

# MICROFLEX<sup>®</sup> COMPLETE WIRELESS



Microflex<sup>®</sup> Complete Wireless offers full conference functionality with the added convenience of encrypted digital wireless transmission for up to 125 participants. It overcomes cable limitations at off-site meetings, in rooms with flexible seating, or in historic buildings where drilling holes in furniture is impractical. Proven Shure RF interference detection and avoidance technology delivers reliable transmission and limits signal dropouts even in the most congested RF environments. Robust wireless encryption keeps meeting content private. Each wireless conference unit is powered by a smart Lithium-Ion rechargeable battery whose remaining charge (in hours and minutes) can be checked remotely by a technician.

#### **Efficient and Reliable RF transmission**

Automatic frequency management utilizes proprietary technology to detect interference before it affects system performance.

#### **Premium Audio**

Best in class audio capture and reproduction ensures every word spoken is heard.

#### **Powerfully Scalable**

Up to 125 units can be used simultaneously with a single wireless access point, with rechargeable batteries that last up to 11 hours.

#### **Quick and Easy Setup**

Go from cart to conference in minutes, with little to no wireless coordination or system configuration.

#### **APPLICATIONS**

**Boardrooms**

**Parliament/City Councils**

**Flexible Meeting Rooms**

**Training/Seminar Centers**

**Conference/Hospitality Venues**

#### **PRODUCT HIGHLIGHTS**

**Highly intelligible audio**

**All-in-one microphone + speaker design**

**Dante digital audio net-working**

**Shure Network Audio Encryption (AES-256)**

**AES-128 wireless encryption**



**CommShield<sup>®</sup>  
Technology**

# SYSTEM SPECIFICATIONS

## Features

### RELIABLE WIRELESS PERFORMANCE

- Automatic Frequency Coordination for quick and easy setup
- Uses global 2.4/5 GHz spectrum including DFS channels to maximize available spectrum
- Built-in RF spectrum manager constantly monitors available channel quality
- Automatic Interference Detection and Avoidance resolves potential transmission problems in congested RF environments
- High spectral efficiency allows up to 125 units on one WLAN channel

### EASY SETUP AND OPERATION

- MXCWAPT Access Point mounts on wall, ceiling, or stand, and connects with one cable for audio, power, and control
- Each conference unit can be configured as Chairman, Delegate, Listener, or Ambient role
- Smart Lithium-Ion rechargeable battery lasts over 11 hours, recharges in under 4 hours
- Embedded browser-based interface allows remote monitoring and control by chairman or technician
- Speak/request list can be projected on video display without additional software
- Integrated NFC card technology in each conference unit allows participants to be identified by name instead of seat number, regardless of where they sit

### BEST-IN-CLASS AUDIO PERFORMANCE

- Proprietary Shure audio codec for natural, intelligible sound quality
- Automatic Gain Control for consistent speech levels for each talker
- Support for Automatic, FIFO (First-In/First-Off), and Manual microphone operating modes
- Gooseneck microphones include interchangeable Microflex cartridges and CommShield Technology for robust RF noise immunity
- Robust AES-128 wireless encryption for enhanced privacy

