



**M2M**  
SERVICES

# MN02-LTE-M

Cellular Communicator  
with Dial Capture Interface

## Installation and Operation Manual

Doc. No. 02001M V 1.2

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## About this document

This document was developed and wholly owned by M2MServices. It is intended to facilitate trained personal with the installation of MN02-LTE-M. M2M Services reserve the right to modify 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 process.

- 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 listed No. 5013005, conforms to following UL standards:
  - UL985 –Household Fire Warning System Units
  - UL1023 – Household Burglar Alarm System Units
  - UL1610 – Central Station Burglar Alarm Units

### Limited Liability

The user agrees that despite the Device could reduce the risk of fire, theft, burglary or other dangers, it does not guarantee against such events. M2M Services LTD will not take any responsibility regarding personal, property or revenue loss while using the Device. M2M Services LTD responsibility according to local laws does not exceed the value of the purchased system. M2M Services LTD is not affiliated with GSM operators providing cellular services, therefore 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 LTD. 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 does not apply to any Device that 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 voided 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 construction. This warranty does not cover the elimination of externally generated static or noise, or the correction of antenna problems 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 customer applied cleaners, 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.

In no event will M2M Services LTD be liable for any incidental, special or consequential damages (including loss of profits), and the Client shall have no claim against M2M Services LTD 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 LTD.

## Safety Instructions

- ✓ This unit must be checked by a qualified technician once a year.
- ✓ GSM/GPRS communicator MN02-LTE-M (the Device) contains a radio transceiver operating in LTE/GSM bands.
- ✓ Do not use the Device with medical devices, or where it can 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. Don't store or install the Device in overheated, dusty, wet or overcooled places.
- ✓ The Device is mounted in limited access areas. Any system repairs must be done only by qualified, safety aware personnel. Don't disassemble or refit the Device. Do not attempt to personally repair it.
- ✓ Mains power must be disconnected before any installation or tuning work starts. The device installation or maintenance must not be done during stormy conditions.
- ✓ The device must be powered by DC 12-15V, 200mA 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 inside circuitry.
- ✓ Handle carefully. Don't vibrate or shake it violently.
- ✓ Clear the Device with a piece of dry cloth. Don't clean it with chemicals, detergent.
- ✓ Please read the user manual carefully before installation and operation of the Device. Otherwise, it may not work properly or be destroyed.

## Technical Support

Please contact the company that sold you this product. If purchased from Shield Tech Security, you may email [support@shieldtechsecurity.com](mailto:support@shieldtechsecurity.com) or visit <https://shieldtechsecurity.com/support/m2m>

## Product Description



The MN02-LTE is a digital cellular communicator with dial capture interface. It represents the latest communication technology for the security industry. The new LTE (Long Term Evolution) connectivity brings faster speeds and greater stability. The communicator is equipped with dual-SIM and each SIM card supports AT&T and T-Mobile networks.

This communication solution is a complete communication platform for data transfer from alarm systems at remote sites to Central Monitoring Stations (CMS) or end-user equipment (smart phones, tablets, PCs, etc.). The platform allows bi-directional data transmission by using GPRS network and SMS messaging. The platform consists of hardware device (MN02-LTE-M communicator) and Cloud Infrastructure Service (CIS). The CIS can be provided and supported either by M2M Services LTD or by its authorized local partners. The connection between the Device and any security alarm system is via telephone line emulation with DTMF decoding. The MN02-LTE-M maintain permanent connection to the Cloud Infrastructure Service. The CIS performs several administrative tasks, such as to constantly monitor the connections with all Devices; to send commands and queries to the Devices in real time (e.g. to retrieve the GSM signal level or the mains power voltage); to perform device configuration tasks and remote firmware updates; to distribute the alarm events to different end-user equipment and/or to CMS; and etc.

When the alarm system is monitored by a CMS, the CIS receives all events from the Device, buffers them and forwards them to the monitoring station using a protocol and interface that are supported by the monitoring station. The CIS can emulate some of the most popular hardware receivers' protocols, such as Sur-Gard MLR2, DC09 (SIA over IP), VISONIC, KP Electronics etc. In this way, different monitoring station software programs are supported.

The administrative access to configuration settings and service commands can be done through a web based software or through our mobile app 'RControl Admin'. The user can create different administrative accounts with different permissions. For example, it can be specified that some users can only view communicator statuses and check the signal level without being able to change alarm configuration settings.

