SpeechLine DW

SpeechLine Digital Wireless System Specification

FEATURES

- Automatic frequency and interference management
- Speech optimized gain automatics
- License free 1.9 GHz frequency range
- Secure 256 bit AES encryption
- Remote control via Ethernet
- Advanced power management and Li-Ion rechargeables
- Up to 20 channels per range



SpeechLine Digital Wireless is a presentation solution dedicated to speech. The digital wireless microphone system is a future-proof solution that's easy to set up, use and manage. A microphone which lets the presenter concentrate on their words, not on the technology.

SpeechLine Digital Wireless comprises of mobile transmitters (handheld or bodypack) tailored for presentation, speech optimized microphone capsules (condenser capsules, lavalier or headworn microphone) and an easy-to-integrate stationary receiver. For convenience, the system relies on lithium-ion technology with a battery lifetime of more than 15 h and flexible charging solutions of multi-device chargers or USB-charging on the fly. Thanks to the Automatic Frequency Management, the system always finds a free frequency (no frequency planning is necessary anymore). The Automatic Interference Management always maintains a stable connection, which makes the system very reliable. The Automatic Sensitivity Management makes the setup even more convenient, no more gain settings are required. With seamless network integration the system can be controlled via AMX, Crestron or a dedicated remote control software, which makes SpeechLine DW easy to monitor and to manage.

For secure communication, SpeechLine Digital Wireless uses the secure advanced 256-bit AES encryption for secure wireless transmission.

Due to the 1.9 GHz frequency range SpeechLine DW is the future proof of investment and already DD ready. Moreover, the 1.9 GHz is license free and requires no registration.

ARCHITECT'S SPECIFICATION

A wireless RF transmission system designed for presentation use and other applications where maximum speech intelligibility is required.

The system shall consist of a stationary receiver, a handheld transmitter with a condenser microphone head and a bodypack transmitter with a condenser clip-on or headset microphone and shall be available in different sets of receiver/transmitter/microphone combinations. The system shall also feature a Dante™ interface for use with the microphone receivers designed to add analog mic/line inputs to a Dante™ system.

Operating in the license-free 1.9 GHz band (frequency ranges are between 1,880 and 1,930 MHz, depending on country-specific regulations), the system shall use automatic frequency management to determine the best free available frequency and to automatically start the transmission. Additionally, the system shall incorporate automatic interference management, allowing the transmitter and receiver to move to an undisturbed, compatible frequency with no audio signal interruption, should interference occur. Furthermore, advanced 256-bit AES encryption shall be used for secure wireless transmission.

To allow optimum use of the 1.9 GHz frequency band, the system shall offer two operating modes: Adaptive Power Mode for up to 20 links used simultaneously and Multi-Room Mode. In Multi-Room Mode, the transmission power shall be adjustable in steps to adapt the coverage to the corresponding room size in order to allow a significantly larger number of links. This makes the system the optimum solution for a great variety of projects with widely differing installation sizes at the same location.

Furthermore, the system shall be compatible with Sennheiser software for network-based remote setup, control and monitoring of large installations with hundreds of devices.

The system's AF frequency response shall range from 20 – 20,000 Hz. The dynamic range shall be > 120 dB(A). Total harmonic distortion (THD) at 1 kHz shall be typical 0.1 %. Signal-to-noise ratio shall be > 90 dB(A). Latency shall be 19 ms. Operating temperature shall range from -10 °C to +55 °C (+14 °F to +131 °F).

SENNHEISER

Architect's Specification continued

The user interface of the receiver shall be operated by jog dial and OLED display. The receiver shall have dedicated pairing, escape and power buttons.

The receiver shall feature a low-cut filter as well as speech-optimized sound profiles or custom settings with a 7-band graphic equalizer. The receiver's RF sensitivity shall be -90 dBm. RF output power of the receiver's back channel shall be adaptive and up to 250 mW (country-specific).