## Specifications

|                                   |  |   |
|-----------------------------------|--|---|
| Latency                           | 16ms   | MXCW640 Microphone Input to MXCWAPT to MXCW640 Speaker/Headphone Output   |
|                                   | 9.2ms  | MXCW640 Microphone Input to MXCWAPT Analog Output   |
|                                   | 7.7ms  | MXCWAPT Analog Input to MXCW640 Speaker/Headphone Output  |
| Frequency Response                | 100Hz - 20kHz (+0.5dB/-3dB)  | MXCW640 Microphone Input to MXCWAPT to MXCW640 Headphone Output. -45dBFS input, Mic Gain = -30dB (AGC Disabled), Headphone Gain = 0dB. Microphone and headphone transducers not included in frequency response measurement.   |
|                                   | 220Hz - 15kHz (±10dB)  | MXCW640 Microphone Input to MXCWAPT to MXCW640 Speaker Output. -45dBFS input, Mic Gain = -30dB (AGC Disabled), Speaker Gain = 6dB. Microphone transducer not included in frequency response measurement. Speaker transducer was included in frequency response measurement. |
| Total Harmonic Distortion + Noise | 0.06%, typical   | MXCW640 Microphone Input to MXCWAPT to MXCW640 Headphone Output. -6dBFS input, 1kHz, Mic Gain = -30dB (AGC Disabled), Headphone Gain = 0dB, 22Hz - 22kHz BW. Microphone and headphone transducers not included in THD+N measurement.  |
|                                   | 1%, typical  | MXCW640 Microphone Input to MXCWAPT to MXCW640 Speaker Output. -6dBFS input, 1kHz, Mic Gain = -30dB (AGC Disabled), Speaker Gain = 6dB, 22Hz - 22kHz BW. Microphone transducer not included in THD+N measurement. Speaker transducer was included in THD+N measurement.     |
| Dynamic Range                     | 100dB (A-weighted), 97dB (unweighted), typical   | MXCW640 Microphone Input to MXCWAPT to MXCW640 Headphone Output. Mic Gain = -30dB (AGC Disabled), Headphone Gain = 0dB, 22Hz - 22kHz BW. Microphone and headphone transducers not included in dynamic range measurement.  |
|                                   | 94dB (A-weighted), 91dB (unweighted), typical  | MXCW640 Microphone Input to MXCWAPT to MXCW640 Speaker Output. Mic Gain = -30dB (AGC Disabled), Speaker Gain = 6dB, 22Hz - 22kHz BW. Microphone transducer not included in dynamic range measurement. Speaker transducer was included in dynamic range measurement.         |
| Digital Audio Processing          | 24bit/48kHz  |   |
| Digital Audio Networking          | DANTE, AES67   |   |
| Audio Polarity                    | Positive pressure on MXCW640 microphone diaphragm produces diaphragm produces positive voltage on pin 2 (with respect to pin 3) of MXCWAPT XLR output. |   |
| RF Working Range                  | 8m (Low), 15m (Medium), 30m (High), 45m (Maximum)  | Line-of-sight to the MXCWAPT. Actual range depends on RF signal absorption, reflection, and interference  |
| Mean Time Between Failures (MTBF) | 405,790 hours  |   |

# MXCW640 Wireless Conference Unit

## Overview

The MXCW640 Wireless Conference Unit combines a microphone, loudspeaker, and user controls in an integrated wireless unit that complements any meeting space. Wireless convenience eliminates the need to drill holes or route cables, and makes setup for temporary meetings or in rooms with flexible seating quick and easy. A smart rechargeable Li-Ion battery (included) lasts over 11 hours, and a choice of gooseneck microphones provides excellent voice capture.

## Features

- 10-pin modular lockable connection for MXC-series gooseneck microphones
- 4.3 inch color touchscreen displays user controls, voting or meeting information
- Built-in loudspeaker remains on when microphone is activated
- Speak and mute/function buttons with LED status indicators
- NFC ID card slot for participant identification
- Dual 3.5mm headphone jacks with volume controls
- SB930 removable rechargeable Li-Ion battery (included) provides over 11 hours of runtime



## Specifications

### AUDIO INPUTS

| Microphone Input                    |   |   |
|-------------------------------------|---|---|
| Nominal Input Level                 | -60dBV  | Equivalent to 80dB SPL at the MXC416/420 capsule when speaking at a 30cm distance.  |
| Maximum Input Level                 | -1.5dBV   | 1% THD+N measured at MXCWAPT Dante Output. Mic Gain = -30dB (AGC Disabled), MXCWAPT Dante Output Gain = 0dB. Microphone transducer not included in measurement.                                   |
| Frequency Response                  | 20Hz - 20kHz (+0.5dB/-3dB)                      | Measured at MXCWAPT Dante Output. -45dBFS input, Mic Gain = -30dB (AGC Disabled), MXCWAPT Dante Output Gain = 0dB. Microphone transducer not included in frequency response measurement.          |
| Total Harmonic Distortion + Noise   | 0.04%, typical                                  | Measured at MXCWAPT Dante Output. -6dBFS input, 1kHz, Mic Gain = -30dB (AGC Disabled), MXCWAPT Dante Output Gain = 0dB, 22Hz - 22kHz BW. Microphone transducer not included in THD+N measurement. |
| Dynamic Range                       | 112dB (A-weighted), 110dB (unweighted), typical | Measured at MXCWAPT Dante Output. Mic Gain = -30dB (AGC Disabled), MXCWAPT Dante Output Gain = 0dB, 22Hz - 22kHz BW. Microphone transducer not included in dynamic range measurement.             |
| Preamplifier Equivalent Input Noise | -117dBV (A-weighted), typical                   | 22Hz - 22kHz BW   |
| Input Impedance                     | 26k $\Omega$                                    |   |
| Configuration                       | Unbalanced                                      |   |

