VoCALL™ 16US 2-WAY Emergency Communication System

P85899 February 2025

Installation and operation manual

Powering Business Worldwide

TABLE OF CONTENTS

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273 Branchport Ave.
Long Branch, NJ 07740
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SAFETY INFORMATION

Personnel who shall install, maintain or repair this equipment must read the safety information below before starting work.

Definitions and symbols

⚠ WARNING

INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, CAN RESULT IN SERIOUS INJURY OR DEATH.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, can result in minor to moderate injury, or serious damage to the product.

General Safety Precautions

⚠ WARNING

THIS EQUIPMENT IS DEFINED AS CLASS 1 IN EN 62368-1:2014 AND MUST BE PROPERLY GROUNDED.

⚠ WARNING

THIS EQUIPMENT IS INTENDED FOR CONTINUOUS OPERATION AND AS SUCH SHOULD BE PERMANENTLY CONNECTED TO THE MAINS SUPPLY. THIS UNIT MUST BE CONNECTED TO A DEDICATED BREAKER CLEARLY MARKED DO NOT TURN OFF.

⚠ WARNING

VOLTAGES IN EXCESS OF 30V RMS AC OR 50V DC ARE CONSIDERED HAZARDOUS AND IN CERTAIN CIRCUMSTANCES CAN BE LETHAL .THIS PRODUCT CONTAINS WIRING AND TERMINATIONS THAT ARE ENERGIZED TO 120V RMS AC. BEFORE ATTEMPTING TO REMOVE THIS COMPONENT, ENSURE THE MAINS POWER SUPPLY AND BATTERY BACKUP HAVE BEEN DISCONNECTED.

⚠ WARNING

NO USER SERVICEABLE PARTS. TESTING, MAINTENANCE OR REPAIR WITH MAINS POWER (AND/ OR BATTERY) CONNECTED SHOULD ONLY BE UNDERTAKEN BY PERSONNEL WHO ARE TRAINED AND HAVE TAKEN ADEQUATE PRECAUTIONS.

⚠ WARNING

INDOOR USE ONLY. DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

⚠ CAUTION

VoCALL 16US must only be installed by properly trained personnel. In case of violating these requirements the warranty provided will not apply and EATON will not be held legally accountable.

⚠ CAUTION

Before handling PCB, operator should dissipate any electrostatic charge.
Always handle PCBs by their sides and avoid touching any components

⚠ CAUTION

This product may contain lead or other hazardous substances. Dispose of properly

TRAINED/SKILLED INSTALLERS AND OPERATORS

⚠CAUTION

Installation and operation of the VoCALL 16 System is for instructed or skilled personnel.

INSTALLATION IN RESTRICTED ACCESS AREAS

⚠CAUTION

In an effort to protect personnel safety and safeguard against cybersecurity risks, such as tampering, the MX16US and NX16US panels are to be installed in restricted access areas that prevent access to the general public and children.

Receipt/Unpacking

On receiving the unit, verify that the model number and unit options stated on the shipping container match those stated on the order/purchase form. Inspect the equipment upon delivery. Report any crate or carton damage to the carrier prior to accepting the delivery, and have this information noted on the freight bill.

Remove all packing material from the unit. Check the unit for any signs of shipping damage. If damage is found after unpacking, report it to the Freight Company and Eaton. Retain the packaging materials for the carrier to review.

Storage

It is recommended that the unit should be stored in its original shipping box/crate until it is to be installed. The unit should be stored in a location where:

- The ambient storage temperature is 32ºF to 98ºF (0ºC to 37ºC)
- Maximum relative humidity is 95%, non-condensing
- The environment is dry, clean and non-corrosive
- The unit will not be subjected to high shock or vibration conditions

About this manual

This manual contains important instructions that must be followed during installation, start-up, configuration, operation and maintenance for the VoCALL™ 16US 2-Way Emergency Communication System, including the MX16US (also referred to as the Main Panel), the NX16US (also referred to as the Network panel) and their associated Call Stations. All instructions must be read before installing and operating the equipment.

This manual is aimed at specialist personnel, who are responsible for the installation, commissioning and maintenance of the VoCALL 16US 2-Way Emergency Communication System (hereafter referred to as the VoCALL 16 System) and personnel who are responsible for operating the system.

Related Documentation

Table 1. Related Documentation

Product Manual	Document Number
VoCALL 16US 2-Way Emergency Communication System Installation and Operation Manual	P85899
VoCALL 16US System Quick Start Guide	P85921
Call Station Installation Instructions	25-1017
Cellular Gateway Installation Instructions	P85905

Maintenance

A person/organization should be appointed for maintenance of VoCALL 16 system. The responsible individual is expected to have been trained on system operation and maintenance of the system. The responsibilities include, but are not limited to:

- Ensuring a schedule of routine maintenance is performed
- Ensuring all required records of maintenance is available
- Ensuring records are updated to reflect any changes made to the system

Note: NFPA72 Guidelines shall be followed.

Abbreviations/Glossary

Table 2. Abbreviations/Glossary

Term	Definition
VoCALL	Eaton product range for 2-Way Communications
MX16US	Main panel / Telephone
NX16US	Network Panel
CS	Call Station
PSU	Power Supply Unit
Panel	Main (MX) or/and Network (NX) panel
System	An installation consisting of one or more panels and Call Stations
Standalone	Installation consisting of 1 MX panel and Call Stations
Network	Installation consisting of one (1) MX16US and one (1) or more NX16US panels
Engineering mode	State of the panel in which a skilled person is configuring, trouble shooting or updating the system During this state calls are not operational on the system.
T2S	Text-to-Speech; separate software option provided to configure off premise dialer/VoIP messages
IB	Interface Board; located in the MX16US
Main Board	Located in the MX16US
LAN	Local Area Network
SIP	Session Initiation Protocol
Cellular Gateway	Router, provides an internet connection when a LAN connection is not available
Dialer	Gateway Dialer, used to place VoIP calls
PoE	Power over Ethernet, used to power the (optional) Cellular Gateway
VoIP	Voice over IP communications
RAS	Refuge Area Sign - instructional sign to be placed next to each Call Station

VoCALL 16 system overview

Introduction

The VoCALL 16 system is a high specification, digital, loop–wired, fully addressable, monitored, and secure bi-directional communication system.

VoCALL 16 system comprises multiple types of devices:

- Panels: Main Panel (MX16US) Network panel (NX16US)
- Call Stations: Flush or surface mounted remote call stations (MX16RRF, MX16RSF, MX16RRS and MX16RSS)
- Gateway Dialer: Off premise dialer using VoIP communications; provided and pre-installed with each MX16US
- Cellular Gateway: VoCALL Cellular Gateway, MX16CELL, provides wireless gateway for the dialer

Products

Table 3. VoCALL 16 System Products

Product Number	Description
Panel	
MX16US	VoCALL 16 Main Panel
MX16-BEZ	VoCALL 16 MX Flush Bezel front panel
MX16-SSC	VoCALL 16 MX Stainless steel flush mount panel front
NX16US	VoCALL 16 Network Panel
MX16CELL (optional)	VoCALL Cellular Gateway
Call Stations	
MX16RRF	Call Station Red Flush
MX16RSF	Call Station Silver Flush
MX16RRS	Call Station Red Surface
MX16RSS	Call Station Silver Surface

Technical Specifications

Table 4. General Specifications

Parameter	Specification
PC/Laptop	Windows based
Standards compliance	UL62368-1 for US and Canada
EMC	FCC part 15 / ICES-003 Class A and EN 55035:2017 (Immunity)
PSU	UL864, UL294 and UL60950
Maximum NX16US	9
Maximum Call Stations	16 per panel
Network Configuration	Loop wired - isolated Class X without ground fault detection
Location Environment	Indoor use only
Operating Temperature	32°F to 98°F (0°C to 37°C)
Humidity	95% Non-Condensing
Maximum operating altitude	6,561 ft (2,000 m)
Pollution Degree	2
IP Rating	IP20

Table 5. Panel Network Loop Wiring

Parameter	Specification
Communications	RS485, full duplex
Cable Type	Two pairs (TX and RX), 18 - 12 AWG, Shielded Twisted pair, solid core or stranded
Maximum distance between Panels	1,000 ft
Maximum loop length	12,000 ft
Maximum capacitance wire-to-wire	60 pF/ft
Maximum capacitance wire-to-shield	100 pF/ft

Note: Use shielded cable throughout the installation. Ensure the cable shielding is securely connected to earth.

Note: Call Station power and communication loops must be wired in separate cable pairs.

Table 6. Call Station Loop Wiring

Parameter	Specification
Communications	CAN, full duplex
Cable Type	Two pairs (Power and CAN) 18 - 12 AWG, Shielded Twisted pair, solid core or stranded
Maximum total loop resistance (including return)	13.6 ohms (equivalent to 1700 ft/16AWG)
Maximum resistance between Panel and Call Station	4.8 ohms (equivalent to 600 ft/16AWG)
Maximum resistance between Call Stations	4.8 ohms (equivalent to 600 ft/16AWG)
Maximum capacitance wire-to-wire	60 pF/ft
Maximum capacitance wire-to-shield	100 pF/ft

Note: The maximum loop resistance specified in Table 6 shall not be exceeded; this is the wiring resistance budget the installer must use to ensure proper operation of the system. This specification includes the return path from the last Call Station to the Panel.

Table 7. IT Network Requirements

The network's firewall must pass the protocols listed in Table 7.

Protocol Type	Description
SIP	Session Initiation Protocol
SDP	Session Description Protocol
RTP	Real-Time Transport protocol
RTCP	RTP Control Protocol
SRTP	Secure RTP

Note: Network cabling must be CAT 5e (10/100 Mbps) minimum; maximum distance for the network cable is 328 ft (100 m).

ETHERNET CONNECTORS - UNSHIELDED WITH NON-METALLIC HOODS

IMPORTANT

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

Compliance Statement:

Compliance to UL62368-1 requires skilled personnel to install and maintain the system and properly trained/instructed personnel to operate the system in emergency situations. The Main and network panels are intended to be installed in locations with limited or restricted access. Follow all instructions to ensure regulatory compliance.

System Components

MX16US (Main Panel)

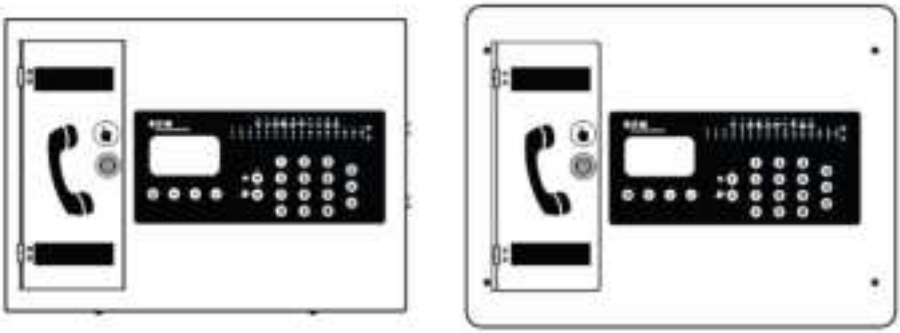


Figure 1. MX16US Flush and Surface

Table 8. MX16US Specifications

Parameter	Specification
Dimension (H x W x D)	13.9 x 19.2 x 6.1 inches (354 x 487 x 154 mm)
Stainless Front Dimension (H x W x D)	15.4 x 20.6 x 0.1 inches (390 x 522 x 2.5 mm)
Weight (excluding battery)	MX16US: 18.7 lbs. (8.5 kg) MX16US-SSC: 7.7 lbs. (3.5 kg)
Knockouts	3/4 inch standard knockouts
Power Supply	120 Vac (+ 10%/ -15%), 60Hz
Power Consumption	2.7 Watts
Fault Indications	Audible and visual indicators
Security	Handset behind lockable door, Logging of physical access to panel
Memory	Removable SD card - shipped from the factory in the unit
Battery[1]	Qty 2, 12V, 14 Ah, sealed lead acid battery Battery shall be UL certified to UL1989
Battery - Full load[2] 24 hrs Standby Current	0.50 A
Battery - Full load w/optional accessories[3] 20 hrs Standby Current	0.60 A

[1] Batteries are not supplied with the unit and should be procured separately.

[2] MX 16US Full load includes 16 Call Stations

[3] MX 16US Full load including 16 Call Stations and optional accessories (Cellular Gateway, PoE and antenna)

Network Panel

Figure 2. NX16US

Table 9. NX16US Specifications

Parameter	Specification
Dimension (H x W x D)	13.9 x 13.9 x 5.6 inches (354 x 354 x 143 mm)
Weight - excluding battery	13.7 lbs. (6.2 kg)
Knockouts	3/4 inch standard knockouts
Power Supply	120 Vac (+ 10%/ -15%), 60Hz
Power Consumption	2.7 Watts
Fault Indications	Audible and visual indicators
Security	Logging of physical access to panel
Memory	Removable SD card - shipped from the factory in the unit
Battery[1]	Qty 2, 12V, 14 Ah, sealed lead acid battery Battery shall be UL certified to UL1989
Battery - Full load[2] 24 hrs Standby Current	0.50 A

[1] Batteries are not supplied with the unit and should be procured separately.

[2] NX 16US Full load includes 16 Call Stations

Call Stations

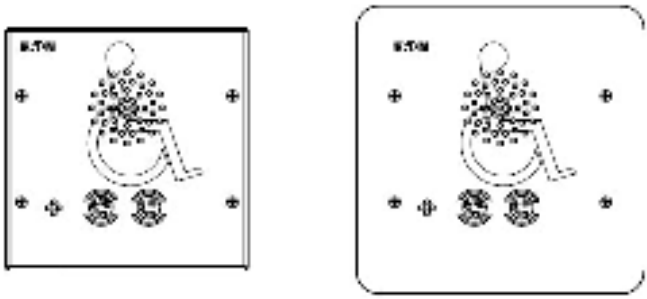


Figure 3. Call Stations - Flush mount and Surface mount

Table 10. Call Station part numbers and specifications

Product Number/Specification	Description
MX16RRF	Call Station Red Flush
MX16RSF	Call Station Silver Flush
MX16RRS	Call Station Red Surface
MX16RSS	Call Station Silver Surface
Dimension (H x W x D)	Surface: 5.4 x 5.4 x 2.2 inches (137 x 137 x 56 mm) Flush: 6.4 x.6.4 x 2.2 inches (162 x 162 x 56 mm)
Weight	1.8 lbs. (0.8 Kg)
Knockouts	3/4 inch standard knockouts
Voltage Rating	21V to 27.6V (Nominal 24V) DC
Power Consumption	Active - 0.65 Watts Standby - 0.52 Watts
Indications	Audible and visual indicators

SD Card Explorer Software

The SD Card Explorer software, preloaded onto an SD Card and installed in the MX16US prior to shipping, includes two utilities for use in the VoCALL System:

Log Viewer

The SD Card Explorer Log Viewer utility provides the ability to view the Call, Fault and Event records in log files maintained on the SD card.

Refer to the "Viewing Logs in SD Card Explorer" section of this manual to view the log file views.

Text-to-Speech

Text-to-Speech, hereafter referred to as T2S, is a utility of the SD Card Explorer used in conjunction with the Gateway Dialer. The T2S utility allows the user to generate voice messages that are unique to each Call Station with location specific information. This information can be used by emergency response personnel to locate persons needing assistance.

The T2S utility configures and downloads custom messages to the SD card which, when installed in the MX16US, is with the Dialer in an emergency event.

When a Call Station is activated during an emergency, the system will dial the associated programmed phone number. Once the call is connected to a remote location the recorded message will be played.

Gateway Dialer

The VoCALL Gateway Dialer (hereby referred to as the Dialer) is a device used to place Voice-over-IP (VoIP) calls from the VoCALL 16US system to remote call center locations such as 911. This allows live 2-way voice calls between persons needing assistance and emergency personnel.

The Dialer has two Ethernet ports, one for internal communications with the MX16US and the other for VoIP calls using the customer's IT network or an (optional) Cellular Gateway device.

When the MX16US is unattended, the Dialer routes calls initiated at Call Stations to remote Call Centers. When answered by the remote Call Center, the MX16US will first play the generated voice message containing location information created by the T2S utility. After the message plays, the Call Station and the remote Call Center will have a live 2-way voice call.

The end customer is responsible for establishing and maintaining an account and expenses associated with the VoIP service provider and (optional) cellular service.

Note: The network's IT infrastructure shall protect the Dialer from security threats.

Note: Refer to the "Text-to-Speech" section of this manual for creating and generating the Call Station location messages that are played by the MX16US prior to connecting the 2-way voice call.

The Dialer requires an internet connection and a VoIP service provider to place emergency voice calls. The provider chosen by the installer/end-customer should have the following features:

- **Security** (required by Eaton cybersecurity) - Ensures the on-premise VoIP communications of the MX16US are secure and protected.
  - STLS (SIP over TLS)
  - SRTP (Secure/Encrypted RTP)
- **E911** - Enhanced 911, provides general location information to 911 personnel in addition to the specific Call Station location information sent by the MX16US at the beginning of each call.
- **BYOD** - Bring-Your-Own-Device, allows the customer's equipment (Gateway Dialer) to use the VoIP service provider's network.
- **Phone number and PSTN gateway** - Phone number selection/assignment, gives the MX16US a phone number which can reach a remote call center on the PSTN (Public-Switched-Telephone-Network). A PTSN gateway allows a service provider to bridge calls from the MX16US internet and the public telephone system.

The suggested providers listed below have been found to meet the above requirements. It is the final responsibility of the installer/end-customer to choose a VoIP service provider that meets their needs.

RingCentral - https://www.ringcentral.com/

VoIP.ms - https://voip.ms/

Callcentric - https://www.callcentric.com/

Note: Callcentric does not support secure VoIP communication protocols (STLS & SRTP).

NETWORK SECURITY

⚠WARNING

THE EXTERNAL WAN ETHERNET PORT ON THE DIALER SHALL BE CONNECTED TO THE LOCAL NETWORK'S IT INFRASTRUCTURE AND PROTECTED AGAINST OUTSIDE SECURITY THREATS.

THE LAN ETHERNET PORT WIRING SHALL BE LIMITED TO A SINGLE BUILDING OR STRUCTURE.

Cellular Gateway and PoE

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 kit includes a Cellular Gateway (LTE router), an antenna, a PoE injector, and an ABS enclosure and hardware. Please refer to the installation instructions listed in Table 1 for installation details. The Cellular Gateway requires a data plan activated through a cellular network 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.

The Cellular Gateway is to be mounted in the ABS enclosure, which must be installed in the same building as the MX16US. The antenna can be mounted to the enclosure or to a suitable nearby surface, however it must be indoors in a location that receives a reliable cellular network signal.

The PoE Injector is installed in the MX16US panel next to the Dialer. It provides power and data to the Cellular Gateway over a single Ethernet cable.

Note: The Cellular Gateway is a third party manufactured device; refer to the router's manufacturer when configuring the device.

System Features

- **Loop wired configuration**: Both the remote Call Stations (CS) and the panel-to-panel network are designed to provide full isolation from a single break or short in the wiring. This ensures that all Call Stations and panels continue to function under a network fault condition. The wiring is the same as Class X wiring except ground fault. The system will function normally except under ground fault detection.
- **Simple installation with auto learn function**: The MX16US (also referred to as MX) supports up to 16 Call Stations.
- **Easy network extension:** The VoCALL 16 network can be extended easily by connecting NX16US (also referred to as NX) panels in daisy chain fashion on a loop; up to 9 NX16US panels can be connected on the loop. Each panel (MX and NX) can support up to 16 Call Stations for a total capacity of 160 Call Stations on the system.
- **Intuitive network configuration:** Auto addressing functionality along with a locally hosted Web application for configuration of the system provides an easy and intuitive experience for commissioning the site.
- **Superior audio quality:** The VoCALL 16 system is a fully digital system. The panels and Call Stations communicate using digital data which provides high immunity to electrical noise and ensures superior audio quality for maximum intelligibility.
- **Extensive system operation monitoring and logging:** The VoCALL 16 system provides detailed logging of all events providing a record for fault finding, tracking and usage compliance.
- **User interface**: A large LCD display, keypad and a menu allows ease of use during system configuration, monitoring and day to day operation.
- **Secure software update:** The MX16US facilitates the update of all devices on the network from a central location. The software is encrypted and digitally signed ensuring secure update.
- **User configuration**: The VoCALL 16 system facilitates a maximum of 10 user login/profiles. Each user's profile can be configured independently allowing system administrator flexibility to support the needs of the most demanding applications.
- **Secure communications**: The VoCALL 16 system has been designed within Eaton's stringent Cybersecurity guidelines. The system is designed to protect against unauthorized and malicious use.

Topology

Standalone Topology

A Standalone topology configuration includes one MX16US panel and up to 16 Call Stations; each Call Station on the loop is automatically addressed by the MX16US during configuration.