The receiver's audio output shall utilize a balanced XLR-3M socket with a maximum output of +18 dBu along with two unbalanced RCA sockets with a maximum output of +6 dBu. The receiver shall feature automatic gain optimization. Two reverse SMA sockets shall be provided for connecting the antennas.

The receiver shall feature RJ-45 network connectivity compatible with IPv4 and IPv6 networks. For remote control the receiver shall have media control protocol integration.

The receiver shall operate on 12 V DC power supplied from the NT 12-4C power supply unit (100-240 V AC, 50/60 Hz, for use in the USA, the UK, and Europe) or the NT 2-3 power supply unit (100-240 V AC, 50/60 Hz, for use in countries other than the USA, the UK, and Europe). Power consumption shall be 350 mA. The dimensions shall be approximately 168 x 212 x 43 mm (6.61" x 8.35" x 1.69"). Weight shall be approximately 828 grams (1.83 lbs). The receiver shall be the Sennheiser SL Rack Receiver DW.

The transmitters shall be powered by either one Sennheiser Lithium-Ion rechargeable accupack with a typical operating time of 15 hours or with an optional battery case for two 1.5V AA size batteries. The accupack can be quickly charged through a wide variety of charging options, including micro USB. The accupack shall have charging contacts on the outside for charging in the dedicated CHG 2 charger.

The handheld transmitter shall be equipped with a mute switch, which can be deactivated via the user interface. The handheld transmitter's AF frequency response shall range from 50 – 20,000 Hz. RF output power shall be adaptive and up to 250 mW (country-specific). The handheld transmitter shall have automatic sensitivity adjustment. Dimensions shall be approximately 215 x 40 mm (8.46" x 1.57"). Weight (with microphone head, without accupack) shall be approximately 262 grams (9.24 oz). The handheld transmitter shall feature an LC display showing wireless link name, battery status, and reception quality. The handheld transmitter shall be the Sennheiser SL Handheld DW.

The microphone head suitable for use with the handheld transmitter shall be a condenser type with a super-cardioid pick-up pattern and a sensitivity of 1.6 mV/Pa. Maximum sound pressure level shall be 152 dB SPL. The microphone head shall be the Sennheiser MME 865-1.

The bodypack transmitter's microphone/line input shall utilize a lockable 3.5 mm jack socket. The AF frequency response shall range from 50 – 20,000 Hz (mic) and from 20 – 20,000 Hz (line). RF output power shall be adaptive and up to 250 mW (country-specific). The maximum input level shall be 2.2 Vrms (mic) or 3.3 Vrms (line). Input impedance shall be 1 MΩ (line). The bodypack transmitter shall have automatic sensitivity adjustment. Dimensions shall be approximately 100 x 65 x 24 mm (3.94" x 2.56" x 0.94"). Weight (without accupack) shall be approximately 88 grams (3.10 oz). The bodypack transmitter shall feature an LC display showing wireless link name, battery status, and reception quality. The bodypack transmitter shall be the Sennheiser SL Bodypack DW.

The microphone suitable for use with the bodypack transmitter shall be a condenser type with an omni-directional pick-up pattern and a sensitivity of 5 mV/Pa. Maximum sound pressure level shall be 142 dB SPL. The clip-on microphone shall be the Sennheiser MKE 1 and the headset microphone shall be the Sennheiser SL Headmic 1.

