Fire Communicator

Installation and wiring

ADC-FC100-Tx

Table of Contents

Additional Documents

For more in-depth information, please refer to this document:

Document name	Description
Sticker Rev: 0.21_20250926	Schematics and description of connections ADC-FC100-Tx.
Manual Rev: 1.0.1	Manual of the product ADC-FC100-Tx.

Before You Start

This document provides information about mounting, wiring, and troubleshooting of the ADC-FC100-Tx communicator. It is written under the assumption that the installer is qualified and possesses the necessary skills to install this device.

Important Safety Instructions

Read all the safety and operating instructions listed below before installation and use.

Qualified Personnel

- The device must be assembled, installed, and serviced by qualified personnel in accordance with the instructions.
- The device must be inspected by qualified personnel once a year (on average).

Environmental Conditions

- The device must work in a safe environment with parameters in accordance with its specification.
- Operating temperature:
  - Nominal: +68ºF (+20ºC)
  - Acceptable: +32ºF to +120ºF (0ºC to +49ºC).
  - Humidity: 0% ... 93% (without condensation).
- Do not install the device near any heat sources, such as radiators, heat registers, stoves, or other appliances that produce heat.
- The device is intended only for indoor and dry installations.
- Do not install in dirty, dusty places, places with high humidity (with condensation), or near water, chemical vapors or in the same room with medical equipment, the function of which may be disrupted.
- Do not install near water or chemical vapors.
- Avoid mounting the ADC-FC100-Tx near sources of significant electromagnetic interference, or in rooms where metal is the predominant structural material due to the potential for cellular signal attenuation.

Damage, Repair and Maintenance

- If the device is damaged, disconnect it from the power supply and have it replaced only by trained, qualified personnel.
- Do not attempt to repair the device yourself, repairs are made only by the manufacturer's service.
- The device should always be cleaned with dry cloth. Do not use water, detergents or chemicals, as they may damage the device.

NOTICE: To reduce the risk of fire or electric shock, do not expose the device to rain or moisture.

Technical Support

QUESTIONS?

If you are experiencing difficulties with your installation, please contact Alarm.com CORE Technical Support at 866-834-0470 and we'll be happy to assist further.

Wiring and Mounting

In the box:

- ADC-FC100-Tx Fire Communicator
- LTE Antenna (x2)
- Mounting Bracket
- Mounting Screws – Case (x4)
- Mounting Screws – Bracket (x2)
- Nylon Pegs (x4)
- Insert – Information about the device

Special tools are required for connection:

- Screwdrivers, Phillips; size PH2
- Screwdriver; Phillips; size PH1
- for ARK e.g.: Screwdriver; flat; 2.5x

Mounting the Metal Fire Enclosure

NOTES:

- It is required for the device needs to be installed inside a metal enclosure.
- The location and wiring methods must be in accordance with the National Electrical Code, ANSI/NFPA 70.
- Installation procedures must align with the guidelines set by the National Fire Alarm and Signaling Code, NFPA 72.
- When mounting on a surface that is prone to vibrations, exercise extra caution. If the installation is not performed correctly, it may lead to cable connection problems.
- Please ensure you thoroughly review the 'Important Safety Instructions' section.

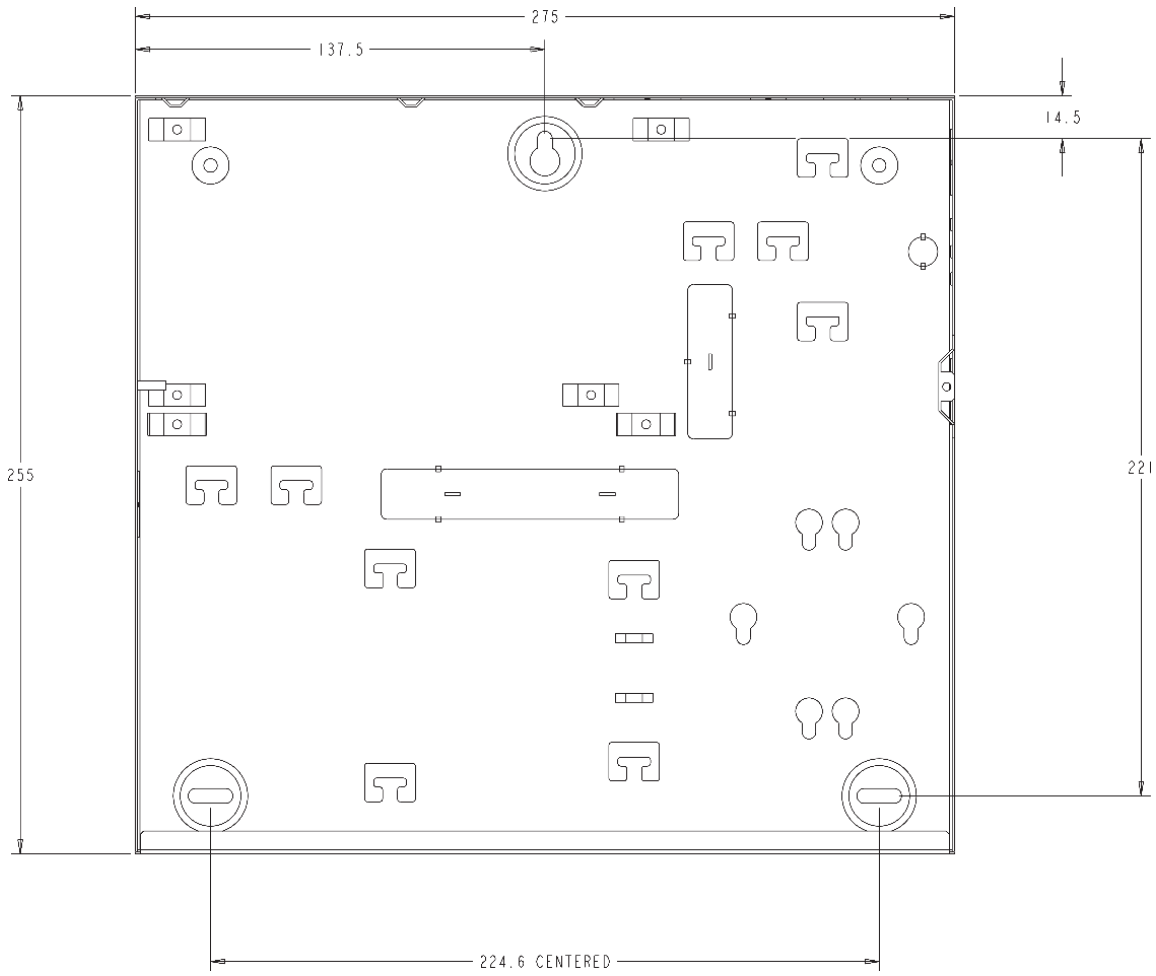

Fig. 1.1. Dimensions of the proposed metal fire enclosure.