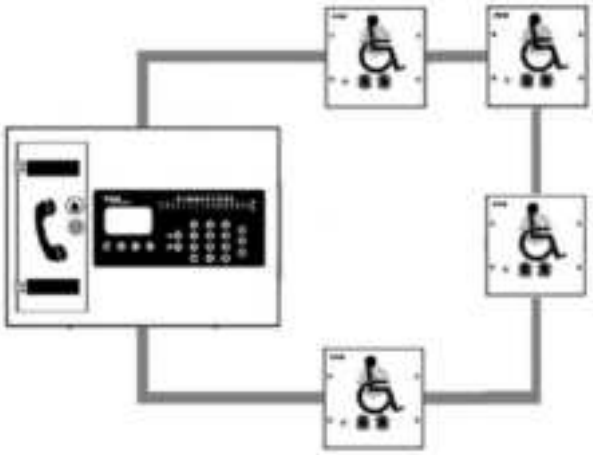


Figure 4. MX16US Standalone Topology

Note: All cabling must comply with local regulations, codes of practice and standards.

Network Topology

An MX/NX Network topology configuration includes one MX16US and up to 9 NX16US panels connected on a loop. Each panel (MX or NX) can have up to 16 Call Stations connected to it, for a total capacity of 160 Call Stations.

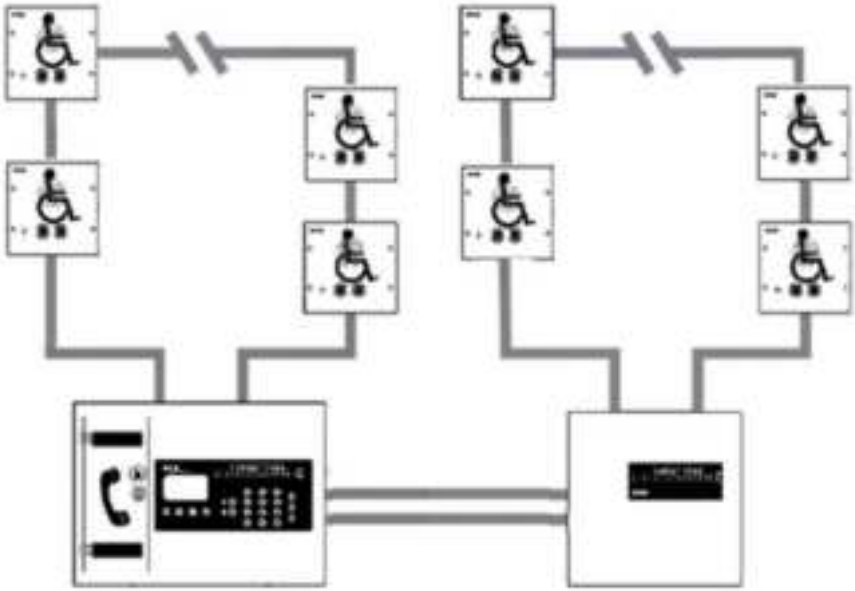


Figure 3: MX and NX topology

Note: A Network installation requires one MX16US and at least one NX16US panel to be installed in a loop; each NX16US panel requires at least one Call Station connected.

Note: All cabling must comply with local regulations, codes of practice and standards.

Installation

The VoCALL16 system is designed to meet applications including Area of Refuge (Area of Rescue Assistance), Emergency Communications Systems, Stairwell Communications Systems, Elevator Landing Communications Systems and Occupant Evacuation Elevator Lobby Communications Systems. Refer to local codes and standards for Remote Call Station installation locations.

- The VoCALL 16 system is for indoor use only.
- The MX and NX panels are intended to be installed in a restricted access location to avoid tampering with the system.
- Background noise levels in the vicinity of the MX16US panel and Call Stations should be kept as low as possible.

MX16US Panel Location

The MX16US should be located:

- The center of the MX16US shall be mounted at a height of 48 - 60 inches (122 - 152 cm)from the floor.
- Close to the main fire alarm panel or a repeater fire panel, in an area of low fire risk.
- In an area with low background noise, particularly during an emergency.
- Fire alarm sounders or Voice Alarm speakers should not be located near the panel.
- If in a control room, the panel should be within easy reach from the operator's normal position.
- The MX16US is intended to be installed in a secure and restricted access location to avoid tampering with the system.

NX16US Panel Location

- The center of the NX16US panel shall be mounted at a height of 36 - 66 inches (91 - 168 cm) from the floor.
- The NX panel is intended to be installed in a secure and restricted access location to avoid tampering with the system.

Call Station Location

Call Station locations shall be as per application and in accordance with local regulations guidelines and standards.

The Call Stations should be located within easy access to persons needing assistance such as:

- In all areas of refuge and adjacent to the elevator landings on each floor.
- Mounted at a height of between 34 - 48 inches (86 - 121 cm) above the floor.

Mounting Instructions

MX16US

1. Remove the unit from the packing material and verify contents against the packing slip.
2. Remove the screws as shown in Figure 8, step A.

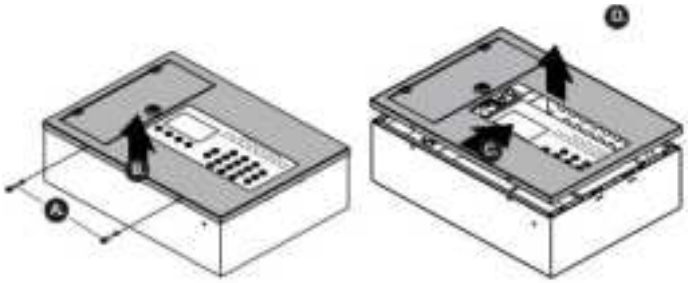


Figure 8. Remove MX16US front panel

3. Lift the front panel from bottom (step B) and push back (steps C and D) to disengage the clips, as shown in Figure 8.
4. Refer to Figure 9; disconnect the ground cable from the front panel; leave the ground cable connected to the enclosure.

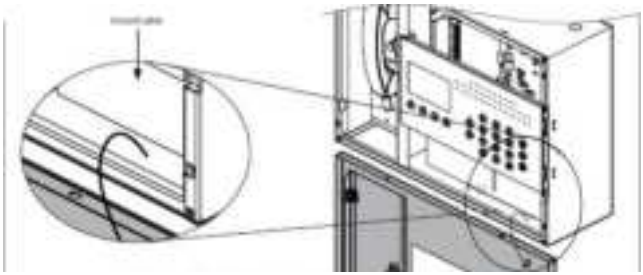


Figure 9. Disconnect the ground cable from the MX16US front panel

5. Remove knockouts on the top panel as required; do not remove more knockouts than required.
6. Keyhole mounting holes are provided for wall mounting as shown in Figure 10. Secure the unit to the wall using the appropriate mounting hardware required for the wall's construction.

MX16US - FLUSH MOUNTING

⚠CAUTION

Ensure that at a minimum, # 10 screws are used to mount the enclosure to the wall. Screws must be secured to studs or equivalent to ensure the enclosure is properly secured to the wall.

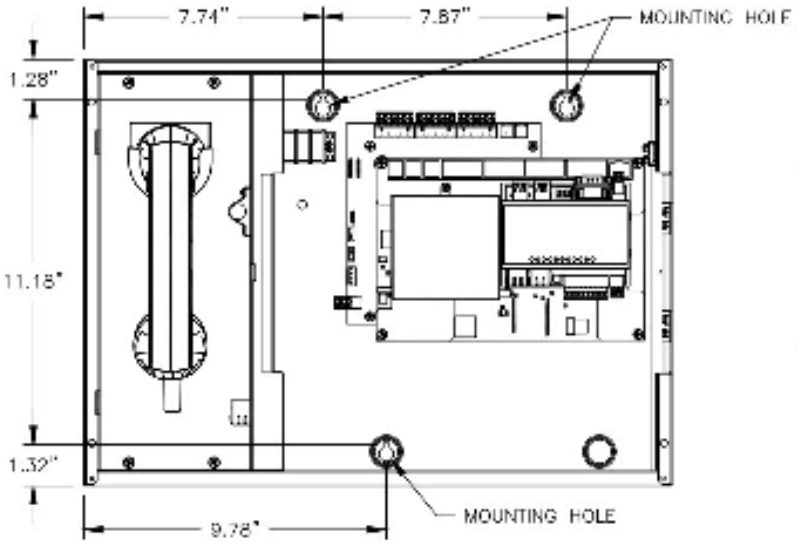


Figure 10. MX16US Enclosure and mounting hole dimensions

7. After mounting the enclosure to the wall, reconnect the ground cable to the front panel.
8. Replace and secure the front panel using the screws previously removed.
9. Proceed to the "Wiring" section to complete the installation.

Note: Security: To prevent inadvertent use of system, a key lock is provided for the handset enclosure and a magnetic latch is used to hold the handset door in place. Authorized users should be provided with a key as required. In addition, the panel is fitted with a tamper switch to monitor and log physical access inside the panel.

NX16US

1. Remove the unit out from the packing material and verify contents against the packing slip.
2. To remove the front panel, remove the screws as shown in Figure 11, step 1.
3. Lift the front panel from the bottom (step 2) and push back (steps 3 and 4) to disengage the clips as shown in Figure 11.

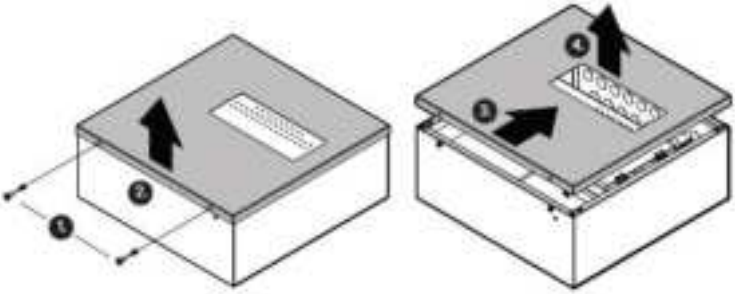


Figure 11. Remove NX16US front panel

4. Refer to Figure 12; disconnect the ground cable from the front cover; leave the ground cable connected to the enclosure.

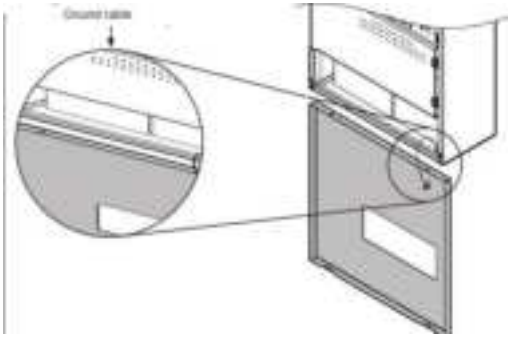


Figure 12. Disconnect the ground cable from the NX16US front panel

5. Remove knockouts on the top panel as required.
6. Keyhole mounting holes are provided for wall mounting as shown in Figure 13. Secure the unit to the wall using the appropriate mounting hardware required for the wall's construction.

NX16US - FLUSH MOUNTING

⚠CAUTION

Ensure that at a minimum, # 10 screws are used to mount the enclosure to the wall. Screws must be secured to studs or equivalent to ensure the enclosure is properly secured to the wall.

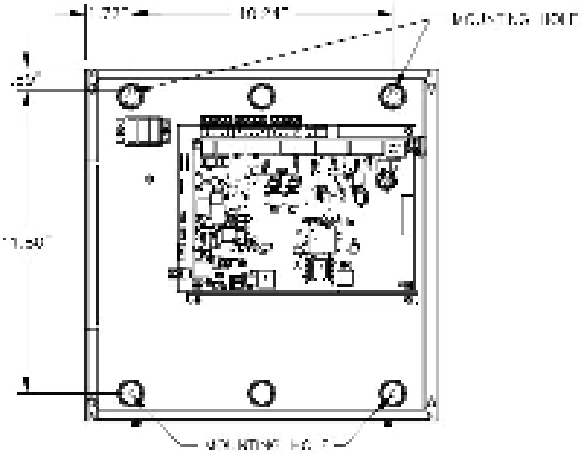


Figure 13. NX16US enclosure and mounting hole dimensions

7. Replace and secure the front panel using the screws previously removed.
8. Reconnect ground cable to the NX16US front panel.
9. Proceed to the "Wiring" section to complete the installation.

Wiring

Power-limited and non-power-limited wiring

When wiring the MX16US and NX16US and associated options, separate the power-limited and non power-limited wiring within the enclosures as shown in Figure 14 and Figure 15. Ensure that power-limited and non power-limited wires enter the enclosures via separate conduits.

Note: Always provide 1/4" separation between wires when routing power limited wires; at a minimum, power-limited wiring must be 1/4" away from any non-power limited wiring.

Note: Separate power-limited and non-power limited wiring within the panels.

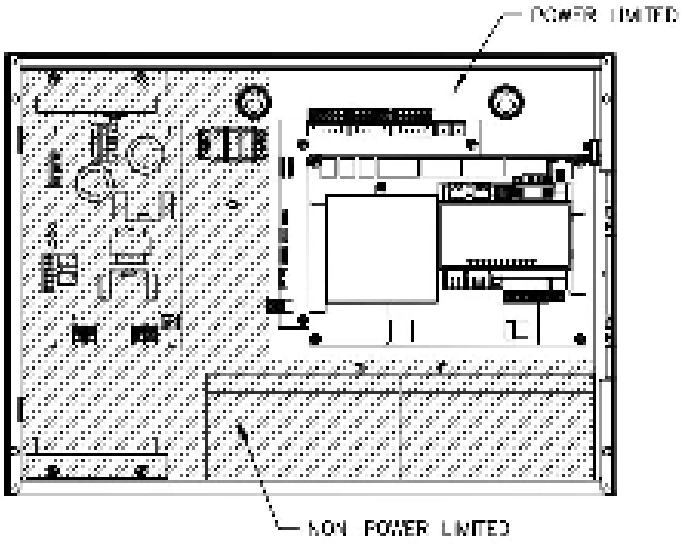


Figure 14. MX16US power limited and non-power limited routing

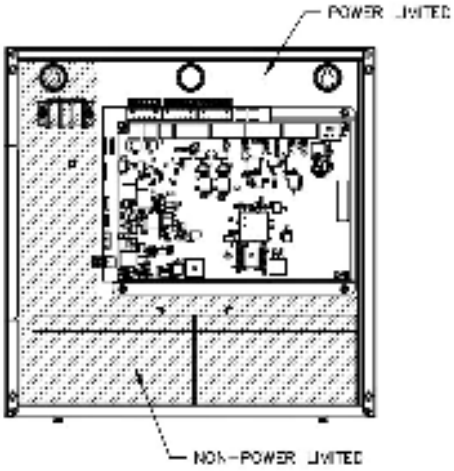


Figure 15. NX16US power limited and non-power limited routing

AC Mains to PSU

The MX16US power supply unit is mounted on the left-side, behind the handset; the NX16US power supply unit is mounted in behind the PC boards.

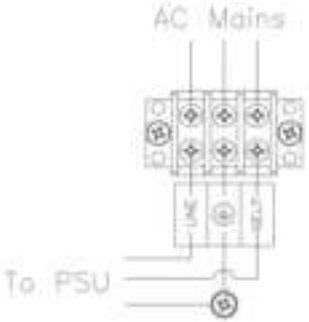


Figure 16. MX16US and NX16US AC Mains Power

Note: A certified circuit breaker shall be installed external to each panel (MX16US and NX16US) to serve as a power disconnect during service and maintenance use. A UL certified circuit breaker with a rating of 120 Vac, 5A shall be used for each panel and UL certified wiring of at least 18AWG shall be used for supply connection to the panels. The AC power connection shall include a ground wire as shown in Figure 16.

PSU to Battery

Refer to Figure 17, Figure 18 and Figure 19 when installing and connecting the batteries.

Note: In an effort to provide the required voltage, the two batteries in the MX16US and NX16US shall be connected in series.

Note: The leads connecting the MX16US batteries to the PSU are pre-installed at the factory.

1. On the MX16US, carefully remove the flexible battery barrier located under the PCBs and set it aside for reinstallation after the batteries are installed and wired.

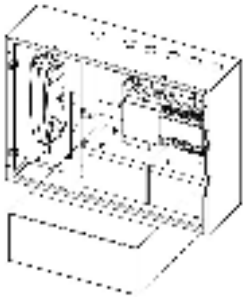


Figure 17. MX16US shown with battery barrier extruded

2. Install the batteries in the enclosure under the PCBs.
3. Identify the factory provided battery harness.
4. Connect the open end of the battery harness as follows:
    a. Red wire to the positive (+) battery terminal.
    b. Black wire to the negative (-) terminal of the battery.
5. On the MX16US, reinstall the battery barrier; ensure no wires are caught between the barrier and the back of the enclosure.

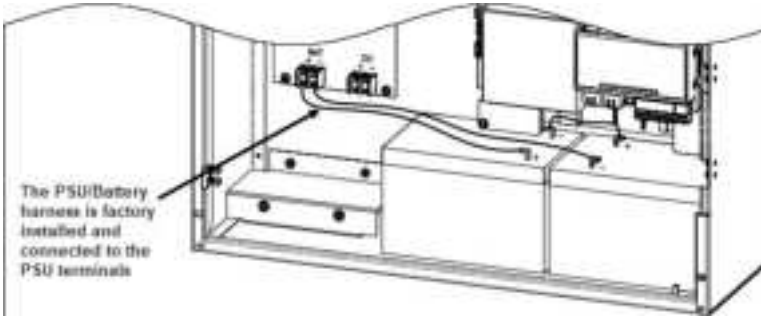


Figure 18. MX16US Battery Connections

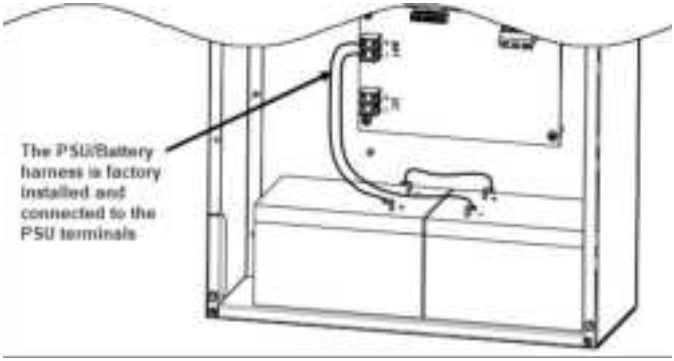


Figure 19. NX16US Battery Connections

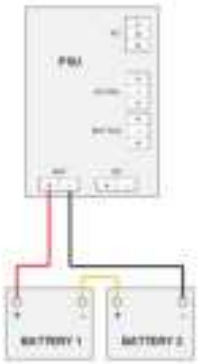


Figure 20. PSU to Battery connections

BATTERY SAFETY

⚠CAUTION

Sealed lead acid batteries contain sulfuric acid which can cause burns if exposed to the skin.

Exercise caution when handling batteries, the low internal resistance of batteries could result in large current flow if they are accidentally short circuited causing burns and a risk of fire.

Exercise caution when handling batteries, risk of explosion if battery is replaced by an incorrect type.

Properly dispose of used batteries according to local regulations. Exercise caution when handling batteries, the low internal resistance of batteries could result in large current flow if they are accidentally short circuited causing burns and a risk of fire.

Exercise caution when handling batteries, risk of explosion if battery is replaced by an incorrect type.

Properly dispose of used batteries according to local regulations.

Note: UL1989 listed batteries must be used.

Note: Always apply AC power before connecting batteries; connect the positive terminal Red (+) wire first.

Note: Power must be removed from the unit prior to performing any wiring; do not remove or replace the PSU connectors while the AC power is active as this will damage the equipment.

Note: Disconnect the batteries before removing the AC power; always remove the negative terminal Black (-) wire) first.

Call Station Wiring

Call Stations are wired in a two pair daisy chain loop that provides survivability for a single fault. The two wire pairs provide power and data to the Call Station.

All wiring shall be shielded wire. Refer to Table 6 for Call Station wiring calculations, wire distance and details. Ensure all wiring complies with local regulations codes of practice and standards.

Call Stations are automatically addressed when the **Call Station Learn** option is executed from the MX16US front panel. The first Call Station connected to OS OUT (PORT A) will be addressed as #1; the remaining Call Stations will be numbered in their respective order in the network following Call Station#1.

Refer to Figure 21, Figure 22 and Table 11, Table 12 and Table 13 for wiring Call Stations.

