

# Cellular Gateway and PoE Injector installation instructions

## Description

The (optional) Cellular Gateway is sold as a kit (part number MX16CELL) and provides an internet connection for the MX16US panel, allowing 2-way VoIP calls when a wired Local IT network is not available.

The MX16CELL kit includes a Cellular Gateway (LTE router) an antenna, antenna cable, a PoE Injector (PoE), and an ABS enclosure with hardware.

The Cellular Gateway is to be installed in the ABS enclosure; the ABS enclosure must be installed indoors in the same building as the MX16US. The Cellular Gateway antenna can be mounted to the enclosure as described in this manual; alternately, the antenna can be mounted to a suitable nearby surface, however the antenna must be indoors and in a location that receives a reliable cellular network signal.

The PoE Injector is to be installed inside the MX16US panel, adjacent to the Gateway Dialer on a mounting plate.

The Cellular Gateway is intended to be installed and operated in the VoCALL 16US system without the need for programming or additional device management configuration.

The Cellular Gateway requires a data plan activated through a compatible cellular service provider. The end customer is responsible for establishing and maintaining an account and expenses associated with the cellular service provider. A data plan allowance of 5 GB/month is recommended. Typical data usage between the Dialer and the VoIP service provider is approximately 100 MB/day.

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**Note:** The Sierra Wireless AirLink LX40 is a third party manufactured device; refer to the manufacturer's Website, [www.sierrawireless.com/router-solutions/lx40/](http://www.sierrawireless.com/router-solutions/lx40/) for instructions and a list of compatible providers.

**Note:** Refer to the *AirLink LX40 Hardware User's Guide* to resolve any technical concerns when installing and operating the unit.

**Note:** Refer to the *AirLink LX40 Hardware User's Guide* for a list of provider certifications, protocols, LED attributes and other specifications and descriptions.

**Note:** The Altronix® NetWay1X PoE Injector is a third party device; refer to the manufacturer Website, [www.altronix.com/products/NetWay1X](http://www.altronix.com/products/NetWay1X) for additional information to resolve any technical concerns when installing and operating the unit.

Table 1 provides a list of supporting documents for the VoCALL 16US system.

**Table 1. Related VoCALL Documents**

Document	Part Number
VoCALL 16US 2-Way Emergency Communication System Installation and Operation Manual	P85899
Call Station Installation Instructions	25-1017
Cellular Gateway: AirLink® LX40 Hardware User Guide	Refer to manufacturer's website
PoE Injector: Altronix NetWay1X Installation Guide	Refer to manufacturer's website

Tables 2 through 5 provide specifications for the components included in the Gateway Dialer Kit.

**Table 2. Cellular Gateway Specifications**

Specification	Description
Manufacturer	Sierra Wireless AirLink LX40
Environmentals	32°F - 98°F (0°C - 37°C) 0 - 70H, non-condensing
Dimensions (including connectors)	4.4 x 3.1 x 1.0 inches (11.1 x 7.9 x 2.5 cm)
Mounting	Mounts to the back plane inside the ABS enclosure
Connections	
Antenna:	SMA plug
Communications:	RJ45
Power	Input Voltage: 7 - 36 VDC PoE: 13W, Type 1 Power Device, IEEE 802.3af



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## Specifications

**Table 3. PoE Specifications**

Specification	Description
Manufacturer	Altronix NetWay1X
Environmental	32°F - 98°F (0°C - 37°C) 0 - 70% RH, non-condensing
Dimensions	3.5 x 3.5 x 1.0 inches (8.9 x 8.9 x 2.6 cm)
Mounting	Mounts to the Plexiglas plate in the MX16US
Connections	
Antenna	SMA plug
Communications	RJ45 (2 options)
Terminal Block	14 - 18 AWG pair
Power	Input Voltage: 24VDC Output: PoE up to 30W, IEEE 802.3 Short circuit protected

**Table 4. Antenna Specifications**

Specification	Description
Environmental	32°F - 98°F (0°C - 37°C) 0 - 70% RH, non-condensing
Dimensions	1.92 x 5.90 x 1.77 inches (4.9 x 15.0 x 4.5 cm)
Mounting	Mounts to the outside of the ABS enclosure
Connections	SMA Plug
Cable	RG174 9.8 inches (3m)