To mount the suggested metal enclosure, you should carefully follow the steps provided in the manufacturer's installation manual. The mounting instructions for the proposed metal fire enclosure can be found on the following page (LINK): Bosch | Enclosure, small, red | B11R (boschsecurity.com), at the bottom of *Downloads* tab.

Mounting the ADC-FC100-Tx Communicator

NOTES:

- Please verify the contents of the box in accordance with the section “Wiring and Mounting” in the “In the box” section.
- To meet the requirements of the UL standard, ADC-FC100-Tx must be powered only from the regulated, UL-listed fire alarm control panel (FACP). Additional backup power is not compliant.
- Avoid installing the ADC-FC100-Tx near sources of significant electromagnetic interference, or in rooms where metal is the predominant structural material due to the potential for weakening cellular signal.
- Please ensure you thoroughly review the 'Important Safety Instructions' section.

Mounting Bracket

In every ADC-FC100-Tx box we include stainless-steel mounting bracket (fig. 1.2), which is designed to mount the device (bare or in the included plastic casing) in the metal fire enclosure.

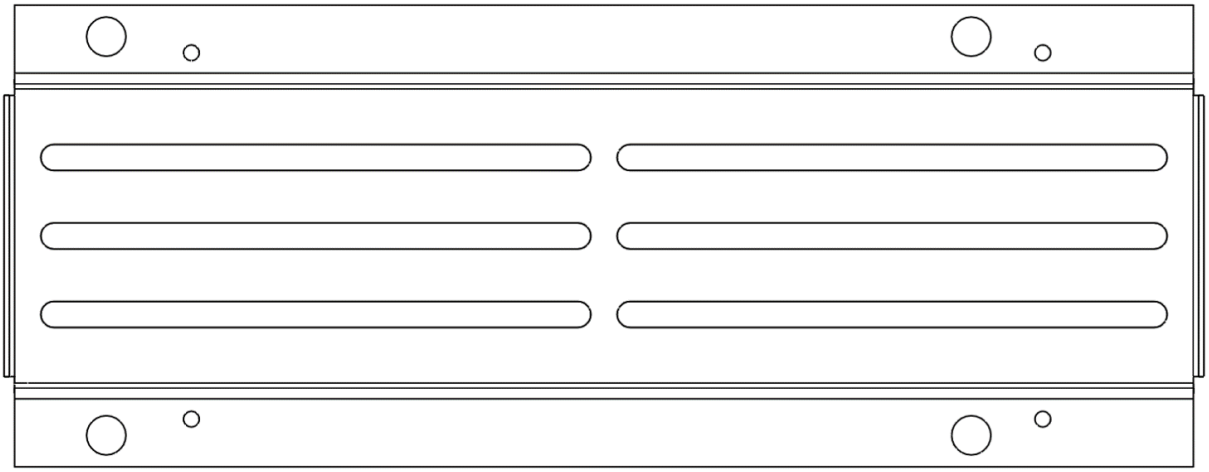

Fig. 1.2. Front view of mounting bracket included in the package.