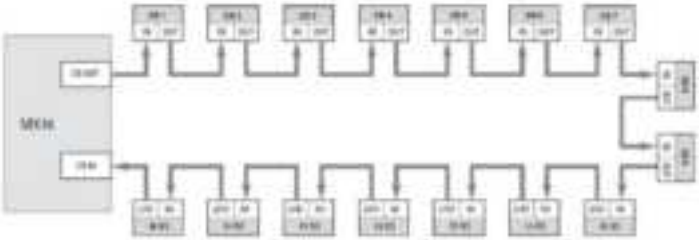


Figure 21. Daisy chain loop for Call Station wiring

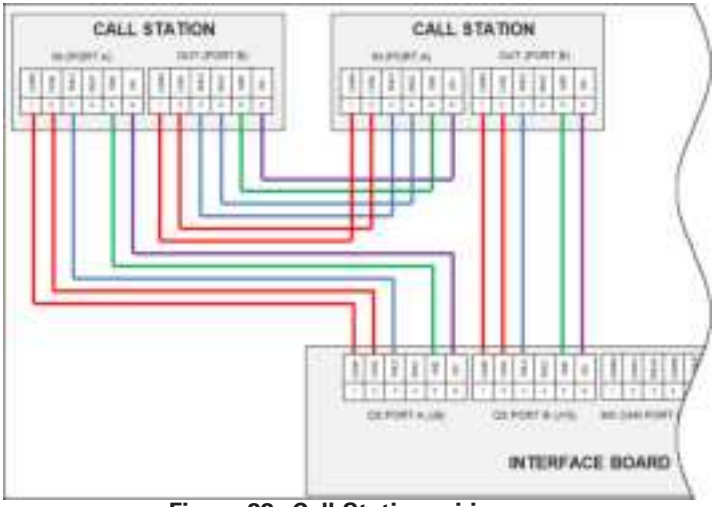


Figure 22. Call Station wiring

Table 11. Interface Board to Call Station #1 Wiring

Interface Board	Call Station #1
OS PORT A (J8)	**IN (PORT A)**
Pin-1 - CANH	Pin-1 - CANH
Pin-2 - CANL	Pin-2 - CANL
Pin-3 - SHLD	Pin-3 - SHLD
Pin-4 - No connection	Pin-4 - No connection
Pin-5 - GND	Pin-5 - GND
Pin-6 - 24V	Pin-6 - 24V

Table 12. Call Station to Call Station Wiring

Call Station #N	Call Station #N+1
OUT (PORT B)	**IN (PORT A)**
Pin-1 - CANH	Pin-1 - CANH
Pin-2 - CANL	Pin-2 - CANL
Pin-3 - SHLD	Pin-3 - SHLD
Pin-4 - SHLD	Pin-4 - SHLD
Pin-5 - GND	Pin-5 - GND
Pin-6 - 24V	Pin-6 - 24V

Table 13. Last Call Station to the Interface Board Wiring

Call Station #2	Interface Board
OUT (PORT B)	**CS PORT B (J10)**
Pin-1 - CANH	Pin-1 - CANH
Pin-2 - CANL	Pin-2 - CANL
Pin-3 - SHLD	Pin-3 - SHLD
Pin-4 - No connection	Pin-4 - No connection
Pin-5 - GND	Pin-5 - GND
Pin-6 - 24V	Pin-6 - 24V

CALL STATION POWER AND DATA WIRING

⚠CAUTION

Take care while connecting power and data wiring for Call Stations; Call Station may be damaged if power and data connections are interchanged.

RAS SIGN ADJACENT TO CALL STATIONS

⚠CAUTION

A model RAS-INSTRUC Call Station instructions sign shall be installed adjacent to each Call Station. The sign should be placed at the same height as the Call Station. Follow all applicable codes and standards for required safety and instructional signs.

MX Panel to NX Panel Wiring

The network panels are wired as a fully isolated loop with each panel in series on the loop. The loop provides both open and short isolation on all communications pairs. Refer to Table 5 for panel wiring distance and information. Ensure all wiring complies with local regulations, codes of practice and standards.

Note: All network wiring shall be shielded cable.

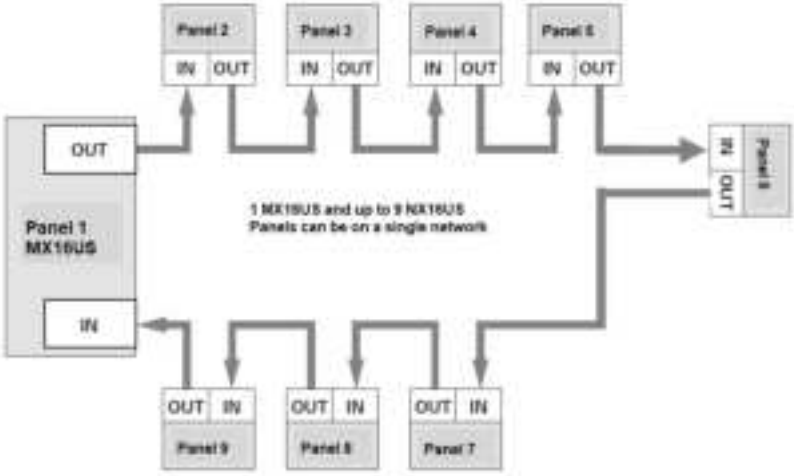


Figure 23. Daisy chain loop for panel wiring

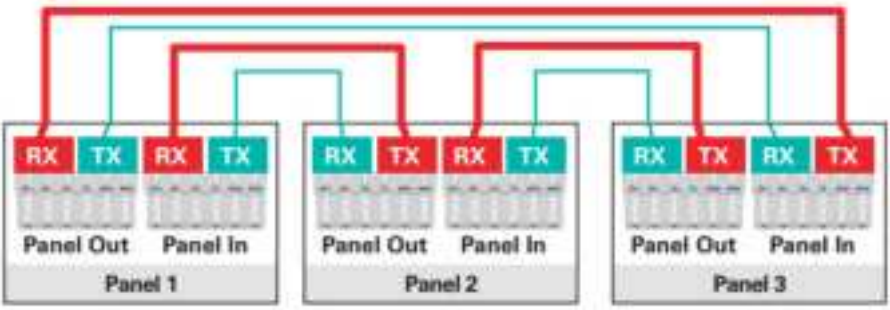


Figure 24. Panel to panel port connections

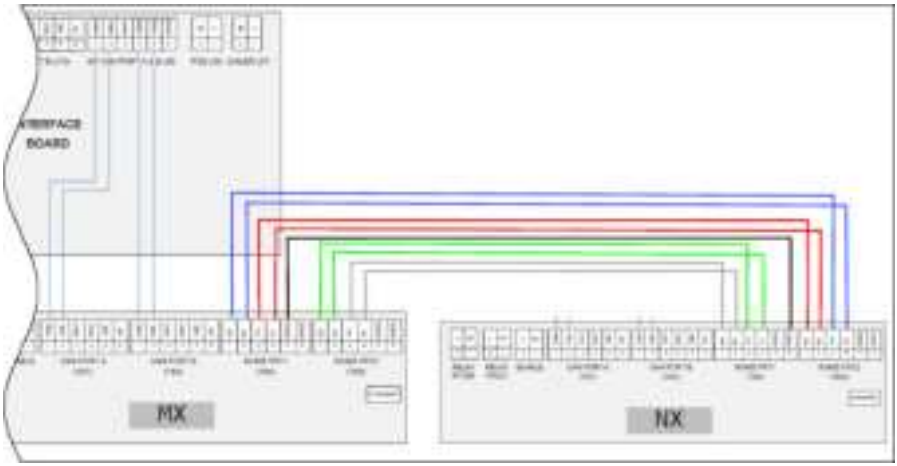


Figure 25. IB-to-MX-to-NX Panel wiring

Table 14. MX Port-1 to NX Wiring

MX16US (Panel #1)	NX16US (Panel #2)	NX16US (Panel #2)
RS485 PRT1 (TB4)	**RS485 PRT2 (TB5)**	**RS485 PRT1 (TB4)**
Pin-1 RX (+)	Pin-3 TX (+)	
Pin-2 RX (-)	Pin-4 TX (-)	
Pin-3 TX (+)	Pin-1 RX (+)	
Pin-4 TX (-)	Pin-2 RX (-)	
Pin-5 SHLD	Pin-5 Not connected	
Pin-6 Not Connected	Pin-6 Not Connected	Pin-6 SHLD

Table 15. MX Port-2 to NX Wiring

MX16US (Panel #1)	NX16US (Panel #2)
RS485 PRT2 (TB5)	**RS485 PRT1 (TB4)**
Pin-1 RX (+)	Pin-3 TX (+)
Pin-2 RX (-)	Pin-4 TX (-)
Pin-3 TX (+)	Pin-1 RX (+)
Pin-4 TX (-)	Pin-2 RX (-)

Table 16. Interface Board to MX Wiring

Interface Board	MX16US (Panel #1)	MX16US (Panel #1)
MX CAN Port A & B (J9)	**CAN Port A (TB 1**	**CAN Port B**
Pin-1 CANHA	Pin-1 CANH	
Pin-2 CANLA	Pin-2 CANL	
Pin-3 No connection		
Pin-4 CANHA		Pin-1 CANH
Pin-5 CANLA		Pin-2 CANL
Pin-6 No connection		

MX/NX Auxiliary connections

The MX16US is provided with two (2) normally open/normally closed relays (30vdc, 1A) to connect with an external device that offer specific functions as noted below.

Relays:

- **IN-USE** relay: normally **OPEN**; **CLOSES** when any call is active or in progress; the IN-USE relay should be connected to the fire alarm control unit's trouble input to signal off-premise that there is a request for assistance at the protected premise.
- **FAULT** relay: normally **CLOSED**; **OPENS** on any fault event or trouble condition; The FAULT relay should be connected to the fire alarm control unit to signal off premise when the VoCALL system is in trouble.

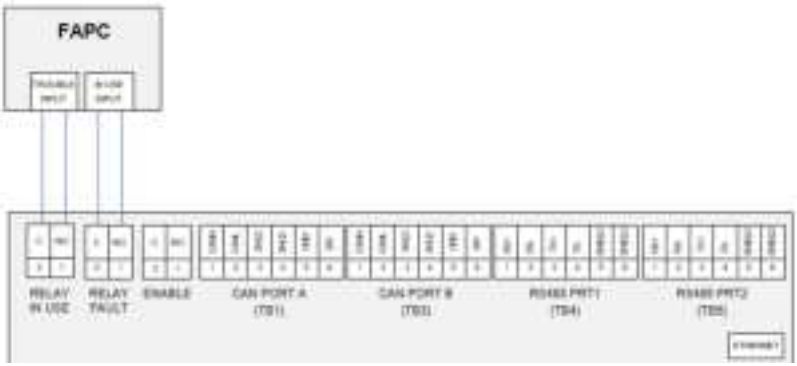


Figure 26. Relay wiring to FACP

Dialer connections

The Dialer is used to dial/communicate off premise in an emergency situation where a call for assistance has been placed on the VoCALL system.
The Dialer connections are pre-wired at the Factory as follows (refer to "APPENDIX 6" for additional information and programming instructions.

1. To power the Dialer, install a short (6 to 8 inch) 18AWG 2-pair wire as follows:
   a. Connect one end of the pair to terminals 1 and 2 on the Terminal Block labeled **Power In** on the Dialer.
   b. Connect the other end of the pair to terminals 1 and 2 on the Terminal Block labeled **DIALER (J7)** located on the *MX 16US Interface Board***.**
2. To provide remote communications:
   a. Connect one end of an Ethernet cable from the RJ45 connector on the Dialer labeled **External Connection (WAN)**.
   b. Connect the other end of the Ethernet cable to the site's **Local Area Network**.
3. To facilitate communications within the MX16US to the Dialer:
   a. Connect one end of an Ethernet cable to the RJ45 connector on the Dialer labeled **Internal Connection (Local)**.
   b. Connect the other end of the Ethernet cable to the RJ45 connector on the top right corner of the *Main Board* in the MXUS16.

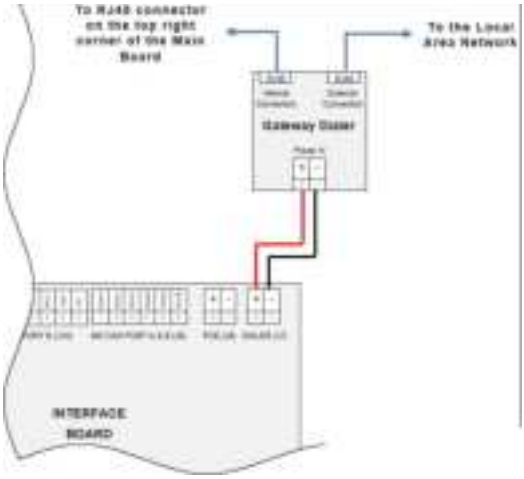


Figure 27. Dialer Wiring

Operations

The MX16US display allows the user to locally manage the unit's settings, manage calls and configure parameters.

The following sections include descriptions of the audible and visual indicators on the MX, NX and Call Station front panels.

Front Panel Buttons

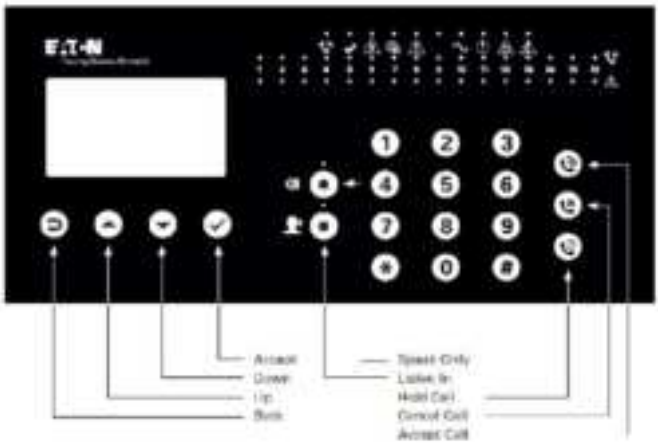


Figure 28. MX16US front panel LEDs and keypad

Keypad navigation:

- Use the '**ACCEPT**' button to move one step ahead / one screen in
- Use the '**Back**' arrow-button to move one step back / one screen out
- Use the '**Up**' and '**Down**' arrow-buttons to navigate through menu screen
- For Menu options with parameters to be edited, press '**ACCEPT**' to enter edit mode. Press '**Up**' and '**Down**' button to select value / option. Press '**ACCEPT**' again to come out of edit mode
- Type the menu selection numbers to navigate quicker:
  Example: To select menu item 6, press **6** on the keypad and then press **ACCEPT**

Front Panel Indicators

The MX16US and NX16US include LEDs, symbols and a buzzer.

LEDs are provided on the MX/NX panel to display status and health of the system. The LEDs and respective symbols on the MX and NX are the same with one exception; the NX16US panel does not include the Call Indication handset above LED 4.

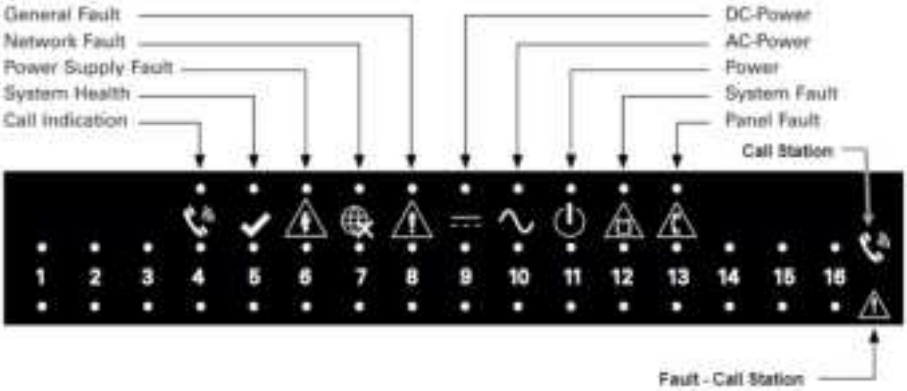


Figure 29. MX16US Front Panel Indicators

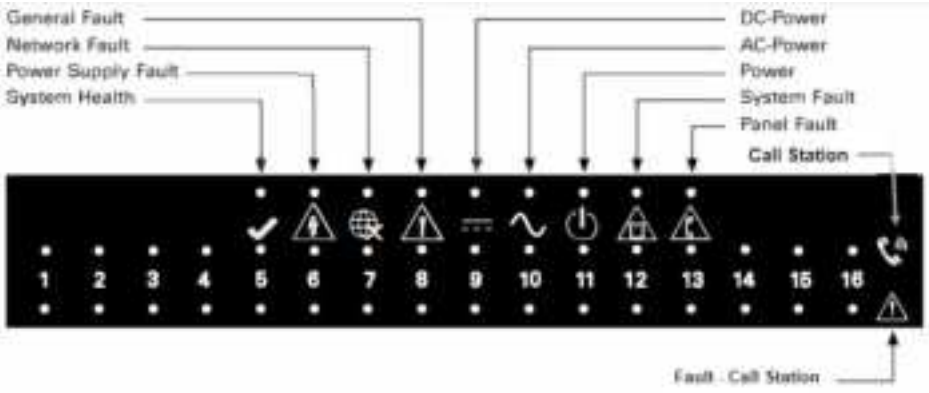


Figure 30. NX16US Front Panel Indicators

Table 17. MX16US and NX16US front panel LED indicators

LED Indications	Color	Interpretation
CALL - Indication (Panel)	Off	No Call
	Red – blinking	Out-going / In-coming call / Call on hold
	Green - blinking	Call in progress
CALL - Call Station (1-16)	Off	No call
	Red – blinking	Out-going / In-coming call / Call on hold
	Green	Call in progress
System Health	Blue	System is healthy
Power Supply Fault	Yellow	Fault in power supply unit
System Fault	Yellow	Failure of system self-diagnosis / internal fault
Panel Fault	Yellow	Any fault on panel
System Health	Blue	System is healthy
Power Supply Fault	Yellow	Fault in power supply unit
FAULT – Call Station (1-16)	Yellow	Fault on respective Call Station
Listen In	Green - blinking	Panel is in Listen In mode of conversation with Call Station
Loud Speak	Green	Panel is in Speaker Out mode of conversation with Call Station
CALL – Call Station (1-16) FAULT – Call Station (1-16)	Alternate blinking - all CALL LEDs (Green) - all Fault LEDs (Yellow)	Enable input active / In engineering mode indication on NX panel

Symbols and Descriptions

Table 18 provides a list of front panel LCD screen icons on the MX16US and their respective descriptions.

Table 18. MX 16US LCD Screen calling status symbols

Symbol	Interpretation
	Handset off hook
	Handset on hold
	Incoming call
	Call active
	Outgoing call
	Call cancel
	Call is disabled
	Menu icon
	Keypad icon
	Cover open
	Engineering mode

Audible indications - MX Panels

A buzzer is provided on the MX front panel to provide an audible signal in the event of the following:

1. **Fault Indication** – the buzzer sounds a fault tone when a fault is logged on the panel; the fault tone will repeat continuously until one of the following occurs:
   - The fault is corrected.
   - The fault is acknowledged; acknowledging the fault will silence the buzzer for 24 hours after which time, if the fault condition still exists, the buzzer will sound again.
2. **Call Indication** – The buzzer sounds when there is an incoming call.
3. **Dial Tone** - On lifting the handset to activate a call, the User will hear a dial tone as experienced with normal telephone service.
4. **Busy Tone** – If the called device is engaged in an active call, the calling device will hear busy tone.
5. **Hold Tone** – If an active call is placed on hold by a Main panel, the device will hear hold tone.

Call Station - Visual indications

Symbols are used to indicate the operation of Call Stations, making them language independent and simple for public use in case of emergency. LEDs are used to provide status of the Call Station and calls.

Table 19. Call Station Visual Indicators

LED Indications	Button	Color	Interpretation
Fault Indication		Yellow	Failure of system self-diagnosis / internal fault
Call Indication	Call Button	Red – blinking	Out-going call / In-coming call / Call on hold.
	Call Button	Green	Call is in progress.
	N/A	Off	No call

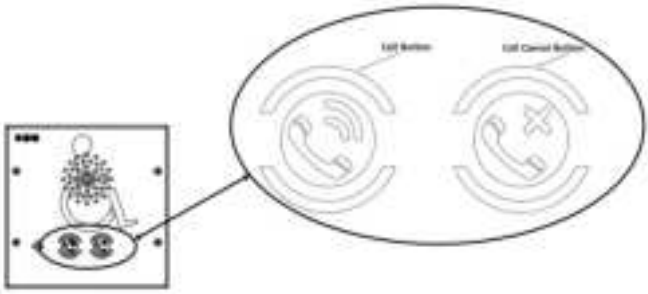


Figure 31. Call Station Visual LED Indicators

Call Station - Audible Indications

An audible sound is played at the Call Station to indicate an event:

Call Indication

- The speaker plays a ring tone when there is an incoming call

Cadence

- Upon pushing the Call button, the user will hear a cadence tone until the call is answered.

Busy Tone

- If the Main panel is actively engaged in a call, the Call Station's speaker will sound a busy tone.

Hold Tone

- If the Call Station's call is placed on hold by the MX panel, a hold tone will be heard on the Call Station's speaker.

Programming the VoCALL System

The following sections include steps and descriptions for configuring the MX, NX and Call Stations into the system, along with steps for viewing system status and logs.

Use the MX16US keypad to configure the system; press the **Back** or **ACCEPT** button as per the instructions, to save the configuration after each configuration's step.

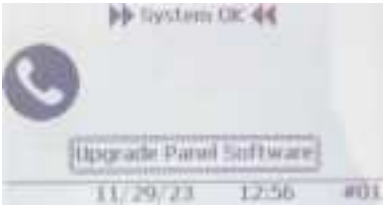
The process of configuring and setting parameters for the system is summarized below; instructions and detailed steps are provided in each section.

