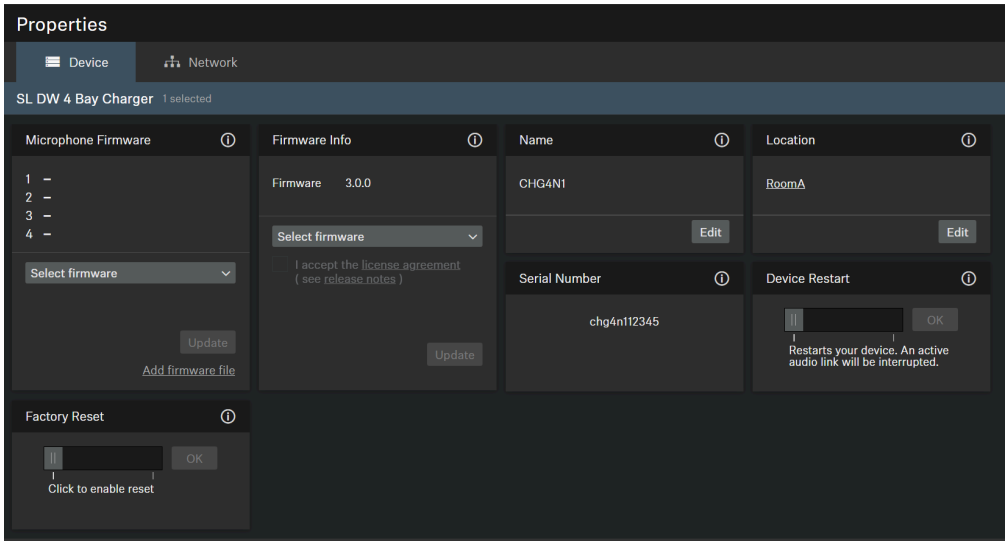
- **Start**: Starts the walk test.
- **Stop**: After starting the walk test, the Start button becomes the Stop button. Click on Stop to end the walk test.

CHG 4N / CHG 2N charger

The following settings can be adjusted for the CHG 4N network-enabled charger and for the CHG 2N - 2 bay network charger.

SpeechLine Digital Wireless

Device Settings



Firmware Info

Displays the current firmware version.

For information on how to update the firmware, refer to Updating device firmware.

Name

Edits the name of a device. The name will be stored on the device. If you change the name on the device itself, it will be displayed here accordingly.

Location

Sets the location of the selected device.

The field is limited to 255 bytes length including any UTF-8 characters.

Display Brightness

Slider for adjusting the display brightness of the selected receiver.

Auto Lock

- **Mic On**: Sets the color of the LEDs when the microphone array is active.
- **Mic Mute**: Sets the color of the LEDs when the microphone array is muted.
- **Custom**: Sets the color of the LEDs for a status which can be customized via a media control system using the Sennheiser Sound Control Protocol.

Serial Number

Displays the serial number.

Device Restart

Restarts the selected device.

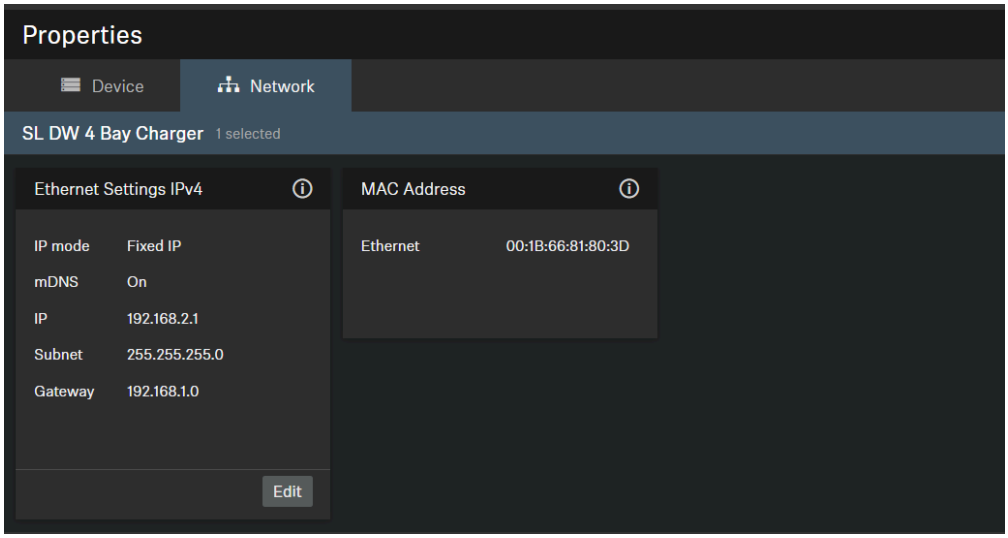
Factory Reset

All settings of the selected device are reset to the factory defaults.

> **i** The last saved status of the **Location-based mute** function is retained even after you reset the device to the factory default.

Network Settings

> For further information on network settings of the CHG 4N /CHG 2N please refer to the SpeechLine Digital Wireless system instruction manual: SpeechLine Digital Wireless system instruction manual.



Ethernet Settings

IP Mode

- **Automatic**: The IP address is automatically assigned using DHCP. If no DHCP server is available, the IP address is assigned by the SL Rack Receiver DW itself.
- **Fixed IP**: The IP address has to be entered manually.

mDNS

- **Off**: Deactivates mDNS to reduce the data volume transferred across the network. This option is recommended for larger systems.
- **On**: Activates mDNS to allow for automatic device detection. This option is recommended for smaller systems with up to 30 devices.

IP

- Input of the IP address in Fixed IP mode.

Subnet

- Input of the subnet mask in Fixed IP mode.

Gateway

- Input of the gateway in Fixed IP mode.

MAC Address

Displays the unique MAC addresses of the device according to the connected ports.

TeamConnect Bar

The following settings can be adjusted for the TeamConnect Bar S and M.

TeamConnect Bar

Audio Settings

The following settings can be adjusted in the audio tab.

1. Noise Suppression
2. Internal Mic Mute
3. External Dante® Speaker Output

Sound Profile

Sound profiles are presets that are optimized for the intended mounting options.

Custom: 7-band equalizer for manually adjusting or selecting preset sound settings depending on the mounting option of the device:

- Wallmount
- Table Top

- Under Display
- Above Display
- Free Standing
- Custom

Internal Microphone Noise Gate

Noise Gate:

Noise Gate can be activated to avoid amplification of background noise, e.g. during pauses in speech.

Threshold:

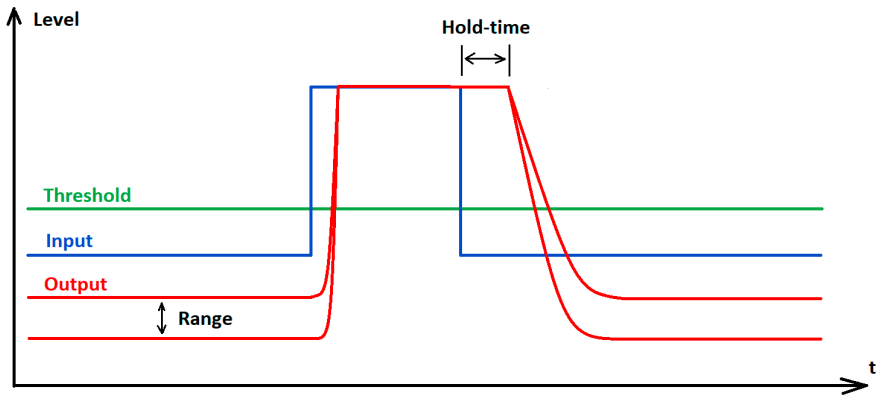
The Noise Gate will open the audio of the microphone output only after the predefined threshold value of the needed microphone has been reached. With the slider you can adjust the minimum threshold level from -70 dB to -30 dB in steps of 1 dB.

Hold Time:

The Hold Time sets the duration until the noise gate is activated, e.g. during speech pauses. With the slider you can adjust the duration time from 100 ms to 500 ms in steps of 50 ms.

Range

The 'Range' parameter defines the degree of noise suppression below the set threshold for the entire Noise Gate. The parameter can be set in steps of 1 dB between 0 dB (no suppression) and 80 dB (the level is reduced by 80 dB below the threshold and after the 'attack time').



Automix Priority

The TC Bar has up to two Dante® inputs for external microphone channels (Ext. CH 1 and Ext. CH 2). The channels allow external devices (e.g. TeamConnect Ceiling Medium) to be connected to the TC Bar via a Dante® network. The settings via the Automix Priority only manage the priority of the selected channel. It has no influence on the actual gain level of the connected microphones.

Integrated Automixer

The Dante® inputs are managed via an integrated automixer, whereby the priority of the channels, including the internal microphone array, can be set via individual faders. Reducing the level by the corresponding control fader will add an virtual level reduction to the channel that makes it less likely to be selected by the automixer.

Level meters

The level meters show the signal level of the inputs and the internal microphone array PRE fader and also PRE virtual level reduction. Moving the faders therefore does not change the displayed levels.

Prioritizing a single channel

If you want to prioritize a single channel from the selection, you will have to reduce the virtual gain reduction of the other two channels. With Fade Time you can adjust the switching speed between the audio sources connected to the auto mixer.

Active channel

The automixer provides an indicator above the channels to show the active channel. If the channel is active, the indicator changes to green. The automixer has a NOM (Number of Open Microphones) = 1, so that only one microphone can be active at a time.

Internal Mic Mute

Mutes only the internal microphone input channel of the device. External microphone channels (Ext. CH1 and Ext. CH2) remain unaffected.

Conference Output

Controls the level of the near and far end signals at the Dante® conference output.

Slider for adjusting the digital audio output level from 0 dB to -60 dB in steps of 1 dB.

Noise Suppression

Noise Suppression detects and suppresses unwanted static background noise (e.g. HVAC, fans etc.). Depending on the intensity of the noise level, you can choose the degree of suppression:

- low
- medium
- high

Speaker Output

Slider for adjusting the audio output level by up to 100 %.

Bluetooth Input

Shows the output level of the currently connected Bluetooth device, which is fed into the TC Bar as the input level.

External Dante® Speaker Output

Routes audio to Dante® speakers and disables the TC Bar's internal speakers.

> **i** Dante® must be enabled for this function to work.

USB Input

Shows the output level of the currently connected USB device, which is fed into the TC Bar as the input level.

All Microphones Mute

Mutes all microphone input channels:

- Internal Mic.
- Ext. CH1
- Ext. CH2

> **i** Muting the microphone can also be activated or deactivated using the system settings of the operating system and/or conference system in use (e.g., MS Teams, Zoom, etc.).
> If you use the Control Cockpit to mute the microphone, all outgoing microphone signals are muted. This is the case even if your connected TCC M does not display a red LED to indicate the device is muted. Additionally, the TC Bar does not transmit any more audio signals through the Dante® channels NearEnd ConferenceOut or LocalMicrophoneMixOut. The channel FarEnd ConferenceOut continues to be transmitted.

Location based mute

Part of group: Activate this function to add the transmitter to a mute group. If then one of the transmitters in this mute group is muted or unmuted, all other transmitters in the same mute group of the same location will also be muted and unmuted simultaneously. This allows you to create a separate mute group for each location.

Deactivated: The transmitter is not part of a mute group. Muting or unmuting does not affect other transmitters.

> The most recently saved status is retained even after you reset the device or the audio settings to the factory defaults.

Mute All Microphones

Mutes all microphone input channels:

- Internal Mic.
- Ext. CH1
- Ext. CH2

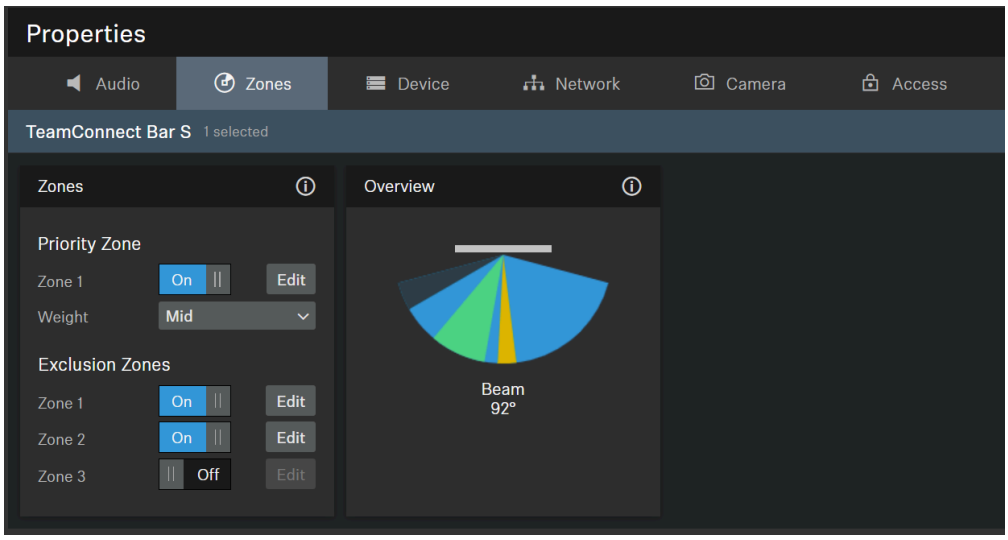
Audio Default Settings

Resets the audio settings (Low Cut and Sound Profiles) to the factory defaults.

> The last status saved in the “Location-based mute” field is retained even after you reset the audio settings to the factory defaults.

Zones

The TeamConnect Bar allows you to define two different types of zones.



The TeamConnect Bar allows you to define two different types of zones:

- One Priority Zone - Zone to be preferred
- Up to three Exclusion Zones - Zones to be excluded

For each zone the horizontal angles can be set individually.

