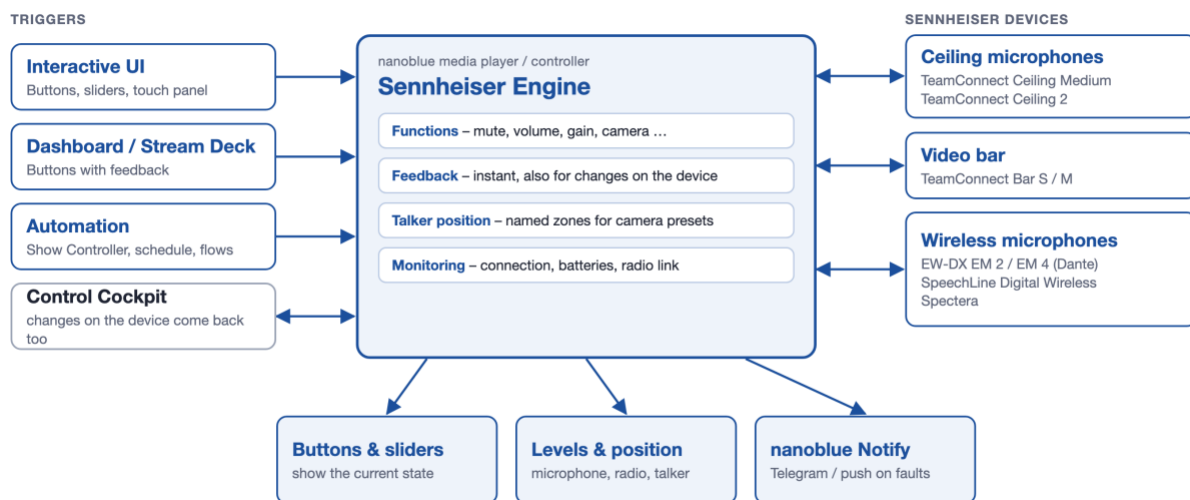


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nanobblue® Sennheiser Control

Operate and monitor Sennheiser ceiling microphones, video bars and wireless microphones – mute, volume, camera presets by talker position and battery warnings with feedback



Overview: touch panel, buttons and automation trigger functions. The Sennheiser Engine controls several devices at once, reports every change instantly and monitors connection and batteries.

What it is about

Sennheiser devices are widely used in meeting rooms, lecture halls and conference centres: ceiling microphones of the TeamConnect Ceiling series, the TeamConnect Bar video bar and the EW-DX, SpeechLine Digital Wireless and Spectera wireless systems. In day-to-day use people need only a small part of this: microphone mute, volume, the right camera view – and the certainty that the wireless microphone will not run flat in the middle of a talk.

nanobblue Sennheiser is a ready-made building block for the nanobblue media player and controller. It connects to the devices through the manufacturer's open control protocol, the **Sennheiser Sound Control Protocol (SSC)**, and makes every function available as a button, slider or display in the **Interactive UI**. A new project needs no programming: the function is defined by the ID of the control element.

One engine controls several devices at once, even a mix of both protocol generations. It runs directly on the nanobblue device in the local network of the installation, responds instantly and needs no internet connection.

Key features

What can be controlled

Device	Functions
Ceiling microphones (TCC M, TCC 2)	Mute, output levels (analogue and Dante), reference level for echo cancellation, brightness and colours of the LED ring, “room in use” indicator, talker position
Video bar (TC Bar S / M)	Microphone mute, speaker volume, recall and store camera preset, camera pan, tilt and zoom, sound profile, Bluetooth, LED ring, talker position
Wireless microphones (EW-DX, SpeechLine)	Per channel: mute, gain, output level, channel name, identify. Feedback: transmitter connected, battery level, remaining runtime, transmitter type, mute on the transmitter, frequency (EW-DX), radio quality, warnings
Spectera	Per bodypack / handheld: gain, low cut, headphone volume (in-ear), name, identify, command button behaviour. Feedback: connected, battery level, remaining runtime, command button pressed, radio quality. Base station: radio per RF channel off / on, pairing mode, temperature and power supplies
All devices	Identify (device flashes), name, room, model, firmware, device state and warnings
Scenes	Several settings at the push of a button, also across devices, e.g. “Meeting” or “Break”
Free command	Any command of the Sennheiser protocol – for special functions

Functions have the same names on all devices. A control panel for the channels of an EW-DX receiver therefore also works with a SpeechLine receiver without changes. Values outside the permitted range are set to the nearest valid value, e.g. to the 3 dB steps of the EW-DX.