Table 20. Summary of Programming Steps

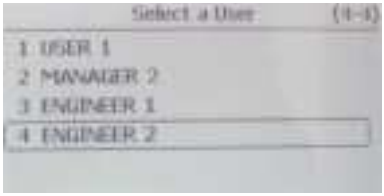
	Description	Specific Function
1	Getting Started	Verify wiring and Ethernet connections Power up the system and address system troubles Login to the MX 16US as ENGINEER 2; enter default password: 999999
2	Configure the MX 16US	Go to SETTINGS: a. Set the MX 16US as the main panel b. Assign the MX 16US a number c. SAVE the settings
3	MX 16US Call Station/System Learn	On the MX 16US: a. Perform a Call Station Learn (even if there are no Call Stations) b. SAVE the settings c. If the system includes an NX 16US, perform a System Learn
4	NX 16US Call Station Learn	On the NX 16US: a. Log into each NX 16US and perform a Call Station Learn b. SAVE the settings
5	MX 16US - System Learn	a. Perform a System Learn b. SAVE the settings
6	Verify the system is trouble-free	Resolve issues as needed; repeat steps 3, 4 and 5 after any changes
7	Set up the Gateway Dialer	Set up and configure the Gateway Dialer and Voice messaging; Refer to the VoCALL 16US 2-Way Emergency Communications System Installation and Operation Manual.
8	Configure User/SD Card/Auxilliary Relay and Text-to-Speech settings	Refer to the VoCALL 16US 2-Way Emergency Communications System Installation and Operation Manual.

Login to the System

1. Verify the system is installed properly and power has been applied; the AC power and the Power LEDs should both be illuminated green.
2. Upon power up, if there are faults in the system or if a previously configured system has been modified, the first screen to be displayed will indicate that faults will need to be accepted. If the system has no faults, the **System OK** screen will be displayed.

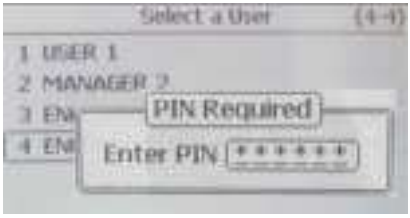


3. Select the down arrow; the *Select a User* screen will open.
4. On the *Select a User* screen, select **ENGINEER 2** and press the **ACCEPT** button; the *PIN Required* popup will appear.

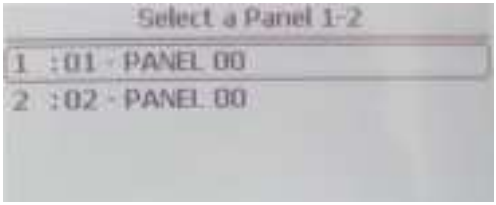


5. On the *Pin Required* popup, enter the **six digit default PIN** (999999) and press the **ACCEPT** button; the *Select a Panel* screen will open.

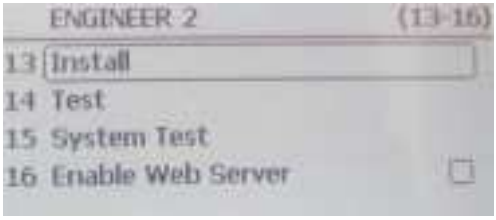
Note: Each user is required to change the default PIN after the first login; refer to the "Change PIN" section for instructions and requirements.



6. On the *Select a Panel* screen, select **01-PANEL 00** and press the **ACCEPT** button; the *ENGINEER 2* screen will open.

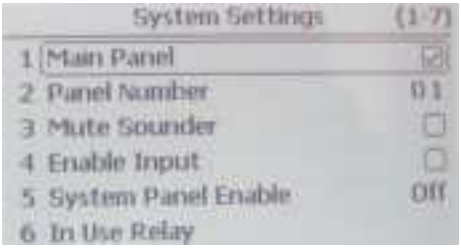


7. On the *ENGINEER 2* screen, scroll down and select **Install;** the *Install* screen will open.

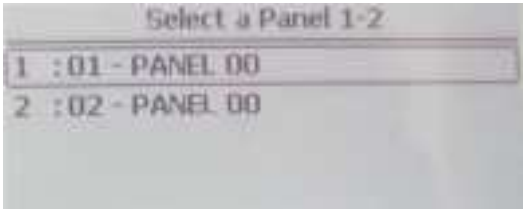


8. On the *Install* screen, select **System Settings;** the *System Settings* screen will open.

9. On the *System Setting* screen:
   a. **Check the box** to the right side of the **Main Panel** selection.



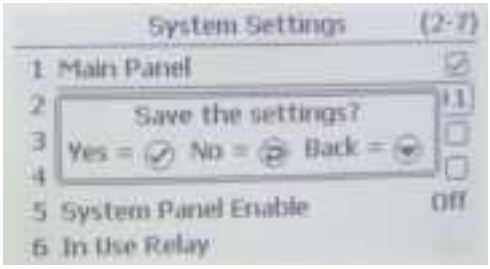
b. Scroll to **Panel Number** and press the **ACCEPT** button; input "01" to configure the Main Panel and then press the **ACCEPT** button.



Note: The Main Panel is assigned 01; when configured, NX panels are user configurable 2 through 10.

10. To save changes:

a. Press the **Back Arrow** button; a pop-up will open asking if changes should be saved.



b. Press the **ACCEPT** button to save the changes and return to the *Install* screen.

Set Display Settings

Brightness and Contrast

1. From the home screen, use the arrows and check buttons for the following:
   a. Navigate to the **Select a Panel** screen.
   b. Select the **panel 01** (Main Panel).
   c. Select **Display Settings**.
   d. Select **Brightness (or other listed options)**.

   e. Press the **check button** to adjust the selected option.
   f. Use **Up** / **Down** keys to select the optimum brightness/contrast level.
   g. Press the **check button** to ACCEPT the new setting.
   h. Press the **Back Arrow** button **to save** the settings.

Note: Screen brightness/contrast will change in real time while updating the value.

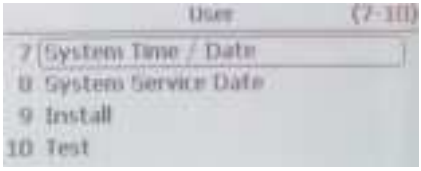
Set System Time/Date

The *Set Time and Set Date* values are set on the MX16US panel and are stored in the event log. All logs use the time and date information set by user.

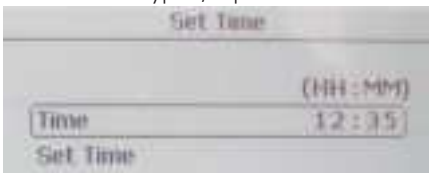
The Time, Date, Daylight Savings settings are common for the entire system and are maintained across the network.

Set Time

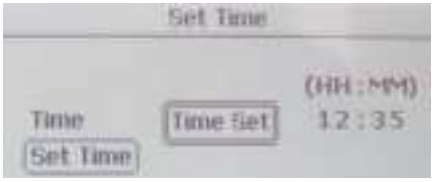
1. Navigate to the **USER** screen.
2. Select **System Time/Date**.



3. Select **Time,** press the **ACCEPT button** and the time numerals will be highlighted for change; using the numeral keypad, input the hours and minutes (HH:MM).



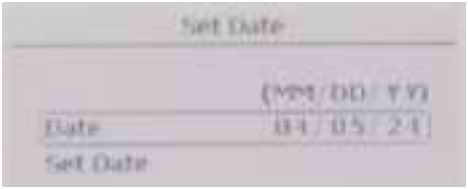
4. Press the **ACCEPT button,** arrow down to **Set Time** and press the **ACCEPT button** again; the time will be set.



5. Press the **Back** button to save the settings and return to the *System Time / Date* screen.

Set Date

1. On the *System Time / Date* screen, select **Date**, press the **ACCEPT button** and the date numerals will be highlighted for change; using the numeral keypad, input the date in the format shown (either MM:DD:YY or DD:MM:YY).

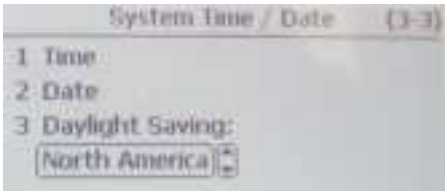


2. Press the **ACCEPT button,** arrow down to **Set Date** and press the **ACCEPT button** again; the date will be set.
3. Press the **Back Arrow** button to save the settings and return to the *System Time / Date* screen.

Set Daylight Saving (DST)

Available DST options: Off (default), New Zealand, Australia, North America, Europe, UK.

1. On the *System Time / Date* screen, select **Daylight Saving**, press the **ACCEPT button,** the current selected daylight savings zone will be highlighted for selection.



2. Using the up and down arrow buttons, scroll thru the DST zones and select the relevant DST zone as per the system's location.
3. Once a zone selection is identified, press the **ACCEPT** button, the DST zone will be set.
4. Press the **Back** button to save the settings and return to the *System Time / Date* screen.

User Configuration

The following types of access profiles are enabled on panel by default:

- USER 1
- MANAGER 1
- ENGINEER 1
- ENGINEER 2

ENGINEER 2 is the super user for the system. Other access profiles need to be enabled during configuration as per system requirements.

Note: The person responsible for maintaining the system is also responsible for maintaining the compliance with local regulations and standards.
Any deviation from the default profiles should be agreed by all parties and recorded in the maintenance, commissioning and hand over documents.

Access level 1 – Members of public.

Call Stations are readily available for use by members of the general public to initiate or receive a call; passwords are not required.

Available functionality - Start and end a call

Access level 2 – Authorized access to operate the system by person specified as USER and has been trained by an installer or authorized commissioning technician.

The MX panel provides an authorized person (such as ENGINEER 2) to configure USER permissions for specific features such as the key lock to restrict usage of the Main panel's handset and the requirement of a 6-digit PIN to access the system controls.

Up to five (5) USER profiles can be configured into the system; the default USER profile includes the following permissions:

- Start and end a call – to give assistance to a member of the general public
- View Event Log
- View Fault Log
- View Call Log
- Change PIN
- Silence sounder

Note: By default, the USER profile does not have permission to clear faults.

Note: Accepting Faults by a USER will silence the buzzer for twenty four (24) hours. If the fault is not corrected in 24 hours, the buzzer will sound again. If a new fault is activated within 24 hours the buzzer will be immediately activated again.

Access level 3 – MANAGER Profile

The system can store up to three (3) MANAGER profiles, This level can authorize access for specific users and should be trained to maintain the system. This level allows basic fault finding and system maintenance; a 6-digit PIN is required to access the system controls.

Default functionality for the MANAGER profile includes:

- Start and end a call.
- ACCEPT Faults
- View Event Log
- View Fault Log
- View Call Log
- Change PIN
- Display Settings
- Silence sounder

Note: Accepting system faults by a MANAGER will clear the fault from the current faults list. It is recommended that faults are accepted by a MANAGER only after they have been corrected.

Access level 4 - Authorizes access for person who is specified as ENGINEER and is trained and authorized by manufacturer to install, service, configure the system and update software, thereby changing the system's basic mode of operation. The ENGINEER profile requires a 6-digit PIN to access the system controls.

The system can store up to two (2) ENGINEER profiles.

Default functionality for the ENGINEER profile includes:

- Start and end a call
- Perform system tests
- Remote Access (only on Main panel)
- ACCEPT Faults
- View Event Log
- View Fault Log
- View Call Log
- Manage Users
- Change PIN
- Display Settings
- System Time / Date
- System Service Date
- Install
- Test
- System Test (only on Main panel)
- Web Server Enable (only for ENGINEER 2 login)

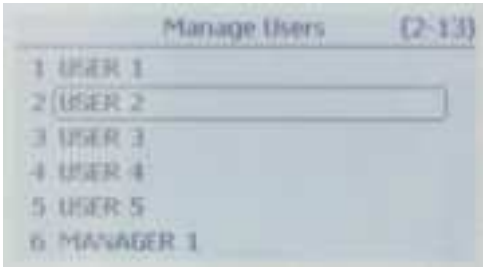
Note: Accepting system faults by ENGINEER would clear the fault from current faults list. It is recommended that faults are accepted by ENGINEER only after they have been corrected.

Configure Access Profiles

The VoCALL16 system allows flexibility for changing the default functions available to each individual profile. The access level of each profile can be configured to assign functionality or restrict functionality as needed for specific users.

1. Login with appropriate credentials and scroll to **Manage Users** and press the **ACCEPT** button.

2. Select the profile to be enabled and press the **ACCEPT** button.



3. Scroll to **ENABLED** and click the check box; press the **ACCEPT** button and then use the **Back arrow** button to save the settings.

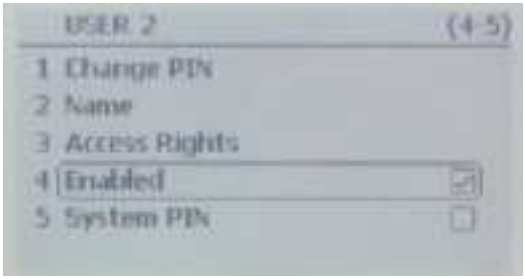


Table 21. Available Access Rights

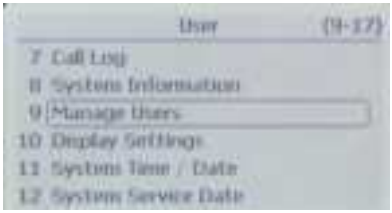
Access rights	Permission to
Remote Access	Access information of other panels on the network by allowing remote access. This option is valid for a networked system. This feature is available only on the Main panel of the network. It enables network monitoring and configuration from a single point.
ACCEPT Faults	Clear the faults from active faults log. Faults should be cleared from active log once they are resolved.
Event log	View event log of the panel
Fault log	View fault log of the panel
Call log	View call log of the panel
Manage User	Enable, modify access rights and PIN for all access profiles excluding ENGINEER 2
Change PIN	Change PIN
Display Settings:	View / modify display related settings.
System Time/Date	Set / update time, date, DST settings for the network.
System Service Date	Set service date for the network.
Install	Access Install menu and configure the system
Test	Run diagnostic tests on the panel
System test	Run LED test on all panels of network.
Enable Web Server	Enable access of device/network by a web browser

Note: When changing default access rights for any profile, exercise caution. As a best practice to enhance security, ensure minimum rights required are enabled for any user of the system.

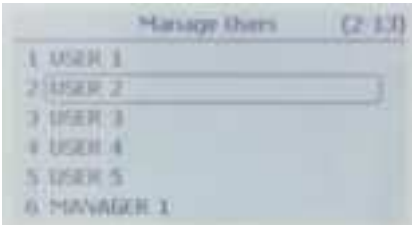
Configure Access Rights

VoCALL 16 facilitates configuring access profile individually as per user's requirement. Steps to configure any profile:

1. Login with appropriate credentials and go to **Manage Users** and press **ACCEPT**.



2. Select the profile to be configured and press **ACCEPT**.



3. Go to **Access Rights** and press **ACCEPT**.

4. Click or unclick the boxes to select/de-select the features for the selected profile.

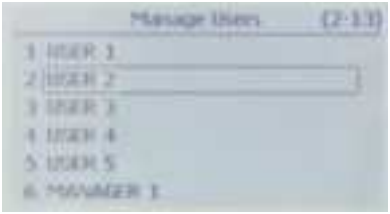
5. Use the **Back arrow** button to save the settings; a pop-up will appear confirming the changes have been saved.

Changing a Name

A unique user can be assigned to profiles.

1. Login with appropriate credentials and go to **Manage Users** and press **ACCEPT**.

2. Select the profile to be configured and press **ACCEPT**.

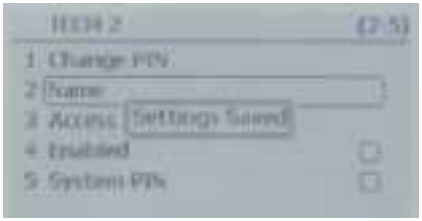


3. Go to **Name** and then press **ACCEPT**.

4. Use the front panel buttons to change the name as follows.
   a. Press the **ACCEPT** button to **highlight the first character** in the name.

   b. Use the **up and down arrow** buttons to scroll thru letters.
   c. Press the **ACCEPT button** when the correct letter appears; the letter will no longer be highlighted
   d. Press the **up and down arrow** buttons to move to the next character to the left or right.
   e. Repate the above steps until all characters in the new name are changed.
   f. Press the **up and down arrow** buttons to scroll to the **Save** option.

   g. Press the **ACCEPT** button to save the name changes; a **Settings Saved** pop-up will momentarily appear to confirm the new name has been saved.



Note: Character set permissible: A-Z, 0-9 and blank.

Note: Max character length for the name is 16 characters.

Change PIN

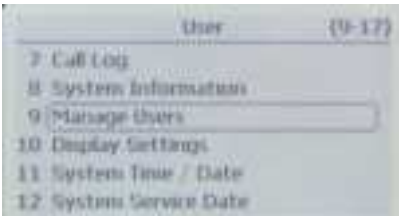
Note: Each user is required to change the default PIN after the first login.

The PIN must meet the following requirements:

- Must be 6 digits in length
- Must be different from last 5 PINs used
- Cannot be the default PIN
- Cannot be a pattern (example 111111 or 123456)

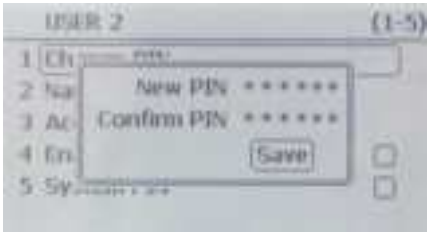
Steps to change the PIN:

1. Login with appropriate credentials and go to **Manage Users** and press **ACCEPT**.

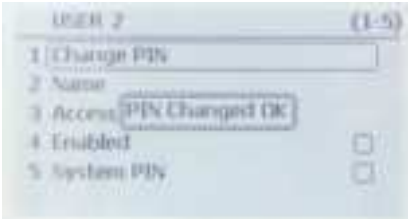


2. Select the profile for which PIN is to be changed and press **ACCEPT**.

3. Select **Change PIN** and enter a unique 6-digit PIN in the **New PIN** line; enter the PIN again in the **Confirm PIN** line.



4. After entering and confirming the PIN, press **ACCEPT** a pop-up will appear confirming the changes have been saved.



Once the user profile has been configured with the required permissions, that profile user can change their own PIN by logging into their profile and following the steps above.

Disable PIN

The VoCALL 16 system provides the ability to globally disable the PIN requirement, thereby allowing all users the ability to log into the system and execute modifications.

By default, PINs are enabled for all users. It is recommended that a PIN be required for access to the VoCALL 16 System. When disabled, PINS for all login profiles are no longer required. Disabling the PIN requirement will result in providing all profile users access to all configuration features of the system along with the ability to modify user and system parameters.

When system access PINS are disabled, the authority maintaining the system will be responsible for providing adequate security measures to ensure that no unauthorized person would be allowed to interact with the system. Check local regulations and standards in regard to access security.

DISABLE PIN - NOT RECOMMENDED

⚠ CAUTION

Unchecking the PIN Required box on the *Manage Users* screen disables the requirement for a user to input a PIN when logging into the VoCALL 16 System.

When PINs are disabled, the authority maintaining the system will be responsible for providing adequate security measures to ensure that no unauthorized person would be allowed to interact with the system. Prior to disabling the PIN requirement feature, check local regulations and standards in regard to access security.

It is highly recommended that a PIN be required for each user; disabling the PIN requirement should be recorded as a deviation to system practices.

PIN Required - Enable/Disable

The *PIN Required* option provides the ability to globally enable (or disable) the requirement for all users to input a PIN when logging into the system.

Follow the steps below to verify the status of the **PIN Required** option:

1. Login with appropriate credentials and go to **Manage Users** and press **ACCEPT**.
2. Scroll to **PIN Required** and verify status of the option:
   - Box Checked - All users will be required to input a PIN when logging into the system
   - Box Unchecked - Any user can log into the system for access to their respective rights.

   a. If no changes are necessary, use the **Back arrow** button to return to the previous screen.

   b. If changes are needed, press the **ACCEPT** button to check (or uncheck) the **PIN Required box** as appropriate and then use the **Back arrow** button to save the setting; a pop-up will appear confirming the changes have been saved.

USER Lockout

A user's account will be locked after a set number of unsuccessful login attempts. While configuring the system, ENGINEER 2 can set by the number of unsuccessful attempts from 1 to 10.

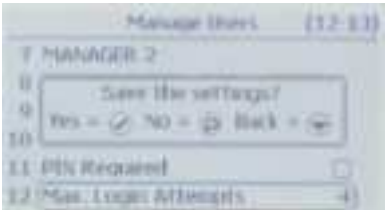
Default value of attempts: **5 tries**; after 5 tries, the user will be locked out of the system for 10 minutes.

Steps to configure login attempts:

1. Login with appropriate credentials and go to **Manage Users** and press **ACCEPT**.

2. Go to **Max Login Attempts** and press **ACCEPT**.

3. Use the up/down arrow buttons to select the number of **Max Login Attempts** (range of 1 – 10) and then press **ACCEPT**; a pop-up will appear confirming the changes have been saved.



PIN Recovery

In the situation where the **ENGINEER 2** access profile PIN has been forgotten or lost, the PIN can be recovered by using steps below:

1. Press the four (4) navigation keys simultaneously - **BACK, UP, DOWN, ACCEPT**; a code will be displayed.
2. Call Technical Support and provide them the displayed code.
3. Technical Support will provide a unique access code to be entered into the system.
4. Enter Tech Support's access code on the PIN Recovery screen and enter a new PIN.