The Dante™ interface shall feature four balanced and RF filtered mic/line inputs on female XLR-3 connectors and two RJ-45 Ethernet connectors to allow Dante™ daisy chaining (DDC) of multiple units. Audio frequency response shall range from 20 – 20,000 Hz. Input impedance shall be > 1.8 kΩ at any gain setting. Equivalent input noise shall be -113 dBu. The Dante™ interface shall be powered over the CAT5 Ethernet cable from an 802.3af PoE compliant network switch or from an external +12 V DC power supply. The unit shall support daisy chaining of two units when powered via PoE and shall accept daisy chaining of up to three units when powered via an external +12 V DC power supply. Power consumption shall be 2.7 W (225 mA) @ +12 V DC without phantom power and 5.5 W (460 mA) @ +12 V DC with a 10 mA phantom power load per input. The Dante™ interface shall have a rugged metal housing with integrated mounting brackets; dimensions (W x H x D) shall be 219 x 38 x 120 mm (8.63" x 1.50" x 4.74"). Weight shall be 0.77 kg (1.7 lbs). Operating temperature shall range from 0 °C to 40 °C (32 °F to 104 °F).
The Dante™ interface shall be the Sennheiser SL DI 4 XLR.

The wireless RF transmission system shall be the Sennheiser SpeechLine Digital Wireless.

Architect's Specification continued

The software shall enable the user to set up, control and monitor all components of a SpeechLine Digital Wireless system via a network. The browser-based responsive software shall be accessible across all platforms from any device (e.g. tablet, computer) in the network. The software shall provide a complete overview of all network-enabled SpeechLine Digital Wireless devices together with status information such as link status, battery life information, alerts and notifications. The software shall allow the user to edit settings of one device or multiple devices at a time. The software shall also feature a room list view, which shows the locations of all devices in the network as well as the number of devices per room.

The software shall be the Sennheiser Control Cockpit

SPECIFICATIONS

System

AF frequency response	20 to 20,000 Hz
Dynamic range	> 120 dB(A)
THD (1 kHz)	typ. 0.1 %
Audio sampling	24 bit/48 kHz
Signal-to-noise ratio	> 90 dB(A)
Encryption	AES 256
RF frequency ranges	EU: 1,880 to 1,900 MHz USA: 1,920 to 1,930 MHz Brazil: 1,910 to 1,920 MHz Taiwan: 1,880 to 1,895 MHz Japan: 1,893 to 1,906 MHz
Modulation	GFSK with back channel
Transmission method	TDMA, space diversity
Latency	19 ms
Relative air humidity	max. 95 %
Temperature range*	Operation: -10 °C to 55 °C (14 °F to 131 °F) Storage: -20 °C to 70 °C (-4 °F to 158 °F)

* The temperature range is influenced by the battery characteristics

SL Rack Receiver DW

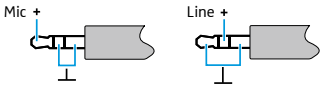
RF sensitivity	< -90 dBm
RF output power back channel	adaptive, up to 250 mW (country-specific)
XLR output level, balanced	max. +18 dBu
RCA output level, unbalanced	max. +6 dBu
Audio effects	Low cut: -3 dB at 120 Hz Equalizer: 7-band graphic equalizer with sound presets Sound profiles: • Female Voice • Male Voice • Media
Display	OLED
Network protocol	Media Control Protocol, TCP/IP IPv4 (DHCP, manual)/ IPv6
Power supply	12 V DC
Current consumption	350 mA
AF connection sockets	XLR/2 x RCA
Antenna sockets	2 x reverse SMA
Network sockets	RJ-45
DC socket for power supply	hollow jack
Weight	approx. 828 g

SL Handheld DW

RF output power	adaptive, up to 250 mW (country-specific)	
AF frequency response	50 to 20,000 Hz	
Input sensitivity	automatic sensitivity adjustment	
Power supply	Accupack:	BA 10 (Li-Ion, 3.6 V)
	Batteries*:	2 x AA size battery (1.5 V)
Operating time	Accupack:	typ. 15 h
	Batteries*:	typ. 10 h
Display	LCD	
Mute switch	available	
Weight (w/o accupack)	approx. 262 g incl. microphone head	