Operation in the Interactive UI

The ID of a control element also defines its function. In UI Studio, create a slider, button or text and give it the matching ID – done. Feedback is sent back to the same ID. Each device gets a short name during setup, e.g. “decke” (ceiling), “bar” or “funk” (wireless).

Control element	ID (example)	Effect
Button	senn__decke_mute	Ceiling microphone mute on / off, lights up when muted
Slider	senn__bar_volume	Volume of the video bar (0–100)
Buttons	senn__bar_volume__up / __down	louder / quieter in fixed steps
Button	senn__bar_camera_preset	Video bar camera moves to its preset
Button	senn__funk_ch1_mute	Wireless channel 1 mute on / off
Text	senn__funk_ch1_tx_battery_txt	Transmitter battery level, e.g. “80 %”
Text	senn__funk_ch1_tx_runtime_txt	Remaining runtime, e.g. “6 h 40 min”
Lamp	senn__funk_ch1_tx_low_battery	lights up when the battery is low
Lamp	senn__spec_ch1_command_active	Command button on the Spectera transmitter pressed (e.g. request to speak)
Text	senn__decke_zone_txt	current talker zone, e.g. “tisch_rechts”
Bar graph	senn__meter_funk_ch1	Level meter of the wireless channel
Button	senn__scene_meeting	Recall a scene, lights up while it applies

- **Feedback from everywhere:** if something is changed in Sennheiser Control Cockpit or directly on the device, the Interactive UI shows the new state immediately.
- **Dashboard and other interfaces:** in addition, the most important functions have ready-made inputs and outputs with plain on/off or numeric values, e.g. for dashboard buttons or a Stream Deck.

Camera follows the talker

The ceiling microphones and the video bar detect the direction someone is speaking from. nanoblue maps this direction to named zones, e.g. "Table left", "Table right" or "Lectern". When the talker changes zone, a camera can automatically move to the matching preset.



Zones are defined as angle ranges during setup, optionally with an elevation angle as well.

Sequence: the ceiling microphone reports the direction, the engine recognises the zone, and after a short hold time the camera moves to the matching preset.

- **Freely defined zones:** as an angle range (0–360°), also across 0°, optionally with an elevation angle.
- **Calm camera work:** a new zone only applies once it has been stable for an adjustable time (default 1.5 seconds). Short interjections do not trigger a camera move.
- **With any camera:** the zone change is a normal event in nanoblue. It can trigger a PTZ camera, the camera of the video bar or a cue in the Show Controller.

Wireless microphones at a glance

For every wireless channel nanoblue shows whether a transmitter is connected, how full the battery is and how long it will last. When the battery runs low, nanoblue reports it in good time – on the touch panel and, if required, via Telegram or push.



Only the change is reported: once when the fault occurs, once for the all-clear.

Monitoring: the receiver reports battery and radio quality, the engine checks every channel and warns when a battery is low. Once the problem is solved, an all-clear follows.

Display	Meaning
Transmitter connected	A switched-on transmitter is registered on the channel
Battery level / runtime	in percent and hours / minutes, updated continuously
Battery low	Battery below the configured limit (default 20 %) or warning from the transmitter
Mute on the transmitter	The speaker has muted the microphone on the transmitter
Radio quality / level	Reception quality in percent and audio level of the channel
Warnings	e.g. no transmitter, bad link, overload

Spectera

Spectera is Sennheiser's wideband wireless system: one base station serves many bodypacks and handhelds at the same time. nanoblue assigns each device to a fixed channel by name, serial number or device ID. The user interface therefore stays the same even when devices are paired again.

- **Command button:** when the speaker presses the button on the transmitter, nanoblue sees it immediately. This can show a request to speak, turn a camera to the speaker or switch talkback.

- **Radio off per RF channel:** mutes all transmitters of one radio channel at the push of a button, e.g. during a break.
- **No mute of individual microphones:** the Spectera interface does not provide this. Individual microphones are muted on the mixing desk as usual, which nanoblue can also control.
- **Considerate towards LinkDesk:** if someone is working on the system in Sennheiser LinkDesk, nanoblue writes nothing and reports this. Displays keep running.

Notification with nanoblue Notify

If required, two events are sent to nanoblue Notify and from there via Telegram or push to the technical staff: **battery low** on a wireless channel and **device not reachable**. Only the change is reported – once when the fault occurs and once for the all-clear. This keeps the inbox quiet.

Level meters

Microphone levels of the ceiling microphones and the video bar, the audio level of every wireless channel and the radio quality are shown as a bar graph and a number, up to four times per second. Levels are only transmitted while they are needed.

Scenes

A scene combines several settings, also across several devices. It is recalled at the push of a button. The button stays active as long as all settings of the scene match.