### AUDIO OUTPUTS

| Speaker Output                    |   |   |
|-----------------------------------|---|---|
| Nominal Output Level              | 72dB SPL at 0.5m                              | Measured with an SPL meter using A-weighting and fast averaging   |
| Maximum Output Level              | 89dB SPL at 0.5m                              | 3% THD+N  |
| Frequency Response                | 220Hz - 15kHz ( $\pm$ 10dB)                   | Audio Injected at MXCWAPT Dante Input. -6dBFS input, MXCWAPT Dante Input Gain = 0dB, Speaker Gain = 6dB. Speaker transducer was included in frequency response measurement.           |
| Total Harmonic Distortion + Noise | 1%, typical                                   | Audio Injected at MXCWAPT Dante Input. -6dBFS input, 1kHz, MXCWAPT Dante Input Gain = 0dB, Speaker Gain = 6dB, 22Hz - 22kHz BW. Speaker transducer was included in THD+N measurement. |
| Dynamic Range                     | 94dB (A-weighted), 91dB (unweighted), typical | Audio Injected at MXCWAPT Dante Input. MXCWAPT Dante Input Gain = 0dB, Speaker Gain = 6dB, 22Hz - 22kHz BW. Speaker transducer was included in dynamic range measurement.             |

| Headphone Outputs                 |  |   |
|-----------------------------------|--|---|
| Maximum Output Level              | 2.1dBV   | 1% THD+N. Audio Injected at MXCWAPT Dante Input. MXCWAPT Dante Input Gain = 0dB, Headphone Gain = 0dB. Headphone transducer not included in measurement.                                  |
| Frequency Response                | 100Hz - 20kHz (+0.5dB/-3dB)                    | Audio Injected at MXCWAPT Dante Input. -6dBFS input, MXCWAPT Dante Input Gain = 0dB, Headphone Gain = 0dB. Headphone transducer not included in frequency response measurement.           |
| Total Harmonic Distortion + Noise | 0.04%, typical                                 | Audio Injected at MXCWAPT Dante Input. -6dBFS input, 1kHz, MXCWAPT Dante Input Gain = 0dB, Headphone Gain = 0dB, 22Hz - 22kHz BW. Headphone transducer not included in THD+N measurement. |
| Dynamic Range                     | 101dB (A-weighted), 99dB (unweighted), typical | Audio Injected at MXCWAPT Dante Input. MXCWAPT Dante Input Gain = 0dB, Headphone Gain = 0dB, 22Hz - 22kHz BW. Headphone transducer not included in dynamic range measurement.             |
| Load Impedance                    | >8 $\Omega$ , typical                          | Headphone outputs are protected against short circuits  |
| Configuration                     | Dual mono                                      | Will drive stereo and mono headphones   |
| Type                              | TRRS 3.5mm Female Socket                       |   |

### RF

|                    |   |
|--------------------|---|
| WLAN Standard      | IEEE 802.11a,g                                      |
| RF Frequency Bands | 2.4GHz ISM / 5GHz UNII                              |
| Sensitivity        | -75dBm at 10%PER                                    |
| Output Power       | 1mW (Low), 3mW (Medium), 6mW (High), 10mW (Maximum) |
| Antenna Type       | Proprietary Internal Bi-level Dual-Band PIFA        |

### POWER

|                   |                   |
|-------------------|-------------------|
| Battery Type      | Shure SB930       |
| Battery Connector | Proprietary blade |
| Battery Chemistry | Lithium-Ion       |
| Battery Voltage   | 3V - 4.2V         |
| Battery Capacity  | 35Wh              |