Note: While the PIN recovery process is taking place, the system can be used with the existing values for all existing system parameters and calling scenarios.

Configuring the MX16US Panel

Call Station Learn

The learning and auto-addressing of Call Stations connected to the Main Panel must be performed even if the Main Panel has no Call Stations connected.

The *Call Station Learn* process must be performed whenever a Call Station has been added, removed or replaced in an existing system for any panel or if any details are changed for a Call Station.

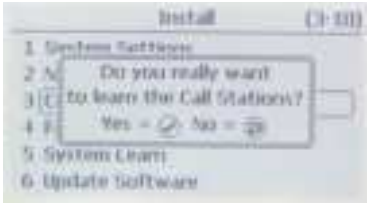
Note: Verify the list of Call Stations match those installed in the system; make a note of unidentified Call Stations for troubleshooting after the system configuration is complete.

Note: If wiring is not correct, the number of Call Stations detected will be incorrect. Fault log / learn status can be referred to identify the problem. After fixing the issue, perform the Call Station Learn process again.

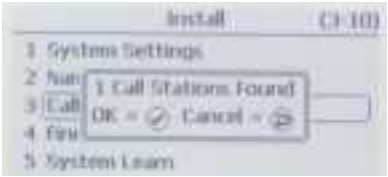
Note: Ensure all Call Stations have same software version.

1. Login with appropriate credentials and navigate to **Select a Panel**; select the **01: Panel 00** for the MX16US and then navigate to **Install.**

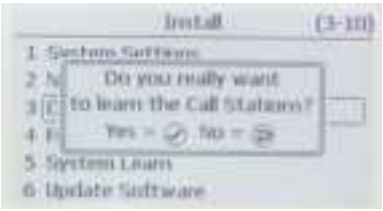
2. On the *Install* screen, scroll to **Call Station Learn** and press the **ACCEPT** button; a confirmation pop-up will open.



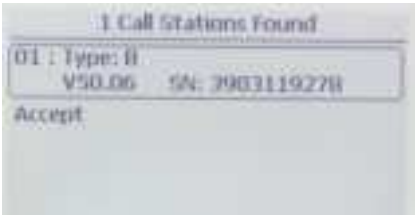
3. On the confirmation pop-up, press the **ACCEPT** button; the panel will detect the number of Call Stations found in the network and a confirmation pop-up will open.



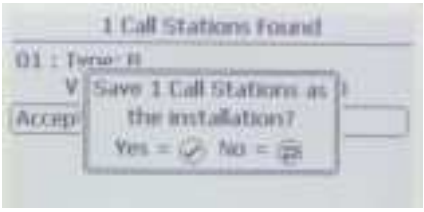
4. On the confirmation pop-up, press the **ACCEPT** button; a *Learn Call Stations* confirmation pop-up will open.



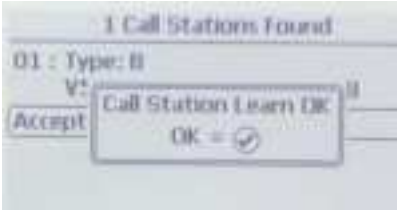
5. On the confirmation pop-up, press the **ACCEPT** button; a list of Call Stations found on the network will be displayed identifying each Call Station's ID, software version and serial number.



6. On the *Call Stations Found* screen, scroll down to **ACCEPT** and then press the **ACCEPT** button; the *Save Call Stations* pop-up will open.



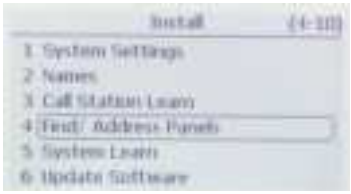
7. On the *Save Call Stations* pop-up, press the **ACCEPT** button to acknowledge that Call Stations have been learned to the System; the Call Station Learn process is complete and the display will return to the Install screen.



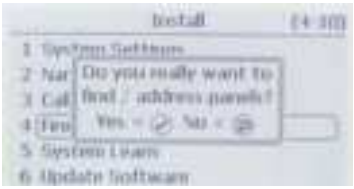
Find and Address Panels

After all Call Stations have been found, learned and saved to the system, the next step is to find and assign an address to all NX16US panels on the network.

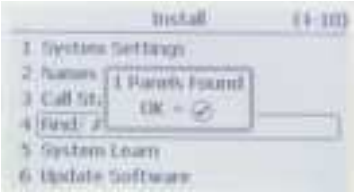
1. Login with appropriate credentials and navigate to **Select a Panel**; select the **01: Panel 00** for the MX16US and then navigate to **Install.**



2. On the *Install* screen, scroll to **Find/ Address Panels** and press the **ACCEPT** button; a confirmation pop-up menu will open requesting to find/address all panels.

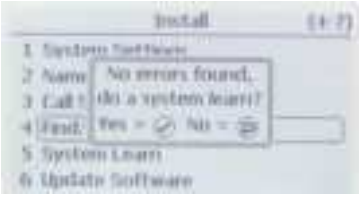


3. On the confirmation pop-up menu, press the **ACCEPT** button; another pop-up menu will open indicating the number of active panels in the network; press the **ACCEPT** button again.

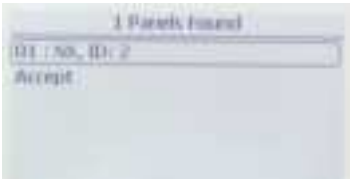


Note: If no faults were identified in the system, a pop-up menu will open indicating no faults were found. If the system identified faults, the faults must be resolved and then the *Find/ Address Panels* process must be started again.

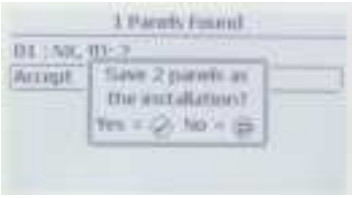
4. If the *No Faults* pop-up opens, press the **ACCEPT** button; a *Panels Found* screen will open identifying the (NX16US) panels found in the system along with their respective addresses.



5. On the *Panels Found* screen, scroll down to *ACCEPT* and then press the **ACCEPT** button; a confirmation pop-up menu will open requesting to save the panels into the network configuration.



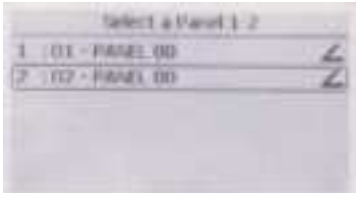
6. On the confirmation pop-up menu, press the **ACCEPT** button; the *Updating System Information* screen will open and show progress as the system updates with the panel information.



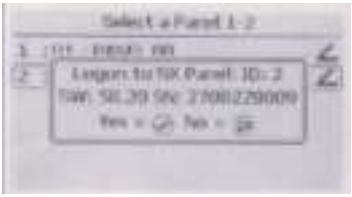
7. On the *Updating System Information* screen press the **ACCEPT** button when the progress bar indicates the system has updated 100%; the display will return to the *Install* screen.

Configuring the NX16US Panel

1. Login as **Engineer 2** and navigate to *Select a Panel* and then scroll to highlight one of the NX panels and press the **ACCEPT** button; a *Logon to NX* pop-up will open.

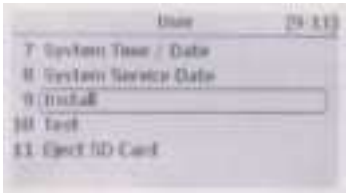


2. On the *Logon to NX* confirmation pop-up, press the **ACCEPT** button; the *User* screen will open.



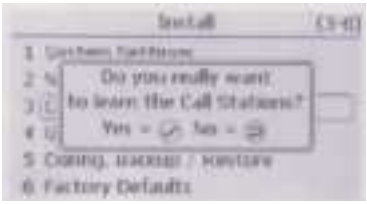
Note: The selected panel being accessed will be placed in engineering mode during the entire period. The NX panel LEDs will blink alternatively to indicate the panel is in engineering mode.

3. On the *User* screen, scroll down and select **Install** and then press the **ACCEPT** button; the *Install* screen will open.

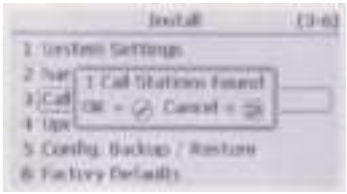


4. On the *Install* screen, scroll down and select **Call Station Learn** and then press the **ACCEPT** button.

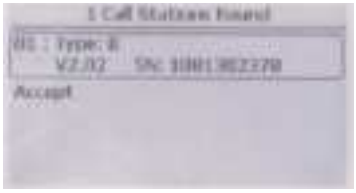
5. On the *Do you really want to learn the Call Stations* confirmation pop-up, press the **ACCEPT** button.



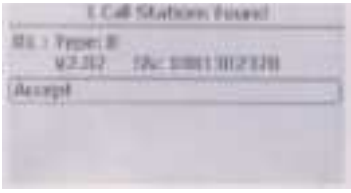
6. A *Call Stations Found* confirmation pop-up will open; press the **ACCEPT** button.



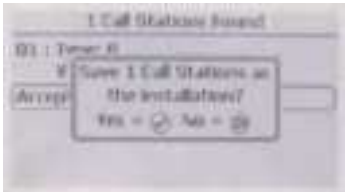
7. The *Call Stations Found* screen will open displaying all Call Stations found on the selected NX panel.



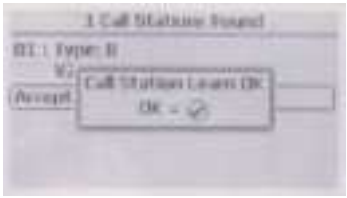
8. Scroll down to the *Accept* box and then press the **ACCEPT** button.



9. On the *Save Call Stations* confirmation pop-up press the **ACCEPT** button; the *Call Station Learn OK* pop-up will open.



10. On the *Call Station Learn* OK confirmation pop-up press the **ACCEPT** button to learn the Call Stations; the Call Station Learn process is complete and the display will return to the *Install* screen.



Note: The Call Station Learn process must be performed whenever a Call Station has been added, removed or replaced for any MX or NX panel or when any parameters are changed for a Call Station.

Note: An error message will be displayed if the Call Station Learn process is not successful due to any failure – e.g.: No Call Station connected, Loop break etc. The fault must be resolved and the Call Station Learn process must be started again until successful.

Note: If wiring is not correct, the number of Call Stations detected will be incorrect. After resolving the issue, perform the Call Station Learn process again.

Note: Ensure all Call Stations have the same software version.

Note: Verify the list of Call Stations match those installed in the System; make a note of unidentified Call Stations for troubleshooting after system configuration is complete.

Note: At least one Call Station must be connected to the NX16US panel for the Call Station Learn process to be successful.

System Settings

The *System Settings* menu, located on the *Install* menu for both the MX16US and each NX16US panel, provides the User the ability to configure and customize parameters for each panel. Refer to Table 22 for a summary of optional panel settings.

Table 22. System Settings

System Setting	Description
Main Panel	Identifies the MX16US
Panel Number	Set/modify the selected panel's ID/dialing number (MX or NX)
Mute Sounder	When enabled, silences the audible alarm on a selected panel
Enable Input	Not supported in the VoCALL 16US System
System Panel Enable	Not supported in the VoCALL 16US System
In Use Relay	Normally open; closes when any call is active or in progress
Fault Relay	Normally closed; opens on any fault event or trouble condition

Set Panel ID

The Panel ID for the MX16US was set during the early steps of commissioning however, the Panel ID can be modified as necessary, along with the Panel IDs for any NX16US in the network.

The Panel ID identifies the dialing number that is assigned to a panel, the Panel ID is selectable between 1 and 10. The default value is 01.

A panel's dialing address is XX00, where XX is Panel ID. A Call Station's dialing address is XXYY; where XX is Panel ID and YY is Call Station ID.

Refer to the *"System Settings"* for display screens and menu selections.

1. Login with appropriate credentials and navigate to **Select a Panel**.
2. Scroll to select a panel to change the Panel ID and press the **ACCEPT** button; the *User* screen will open.
3. On the *User* screen, scroll down and select **Install;** the *Install* screen will open.
4. On the *Install* screen, select **System Settings;** the *System Settings* screen will open.
5. On the *System Settings* screen:
   a. Scroll to **Panel Number** and press the **ACCEPT** button; the panel ID numbers on the right side of the screen will flash.
   b. Use the arrow keys to modify the numbers to reflect the new Panel ID and then Press the **ACCEPT** button; the numbers will no longer flash.
   c. Use the **Back Arrow** button to save changes and return to the *Install* screen.
6. Perform a System Learn, described in the "System Learn" section to input the new Panel ID into the MX16US.

Mute Sounder

When enabled (box checked), the Mute Sounder option provides the ability to mute the audible sounder/buzzer on a selected (MX or NX) panel. The setting must be configured independently for each panel.

MUTE SOUNDER - NOT RECOMMENDED

⚠CAUTION

Checking the Mute Sounder box on the System Settings screen silences the audible sounder/buzzer on the selected MX and NX panel.

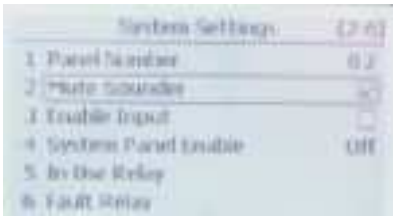
When the Mute Sounder is enabled, the authority maintaining the system will be responsible for providing adequate measures to ensure that the system meets and local, regional or national audible requirements.

It is highly recommended that the Mute Sounder be configured as disabled unless used during maintenance periods. If the Mute Sounder is enabled, it should be recorded as a deviation in normal operational procedures.

It is not recommended to mute the audible sounder/buzzer. If the Mute Sounder is enabled, it should be recorded as a deviation in normal operational procedures.

As an alternative, user's have the ability to silence the sounder/buzzer for 24 hours by accepting the faults on the panel / system.

1. On the *Select a Panel* screen, scroll to select the panel to mute the sounder/buzzer and then press the **ACCEPT** button; the *User* screen will open.
2. On the *User* screen, scroll down and select **Install;** the *Install* screen will open.
3. On the *Install* screen, select **System Settings**; the *System Settings* screen will open.
4. On the *System Settings* screen:
   a. Scroll to **Silence Sounder** and press the **ACCEPT** button; when checked, the box to the right of the screen will enable the mute option. Uncheck the box to disable the option.



   b. Use the **Back Arrow** button to save changes and return to the *Install* screen.

Enable Input

Enable Input is a reserve-use option; it is not supported in the VoCALL 16US System.

The Input connection allows the system to be in a non-operational mode until it receives an input. Local regulations shall be adhered to when using the Input. The panel is supplied in an operational state.

Note: The Enable Input option is not supported on the VoCALL 16US System.

In Use and Fault Relays

The VoCALL 16 panel provides the option to configure an event that will activate the two relay outputs on the MX16US:

- **In-Use:** The default state of the In-Use relay will change state when the panel is on an active call. The In-Use relay should be connected to the fire alarm control unit's trouble input to signal off-premise that there is a request for assistance at the protected premise.
- **Fault:** The default state of the Fault relay will change state upon the occurrence of any fault. The Fault relay should be connected to the fire alarm control unit to signal off premise when the VoCALL system is in trouble.

1. On the ***Select a Panel*** screen, scroll to select the panel and then press the **ACCEPT** button; the *User* screen will open.
2. On the *User* screen, scroll down and select **Install;** the *Install* screen will open.
3. On the *Install* screen, select **System Settings**; the *System Settings* screen will open.
4. On the *System Settings* screen:
   a. Scroll to **In Use Relay (or Fault Relay)** and press the **ACCEPT** button; when checked, the box to the right of the screen will enable the relay option. Uncheck the box to disable the option.
   b. Use the **Back Arrow** button to save changes and return to the *Install* screen.

Note: Verify proper wiring has been connected between the relay connections and the FACP.

Calling Operation

General Calling Information

If an MX16US or NX16US panel is in engineering mode, calls cannot be made to or from that panel. Any Call Station connected to a panel in engineering mode cannot be accessed as long as engineering mode is active.

There are two (2) types of calls allowed on the VoCALL 16 system :

- Calls from the Main panel to any Call Station.
- Calls from any Call Station to the Main panel.

Note: Calls between two Call Stations are not supported.

General information:

- Call Stations can call the Main panel with a one-step operation by pressing the **Call** button.
- The Main panel can call any Call Station by dialing its number as described in the "Dial Address" section.
- To provide reassurance to the caller, a dial/cadence tone will be played by the Panel; a busy tone will be played if another call is already in progress.
- The system allows one active voice call on the system at a particular time.
- The Main panel can cancel an active call or place an active call on hold to answer another incoming call or a reconnect call from its list of calls already on hold.
- Call log: The Main panel logs all calls.
- When a Gateway Dialer enabled, if a call is not answered using the handset on the MX, the Gateway Dialer will then call the pre-programmed off-premise emergency phone number. Once the off-premise phone is answered, the MX will play the Call Station's recorded location message. After the message plays, a two-way voice call is automatically established between the Call Station and off-premise personnel.

Making a call from a Call Station

Call Stations can initiate a call by pressing the **Call** button on the front of the unit.

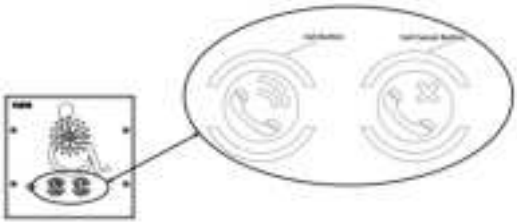


Figure 32. Call Station Buttons

Receiving a call at a Call Station

Personnel at a Call Stations can accept/receive a call by pressing the **Call** button on the front of the unit.

Ending a call from an Call Station

Personnel at a Call Stations can end a call by pressing the **End Call** button on the front of the unit.

Dial Address

The dial address for each of the units on the network consists of 2 pairs of numbers, each consisting of 2 digits as indicated below.

- The first pair of digits is the panel number; panel numbers range from 01 - 10.
- The second pair of digits is the Call Station number; Call Station numbers range from 01 - 16.

Figure 33. Dialing address

Example: To initiate a call from the MX16US to Call Station #5, dial **0105.**

Receiving a call at the MX16US handset

The MX16US handset is used to answer Call Station calls; when the handset is on the hook the Main panel will beep and the name of the calling Call Station will appear on the display. The operator can then lift the handset and connect to the Call Station.

If more than one line is calling, all calling lines will be shown in the display and can be scrolled through with the navigation buttons. The selected call can then be answered by pressing the **ACCEPT Call** button located on the right-side of the Panel. Only one call can be active at a time; while one call is active, additional calls will be in the incoming or hold state.

Making a call from the panel handset

Lift the handset on the MX, enter the **Dial Address** on the keypad (Panel ID and CS number) and then press **ACCEPT Call**, the line will connect automatically when the Call Station's call button is pressed.

Ending a call at panel handset

An active call can be ended by placing the handset in the cradle. If multiple calls are present on the panel, either incoming or hold calls, then the active call can be ended by pressing the **End Call** key on panel. The next call can then be selected from the list using the **ACCEPT Call** key.

Holding the call

One active call is supported on the system at any particular time. When a panel is active on a call, any other incoming calls get added to the call list. The User can decide to cancel or put on hold the active call to respond to next call.

A call can be put on hold by pressing the **Hold Call** key and then the User can navigate the call list to select another call. When a new call is selected, press the **ACCEPT Call** key to start the conversation.

To initiate a call from Panel while other calls are placed on hold press **Back** key and then dial the number to be called.

Refer to Table 10 for a list of front panel LCD screen icons and their respective descriptions.

Listen-In call

Listen-in call is a one-way call to a Call Station. It allows the MX16US to listen to the audio from the selected Call Station.

1. Dial the number of the Call Station and press **Listen-In** to start the call; the CALL LED on the Call Station will illuminate to indicate an active call.
2. Press **Cancel** or replace the handset to end the call.

Saving/Restoring a System Configuration

VoCALL 16 enables the Main panel (MX16US) to save configuration parameters of a system or a particular panel as a record. A saved configuration can be installed to restore the system to a previous configuration version. Configuration files are stored on an SD card.

Refer to Table 23 for a list of settings when performing a *System Config.Backup*.

Saving the system configuration to an SD Card

1. Login with appropriate credentials and go to **Install** and press **ACCEPT**.
2. Go to **Config. Backup/Restore** and press **ACCEPT**.
3. Select **Config. Backup** to create a backup file for the panel and then press **ACCEPT**.
4. The panel will create and store the configuration file on the SD card. The filename will be date and time stamped.
5. Select **System Config. Backup** on the Main panel to create a backup of the complete system.

Note: It is recommended to save the configuration to an SD Card once the installation and configuration is complete or when any changes are made to system settings.

Note: The configuration file will be required when opting to view logs stored on an SD card using log viewer.

Restoring the system configuration from an SD Card

A previously saved configuration file can be used to restore the system configuration to an earlier state. This can help in saving installation time when any panel or Call Station is replaced.

