AUTOCALL

IP Gateway GSM Cellular Module Installation Guide

579-1248AC Rev. E

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1 Introduction

This guide describes how to install the optional IP Gateway GSM Cellular Modules, antenna and antenna extensions.

The GSM 4G/LTE cellular module requires two antennas. In cases with poor signal strength at the Fire Alarm Control Unit (FACU), you may need to move the antenna to another location with improved network coverage using an extension kit.

2 Related documentation

You may need to consult the following additional documentation:

- *IP Communicator / Connected Services Gateway Module Installation Guide 579-1296AC*
- *2050/ 2250 Panels IP Communicator / Connected Services Gateway Module Installation Guide 579-1463AC*
- *Antenna Extension Kit 579-1281AC*
- *IP Gateway External Box Installation Guide 579-1249AC*
- *ES Panel Programmer's Manual For 4100ES and 4010ES Fire Alarm Control Panels 574-849AC*
- *4007ES and 4007ES Hybrid Fire Alarm Programmer Manual 579-1167AC*
- *2050 and 2250 Foundation Series Fire Alarm Control Unit Operation Guide 579-1405AC*
- *2050 and 2250 Foundation Series Fire Alarm Control Units PC Programmer Installation Guide and Programming Instructions 579-1421AC*

3 Cautions, warnings, and regulatory information

READ AND SAVE THESE INSTRUCTIONS Follow the instructions in this installation manual. These instructions must be followed to avoid damage to this product and associated equipment. Product operation and reliability depend upon proper installation.

DO NOT INSTALL ANY AUTOCALL™ PRODUCT THAT APPEARS DAMAGED Upon unpacking your Autocall product, inspect the contents of the carton for shipping damage. If damage is apparent, immediately file a claim with the carrier and notify an authorized Autocall product supplier.

ELECTRICAL HAZARD Disconnect electrical field power when making any internal adjustments or repairs. All repairs should be performed by a representative or an authorized agent of your local Autocall product supplier.

STATIC HAZARD Static electricity can damage components. Handle as follows:

- Ground yourself before opening or installing components.
- Prior to installation, keep components wrapped in anti-static material at all times.

FCC RULES AND REGULATIONS – PART 15. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

3.1 Additional information

ISED CANADA INTERFERENCE STATEMENT

This device complies with Part 15 of the FCC Rules and ISED Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'ISED Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, ême si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC CLASS A DIGITAL DEVICE NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or experienced radio/television technician for help.

CAN ICES-3 (B) / NMB-3 (B)

FCC/ISED CANADA WIRELESS NOTICE

This equipment complies with FCC and ISED Canada radiation exposure limits set forth for an uncontrolled environment. The antenna should be installed and operated with minimum distance of 20 m between the radiator and your body. The antenna used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter, except as described in this user manual.

Cet appareil est conforme aux limites d'exposition aux rayonnements de la IC pour un environnement on contrôlé. L'antenne doit être installé de façon à garder une distance minimale de 20 centimètres entre la source de rayonnements et votre corps. L'antenne utilisée pour cet émetteur ne doit pas être situé ou opérant en conjonction avec une autre antenne ou émetteur, sauf tel que décrit dans ce mode d'emploi.

Antenna gain must be below/Gain de l'antenne doit être ci-dessous:

Table 1: Antenna gain reference

Frequency band	**A100-6416, A010-6416, A007-6416** **A100-6417, A010-6417, A007-6417**
3G - B5: UL: 824 - 849, DL: 869 - 894	1.3 dBi
B2: UL: 1850 - 1910, DL: 1930 - 1990	6.8 dBi
4G - B12: UL: 699 -716, DL: 729 - 746	1.2 dBi
B13: UL: 777 - 787, DL: 746 - 756	2.2 dBi
B5: UL: 824 - 849, DL: 869 - 894	1.3 dBi
B4: UL:1710 - 1755, DL: 2110 - 2170	4.6 dBi
B2: UL: 1850 - 1910, DL: 1930 - 1990	6.8 dBi

WARNING: To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 20 cm or more must be maintained between the antenna of this device and persons during device operation.