### USB

|                     |                            |
|---------------------|----------------------------|
| Input Voltage Range | 4.5V - 5.25V               |
| Power Consumption   | 10W max                    |
| Recommended Cable   | 25AWG/1P + 22AWG/2C, <1.5m |

### USER INTERFACE

|                    |  |
|--------------------|--|
| Display Type       | Color TFT LCD with Capacitive Touch Screen |
| Display Size       | 4.3" (109.2mm)                             |
| Display Resolution | 480 x 272 (128ppi)                         |

### MECHANICAL

|               |  |
|---------------|--|
| Dimensions    | 70.2mm x 148mm x 257.5mm (2.8" x 5.8" x 10.1") |
| Weight        | 1.21kg with battery, 1.025kg without battery   |
| Color         | Black  |
| Material      | Molded Plastic, Die Casted Aluminum            |
| Mounting Type | M4 hexagon bolt                                |

### ENVIRONMENTAL

|                             |                              |
|-----------------------------|------------------------------|
| Operating Temperature Range | 0°C (32°F) to 35°C (95°F)    |
| Charging Temperature Range  | 0°C (32°F) to 33°C (91.4°F)  |
| Storage Temperature Range   | -20°C (-4°F) to 50°C (122°F) |
| Relative Humidity           | <95%                         |

# MXCWAPT Access Point Receiver

## Overview

The MXCWAPT Access Point Transceiver manages audio routing, frequency coordination, and system control for up to 125 wireless conference units. The MXCWAPT automatically selects the clearest channel in the 2.4 GHz and 5 GHz frequency bands and switches channels to avoid potential interference. The access point provides both Dante™ and analog audio inputs and outputs, and uses a single Ethernet connection for power, audio, and control.

## Features

- Controls up to 125 MXCW640 wireless conference units
- Bi-directional wireless connection provides audio to and from conference units and enables real-time control of all settings
- Operates in 2.4 GHz / 5 GHz frequency bands, including DFS spectrum
- Automatic frequency coordination, interference detection and avoidance
- Dante digital audio (10 inputs/10 outputs)
- Analog audio input and output (XLR)
- One Ethernet cable for audio, control, and PoE power
- AES-128 wireless encryption for enhanced privacy
- Display for basic system configuration without a laptop
- LEDs indicate power, wireless connection, and network status
- Includes wall / ceiling mounting plate



## Specifications

### AUDIO INPUTS

#### Analog Input

|                                     |   |   |
|-------------------------------------|---|---|
| Maximum Input Level                 | 24.9dBV   | 1% THD+N. Measured at Dante Output. Line Level, Analog Input Gain = 0dB, Dante Output Gain = 0dB                            |
|                                     | 10.3dBV   | 1% THD+N. Measured at Dante Output. Aux Level, Analog Input Gain = 0dB, Dante Output Gain = 0dB                             |
| Frequency Response                  | 22Hz - 20kHz (+0.5dB/-3dB)                      | Measured at Dante Output. -6dBFS input, Line Level, Analog Input Gain = 0dB, Dante Output Gain = 0dB                        |
|                                     | 22Hz - 20kHz (+0.5dB/-3dB)                      | Measured at Dante Output. -6dBFS input, Aux Level, Analog Input Gain = 0dB, Dante Output Gain = 0dB                         |
| Total Harmonic Distortion + Noise   | 0.03%, typical                                  | Measured at Dante Output. -6dBFS input, 1kHz, Line Level, Analog Input Gain = 0dB, Dante Output Gain = 0dB, 22Hz - 22kHz BW |
|                                     | 0.02%, typical                                  | Measured at Dante Output. -6dBFS input, 1kHz, Aux Level, Analog Input Gain = 0dB, Dante Output Gain = 0dB, 22Hz - 22kHz BW  |
| Dynamic Range                       | 115dB (A-weighted), 113dB (unweighted), typical | Measured at Dante Output. Line Level, Analog Input Gain = 0dB, Dante Output Gain = 0dB, 22Hz - 22kHz BW                     |
|                                     | 112dB (A-weighted), 110dB (unweighted), typical | Measured at Dante Output. Aux Level, Analog Input Gain = 0dB, Dante Output Gain = 0dB, 22Hz - 22kHz BW                      |
| Preamplifier Equivalent Input Noise | -92dBV (A-weighted), typical                    | Line Level, Analog Input Gain = 0dB, 22Hz - 22kHz BW  |
|                                     | -104dBV (A-weighted), typical                   | Aux Level, Analog Input Gain = 0dB, 22Hz - 22kHz BW   |
| Connector Type                      | XLR-3-pin female                                | Pin 1 = ground, Pin 2 = Audio +, Pin 3 = Audio -  |