The current system and the configuration to be restored must be an exact one-to-one replacement of network devices (MX, NX and Call Stations). An error will be reported if the quantity of devices or types of devices are different from the time the configuration was saved.

Restoring specific parameters

1. Login with appropriate credentials and go to **Install** and press **ACCEPT**.
2. Go to **Config. Backup/Restore** and press **ACCEPT**.
3. Select **Config. Restore** and press **ACCEPT**.
   a. **Select a configuration file** to load specific parameters from and press **ACCEPT**.
   b. Select the parameters to restore. The panel will undergo a power cycle once the restore process is completed.
4. The system will provide a notification upon successful completion of the restore process or if there were any errors encountered.
5. Perform system / Call Station learn operation after restoring the configuration file.

Restoring a complete system configuration

1. Login with appropriate credentials and go to **Install** and press **ACCEPT**.
2. Go to **System Config. Restore** and press **ACCEPT**.
3. **Select a configuration file** to load onto the Main panel and press **ACCEPT**; the panel will undergo a power cycle once the restore process is completed.
4. The system will provide a notification upon successful completion of the restore process or if there were any errors encountered.
5. Perform system / Call Station learn operation after restoring the configuration file.

Factory Defaults

A full or partial restore of the MX configuration parameters is available when restoring default factory settings.

Steps to restore parameters back to factory defaults are listed below:

1. Login with appropriate credentials and go to **Install** and press the **ACCEPT** button.
2. Go to **Factory defaults** and press the **ACCEPT** button.
3. Select the parameters to be restored to the default value(s).
4. Go to **Restore** and press the **ACCEPT** button.
5. The MX16US will undergo a reboot after parameters are restored to default values.

System Logs

Events occurring in the system are time stamped, recorded and stored in local RAM on the MX16US and if the SD Card is installed in the panel, the logs will be auto saved to the card.

Information is logged and categorized in groups:

- Call Logs
- Fault Logs
- Event Logs

Call logs

VoCALL 16 provides detailed information for all the calls processed by the system.

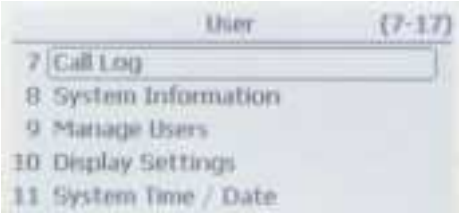
Calls are logged and recorded in the Call Log with the date and time stamp. The log includes the call originator, called number and type of occurrence, such as start or end call. Refer to Table 24 for an example of states and descriptions.

Table 23. Call Log states and descriptions

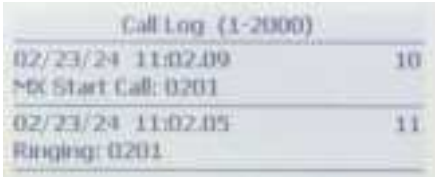
State	Description
On Hook - CS	Call has been disconnected by CS
Off Hook - CS	Handset has been lifted / Call button pressed.
Ringing	Call has been initiated. It is not yet received on the other end.
CS/MX Start Call	Call has been initiated. The log will record the entity starting the call.
CS/MX End Call	Call has been terminated. The log will record the entity ending the call.
Dial Number	Call Station calling number dialed by panel.
Listen-in	MX has initiated call with a CS in listen-in mode. No action is required by CS for this call. It helps in listening to a CS surroundings
Loud-speak	MX has initiated call with CS in Speak Only mode. No action is required by CS for this call. This would be useful to broadcast information. This call is possible only with one CS one at a time.
Hold - start/end	Call has been put on hold by panel.
Network error	On going call ended due to fault with network, audio recovery was not possible.
Call Timeout	Call from Call Station has not been answered within specified time.

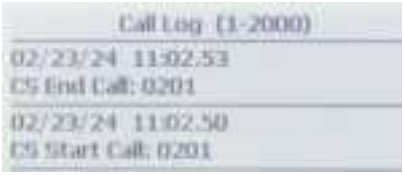
The Call Log examples below display calls between the MX16US and CS01 (CS01 is connected to NX02)

1. Navigate to **Call Logs** to view the Call logs.

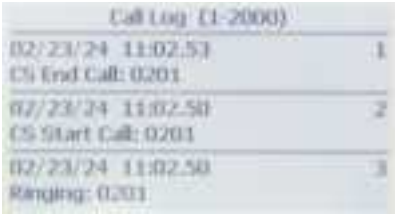


2. MX16US panel calls CS01; call is ended by the panel.

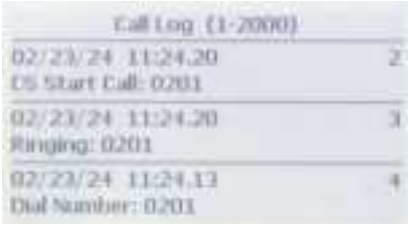


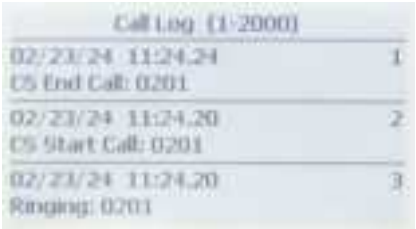


3. CS01 calls the MX16US and the call is ended by the Call Station.



4. MX16US calls CS01; call is ended by the Call Station.





Fault logs

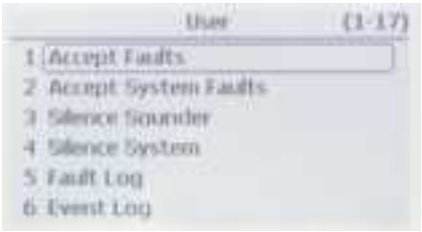
All faults occurring on the system, including those on an MX, NX or Call Stations, are logged and recorded with the date, time stamp and type of fault.

Current faults can be viewed on the *ACCEPT Fault* screen, whereas all active and resolved faults can be viewed on the Fault Log.

Refer to the "APPENDIX 2" for a partial list of faults including their descriptions and associated resolutions.

View Current Faults

1. On the User screen select **ACCEPT Faults** and press the **ACCEPT** button; a list of faults currently in the system will be displayed.



Clear a Current Fault:

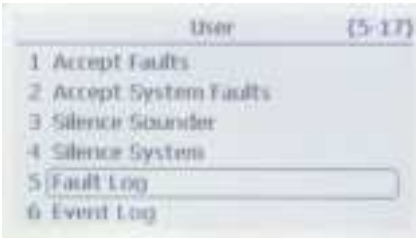
For non-latching faults, such as a Power short on CAN lines or Battery faults, once the fault is resolved, it will immediately be removed from the *Accept Faults* list.

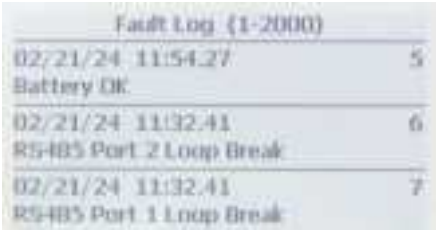
To clear all other faults:

1. Resolve the fault(s).
2. Navigate to **Accept System Faults** and press the **ACCEPT** button; the resolved fault will be cleared from the list, any fault still on the system will continue to be displayed.

View All Faults (current and resolved)

1. Navigate to Fault Logs; a list of up to 2,000 current and previous faults will be displayed.

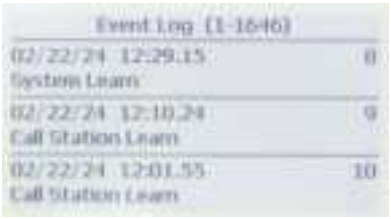




Event log

All events occurring In the system, including those on an MX, NX or Call Station, are logged in the *Event Log* and the date and time stamp is recorded.

1. On the *User* screen, scroll to select **Event Logs** and press the **ACCEPT** button; a list of faults currently in the system will be displayed.



Note: Logs are saved periodically on SD Card if it is installed in the MX16US. Saved logs can be retrieved by using a PC and SD card reader.

Note: The SD Card Explorer application, pre-loaded on the SD card, is provided to enable the user to read the log files on a desktop. The application is stored on the SD card in the RELEASE folder.

Update Software/Update System

Software updates shall be performed by the technician responsible for the system. Contact Technical Support for the most recent release of software files.

Note: Proper operation of the VoCALL system requires that all devices on the network, including the MX16US, all NX16US panels and Call Stations, be loaded with the same software version.

SYSTEM UPDATE- RECOMMENDED PROCESS

⚠ CAUTION

It is highly recommended that all software updates are performed utilizing the *System Update* option.

The *System Update* process provides for a more streamlined method of updating all device types simultaneously without omitting any specific devices which would result in fault conditions.

There are two (2) types of software that are available for updating (Panel software and Call Station software) and there are two (2) methods of updating software.

Update Software: The system user selects a specific device for software update.

Update System: All devices in the network, including all the panels (MX16US and NX16US panels) or all Call Station(s) will be updated. The time required to update the entire installation depends on the size of installation; networks with a large number of panels and Call Stations may require an extended amount of time to update.

Prior to upgrading the network or any specific devices on the system, verify the following:

- Run a **System Config Backup** before updating software refer to the "Saving the system configuration to an SD Card" section.
- No active Network faults
- No Active calls in progress
- The SD card with the most recent released software files is installed in the MX16US

Update Software

The *Update Software* option will update the selected panel software or the selected panel's associated Call Stations. It is important to follow a specific sequence, summarized below, when upgrading software to network devices:

Note: Identify the internal addresses of each NX16US in the network as listed in the configuration

Note: When upgrading NX16US panels and their respective Call Stations, the process must start with the panel and its associated Call Stations closest to the MX16US; once the closest panel and its Call Stations are updated, then move on the next closest NX16US and its Call Stations. Continue until all devices are properly updated.

Note: During the Update Software process, the selected panel will be put in **Engineering Mode** and no calls will be processed through that panel.

Sequence summary for updating SW:

- Call Stations attached to a panel should be updated first.
- The panel should be updated immediately after updating its associated Call Stations.

Software update sequence:

Follow the steps below to select and update individual network devices:

1. Verify the latest version of software has been loaded onto the PC/laptop.
2. Log into the panel to be updated and navigate to the **User** screen and then scroll down to **Eject SD Card**; press the **ACCEPT** button.

3. Carefully remove the SD Card from the Main board located in the panel to be updated.
4. Install the SD card into a PC/laptop and navigate to the folder containing the most recent VoCALL software version.
5. **Copy** the most recent software versions into the **UPDATES** folder on SD Card; the files will have '**.aes**' extension.
6. After the files are copied, remove the SD Card from the PC/laptop and plug the SD Card back into the panel to be updated and close the front cover.
7. Log into the system as **ENGINEER 2;** the *Select a Panel* screen will open.

8. On the *Select a Panel* screen, scroll to the panel to be updated and press the **ACCEPT** button;:
   - If an MX panel is selected, proceed to Step 10.
   - If an NX panel is selected (as shown below) the *Logon to NX Panel* confirmation screen will open.

9. When the *Logon to NX Panel* confirmation pop-up opens press the **ACCEPT** button; the display will open the *User* screen; scroll to select **Install** and press the **ACCEPT** button again.

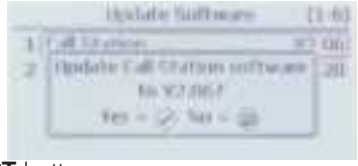
Note: The selected NX16US panel will go into **Engineering Mode**; the front panel LEDs will flash.

10. On the *Install* screen, scroll to select **Update Software**; a list of available software versions will be displayed**.**

11. Scroll to **select a software version** for a Panel or a Call Station and click the **ACCEPT** button; a pop-up will open requesting confirmation to perform the update.

Note: The example below shows results for selecting a Call Station, when selecting a Panel, screens may vary.

12. On the *Update Software* confirmation pop-up select one of the following:
    a. Press the **ACCEPT** button to answer **Yes** and continue with the software update.
    b. Press the **Back** button to answer **No** and return to the previous menu.



13. Upon clicking the **ACCEPT** button:
    - The software update process will start and a pop-up notification will open to indicate either a successful completion of update or indicate any errors encountered during the process.

    - If a Panel was selected for update, upon the successful update, the panel (MX16US and NX16US) will undergo a reboot and the display will return to the Home screen; if a Call Station was selected, no reboot will occur.

14. After the update:

    a. **For a Call Station update** - log into the selected panel and perform a **Call Station Learn** as described in the "Call Station Learn" section and then perform a **System Learn,** as described in the "System Learn" section. When complete, verify proper system operation.

    b. **For a Panel update**- perform a **System Learn,** as described in the "System Learn" section. When complete, verify proper system operation.

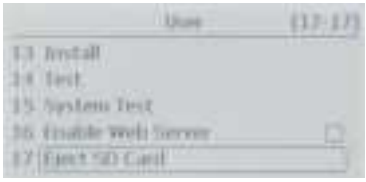
15. Verify proper operation of the system.

Update System

Note: During a software update, the system will be put in **Engineering Mode** and no calls will be processed.

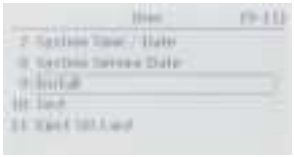
Note: Depending on the selected option, devices in the network, including *either* all the panels (MX16US and NX16US) *or* all Call Station(s) will be updated.

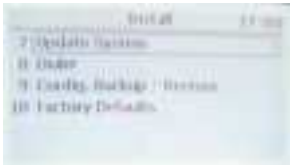
1. Verify the latest version of software has been loaded onto the PC/laptop.
2. Log into the MX16US; on the **User** screen scroll down to **Eject SD Card**; press the **ACCEPT** button.



3. Carefully remove the SD Card from the Main board located in the MX16US panel.
4. Install the SD card into a PC/laptop and navigate to the folder containing the most recent VoCALL software version.
5. **Copy** the most recent software version into the **UPDATES** folder onto SD Card; the files will have '**.aes**' extension.
6. Remove the SD Card from the PC/laptop and plug the SD Card back into the MX16US.
7. On the MX16US log into the system as **ENGINEER 2;** the *Select a Panel* screen will open; on the *Select a Panel* screen, scroll to select Panel 1 (MX) and then press the **ACCEPT** button.

8. Navigate to the **Install** screen and press the **ACCEPT** button. On the *Install* screen scroll to select **Update System** and press the **ACCEPT** button again; the *Update System* screen will open displaying a list of software versions for the Panels and Call Stations.

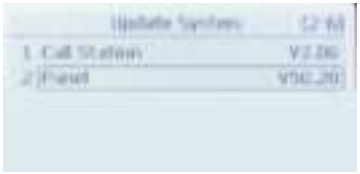




9. On the *Update System* screen, scroll to **select a software version** from the list and press the **ACCEPT** button; a confirmation pop-up will open requesting to update the software to the selected version

Note: This process will copy the updated SW to the selected device type.

Note: The example below shows the panel software selected; screens may vary when updating Call Station software.



10. On the *Update system* confirmation pop-up:
    a. Press the **ACCEPT** button to answer **Yes** and continue with the software update.
    b. Press the **Back** button to answer **No** and return to the previous menu.

11. Upon clicking the **ACCEPT** button:
    - The system update process will start copying the file to the selected devices.
    - A pop-up notification will open indicating the *Copying file to Panels* progress.

12. When the file copying is complete, a confirmation pop-up will open; press the **ACCEPT** button.

13. After the software has been copied to the devices, a confirmation pop-up will open requesting to update the devices with the copied software; press the **ACCEPT** button to update the software.

14. When the update is complete, all panels will reboot and the MX16US display will return to the home screen.

15. Repeat the **Update System** process until all panels or Call Stations have been updated to the latest version release of software.

16. After the update:

    a. For a Call Station update - log into the selected panel, perform a **Call Station Learn** as described in the "Call Station Learn" and then perform a **System Learn**, as described in the "System Learn" section.

    b. For a Panel update - perform a **System Learn**, as described in the "System Learn" section.

17. Verify proper operation of the system.

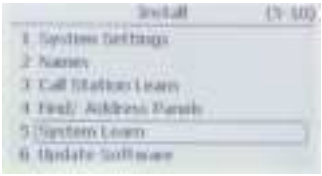
System Learn

If modifications are made to the hardware or software, a *System Learn* must be run again to identify all NX16US panels connected to the MX16US. This process assigns a unique internal address to all NX16US panels in the system.

- PANEL ID is different from the Internal address assigned to each panel.
- The PANEL ID is assigned by the person commissioning the panel
- The VoCALL System assigns Address IDs (#2 – 10) to the NX16US panels based on the order of their connection and position from the MX16US.

Panel	Panel ID	Panel Address
Main MX Panel	01	N/A
NX Panel	02	01
NX Panel	03	02

1. Login with appropriate credentials and navigate to **Select a Panel**; select the **01: Panel 00** for the MX16US and then navigate to **Install.**



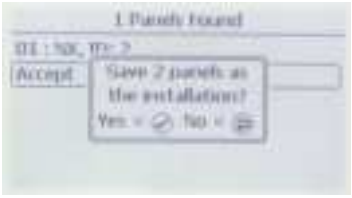
2. **On the *Install* screen,** scroll to **System Learn** and then press the **ACCEPT** button; when the confirmation pop-up appears, press the ACCEPT button again to start the System Learn process.

3. When the System Learning process is complete, a *Panels Found* pop-up will identify the number of active panels connected to the MX16US.

4. On the *Panels Found* confirmation pop-up, press the **ACCEPT** button; a list of active NX16US panels found on the network will be displayed identifying each panel's information:
    - Panel address
    - Type of panel (NX)
    - Panel ID
    - Number of Call Stations assigned to the panel

5. On the *Panels Found* screen, scroll to select any of the NX panels and press the **ACCEPT** button to view the panel's details; press the **Back Arrow** button to return to the *Panels Found* screen.

6. On the *Panels Found* screen, scroll down to **Accept** and then press the **ACCEPT** button; a confirmation pop-up menu will open requesting to save the panels.



7. When the confirmation pop-up appears, press the **ACCEPT** button to save the panels; the *Updating System Information* pop-up will open. When the progress bar indicates the system has updated 100% press the **ACCEPT** button to return to the *Install* screen.

Note: If the System Learn process fails to detect the number of NX16US panels completed, the installer must resolve any faults/issues prior to continuing. If faults are identified during the System Learn process, the display will provide a list of faults, such as those listed below, that need to be corrected.

Fault examples:

- Loop break: due to any break in cabling / incorrect cabling.
- Duplicate/Invalid Panel ID : two or more panels have same value of PANEL ID parameter or no value has been set for the parameter
- Call Station Learn required : Auto-addressing of connected Call Stations needs to be performed
- System Learn required : System Learn is needed for adding a panel to the network

8. A Loop Break fault must be corrected for the System Learn process to proceed; the Main panel will indicate the location of the loop break condition. Wiring continuity between panels should be checked to correct the fault.
9. Once all faults are resolved, restart the **System Learn** process and then verify proper system operation.

Web Server

The Web Server feature provides the ability to display the VoCALL System's information on a PC/Laptop in a user friendly web-page format for viewing and configuration purposes.

Note: Using the Web Server for editing will place the system in Engineering Mode and calls will not be completed. If there is an active call on the system, Engineering Mode will be activated after the call is completed.

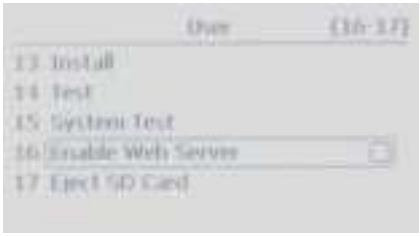
Note: The Dialer uses the Ethernet port on the MX to access the network; the Dialer must be disconnected to allow for an Ethernet cable to be connected between a PC/laptop and the MX.

Connect to the Web Server

The Webserver requires a direct Ethernet connection to a PC/laptop and uses a static IP address (Network switch connections and DHCP are not supported).

1. Connect an Ethernet cable between the PC/Laptop and the MX16US Ethernet ports.
2. Set the network values on the PC/Laptop:
   - IP Address to 10.0.0.2
   - Subnet mask: 255.255.255.0
   - Default gateway: 10.0.0.1

3. Log into the MX16US and navigate to the *User* screen and then scroll to select **Enable Web Server**; press the **ACCEPT** button to check the box to enable the Web Server.
4. Press the **Back** button to save the setting.



5. The Web Server uses fixed IP address of 10.0.0.17; log into the Web Server as follows:
   a. Open a Web Browser on the PC/Laptop and enter IP address 10.0.0.17 into the address bar; the login screen of the Web Server will open.
   b. Enter the appropriate login credentials; default credentials are as follows:
      a. User Name: USER1
      b. Password: USER1

6. After the initial login, use the **Change Password** option to update the default login User name and password (use upper case letters and numbers only; no special characters).

Web Server Overview

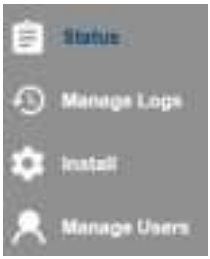
After logging into the Web Server, the status page is visible providing an overview of the installed system.

Navigation Pane

The navigation pane, located on the left side of the page, provides quick access across the webpages.