FCC/IC LABEL

The modular transmitter LE9080 is labeled with its own FCC ID and IC number. When the module is installed inside the host device and the FCC ID/IC of the module is not visible, the host device displays the provided label referring to the FCC ID and IC of the enclosed module. This label is shipped together with the module and it is the responsibility of the integrator to apply it to the exterior of the enclosure, as displayed in the following figure.

Le modulaire émetteur LE9080 est étiqueté avec son propre ID FCC et le numéro IC. Lorsque le module est installé à l'intérieur du dispositif hôte et la FCC ID / IC du module ne soit pas visible, le dispositif d'accueil affiche l'étiquette fournie se référant à l'ID FCC et IC du module ci-joint. Ce label est livré avec le module et il est de la responsabilité de l'intégrateur de l'appliquer à l'extérieur de l'enceinte, comme indiqué dans la figure suivante.

Figure 1: Label placement

Model LE9080

Contains FCC ID: F5318LE9080

Contains IC: 160A-LE9080

Note: For A050 and A250 panels, GSM cellular module will be used only when IP Communicator / Connected Services Gateway Module is mounted in an external box.

4 Overview

The IP Gateway Cellular Module is an optional module used with the IP Gateway Modules. The cellular module connects the IP Gateway to a cellular network.

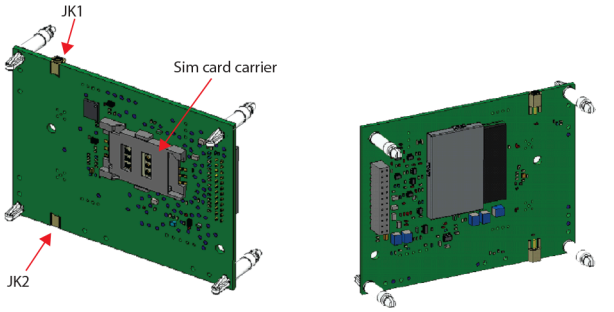

Figure 2: IP Gateway Cellular Module

The GSM 4G/LTE cellular modules include two antennas. See Table 2 for a list of PIDs.

In the case of poor signal strength at the FACU, you may require an optional antenna extension kit. See Table 3 for compatible extension kit information.

Table 2: Cellular module PIDs

Cellular module kit description	Cellular module kit PIDs for IP Gateways mounted in the FACU	Cellular module kit PIDs for IP Gateways mounted in an external box, see notes 1 and 2
GSM 4G/LTE	A100-6416	A100-6417
	A010-6416	A010-6417
	A007-6416	A007-6417

Table 3: Antenna extension kit PIDs

Extension kit	Compatible extension kit PIDs, see note 2
15 feet (4.57 m) antenna extension kit	A100-6405
	A010-6405
	A007-6405
25 feet (7.62 m) antenna extension kit	A100-6406
	A010-6406
	A007-6406
50 feet (15.24 m) antenna extension kit	A100-6407
	A010-6407
	A007-6407

The IP Gateway Cellular Module attaches to the IP Gateway, which may come pre-installed in new FACUs. except A050 and A250.

Note:

1. For A050 / A250 panel, cellular kit is required only when IP Communicator / Connected Service Gateway module is mounted in an external box.
2. User should order A007-6417 cellular module & respective antenna extension kits to use with A050 / A250.

4.1 Specifications

See Table 4 for cellular module electrical requirements and for environmental limitations.

Table 4: Electrical and environmental specifications

Electrical specifications				
Voltage DC	Nominal 24 V draw through the IP Gateway	24 V battery	For 4007ES / 4010ES / 4100ES panels powered from SPES, see note *.	For A050 and A250 panels powered from auxiliary power supply, see note **.
Current DC	60 mA	60 mA	60 mA	60 mA
Environmental specifications				
Temperature	Normal operation with ambient temperature outside the cabinet at 32°F to 120.2°F (0°C to 49°C)			
Humidity	Normal operation under non-condensing humidity conditions up to 93% relative humidity at 100.4°F (38°C)			

Note:

* When the SPES powers the IP Gateway, add the current draw of the cellular module to the current draw of the IP Gateway, and calculate the 24 V battery draw using the SPES current draw table in the **Specifications** section of *Power over Ethernet Switch Module Installation Guide* 579-1250AC.