### AUDIO OUPUTS

#### Analog Output

|                                   |  |  |
|-----------------------------------|--|--|
| Maximum Output Level              | 4.3dBV   | 1% THD+N. Audio Injected at Dante Input. Dante Input Gain = 0dB, Analog Output Gain = 0dB                            |
| Frequency Response                | 1Hz - 20kHz (+0.5dB/-3dB)  | Audio Injected at Dante Input. -6dBFS input, Dante Input Gain = 0dB, Analog Output Gain = 0dB                        |
| Total Harmonic Distortion + Noise | 0.01%, typical   | Audio Injected at Dante Input. -6dBFS input, 1kHz, Dante Input Gain = 0dB, Analog Output Gain = 0dB, 22Hz - 22kHz BW |
| Dynamic Range                     | 100dB (A-weighted), 97dB (unweighted), typical                         | Audio Injected at Dante Input. Dante Input Gain = 0dB, Analog Output Gain = 0dB, 22Hz - 22kHz BW                     |
| Load Impedance                    | >600Ω, typical   |  |
| Type                              | Three-pin Male XLR   |  |
| Pinout                            | Standard XLR Pinout (Pin 1 = Ground, Pin 2 = Audio +, Pin 3 = Audio -) |  |
| XLR GND Lift Switch Position      | *Left (Pin 1-GND connected)<br>Right (Pin1-GND disconnected)*          |  |
|                                   | -104dBV (A-weighted), typical  | Aux Level, Analog Input Gain = 0dB, 22Hz - 22kHz BW  |
| Input Impedance                   | 10kΩ   | Line Level   |
|                                   | 12kΩ   | Aux Level  |
| Configuration                     | Balanced   |  |

|                                  |  |
|----------------------------------|--|
| <b>RF</b>                        |  |
| WLAN Standard                    | IEEE 802.11a,g                                       |
| RF Frequency Bands               | 2.4GHz ISM / 5GHz UNII                               |
| Sensitivity                      | -80dBm at 10%PER                                     |
| Output Power                     | 1mW (Low), 5mW (Medium), 13mW (High), 25mW (Maximum) |
| Antenna Type                     | Proprietary Internal Bi-level Dual-Band PIFA         |
| <b>POWER</b>                     |  |
| Supply Type                      | Power Over Ethernet, 802.3af, Class 0 PD             |
| Supply Voltage (at MXCWAPT)      |  |
| Power Consumption                | 12.95W (max), 6.5W (typ)                             |
| <b>NETWORK</b>                   |  |
| Interface                        | Gigabit Ethernet, Dante digital audio                |
| Link Speed                       | 10/100/1000Mbps                                      |
| Networking Addressing Capability | DHCP or Manual IP address                            |
| Cable Length                     | 100m (max)   |
| Cable Type                       | > Cat5e (shielded/unshielded)                        |
| Connector Type                   | 1 x RJ45   |
| Connector LED                    | Status (Green) / Link Speed (Amber)                  |

|                       |  |
|-----------------------|--|
| <b>USER INTERFACE</b> |  |
| Display Type          | Monochrome FFSTN LCD                             |
| Display Size          | 1.84 x 0.74" (46.7x18.8mm)                       |
| Display Resolution    | 152 x 78 (78 ppi)                                |
| LED Status Indication | Power, Network Audio, Wireless (Red/Green/Amber) |
| Reset                 | Pushbutton for Network/Factory Reset             |

|                   |  |
|-------------------|--|
| <b>MECHANICAL</b> |  |
| Dimensions        | 47.8mm x 242.5mm x 241.8mm (1.88" x 9.55" x 9.52") |
| Weight            | 1.15 kg  |
| Color             | White / Gray                                       |
| Material          | Molded Plastic, Die-casted Aluminum                |
| Mounting Type     | Wall or ceiling bracket                            |

|                             |                                 |
|-----------------------------|---------------------------------|
| <b>ENVIRONMENTAL</b>        |                                 |
| Operating Temperature Range | -7°C (19.4°F) to 49°C (120.2°F) |
| Storage Temperature Range   | -29°C (-20.2°F) to 60°C (140°F) |
| Relative Humidity           | <95%                            |

