Engineered Sound Wireless

System Overview

2023

audio-technica

Engineered Sound Wireless

Engineered Sound Wireless Microphone System Overview

- Simple automatic frequency management using Digital Enhanced Cordless Telecommunications (DECT) standards.
- High channel capacity – 96 channels in Standard Mode and 192 channels in High Density Mode
- Designed for boardroom, classroom, and flexible meeting spaces.
- Long life Lithium-Ion batteries.
- AES 256 encryption
- Long range operation (up to 100m in Mid Power mode).
- Simple setup and monitoring through Audio-Technica's Wireless Manager software.
- Discrete or mixed Dante outputs

Engineered Sound Wireless

DECT Band Wireless Microphone System

- Automatic frequency management using DECT standards for the 1.9 GHz band.
- DECT standards use continuous Dynamic Channel Selection and Allocation.
  - Guarantees that radio links are always set-up on the channel with the lowest lowest RF noise level.
- Operates from 1.88 GHz to 1.90 GHz (Australia).
- Operates as a multicarrier Frequency-Division Multiple Access (FDMA) and Time-Division Multiple Access (TDMA) system.
  - The radio spectrum is divided into physical carriers in two dimensions: frequency and time.
    - DECT band divided into 10 separate carrier frequencies
    - Each carrier manages upload and download data in frames consisting of 24 slots each
- ES Wireless can be configured for Standard Density (SD) or High-Density (HD) modes.

	Standard Density (SD)	High Density (HD)
Maximum Channels	96	192
Latency	16.7 mS	24.0 mS
Audio Sampling	24-bit/48 kHz	24-bit/48 kHz
Audio Bit Rate	128 kbps	64 kbps

Engineered Sound Wireless

DECT Band Wireless Microphone System

- Utilizing more advanced modulation techniques, Engineered Sound Wireless can achieve a range of 100 meters in Mid Power mode.
  - Additional power modes are available:
    - Minimum – 2 mW
    - Low – 10 mW
    - Mid – 30 mW (default)
    - High – 100 mW
- Engineered Sound Wireless also achieves many additional performance advantages over the competition:

	Standard Density (SD)		High Density (HD)	
	Audio-Technica	Shure	Audio-Technica	Shure
Maximum Channels	96	80	192	160
Latency	16.7 mS	18 mS	24.0 mS	28 mS
Audio Sampling	24-bit/48 kHz	24-bit/48 kHz	24-bit/48 kHz	24-bit/48 kHz
Audio Bit Rate	128 kbps	64 kbps	64 kbps	32 kbps

Engineered Sound Wireless

Power and Range Specifications

Power Level	Audio-Technica	Power Level	Shure
High	100 mW (180 m)	Max	80 mW (45.7 m)
Mid (default)	30 mW (100 m)	High	16 mW (30 m)
Low	10 mW (60 m)	Medium (Default)	3 mW (15 m)
Minimum	2 mW (25 m)	Low	1 mW (7.5 m)

Engineered Sound Wireless

Engineered Sound Wireless Microphone System

- Receiver configured for 8 channels
- AES 256 encryption
- Four different transmitter types
  - Belt Pack
  - Handheld
  - Boundary
  - Gooseneck
- 30 dB gain adjustment available within the individual transmitters
- Fast charge capabilities
  - 2 bay charger for belt pack and handheld transmitters
  - 4 bay charger for boundary and gooseneck transmitters