**Table 5. Enclosure Specifications**

Specification	Description
Environmental	32°F - 98°F (0°C - 37°C) 0 - 70% RH, non-condensing
Dimensions (external)	11.8 x 7.9 x 5.0 inches (30.0 x 20.1 x 13.0cm)
Weight	
Empty	0.8 lbs. (0.4 kg)
Installed with: Cellular Gateway Bracket Antenna and cable	3.5 lbs (1.6 kg)
Mounting	Surface mounts to an interior wall

## Installation

The Cellular Gateway shall be installed in a separate ABS (indoor) enclosure; the PoE Injector is installed inside the MX16US panel adjacent to the Gateway Dialer on a mounting plate.

### INDOOR-SAME-BUILDING INSTALLATION

#### **⚠WARNING**

**ALL EQUIPMENT SHALL BE INSTALLED INDOORS, WITHIN A SINGLE BUILDING OR STRUCTURE.**

## Remove Power to the MX16US

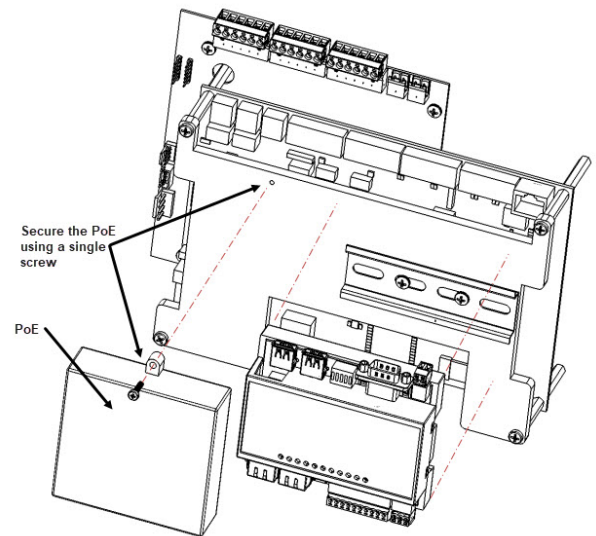
Refer to the *VoCALL 16US 2-Way Emergency Communication System installation and operation manual*, part number P85899, for battery wiring and removal of the battery shield.

1. Turn the AC Mains power to the MX16US panel OFF.
2. Verify the AC power LED on the MX16US front panel is OFF.
3. Remove the MX16US battery shield to expose the battery terminals.
4. Disconnect the wires from the positive and negative terminals of the batteries.
5. Remove the batteries from the enclosure.

## Install the PoE Injector into the MX16US

Refer to Figure 1 when installing the PoE Injector.

1. Locate the Plexiglas plate installed in the MX16US.
2. Install the PoE Injector onto the plate, to the left-side of the Dialer, using one (1) Phillips M3 x 12mm Phillips pan head screw provided in the kit; hand tighten to secure the unit taking care to avoid over-tightening the screw.



**Figure 1. PoE Injector location**

## Prepare the enclosure

The Cellular Gateway enclosure is intended to be surface mounted to a wall in the same building/structure as the MX16US.

**Note:** All fittings, conduit hubs, and wiring glands must meet local requirements.

**Note:** Verify the appropriate size gland is installed in the penetrations to seal and secure the cables.

**Note:** Verify the appropriate size conduit is installed and connected to the enclosure penetrations for all cables routed to the enclosure.

## ANTENNA AND CABLE PENETRATION LOCATIONS

### CAUTION

Due to the construction of the enclosure, it is important to drill the antenna penetration hole as specified in Figure 2.

Varying the placement of the penetration hole will result in the inability of the antenna to lay flat and adhere to the surface of the enclosure.

1. Identify a location for the Cellular Gateway enclosure.
2. Use a hole saw or Greenlee-type punch to drill penetrations in the enclosure as follows:
  - a. Identify a suitable location on the bottom of the enclosure for the RJ45 Ethernet cable to enter the enclosure and drill a penetration hole for routing of the Ethernet cable.
  - b. Locate the exact location on the top of the enclosure for the antenna penetration hole as shown in Figure 2, and drill the correct size hole.