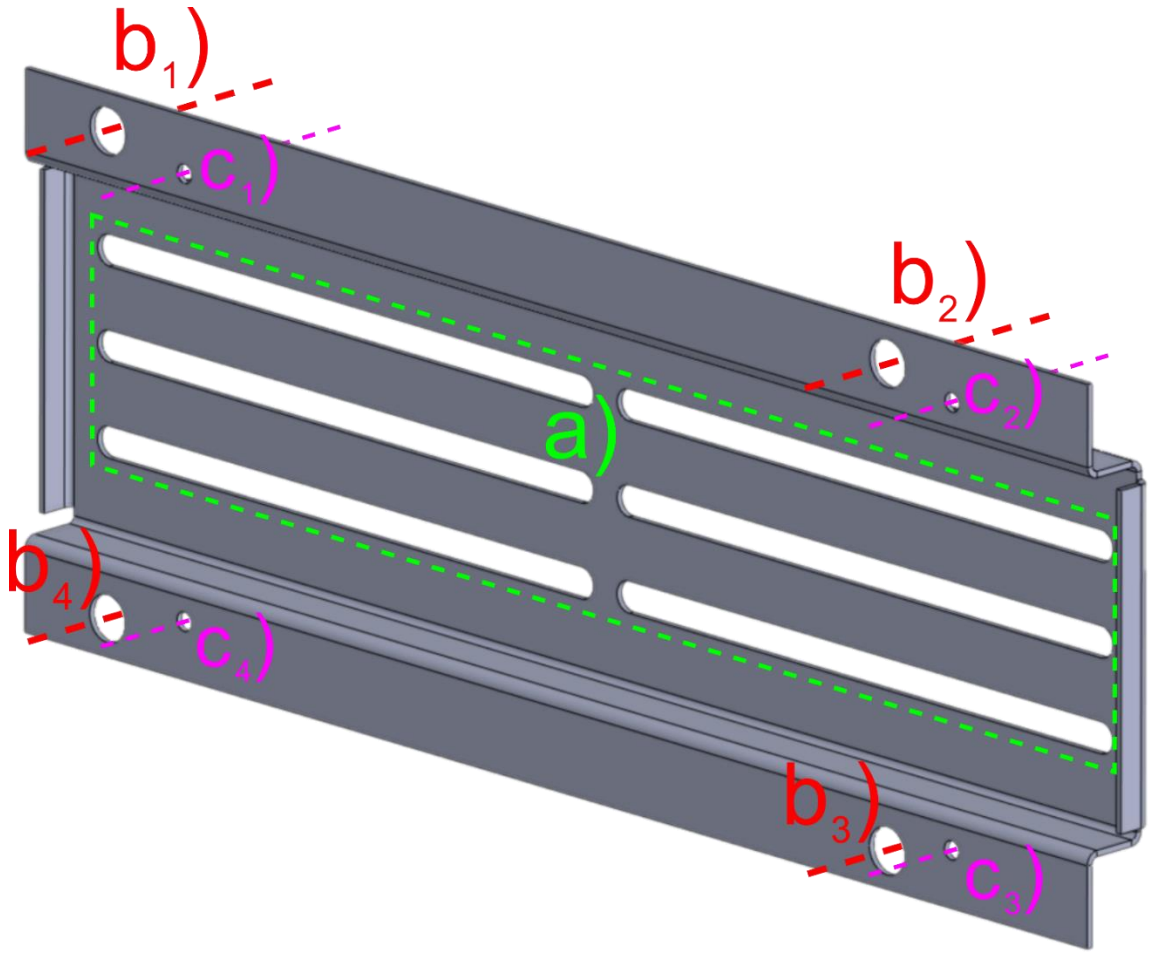

Fig. 1.3. Sideview of the mounting bracket with marked mounting holes.

Mounting bracket is attached to the metal fire enclosure with 2 metal screws. Figure 1.3 presents a side view of the mounting bracket:

- The area marked with letter **a)** indicates where the mounting bracket must be attached to the metal fire enclosure.
- The holes marked as **b_1), b_2), b_3), b_4)** are used for **optional** mounting of bare ADC-FC100-Tx PCB with 4 nylon pegs, included in the box, onto the steel mounting bracket.
- The holes marked as **c_1), c_2), c_3), c_4)** are used for **default** mounting of ADC-FC100-Tx placed in the plastic case, included in the box, onto the steel mounting bracket.

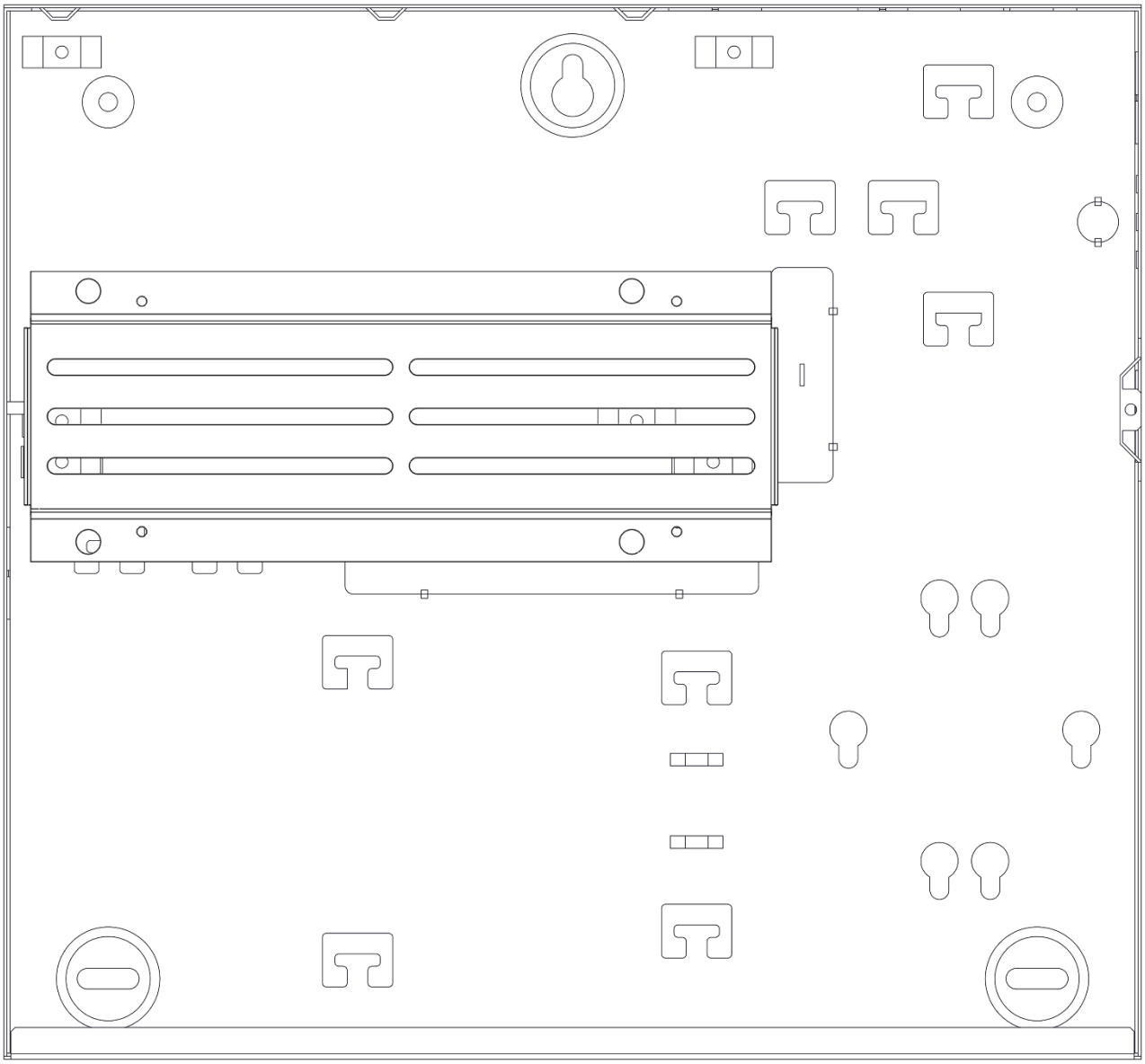

Fig. 1.4. Mounting bracket placed on the suggested Bosch B11 metal fire enclosure with the screwing holes poking out of the a) marked zone.

Figure 1.4 presents front view of the steel mounting bracket placed in metal fire enclosure with mounting holes poking through previously mentioned area a).

Decide whether you want to mount the device with or without the plastic case. Screw the mounting bracket down firmly and make sure it's done correctly to not disturb future wiring of the ADC-FC100-Tx, etc.