Engineered Sound Wireless

ESW-R4180DAN 8 Channel Receiver

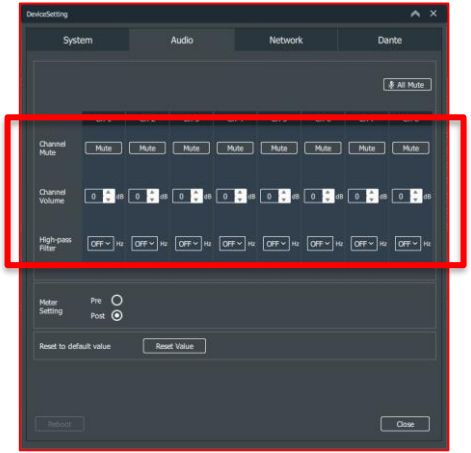
- Small size similar to a Wi-Fi access point
  - 22.8 cm W x 22.8 cm L x 4.3 cm D
- Includes mounting bracket
- PoE powered (4.8W, IEEE 802.3af Class 0)
- Includes 2 RJ45 jacks:
  - Single Cable Mode (default)
    - PoE, Dante, and network control on Port A
  - Split Cable Mode
    - PoE and Dante on Port A
    - Network control on Port B
- Maximum of 12 receivers per space in Standard Density Mode (96 channels)
- Maximum of 24 receivers per space in High Density Mode (192 channels)

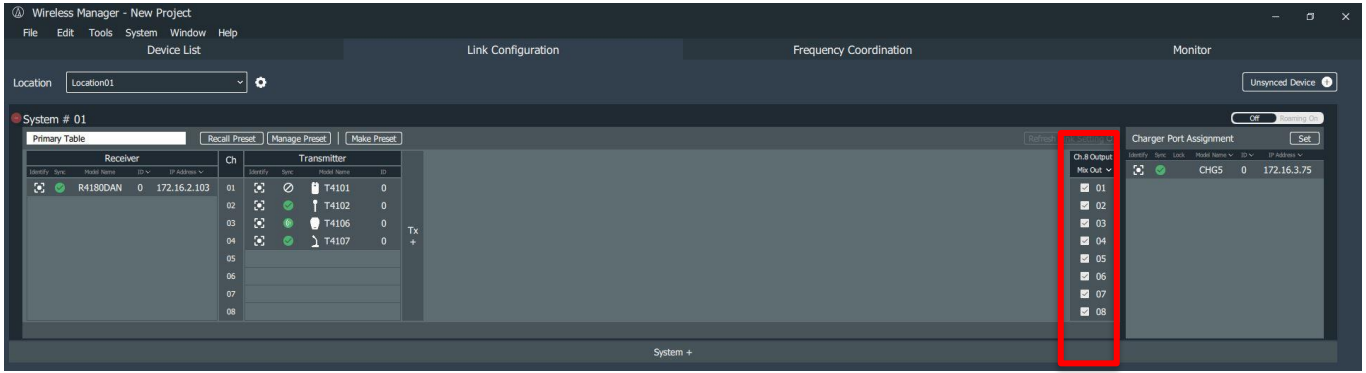
Engineered Sound Wireless

ESW-R4180DAN Receiver

- Channel Mute
- Channel Volume
  - -30 to +10
- High Pass Filter
  - 80 Hz, 120 Hz, or 160 Hz

- Discrete Dante or mixed Dante output from the receivers.





Engineered Sound Wireless

Multi-Transmitter and Roaming Functionality

- Two functions that allow greater flexibility
- One allows many transmitters to a single receiver while the other allows a single transmitter to many receivers
- These two modes are mutually exclusive per receiver

Engineered Sound Wireless

Multi-Transmitter Functionality

- Allows up to 6 transmitters to be assigned to a single receive channel on an ESW-R4180DAN.

