

# Engineered Sound® Wireless DECT Wireless System



Commercial Audio

## Features

- Automatic DECT-based frequency management
- Up to 96 simultaneous usable channels
- Simple setup with Cat 5e cable and 8-channel Dante audio output
- Standard mode (48 channels) minimizes latency, and HD mode (96 channels) maximizes the number of channels
- Selectable RF power output to optimize coverage area
- Compatible with Audio-Technica's Wireless Manager software for centralized management of system settings and operations
- Presets allow transmitters to be customized for multiple applications
- Roaming function allows transmitters to connect to multiple receivers within preconfigured rooms/areas
- Long-lasting internal lithium-ion batteries for all-day transmitter use
- Sound quality optimized for intelligible, crystal-clear audio
- Adjustable high-pass, transmitter gain, and volume for each receiver channel
- AES256 encryption for superior security
- Compatible with Syslog protocol
- Ability to configure, monitor, and save device settings as projects in Wireless Manager software
- DECT RF scan identifies number of available DECT wireless channels via A-T's Wireless Manager software

## Description

Audio-Technica's Engineered Sound Wireless System is a DECT wireless system that offers simple, smart, and scalable high-quality audio. This versatile system eliminates frequency coordination, which is a limitation of conventional wireless systems, allowing for use of numerous microphones (transmitters) with no license applications. The simplified wiring eliminates the hassle of installing multiple antennas. The system can be configured in Standard Mode (up to 48 channels), to minimize latency, or HD mode (up to 96 channels), to maximize the number of channels. Seamless setup and management are controlled via Audio-Technica's Wireless Manager software, which is capable of managing multiple wireless systems from a single screen. In addition, AES256 encryption comes standard, providing superior security and reliable operation. Once the system is set up, transmitters will be ready to use simply by removing them from the charging station, with a full charge supplying all-day operation.

The ESW-R4180DAN receiver supplies 8-channel Dante audio output via a simple LAN connection (Cat 5e or higher) to a PoE network switch. Dual network ports also allow separate Dante and IP control. The receiver supports mixed output to accommodate setups with limited input channels, and offers high-pass filtering and audio level control for each channel. Any combination of up to 8 handheld, body-pack, desk stand, or boundary transmitters can be used simultaneously with each ESW-R4180DAN receiver. Up to 12 receivers can be used providing a maximum count of 96 simultaneous channels (when utilizing HD mode). The receiver's low-profile white housing blends in with interior décor and features status and link indicator lamps.

The ESW-T4106 boundary microphone transmitter features selectable omnidirectional and cardioid polar patterns. Its touch-sensitive talk switch can be set to three different operation modes (toggle mute on/off, touch-to-talk, touch-to-mute). The mute status is indicated by two LED lamps (one on the rear of the unit, one outlining the switch), which can be set to display seven different colors or be turned off. The transmitter is equipped with a user-replaceable lithium-ion (LI-220) battery, and can be charged via a USB-C connection (to allow continual use) or in the ESW-CHG5 charging station.

The ESW-T4107 desk stand transmitter is compatible with ES925 Series gooseneck microphones, allowing for a wide selection of gooseneck lengths (4.85", 9.08", 12.08", 15.08", 18.08", 21.08") and microphone polar patterns (MicroLine®, hypercardioid, cardioid, omnidirectional). Like the boundary transmitter, it features a touch-sensitive talk switch that can be set to three different operation modes (toggle mute on/off, touch-to-talk, touch-to-mute). LED lamps around the switch and on the rear of the unit (which can be set to 7 different colors or be turned off) display the mute status. The transmitter is equipped with a user-replaceable lithium-ion (LI-220) battery, and can be charged via a USB-C connection (to allow continual use) or in the ESW-CHG5 charging station.

The ESW-T4101 body-pack transmitter features a built-in, high-quality microphone and an on/off/mute push-button control. It is equipped with a CH-style screw-down 4-pin input connector to provide secure connection to CH-style lavalier and headworn mics. (The transmitter supplies 5V DC bias to power condenser microphones.) The transmitter includes a built-in antenna, user-replaceable lithium-ion (LI-220) battery, charging terminals (for use with the ESW-CHG4 charging station) and belt clip, plus a removable neck strap.