** IP Communicator / Connected Services Gateway Module is connected with A050 and A250 panels using serial port.

5 Installing the cellular module

5.1 Mounting the cellular module

Note: SIM cards are not included with the cellular module and must be ordered separately. The header connectors are located on the bottom of the cellular module. The SIM card carrier is located on the top.

To mount the cellular module perform the following steps:

1. Insert the SIM card into the SIM card carrier.
2. Push the four nylon standoffs through the bottom of the cellular module. The longer snap lock ends click through the top of the cellular module, see Figure 3.
3. Align the connector on the cellular module with the matching connector on the IP Gateway.
4. Press the cellular module onto the IP Gateway until the standoffs snap into place.
5. Place the FCC label included in the cellular module kit on the box where you installed the IP Gateway. Ensure that it is visible when the doors of the FACU are closed.

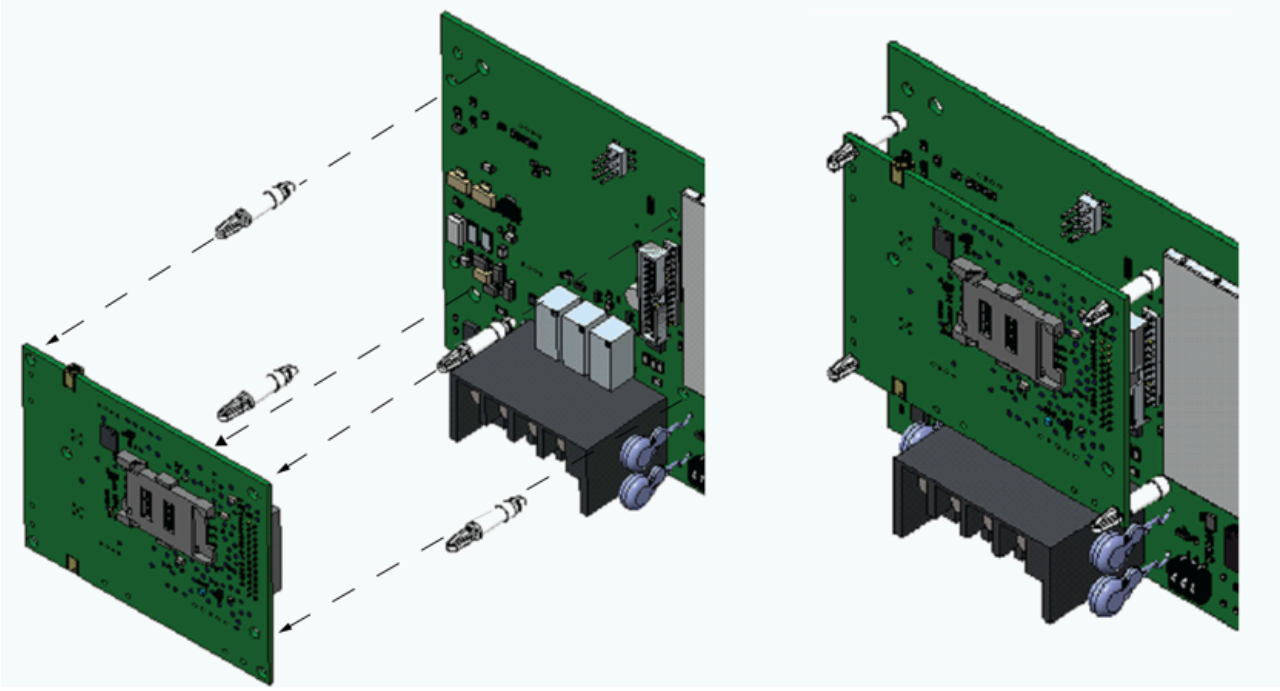

Figure 3: Connecting the cellular module to the IP Gateway

6 Antenna mounting guidelines

You can mount the antenna for the cellular module in three locations as follows:

- Directly on the FACU that the IP Gateway is installed in.
- On the wall using an extension cable or bracket.
- Directly on the IP Gateway external box.

Note:

- You can use a combination of the mounting locations listed above for installations requiring more than one antenna.
- The cables and antennae included in the cellular module kit are identical. You can use either antenna as the primary or secondary antenna mounting.
- The antenna is omni-directional. You do not need to align it to a particular compass direction.
- For A050 and A250 panels, GSM cellular module will be used only when IP Communicator / Connected Services Gateway Module is mounted in an external box.