## Main Features

- ✓ Universal Panel Compatibility – Dial capture interface supporting Contact ID and SIA
- ✓ Exceptional Redundancy – Dual-SIM, each SIM supporting AT&T and T-Mobile
- ✓ One input and one programmable output
- ✓ Connection monitoring – adjustable fault reporting time as low as 20 seconds.
- ✓ Upload/Download – For selected panel: DSC, Honeywell and NX series. Additional hardwire required.
- ✓ High reliability due to multiple transmission channels (GPRS/SMS/GSM/PSTN) and redundant servers;
- ✓ Jamming detection – triggers notification through the alternative channel or activation of a digital output.
- ✓ Web-based software and smartphone app for devices configuration and administration. Remote firmware updates.
- ✓ End-user smartphone app – supports push notifications and arming/disarming of the alarm system.

## Specifications

Supply Voltage	+12 to +15 VDC
Consumption	Standby 15 mA Peak 200mA
Frequency	LTE-FDD B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28 GSM850/GSM900/DCS1800/PCS/1900
GSM Providers	AT&T, T-Mobile
Dimensions	1.6"x1.95"x0.8"
Weight	1 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 70.
- ✓ 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.
- ✓ The wiring should be done only when the panel is power down.
- ✓ For Dry/Indoor use only.

## Wiring the Communicator

The MN02-LTE-M is equipped with 6 leads, placed in a common jacket, to facilitate the connection with the panel. Each lead is 26 AGW, 12" (30 cm) long and color coded. The communicator must be mounted inside the box of the host alarm system to be UL compliant.

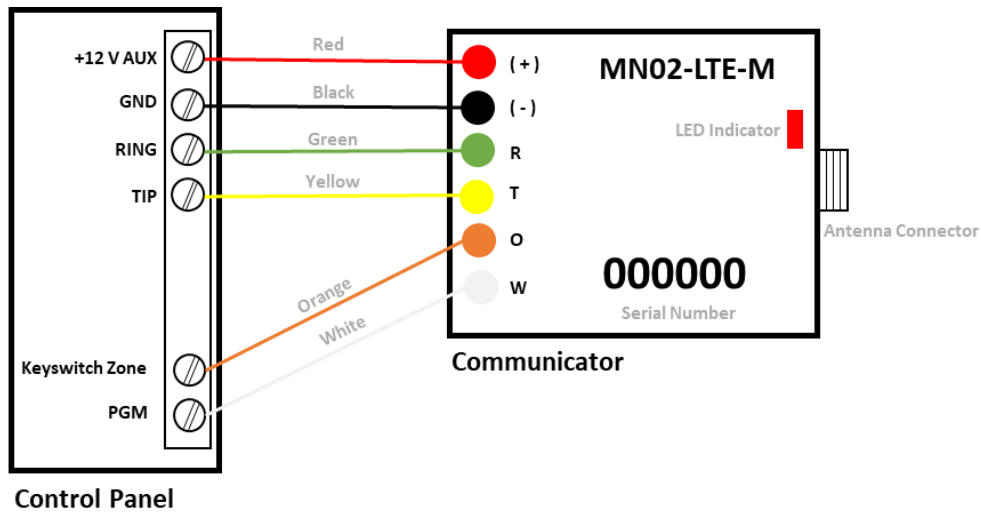


Figure 1: Installation Wiring Diagram

(+) red wire	Connect this wire to AUX + of the panel.
(-) grey wire	Connect this wire to the AUX – (GND) of the panel.
R green wire	Connect this wire to the RING of the panel.
T yellow wire	Connect this wire to the TIP of the panel.
O orange wire	Connect this wire to a zone, that can be define as a keyswitch zone. This connection is optional in case you would like to take advantage of the Interactive features.
W white wire	Connect this wire to a PGM of the panel. This connection is optional (Interactive features). The status of the panel can be retrieve not only from the status PGM, but also from the Open/Close reports from the dialer.

**WARNING:** Always connect the device to a current limited power source. Never connect it directly to a battery.

## Mounting the Communicator

This communicator comes fully assembled with all the components mounted except the external antenna.

There are nine steps in installing MN02-LTE-M 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.

1. The communicator must be mounted inside the box of the host alarm system, using a double sided adhesive tape (not provided by M2M). Place the communicator in a way that it will not interference with the other components in the box.
2. Connect the antenna to the communicator.  
The antenna is supplied with SMA connector, that allows 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 type to securely attach the antenna to the box. The antenna should be position perpendicular 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 shield it or otherwise block the cellular radio RF signal.