The ESW-T4102/C510 handheld transmitter comes with the ATW-C510 cardioid dynamic capsule, which features a multistage grille design for excellent protection against plosives and sibilance without compromising high-frequency clarity. The capsule is interchangeable with all Audio-Technica wireless microphone capsules and a wide array of other compatible capsules. The robust metal transmitter is equipped with a power button, slide-to-mute switch, a user-replaceable lithium-ion (LI-320) battery and charging terminals (for use with the ESW-CHG4 charging station). The AT8456a Quiet-Flex™ stand clamp and a 5/8"-27 male to 3/8"-16 female threaded screw adapter are included as accessories.

The ESW-CHG4 two-bay charging station rapidly recharges both the system's body-pack and handheld transmitters (approx. 2 hours for ESW-T4101; approx. 3 hours for ESW-T4102). Up to four charging stations can be linked and powered by a single power supply. Charging status can be monitored via the station's indicator lamps as well as in the Wireless Manager software. Firmware for all docked transmitters can be updated remotely. Two detachable microphone hangers are included to provide a convenient place to wrap a lavalier mic cable that is attached to a charging body-pack transmitter.

The ESW-CHG5 four-bay charging station rapidly recharges (in as little as two hours) the system's desk stand and boundary transmitters. Up to two charging stations can be linked and powered by a single power supply. As with the ESW-CHG4, the charging status can be monitored via the station's indicator lamps and in the Wireless Manager software, and firmware for all docked transmitters can be updated remotely.

## Architect's and Engineer's Specifications

The DECT wireless microphone system shall consist of a receiver and appropriate transmitters (boundary, desk stand, body-pack, handheld) and shall operate in the UHF band of 1,920–1,930 MHz. It shall incorporate AES256 encryption technology. Setup and management of the system shall be controlled via specially designed manager software.

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The DECT wireless 8-channel receiver shall be equipped with a status indicator LED lamp (to show when the device is on and provide other alerts) and a link indicator LED lamp (to show transmitter link status). It shall support mixed output to accommodate setups with limited input channels, and offer high-pass filtering and audio level control for each channel. The receiver shall be capable of using up to 8 of the system's handheld, body-pack, desk stand, or boundary transmitters (in any combination) simultaneously. Up to 12 receivers shall be usable together, providing a maximum count of 96 simultaneous channels. The receiver shall have A/B network ports for the Dante standard that accept LAN cables (Cat 5e or higher, shielded cables with conductor size of 24AWG or greater in diameter). The receiver shall turn on when the network port A is connected to a PoE-compatible switching hub. Network port A shall send Dante and IP control data in single cable mode together. The receiver shall also include a reset button that can be used to check the network mode, reset the network, and perform a factory reset. The wireless receiver and the supplied wall/ceiling mounting bracket shall be white.

The DECT wireless boundary microphone transmitter shall be switchable between omnidirectional and cardioid polar patterns (each with a frequency response of 20–18,000 Hz). The transmitter shall be equipped with a touch-sensitive talk switch that can be set to three different operation modes (toggle mute on/off, touch-to-talk, touch-to-mute). The transmitter shall be configurable to turn on in a muted or unmuted state. Two LED lamps – one on the rear of the unit, one outlining the talk switch – shall display power and mute status. There shall be seven selectable colors for the lamps, plus an off setting. A power button on the base of the unit shall turn the transmitter on and off. Charging terminals on the base of the transmitter shall work with an optional smart charging dock to recharge the user-replaceable lithium-ion battery (LI-220) installed in the transmitter. The battery cover shall be locked with screws. The transmitter shall also include a USB-C port to allow charging while the unit is in use.