Priority Zone

> **i** In case both zone types overlap, the rules of the Exclusion Zone will apply.

The Priority Zone allows you to set up a zone which will be handled prioritized in case of incoming audio signals from different positions at the same time. This feature can be useful e.g. during conference meetings with an important person involved.

You can adjust a weighting for this zone. The weighting increases the focus on the incoming signals from the zone by the selected values. The following settings can be made:

- **Mid**: Increases the weighting on the audio output from the zone by about 1.5 times the normal value.
- **High**: Increases the weighting on the audio output from the zone by about 2.5 times the normal value.
- **Max**: Increases the weighting on the audio output from the zone by about 4 times the normal value.

> **i** When defining the Priority Zone the area to be prioritized in the detection of the audio source is indicated green.

You can adjust the slider to set a Priority Zone. The zone can be adjusted individually from 15° to 165°. Minimum size for the angle: 15°.

Exclusion Zones

> **i** In case both zone types overlap, the rules of the Exclusion Zone will apply.

The TC Bar allows you to define up to three exclusion zones. By activating these zones all outgoing audio signals from these areas will be neglected.

> **i** When defining the Exclusion Zones the area to be excluded in the detection of the audio source is indicated petrol.

You can adjust the sliders to set the exclusion zone. The horizontal zone can be adjusted individually from 15° to 165°.

Overview

When you activate the zones, a 2D overview is created on the right, which displays all activated zones in real time. The zones in the 2D model are indicated either green (prioritized) or petrol (excluded).

Setting up zones

You can set up one priority zone and up to three exclusion zones.

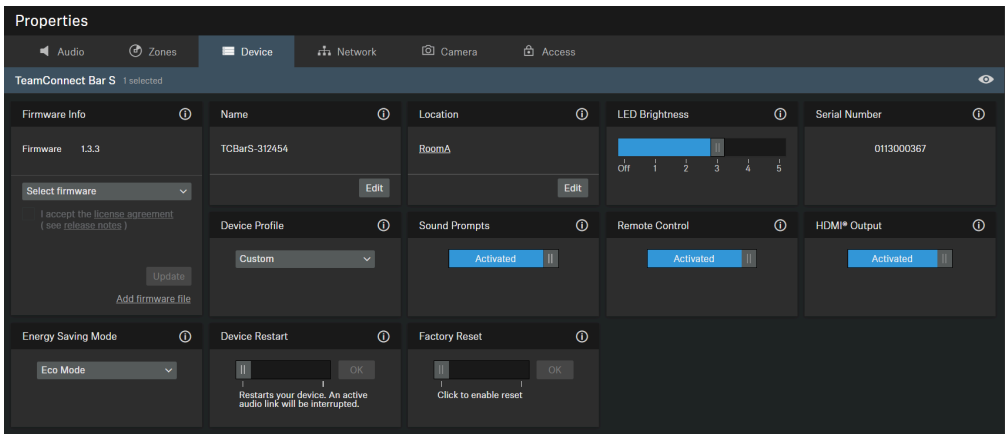
To set up a zone:

- Click **Edit** to define a zone.
- Click **Apply** to save the defined zone.
- Click the **On** button to activate the zone.

✓ The zones are set up.

Device Settings

The following device settings are available for the TC Bar.



1. Remote Control
2. Energy Saving Mode

Firmware Info

Displays the current firmware version.

For information on how to update the firmware, refer to Updating device firmware.

Name

Edits the name of a device. The name will be stored on the device. If you change the name on the device itself, it will be displayed here accordingly.

Location

Sets the location of the selected device.

The field is limited to 255 bytes length including any UTF-8 characters.

LED Brightness

Slider for adjusting the LED brightness.

- **Off**: the LEDs are switched off completely
- **1 ... 5**: adjusts the brightness between low (1) and high (5)

Serial Number

Displays the serial number.

Device Profile

Here you can select the desired device profile, which is applied either from your own configured settings or from the predefined settings of the selected conference and collaboration platform.

> **i** When changing the device profile, the camera settings will be reset and the device will be restarted.

- **Custom:** own device profile
  - Enables all settings in the **Camera** tab as well as the HDMI output in the **Device** tab
- **Microsoft Teams:** predefined by Microsoft Teams

> **i** Using this profile, the camera zoom of the TC Bar is reduced to comply with Microsoft Teams specification.

  - Enables the default settings for Microsoft Teams
  - Resets all settings in the **Camera** tab
  - Disables the HDMI output in the **Device** tab
  - Reboots the device
- **Zoom:** predefined by Zoom

> **i** Using this profile, the camera zoom of the TC Bar might be changed to comply with Zoom specification.

  - Enables the default settings for Zoom
  - Resets all settings in the **Camera** tab
  - Reboots the device

Sound Prompts

Activates or deactivates all integrated sounds of the TC Bar with the exception of the welcome prompt.

Remote Control

Activates or deactivates the use of the infrared remote control of the TC Bar.

Device Restart

Restarts the selected device.

HDMI output

Activates the HDMI output signal to external display.

> **i** If you select "Microsoft Teams" as the “Device Profile”, the HDMI output is deactivated.

Energy Saving Mode

Depending on required availability and response time, configure the energy-saving mode to meet the TC Bar’s use-case needs.

> **i** For detailed information about the prerequisites for entering a specific standby mode and about the maximum power consumption, please refer to the chapter Status information about energy consumption in the TC Bar manual.

- **Low Power Mode** (optional)
  - Optional mode
  - Puts the device into deep sleep mode to reduce power consumption
  - Waking the device requires a manual power-on operation
  - Remote wake-up is not possible because there is no longer a network connection
- **Eco Mode** (Default)
  - Default mode in the factory-delivered state (firmware ≥1.3.0)
  - Puts the device into a state of minimal power consumption to ensure availability and a quick response time over Ethernet.
  - Remote wake-up is possible
- **Always On Mode** (optional)
  - Optional mode
  - Explicitly recommended for devices that must be available 24/7 for administration purposes
  - Must be explicitly confirmed by the user
  - Device will no longer be automatically placed into any ECO mode
  - The power consumption is not reduced
  - The device remains constantly in an operational state and can be accessed at any time.

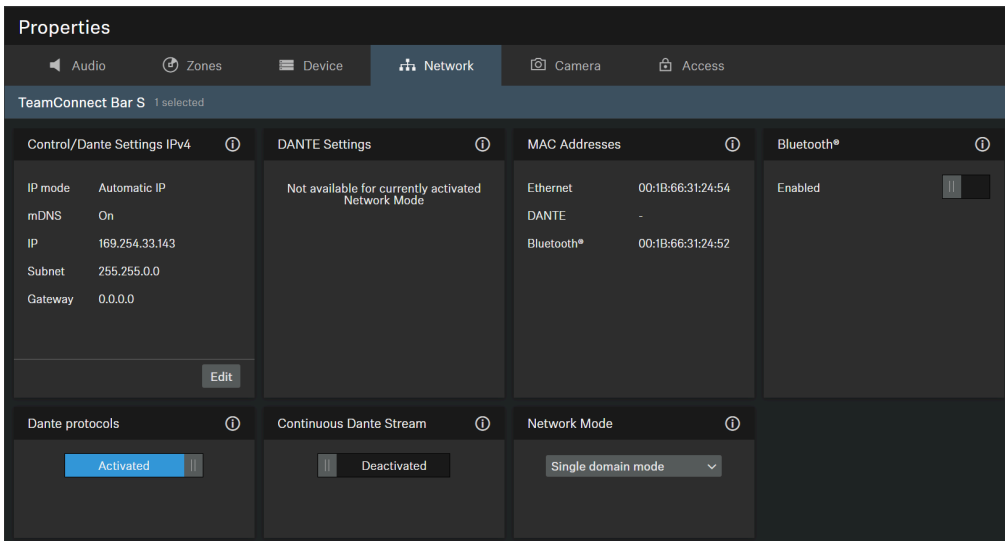
Factory Reset

All settings of the selected device are reset to the factory defaults.

> **i** The last saved status of the **Location-based mute** function is retained even after you reset the device to the factory default.

Network Settings

The following network settings are available for the TC Bar.



1. Continuous Dante® Stream

Control/Dante Settings IPv4

IP Mode

- **Automatic**: The IP address is automatically assigned using DHCP. If no DHCP server is available, the IP address is assigned by the SL Rack Receiver DW itself.
- **Fixed IP**: The IP address has to be entered manually.

mDNS

- **Off**: Deactivates mDNS to reduce the data volume transferred across the network. This option is recommended for larger systems.
- **On**: Activates mDNS to allow for automatic device detection. This option is recommended for smaller systems with up to 30 devices.

IP

- Input of the IP address in Fixed IP mode.

Subnet

- Input of the subnet mask in Fixed IP mode.

Gateway

- Input of the gateway in Fixed IP mode.

Dante Settings

- **Automatic**: The IP address is automatically assigned using DHCP or Zero Configuration. If no DHCP server is available, the IP address is assigned by the TeamConnect Bar itself.
- **Fixed IP**: The IP address has to be entered manually.
- **IP**: Input of the IP address in Fixed IP mode.
- **Subnet**: Input of the subnet mask in Fixed IP mode.
- **Gateway**: Input of the gateway in Fixed IP mode.
- **VLAN ID**: VLAN ID field to be routed to the correct network (default = 100).

A VLAN separates a physical network into logical sub-networks. This enables several virtual networks to be created from one physical switch port. When using Dual Domain Mode, Dante® and Control Cockpit can be used separately. In case of Dante® network, this can be virtually separated and operated independently using a VLAN with just one network connection. The frames are given a tag containing a VLAN ID. This provides the switch port with information on which Dante® VLAN the frame belongs to.

MAC Address

Displays the unique MAC addresses of the device according to the connected ports.

Bluetooth®

Bluetooth is deactivated by default. In order to activate BT and connect the TC Bar to a BT-compatible device:

- Click on **Enabled** to activate the BT function and wait approx. 10 sec in order to let the device process the initial activation.
- Click on **Start** to start the pairing process.
- In your device, search for your TC Bar name and click on **Connect**. If the TC Bar is not yet visible, repeat the pairing process again.

> **i** Devices that have already been paired are displayed under **Known Devices**.

DANTE Protocols

Enables a digital audio network protocol over Ethernet for routing and synchronization of Dante-compatible devices using the Dante Controller software.

Continuous Dante® Stream

- Enables continuous transmission of microphone streams over Dante®.

> **i** Audio data will be streamed permanently over Dante®. This may increase power consumption. Ensure that continuous audio streaming over Dante® complies with your regional security and regulatory requirements before enabling.

CAUTION

Risk from unencrypted audio communication

Communication over Dante® is not encrypted by default and can be eavesdropped on and misused by 3rd parties.

- ▶ Enable continuous transmission over Dante® only when no sensitive content is being transmitted.
- ▶ Encrypt your communication for sensitive content using Dante Media Encryption feature in Dante Director.

Network Mode

Displays the Dante® Network port configuration of the selected device.

- Single Domain Mode (default mode for TC Bar and TC Bar M):
- Dual Domain Mode (for TC Bar S and TC Bar M)
- Split mode (only for TC Bar M)

Single Domain Mode:

- This mode is usually used if you want to use both the controller (Sennheiser or third-party provider) and Dante® on the same physical port with only one available IP in the same network. To set up both configurations, you need the Sennheiser Control Cockpit for the control network and the Dante Controller for other routed Sennheiser devices.

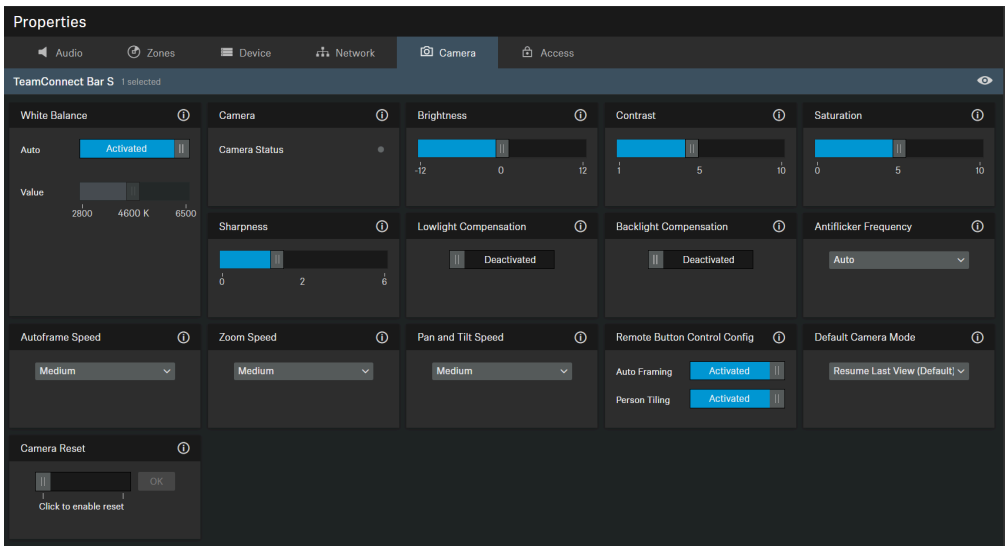
Dual Domain Mode:

- This mode is generally used if you receive a merged flow from two separate networks via a single network line and you want to resolve this merged flow back into two different IP and MAC addresses. In this way you can operate the Dante® network and the control network independently of each other via the same switch.
- Outgoing Dante® data packets are tagged as a VLAN (Virtual Local Area Network) in accordance with the 802.1q standard. The incoming data packets must also be tagged by the externally connected network in order to be able to assign them correctly for internal use. Depending on the device, the data packets may need to be translated from the outgoing 802.1q standard to 802.3 via a managed switch.