# MXCWNCS Networked Charging Station

## Overview

The MXCWNCS Networked Charging Station charges 10 SB930 batteries in 4 hours. LED indicators display charge status, and a RJ45 Ethernet connection enables battery levels to be monitored remotely. Includes IEC power cable and mounting hardware for wall or rack mounting.

## Features

- Accommodates up to 10 SB930 rechargeable batteries
- 5-segment LEDs on the unit display charge status individually for every battery
- RJ45 Ethernet connection enables remote monitoring of battery charge status in hours and minutes via Microflex Complete Wireless graphical user interface
- Charges 10 batteries to 50% charge in 1.5 hours, 100% charge in 4 hours
- Selectable storage mode partially discharges batteries for long-term storage or shipment
- Includes hardware for wall and rack mounting
- Includes IEC power cable

## Specifications

|                                  |                                     |
|----------------------------------|-------------------------------------|
| <b>NETWORK</b>                   |                                     |
| Interface                        | Ethernet                            |
| Link Speed                       | 10/100Mbps                          |
| Networking Addressing Capability | DHCP or Manual IP address           |
| Cable Length                     | 100m (max)                          |
| Cable Type                       | > Cat5e (shielded/unshielded)       |
| Connector Type                   | 1 x RJ45                            |
| Connector LED                    | Status (Green) / Link Speed (Amber) |

|                       |  |
|-----------------------|--|
| <b>USER INTERFACE</b> |  |
| Display Type          | 5 LEDs per bay for charging indication |
|                       | 1 status LED                           |
|                       | 2 Ethernet LEDs                        |

|                   |  |
|-------------------|--|
| <b>MECHANICAL</b> |  |
| Dimensions        | 72.4mm x 438.9mm x 193.5mm (2.9" x 17.3" x 7.6")     |
| Weight            | 2825 g   |
| Color             | Black  |
| Material          | Molded Plastic, Steel                                |
| Mounting Type     | Tabletop, wall mount or rack (4U rackspace required) |

| ENVIRONMENTAL                           |                                 |  |
|---|---------------------------------|--|
| Operating/Discharging Temperature Range | -20°C (-4°F) to 35°C (95°F)     | Discharging may occur when storage mode is enabled |
| Charging Temperature Range              | 0°C (32°F) to 35°C (95°F)       |  |
| Storage Temperature Range               | -29°C (-20.2°F) to 60°C (140°F) |  |
| Relative Humidity                       | <95%                            |  |



# SB930 Rechargeable Battery

## Overview

The SB930 Rechargeable Battery powers the MXCW640 Wireless Conference Unit for over 11 hours. LED indicators on the battery display charge status quickly and easily. Charging in the MXCWNCS Networked Charging Station takes just 1.5 hours for a 50% charge, and 4 hours for a 100% charge.

## Features

- INCLUDED WITH MXCW640
- Powers MXCW640 wireless conference unit for over 11 hours
- Integrated test button and 5-segment LED to display charge level
- With MXCWNCS Networked Charging Station, charges to 50% in 1.5 hours, 100% in 4 hours
- 3-cell battery with Shure Smart Li-Ion Technology
- Remote monitoring of battery life remaining in hours and minutes

## Specifications

### USER INTERFACE

|              |   |
|--------------|---|
| Display Type | 5 status LEDs and push button to indicate state of charge |
|--------------|---|

### MECHANICAL

|            |   |
|------------|---|
| Dimensions | 31mm x 65mm x 101.5mm (1.22in. x 2.56in. x 4.00in.) H x W x D |
| Weight     | 184 g   |
| Color      | Black   |
| Material   | Molded Plastic  |