* optional accessory

SL Bodypack DW

RF output power	adaptive, up to 250 mW (country-specific)	
AF frequency response	Mic:	50 to 20,000 Hz
	Line:	20 to 20,000 Hz
Max. input level	Mic:	2.2 V RMS
	Line:	3.3 V RMS
Line input impedance	1 MΩ	
Input sensitivity	automatic sensitivity adjustment	
Power supply	Accupack:	BA 30 (Li-Ion, 3.7 V)
	Batteries*:	2 x AA size battery (1.5 V)
Operating time	Accupack	typ. 15 h
	Batteries*:	typ. 11 h
AF connection socket	3.5 mm jack socket, lockable	
		
Weight (w/o accupack)	approx. 88 g	

* optional accessory

Microphones

	MME 865-1	MKE 1	SL Headmic 1
Microphone type	pre-polarized condenser microphone		
Sensitivity	1.6 mV/Pa	5 mV/Pa	5 mV/Pa
Pick-up pattern	super-cardioid	omni-directional	omni-directional
Max. SPL	152 dB SPL	142 dB SPL	142 dB SPL

Power supply units (for SL Rack Receiver DW)

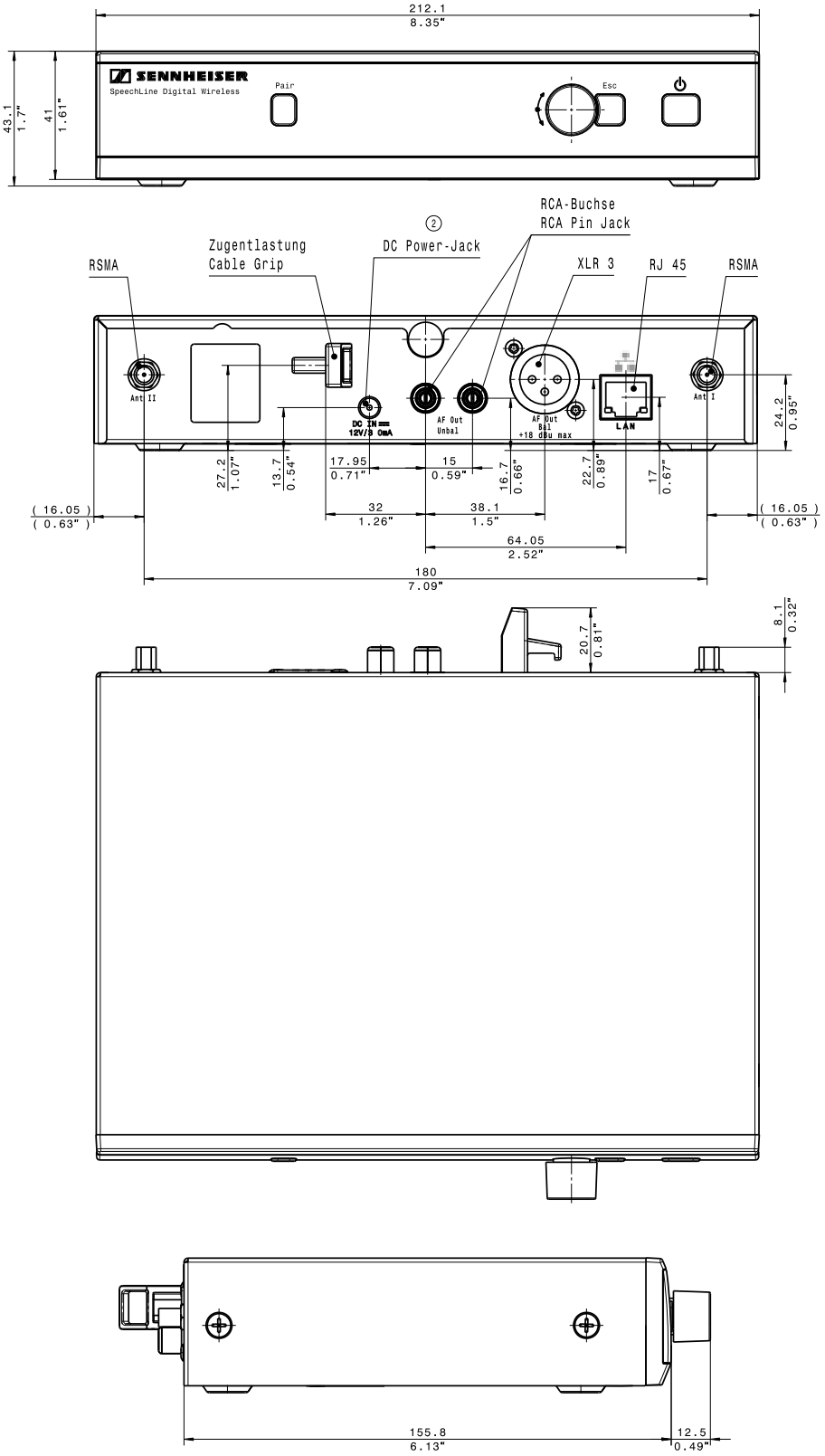
	NT 12-4C	NT 2-3
Nominal input voltage	100 to 240 V⎓	
Power frequency	50 or 60 Hz	
Input current	max. 120 mA	
Nominal output voltage	12 V ⎓	
Standby power consumption	≤ 0.3 W	
Energy efficiency level	V	IV
Operating temperature	-10 °C to 55 °C (14 °F to 131 °F)	
Storage temperature	-20 °C to +70 °C (-4 °F to 158 °F)	
Relative air humidity	max. 95 %	
Weight	approx. 100 g	approx. 105 g

