M2M SERVICES

MQ03-LTE-M-FIRE-AV

Dual-Path/Sole-Path Communicator
with Dial Capture Interface

Installation and Operations Manual

Doc. No. 03004 V 1.5 03/2022

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About this document

This document was prepared and wholly owned by M2M Services. It is intended to provide trained personnel with the installation of the MQ03-LTE-M-FIRE-AV. M2M Services reserve the right to edit and revise this manual without notice.

Agency Listings and Approvals

These listings and approvals apply only to the module specified in this document. In some cases, listing may be in progress.

- FCC Statement
  This equipment complies with FCC rules Part 15, FCC registration No. XMR201707BG96 and operation is subject to the following conditions:
  (1) This device may not cause harmful interference, and
   (2) This device must accept any interference received.
- ETL No. 5013005, conforms to following UL standards:
    - UL864 – Control Units and Accessories for Fire Alarm Systems
    - UL1610 – Central-Station Burglar Alarm Units

Limited Liability

The user agrees that although the Device could reduce the risk of fire, theft, burglary, or other dangers, it does not guarantee against such events. M2M Services will not take any responsibility regarding personal, property or revenue loss while using the Device. M2M Services responsibility according to local laws does not exceed the value of the purchased system. M2M Services is not affiliated with GSM operators providing cellular services; therefore it is not responsible for network services, coverage, or its operation.

Manufacturer Warranty

The Device carries a non-transferable hardware limited warranty by the manufacturer M2M Services. This warranty does not cover any postal or labor costs for the removal and reinstallation of the Device. This warranty does not cover any subscriber agreements or failure of services provided under the terms of such subscriber agreements, or failure of cellular, GPRS, LAN or other related networks functions and services. The warranty is not valid if the device has been modified or used in a manner contrary to its intended purpose and does not cover damage to the Device caused by installation or removal of the Device or any of its components. This warranty is void if the Device has been damaged by improper maintenance, SIM card removal, accident or unreasonable use, negligence, acts of God, neglect, improper service, or other causes not arising out of defect in materials or build. This warranty does not cover the elimination of externally generated electrostatic fields or noise, or the correction of problems with the antenna or weak signal reception, damage to software, accessories or alarm system external components, cosmetic damage or damage due to negligence, misuse, abuse, failure to follow operating instructions, accidental spills or cleaners applied by the customer, damage due to environmental causes such as floods, airborne fallout, chemicals, salt, hail, windstorms, moisture, lightning or extreme temperatures, damage due to fire, theft, loss or vandalism, damage due to improper storage and connection to equipment of another manufacturer, modification of existing equipment, faulty installation or short circuit.

M2M Services will not be liable in any event of incidental, special or consequential damages (including loss of profits), and the Client shall have no claim against M2M Services for termination of contracts, indemnification, compensation for loss of customers, loss of profits, prospective profits, distribution rights, market share, goodwill, investments made or any similar losses that may result from any faults in the operation of the Device and the services provided by M2M Services.

Safety Instructions

- ✓ This unit must be checked by a qualified technician once a year.
- ✓ The MQ03-LTE-M-FIRE-AV device contains a radio transceiver operating over LTE CAT-M1 band.
- ✓ Do not use the Device with medical devices, in places or where it could interfere with other devices and cause any potential danger.
- ✓ Do not expose the Device to high humidity, chemical environment, or mechanical impacts.
- ✓ Do not use the Device in hazardous environment. Do not store or install the Device in overheated, dusty, wet or overcooled places.
- ✓ The Device should be mounted in areas with restricted access. Any system repairs must be done only by qualified, safety aware personnel. Do not disassemble or refit the Device. Do not attempt to personally repair it.
- ✓ Mains power must be disconnected before any installation starts. The device installation or maintenance must not be done during stormy conditions.
- ✓ The device must be powered by DC 12-29V power supply.
- ✓ Blown fuses or any other components of the Device must not be replaced by the user.
- ✓ Keep the Device dry. Any liquid, i.e., rain, moisture, may destroy or damage the internal circuitry.
- ✓ Handle carefully. Do not shake it violently.
- ✓ Do not clean it with chemicals or detergent.
- ✓ Please read the user manual carefully before installing or operating on the Device. Otherwise, it may not work properly or be damaged.

