



SPECTERA Base Station



The Spectera Base Station is a 1 U hardware device that provides up to 64 channels (32 in / 32 out) and utilizes up to two wideband RF channels to accommodate all wireless transmission of the unit. It features redundant Dante® and optional redundant MADI, ensuring seamless integration into your audio network. Additional antennas can be added for redundancy, extended zone coverage, or additional spectrum capacity.

FEATURES

- 19" 1 U Base Station with redundant power supplies
- Provides up to 64 audio channels (32 in / 32 out) and allows for up to two independent wideband RF channels in UHF or 1G4 (6 or 8 MHz) – country specific per region license
- 4 RJ45 antenna ports for redundancy, extended zone coverage, and additional spectrum usage
- Redundant Dante® audio interface
- Two slots for redundant MADI (optional, OM or BNC)
- Sample rates of 48 kHz and 96 kHz
- Individual sample rate converters for all audio interfaces
- Wordclock I/O BNC
- Synchronized clock for all audio over RF allows 3D recordings and playback
- Adjustable RF power from 10 – 100 mW (country specific)
- RJ45 network interface for full remote control
- 11 Audio link modes with selectable audio codecs (OPUS, SeDAC or PCM)
- Secure transmission of confidential content using AES 256 encryption
- Future expansion via cascade port
- Selectable headphone output with volume control on front panel
- OLED display, jog wheel navigation, and rugged metal housing
- Base Station activation via LinkDesk or WebUI: Spectera license defines system functionality and respective frequency spectrum per region (license sold separately)

DELIVERY INCLUDES

- Base Station
- Power cables with country specific plugs (EU, UK, US)
- Quick guide
- Safety guide
- Manufacturer declaration sheet

PRODUCT VARIANTS

SPECTERA Base Station

Art. no. 509162

ACCESSORIES

SPECTERA MADI Card (BNC)	MADI Card Coaxial for Base Station	Art. no. 509293
SPECTERA MADI Card (OM)	MADI Card Optical multimode for Base Station	Art. no. 509295
SPECTERA Filter set	Exchangeable filter for Base Station	Art. no. 700073



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SYSTEM LICENSES

Name	Art. no.	Frequency range	Certified Countries*
SPECTERA LIC (ZONE 01)	700532	UHF (470 - 608 MHz, 630 - 698 MHz) 1G4 (1350 - 1400 MHz)	EU + EFTA, United Kingdom, Turkey
SPECTERA LIC (ZONE 02)	700533	UHF (470 - 608 MHz, 657 - 663 MHz) 1G4 (1435 - 1525 MHz Certification pending)	USA
SPECTERA LIC (ZONE 03)	700534	UHF (470 - 608 MHz, 657 - 663 MHz)	Canada
SPECTERA LIC (ZONE 04)	700535	UHF (470 - 534 MHz, 534 - 608 MHz, 630 - 698 MHz)	Singapore
SPECTERA LIC (ZONE 05)	700536	UHF (470 - 608 MHz, 630 - 698 MHz) 1G4 (1350 - 1400 MHz)	South Africa Certification pending
SPECTERA LIC (ZONE 06)	700537	UHF (470 - 608 MHz, 630 - 694 MHz)	Malaysia, Qatar
SPECTERA LIC (ZONE 07)	700538	UHF (470 - 510 MHz)	Israel - Certification pending
SPECTERA LIC (ZONE 08)	700539	UHF (487 - 608 MHz, 630 - 694 MHz)	Indonesia
SPECTERA LIC (ZONE 09)	700540	UHF (470 - 608 MHz, 630 - 694 MHz) 1G4 (1350 - 1400 MHz)	United Arab Emirates
SPECTERA LIC (ZONE 10)	700541	UHF (470 - 608 MHz, 630 - 698 MHz)	Philippines
SPECTERA LIC (ZONE 11)	700542	UHF (520 - 608 MHz, 630 - 694 MHz)	Australia
SPECTERA LIC (ZONE 12)	700543	UHF (510 - 606 MHz)	New Zealand
SPECTERA LIC (ZONE 13)	700544	UHF (479 - 565 MHz)	Hong Kong

* It is the responsibility of the user to inform themselves about the current local regulatory and certification requirements and to comply with them using wireless systems.