Accupacks

	BA 10	BA 30
Charging capacity	2200 mAh	2030 mAh
Output voltage	3.6 V	3.7 V

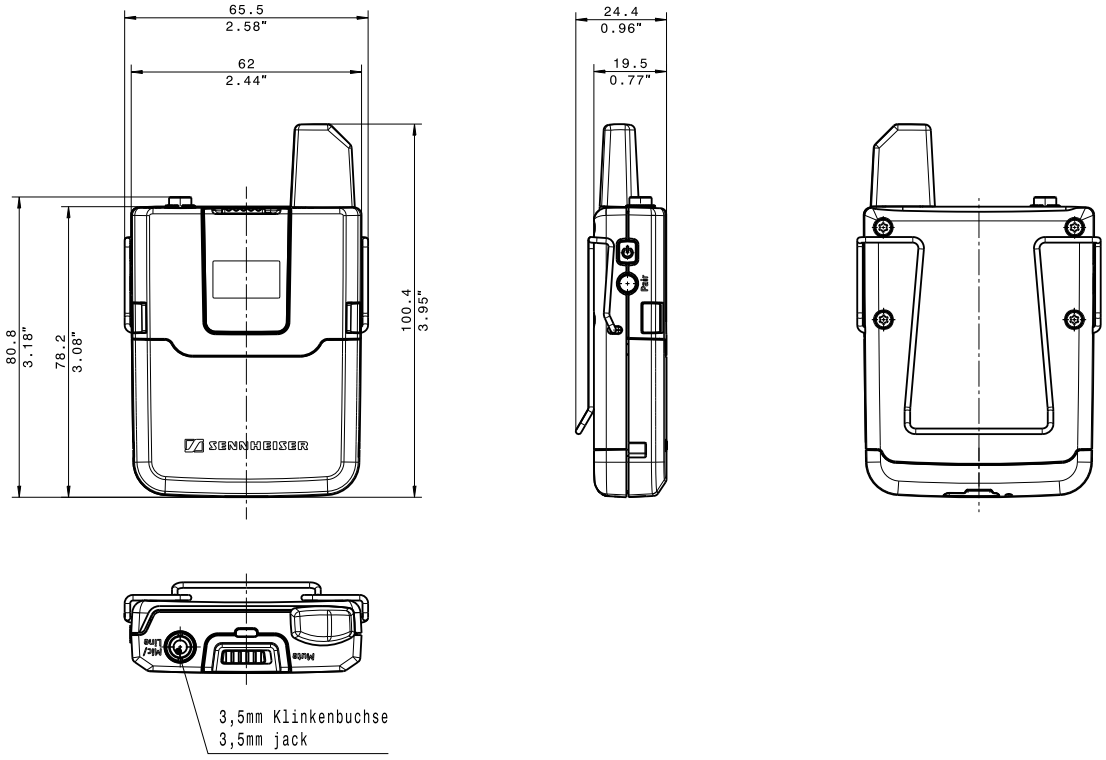
DIMENSIONS

SL Rack Receiver DW

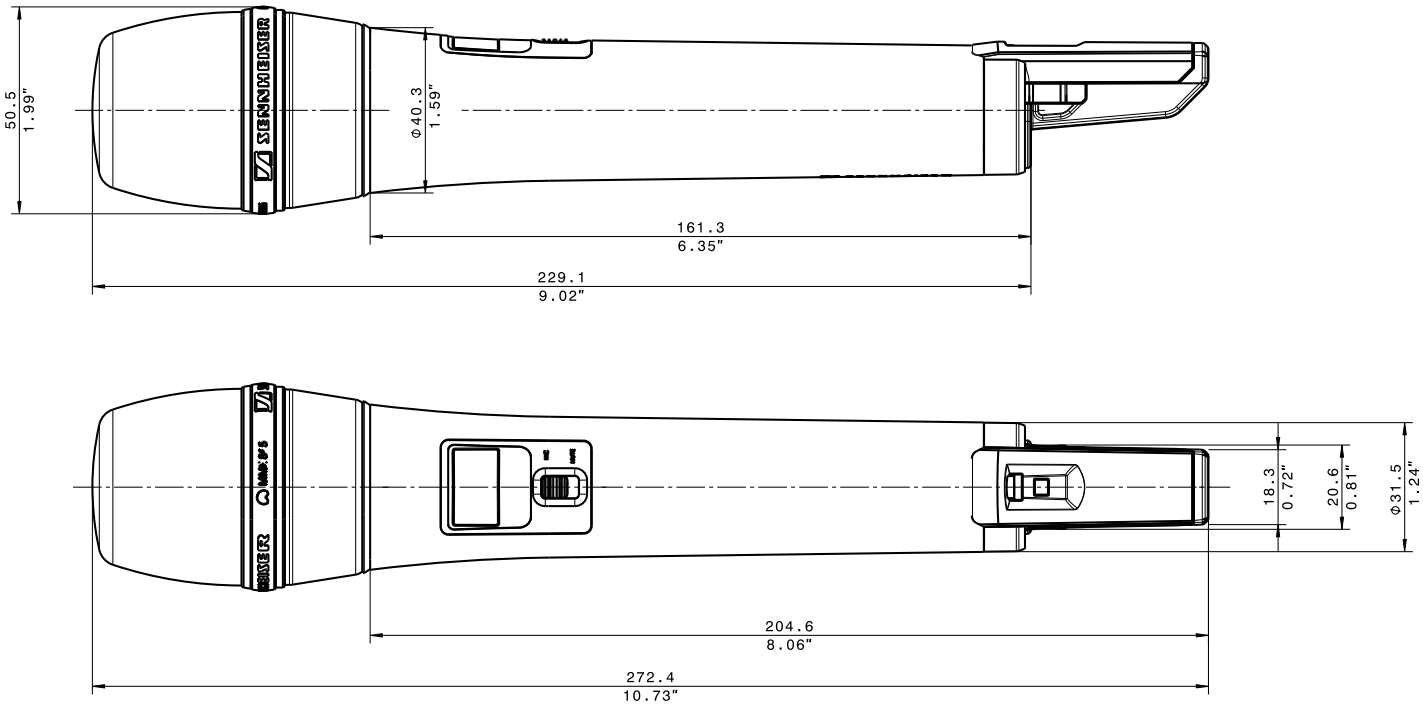


DIMENSIONS

SL Bodypack DW

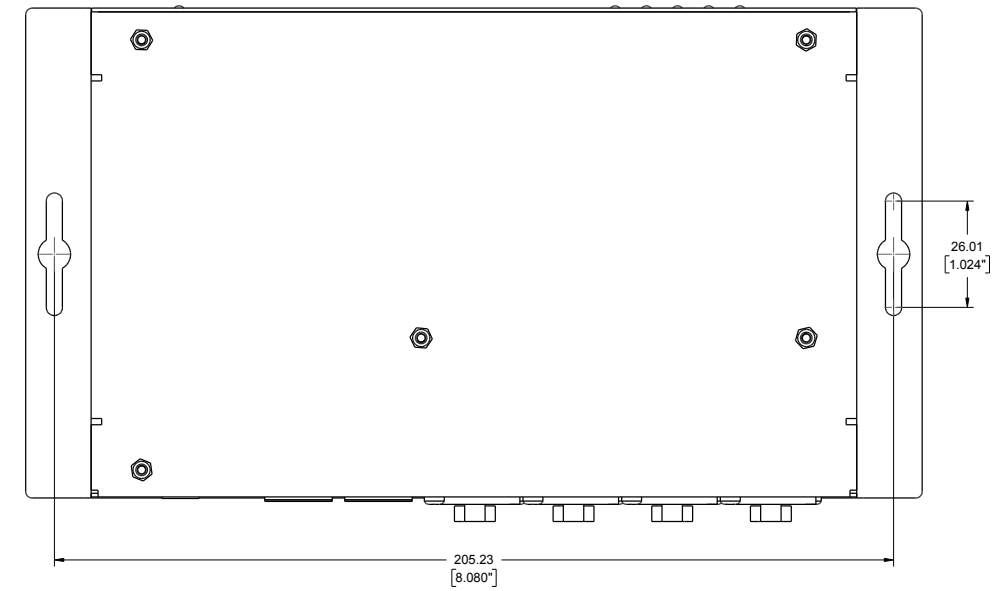


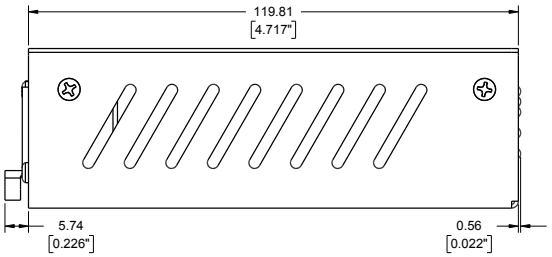
SL Handheld DW

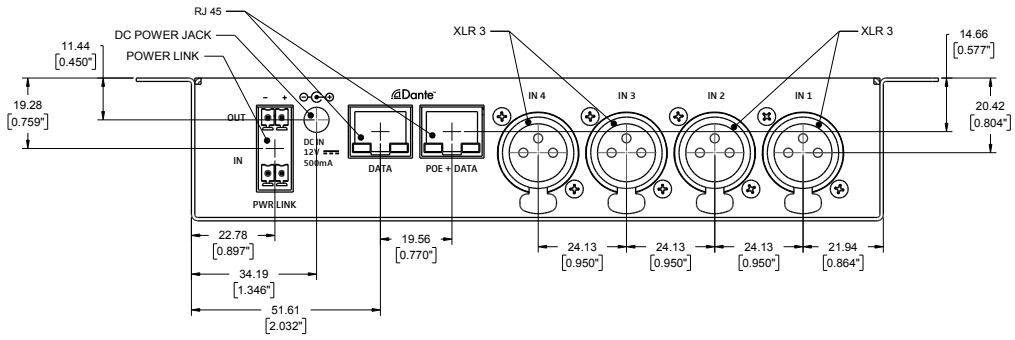


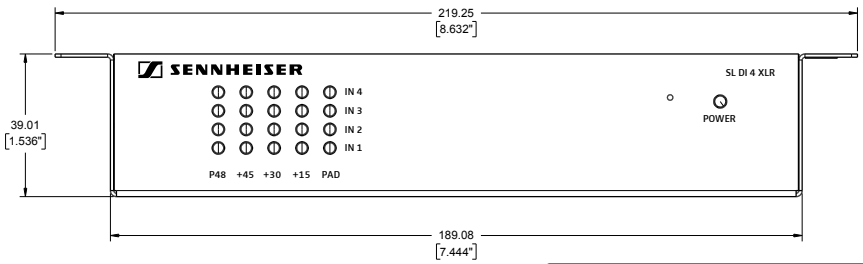
DIMENSIONS

SL DI 4 XLR









ACCESSORIES

Product	Features	Description
AWM 2	• Unobtrusive antenna wall or tripod mounting • Robust metal housing	With the AWM 2, the antennas can be installed in an optimum way and nearly invisible, in case the stationary receiver shall be invisible or needs to be further away. It can be easily mounted on a mobile microphone tripod or permanently installed on a wall.