Technical Support

For support in the USA and Canada, contact M2M Services Technical Support at:

- Telephone: 1-800-403-7029
- Email: support@m2mservices.com
- Website: support.m2mservices.com

Product Description

The MQ03-LTE-M-FIRE-AV is a digital cellular communicator with dial capture interface. It represents the latest communication technology for the security industry. The communicator is equipped with dual-SIM. In the US one of the SIM cards supports AT&T and the other supports Verizon.

This communication solution is a complete communication platform for data transfer from alarm systems at remote sites to Central Monitoring Stations (CMS). The platform allows bi-directional data transmission by using LTE CAT-M1 network and LAN.

Main Features

- ✓ Universal Panel Compatibility – Dial capture interface supporting Contact ID, SIA, and Pulse 4/2
- ✓ Exceptional Redundancy – Dual-SIM device
- ✓ Connection monitoring – adjustable fault reporting time as low as 5 minutes. Default time – 35 minutes.
- ✓ High reliability due to multiple transmission channels (LTE CAT-M1/LAN) and redundant servers.
- ✓ Web-based software and a smartphone app for device configuration and diagnostics.
- ✓ End-user smartphone app – supports push and email notifications.

Specifications

Characteristics	Technical Specifications
Supply Voltage	+12 to +29 VDC
Consumption	Standby 60 mA Peak 200 mA
Frequency	LTE CAT-M1 700/850/1700/1900/2100 MHz
GSM Providers	AT&T, Verizon, or other available networks in the area
Dimensions	2.48"x3.54"x1.26"
Weight	2.56 oz without antenna
Environmental	Operating temperature: 0°C to 49°C (32°F to 120°F) Humidity: 0 to 85% relative humidity, non-condensing

Mounting and Wiring

- **Recommended location and wiring methods must be in accordance with the National Electrical code, ANSI/NFPA 72.**
- **Installation must be in accordance with the National Fire Alarm and Signaling Code, NFPA 72.**
- **The communicator must be connected to a UL Listed compatible panel with power limited circuits.**
- **The communicator must be powered by a regulated UL Listed UOJZ, UTOU, NBSX control panel or power supply.**
- **The wiring should be done only when the panel is powered down.**
- **For Dry/Indoor use only.**

Wiring the Communicator

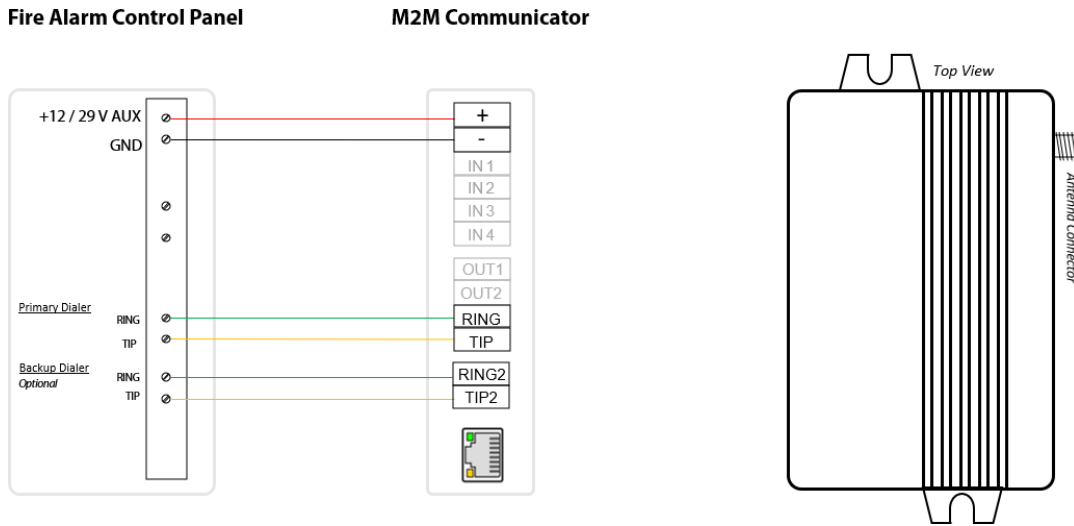The terminal strips can accommodate solid or stranded wire sizes from 14 to 22 AWG.