The DECT wireless desk stand transmitter shall be compatible with a wide selection of fixed-charged gooseneck microphones (available lengths: 4.85", 9.08", 12.08", 15.08", 18.08", 21.08"; available polar pattern acceptance angles: 90°, 100°, 120°, 360°). Like the boundary transmitter, the desk stand transmitter shall be equipped with a touch-sensitive talk switch that can be set to three different operation modes (toggle mute on/off, touch-to-talk, touch-to-mute). The transmitter shall be configurable to turn on in a muted or unmuted state. Two LED lamps— one on the rear of the unit, one outlining the talk switch—shall display power and mute status. There shall be seven selectable colors for the lamps, plus an off setting. A power button on the base of the unit shall turn the transmitter on and off. Charging terminals on the base of the transmitter shall work with an optional smart charging dock to recharge the user-replaceable lithium-ion battery (LI-220) installed in the transmitter. The battery cover shall be locked with screws. The transmitter shall also include a USB-C port to allow charging while the unit is in use.

The DECT wireless body-pack transmitter shall have a microphone level input with a screw-down 4-pin connector. It shall provide DC voltage to power microphones requiring DC bias. The transmitter shall also be equipped with a built-in microphone with a frequency response of 20–20,000 Hz and a built-in antenna. The body-pack transmitter shall have a reversible clip allowing for up or down cable entry. A detachable neck strap shall also be included. A push button on the front of the unit shall turn the transmitter on and off and control mute/unmute functionality. A status indicator LED lamp shall display power and other status indications. Charging terminals on the back of the transmitter shall work with an optional smart charging dock to recharge the user-replaceable lithium-ion battery (LI-220) installed in the transmitter. The battery and battery cover shall be locked with screws.

The DECT wireless handheld transmitter shall come with a dynamic cardioid microphone capsule, which shall screw onto the transmitter's industry-standard thread mount. The capsule shall incorporate internal shock mounting and have a two-stage integral pop filter. The transmitter shall also work with additional capsules specifically designed for the transmitter (available separately) as well as other compatible capsules. The transmitter shall have a metal housing with a plastic antenna end cap. The transmitter shall be equipped with a power button and a mute on/off switch. A status indicator LED lamp shall display power and other status indications. Charging terminals on the base of the transmitter shall work with an optional smart charging dock to recharge the user-replaceable lithium-ion battery (LI-320) installed in the transmitter. The transmitter shall be supplied with a heavy-duty stand clamp.

A two-bay charging station shall be available to rapidly recharge (in as little as two hours) the lithium-ion batteries in the system's body-pack and handheld transmitters. It shall be possible to link up to four charging stations and power them with a single power supply. Indicator lamps shall display charging status, which shall also be monitorable via the system's manager software. Remote firmware updates shall be enabled for transmitters docked in the charging station. Each of the station's bays shall have accompanying mounting holes for a detachable microphone hanger that can be used to wrap a lavalier mic cable and leave it attached to a charging body-pack transmitter. Two microphone hangers shall be included with the charging station. The station shall also come with a link cable, link plate and link plate screws.

A four-bay charging station shall be available to rapidly recharge (in as little as two hours) the lithium-ion batteries in the system's desk stand and boundary transmitters. It shall be possible to link two charging stations and power them with a single power supply. Indicator lamps shall display charging status, which shall also be monitorable via the system's manager software. Remote firmware updates shall be enabled for transmitters docked in the charging station. The station shall also come with a link cable, link plate and link plate screws.

The Audio-Technica Engineered Sound® Wireless DECT wireless system is specified.

Specifications	Overall system
Operating frequencies	DECT Mode 01 (US, Canada): 1,920 to 1,930 MHz; RF power limit 100 mW DECT Mode 02 (South America): 1,910 to 1,930 MHz; RF power limit 250 mW DECT Mode 25 (Brazil): 1,912 to 1,920 MHz; RF power limit 250 mW DECT Mode 28 (Chile): 1,920 to 1,930 MHz; RF power limit 100 mW DECT Mode 29 (Uruguay): 1,910 to 1,920 MHz; RF power limit 100 mW <i>This product is set to the DECT Mode matching the laws and regulations of the country where it will be used.</i>
Dynamic range	> 105 dB (A-weighted), typical
Total harmonic distortion	< 1.0%
Operating range	Max. 100 m (328.1'; with RF Power set to Mid) <i>Open range environment with no interfering signals.</i>
System frequency response	Standard: 20 to 20,000 Hz HD mode: 20 to 20,000 Hz <i>Depending on microphone element to attach.</i>
Receiving system	True diversity
Latency	Standard: 16.7 ms typical HD mode: 24.0 ms typical
Audio sampling rate	Standard: 24 bits, 48 kHz HD mode: 24 bits, 48 kHz
Encryption system	AES256
RF output power	Max: 250 mW, High: 100 mW, Mid: 30 mW, Low: 10 mW, Min: 2 mW (switchable) <i>Exercise caution regarding the transmitting power to meet local regulations.</i>
Maximum simultaneous use	Standard: 48 channels* HD mode: 96 channels* In DECT Mode 01/28/29. <i>*Depending on the region and environment.</i>