CHG 2	• Two bay charger for SL DW • Universal charging slots for either bodypack and handheld • External DC adaptor	The CHG 2 charger makes battery management really easy. The mobile transmitters, while not in use, are charged in the two charging bays. Thus, the devices are always ready-to-use when needed. The bi-color LED indicates the status. For seamless installation, the external power supply provides the necessary flexibility.
BA 10 / BA 30	• Li-Ion rechargeable battery • USB charging socket • Dedicated charging contacts	With the BA 10 / BA 30 the SpeechLine Digital Wireless transmitters' long operation time is guaranteed. With more than 15 hours of battery life time even an entire day of operation can be covered. The integrated USB socket allows instantaneous charging.
CL 5/10/20	• Robust, step-proof antenna cable • Sturdy R-SMA connectors	With the robust and step-proof CL 5/10/20 antenna cables the distance between the antenna and the SL Rack Receiver DW can be covered. This allows flexible integration of SpeechLine Digital Wireless in various applications.
Sennheiser Control Cockpit	• Remote control of SpeechLine Digital Wireless • Convenient setup and handling • Detailed status monitoring • Flexible browser-based application	The dedicated Sennheiser Control Cockpit software allows for an easy setup and handling of SpeechLine Digital Wireless even in large installations or events. Monitoring all status information is very easy. All system and device settings can be adjusted remotely.
SL Headmic 1	• Most comfortable-to-use presenter microphone • Outstanding sound quality, omni-directional • Sleek and unobtrusive appearance • Extremely lightweight, but sturdy metal frame • Soft-case for convient transport and storage • Available in black, silver and beige	The SL Headmic 1 is an extremely unobtrusive and comfortable-to-use headworn microphone. It features the proven omi-directional MKE 1 microphone capsule. The adjustable neck band makes its use conventient for everyone. The extremely lightweight (7 g) but robust metal frame makes long-term usage most convenient. It comes with a sturdy and sleek soft-case, which can also hold a bodypack transmitter. It is available in black or beige.
SL DI 4 XLR	• 4 XLR balanced and RF filtered mic/line inputs • 802.3af compliant PoE powered to work with any compliant PoE network switch, or an external +12 V DC supply • +48 V phantom power • Dante™ Daisy Chaining allows multiple SL DI 4 XLRs to be connected over a single home-run to the Ethernet switch	The SL DI 4 XLR four input Dante™ preamp is the ideal interface for wireless microphone receivers and adding mic/line inputs to a Dante™ system. The small form factor of the SL DI 4 XLR allows them to be mounted almost anywhere, putting them close to audio sources and minimizing interference-prone analog wiring.