Figure 1: Wiring Diagram

(+)	Connect to AUX + of the panel.
(-)	Connect to AUX – (GND) of the panel.
RING	Connect to RING of the primary dialer of the panel.
TIP	Connect to TIP of the primary dialer of the panel.
RING2	Connect to RING of the backup dialer of the panel.
TIP2	Connect to TIP of the backup dialer of the panel.

Note: IN1, IN2, IN3, IN4, OUT1, OUT2 – Not required for reporting via the PSTN dialers

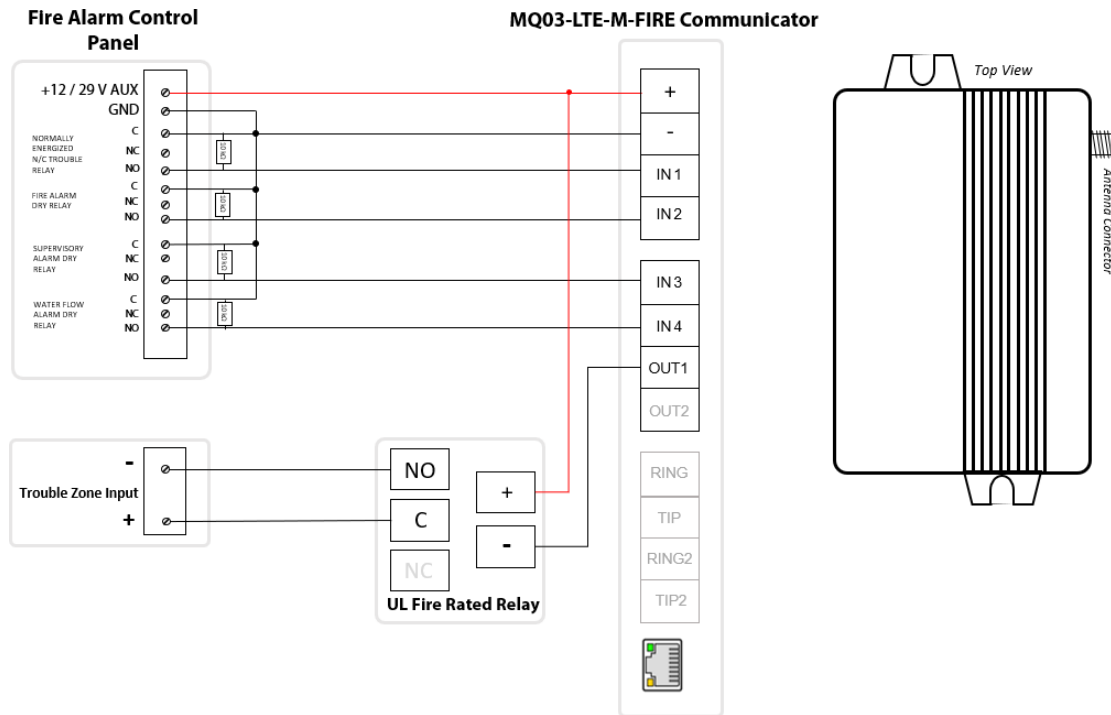# Wiring for FACP Relay Trigger Input Reporting (supervised inputs) *

Figure 2: Wiring Diagram

(+)	Connect to AUX + of the panel.
(-)	Connect to the AUX – (GND) of the panel.
IN1	Connect to a Trouble Relay Output.
IN2	Connect to a Fire Alarm Relay Output.
IN3	Connect to a Waterflow Alarm Relay Output.
IN4	Connect to a Supervision Alarm Relay Output.
OUT1*	Connect to a Trouble Zone Input
OUT2**	Connect to a Trouble Zone Input

Note:

OUT1* indicates loss of both cellular and LAN connections. OUT1 is an open collector output, maximum load 50 mA. A relay may not be required, refer to your FACP panel installation manual.