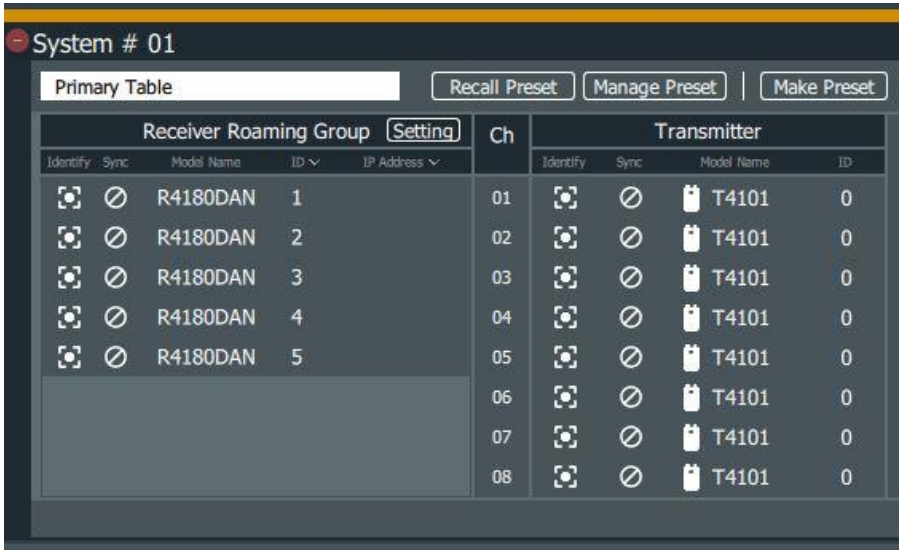
- Useful for multi-purpose / flexible spaces to choose transmitter types based on the application.

Engineered Sound Wireless

Roaming Functionality

- Allows 8 transmitters to be linked to any one of 5 different ESW-R4180DAN receivers

- Useful for allowing presenters to move to different spaces while using the same transmitter.



1 2 3 4 5

Engineered Sound Wireless

ESW-T4101 Body Pack Transmitter

- Light weight and compact
- Rechargeable Lithium-Ion Battery with a 25-hour run time
  - ATW-CHG4 charger
- cH connector for Audio-Technica lapel and headset microphones
- Built in omnidirectional microphone
- Separate gain settings for internal and external microphones
  - Automatically selects built-in microphone when no external mic connected
- Single power/mute switch with defeatable mute
- Red/Green mute LED indicator
- Includes lanyard for wear around the neck

Engineered Sound Wireless

ESW-T4102 Handheld Transmitter

- Interchangeable capsules (comes standard with C510 cardioid dynamic element)
- Metal Chassis
- Rechargeable Lithium-Ion Battery with a 35-hour run time
- ATW-CHG4 charger
- Convenient external mute and power switches
  - Mute switch defeatable
- Red/Green mute LED indicator

Engineered Sound Wireless

ESW-T4106 Boundary Transmitter

- Software selectable cardioid or omnidirectional microphone pattern
- Metal Chassis
- Rechargeable Lithium-Ion Battery with a 22-hour run time
  - ATW-CHG5 charger
  - USB-C charging cable for charge during operation
- Programmable mute switch
  - Toggle, PTT, or PTM
  - Two state LED indicator with 7 color choices

Engineered Sound Wireless

ESW-T4107 Desktop Gooseneck Transmitter

- Uses ES925 Series gooseneck microphones
  - 15.2 cm, 30.5 cm, 38.1 cm, 45.7 cm, 53.3 cm, and 60.9 cm lengths available
  - Cardioid, Hypercardioid, and MicroLine elements available
- Metal Chassis
- Rechargeable Lithium-Ion Battery with a 17-hour run time
  - ATW-CHG5 charger
  - USB-C charging cable for charge during operation
- Programmable mute switch
  - Toggle, PTT, or PTM
  - Two state LED indicator with 7 color choices

Engineered Sound Wireless

ESW-CHG4 & ESW-CHG5 Chargers

- ESW-CHG4 2-Bay charger for belt pack and handheld transmitters
- ESW-CHG5 4-Bay charger for boundary and gooseneck transmitters
- Network connection for configuration and monitoring
- Quick charge capability – charges to full in as little as 2 hours
- Linkable to run 8 bays from a single network cable and power supply
  - Linking cable and plate included