Scene (example)	Content
Meeting	Ceiling microphone and video bar active, bar volume at 50
Break	Ceiling microphone and video bar muted
Talk	e.g. wireless microphone at the lectern active, ceiling microphone muted, camera on the lectern

Control from other workflows

- **Show Controller and schedule:** cues or appointments trigger functions, e.g. all microphones active at the start of an event and muted afterwards.
- **Room control:** any flow in the nanoblue Editor can send commands, e.g. mute the microphones as soon as the video conference ends, or turn the bar down when a presentation starts.

Setup

- **In the nanoblue Editor:** Sennheiser is a ready-made flow. For each device a short name, the device type, the IP address and – for the newer devices – the password are entered, plus zones and scenes if required.
- **On the Sennheiser device:** for TeamConnect Ceiling Medium, TeamConnect Bar and EW-DX, third-party access is switched on once in Sennheiser Control Cockpit or Wireless Systems Manager and a password is set. TeamConnect Ceiling 2 and SpeechLine need no preparation.
- **Test mode:** included test devices simulate all supported models. This allows the interface and workflows to be prepared before the system is on site.
- **Persistent:** the configuration is stored on the device and survives restarts and flow updates.
- **First commissioning:** the first run on the real devices is carried out together with the operator.

Reliable in operation

- **Self-contained:** control and feedback run on the nanobblue device in the local network – even without internet.
- **Instant feedback:** the devices report every change by themselves. There is no constant polling, the network stays quiet.
- **Self-healing:** nanobblue checks the connection to every device continuously. If a device restarts or is briefly unreachable, the engine reconnects automatically and reads all values afresh.
- **Considerate:** nanobblue occupies exactly one connection per device. SpeechLine receivers, for example, allow at most eight simultaneous control stations.

Security

TeamConnect Ceiling Medium, TeamConnect Bar and EW-DX (firmware 4.0 and later) are addressed encrypted via HTTPS and with a password. TeamConnect Ceiling 2 and SpeechLine use the older protocol version without login and encryption; these devices are therefore only operated in the local network or a dedicated VLAN of the installation and are not exposed to the internet. Spectera is also addressed encrypted and with a password; after a wrong password nanobblue waits five minutes before trying again so that the base station does not lock it out. Remote maintenance of the nanobblue device runs encrypted via the nanobblue VPN as usual.

Supported devices

Device	Connection	Functions	Status
TeamConnect Ceiling Medium	SSC v2, HTTPS	mute, outputs, LED ring, talker position, levels	implemented, tested in test mode
TeamConnect Ceiling 2	SSC v1, TCP 45	mute, outputs, LED ring, talker position, levels	implemented, tested in test mode
TeamConnect Bar S / M	SSC v2, HTTPS	microphone, speaker, camera, sound profile, Bluetooth	implemented, tested in test mode
EW-DX EM 2 / EM 2 Dante / EM 4 Dante	SSC v2, HTTPS (firmware 4.0 and later)	channels, transmitters, battery, frequency, radio quality	implemented, tested in test mode
SpeechLine Rack Receiver DW	SSC v1, UDP 45	1 channel, transmitter, battery, radio quality, display	implemented, tested in test mode
SpeechLine Multi-Channel Receiver DW 2 / 4	SSC v1, UDP 45	2 or 4 channels, transmitters, battery, radio quality	implemented, tested in test mode
Spectera Base Station	SSC v2, HTTPS (API 17.0 / 18.1)	bodypacks, handhelds, battery, command button, radio per RF channel	implemented, tested in test mode
CHG 2N / 4N chargers, EW-DX before firmware 4.0	SSC v1	same protocol, other functions	on request

Verification against the real devices takes place during first commissioning.

Technology in brief

- Sennheiser Engine as a flow in the nanobblue Editor on the nanobblue media player or controller.
- Sennheiser Sound Control Protocol in both versions: SSC v2 via HTTPS with subscription (server-sent events), SSC v1 as JSON via TCP or UDP on port 45 with subscription.
- Several devices on one engine, the same function names across all device types.

- Integration with Interactive UI, Dashboard, Show Controller, schedule, nanobblue Notify and all flows in the nanobblue Editor.

Typical applications

- Meeting rooms: microphone mute and volume on the touch panel next to lighting, display and video conferencing.
- Hybrid meetings: the camera automatically turns to the part of the table someone is speaking from.
- Lecture halls and conference centres: battery level of all wireless microphones at a glance, warning before a battery runs flat.
- Events: switch microphones in the Show Controller together with lighting and media.

In preparation

Display in the nanobblue connection monitor · ready-made example page for the Interactive UI with microphones, wireless channels and battery display · the CHG 2N / 4N chargers · installation via the nanobblue flow catalogue.