OUT2** is preconfigured as a path failure output and it indicates loss of any of the communication channels. OUT2 is an open collector output, maximum load 50 mA. A relay may not be required, refer to your FACP panel installation manual.

RING, TIP, RING2, TIP2, OUT2 – not required when using the FACP relays

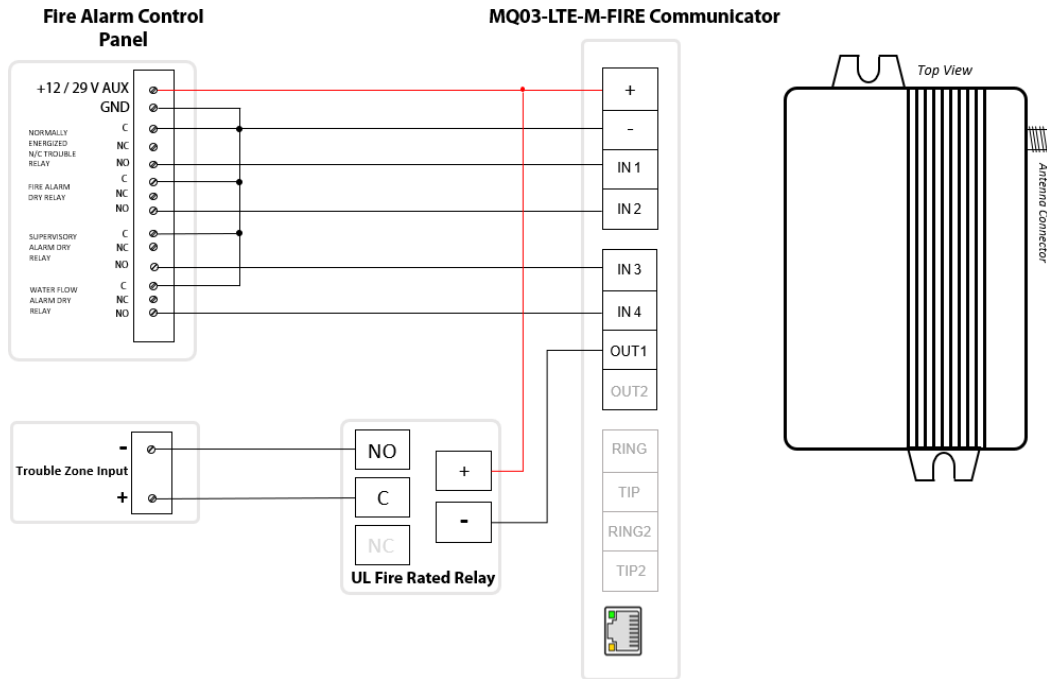# Optional wiring for FACP Relay Trigger Input Reporting (none-supervised inputs)

Figure 3: Wiring Diagram

(+)	Connect to AUX + of the panel.
(-)	Connect to the AUX – (GND) of the panel.
IN1	Connect to a Trouble Relay Output.
IN2	Connect to a Fire Alarm Relay Output.
IN3	Connect to a Waterflow Alarm Relay Output.
IN4	Connect to a Supervision Alarm Relay Output.
OUT1*	Connect to a Trouble Zone Input
OUT2*	Connect to a Trouble Zone Input

*Note:

OUT1* indicates loss of both cellular and LAN connections. OUT1 is an open collector output, maximum load 50 mA. A relay may not be required, refer to your FACP panel installation manual.
OUT2** is preconfigured as a path failure output and it indicates loss of any of the communication channels. OUT2 is an open collector output, maximum load 50 mA. A relay may not be required, refer to your FACP panel installation manual.