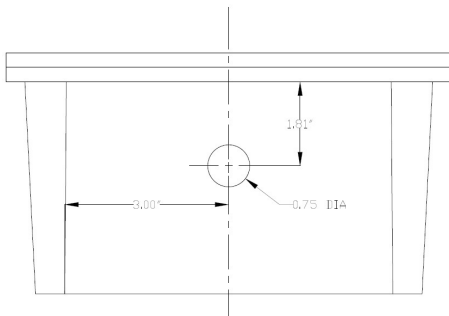


Figure 2. Top of enclosure - antenna penetration hole

### Install the Enclosure Back Panel

The kit is supplied with an ABS back panel to be installed internal to the enclosure; the back panel is used for mounting the Cellular Gateway and its bracket.

1. Identify the enclosure's back panel and the six (6) #10-16 x 7/16 Phillips pan head screws provided in the kit.
2. Install the back panel into the enclosure, positioning the front side of the panel facing out.
3. Align the back panel screw holes with the enclosure's holes and secure the panel to the rear of the enclosure with the six (6) screws.

### Mount the external tabs onto the enclosure

Four mounting tabs and four (4) M5 x 12mm Phillips head screws are provided for mounting the enclosure to the wall.

Depending on the placement of the enclosure onto the wall, the installer can select to install the mounting tabs using one of two (2) sets of screw holes located on the rear-side of the enclosure.

1. Identify the four (4) mounting tabs and the four (4) M5 x 12mm Phillips pan head screws provided in the kit.
2. Install one (1) tab in each corner of the enclosure and secure the tab to the enclosure using the screws provided in the kit,

### Install a SIM Card into the Cellular Gateway

1. Identify the Cellular Gateway module and the appropriate SIM card.
2. Press the tab on the side of the unit while sliding the cover.
3. Situate the Cellular Gateway unit with the logo facing up and position the SIM card with the gold contacts facing down and towards the unit.
4. Carefully slide the SIM card into the unit until it clicks into the slot.
5. Replace the cover.

### Install the Cellular Gateway into the enclosure

Refer to the *AirLink LX40 Hardware User's Guide* when installing the Cellular Gateway unit onto the bracket.

1. Identify the Cellular Gateway, the optional mounting bracket and four (4) of the 8-18 x 5/16 Phillips pan head screws included in the kit.
2. Identify a location inside the enclosure to mount the Cellular Gateway being careful to avoid interfering with the routing of the antenna connector and cable while also allowing ample room to route the unit's Ethernet cable.
3. Using the four (4) screws, attach the bracket to the enclosure's back plate.
4. Slide the unit's SMA antenna connector between the curved retainers on the bracket.
5. Snap the front of the unit into place and verify the unit is secured in the bracket without movement.

### Mount the enclosure to the wall

1. Using appropriate hardware for the wall construction, mount the enclosure to a wall using the four previously installed tabs to secure the enclosure to the wall.

### Mount and connect the antenna

1. Route the antenna cable thru the antenna penetration hole previously drilled on the top of the enclosure.
2. Carefully peel the 3M plastic wrap off the bottom of the antenna, exposing the adhesive.
3. Position the antenna such that the SMA connector drops into the hole.
4. Firmly press down on the antenna to secure the adhesive to the enclosure.

### Wiring

Refer to Figure 3 when wiring the optional scenarios for the Cellular Gateway, PoE Injector and Dialer Module.

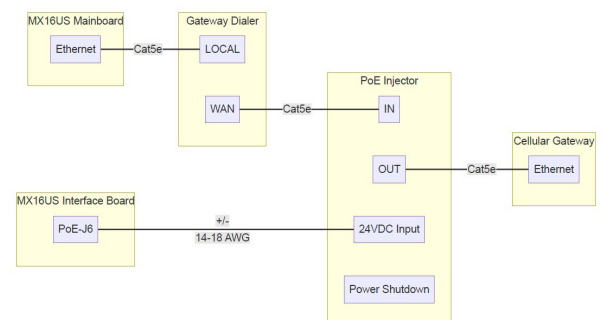


Figure 3. Cellular Gateway, PoE Injector and Dialer Wiring

### Internal Wiring

1. Ensure an Ethernet (Cat5e or better) cable is connected from the MX16US **Mainboard Ethernet connector** to the **Gateway Dialer LOCAL connector** (this cable is factory installed and shipped in the MX16US).
2. Connect an Ethernet (Cat5e or better) cable from the **Gateway Dialer's WAN connector** to the **PoE Injector's IN port**.
3. Connect a 2-conductor cable (14-18 AWG) from the positive (+) and negative (-) terminals of the MX16US Interface Board **POE (J6)** connector to the positive (+) and Negative (-) terminals respectively of the PoE Injector **24VDC Input** connector.