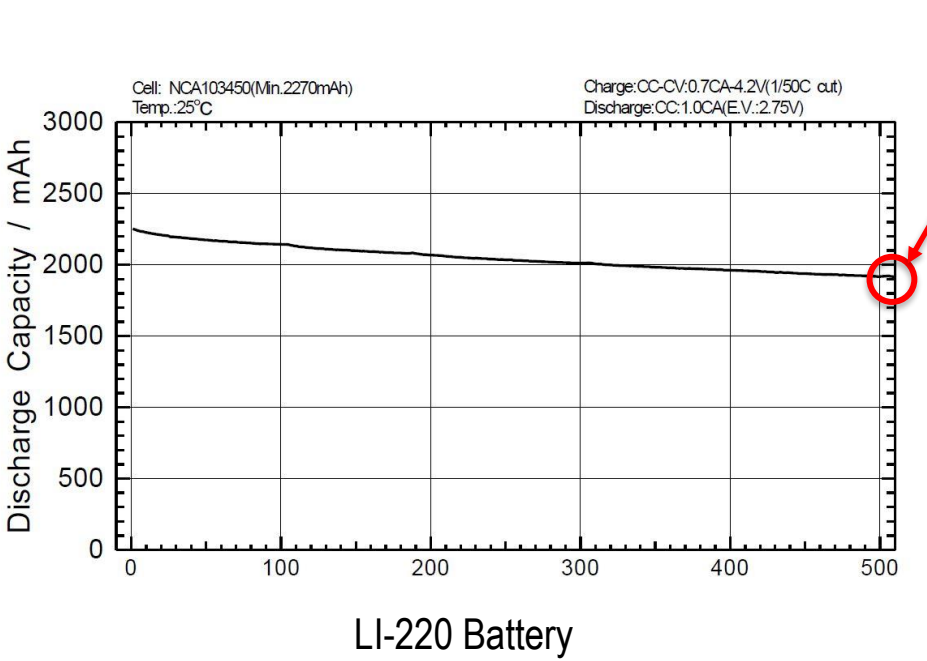
Engineered Sound Wireless

Engineereed Sound Wireless Batteries

Transmitter model (Battery)	Description	Battery Life	Charge Time (per power supply)					
			1 to 4 Transmitters		5 to 6 Transmitters		7 to 8 Transmitters	
			50%	100%	50%	100%	50%	100%
ESW-T4101 (LI-220)	Belt pack transmitter	25 h	50 m	2 h	1 h 10 m	2 h 50 m	1 h 40 m	3 h 40 m
ESW-T4106 (LI-220)	Boundary transmitter	22 h	50 m	2 h	1 h 10 m	2 h 50 m	1 h 40 m	3 h 40 m
ESW-T4107 (LI-220)	Gooseneck transmitter	17 h	50 m	2 h	1 h 10 m	2 h 50 m	1 h 40 m	3 h 40 m
ESW-T4102 (LI-320)	Handheld transmitter	35 h	1 h 20 m	3 h	1 h 40 m	4 h 10 m	2 h 20 m	5 h 20 m