RING, TIP, RING2, TIP2, OUT2 – not required when using the FACP relays

Optional Wiring for Two Supervised Ring/TIP lines of the M2M Communicator*

The MQ03-LTE-M-FIRE-AV supports RING and TIP wires supervision. The communicator will detect and report trouble evet to the central station in case the RING/TIP connection between the device and the FACP is violated.

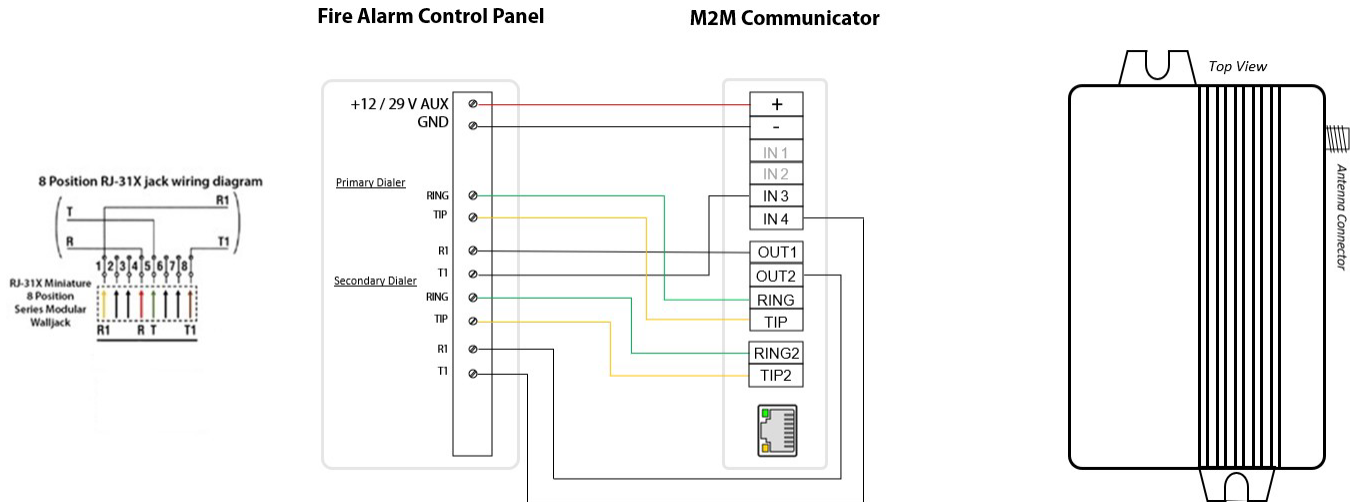To supervise the RING and TIP connection, refer to the wiring diagram* below:

Figure 4: Wiring Diagram for supervision of the two RING/TIP lines of the FACP

(+)	Connect this terminal to AUX + of the panel.
(-)	Connect this terminal to the AUX – (GND) of the panel.
Primary Dialer	
RING	Connect this terminal to the RING of the primary dialer of the panel.
TIP	Connect this terminal to the TIP of the primary dialer of the panel.
OUT1	Connect this terminal to the R1 of the primary dialer of the panel.
IN3	Connect this terminal to the T1 of the primary dialer of the panel.
Backup Dialer	
RING2	Connect this terminal to the RING of the backup dialer of the panel.
TIP2	Connect this terminal to the TIP of the backup dialer of the panel.
OUT2	Connect this terminal to the R1 of the backup dialer of the panel.
IN4	Connect this terminal to the T1 of the backup dialer of the panel.

To use this feature, you must enable it in the M2M Administrative Platform -> Device Dashboard menu or via the RControl Admin mobile application.

Mounting the Communicator

This communicator comes fully assembled with all the components mounted, except for the external antenna. The device comes with standard 3 ft external antenna.