Split Mode:

- This mode is generally used if you receive a mixed signal from two separate networks via a single network line and want to resolve this mixed signal back into two different IP addresses. In this way, you want to operate the Dante network and the control network independently of each other and use a separate switch for each network.

Camera Settings



1. Default Camera Mode

White Balance

Adjusts the video image for natural color representation. The white balance can be set either automatically or manually.

Camera Status

Shows current status (enabled or disabled) of the camera.

Brightness

Adjusts the brightness of the video image from **-12** (dark) to **12** (very bright).

Contrast

Adjusts the contrast between light and dark parts of the video image from **1** (low contrast) to **10** (high contrast).

Saturation

Adjusts the color saturation of the video image from **0** (low saturation) to **10** (high saturation).

Sharpness

Adjusts the level of detail in the video image.

Lowlight Compensation

Increases the camera sensitivity in scenes with low lighting. Either Backlight Compensation or Lowlight Compensation can be used.

Backlight Compensation

Increases the exposure of the camera in backlight conditions. Either Backlight Compensation or Lowlight Compensation can be used.

Antiflicker Frequency

Reduces image flickering caused by AC driven lighting sources.

Autoframe Speed

Controls the speed of automatic zooming.

Zoom Speed

Controls the speed of manual zooming.

Pan and Tilt Speed

Controls the pan and tilt speed of the camera.

Remote Button Control Config

Activates or deactivates functions Auto Framing and/or Person Tiling on the remote control.

Default Camera Mode

Applies the TC Bar's default view at the start of each call.

> **i** Any temporary changes made with the IR remote apply only to the current call.

The following modes are available:

- **Resume Last View** (Default): In this mode, the last saved changes will be applied.
- **Full Field of View**: Displays the entire field of view.
- **Auto Framing**: Focuses on participants in the room and maintains this focus at all times.

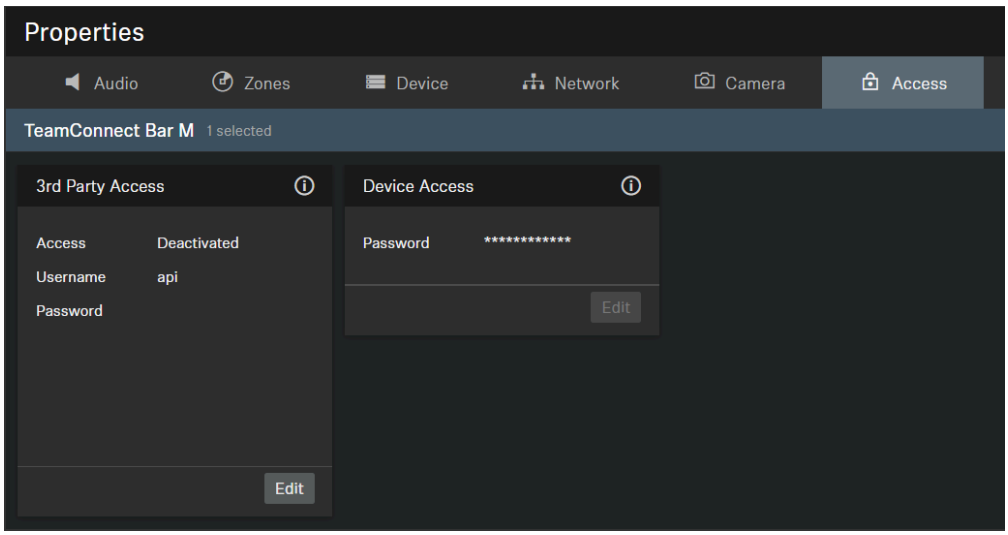
- **Person Tiling**: Automatically divides recorded participants into individually tailored frames.
- **User Preset**: All user configured camera settings will be applied.

Camera Reset

Resets the preset camera settings to default settings.

Access

Here you can manage third-party access and device access.



Third-Party Access

The 3rd party media control access for TeamConnect Bar is encrypted and protected using username and password. It has to be enabled using Control Cockpit before use.

> **i** The full range of functions and list of callable methods can be found in the media control protocol for the TeamConnect Bar (see 3rd party for TeamConnect Bar).

- Enables or disables 3rd party media control access. In order to enable, select the **Edit** button, activate the toggle switch, enter a 3rd party device password and select the **OK** button.
- You can use the username **api** and configured password for your API calls.

> **i** If you deactivate 3rd party access, the previously set password will be deleted.

> **i** Please note that the new password must meet the following requirements:
>
> - At least ten characters
> - At least one lowercase letter
> - At least one uppercase letter
> - At least one number
> - At least one special character: !#$%&()*+,-./:;<=>?@[]^_{|}~
> - Maximum length: 64 characters

Device Access

Changes the password for device access, used by Control Cockpit to authenticate to the device.

Please note that the new password must meet the following requirements:

- At least ten characters
- At least one lowercase letter
- At least one uppercase letter
- At least one number
- At least one special character: !#$%&()*+,-./:;<=>?@[]^_{|}~
- Maximum length: 64 characters

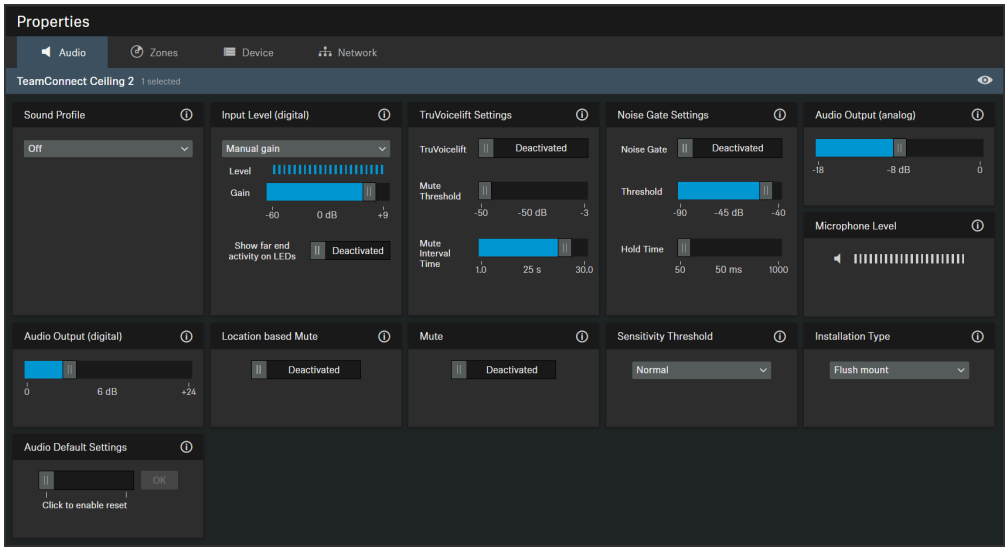
TeamConnect Ceiling 2

The following settings can be adjusted for the TeamConnect Ceiling 2 ceiling microphone array.

TeamConnect Ceiling 2

Audio Settings

The following settings can be adjusted in the audio tab.



Sound Profile

- **Custom**: 7-band equalizer for manually adjusting the sound settings.
- **Off**: No sound profile is activated.

Input Level (digital)

- **Automatic**: The Dante® input gain setting will be adjusted automatically (see below: Automatic AEC Reference Input Gain).
- **Manual**: The Dante® input gain setting will be adjusted manually in steps of 3 dB in the range between **+9 dB** and **-60 dB**.

Automatic AEC Reference Input Gain

This feature automatically adjusts the Dante input gain setting for internal far-end detection according to the level and noise floor of the far-end audio. Enabling this feature is recommended in order to improve the AEC performance of connected devices if the static or background noise floor of far-end participants often changes.

External AEC Reference Channel

For especially challenging teleconferencing setups it can be helpful to use an external AEC reference channel to support echo cancellation. The external AEC reference channel can be added to the TeamConnect Ceiling 2 / TeamConnect Ceiling Medium via the Dante input ports.

For initial configuration of the external AEC reference channel the following possibilities are in place.

- Slider for adjusting the input gain of the digital audio input, when an external AEC reference channel is used.
- Switch for visualizing the far end activity via the LEDs of the TeamConnect Ceiling 2 / TeamConnect Ceiling Medium.

When this function is activated, the LEDs will light up blue. When a far end signal is present, the dynamic beamforming will freeze in a static 90° beam, which is indicated by the LEDs lighting up yellow.

This mode is only recommended during initial configuration. If the mode is not deactivated, it will switch off automatically after 30 minutes.

TruVoicelift

TruVoicelift activates certain algorithms for the microphone output signal in order to mitigate the risk of feedback from the loudspeakers and to improve the audio signal for local output.

Mute Threshold: The mode has an inbuilt automatic mute function which will temporarily shut down the output in case the microphone level exceeds the set level of the Mute

Threshold. With the slider you can adjust the Mute Threshold according to the microphone level from **-50 dB** to **-3 dB** in steps of **1 dB**.

Emergency Interval Time: The Emergency Interval Time allows to set a period of time for how long the microphone should be muted after the Mute Threshold has been exceeded. With the slider you can adjust the interval time from **1 s** to **30 s** in steps of **1 s**.

Noise Gate Settings

Noise Gate can be activated to avoid amplification of background noise, e.g. during pauses in speech.

Threshold: The Noise Gate will open the audio of the microphone output only after the predefined threshold value of the needed microphone has been reached. With the slider you can adjust the minimum threshold level from **-90 dB** to **-40 dB** in steps of **1 dB**.

Hold Time: The Hold Time sets the duration until the noise gate is activated, e.g. during speech pauses. With the slider you can adjust the duration time from **50 ms** to **1000 ms** in steps of **50 ms**.

Microphone Level

Displays the microphone level.

Audio Output (analog)

Slider for attenuating the analog audio output level by up to **18 dB.**

Audio Output (digital)

Slider for adjusting the digital audio output level from **0 dB** to **+24 dB** in steps of 3 dB.

Location based mute

Part of group: Activate this function to add the transmitter to a mute group. If then one of the transmitters in this mute group is muted or unmuted, all other transmitters in the same mute group of the same location will also be muted and unmuted simultaneously. This allows you to create a separate mute group for each location.

Deactivated: The transmitter is not part of a mute group. Muting or unmuting does not affect other transmitters.

> **i** The most recently saved status is retained even after you reset the device or the audio settings to the factory defaults.

Mute

Immediately mutes the audio outputs of the selected device.

Audio Default Settings

Resets the audio settings (Low Cut and Sound Profiles) to the factory defaults.

> **i** The last status saved in the “Location-based mute” field is retained even after you reset the audio settings to the factory defaults.

Sensitivity Threshold

With the Microphone Sensitivity Threshold, the microphone adjusts to the background noise to better identify the speaker. Depending on the setting, the sensitivity is either amplified or attenuated.

- **Normal** (factory setting): recommended setting for speakers with a normal conversation volume.
- **Quiet**: recommended setting for speakers with a quiet conversation volume. The sensitivity of the microphone is increased.
- **Loud**: recommended setting for speakers with a loud conversation volume (e.g. in a room with a lot of background noise). The sensitivity of the microphone is attenuated.

Installation Type

- **Flush Mount**: recommended setting if the ceiling microphone array has been installed in or directly underneath the ceiling.
- **Suspended Mount**: recommended setting if the ceiling microphone array has been suspended from the ceiling.

Configuring an external AEC reference channel

TeamConnect Ceiling devices can use an external AEC (Acoustic Echo Cancellation) reference channel (remote participant / far end signal) to temporarily stop the automatic dynamic beamforming while the far end signal is present on the loudspeakers in the room.

The dynamic beam will point down by 90° in this far end mode. This feature can be helpful for specific solutions where the AEC algorithm struggles with a dynamic reference signal.

The external AEC reference channel will be sent from the DSP to the Dante® input of the TeamConnect Ceiling device.

Requirements

- TeamConnect Ceiling 2 with firmware version 1.3.4 or higher supports an AEC reference channel on the Dante® ports.
- Make sure that the Dante® firmware of the TeamConnect Ceiling 2 is updated to version 1.1.0 or higher.
- Route the AEC reference channel to the TeamConnect Ceiling 2 input via Audinate's Dante Controller software.

Best practice recommendation

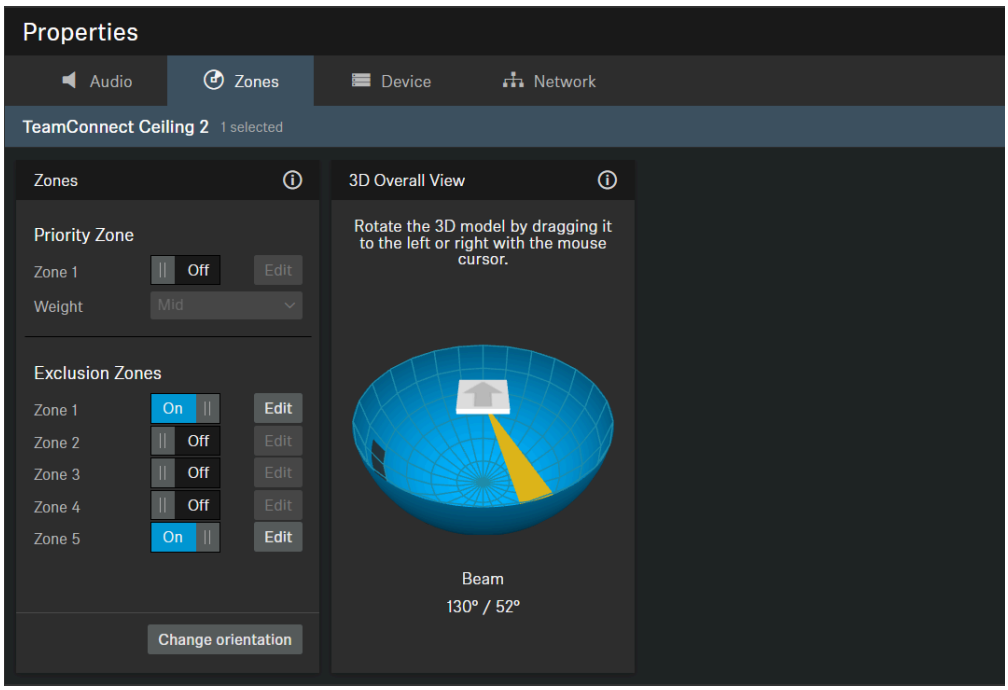
i From our experience, the following procedure should work for most scenarios.