**WARNING:** The internal 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 in accordance with 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 a manufacturer approved antenna. Non-approved antennas or modifications could impair service quality, damage the device and violate FCC regulations.

3. Connect the communicator to the alarm panel. Refer to the wiring diagram provided on the previous section.
4. Power up the panel.
5. The communicator LED indicator will turn on and start blinking. The steady light will indicate a good connection.

The 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	
Fast flashing	Transferring data	

6. Download the RControl Admin mobile application on your Android or IOS mobile device.
7. Login with the end user credentials from the quick installation manual provided with the device.
8. If the signal is low, reposition the antenna and try again to find a better signal.
9. When the wiring and positioning of the unit is completed, proceed with the programming of the panel (next section).

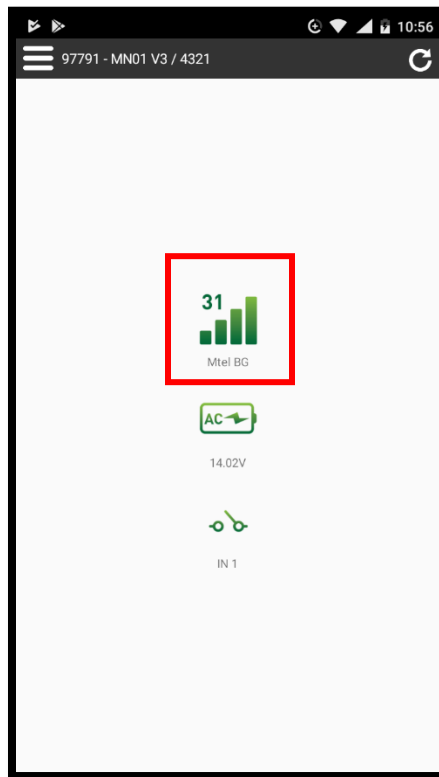


Figure 2: Screen Shot from RControl App with information about signal strength.

# 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 MN02-LTE-M.

## Programming the Control Panel

For programming information, please refer to the appropriate control panel guide. Ensure the following programming is done:

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

**Find configuration guides for popular panels at**  
<https://www.shieldtechsecurity.com/support/m2m>

## Troubleshooting the DTMF Communication

If you have issues receiving the events:

1. Verify the RING/TIP connection
  - ✓ Make sure the green and yellow wires 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 “Telephone Line Monitoring”
  - ✓ Disable “Wait for Dial Tone” option
  - ✓ Use “A” instead of “0” in the account number
  - ✓ If there is more than one partition, enter an account number for each partition. For curtain panels, you might need also to specify an account number for the main partition 0 (sometimes referred as system number)

## RControl App Setup

The MN02-LTE communicators can add smart features to new and existing alarm systems. You can monitor status of the system, look back in the events history and receive real-time notifications for important events. Even more, you can remotely arm/disarm the alarm panel from a smartphone.

You can download the mobile application for Android and iOS from Google Play and AppStore by searching for “RControl M2M”, or from the following links:

<https://play.google.com/store/apps/details?id=m2m.mobile>

<https://itunes.apple.com/bg/app/residence-control/id712098315?mt=8>

## Configuring Remote Control of the Panel (Optional)

To enable the **remote arm/disarm feature**, both the alarm panel and the communicator should be properly configured. It can be done via the keyswitch feature of the panel. No matter what option you choose, you will need to create an end user for the mobile application and you will need to grant permissions for remote arming/disarming (refer to "Granting remote access to users" section).

You can remotely arm and disarm virtually any alarm panel that supports **Momentary Keyswitch Arming**.

The general principle of working is as follows:

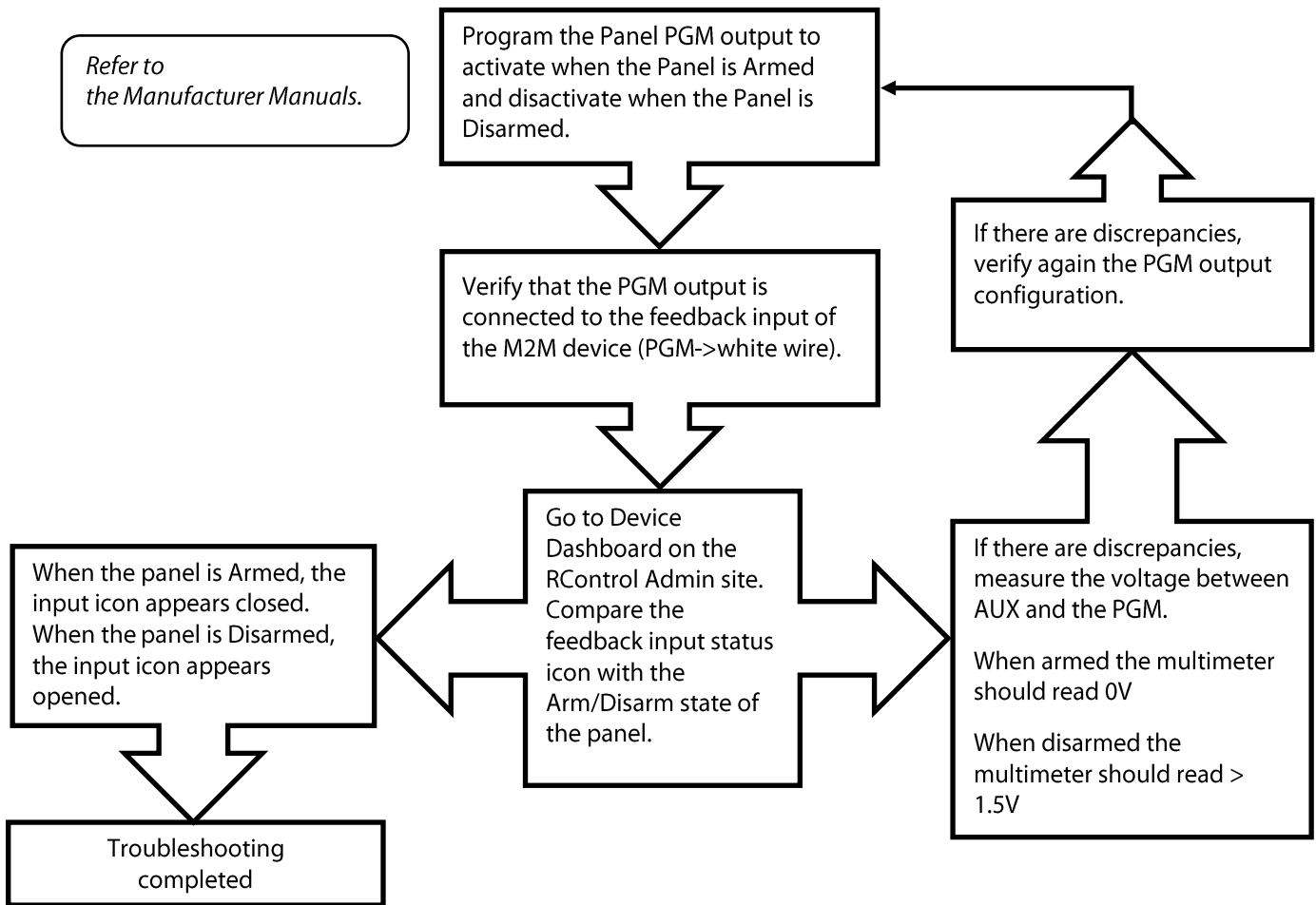
- ✓ You should configure the output of the communicator as keyswitch. You should connect this output to a zone of the panel that is configured as a momentary keyswitch. When momentary activated, the output of the communicator will switch to ground for a predefined interval of time. Each pulse would alternately arm/disarm the system.
- ✓ The communicator needs feedback from the alarm panel if it is actually armed or disarmed. For that reason, you should also configure a PGM of the alarm panel to activate (switch to ground) when the panel is armed and to deactivate when disarmed. You should connect this PGM to an input of the communicator that is configured as Status Feedback input. For panels that don't have a status PGM, the status can still be received through the Open/Close reporting.

**Note:** The keyswitch zone of the panel should be attached to Partition 1. The PGM of the alarm panel should also reflect to the arming status of Partition 1. Currently you can arm/disarm remotely via keyswitch **only Partition 1**.