The communicator must be installed within M2M FC08 Enclosure for Cellular Alarm Communicators, Altronix BC300R, or any other UL Listed (UOXX, NITW or CYIV) metal enclosure. All the wiring must be routed through a conduit.
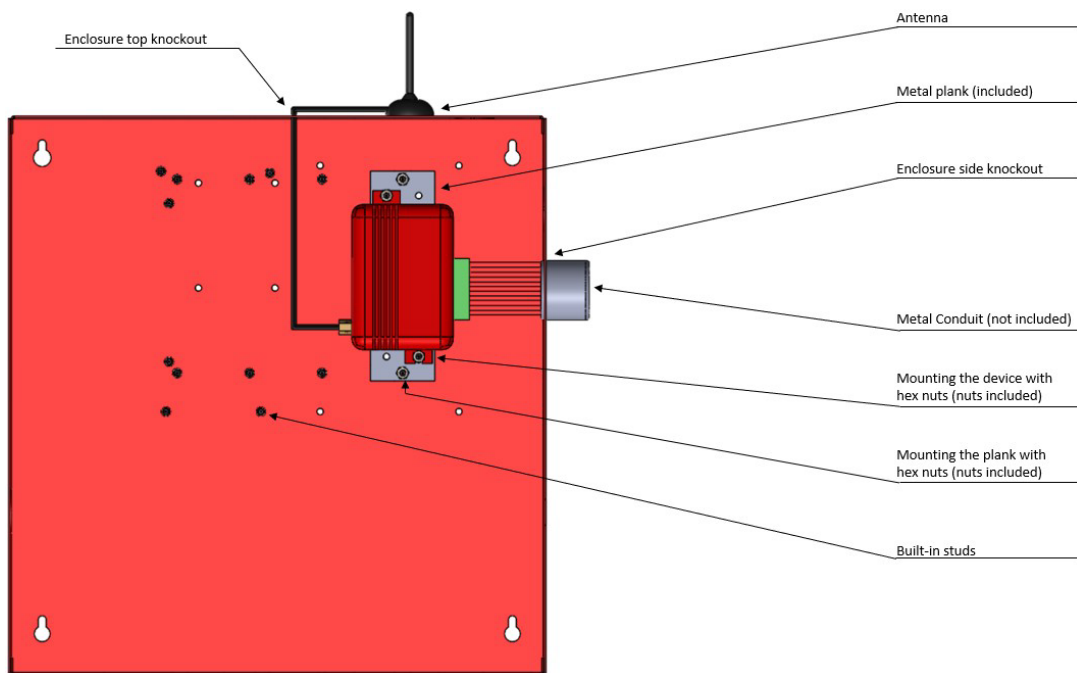