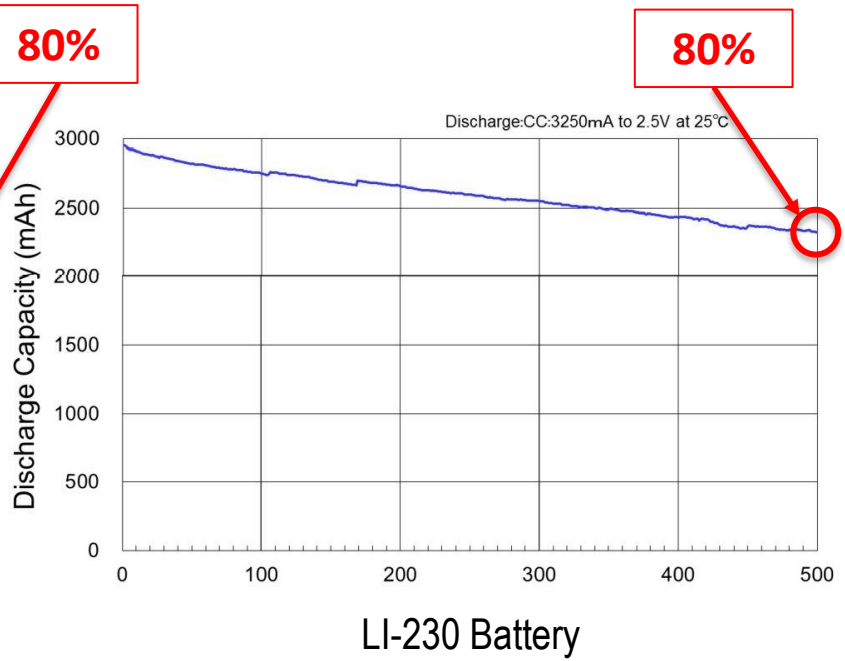
Engineered Sound Wireless

Engineereed Sound Wireless Batteries – Life Cycle



LI-220 Battery

80%



LI-230 Battery

80%

Charge Cycles

Engineered Sound Wireless

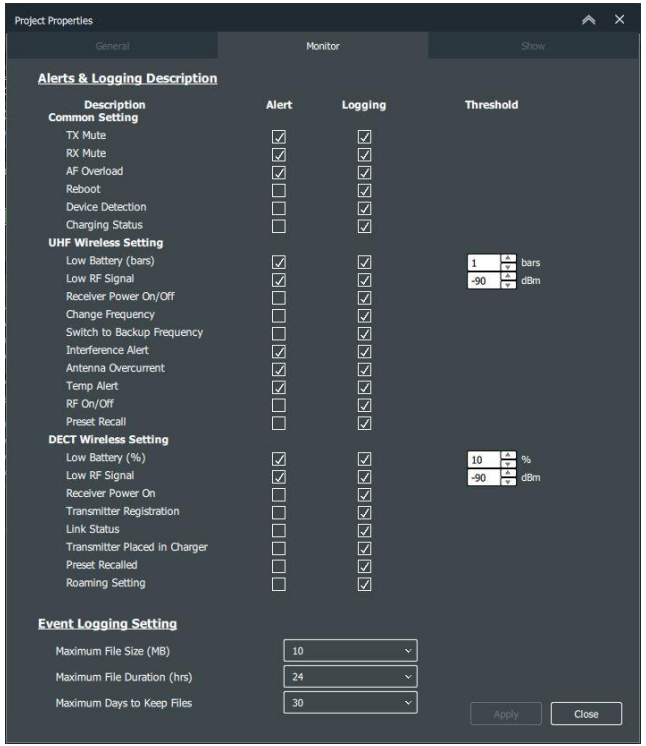
Software Monitoring

- Can be monitored using Audio-Technica Wireless Manager
  - Battery Charge Status
    - Charge percent
    - Time to full charge
  - Transmitter Status
    - Charge percent
    - Battery time remaining
    - Transmitter type
    - Gain
    - Mute status
    - RF level
    - AF level

Engineered Sound Wireless

Syslog Monitoring

- Can be monitored using Syslog server
  - Mute status
  - Low battery
  - Low RF level
  - Receiver on
  - Link status
  - In charger status



Engineered Sound Wireless

Control

- API is available from the Audio-Technica website
- IP control modules planned for development
  - Q-SYS
  - Crestron
  - Symetrix
- Audio-Technica will provide documentation for all 3rd party developers

Q-SYS™
Cloud managed, audio, video and control

CRESTRON

Symetrix

Thank You!

Mark Donovan, CTS-D, CTS-I
Applications Engineering Manager, Professional Markets
T: (330) 686-2600 x2060
mdonovan@atus.com
aeteam@atus.com

Dan Pelletier, CTS
Sr. Applications Engineer, Professional Markets
T: (330) 686-2600 x2080
M: (440) 263-5433
dpelletier@atus.com
aeteam@atus.com

Kaylee Kainrad
Applications Engineer, Professional Markets
T: (330) 686-2600 x2095
kkainrad@atus.com
aeteam@atus.com

audio-technica