Attaching ADC-FC100-Tx

There are two methods of attaching ADC-FC100-Tx onto the metal fire enclosure.
Installation methods:

- Default: for FACPs with power limited – ADC-FC100-Tx installation in plastic casing
- Optional: for other FACPs – ADC-FC100-Tx installation without plastic casing

Both methods meet UL864 requirements.

Default attaching method (for FACP with power limit):

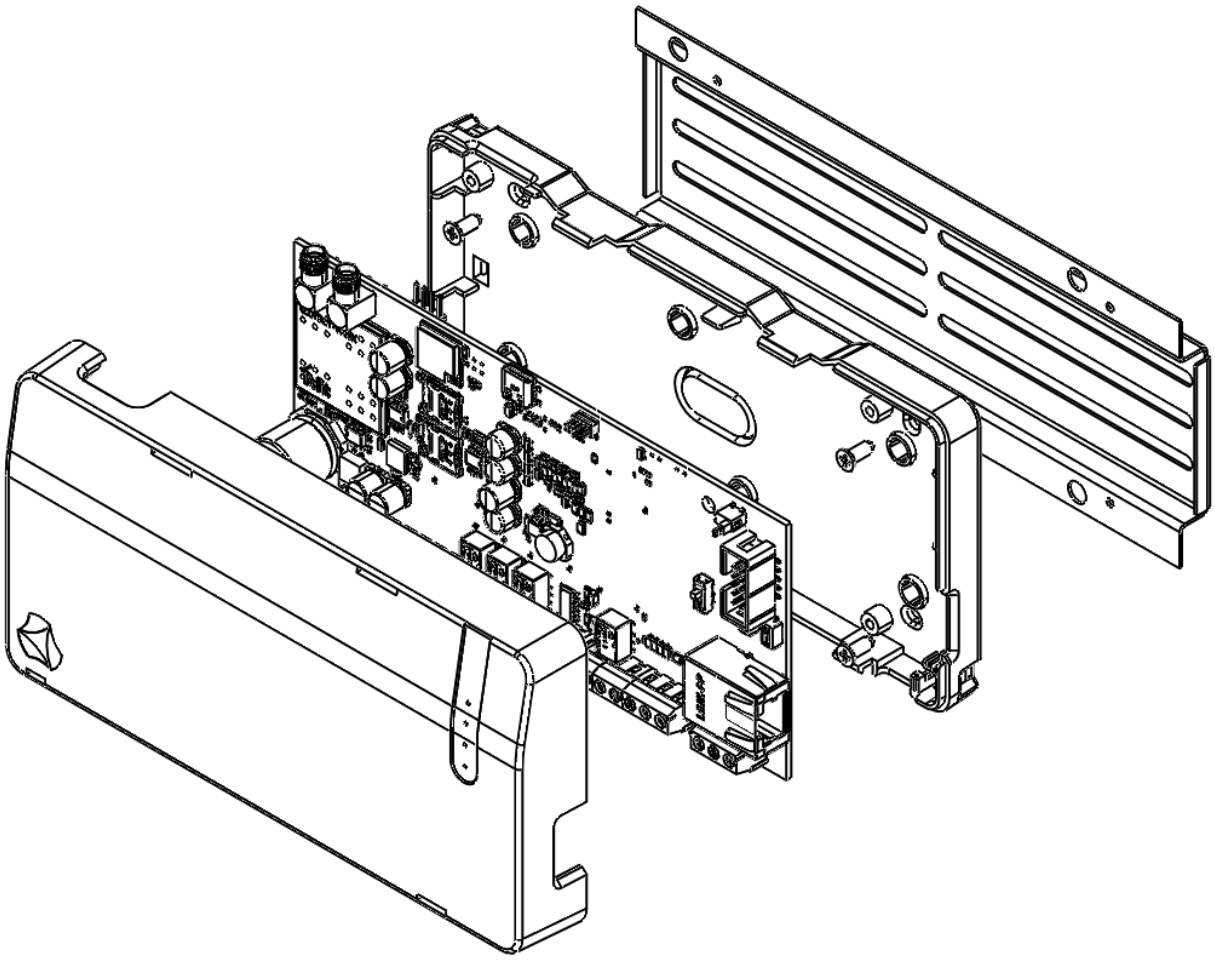

Fig. 1.5. Default method of mounting the ADC-FC100-Tx, using included plastic case.

To begin, open the plastic case (fig. 1.6), bend plastic latch on top of the base of the plastic case then carefully pull out the ADC-FC100-Tx.
Screw down the base of the plastic case to the mounting bracket using 4 flathead mounting screws (fig. 1.5). Gently put back in the ADC-FC100-Tx into the base of the plastic case.
Now you may proceed to device wiring . After wiring, close the plastic case.

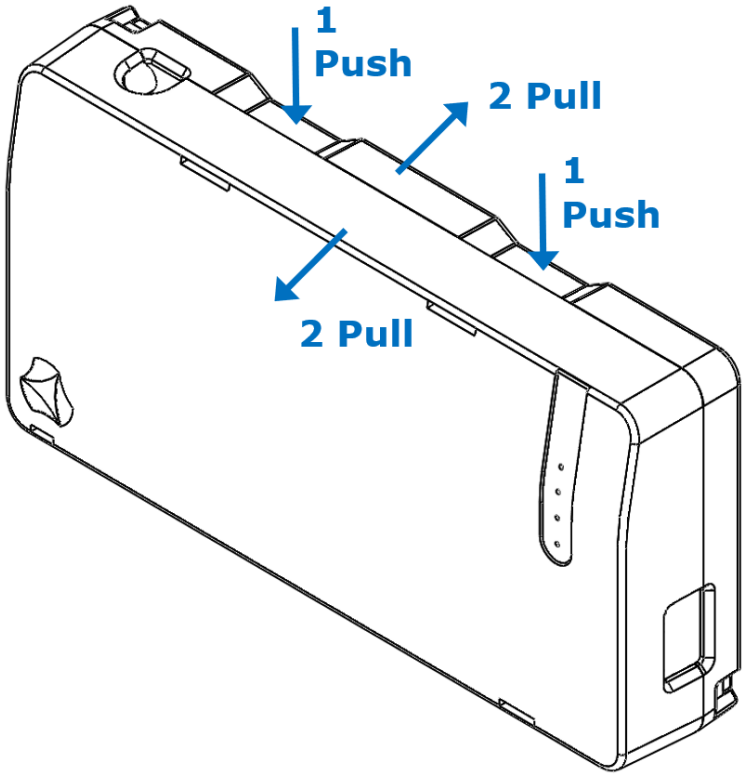

Fig. 1.6. Correct way of opening the plastic case.