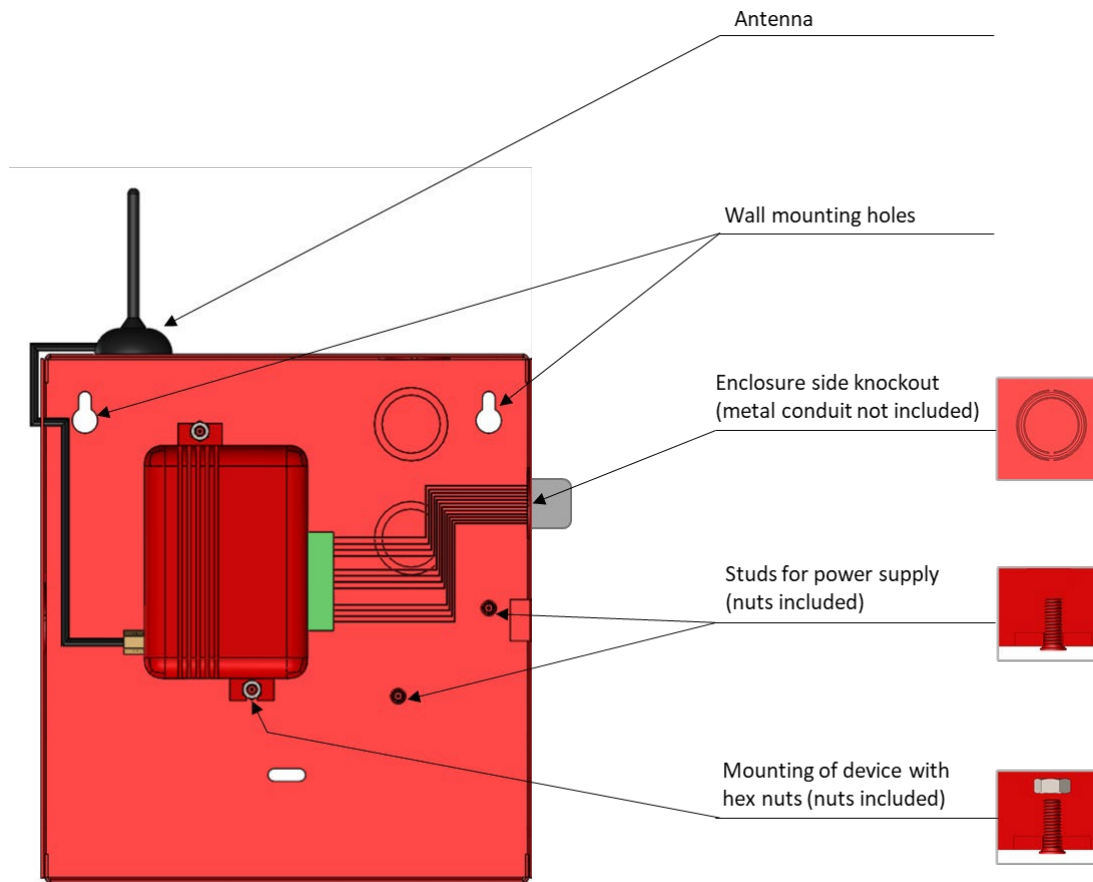*Figure 6: MQ03-LTE-M-FIRE mounting in Altronix BC300R Enclosure*

Antenna

Wall mounting holes

Enclosure side knockout
(metal conduit not included)

Studs for power supply
(nuts included)

Mounting of device with
hex nuts (nuts included)

Figure 7: MQ03-LTE-M-FIRE-AV mounting in FC08

Enclosure

There are several steps in installing MQ03-LTE-M-FIRE-AV properly. In the following steps you will use the communicator and the RControl Admin application to determine the signal strength to find a suitable mounting location.

For UL installations, the communicator must be mechanically secured to a UL Listed enclosure such as a UL Listed junction box. If mounting in the FC08 metal enclosure, use the mounting diagram in figure 7.

1. Connect the antenna to the communicator.
   The antenna is supplied with an SMA connector, that allows for easy connection to the communicator. The body of the antenna has a magnet in the bottom and can be attached to the wall of the metal alarm panel box or use double sided adhesive tape to securely attach the antenna to the box. The antenna should be placed perpendicularly to the ground, either right side up or upside down. Try to keep the antenna away from sources of RF interference or where metal objects can block the cellular radio RF signal.

> **WARNING**: The antenna used with this product must be installed to provide separation distance of at least 7.8 in (20cm) from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter except when in accordance with the FCC multi-transmitter product procedure.
>
> **Note:** Antenna problems are rare unless the premises are in an area with poor network coverage, in a building below ground, or in a metal structure. If you require antenna with a longer cable, please contact your M2M Services representative.
>
> Do not use the unit with a damaged antenna. Have your antenna replaced immediately. Use only an antenna approved by the device manufacturer. Non-approved antennas or modifications could impair service quality, damage the device, and violate FCC regulations.