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## Specifications (continued)

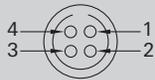
### ESW-R4180DAN 8-channel receiver

Modulation mode	A-field: $\pi/2$ -BPSK B-field: $\pi/8$ -8PSK
RF sensitivity	< -90 dBm
Network	Dante: 1 Gbps IP control: 100 Mbps
I/O connector	Network/Dante: RJ-45
Power consumption	4.8 W
Power supply	PoE (IEEE 802.3af Class 0)
Operating temperature range	-10°C to +50°C (14°F to 122°F)
Dimensions	228.6 mm (9.0") × 228.6 mm (9.0") × 43.5 mm (1.7") (W × D × H)
Weight	620 g (22 oz), without accessories
Included accessory	Bracket



### ESW-T4101 body-pack transmitter

Frequency response	20 to 20,000 Hz (internal microphone)
Modulation mode	A-field: $\pi/2$ -BPSK B-field: $\pi/4$ -QPSK
Input connection	Four-pin locking connector Pin 1: GND Pin 2: MIC DETECTION Pin 3: MIC INPUT Pin 4: DC BIAS +5 V
Battery	Lithium-ion battery LI-220 (included)
Operating temperature range	-5°C to +45°C (23°F to 113°F)
Battery life	25 hours <i>This varies depending on usage conditions.</i>
Dimensions	56 mm (2.2") × 23.5 mm (0.93") × 90 mm (3.5") (W × D × H)
Weight	112.3 g (4.0 oz), with battery
Included accessory	Neck strap



### ESW-T4106 boundary microphone transmitter

Frequency response	Omnidirectional: 20 to 18,000 Hz Cardioid: 20 to 18,000 Hz
Modulation mode	A-field: $\pi/2$ -BPSK B-field: $\pi/4$ -QPSK
Microphone polar pattern	Cardioid, omnidirectional (selectable)
Battery	Lithium-ion battery LI-220 (included)
Charging time (USB)	Approx. 2 hours 40 minutes <i>This varies depending on usage conditions.</i>
Operating temperature range	-5°C to +45°C (23°F to 113°F)
Battery life	22 hours <i>This varies depending on usage conditions.</i>
USB charging connector	USB Type-C (USB 3.0)
Dimensions	90.5 mm (3.6") × 129.4 mm (5.1") × 31.9 mm (1.3") (W × D × H)
Weight	500 g (18 oz), with battery



### ESW-T4107 desk stand transmitter

Modulation mode	A-field: $\pi/2$ -BPSK B-field: $\pi/4$ -QPSK
Microphone	ES Series modular gooseneck microphone-compatible
Battery	Lithium-ion battery LI-220 (included)
Charging time (USB)	Approx. 2 hours 40 minutes <i>This varies depending on usage conditions.</i>
Operating temperature range	-5°C to +45°C (23°F to 113°F)
Battery life	17 hours <i>This varies depending on usage conditions.</i>
USB charging connector	USB Type-C (USB 3.0)
Dimensions	90.5 mm (3.6") × 129.4 mm (5.1") × 47.4 mm (1.9") (W × D × H)
Weight	535 g (19 oz), with battery



### ESW-T4102 handheld transmitter

Modulation mode	A-field: $\pi/2$ -BPSK B-field: $\pi/4$ -QPSK
Microphone capsule	Interchangeable microphone capsule-compatible
Battery	Lithium-ion battery LI-320 (included)
Operating temperature range	-5°C to +45°C (23°F to 113°F)
Battery life	35 hours <i>This varies depending on usage conditions.</i>
Dimensions	ESW-T4102 (without capsule): 188.5 mm (7.4") × 37 mm (1.5") in diameter ESW-T4102/C510: 259.5 mm (10") × 53.7 mm (2.1") in diameter
Weight (with battery)	ESW-T4102 (without capsule): 205 g (7.2 oz) ESW-T4102/C510: 334 g (12 oz)
Included accessories	AT8456a Quiet-Flex™ stand clamp, 3/8"-27 male to 3/8"-16 female threaded screw adapter