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SPECIFICATIONS

System

Transmission scheme	Multicarrier, TDMA, TDD
RF channel	Bandwidth: 6 or 8 MHz countrywise limited Mobiles devices: up to 128 per RF channel Audio links: up to 128 per RF channel
Radio frequency range	UHF: 470 - 608 MHz, 630 - 698 MHz 1G4: 1350 - 1400 MHz, 1435 - 1525 MHz countrywise limited
Audio frequency response	20 Hz to 20,000 Hz (± 1 dB) (Audio link modes with audio codecs SeDAC and PCM only)
Encryption	AES 256 CTR Mode exp. >10k years

Audio link modes

MIC/LINE	Mono	Max links per RF carrier	Utilized % of RF carrier	Audio codec	Latency	Range
Raw Low Latency	Mono	8	12.50 %	PCM	1.0 ms	Reduced
Raw	Mono	16	6.25 %	PCM	1.6 ms	Reduced
Live Low Latency	Mono	8	12.50 %	SeDAC	1.0 ms	Extended
Live	Mono	16	6.25 %	SeDAC	1.6 ms	Extended
Live Link Density	Mono	32	3.13 %	SeDAC	2.7 ms	Standard
Max Range	Mono	16	6.25 %	OPUS	9.9 ms	Maximum
Max Link density	Mono	128*	0.78 %	OPUS	15.2 ms	Reduced

IEM/IFB	Mono/ Stereo	Max links per RF carrier	Utilized % of RF carrier	Audio codec	Latency	Range
Live	Mono	16	6.25 %	SeDAC	1.6 ms	Extended
Live Link Density	Mono	32	3.13 %	SeDAC	2.7 ms	Standard
Max Range	Mono	16	6.25 %	OPUS	9.9 ms	Maximum
Max Link density	Mono	128*	0.78 %	OPUS	15.2 ms	Reduced
Live Ultra Low Latency	Stereo	4 (8 ch)	25 %	SeDAC	0.7 ms	Extended
Live Low Latency	Stereo	8 (16 ch)	12.50 %	SeDAC	1.1 ms	Extended
Live	Stereo	16 (32 ch)	6.25 %	SeDAC	1.6 ms	Standard
Live Link Density	Stereo	32 (64 ch)**	3.13 %	SeDAC	2.7 ms	Reduced

* Base Stations have 32 audio outputs, for 128 links in a single RF channel, 4 Base Stations and firmware update with cascade port function are required (future release)

** Base Stations have 32 audio inputs, for 32 stereo links (64 ch) in a single RF channel, 2 Base Stations and firmware update with cascade port function are required (future release)