- Leave the Dante® input level of the TeamConnect Ceiling 2/ TeamConnect Ceiling Medium at the factory value of **0 dB**.
- Start from a minimum output gain of the DSP on the reference channel so the automatic dynamic beamforming can work normally.
- Verify this by talking in the room and observing the beam position in the Control Cockpit. The far end needs to be inactive at this point.
- Then, while the far end remains inactive, start increasing the output gain of the DSP slowly until you see the beam orientation of the TeamConnect Ceiling 2 / TeamConnect Ceiling Medium drop/toggle to **90°**.
- At this point, decrease the reference channel output gain of the DSP by **15** to **18 dB** in order to get some headroom for the far end detection.
- Optionally, adjust the Dante® input level of the TeamConnect Ceiling 2 / TeamConnect Ceiling Medium if that is more convenient than adjusting the output gain of the DSP.

✓ The external AEC reference channel has been configured.

Zones

You can set up one Priority Zone and up to five Exclusion Zones.



TeamConnect Ceiling 2 allows you to define two different types of zones:

- One Priority Zone - Zone to be preferred
- Up to five Exclusion Zones - Zones to be excluded

For each zone, both the vertical and horizontal angles can be set individually.

Priority Zone

The Priority Zone allows you to set up a zone which will be handled prioritized in case of incoming audio signals from different positions at the same time. This feature can be useful e.g. during conference meetings with an important person involved. You can learn more about this topic in Setting up zones.

You can adjust a weighting for this zone. The weighting increases the focus on the incoming signals from the zone by the selected values. The following settings can be made:

- **Mid**: Increases the weighting on the audio output from the zone by about 1.5 times the normal value.
- **High**: Increases the weighting on the audio output from the zone by about 2 times the normal value.
- **Max**: Increases the weighting on the audio output from the zone by about 3 times the normal value.

When defining the Priority Zone the area to be prioritized in the detection of the audio source is indicated green.
Vertical zone:

- The vertical zone can be adjusted individually from **0°** to **90°**.
- Minimum size for the vertical angle: **15°**

Horizontal zone:

- The horizontal zone can be adjusted individually from **0°** to **360°**.
- Minimum size for the horizontal angle: **15°**

Exclusion Zones

tc-ceiling-2 allows you to define up to 5 Exclusion Zones. By activating these zones all outgoing audio signals from these areas will be neglected. You can learn more about this topic in Setting up zones.

By default, zone 1 is activated with the following settings:

- **Vertical angle**: **0-10°**
- **Horizontal angle**: **0-360°**

When defining the Exclusion Zones the area to be excluded in the detection of the audio source is indicated petrol.
Vertical zone:

- The vertical zone can be adjusted individually from **0°** to **90°**.
- Minimum size for the vertical angle: **10°**.

Horizontal zone:

- The horizontal zone can be adjusted individually from **0°** to **360°**.
- No minimum size for the horizontal angle.

3D Overall Overview

By activating the zones, a 3D Overall View is created on the right, which displays all activated zones in real time. The zones in the 3D model are indicated either green (prioritized) or petrol (excluded).

The arrow indicates the orientation of the installed tc-ceiling-2 device. You can use the button Change orientation to change the orientation of the ceiling microphone array.

> In case both zone types overlap, the rules of the Exclusion Zone will apply. In this case, the Priority Zone is not displayed in the 3D Overall View.

Setting up zones

You can set up one Priority Zone and up to five Exclusion Zones.

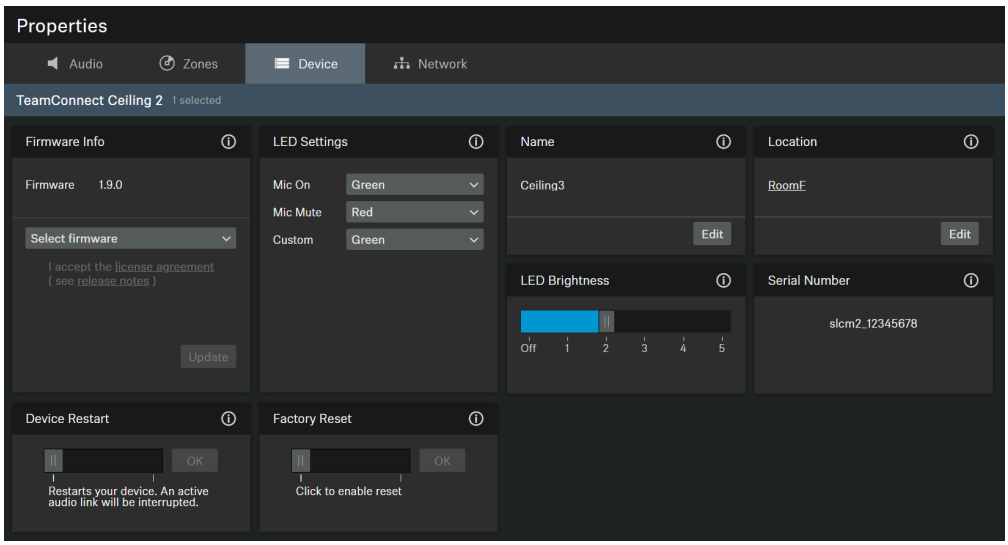
In order to set up a zone:

- Click on **Edit** to define a zone.
- Click on **Apply** to save the defined zone.
- Click on the button **On** to activate the zone.

✓ The zones have been set up.

Device Settings

The following device settings are available for the TC Bar.



Firmware Info

Displays the current firmware version.

For information on how to update the firmware, refer to Updating device firmware.

LED Settings

Adjusts the color of the four LEDs in the corners of the ceiling microphone array.

- **Mic On**: Sets the color of the LEDs when the microphone array is active.
- **Mic Mute**: Sets the color of the LEDs when the microphone array is muted.
- **Custom**: Sets the color of the LEDs for a status which can be customized via a media control system using the Sennheiser Sound Control Protocol.

Name

Edits the name of a device. The name will be stored on the device. If you change the name on the device itself, it will be displayed here accordingly.

Location

Sets the location of the selected device.

The field is limited to 255 bytes length including any UTF-8 characters.

LED Brightness

Slider for adjusting the LED brightness.

- **Off**: the LEDs are switched off completely
- **1 ... 5**: adjusts the brightness between low (1) and high (5)

Serial Number

Displays the serial number.

Device Restart

Restarts the selected device.

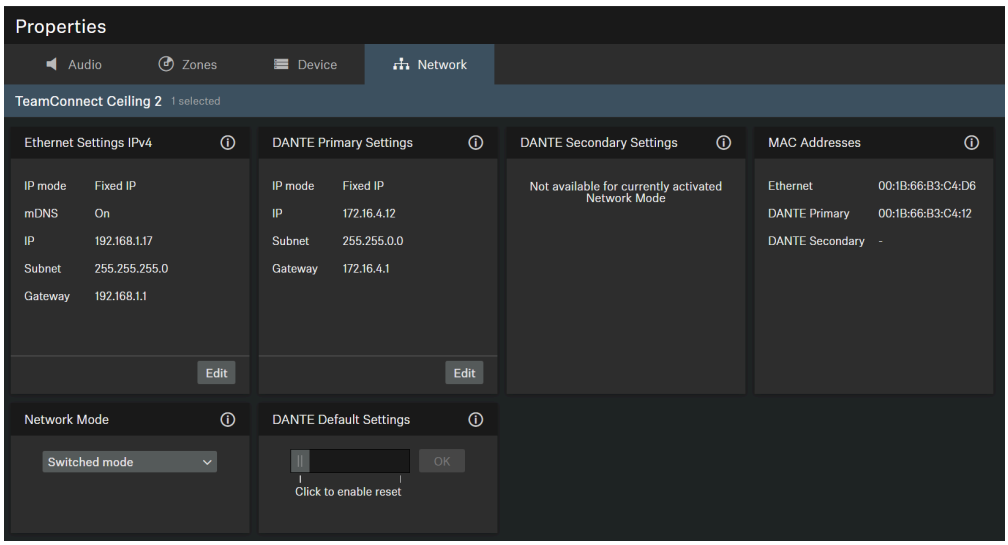
Factory Reset

All settings of the selected device are reset to the factory defaults.

> **i** The last saved status of the **Location-based mute** function is retained even after you reset the device to the factory default.

Network Settings

The following network settings are available.



Control/Dante Settings IPv4

IP Mode

- **Automatic**: The IP address is automatically assigned using DHCP. If no DHCP server is available, the IP address is assigned by the SL Rack Receiver DW itself.
- **Fixed IP**: The IP address has to be entered manually.

mDNS

- **Off**: Deactivates mDNS to reduce the data volume transferred across the network. This option is recommended for larger systems.
- **On**: Activates mDNS to allow for automatic device detection. This option is recommended for smaller systems with up to 30 devices.

IP

- Input of the IP address in Fixed IP mode.

Subnet

- Input of the subnet mask in Fixed IP mode.

Gateway

- Input of the gateway in Fixed IP mode.

DANTE Primary Settings

Displays editable IP address, Subnet and Gateway of the Primary DANTE port.

DANTE Secondary Settings

Displays the IP address, Subnet and Gateway of the Secondary DANTE port. You can edit the settings when using the network mode **Audio redundancy**.

MAC Address

Displays the unique MAC addresses of the device according to the connected ports.

Bluetooth

Bluetooth is deactivated by default. In order to activate BT and connect the TC Bar to a BT-compatible device:

- Click on **Enabled** to activate the BT function and wait approx. 10 sec in order to let the device process the initial activation.
- Click on **Start** to start the pairing process.
- In your device, search for your TC Bar name and click on **Connect**. If the TC Bar is not yet visible, repeat the pairing process again.

> **i** Devices that have already been paired are displayed under **Known Devices**.

DANTE Protocols

Enables a digital audio network protocol over Ethernet for routing and synchronization of Dante-compatible devices using the Dante Controller software.

Network Mode

Switched mode:

- When the device is set to „Switched mode“, the secondary Dante port will behave as a standard switch port, allowing daisy-chaining through the device. In this mode the IP and MAC address of the primary port will be used.

Audio redundancy mode:

- When the device is set to „Audio redundancy mode“, the device will duplicate Dante media traffic to both Dante ports, allowing the implementation of a redundant network via the secondary port. In this mode, both ports get a separate IP address.

DANTE Default Settings

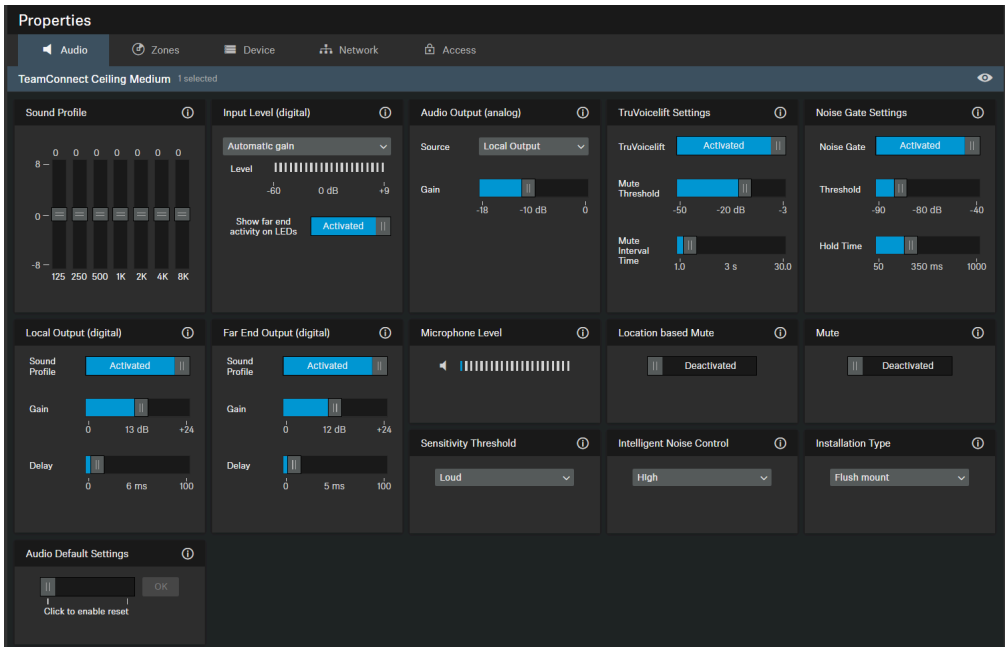
Resets all DANTE settings to their defaults.

TeamConnect Ceiling Medium

TeamConnect Ceiling Medium HTML

Audio Settings

The following settings can be adjusted in the audio tab.



Sound Profile

- **Custom**: 7-band equalizer for manually adjusting the sound settings.
- **Off**: No sound profile is activated.

Input Level (digital)

Automatic:

- The Dante input gain setting will be adjusted automatically (see below: Automatic AEC Reference Input Gain).

Manual:

- The Dante input gain setting will be adjusted manually in steps of 3 dB in the range between **+9 dB** and **-60 dB**.