Optional attaching method (for FACP without power limit):

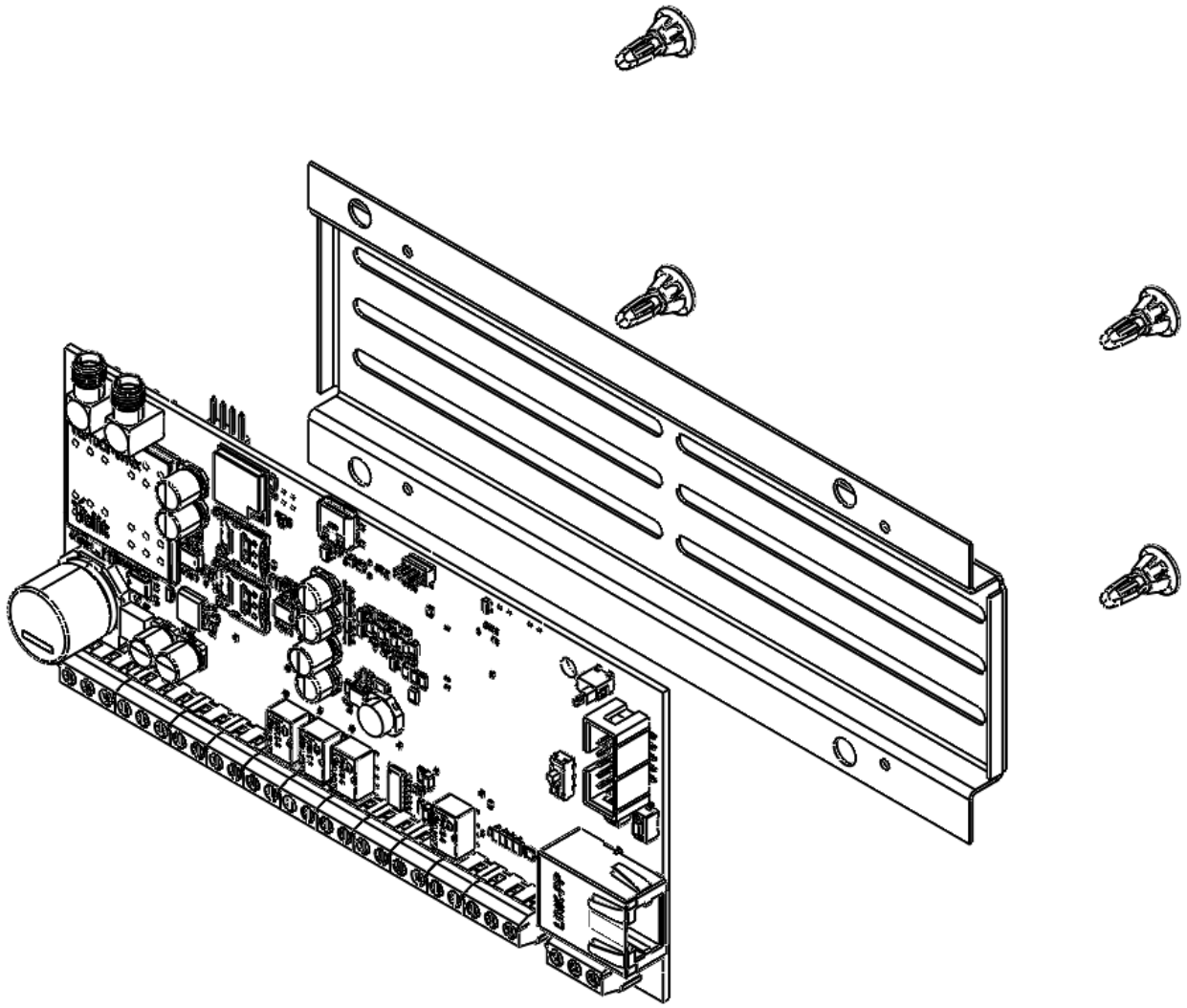

Fig. 1.7. Optional mounting method of bare ADC-FC100-Tx PCB onto mounting bracket.

As an optional mounting method, it is possible to mount ADC-FC100-Tx without plastic case, using nylon pegs. The assembly layout of this mounting method is presented in figure 1.7.

Put nylon pegs through larger holes in the mounting bracket, so the wider part of the peg is facing the metal fire enclosure.
Carefully attach the ADC-FC100-Tx to the thinner part of the nylon pegs, using designated holes on the PCB. Check if the device is attached firmly.
At this point you may proceed to wiring the device.

Installing the Antennas

NOTES:

- Antennas, like SIM cards, must be installed when the ADC-FC100-Tx is powered down.
- The communicator is equipped with two antennas, MAIN antenna and the supporting one: DIV (Diversity) antenna.
- Do not use an antenna that is damaged or not approved by the manufacturer. Otherwise it may lower the signal quality, violate requirements set by certificates or even damage ADC-FC100-Tx.
- For better signal quality, avoid installing an antenna below ground, behind metal objects or near source of RF interference.
- The external antennas used with the communicator must be positioned to maintain a minimum separation distance of 7.8 inches (20cm) from all individuals.
- Antenna should not be co-located or operated in conjunction with any other antenna or communicator.
- Please ensure you thoroughly review the 'Important Safety Instructions' section.