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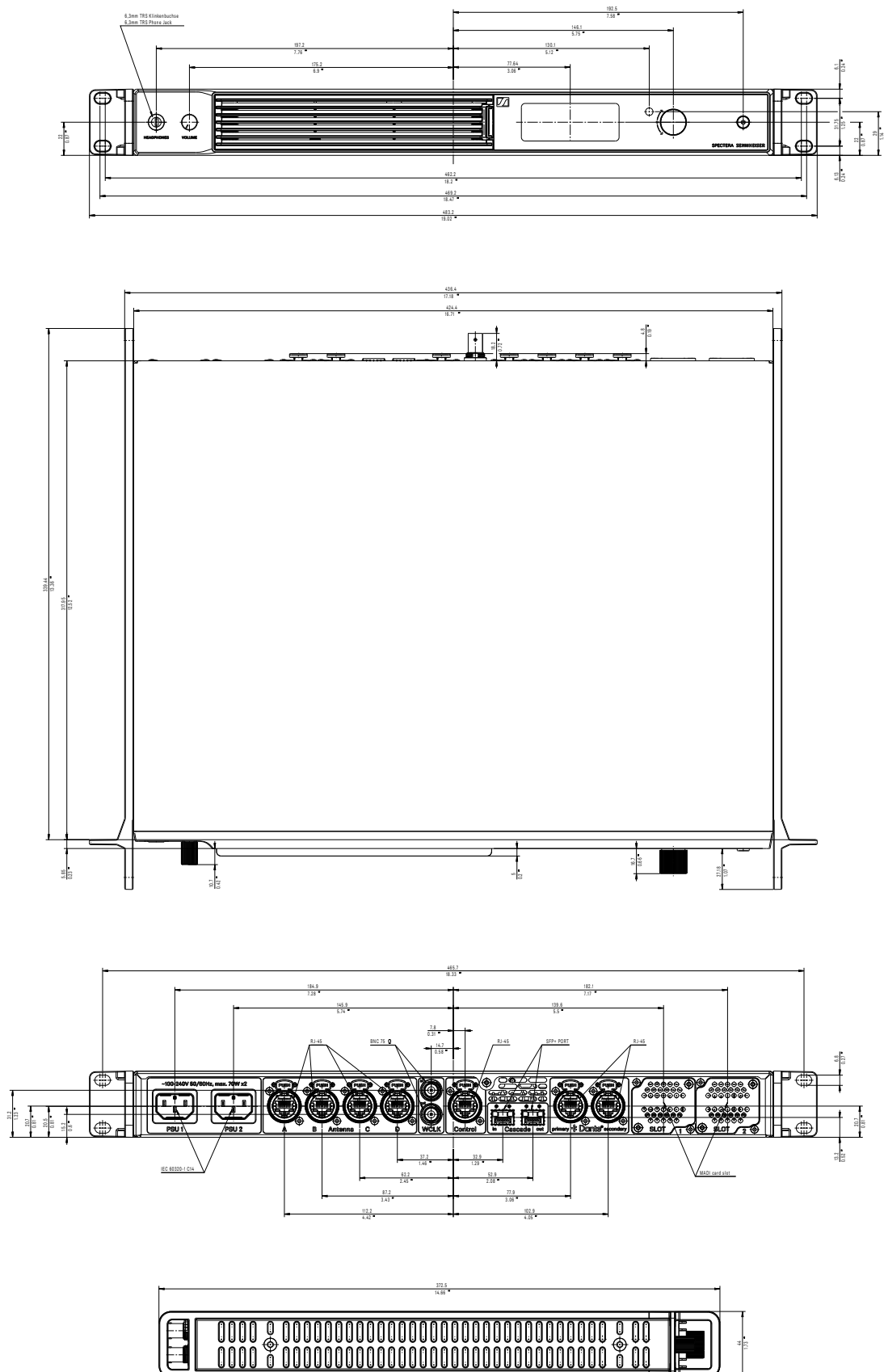
RF channels	2
Audio inputs and outputs	Input: up to 32 channels Output: up to 32 channels individually selectable from digital audio interfaces
Digital audio interfaces	Dante® Ethernet, 1 Gbit/s 2× ruggedized RJ45 (Primary and Secondary) 32 In, 32 Out, 48 kHz or 96 kHz, 16/24/32 bit MADI (AES10) 2× Expansion Slots for MADI Card OM (optical fiber multimode) or MADI Card BNC (separate accessories) 32 In, 32 Out, 48 kHz or 96 kHz, 16/24 bit Individual sample rate for each interface
Headphone output	6.3 mm TRS jack, 2 × 50 mW RMS (32 Ω, -40 dB THD, 1 kHz)
Antenna connections	4 × ruggedized RJ45, PoE supply for up to 4 DAD UHF/1G4
Antenna cable	Category 5e or higher, S/UTP (maximum 100 m)
Word clock	Input: BNC, 75 Ω Output: BNC, 75 Ω Sampling rates: 48 kHz, 96 kHz
Control	Ethernet, 1 Gbit/s, ruggedized RJ45
Cascade in / out*	2 × SFP+ cages (to be equipped with 10 Gbit/s modules)
Power supply	2 × internal redundant 100 to 240 V AC, 50/60 Hz
Power consumption	70 W
Power plug	3-pin, protection class I as per IEC/EN 60320-1
Dimensions (H × W × D with mounting elements)	44 × 483 × 373 mm (1.73" x 19.02" x 14.69")
Weight	approx. 6.3 kg (13.89 lbs) (without accessories)
Temperature	Operation: -10 °C to +50 °C (14 °F to 122 °F) Storage: -25 °C to +70 °C (-13 °F to 158 °F)
Relative humidity	25 % to 95 % (non-condensing)
Dripping and splashing liquids	The product must not be exposed to dripping and splashing liquids (IP2X)

*Software update with cascade port function required (future release)

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DIMENSIONS





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ARCHITECT'S SPECIFICATION

Sennheiser Spectera/ System description / Intro text

Digital bidirectional (uplink/ downlink) multicarrier/ TDMA/ TDD wireless system for simultaneous transmission of up to 32 audio input and output channels. The system shall use digital broadband transmission technology for this purpose. It shall be based on wireless multichannel audio systems technology (WMAS) and its combination of modulation and multiplexing methods.

Data and audio transmission, as well as remote control and monitoring data, shall be carried out via a single RF carrier, avoiding the 2.4 ISM band.

The system shall operate in the TV UHF band or the 1.4/1.5 GHz band. It shall operate with an RF channel bandwidth of 6 or 8 MHz and shall pair up to 128 mobile devices per RF channel.

It shall provide a switching bandwidth of 194 MHz (UHF) or 128 MHz (1.4 GHz), which shall be identical for all RF components in the system; the base station shall be frequency-independent and both frequency bands shall be operated simultaneously by a single base station.