2. Connect the communicator to the alarm panel. Refer to the wiring section provided in the previous section.
3. Connect the LAN port of the communicator to a router. If you have DHCP enabled in your network, the communicator will connect automatically via Internet.
4. Power up the panel.
5. The communicator's LED indicator will turn on and start blinking. The steady light will indicate a good connection. The device LED has the following states:

LED Status	Indication	Action
The LED is Off	The unit is not connected to the panel. The power from the panel is out. The unit is damaged	Verify the wiring, refer to the wiring diagram. Measure the AUX output of the panel. Replace the unit
Slow flashing	Trying to establish connection. There is no signal available	Reposition the antenna
Constantly On, blinking every 5 secs	Connection established at low signal level	Reposition the antenna
Constantly On	Connection established at good signal level	
Fast flashing	Transferring data	

6. If the device is connected to a local area network with DHCP enabled, it will automatically get a dynamic IP address. External IP address or router port redirections are NOT needed. If static IP is required refer to M2M Services Administrative platform section "LAN Settings".

The RJ45 Connector LEDs have the following states:

Yellow LED RJ45 Connector	Indication	Action
The LED is Off	The LAN cable is not plugged into the communicator	Verify the wiring, refer to the wiring diagram. Measure the AUX output of the panel Replace the unit
The LED is Constantly On	Connection established	
Green LED RJ45 Connector	**Indication**	**Action**
The LED is Off	The router is not providing an IP via DHCP. The device is configured with static IP that is already in use in the network.

There is no internet access. | If using DHCP, check your DHCP server settings. If using static IP, make sure that the IP is not already in use. Check if you have access to the internet using another device in the same network. Check your router settings. |
| The LED is Blinking | Transferring data | |
| The LED is Constantly On | Cable and communication with the router are OK | |

7. Download the RControl Admin mobile application onto your Android or IOS mobile device.

8. Login with the end user credentials found in the quick installation manual provided with the device.

9. For more details refer to M2M Smartphone Application Overview V 2.0 at support.m2mservices.com
   If the signal is low, reposition the antenna and try again to find a better signal. To be verified by the installer.
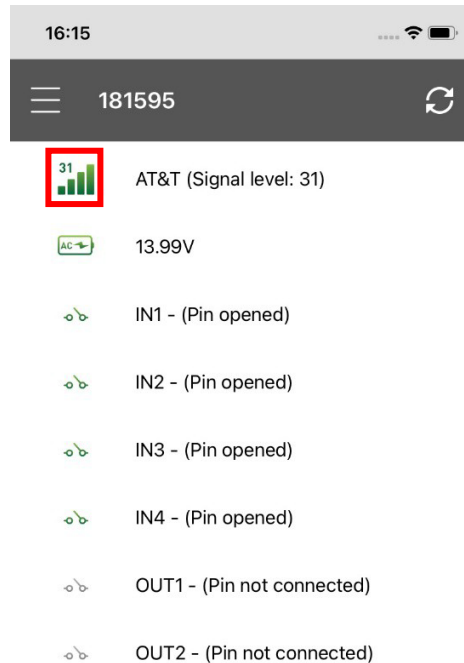

Figure 3: Screenshot from the RControl App providing information about signal strength.

10. When the wiring and deployment of the unit are completed, proceed with the programming of the panel (see next section).

Programming

Out of the box the communicator is ready to use and does not require additional programming. You need to program the control panel to work with the MQ03-LTE-M-FIRE-AV.

Programming the Control Panel

For information about how to program the control panel, please refer to the corresponding control panel guide. Ensure that the following programming is done:

- ✓ Enable the PSTN dialer of the FACP.
- ✓ Select DTMF mode.
- ✓ Select Contact ID, SIA or Pulse* 4/2 communication format.
- ✓ Enter a telephone number for dialing (you can use any number, e.g., 999999)
- ✓ Enter a 4-digit account number.

Pulse 4/2 reporting requires additional configuration in the M2M Administrative platform

Programming guides and a list of the compatible alarm panels are available at http://support.m2mservices.com/

Troubleshooting

If you have issues receiving the events:

1. Verify the RING/TIP connection
    - ✓ Make sure the RING and TIP terminals are connected to a TELCO ring and tip, not R-1/T-1 terminals.
    - ✓ Verify the panel error messages – "Cut Line", Communication Failure".
2. Try the following additional settings of the panel:
    - ✓ Disable "Wait for Dial Tone" option