Wiring the Communicator

NOTES:

- Before you begin wiring the device, ensure that the FACP is switched off and the power supply is unplugged.
- Ensure that the operator has been notified that the FACP will be turned off and not operating.
- Please ensure you thoroughly review the 'Important Safety Instructions' section.
- The placement and methods of wiring should comply with the National Electrical Code, ANSI/NFPA 70.
- A wiring method which shall be in accordance with CSA C 2.1, Safety Standard for Electrical Installations, Canadian Electrical Code, Part I, Section 32.
- To meet UL864 installation requirements - all ITE equipment (router, switch, hub, etc.) used for IP connection shall be cUL/UL listed.
- To comply with UL864 installation requirements, an isolated loop circuit protector (meeting UL Listed, UL497B standard, QVGQ category) shall be used.
- To meet the requirements of the UL standard, ADC-FC100-Tx must be powered directly from the regulated, UL-listed FACP.
- The length of the connecting wires should not exceed 10 feet (3m).
- The cross-section of the cable powering the communicator should be between 22 AWG (0,32mm2) and 16 AWG (1,31mm2).
- The cross-section of the cable connecting communicator with FACP should be between 22 AWG (0,32mm2) and 16 AWG (1,31mm2).
- In case multiple conductors are connected to the same terminal, a multiple conductor ferrule should be used, as shown in diagram 1.10.
- All cables should be routed through the cable conduit.

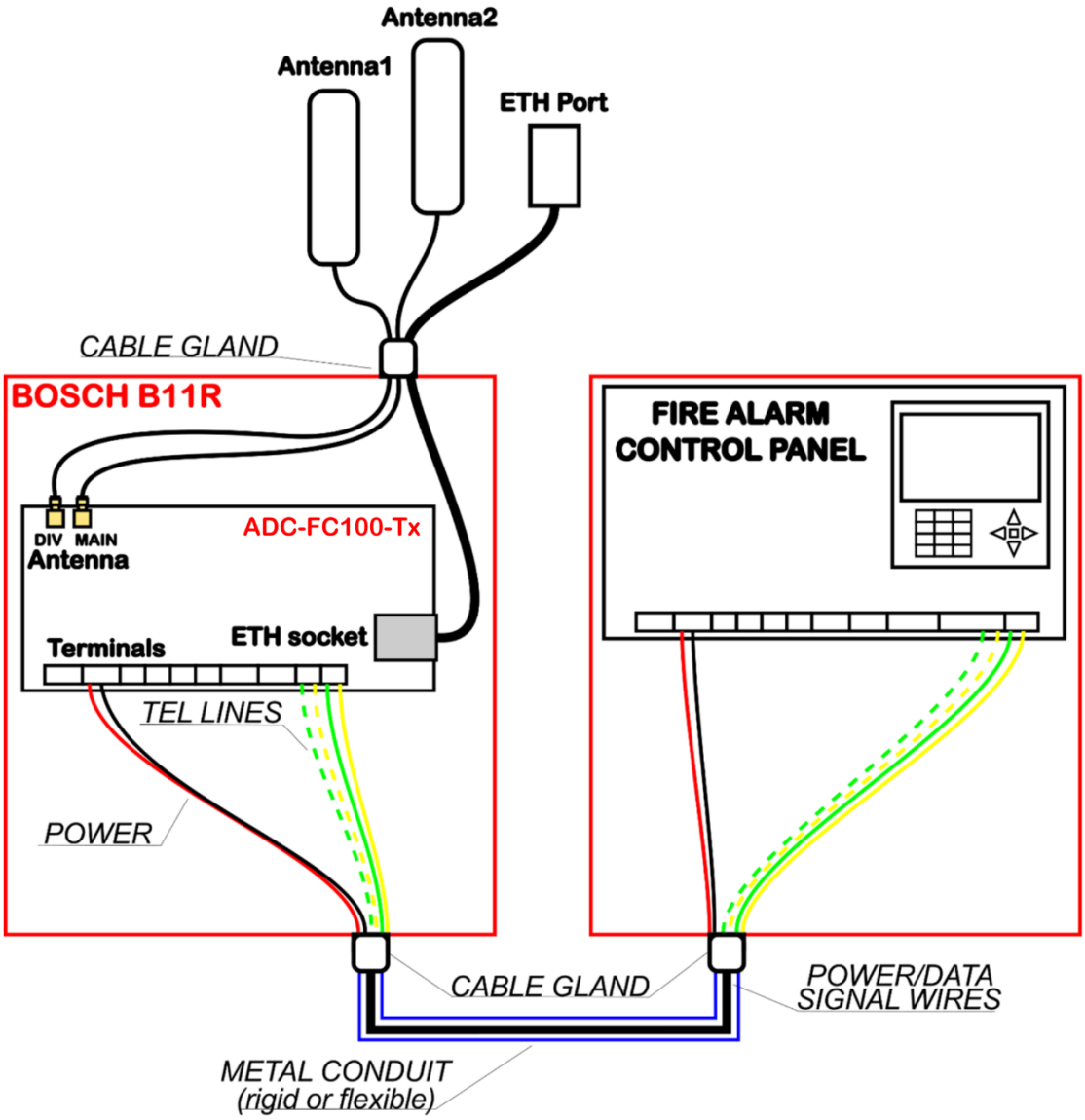

Fig. 1.8. Wiring scheme according to UL standards.

Installation method:

- Default: for FACPs with power limited – ADC-FC100-Tx installation in plastic casing
- Optional: for other FACPs – ADC-FC100-Tx installation without plastic casing

UL864 NOTE:

Please be aware that the plastic enclosure for the communicator must only be used with UL Certified UL 864 FACPs with power-limited power sources. For other UL Certified UL 864 FACPs, the communicator must be assembled without a plastic enclosure.

The following wiring diagrams are suitable for fire alarm control units UL certified for Remote Station and/or Central Station service. Panels without AC fail delay should be wired only through relay.

Local signaling of communication problems between the fire alarm control panel (FACP) and the monitoring station can be implemented by dropping the telephone line voltage (applicable only to FACP panels with a dialer) or by signaling via an input on the FACP. If the control panel does not have such an input on the board, verify the possibility of adding an expansion module, in accordance with the information provided by the panel's manufacturer.