- **Status** – Enables a view of health and status of installed units – Panels and Call Stations, detail information of all devices (read only).
- **Manage Logs** – Display active faults, calls, faults and event logs of the system.
- **Install** – Setting configuration parameters, details of all the devices.
- **Manage Users** – Access rights, user parameters for Web Server users.

Note: The Web Serve details and parameters for each User are limited to access of the Web Server only and differ from the MX16US's User details.



Navigation Pane - Status Option

1. Click the **Status** option on the *Navigation pane*; the page will display three (3) tabs described in the following sections.

The tabs on the *Status* Option provides read-only details of the system or selected panel.

Status Tab

The S*tatus* tab provides an overview of the entire system on one page and represents the status of panel such as health, faults and any disabled devices.

Each row corresponds to one panel, either MX or NX and identifies Call Stations attached to them.

Note: Click on any row to open the Panel Information tab.

Panel Information Tab

The *Panel Information* tab provides details of the selected panel and its connected Call Stations. The information is displayed based on the row selected on the Status tab or the panel selected from the drop down option at top of the page.

Note: Click on Active Faults to open the Active Faults tab.

Web Server Tab

The *Web Server* tab displays the system's Ethernet information.

Navigation Pane - Manage Logs Option

Selecting the **Manage Logs** option on the *Navigation pane* will display four (4) tabs as described in the following sections.

The tabs provide a read-only list of *Active Faults, Past Faults, Call Logs and Event Logs* for the selected panel. Up to 10 log entries can be displayed per page; use the arrows at the bottom of the page to view additional pages.

Accept Faults Tab

The A*cceptFaults* tab provides a list of current faults in the system that have not been acknowledged/cleared.

Fault Log Tab

The *Fault Log* tab provides a historical list of up to 2,000 faults that have occurred in the system.

Call Log Tab

The *Call Log* tab provides a historical list of up to 2,000 calls that have occurred in the system.

Event Log Tab

The *Event Log* tab provides a historical list of up to 2,000 events that have occurred in the system.

Navigation Pane - Install Option

The **Install** option on the navigation pane provides ease of configuring parameters. When selecting the *Install* option, the Web Server will place the system in **Engineering Mode**. When placed in Engineering Mode, calls will not be processed on the system and the Install sub-menus on MX16US's display will become inactive/ prohibited. Navigating to any other tab on the Web Server will exit the Engineering Mode.

Note: Prior to continuing or returning to the previous page, the **Save** box, located at the bottom of the page, must be selected after inputting or changing any configuration field.

1. Click the **Install** option on the left side of the *Navigation pane*; a confirmation pop-up will open requesting to place the System in Engineering Mode.

2. Click the **OK** button; a pop-up will open indicating the system has been placed in Engineering Mode and the display on the MX will indicate the system will not process calls.

3. Use the keypad/mouse to navigate through the parameters on each tab.
4. Input or modify any of the selections on the pages.
5. Click the green check box at the bottom of each page to save changes and press the **ACCEPT** button to continue if a confirmation pop-up opens.

Time / Date Tab

Panel Tab

The *Panel tab* provides the User/Installer the ability to set each panel's specific parameters and configurations :

Dialer Tab

The *Dialer tab* provides the Administrator to add up to three (3) pre-configured phone numbers along with a test phone number if a test phone is installed in the network. The Dialer can be programmed from either the front panel of the MX or via the Web Server.

Navigation Pane - Manage Users

Selecting *Manage Users* on the navigation panel allows the configuration of up to 10 user profiles. All users are active by default and have access to all pages of the Web Server.

Note: It is recommended that the system manager change the default User name and Password for all Users. Users not configured should be disabled and access rights should be updated as needed.

Note: The User Name must be in upper case.

SD Card Explorer

SD Card Explorer is preinstalled on an SD Card; the SD Card is installed in the MX from the factory. The SD Card Explorer includes two utilities, Log Viewer and Text-to-Speech, for use in the VoCALL System.

SD CARD REMOVED FROM MX - CALLS WILL NOT PLAY

CAUTION

The SD Card must remain in the MX during normal operations; when the SD Card is removed from the MX16US, any initiated Call Station location messages will not play.

If a call is initiated when the SD Card is removed from the MX16US, an "Audio File Missing" message will be generated; the fault can be cleared once the SD Card is re-installed into the MX.

Note: Prior to generating audio messages, the SD Card Explorer utility must be running on a PC/Laptop and an Microsoft Azure Web-service must be configured and activated as described in the "Obtain and Activate an Azure Key" section.

Note: If the PC/Laptop does not have an SD Card port, a USB to SD Card Reader/ Adaptor may be required.

SD Card Utilities

After the Sysconfig.Backup file is loaded and an Azure key is activated, as described in the following sections, the top of the main page, shown below, will display multiple tabs for selections including:

- Configuration tab - provides the ability to select the appropriate System Configuration file for use when configuring audio location messages.
- Three (3) tabs for viewing Call, Fault and Event logs.
- Two (2) tabs for configuring Text-to-Speech and Dialer Location messages.

Log Viewer:

- Displays a navigation panel on the left-side of the page which enables the real-time tracking of open log files.
- Log Viewer utility provides the ability to view the records in log files located on the SD card. To view the logs, the SD Card must be ejected from the MX and installed in the PC/laptop.
- When selecting the Call, Fault and Event Log tabs located at the top of the Main SD Card Explorer window, the system will display the selected logs.

Text-to-Speech

- A navigation view is available to assist users in reviewing and modifying Text-to-Speech settings, which provide the ability to select any of the multiple categories.
- The T2S utility provides the user the ability to record a voice message and assign the message to specific location(s). When a Call Station is activated during an emergency and the phone call to the emergency service is connected, the system then plays a unique voice message, specific to the Call Station's location using a cloud based Text-to-Speech generation tool. This information can be used by emergency response personnel to locate persons needing assistance.
- T2S messages, locations can be viewed on a remote laptop running the T2S utility or in the MX16US's log files.
- An Ethernet connection between the MXUS16 panel and the PC/Laptop will be needed to utilize the SD Card Explorer in the final step to authenticate the audio messages saved on the SD Card.

A summary of steps for utilizing the SD Card Explorer is outlined below; refer to the specific sections for detailed steps.

- Copy the SD Card Explorer utility onto the PC/Laptop.
- Activate a Microsoft Azure account and obtain a Key for the service.
- Create and set up the Speech service.
- Perform a complete VoCALL system config backup, as described in the "Run a Sysconfig.Backup" section, to create a current config file onto the SD Card.

Obtain and Activate an Azure Key

The SD Card Explorer uses Azure Speech services to convert typed text messages into the audio location messages. This is referred to as Text To Speech (T2S). A Microsoft Azure account is required for access to the Speech services. An Azure account can be set up for free and includes a limited number of T2S conversions per month. After the trail period ends, the free account must be converted to a Pay As You Go account. The services are still free if kept below certain amount (e.g. 0.5 million characters / month). Usage beyond the free limit will incur a charge.

A Speech service must be set up through Azure. This process will create a 32 character long alphanumeric key. This key will be entered into the SD Card Explorer and allow it to access the Azure speech service. Once the key is input and validated, the SD Card Explorer will have access to the Speech service.

Note: The Azure Service key should be kept secure and not shared.

Note: If activating a Trial, after the trial period is over, you will lose the ability to activate and operate the T2S utility.

Configure the Azure service as follows; note that the Azure screens/instructions may vary.

1. Go to **https://portal.azure.com/** to create and set up an Azure account.
2. After creating an account and signing in, search for **Speech services** in the search bar and click on the icon/link.

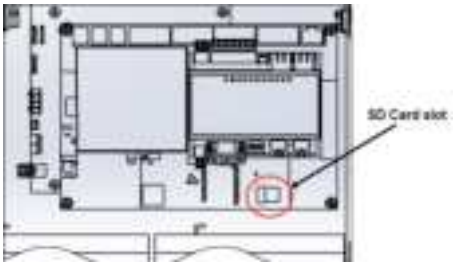
Note: If setting up Speech services for the first time, Azure may ask which account will be associated with the service; this may also be requested after an initial Trial Subscription has ended. An account manager must follow the prompts and enter the appropriate information.

3. Create a **service instance** by clicking the blue highlighted **Create Speech service** button.
   a. Follow the prompts to create a resource group and Instance name to identify the service (Speech service) to be used.
   b. Enter the Resource Group name.
   c. Enter Instance name.
   d. Select a pricing tier for the account (F0 is free trial).
   e. Review the account info and click **create** to complete the account setup.
   f. On the Deployment window, click the blue highlighted **Go to resource** button; the Keys and endpoint window will open.
   g. Click on the blue highlighted **Show keys** button and securely store the key; the key will need to be input when accessing the SD Card Explorer utility.
   h. Proceed to the "Run a Sysconfig.Backup" section.

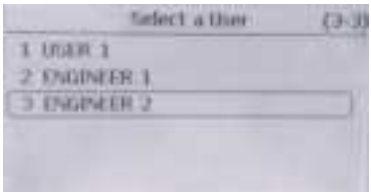
Run a Sysconfig.Backup

Prior to installing and activating the SD Card Explorer, a complete backup of the System should be performed and loaded onto the SD Card.

1. Verify the SD Card is installed into the card slot located on the MX16US panel.

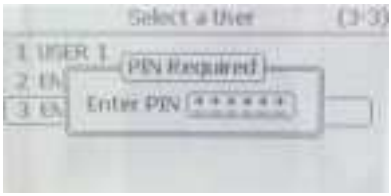


2. On the MX16US, scroll to *Select a User* and press the **ACCEPT** button; on the *USER* screen, scroll to **ENGINEER 2** and press the **ACCEPT** button again.

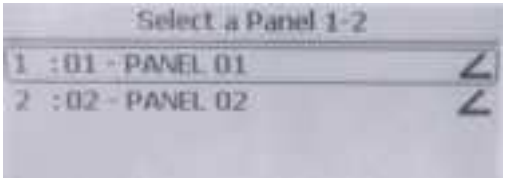


3. Enter a **valid pin** on the *Pin Required* pop up and press the **ACCEPT** button.

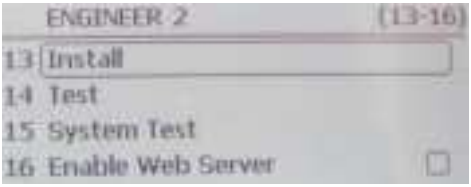
Note: The systems original default pin is 999999; all other pins are user defined.



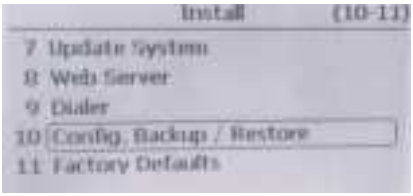
4. On the *Select a Panel* screen, scroll to select **PANEL 01** and press the **ACCEPT** button.



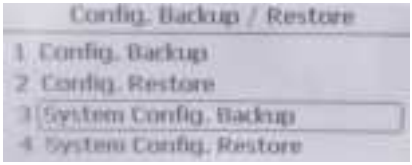
5. On the *ENGINEER 2* screen, scroll to select **Install** and press the **ACCEPT** button.

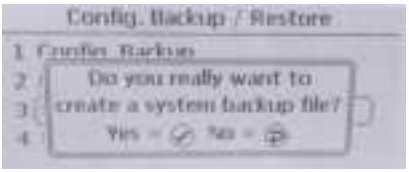


6. On the *Install* screen, scroll to select **Config. Backup / Restore** and press the **ACCEPT** button.



7. On the *Config. Backup / Restore* screen, scroll to select **System Config.Backup** and press the **ACCEPT** button; selecting System Config.Backup will save the backup file onto the SD Card.





8. Press the **ACCEPT** button to reply OK, when the *Backup File Created OK* pop-up appears.

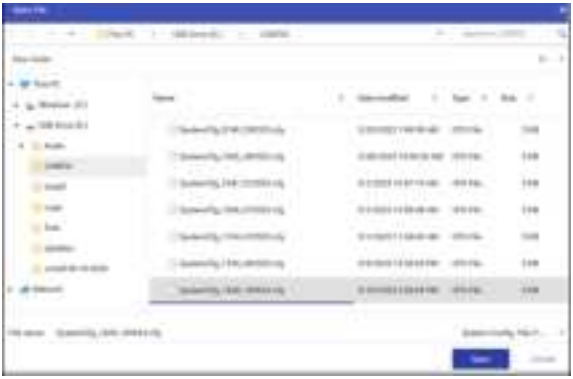
9. On the *User* screen, select **Eject SD Card** and press the **ACCEPT** button; remove the SD Card from the MX16US and continue to the "Load the System Config. Backup onto a Laptop" section.

Load the System Config.Backup onto a Laptop

Note: Administrator privileges are required to extract and run the SD Card Explorer files.

1. Insert the SD Card into a laptop; **open the USB's Directory**.
2. Copy the **SDCardExplorer file** from the USB directory to the PC/Laptop's desktop.
3. Double click to **run the SDCardExplorer.exe** file.
4. On the *Configuration* page, click the **Browse** button and locate the folder that displays the list of available cfg files on the SD card.

5. Highlight the **recently saved cfg file** and click the **Open** button at the bottom of the page; the file will be loaded onto the laptop which activates the Text-to-Speech features and the top box of the *Configuration* page will identify the loaded cfg file.



Once the **SystemCfg** file is loaded, the top bar of the window displays selections for viewing parameters and system status; the menus on the Navigation panel, located on the left-side of the page, are used for programming and accessing Text-to-Speech.

Tabs on top bar:

- **Configuration** - Displays the System Configuration file currently loaded on the laptop and provides a Help box identifying general requirements and recommendations.
- **Call Log** - Displays a list of up to 2,000 call entries, stored on and retrieved from the SD Card; a new file is started when the current Call Log file is full.
- **Fault Log** - Displays a list of up to 2,000 fault entries, stored on and retrieved from the SD Card; a new file is started when the current Fault Log file is full.
- **Event log** - Displays a historical list of up to 2,000 Event entries, stored on and retrieved from the SD Card. Entries include current faults and resolved faults: a new file is started when the current Event Log file is full.
- **Text-to-Speech (T2S)** - Displays a list of Call Stations programmed into the MX; enables the viewing, creation, editing, and deletion of audio messages corresponding to a Call Station's location including address, building and interior location.
- **Dialer Location Messages** - provides for the conversion of pre-recorded location-specific audio messages into a format compatible with the MX16US and Dialer; also provides a login window to access the User list in the MX16US for authentication of User credentials prior to saving the audio files to the SD card for use in the system.

Note: Clicking the down arrow on any column on the display page to select a filter; the page will refresh to display the selected filtered results.

Navigation Pane:

The T2S navigation pane, located on the left-side of the page, provides three (3) selectable views:

- **Call Station Recordings** - displays a list of location-based audio messages associated with Call Stations; includes editor and view ability for viewing, creation, modifying and deletion of the location-based audio messages.
- **Options** - enables the linking of messages to specific buildings at a designated address and the association of introductory text with a location -based audio message. Displays and provides the ability to modify building information.
- **Azure API Access** - provides editor and view options to facilitate the configuration of access settings and other options when utilizing the Azure T2S service.

Viewing Logs in SD Card Explorer

The SD Card Explorer log viewer provides the ability to view the log files located on the SD card; the drop down menus on the display provide the user the ability to sort and filter specific log information.

1. **Click to select** the Call Log, Fault Log or Event Log tab located at the top of the Main SD Card Explorer window; the system will display the selected logs.
2. **Click the down arrow** on any column to generate a filtered display.

Text-to-Speech

A summarized sequence of steps necessary to construct a Text-to-Speech location-based audio message in the VoCALL System is outlined below:

- Activate and access the Azure API as previously described in the "Obtain and Activate an Azure Key" section.
- Create an Introduction message.
- Add a building Address.
- Add the precise location of the specified Call Station inside the building.
- Add pauses between the various sections of the location message and identify how many times to repeat the location message during playback.
- Convert the final text message to a standard audio message using the Azure T2S service.
- Convert the Azure message to an audio message for MX16US playback ability.
- Save the updated Sysconfig.Backup file onto a laptop.
- Save the Sysconfig.Backup file onto the SD Card.
- Reinstall the SD Card back into the MX16US.

Note: During normal operations, when activated, the T2S messages are played from the SD Card installed in the MX16US.

View Existing Call Station recordings

1. Click on the **Text-To-Speech** tab on the top menu bar and then click on **Call Station Recordings** on the navigation panel located on the left-side of the page; the *Call Station Recording* page will open displaying any Call Stations associated

with the MX and any NX panels. Including:

- Audio message text
- Control buttons for playing, recording and deleting audio messages
- Options for sorting, filtering, showing/hiding columns, page selections

Add/Modify/Delete a Building Name or Address

1. To add a building name or address:
   a. Select the **Options** tab on the left side of the page; on the *Options* page, click on the icon next to the **Click here to add a new item**.

   b. Type in the new building name and associated address and click the **Save** button at the bottom of the page.

2. To modify a building name or address, select the **Options** tab on the left-side of the page, **type** the necessary changes in the Building Name or Building Address columns and then click the **Save** button at the bottom of the page.

3. To delete a building name or address, highlight the line identifying the building name and address that is to be deleted: click the associated **Trash Can** located on the left side of the page.
4. Click the **Save** button at the bottom of the page.

Add/Modify/Delete an Introduction Message

The **Options** menu on the navigation panel provides the ability for the user to :

- Add/edit the introductions test for the location message.
- Add/edit/delete the building address.
- Update for the audio recording, such as language or voice.

Note: The T2S utility provides a default Introduction message displayed in the Introduction text box located on the top of the *Options* page.

When the **Add** box in the *Introduction column* on the *Call Station Recording* page is checked for a specific Call Station, the message typed into the box on the *Option* page labeled **Introduction Test** will be played when the Call Button is activated. The Building Name and Address information will follow the Introduction message.

1. To add, modify or delete an Introduction message:
   a. Select the **Options** tab on the left side of the page,
   b. Use the mouse and keyboard to highlight the existing message and press

Delete on the keyboard to remove the current message.

c. Use the mouse and keyboard to type a **revised message** if necessary.

d. Click the **Save** button on the bottom of the page.

Program a Recording

When the **Program a Recording** menu is selected on the navigation panel, the *Call Station Recordings* page is displayed providing the ability for the user to :

- Add/edit/delete a message assigned to a Call Station.
- Input a Call Station's building address.
- Input the precise location of the specified Call Station inside the building.
- Select the number of pauses to be added to the location message and identify how many times to repeat the location message during playback.
- Test/listen to the recorded message prior to saving the message to the SD Card.

The rows on the *Call Station Recorded* page are color-coded to identify the status of Call Station messages:

- **Red** - the system does not include a recording for the Call Station
- **Green** - the system includes a recording for the Call Station.
- **Yellow** - the system includes a recording for the Call Station however, the recording is outdated; the displayed text is different from text that was used for the location audio message recording.

Note: When any information is changed on the *Call Station Recordings* page the **Save** button on the bottom of the page must be clicked to save the changes.

The steps below identify the details necessary to add/edit/delete an audio recording:

1. Click to **highlight** one of the existing Call Station recordings.

2. On the highlighted line, click on the associated column listed below to add or modify the Call Station's information:
   a. CALL STATION LOCATION - **input the name of the Call Station's location** in the *Call Station Location Text* column.

   b. CALL STATION LOCATION - in the *Repeat column*, **input the number of times** the message will be announced when activated.

   c. INTRODUCTION - check the **Add** box to include the introduction when the message is announced.
   d. INTRODUCTION - in the *Pause* box, **input a number (in seconds)** to include a pre-assigned delay between the message's introduction and the message's building name and address information.

   e. BUILDING ADDRESS - in the *Name* column, click the arrow to **select an existing building address name** from the drop down menu.

f. BUILDING ADDRESS - in the *Pause* box, **input a number (in seconds)** to include a pre-assigned delay in each of the recording's properties (such as building location and address) when the message is announced.

g. Once all recording parameters have been programmed, click the **GREEN arrow** to play a test recording of the message on the laptop's speaker.

Note: If there is no recorded message for the selected Call Station the green arrow button will play an audio message from Azure Text-to-Speech service converting text to audio in real time. If there is recorded message for the selected Call Station the recorded message will be played.

h. If the new/updated recording is acceptable, click the **RED button;** the recorded message will be played (again) on the laptop speaker and the recording will be saved to the SD Card.

i. Once all Call Station's messages have been added, programmed, tested and saved to the SD Card, click **Options** on the navigation pane and then click **Call Station Recordings** to view an updated/refreshed status of Call Station messages.

Delete a Call Station Recording

1. Click to **highlight** one of the existing Call Station messages.
2. On the highlighted line, click the **Trash Can icon** to delete a Call Station Recording and then **click OK** to verify the recording should be deleted; the recording will be removed from the Call Station recording status page.