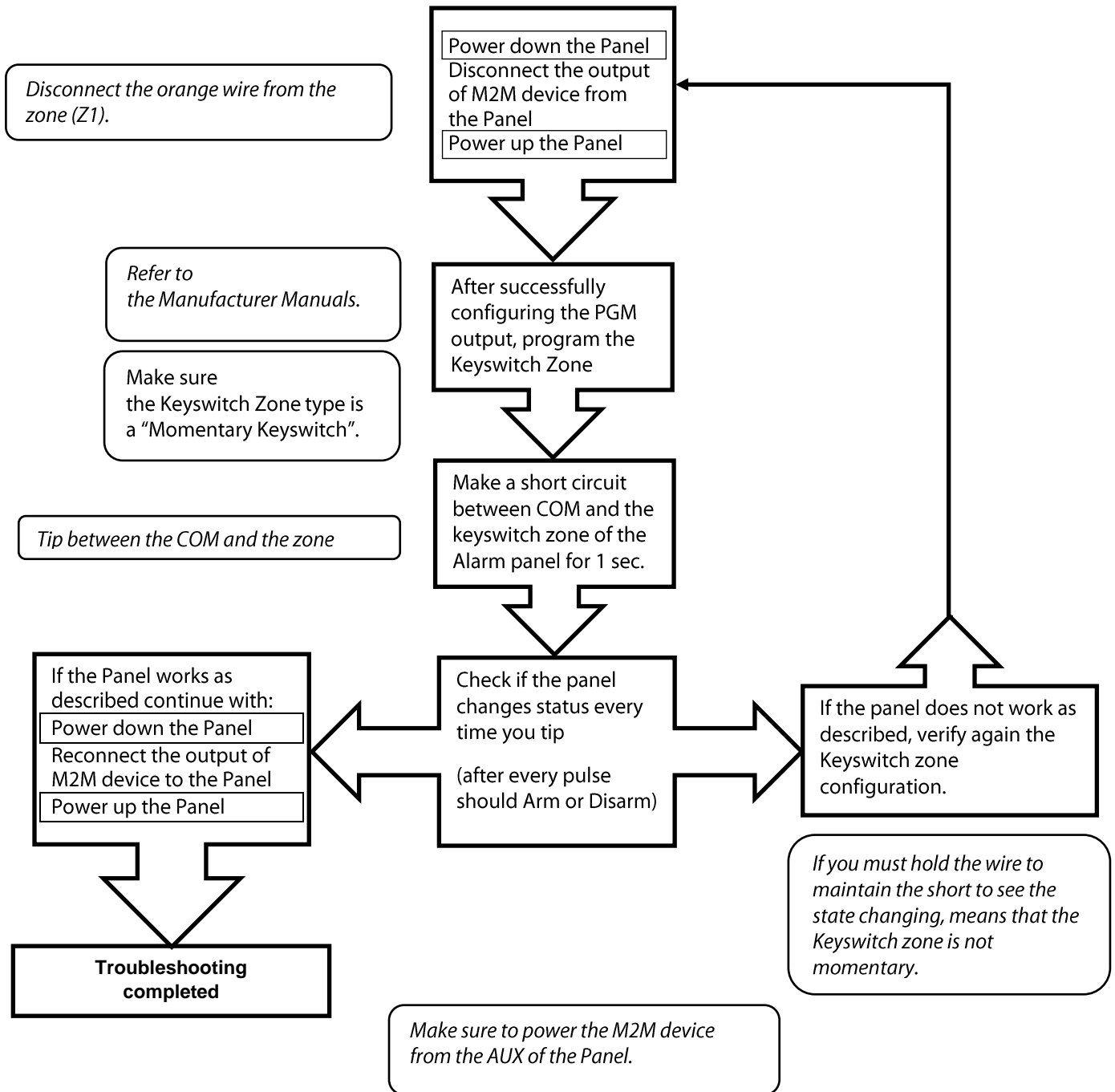
- ✓ You should configure the keyswitch zone of the alarm panel itself. Please refer to the panel's installer manual. Currently the communicator can work only with panels that support Momentary keyswitch. Maintained keyswitch is not supported. Also, please keep in mind that for some models of the alarm panels you might need to connect the output of MN02-LTE to the keyswitch zone of the panel through an EOL resistor.
- ✓ To complete the configuration, you must execute Initial Pairing Procedure:
  - Enable Open/Close reporting (at least during the initial pairing procedure)
  - Enable Arming/Disarming feature from the Settings menu of the RControl mobile app
  - Ask the end user to enter a remote PIN code(4-digits) of their choice
  - Disarm (or Arm) the panel from the keypad within 2 minutes to complete the pairing.

# Troubleshooting

## Troubleshooting the Alarm Panel PGM configuration



## Troubleshooting the Alarm Panel Keyswitch Zone Configuration



## Troubleshooting the Remote Interactions using RControl Mobile App

**NOTE:** After completing the installation of the M2M device and the configuration of the Alarm Panel you must perform a pairing procedure using the RControl mobile application (app) and the Panel.