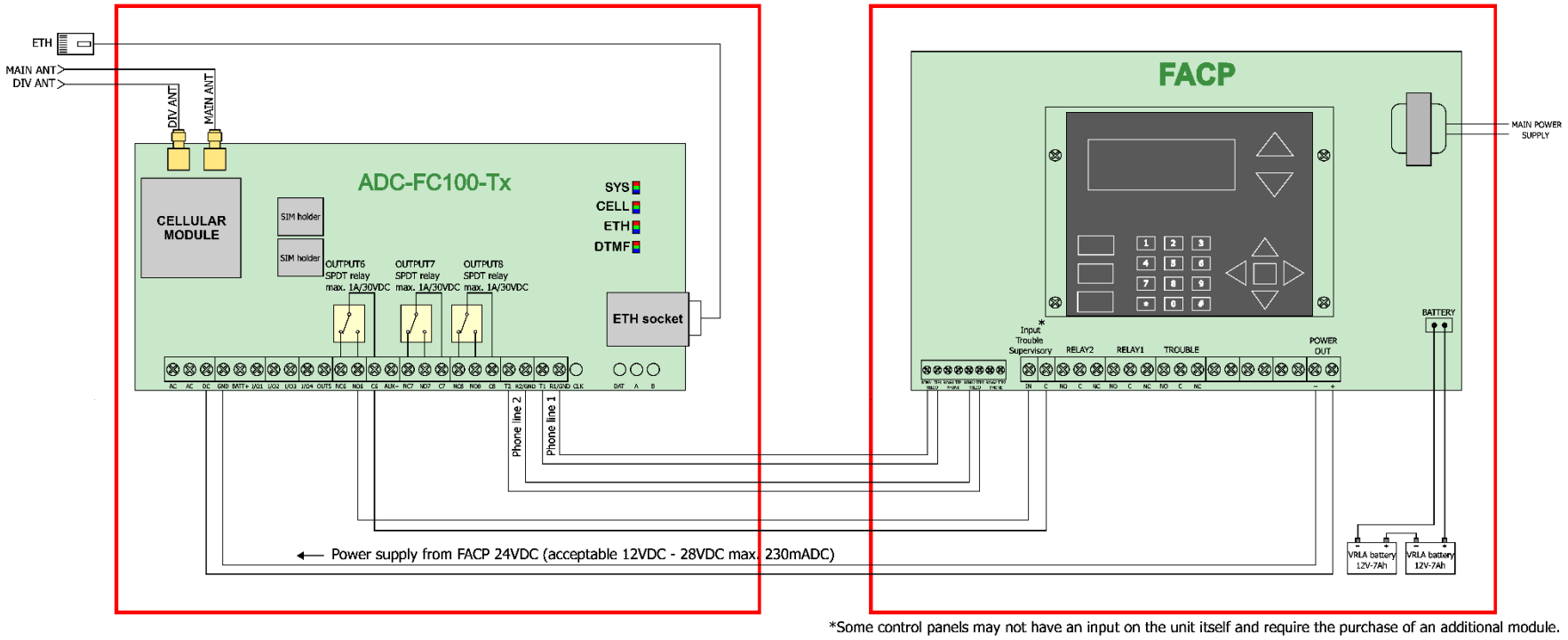

Fig. 1.9. Diagram of connecting the communicator and FACP using telephone dialer.

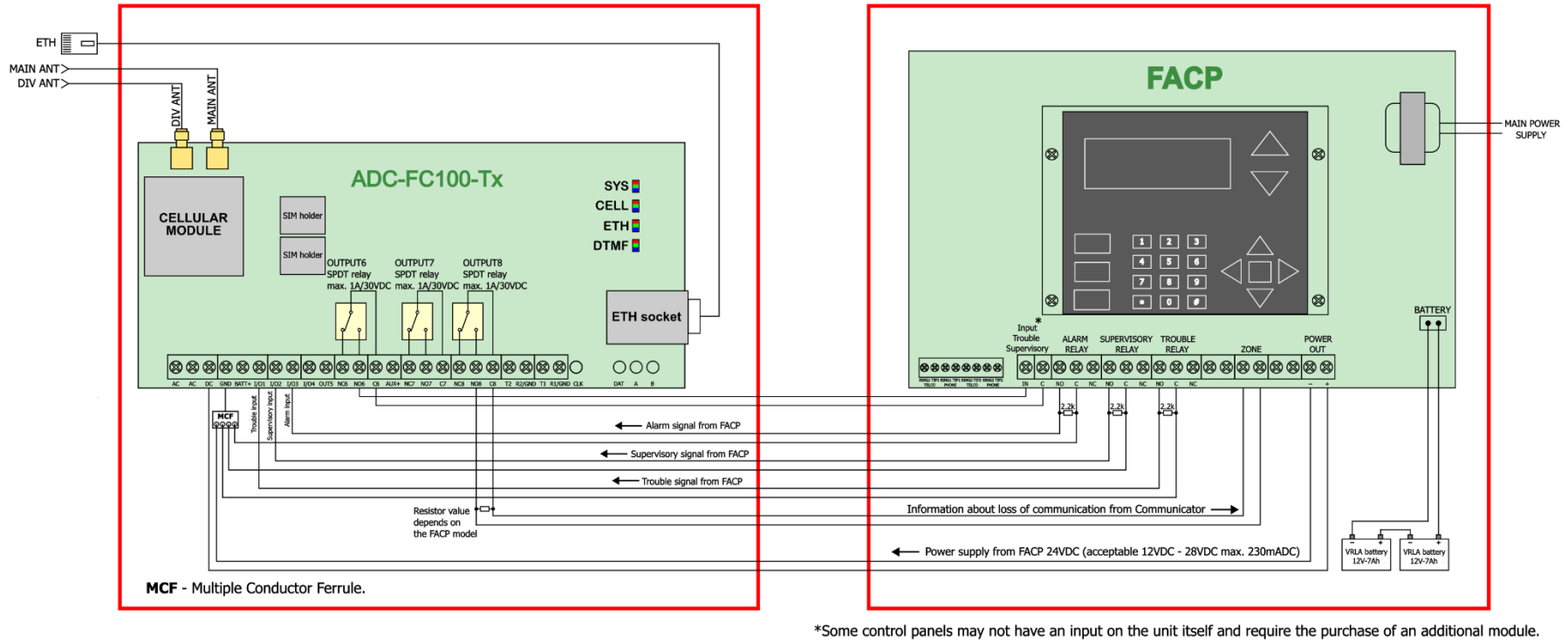

Fig. 1.10. Diagram of connecting the communicator with FACP using relays (FACP without dialer).