Automatic AEC Reference Input Gain

This feature automatically adjusts the Dante input gain setting for internal far-end detection according to the level and noise floor of the far-end audio. Enabling this feature is recommended in order to improve the AEC performance of connected devices if the static or background noise floor of far-end participants often changes.

External AEC Reference Channel

For especially challenging teleconferencing setups it can be helpful to use an external AEC reference channel to support echo cancellation. The external AEC reference channel can be

added to the TeamConnect Ceiling 2 / TeamConnect Ceiling Medium via the Dante input ports.

For initial configuration of the external AEC reference channel the following possibilities are in place.

- Slider for adjusting the input gain of the digital audio input, when an external AEC reference channel is used.
- Switch for visualizing the far end activity via the LEDs of the TeamConnect Ceiling 2 / TeamConnect Ceiling Medium.

When this function is activated, the LEDs will light up blue. When a far end signal is present, the dynamic beamforming will freeze in a static 90° beam, which is indicated by the LEDs lighting up yellow.

This mode is only recommended during initial configuration. If the mode is not deactivated, it will switch off automatically after 30 minutes.

Audio Output (analog)

Sets the attenuation of the gain at the analog audio output.

Slider for attenuating the analog audio output level by up to **-18 dB.**

TruVoicelift

TruVoicelift activates certain algorithms for the microphone output signal in order to mitigate the risk of feedback from the loudspeakers and to improve the audio signal for local output.

Mute Threshold: The mode has an inbuilt automatic mute function which will temporarily shut down the output in case the microphone level exceeds the set level of the Mute Threshold. With the slider you can adjust the Mute Threshold according to the microphone level from **-50 dB** to **-3 dB** in steps of **1 dB**.

Emergency Interval Time: The Emergency Interval Time allows to set a period of time for how long the microphone should be muted after the Mute Threshold has been exceeded. With the slider you can adjust the interval time from **1 s** to **30 s** in steps of **1 s**.

Noise Gate Settings

Noise Gate can be activated to avoid amplification of background noise, e.g. during pauses in speech.

Threshold: The Noise Gate will open the audio of the microphone output only after the predefined threshold value of the needed microphone has been reached. With the slider you can adjust the minimum threshold level from **-90 dB** to **-40 dB** in steps of **1 dB**.

Hold Time: The Hold Time sets the duration until the noise gate is activated, e.g. during speech pauses. With the slider you can adjust the duration time from **50 ms** to **1000 ms** in steps of **50 ms**.

Output signal (your device)

Defines the volume of the digital audio output signal (your device).

- Slider for adjusting the digital audio output level from **0 dB** to **+24 dB** in steps of **3 dB**.
- Slider for setting a transmission delay of **0** to **100 ms** in steps of **1 ms**.

Output signal (far end)

Defines the volume of the digital audio output signal from the far end (connected participants).

- Slider for adjusting the digital audio output level from **0 dB** to **+24 dB** in steps of **3 dB**.
- Slider for setting a transmission delay of **0** to **100 ms** in steps of **1 ms**.

Microphone Level

Displays the microphone level.

Location based mute

Part of group: Activate this function to add the transmitter to a mute group. If then one of the transmitters in this mute group is muted or unmuted, all other transmitters in the same mute group of the same location will also be muted and unmuted simultaneously. This allows you to create a separate mute group for each location.

Deactivated: The transmitter is not part of a mute group. Muting or unmuting does not affect other transmitters.

> **i** The most recently saved status is retained even after you reset the device or the audio settings to the factory defaults.

Mute

Immediately mutes the audio outputs of the selected device.

Sensitivity Threshold

With the Microphone Sensitivity Threshold, the microphone adjusts to the background noise to better identify the speaker. Depending on the setting, the sensitivity is either amplified or attenuated.

- **Normal** (factory setting): recommended setting for speakers with a normal conversation volume.
- **Quiet**: recommended setting for speakers with a quiet conversation volume. The sensitivity of the microphone is increased.
- **Loud**: recommended setting for speakers with a loud conversation volume (e.g. in a room with a lot of background noise). The sensitivity of the microphone is attenuated.

Intelligent Noise Control

The INC feature is a two-step process that enhances the voice tracking and beamformer stability in noisy environments (e.g. by fans, HVAC, racks, ...).

Step 1:

- Noise Detection: Advanced DSP algorithms scan and remove static background room noises picked up by microphone capsules, allowing for enhanced voice tracking and beam processing (this feature is always active).

Step 2:

- Noise ControlRemaining static noises can be further suppressed according to user preference. Three levels of preset suppression are available:
    - Low (-6 dB)
    - Mid (-12 dB)
    - High (-24 dB).

Installation Type

- **Flush Mount**: recommended setting if the ceiling microphone array has been installed in or directly underneath the ceiling.
- **Suspended Mount**: recommended setting if the ceiling microphone array has been suspended from the ceiling.

Audio Default Settings

Resets the audio settings (Low Cut and Sound Profiles) to the factory defaults.

> **i** The last status saved in the “Location-based mute” field is retained even after you reset the audio settings to the factory defaults.

Configuring an external AEC reference channel

TeamConnect Ceiling devices can use an external AEC (Acoustic Echo Cancellation) reference channel (remote participant / far end signal) to temporarily stop the automatic dynamic beamforming while the far end signal is present on the loudspeakers in the room.

The dynamic beam will point down by 90° in this far end mode. This feature can be helpful for specific solutions where the AEC algorithm struggles with a dynamic reference signal.

The external AEC reference channel will be sent from the DSP to the Dante® input of the TeamConnect Ceiling device.

Requirements

- TeamConnect Ceiling 2 with firmware version 1.3.4 or higher supports an AEC reference channel on the Dante® ports.
- Make sure that the Dante® firmware of the TeamConnect Ceiling 2 is updated to version 1.1.0 or higher.
- Route the AEC reference channel to the TeamConnect Ceiling 2 input via Audinate's Dante Controller software.

Best practice recommendation

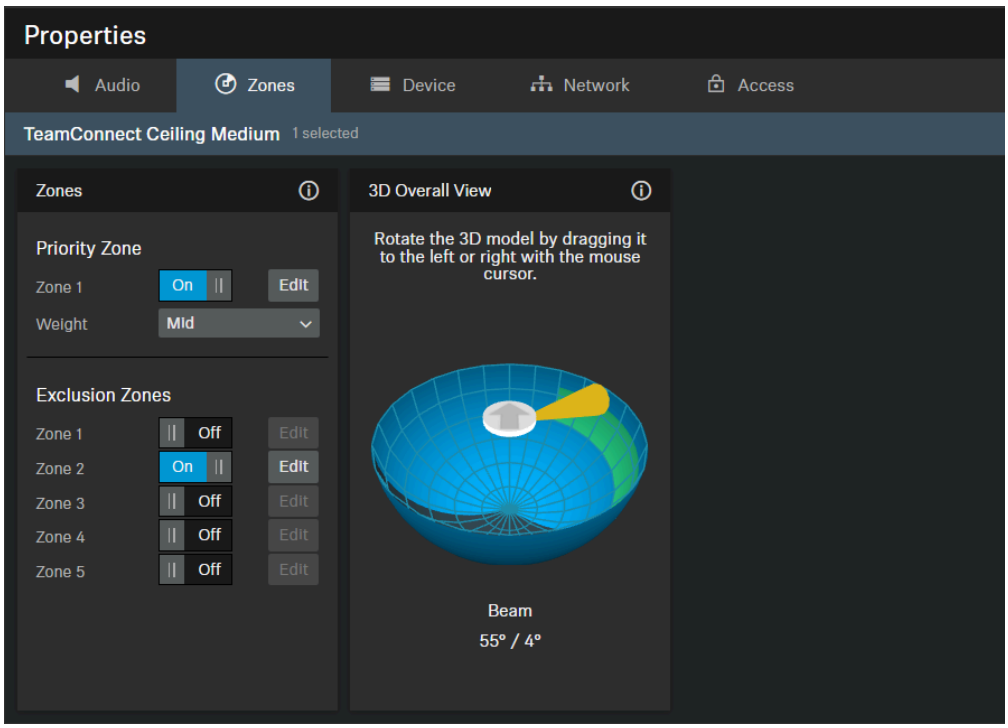
i From our experience, the following procedure should work for most scenarios.

- Leave the Dante® input level of the TeamConnect Ceiling 2/ TeamConnect Ceiling Medium at the factory value of **0 dB**.
- Start from a minimum output gain of the DSP on the reference channel so the automatic dynamic beamforming can work normally.
- Verify this by talking in the room and observing the beam position in the Control Cockpit. The far end needs to be inactive at this point.
- Then, while the far end remains inactive, start increasing the output gain of the DSP slowly until you see the beam orientation of the TeamConnect Ceiling 2 / TeamConnect Ceiling Medium drop/toggle to **90°**.
- At this point, decrease the reference channel output gain of the DSP by **15** to **18 dB** in order to get some headroom for the far end detection.
- Optionally, adjust the Dante® input level of the TeamConnect Ceiling 2 / TeamConnect Ceiling Medium if that is more convenient than adjusting the output gain of the DSP.

✓ The external AEC reference channel has been configured.

Zones

You can set up one Priority Zone and up to five Exclusion Zones.



TeamConnect Ceiling Medium allows you to define two different types of zones:

- One Priority Zone - Zone to be preferred
- Up to five Exclusion Zones - Zones to be excluded

For each zone, both the vertical and horizontal angles can be set individually.

Priority Zone

The Priority Zone allows you to set up a zone which will be handled prioritized in case of incoming audio signals from different positions at the same time. This feature can be useful e.g. during conference meetings with an important person involved. You can learn more about this topic in Setting up zones.

You can adjust a weighting for this zone. The weighting increases the focus on the incoming signals from the zone by the selected values. The following settings can be made:

- **Mid**: Increases the weighting on the audio output from the zone by about 1.6 times the normal value.
- **High**: Increases the weighting on the audio output from the zone by about 2.0 times the normal value.
- **Max**: Increases the weighting on the audio output from the zone by about 2.7 times the normal value.

When defining the Priority Zone the area to be prioritized in the detection of the audio source is indicated green.
Vertical zone:

- The vertical zone can be adjusted individually from **0°** to **90°**.
- Minimum size for the vertical angle: **15°**

Horizontal zone:

- The horizontal zone can be adjusted individually from **0°** to **360°**.
- Minimum size for the horizontal angle: **15°**

Exclusion Zones

TeamConnect Ceiling allows you to define up to 5 Exclusion Zones. By activating these zones all outgoing audio signals from these areas will be neglected. You can learn more about this topic in Setting up zones.

By default, zone 1 is activated with the following settings:

- **Vertical angle**: **0-10°**
- **Horizontal angle**: **0-360°**

When defining the Exclusion Zones the area to be excluded in the detection of the audio source is indicated petrol.
Vertical zone:

- The vertical zone can be adjusted individually from **0°** to **90°**.
- Minimum size for the vertical angle: **10°**.

Horizontal zone:

- The horizontal zone can be adjusted individually from **0°** to **360°**.
- No minimum size for the horizontal angle.

3D Overall Overview

By activating the zones, a 3D Overall View is created on the right, which displays all activated zones in real time. The zones in the 3D model are indicated either green (prioritized) or petrol (excluded).

The arrow indicates the orientation of the installed TCC device. You can use the button Change orientation to change the orientation of the ceiling microphone array.

> In case both zone types overlap, the rules of the Exclusion Zone will apply. In this case, the Priority Zone is not displayed in the 3D Overall View.

Setting up zones

You can set up one Priority Zone and up to five Exclusion Zones.

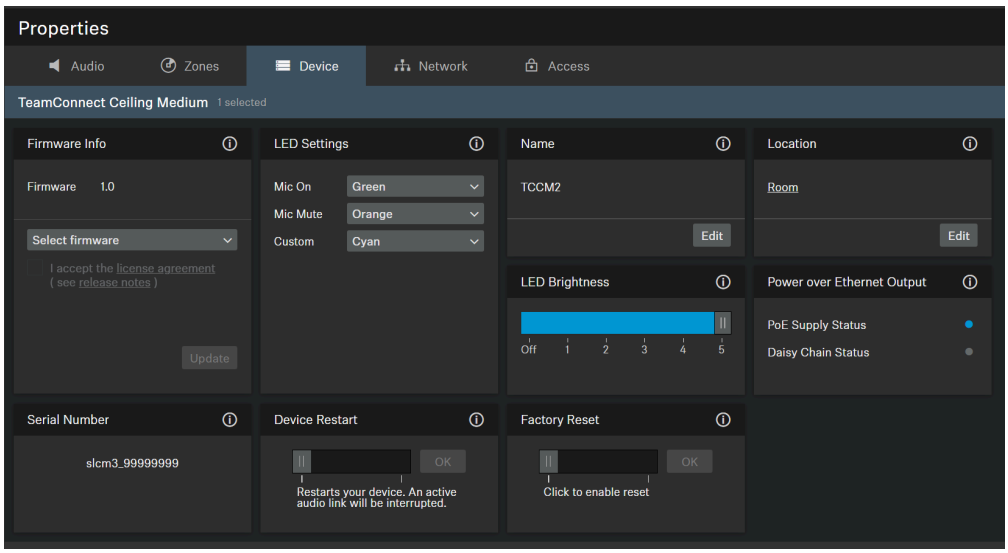
In order to set up a zone:

- Click on **Edit** to define a zone.
- Click on **Apply** to save the defined zone.
- Click on the button **On** to activate the zone.

✓ The zones have been set up.

Device Settings

The following device settings are available for the TC Bar.



Firmware Info

Displays the current firmware version.

For information on how to update the firmware, refer to Updating device firmware.

LED Settings

Adjusts the color of the four LEDs in the corners of the ceiling microphone array.