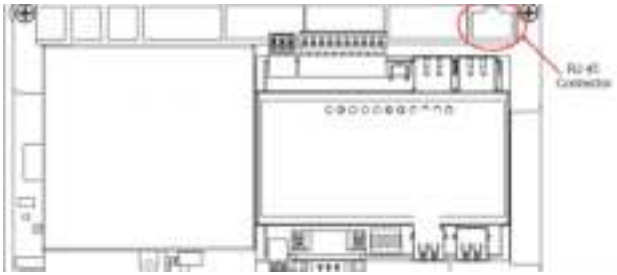
Authenticate and Save audio message(s) onto the SD Card

Once the recording information for all Call Stations has been assigned and saved, the user must confirm that the message's audio files have been properly saved to the SD Card and are available from the MX16US for execution during normal system operations.

- With the SD Card installed on the laptop, verify each Call Station's audio files have been saved to their appropriate folder on the SD Card including two (2) audio files (one .ima file and one .wav file).
- Install the SD Card into the MX16US and select Message Play on the Dialer screen to enable audio messages.

Note: During normal operations, when activated, the T2S messages are played from the SD Card installed in the MX16US.

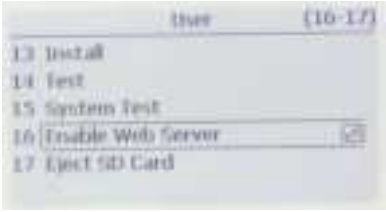
1. Connect an Ethernet cable between the PC/Laptop and the MX16US Ethernet ports.



2. Set the network values on the PC/Laptop:

   - IP Address to 10.0.0.2
   - Subnet mask: 255.255.255.0
   - Default gateway: 10.0.0.1

3. On the MX16US, navigate to the *User* screen and check the **Enable Web Server** box.
4. Log in as Engineer 2, select the MX panel and scroll to the *User* screen.
5. On the *User* screen, scroll down to the **Enable Web Server** and **check the box** on the right side of the selection; press the **ACCEPT** button to save the setting.



6. On the Laptop:
   a. Select the **Dialer Location Message** tab located on the top right-side of the window.

b. Enter the **User Name and Password** for Web Access; the Web Access User Name and Password is different from the MX User Name and Password; the default User Name is USER10 and the default password is USER10.

c. Select the **Final View** tab located on the left-side of the page and then click the **Save VoCALL Audio Files** button located on the bottom right-side of the page; the audio files will be saved to the SD Card.

7. On the laptop, **verify the audio files** saved to the SD Card:
   a. Navigate to the SD Card files on the laptop's USB port.
   b. Click to select the **Audio folder**.
   c. Click to select the **VoCall folder**.
   d. Click to select the appropriate **Panel folder** (reference the serial number of the panel).
   e. Click to select any of the **Call Stations** listed in the panel folder.
   f. Verify there are two (2) files saved for each Call Station.

8. Remove the SD Card from the laptop and insert it into SD Card slot located on the lower right-side of the MX16US Mainboard.

Note: During normal operations, the SD Card must remain in the MX16US; all recorded messages will be played from the SD Card.

APPENDIX 1

Eaton CCOE cybersecurity

PRODUCT TEAM GUIDELINES

VoCALL 16 has been designed with cybersecurity as an important consideration. A number of features are offered in the product to address cybersecurity risks. These cybersecurity recommendations provide information to help users deploy and maintain the product in a manner that minimizes cybersecurity risks.
These cybersecurity recommendations are not intended to provide a comprehensive guide to cybersecurity, but rather to complement customers' existing cybersecurity programs.

Eaton is committed to minimizing cybersecurity risks in its products and deploying cybersecurity best practices in its products and solutions, making them more secure, reliable and competitive for customers.

The following Eaton white papers are available for more information on general cybersecurity best practices and guidelines:

Cybersecurity Considerations for electrical distribution systems (WP152002EN):

http://www.eaton.com/ecm/groups/public/@pub/@eaton/@corp/documents/content/pct_1603172.pdf

Security best practices reminder checklist (WP910003EN):
https://www.eaton.com/content/dam/eaton/company/news-insights/cybersecurity/white-papers/WP910003EN.pdf

Category	Description
Asset Management	Keeping track of software and hardware assets in your environment is a pre-requisite for effectively managing cybersecurity. Eaton recommends that you maintain an asset inventory that uniquely identifies each important component. To facilitate this, VoCALL 16 supports the following identifying information: manufacturer, type, serial number, Software version number, manufacturing.
Physical Security	An attacker with unauthorized physical access can cause serious disruption to system/device functionality. Additionally, Industrial Control Protocols don't offer cryptographic protections, making ICS and SCADA communications especially vulnerable to threats to their confidentiality. Physical security is an important layer of defense in such cases. VoCALL 16 is designed to be deployed and operated in a physically secure location. Following are some best practices that Eaton recommends to physically secure your system/device: • Secure the facility and equipment rooms or closets with access control mechanisms such as locks, entry card readers, guards, man traps, CCTV, etc. as appropriate. Restrict physical access to cabinets and/or enclosures containing VoCALL 16. • Physical access to the telecommunication lines and network cabling should be restricted to protect against attempts to intercept or sabotage communications. It's a best practice to use metal conduits for the network cabling running between equipment cabinets. • VoCALL 16 ships with Ethernet port disabled by default. • Do not connect removable media (e.g.SD cards, etc.) for any operation (e.g., software upgrade, configuration change, or boot application change) unless the origin of the media is known and trusted. • Before connecting any portable device through a USB port or SD card slot, scan the device for malware and viruses.

Account Management	Logical access to the system | device should be restricted to legitimate users, who should be assigned only the privileges necessary to complete their job roles/functions. Some of the following best practices may need to be implemented by incorporating them into the organization's written policies: • Ensure default credentials are changed upon first login. VoCALL 16 should not be deployed in production environments with default credentials, as default credentials are publicly known. • No account sharing – Each user should be provisioned a unique account instead of sharing accounts and passwords. Security monitoring/logging features in the product are designed based on each user having a unique account. Allowing users to share credentials weakens security. • Restrict administrative privileges - Attackers seek to gain control of legitimate credentials, especially those for highly privileged accounts. Administrative privileges should be assigned only to accounts specifically designated for administrative duties and not for regular use. • Leverage the roles / access privileges to provide tiered access to the users as per the business /operational need. Follow the principle of least privilege (allocate the minimum authority level and access to system resources required for the role). • Perform periodic account maintenance (remove unused accounts). • Enforce session time-out after a period of inactivity.
Logging and Event Management	• Eaton recommends logging all relevant system and application events, including all administrative and maintenance activities. • Logs should be protected from tampering and other risks to their integrity (for example, by restricting permissions to access and modify logs, transmitting logs to a security information and event management system, etc.). • Ensure that logs are retained for a reasonable and appropriate length of time. • Review the logs regularly. The frequency of review should be reasonable, taking into account the sensitivity and criticality of the system device and any data it processes.

APPENDIX 2

Troubleshooting

For assistance and technical support contact Eaton Technical Services:

- 1-800-631-2866 ext. 2
- Email: SupportMVSR-Mail@Eaton.com

Using the Fault Log for Troubleshooting

A partial list of Fault Logs are displayed in multiple locations including the MX16US front panel display, Web Server log tabs and the SD Card Explorer log tabs.

Table 25 identifies types of faults and their respective descriptions. Approaches to troubleshooting are found beneath fault category.

Table 24. Using Fault Logs for Troubleshooting

Detected Fault	Fault Name	Description
PSU	PSU Not Found	Panel is not able to communicate with PSU
	AC PSU Fail	AC power source is not available
	DC PSU Fail	DC power source is not available
	Battery Fault	Incorrect or broken battery is connected.

In case of above faults check the power connections – AC to PSU, PSU to Interface Board, Interface Board to Main Board, PSU to battery, replacement of batteries. If the faults persist, call for Eaton Technical Support.

Network Faults – CAN / Call Station loop	CAN A/B Error	Fault on CS wiring - data lines between Panel and CS
	CAN A/B Loop Break	Fault on CS loop - data lines between Panel and CS, data lines between CS-CS
	PSU A/B Short Circuit	Fault on CS loop – Power lines are shorted
	PSU A/B Open Circuit	Fault on CS loop – Power lines are open
	CS Missing	Call Station previously configured is not responding
	CS Unknown	An unknown CS is added in the loop
	CS Position	Position/Address of CS is changed in the loop
	CS Invalid	Device connected is not recognized by the panel

Detected Fault	Fault Name	Description
In case of above faults, check the loop wiring connections for any break or loose connection. Perform Call Station learn procedure to confirm the changes in CS position or addition.		
Network Faults – RS485/ Panel loop	Loop Break Leg 1/2	Fault on wiring loop between panels. Fault is reported by the panels affected by break and MX16US.
	Panel Missing	Panel previously learned is not responding. Fault is reported by the panels affected by break and MX16US.
	Main Missing	Main of the network is not responding. All the panels in the network will report the fault.
	Multiple Mains	More than one MX16US is present on the loop.
	Panel Unknown	An unknown panel is added in the loop
	Panel Position	Position / ID of a panel is changed in the loop.
In case of above faults, check the loop wiring connections for any break or loose connection. Perform System learn procedure to confirm the changes in panel position or addition.		
Diagnostics	Initialization	Fault with initialization of device peripherals
	EEPROM Read / Write / Checksum	Fault accessing internal storage memory; Memory/Code Checksum failure for Panel or CS
	Earth Short 24V / GND	Earth connection is shorted with power connections.
	Speaker Open/Short	Transducer fault in handset of panel / Call Station. Location of fault is exactly identified.
	Mic Open / Short Circuit	Transducer fault in handset of panel / Call Station. Location of fault is exactly identified
	Ethernet	Fault with Ethernet port initialization/ operation.
	Dialer	Dialer not found Dialer has no internet
	SIP	No SIP registration
In case of above faults, call Eaton Tech Support.		
Update	Error updating panel	Firmware update of panel was unsuccessful.
	Error updating CS	Firmware update of Call Station was unsuccessful.
In case of above fault, check for the problem reported by panel. Remedy the situation and update the unit again. If fault still persist, restart the unit and perform the operation.		
Operational	Call/Cancel Switch Fault	Call/Cancel switch on Call Station is either not working or is jammed.
	Off Hook Fault	Panel handset is in off-hook state for more than 90 seconds.
	SD Card Not Present / Error	Error accessing SD Card on the panel
	Tamper Switch	Tamper switch is missing
In case of above faults, check the affected unit and correct the situation. If the faults persist, call Eaton Technical Support.		

Ground Fault

Ground fault detection is enabled when a jumper is connected on CON8 on the Mainboard.

When a ground fault is detected, the fault can be cleared by removing and reinserting the CON8 Earth Ground jumper located on the Main Board and then accepting and clearing the fault.

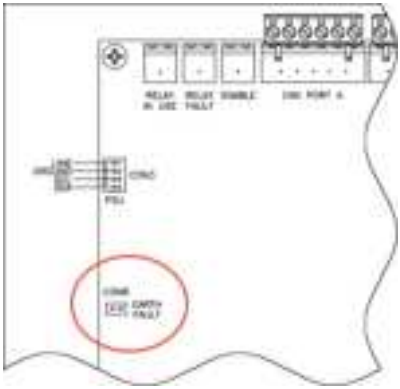
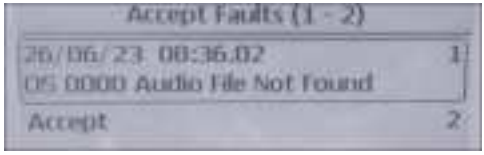


Figure 34. CON8 Earth Ground jumper location on Mainboard

Audio File Not Found

When running a Sysconfig.Backup, if a pop-up opens and indicates an **Audio File Not Found** fault, use the arrow and **ACCEPT** buttons to accept the fault; the Backup can continue because that fault will be resolved when the audio message(s) are programmed.



PSU to Interface Board

Note: This section is for reference only; the PSU Board, located in the MX16US behind the handset compartment, is pre-wired at the factory and does not require any wiring during the installation process.

- The PSU-to Interface connections are pre-wired at the factory.
- The positive (+) and negative (-) wires from the PSU to the battery terminals are shipped from the factory with connections at the PSU. During installation, the installer must install the batteries and terminate the connections at the batteries; refer to the "PSU to Battery" section.
- In the case where AC power fails, the PSU provides the system with DC Battery backup to the system along with an AC Fail and Battery Fail alarm.

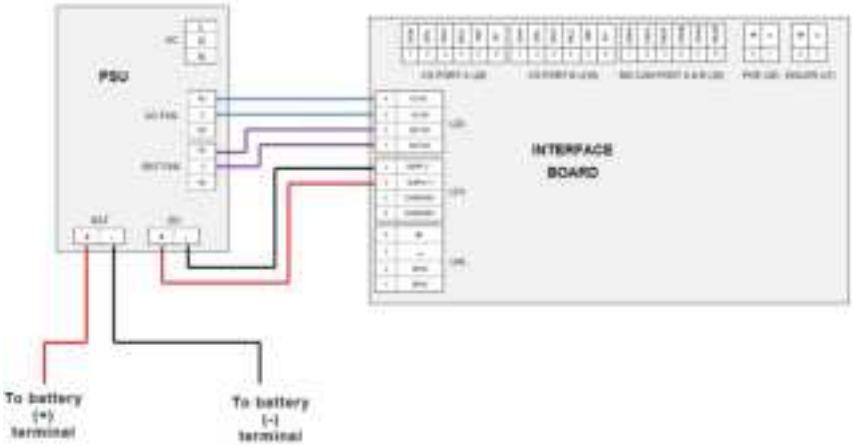


Figure 35. PSU to Interface Board

APPENDIX 3

Default PINs/Passwords

The default PIN must be changed to provide a unique six-digit PIN for each profile; Each user is required to change the default PIN after the first login; refer to the "Change PIN" section for instructions and requirements.

Note: It is recommended that only the required profiles be activated.

Table 25. Default PINs

Access Profile	PIN (6 digit)
USER 1	000000
USER 2	111111
USER 3	222222
USER 4	333333
USER 5	444444
MANAGER 1	555555
MANAGER 2	666666
MANAGER 3	777777
ENGINEER 1	888888
ENGINEER 2	999999

Table 26. Web-Server Default Passwords

Access Profile	Passwords
USER 1	USER1
USER 2	USER2
USER 3	USER3
USER 4	USER4
USER 5	USER5
USER 6	USER6
USER 7	USER7
USER 8	USER8
USER 9	USER9
USER 10	USER10

APPENDIX 4

Panel/Call Station Detail Form

Panel #_____

Panel ID	
Serial Number	
Site Name	
Panel Name	

Call Station Number	Call Station Name	Call Station Location	Serial Number	Dial Number
01				__01
02				__02
03				__03
04				__04
05				__05
06				__06
07				__07
08				__08
09				__09
10				__10
11				__11
12				__12
13				__13
14				__14
15				__15
16				__16

APPENDIX 5

Main Board to Interface Board Wiring

The Main Board to Interface Board (IB) connections are pre-wired at the factory. The power supply unit provides 24V DC output required to power the system. The VoCALL 16 system communicates with and monitors the power battery fault and AC connection.

Note: Call Stations must not be connected directly to the Main Board; rather, Call Stations are connected to the Interface Board as described in the "Call Station Wiring" section.

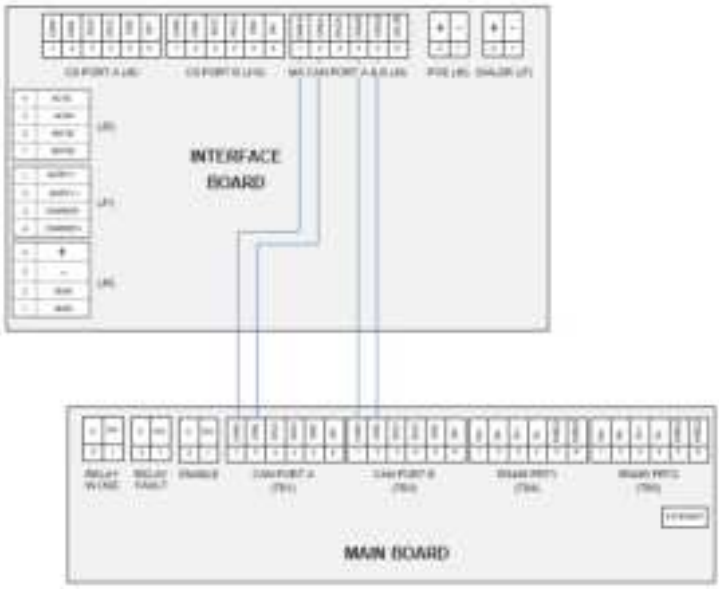


Figure 36. MX16US and NX16US connections

COMMUNICATIONS CONNECTIONS - DO NOT INSTALL SHIELD

NOTICE

Do not connect the shield terminals when wiring the communications wires between the Mainboard and the Interface board; connecting the shields will disrupt communications.

APPENDIX 6

Gateway Dialer Programming

The VoCALL Gateway Dialer must be configured prior to enabling 2-way voice calls from the MXUS16. The Dialer configuration is accomplished using a locally hosted webserver on the device. This webserver is different than the Webserver feature on the MX main board. To access the webserver, the local Ethernet port on the Dialer must be disconnected from the MX and connected to a PC/laptop.

The Dialer requires a direct Ethernet connection to a PC/laptop and uses a static IP address (Network switch connections and DHCP are not supported). The same steps in the "Connect to the Web Server" section can be used to configure the PC/laptop for an IP address of 10.0.0.2 to connect to the Dialer.

1. Connect an Ethernet cable between the PC/laptop and the MX16US Ethernet ports.
2. Log into the local webserver. Open a web browser on the PC/laptop and enter IP address 10.0.0.100 into the address bar; the login screen of the local webserver will open.

Note: The local webserver on the Gateway Dialer is compatible with Chromium based browsers such as Microsoft Edge®, Google Chrome®, and Opera®.

3. Enter the appropriate login credentials. The default username is admin. The default password is unique to each Dialer and can be found on the front of the unit.

4. On the first login, the user will be required to change default password; passwords must comply with the following:

- 8 character minimum
- At least one uppercase letter
- At least one lowercase letter
- At least one number
- At least one special character @$%*?&
- Different than current password

5. After logging in, the Terms and Conditions will be displayed and must be accepted by the user on every login. Read and scroll to bottom. Click Accept before proceeding.

View and Navigation

The overall view of the Dialer interface is shown below. There are four areas of the interface.

- **Navigation** - Used to select pages on the web interface.
- **Info** - Displays data/time, Registration ID, MAC address, and firmware version.
- **Page** - Displays the settings and info for the selected page.
- **Help** - Displays context sensitive help relevant to the selected page.

Note: After changing setting on a page, it is necessary to click the **Submit button** to save the changes to the Dialer.

Dialer Setup for VoCALL 16US

Settings

http://10.0.0.100/settings

The Dialer must be configured for proper operation with the MXUS16.

Refer to the embedded help on the right side of the web page for additional information.

Configure the settings as follows; be sure to click the **Submit button** after changing the settings.

1. Shuttle mode - set for Dialer
2. Network Settings

- Web Protocol - Set for either HTTP or HTTPS depending on cybersecurity requirements of the installation.
- Ethernet Port #1 - WAN connection to the internet. The local IT site administrator should be consulted on port settings.
- Ethernet Port #2 - Local connection to the MXUS16. This is a fixed connection and must be set accordingly for the MXUS16 to communicate with the Dialer.
  - IP Address - 10.0.0.100
  - Netmask - 255.255.255.0

3. Security Settings

- Settings are determined by cybersecurity requirements of the installation. Eaton cybersecurity requires turning off SSH access. If no value is entered for the Web UI Session Timeout it will default to 10 minutes.

4. USB Settings
   - Settings are determined by cybersecurity requirements of the installation. Eaton cybersecurity requires turning off both USB ports.

5. NTP Settings
   - Not used by the VoCALL 16US System.

Dialer Configuration

http://10.0.0.100/dialer

The Dialer requires an account setup with a VoIP service provider to place emergency calls. Refer to the "Gateway Dialer" section for VoIP service provider requirements. The VoIP service will provide account and device details that must be entered in the SIP Server Settings.

Refer to the embedded help on the right side of the web page for more information.

The "Test Connection" button can be used to verify the Dialer is setup correctly with the VoIP service provider. After pressing the button the Dialer will attempt to register with the VoIP service. If the registration was successful, a popup will display and allow the user to enter a phone number for a test call. Pressing the "Test call" button will cause the Dialer to make a phone call to the number provided above. It should be noted the test phone call is only to verity the end-to-end connection, no audio will be available.

System Status

http://10.0.0.100/status

The System Status page provides information regarding the current status of the Dialer.

- Device Information - Provides hardware type, firmware version, Registration ID, and kernel and bootloader version.
- Network - Displays the status of the network connections for Ethernet Port #1 and Port #2

Logs

http://10.0.0.100/logs

The Logs page provides information on changes to the configuration of the device, sorted by date, from the oldest changes to the most recent ones.

Defaults

http://10.0.0.100/defaults

The Defaults page allows the user to revert all settings (except "Network settings") to the factory default settings.

Updates

http://10.0.0.100/updates

The Updates page provides the ability to upload new firmware version to the Dialer from the PC/laptop.

After starting the upload and installation process, it is not recommended to leave the page.

Reboot

http://10.0.0.100/reboot

The Reboot page allows the user to reboot the Dialer.

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