UL864 NOTE:

- AC FAIL event, generated by FACP can be delayed by the ADC-FC100-Tx communicator using any of the inputs from I/O1 to I/O4. If the FACP does not have a telco dialer (POTS) and communication is managed using only three relays, the AC FAIL event delay must be on the FACP side. In this case, the alarm panel must have a built-in delay that ensures the information reaches the monitoring station no sooner than one hour after the power failure and no later than three hours after.
- When wired to FACPs without a telco dialer, the alarm transmissions will transmit general alarms as one zone.

Installation - These products are intended to be installed in accordance with the following:

- NFPA 70 - National Electrical Code,
- NFPA 72 - National Fire Alarm Code,
- Canadian Electrical Code, Part I,
- ULC S524 - Standard for the Installation of Fire Alarm Systems,
- ULC 5537 - Standard for the Verification of Fire Alarm Systems,
- CAN/ULC-S561 – Installation and Services for Fire Signal Receiving Centres and Systems.

LED Reference

The ADC-FC100-Tx communicator is equipped with a set of RGB LEDs that can be used to indicate communication, errors, panel communication, network communication, and signal strength. Specific lighting sequences of these LEDs will be explained in this section and can be used to troubleshoot the device in case of any issues

NOTICE: All four LEDs will light up briefly during the device start-up phase.

SYS LED - global system state

Color	State	Description
–	OFF	Serious hardware error or power is off
RED	FLASHING	3 flashes - No connection to the server, trying to connect
GREEN	ON	Connected to server, both communication paths are working
BLUE	ON	Connected to server, but one of the communication paths is down (Cellular or Ethernet)
GREEN AND BLUE	ALTERNATING	Only on devices with the remote access restrictions: remote programming, configuration and firmware upgrades are currently allowed by the universal fire communicator end-user (using SW3 switch)

CELL / ETH LED - state of communication paths between the communicator and server

Color	State	Description
–	OFF	Communication hardware is not ready, initializing; or this path has been disabled
RED	FLASHING	• 2 flashes - SIM error • 3 flashes - trying to connect to server • 5 flashes - modem error
GREEN	ON	Server connection working - no errors in communication path
	BLINKING	LED turns off for one second during transmission to server
	FLASHING	3 flashes - trying to connect server SIM switching (dual SIM configuration)
BLUE	BLINKING	Sending data to the server
GREEN + BLUE	ON FLASHING	Number of flashes corresponds to the cellular network signal quality (1-8)

DTMF LED - state of communication with the Fire Alarm Control Panel

Color	State	Description
–	OFF	Control panel is not sending data at the moment
RED	ON	Phone lines power is cut off (no connection to the monitoring station)
GREEN	BLINKING	Control panel is sending data to T1-R1 connector
BLUE	BLINKING	Control panel is sending data to T2-R2 connector

SIM1 / SIM2 LED - SIM slot selection and state (located next to SIM slots)

Color	State	Description
–	OFF	Inactive SIM slot, during SIM switch or modem start-up
YELLOW	ON	Active SIM slot

Troubleshooting

LED signals can indicate hardware problems, which can be used for troubleshooting the communicator. Here are some of the possible solutions to error codes listed above.

SYS LED - global system state TROUBLESHOOTING

Color	State	Description
–	OFF	Serious hardware error or power is off
Solution: Check if power cables are connected firmly, check if there is voltage on the power cables.		
RED	FLASHING	3 flashes - No connection to server, trying to connect
Solution: Check the configuration, restart the device, check signal strength, check Ethernet cable and antennas.		
BLUE	ON	Connected to server, but one of the communication paths is down (Cellular or Ethernet)
Solution: Check Ethernet cable and antennas or check signal strength.		

CELL / ETH LED - state of communication paths between the communicator and monitoring station TROUBLESHOOTING

Color	State	Description
GREEN + BLUE	FLASHING	Number of flashes corresponds to the cellular network signal quality (1-8)
Solution: If flashes show signal strength below 4 and device is losing cellular signal, make sure antennas are installed firmly to the PCB and whether the antennas are installed as instructed. Try restarting the device.		
RED	FLASHING	• 2 flashes - SIM error • 3 flashes - trying to connect to server • 5 flashes - modem error
Solution: If 2 flashes, check the SIM card – if it's installed correctly and doesn't have visibly damaged pins, try different SIM card, restart the device; if 3 flashes check the device configuration; if 5 flashes, please contact Alarm.com CORE Technical Support at 866-834-0470.		

NOTICE: If you didn't find the solution to your problem, please contact Alarm.com CORE Technical Support at 866-834-0470.

Maintenance

Cleaning

The ADC-FC100-Tx can bein an environment where dirt and debris may be present. It is recommended that the surfaces be wiped down / cleaned with a fine micro-fiber cloth to remove dirt and debris.

Connection points

Electrical connections can loosen overtime based on a environmental factors, so it is recommended that all electrical connections and terminals are routinely inspected to ensure proper connections are secure.

Wiring inspection

Electrical components can degrade over time, which can be accelerated based on ambient and environment. The wiring shall be inspected for obvious degradation resulting from ambient temperature and installation environment. Replace the wiring if it shows signs of cracking, breaking, insulation breakdown, kinking etcetera.

Mounting securement

The physical securement of the ADC-FC100-Tx shall be verified during the maintenance routine, and any loosening of the mounting configuration shall be tightened.

Weekly system testing

Your ADC-FC100-Tx communicator shall be tested ONCE A WEEK in accordance with the Primary Control Panel's "Weekly System Testing Guidelines" as your ADC-FC100-Tx communicator is part of the complete fire alarm signaling system.

History of Changes

Date	Revision	Changes
20250417	**0.18_20250417**	Adding the chapter History of Changes and modifying the information about screwdriver indexes.
20250513	**0.19_20250513**	Adding point regarding installation requirements for the ITE equipment.
20250523	**0.20_20250523**	Adding a note about Multiple Conductor Ferrule to Wiring the Communicator and to diagram 1.10.
20250627	**0.21_20250627**	Adding point regarding I/O transient requirements.
20250715	**0.22_20250715**	Changing model name in text and diagrams.
20250910	**0.23_20250910**	Adding information about FTC and the Installation Regulatory Notes.
20251021	**1.0.0**	Final version.
20251219	**1.0.1**	FACP local annunciation – LED Indication.