- **Mic On**: Sets the color of the LEDs when the microphone array is active.
- **Mic Mute**: Sets the color of the LEDs when the microphone array is muted.
- **Custom**: Sets the color of the LEDs for a status which can be customized via a media control system using the Sennheiser Sound Control Protocol.

Name

Edits the name of a device. The name will be stored on the device. If you change the name on the device itself, it will be displayed here accordingly.

Location

Sets the location of the selected device.

The field is limited to 255 bytes length including any UTF-8 characters.

LED Brightness

Slider for adjusting the LED brightness.

- **Off**: the LEDs are switched off completely
- **1 ... 5**: adjusts the brightness between low (1) and high (5)

Power over Ethernet output

Indicates whether sufficient power is provided for daisy chaining and whether daisy chaining is currently in use.

Serial Number

Displays the serial number.

Device Restart

Restarts the selected device.

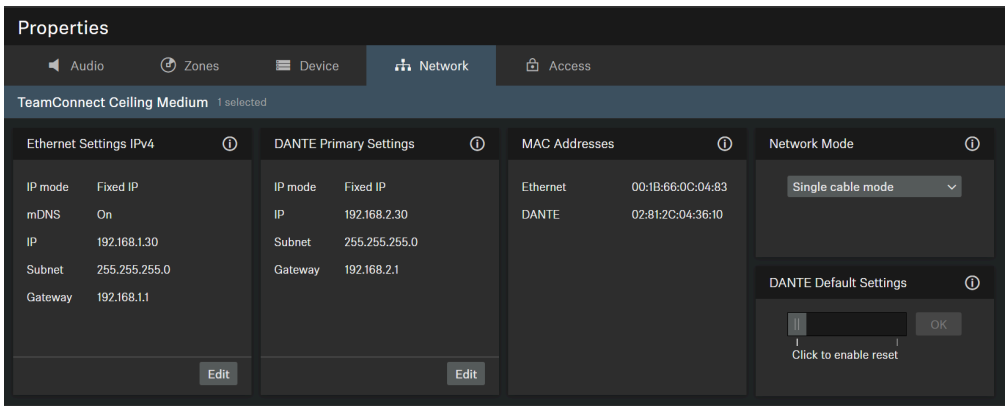
Factory Reset

All settings of the selected device are reset to the factory defaults.

> **i** The last saved status of the **Location-based mute** function is retained even after you reset the device to the factory default.

Network Settings

The following network settings are available.



Control/Dante Settings IPv4

IP Mode

- **Automatic**: The IP address is automatically assigned using DHCP. If no DHCP server is available, the IP address is assigned by the SL Rack Receiver DW itself.
- **Fixed IP**: The IP address has to be entered manually.

mDNS

- **Off**: Deactivates mDNS to reduce the data volume transferred across the network. This option is recommended for larger systems.
- **On**: Activates mDNS to allow for automatic device detection. This option is recommended for smaller systems with up to 30 devices.

IP

- Input of the IP address in Fixed IP mode.

Subnet

- Input of the subnet mask in Fixed IP mode.

Gateway

- Input of the gateway in Fixed IP mode.

DANTE Primary Settings

Displays editable IP address, Subnet and Gateway of the Primary DANTE port.

DANTE Secondary Settings

Displays the IP address, Subnet and Gateway of the Secondary DANTE port. You can edit the settings when using the network mode **Audio redundancy**.

MAC Address

Displays the unique MAC addresses of the device according to the connected ports.

Network Mode

The network mode defines how the different network interfaces on the device shall be used.

- **Single cable mode**
  - When a device is set to **Single cable mode**, the secondary Ethernet port will behave as a standard switch port, allowing daisy-chaining through the device.
- **Split mode**
  - When a device is set to **Split mode**, the first Ethernet port will be used to control and configure the device via the network. The secondary Ethernet port will be used for the output of digital audio.

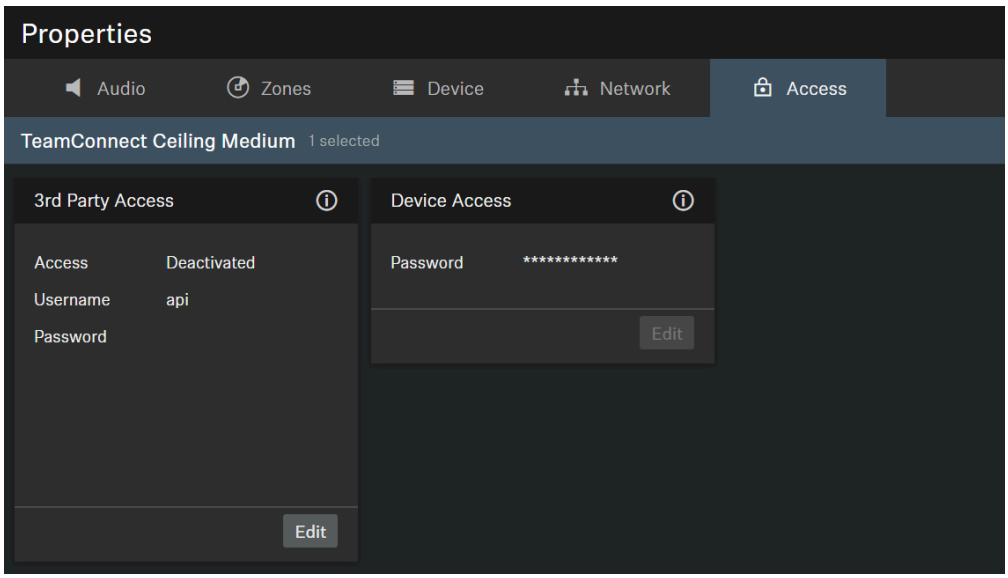
> **i** After changing this setting, the device will restart automatically.

DANTE Default Settings

Resets all DANTE settings to their defaults.

Access

Here you can manage third-party access and device access.



Third-Party Access

The 3rd party media control access for TeamConnect Ceiling Medium is encrypted and protected using username and password. It has to be enabled using Control Cockpit before use.

> The full range of functions and list of callable methods can be found in the media control protocol for the TeamConnect Bar (see 3rd party for TeamConnect Bar).

- Enables or disables 3rd party media control access. In order to enable, select the **Edit** button, activate the toggle switch, enter a 3rd party device password and select the **OK** button.
- You can use the username **api** and configured password for your API calls.

> If you deactivate 3rd party access, the previously set password will be deleted.

Please note that the new password must meet the following requirements:

- At least ten characters
- At least one lowercase letter
- At least one uppercase letter
- At least one number
- At least one special character: !#$%&()*+,-./:;<=>?@[]^_{|}~
- Maximum length: 64 characters

Device Access

Changes the password for device access, used by Control Cockpit to authenticate to the device.

Please note that the new password must meet the following requirements:

- At least ten characters
- At least one lowercase letter
- At least one uppercase letter
- At least one number
- At least one special character: !#$%&()*+,-./:;<=>?@[]^_{|}~
- Maximum length: 64 characters

Evolution wireless G4/G3 stationary receivers

i

evolution wireless 300-500 G4

evolution wireless G3 → #

EM 300 G3

SK 300 G3

300 IEM G3

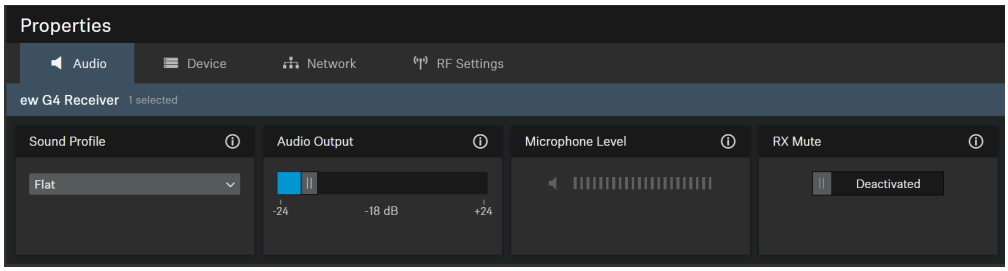
EM 500 G3

SK 500 G3

SKM 500 G3

Audio Settings

The following settings can be adjusted for wireless links with the receivers and transmitters of the evolution wireless G4 and G3 series.



Sound Profile

- **Flat**: no equalization
- **Low Cut**: **-3 dB** at **180 Hz**
- **Low Cut/High Boost**: **-3 dB** at **180 Hz** and **+6 dB** at **10 kHz**
- **High Boost**: **+6 dB** at **10 kHz**
- **Off**: No sound profile is activated.

Microphone Level

Displays the microphone level.

Audio output

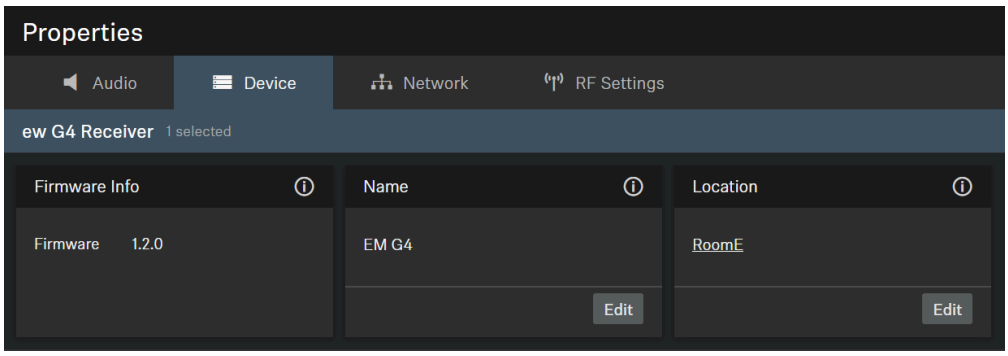
Slider for adjusting the audio output level of the AF OUT audio output of the EM 300-500 G4.

RX Mute

Immediately mutes the audio outputs of the selected device.

Device Settings

The following settings can be adjusted for wireless links with the receivers and transmitters of the evolution wireless G4 and G3 series.



Firmware Info

Displays the current firmware version.

For information on how to update the firmware, refer to Updating device firmware.

Name

Edits the name of a device. The name will be stored on the device. If you change the name on the device itself, it will be displayed here accordingly.

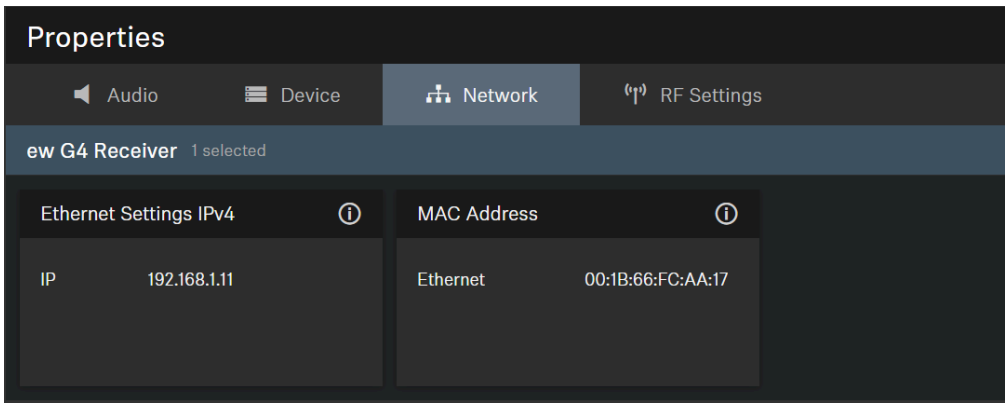
Location

Sets the location of the selected device.

The field is limited to 255 bytes length including any UTF-8 characters.

Network Settings

The following settings can be adjusted for wireless links with the receivers and transmitters of the evolution wireless G4 and G3 series.



Ethernet Settings

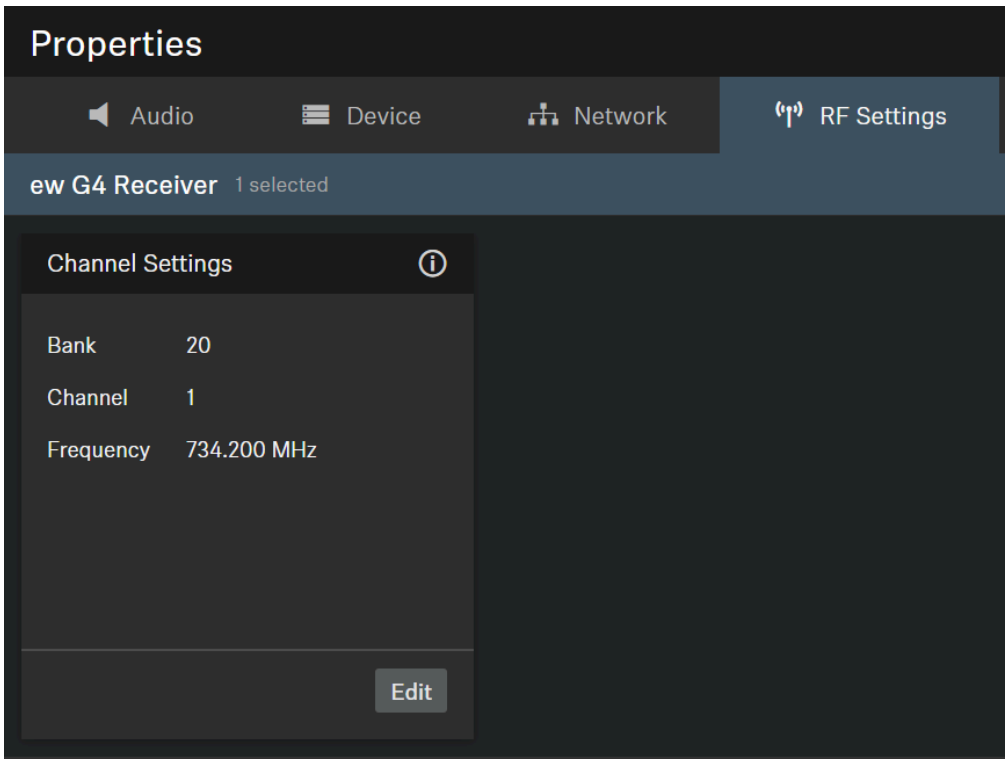
Displays the IP address.