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## Specifications (continued)

### ESW-CHG4 two-bay body-pack and handheld charging station

Power supply	12 V DC, 3.0 A
Charging output	When charging one to four transmitters: 4.2 V DC, 1.5 A When charging five or six transmitters: 4.2 V DC, 1.1 A When charging seven or eight transmitters: 4.2 V DC, 0.7 A
Power consumption	When charging two transmitters: 15.6 W When charging eight transmitters in four linked charging stations: 30.6 W
Charging time (ESW-T4101)	When charging one to four transmitters: Approx. 50 minutes (50% charged), approx. 2 hours (100% charged) When charging five or six transmitters: Approx. 1 hour 10 minutes (50% charged), approx. 2 hours 50 minutes (100% charged) When charging seven or eight transmitters: Approx. 1 hour 40 minutes (50% charged), approx. 3 hours 40 minutes (100% charged) <i>This varies depending on usage conditions.</i>
Charging time (ESW-T4102)	When charging one to four transmitters: Approx. 1 hour 20 minutes (50% charged), approx. 3 hours (100% charged) When charging five or six transmitters: Approx. 1 hour 40 minutes (50% charged), approx. 4 hours 10 minutes (100% charged) When charging seven or eight transmitters: Approx. 2 hour 20 minutes (50% charged), approx. 5 hours 20 minutes (100% charged) <i>This varies depending on usage conditions.</i>
Network	IP control: 100 Mbps
Operating temperature range	0°C to 40°C (32°F to 104°F)
Dimensions	95 mm (3.7") × 180 mm (7.1") × 78.5 mm (3.1") (W × D × H)
Weight	532 g (19 oz)
Included accessories	Link cable, Link plate, Link plate screws, Mic holder
Sold separately	AC adapter (AD-SA1230XA), AC cord



### ESW-CHG5 four-bay desk stand and boundary charging station

Power supply	12 V DC, 3.0 A
Charging output	When charging one to four transmitters: 4.2 V DC, 1.5 A When charging five or six transmitters: 4.2 V DC, 1.1 A When charging seven or eight transmitters: 4.2 V DC, 0.7 A
Power consumption	When charging four transmitters: 30.6 W
Charging time (ESW-T4106/ESW-T4107)	When charging one to four transmitters: Approx. 50 minutes (50% charged), approx. 2 hours (100% charged) When charging five or six transmitters: Approx. 1 hour 10 minutes (50% charged), approx. 2 hours 50 minutes (100% charged) When charging seven or eight transmitters: Approx. 1 hour 40 minutes (50% charged), approx. 3 hours 40 minutes (100% charged) <i>This varies depending on usage conditions.</i>
Network	IP control: 100 Mbps
Operating temperature range	0°C to 40°C (32°F to 104°F)
Dimensions	209.9 mm (8.3") × 303.9 mm (12") × 65.4 mm (2.6") (W × D × H)
Weight	866 g (31 oz)
Included accessories	Link cable, Link plate, Link plate screws
Sold separately	AC adapter (AD-SA1230XA), AC cord



### LI-220 lithium-ion battery

Type	Lithium ion
Output voltage	3.6 V DC
Capacitance	2,200 mAh
Dimensions	39.7 mm (1.6") × 56.7 mm (2.2") × 13.5 mm (0.53") (W × D × H)
Weight	49 g (1.7 oz)



### LI-320 lithium-ion battery

Type	Lithium ion
Output voltage	3.6 V DC
Capacitance	3,200 mAh
Dimensions	21.4 mm (0.84") × 74.8 mm (2.9") × 20.9 mm (0.82") (W × D × H)
Weight	56 g (2.0 oz)

In the interest of standards development, A.T.U.S. offers full details on its test methods to other industry professionals on request. Specifications are subject to change without notice.



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