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### OBSERVE POLARITY WHEN WIRING POWER

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**Observe and maintain polarity of the power connections between the MX16US Interface Board and the PoE Injector; the positive (+) terminal must be connected to the positive (+) terminal and the negative (-) terminal must be connected to the negative (-) terminal.**

**The equipment may be damaged if the power connections are reversed.**

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### External Wiring

**Note:** All equipment must be installed indoors within the same building/structure; the maximum cable distance between the PoE Injector and the Cellular Gateway device is 328 feet (100 m).

1. Connect an Ethernet (Cat5e or better) cable from the PoE Injector's **OUT port** to the Cellular Gateway's **Ethernet connector**.

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### POE INJECTOR WIRING

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**WIRING ON THE POE INJECTOR'S OUT ETHERNET PORT SHALL BE LIMITED TO INDOORS ONLY.**

**THE POE INJECTOR'S OUT ETHERNET PORT WIRING SHALL BE PROTECTED AGAINST EXTERNAL SECURITY THREATS.**

**THE POE INJECTOR'S OUT ETHERNET PORT WIRING SHALL BE 328 FT (100 M) MAXIMUM AND PROTECTED AGAINST EXTERNAL SECURITY THREATS.**

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### ETHERNET CONNECTORS - UNSHIELDED WITH NON-METALLIC HOODS

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**To prevent ground fault troubles, all Ethernet cable connectors must be unshielded with non-metallic hoods.**

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### Activating the Cellular Gateway

The Cellular Gateway router does not require any programming to activate the unit into the VoCALL 16US system.

Once the SIM card is installed in the unit and the unit is installed in the enclosure with all wiring and cables connected, power can be applied as described below, and then the system should be verified as operational.

Refer to the Cellular Gateway documentation if further information is required.

### Apply power to the MX16US

Refer to the *VoCALL 16US 2-Way Emergency Communication System installation and operation manual*, part number P85899, for battery wiring and battery shield installation.

1. Reinstall the batteries into the enclosure.
2. Turn the AC Mains power to the MX16US Main panel ON.
3. Verify the AC power LED on the MX16US front panel is ON.
4. Reconnect the cables to the positive and negative terminals of the battery.
5. Replace the battery shield and close the MX16US door.

### Verify Operation

Refer to the tables below for the Power LED and Network LED operational status and to the *AirLink LX40 Hardware User's Guide* for additional LED operation and troubleshooting.

1. Once power is applied, verify the Cellular Gateway connects to the network (connection may take up to 5 - 10 minutes).
2. Verify proper system operation by placing calls from Call Stations to a remote emergency response location.

**Table 6. Power LED Status**

LED Status	Description
Solid Green	Unit is powered
Flashing Green	After pressing the RESET button for 5 seconds, the green LED will begin flashing; immediately release the RESET button to reboot the unit
Solid Red	Unit is in standby mode
Flashing Red	After pressing the RESET button for 5 - 20 seconds, the red LED will begin flashing; immediately release the RESET button to reset the unit to the factory default settings
Solid Amber	Unit is in low power mode
Flashing Amber	Refer to the <i>AirLink LX40 Hardware User's Guide</i> to place the unit in Recovery Mode

**Table 7. Network LED Status**

LED Status	Description
Solid Green	Unit is connected to an LTE network
Flashing Green (on/off)	Unit is attempting to connect to a network
Solid Amber	Unit is connected to a 2G or 3G network
Flashing Red	Network not available
Flashing Green (3 sec. on/1 sec. off)	Unit is in Wi-Fi client mode (WAN-over-Wi-Fi); refer to the <i>AirLink LX40 Hardware User's Guide</i> for details
Flashing Red/Amber	Refer to the <i>AirLink LX40 Hardware User's Guide</i> to enable Network Operator Switching

For technical assistance please contact Eaton Technical Services 1-800-631-2866.

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