MAC Address

Displays the unique MAC addresses of the device according to the connected ports.

RF Settings

The following settings can be adjusted for wireless links with the receivers and transmitters of the evolution wireless G4 and G3 series.



Channel Settings

Displays the current frequency including bank and channel.

RF Power

Adjusts the transmission power of the receiver:

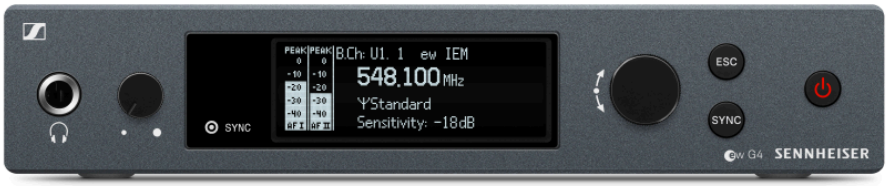
- **Low**: 10 mW
- **Standard**: 30 mW
- **High**: 50 mW

> For some frequency variants of the receiver, not all options might be available due to country-specific regulations.

RF Mute

Immediately mutes the audio outputs of the selected device.

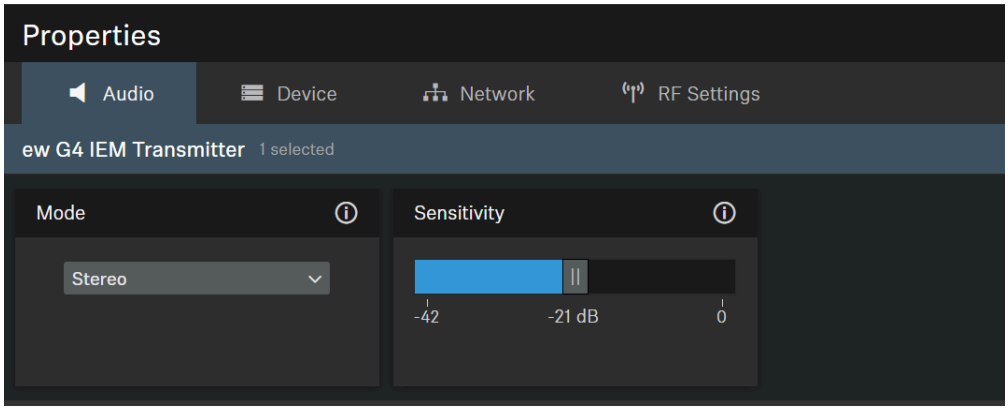
Evolution wireless G4: stationary in-ear monitoring transmitters



evolution wireless IEM G4

Audio Settings

The following settings can be adjusted for wireless links with the receivers and transmitters of the evolution wireless G4 and G3 series.



Mode

Sets the transmitter to Stereo or Mono mode.

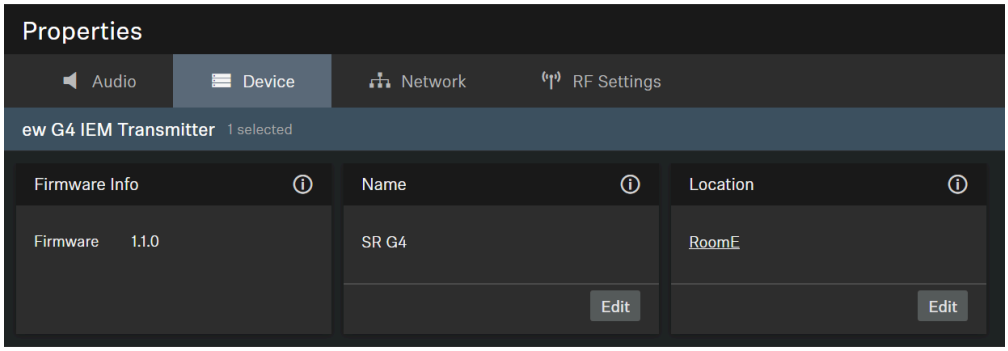
For further details please refer to the ew 300 IEM G3 or ew IEM G4 instruction manualProduct documentation.

Sensitivity

Adjusts the input sensitivity of the transmitter.

Device Settings

The following settings can be adjusted for wireless links with the receivers and transmitters of the evolution wireless G4 and G3 series.



Firmware Info

Displays the current firmware version.

For information on how to update the firmware, refer to Updating device firmware.

Name

Edits the name of a device. The name will be stored on the device. If you change the name on the device itself, it will be displayed here accordingly.

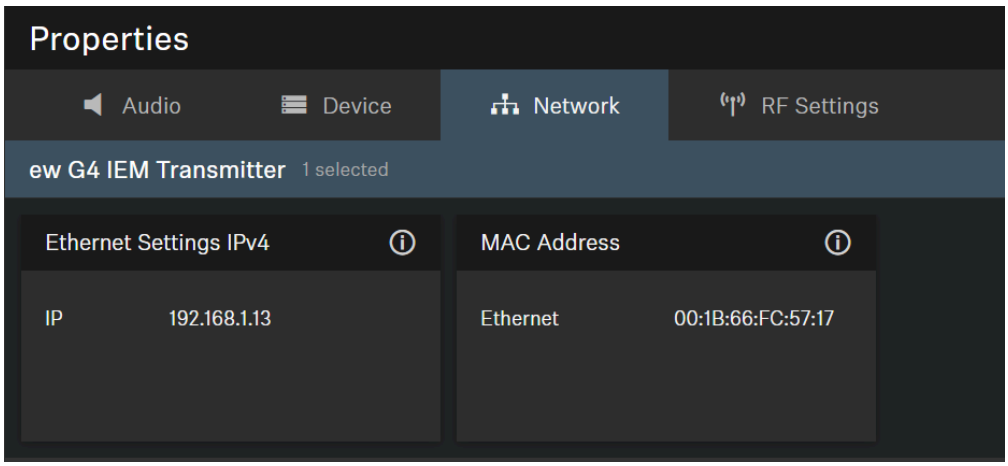
Location

Sets the location of the selected device.

The field is limited to 255 bytes length including any UTF-8 characters.

Network Settings

The following settings can be adjusted for wireless links with the receivers and transmitters of the evolution wireless G4 and G3 series.



Ethernet Settings

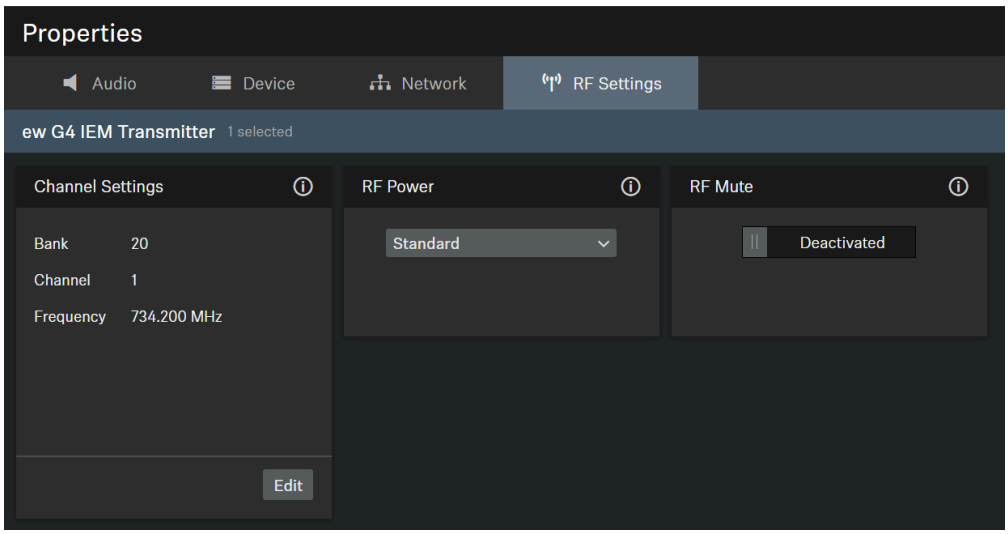
Displays the IP address.

MAC Address

Displays the unique MAC addresses of the device according to the connected ports.

RF Settings

The following settings can be adjusted for wireless links with the receivers and transmitters of the evolution wireless G4 and G3 series.



Channel Settings

Displays the current frequency including bank and channel.

RF Power

Adjusts the transmission power of the receiver:

- **Low**: 10 mW
- **Standard**: 30 mW
- **High**: 50 mW

> **i** For some frequency variants of the receiver, not all options might be available due to country-specific regulations.

RF Mute

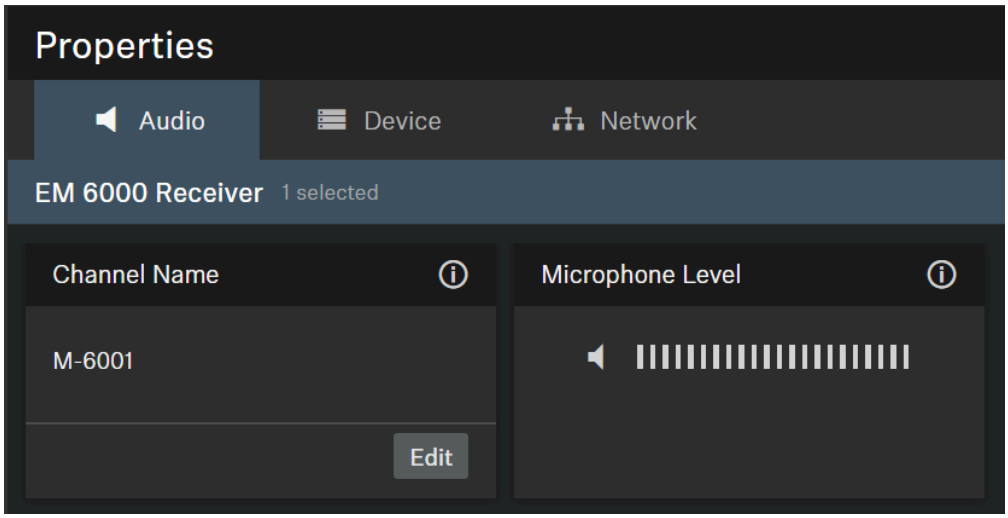
Immediately mutes the audio outputs of the selected device.

EM 6000 digital 2-channel receiver

Digital 6000

Audio Settings

The following settings can be adjusted in the audio tab.



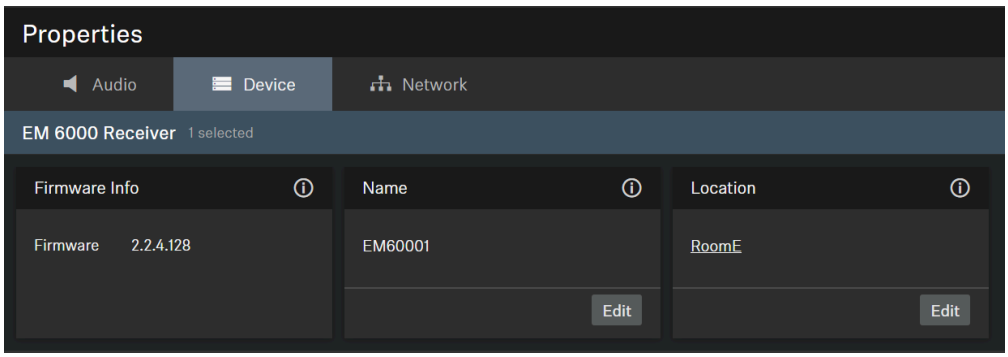
Channel Name

Displays the name of the channel.

Microphone Level

Displays the microphone level.

Device Settings



Firmware Info

Displays the current firmware version.

For information on how to update the firmware, refer to Updating device firmware.

Name

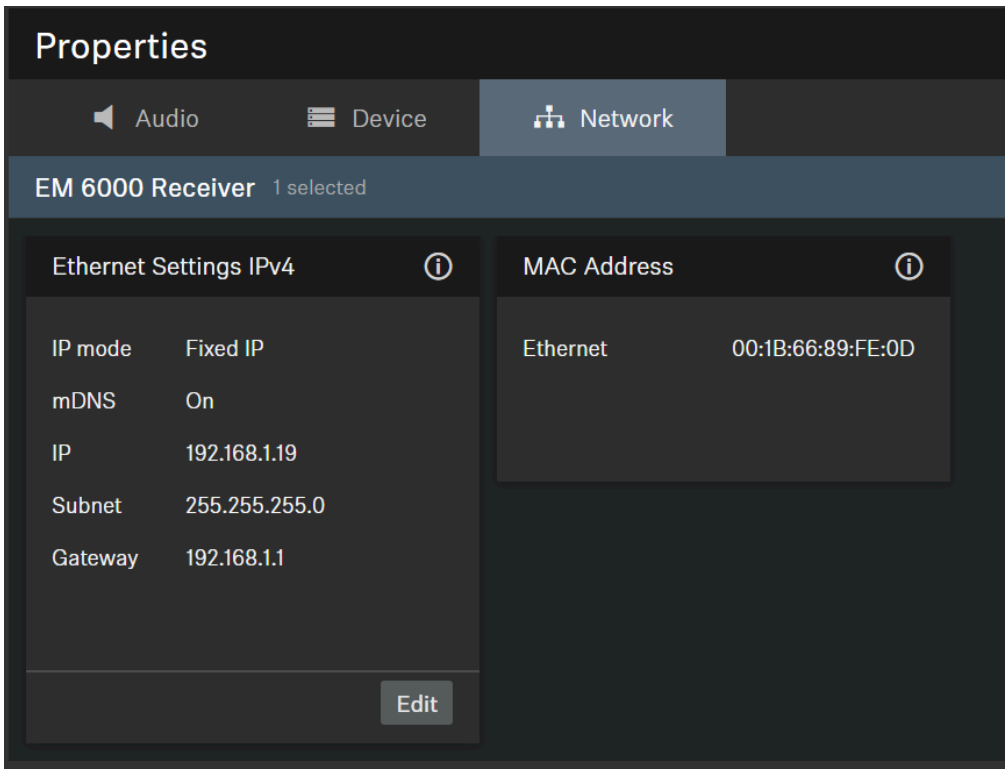
Edits the name of a device. The name will be stored on the device. If you change the name on the device itself, it will be displayed here accordingly.