The system shall consist of the following components:

- Base Station in 19"/1U format (shall allow up to two independent wideband RF carriers in UHF or 1G4 band). The base station shall process only digital audio signals without any analog components (compander, RF emphasis, etc.).
- Bodypacks for simultaneous use as both in-ear monitoring receiver and transmitter for microphone/line audio signals.
- Digital bidirectional antenna with integrated RF components (up to four pieces shall be used simultaneously).
- Proprietary desktop application for comprehensive system management.
- Handheld microphone (in development).

The system can be operated with only one antenna. Up to four antennas can be connected to a single base station and operated in multi-zone mode with improved antenna coverage and optimized signal-to-noise ratio. The connection between the base station and antennas shall be a digital 1 Gb/s connection via a CAT5e (or higher) cable with a maximum length of 100 m.

For all system components, data and audio shall be transmitted via a single RF carrier. The system shall support up to 128 audio channels per RF channel, with each channel individually configurable (audio codec, latency, operating range).

The audio frequency response of the system shall be 20 Hz to 20,000 Hz, the system latency shall be min. 0.7 ms for stereo audio links/ 1 ms for mono audio links. The system shall offer 11 audio link/transmission modes, including a mode for linear PCM format. Each channel can be operated in a different mode; Modes can be changed at any time and without rebooting. The internal audio processing shall be done in 32-bit float format.

100 – 240 V power supply units, Dante and optional MAD1 connectors shall be redundant; a total of up to four antennas can be operated simultaneously.

The system shall have AES 256 end-to-end encryption.

The system shall be remotely controlled and monitored via Windows, macOS native software and a WebUI.

The system shall comply with all relevant international standards and regulations for wireless audio transmission. It shall be certified for use in a wide variety of regions (including the EU, USA and Canada).



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Digital Bidirectional Base Station (Sennheiser Spectera Base Station)

Digital bidirectional 19"/ 1U base station with up to 32 individually selectable audio inputs and outputs/ 64 audio links with 11 audio link modes with selectable audio codecs and PCM for wireless transmission of audio and control data on up to two HF broadband channels (6/ 8 MHz) in the UHF or 1G4 range to match the wireless system described in the system description.

The base station shall be equipped with a 3 x 32 input/32 output audio matrix with an integrated Dante module that shall support redundant Dante (32 x 32 audio channels, AES67); it shall operate at a sampling rate of 48/96 kHz, and each audio interface shall have an individual sampling rate converter. The configured audio links shall be listened to via the headphone output.

The base station shall process only digital audio signals without any analog components (componder, RF emphasis, etc.).

A digital antenna connected for this purpose shall allow it to operate as a continuous broadband spectrum analyzer, while other connected antennas shall continue to transmit IEM, IFB and microphone signals at the same time. The antenna connections shall also be used for multi-zone distribution and range extension.

The base station shall have two redundant 100 – 240 V power supply units, a redundant Dante interface (primary/secondary), two expansion slots for redundant MADI interfaces (BNC, SC-Duplex, AES10) and four RJ45 antenna connectors. Furthermore, the base station shall have an independent RJ45 Ethernet port for remote control and monitoring of the device, which shall be physically isolated from the Audio-over-IP (AoIP) network.

Technical requirements

Specifications:

- RF Channels: 2 (6 or 8 MHz)
- Audio connections: up to 128 mobile channels per RF channel
- Audio I/O: up to 32 inputs and outputs/ 64 audio links
- RF output power: 10 mW – 100 mW, adjustable
- Encryption: AES 256
- Audio frequency response: 20 Hz – 20,000 Hz

Connections, displays & controls on the front:

- 1 x 6.3mm Headphones (2 x 50 mW RMS @ 32 Ω)
- 1 x Encoder Headphone Volume
- 1 x OLED-Display
- 1 x Jog-Wheel

Connections on the back:

- 4 x RJ45 Antenna
- 2 x RJ45 Dante (primary/ secondary)
- 1 x RJ45 Control/ Remote Control
- 2 x BNC Wordclock in/ out
- 2 x SFP+ Cascade (I/O)
- 2 x IEC PSU
- 2 x MADI Expansion Slot

Physical Properties:

- Maße: 19" x 1U X 373 mm
- Weight: approx. 6.3 kg
- Material: Metal
- Operating temperature: approx. -10 °C to +50 °C
- Relative humidity: 25% - 95%
- Power supply: 100 to 240 V AC, 50/60 Hz
- Power consumption: 70 W

Base station shall include power cord and all necessary small parts.