Location

Sets the location of the selected device.

The field is limited to 255 bytes length including any UTF-8 characters.

Network Settings



Ethernet Settings

IP Mode

- **Automatic**: The IP address is automatically assigned using DHCP. If no DHCP server is available, the IP address is assigned by the SL Rack Receiver DW itself.
- **Fixed IP**: The IP address has to be entered manually.

mDNS

- **Off**: Deactivates mDNS to reduce the data volume transferred across the network. This option is recommended for larger systems.
- **On**: Activates mDNS to allow for automatic device detection. This option is recommended for smaller systems with up to 30 devices.

IP

- Input of the IP address in Fixed IP mode.

Subnet

- Input of the subnet mask in Fixed IP mode.

Gateway

- Input of the gateway in Fixed IP mode.

MAC Address

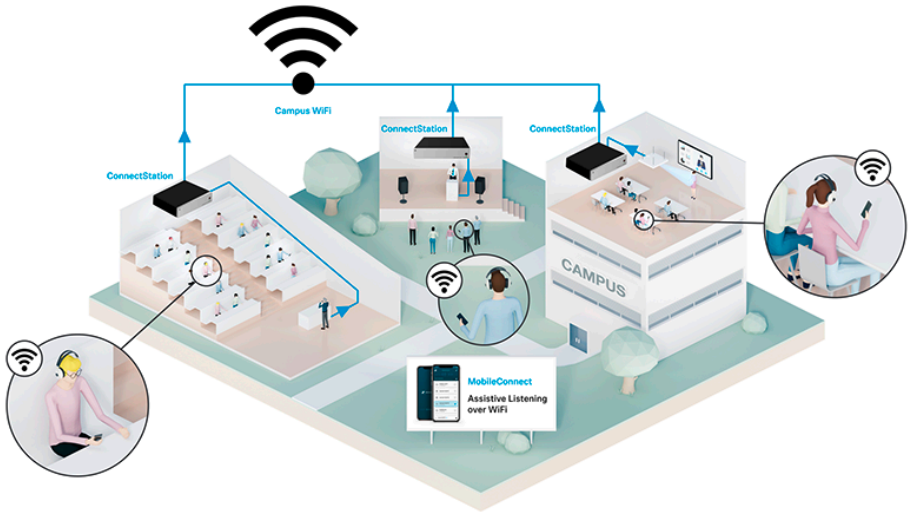
Displays the unique MAC addresses of the device according to the connected ports.

MobileConnect Manager

Sennheiser MobileConnect is an assistive listening solution that allows you to stream audio content via WiFi live and in superior quality to any mobile device.

For further information please refer to the MobileConnect Documentation.

MobileConnect



To add a new MobileConnect Manager to the Control Cockpit “Device List,” please refer to the chapter Adding a MobileConnect Manager.

The following information can be retrieved from the MobileConnect Manager via the Sennheiser Control Cockpit device list:

- Product family ("MCM")
- IP Address
- Online status (see Device state).

6. Knowledge Base

Central hub for information, resources, and guides with further content on the product and/or service.

This page provides an overview of all additional information such as guides, know-how, best practices, and further links related to the product.

Helpful links

-
-

Configuration guide

Here you will find detailed information on specific product topics.

RF sync for SpeechLine Digital Wireless

For the most efficient use of the RF spectrum in multi-channel applications of SpeechLine Digital Wireless, the receivers are able to synchronize with each other.

Use of the RF spectrum

One master receiver provides a transmission clock over the air to its followers in order to guarantee safe RF performance. Every RF group needs to have one master, which can be generated automatically or set manually.

Automatic RF Sync

We recommend the automatic RF sync mode for single-room installations with only one RF group.

> **i** For larger installations in multiple rooms with multiple RF groups, we recommend the manual RF sync mode (see Manual RF Sync).

Configuring automatic RF sync

The automatic RF sync is recommended for single-room installations.

> **i** If you have a multiroom installation, receivers from different locations may synchronize across locations if the RF power is set too high.

In order to configure an automatic RF snyc:

- Navigate to the Locations view.
- Click on the name of the location to select all devices of the location.

  > If there are multiple locations in the Locations view, we recommend the manual RF sync mode.

- Open **Properties** > **RF Settings** on the selected device(s).
- Click **Edit** to configure the settings.
- In the pop-up menu, select automatic mode and click **OK**.
- Restart all receivers one after another.

  > The first restarted receiver will automatically become the master receiver. The other receivers will be the followers.

✓ The automatic RF Sync has been configurated successfully.

Configuring manual RF sync

The manual RF sync mode is recommended for multi-room installations with multiple RF groups.

That way you can avoid receivers from one location synchronizing with receivers from other locations.

> **i** If master and follower are not conf i gur ed and synchronized properly, considerable distortion of the audio transmission can occur.

> **i** Please observe the following aspects:
>
> - Always configure the RF groups by location, that means all receivers of one location together.
> - Define only one receiver as the master receiver for the location.
> - Always configure one location at a time, one after another.
> - Make sure to leave the master receiver switched on all the time.
> - Alternatively, switch all receivers of one location on or off together using a multi-outlet power strip.

In order to configure a manual RF snyc:

- Navigate to the **Locations** view.
- Select all devices of one location by clicking on the name of the location.
  - ✓ The Device List opens with a multi selection of all devices of that location.
- Open **Properties** > **RF Settings** on the selected device(s).
- Click **Edit** to configure the settings.
- In the Mode drop-down select Manual.
- In the Master drop-down select the receiver you want to define as master for this RF group.
  - ✓ All other receivers of the selection will automatically be set as followers.
- Make sure to select the master receiver from the **From** selection list.
  - ✓ The selection comprises all receivers of that location. When defining the RF group per location, as recommended, the master needs to be part of that group.

> If the Rack Receiver and the Multi Channel Receiver are used in one RF group, the RF synchronisation of the receivers must be configured separ at el y under **Properties** > **RF Settings** by device type.

The From existing masters list shows other receivers which have also been defined as master receivers, but which are part of other RF groups in other locations.

- Choose a master from that list only if you want to configure a different setup, e. g. adding a mobile rack, which is configured as a proper location, to a certain other location.

> Only devices with Manual RF sync mode are listed here. Devices with Automatic RF sync mode are not listed here.

- Click **OK** to save the settings.
  - After defining the master receiver, all receivers of that location will be restarted.

The RF Sync properties box underneath the Device List in the Properties -> System tab will display the status information of the selected devices. All selected receivers are indicated with a blue dot. If the dot is grey, the receiver is not part of the selection.

✓ The automatic RF Sync has been configurated successfully.

If the RF sync setup is not ok, errors will be displayed in this properties box as well. For details, see Troubleshooting for RF sync.

Troubleshooting for RF sync

In the **Properties** > **Sytem** tab in the Device List the property box RF Sync will display the status of the selected devices.

The following messages can be displayed:

- Master is unknown
    - The master receiver is not in the device database of the Control Cockpit. This will lead to the error message „Unknown RF master“ configured in the Device List.
- Master is offline
    - The master receiver is switched off. This will lead to the error message RF Master offline in the Device List.
- Unsynchronized followers
    - One or more followers in the RF group are not synchronized with their assigend master receiver. This may happen when receivers have an active link and the RF sync settings are changed. This will lead to the error message Not synchronized in the Device List.

Master is unknown

- Check if the receiver is in the database of the Control Cockpit.
- If not, add the receiver via the Add Device function Adding devices.
- Reconfigure the RF group (see Configuring manual RF sync).

Master is offline

- Switch the master receiver on.

Unsynchronized followers

- Restart the repesctive receiver(s) to initiate re-synchronization.

Error messages in Device List

In certain cases the following status messages may appear in the device list.

Status message	Recommended action
Unknown RF master	The master receiver for the selected RF group is not in the database of the Control Cockpit. Define a master receiver for the selected RF group or add the master receiver to the device list. See Configuring manual RF sync
No RF master configured	No receiver is configured as a master for the selected RF group. Define a master receiver for the selected RF group. See Configuring manual RF sync
Multiple RF masters in location	This label is diplayed for all receivers of one location. More than one receiver of the location is configured as master. We recommend configuring all receivers of one location as one RF group. Reconfigure the receivers of the location as one RF group with one master. See Configuring manual RF sync
Not synchronized	The receiver is not synchronized with its assigend master. Restart the respective receiver(s) to initiate resynchronization.

Setting up Zones for TeamConnect Ceiling

The omnidirectional microphone capsules of the TeamConnect Ceiling microphone array record all the audio signals in the meeting room

Automatic, dynamic and flexible beamforming technology

By means of digital signal processing, the relevant speaking area is then selected in real time.

This means that the system can determine the position of the speaking person at any time, regardless of whether he or she is sitting, standing or moving around.

The realignment of the beam’s directivity takes just milliseconds. The speaking zones therefore no longer have to be configured manually.

The proven Sennheiser microphones capsules ensure perfect audibility. This means that every word spoken in the meeting room can be heard by the off-site attendees.

Prefering a person´s speech by defining a Priority Zone

In a room with a large number of speakers, a Priority Zone can be set up to allow a preferred audio output out of this zone.

This feature analyzes the simultaneous incoming of audio signals in the room and gives preference only to the audio signals picked out of the defined Priority Zone.

Learn more about Setting up Zones:

- TeamConnect Bar
- TeamConnect Ceiling Medium
- TeamConnect Ceiling 2

Product documentation

This section provides references to the instruction manuals and additional information on the Sennheiser products compatible with the Control Cockpit.

> **i** Click on the icon to be redirected to the product website or to the entire operating instructions.

Product	Website	Instruction Manual
Evolution Wireless Digital		
SpeechLine Digital Wireless		
TeamConnect Bar		
TeamConnect Ceiling 2		
TeamConnect Ceiling Medium		
evolution wireless 300-500 G4		
evolution wireless IEM G4		
evolution wireless G3	→	#
EM 300 G3		
SK 300 G3		
300 IEM G3		
EM 500 G3		
SK 500 G3		
SKM 500 G3		
Digital 6000		
MobileConnect		

Man-in-the-middle attack

Control Cockpit detects potential man-in-the-middle attacks based on modified device certificates and blocks affected devices.

Control Cockpit monitors the integrity of the secure connection to a device using the device's certificate. If the certificate of a device changes unexpectedly, Control Cockpit evaluates this as a potential man-in-the-middle attack. In this case, Control Cockpit displays a red security warning and blocks access to the affected device.

Typical triggers

A warning about a possible man-in-the-middle attack can be caused by real attacks, but also by legitimate changes.

Typical causes are:

- Network settings on the Control Cockpit machine were changed,
- concurrent security software is running on the Control Cockpit machine,
- the network topology has changed (for example, IP addresses or new or modified switches or routers).

> **i** In products such as TeamConnect Bar or TeamConnect Ceiling, apparent false alarms may occur after a factory reset if the public key changes as expected.

Troubleshooting

This chapter provides a systematic approach for identifying and resolving issues that may occur during the operation of Control Cockpit.

Depending on the specific problem, click on the relevant chapter to identify possible causes and apply potential solutions.

Devices in the cascade not reachable

Device information

Devices in the cascade not reachable

Cause

One or more devices with outdated firmware have been detected in your cascade. As a result, the devices with the indicated MAC addresses cannot be reached.

Solution

- Note down the MAC addresses of the affected devices.
- Remove the affected chargers from the cascade and connect them directly to the network.

  > i You can find the MAC address on the device nameplate.

- Update each device individually to the latest firmware shown in Control Cockpit. To do this, follow the instructions in chapter Updating CHG 70N(S)-C charger.
- Reassemble the cascade.

Inconsistent firmware version

Device information

Inconsistent firmware version

Cause

One or more devices with outdated firmware have been detected in your cascade.

Solution

- Update the affected devices individually to the latest firmware shown in Control Cockpit. To do this, follow the instructions in chapter Updating CHG 70N(S)-C charger.

Security warning is displayed

Follow these recommendations when Control Cockpit displays a man-in-the-middle warning for a device.

Device information

Security warning | Accept new certificate

A security warning is displayed in Control Cockpit for one or more devices.

Cause

The device certificate or security information has changed, e.g. by performing a factory reset, or there is a potential Man-in-the-middle attack on the network path.

Solution

- Check the physical network connection to the affected device and make sure that no unknown or unauthorized devices are inserted in between.
- Check whether a factory reset was recently performed or firmware or software was updated or changed, which generated new keys or certificates.
- Compare the displayed security information and verify whether it matches an expected device and a known change.
- If you can trace the cause and classify the connection as trustworthy, accept the new certificate in Control Cockpit.
- If the cause is unclear or an attack cannot be ruled out, disconnect the affected device from the network, check the network path, and only allow the connection again after a security analysis.

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