6.1 Mounting the antenna directly on the FACU

Consult the following guidelines before mounting the antenna directly on the 4100ES, 4010ES, or 4007ES FACUs:

- The antenna cables are 36 in. long. They reach all areas on top of the 4100ES and 4010ES FACUs with the IP Gateway mounted in the top bay.
- The antenna cables reach all areas of the 4007ES FACU.
- When you are flush-mounting a 4007ES, leave at least 2 in. of wall protrusion to mount the antenna.
- Run the antenna cables as power-limited wiring.
- Always vertically align the primary antenna. You can mount this antenna close to either the top left or right edge of the FACU to conserve space on the unit for conduit entry. See Figure 4.
- Mount the secondary antenna vertically at least 5.5 in. (14 cm) away from the primary antenna and other antennae. Alternatively, mount the antennae at least 2 in. (5.08 cm) from each other and bend the knuckles of the antennae 45° away from the each other to ensure that they are out of phase. See Figure 5.
- Position antennae at least 2 in. (5.08 cm) away from cables, conduit, and metal structures.

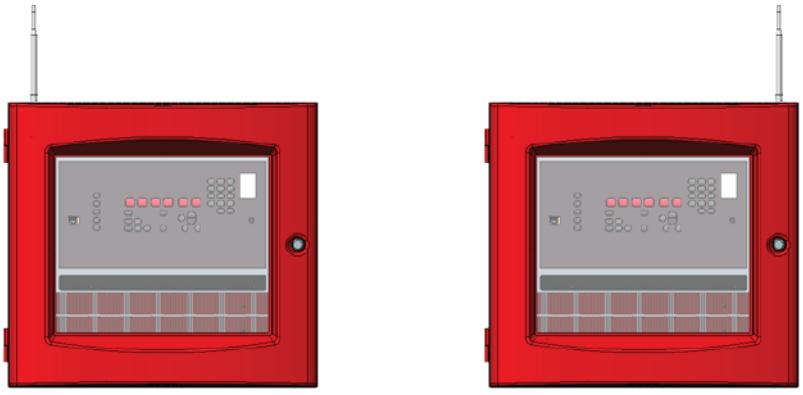

Figure 4: Antenna mounting example

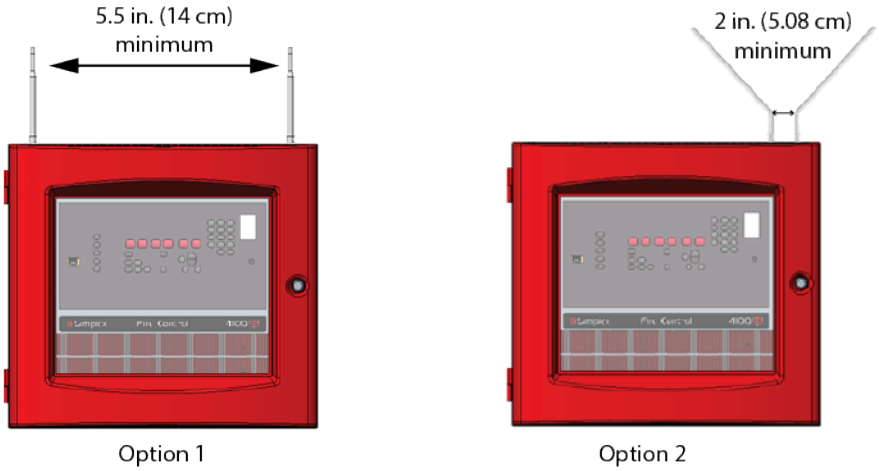

Figure 5: Primary and secondary antennae mounting example

6.2 Mounting the antenna on the wall using an antenna extension

You can use antenna extensions to mount the antenna remotely in an area with better cellular signal and greater mounting space. For antenna extensions, use the same internal cables as when you mount antenna directly on the FACU. Rules for mounting antenna extensions are less restrictive than for mounting on the FACU.

The antenna is pre-installed with the extension and wall brackets in antenna extension kits. Consult the following guidelines before installing the antenna extension:

- You can place holes to mount the antenna extension cables anywhere on the box. Ensure that the 36 in. cable can reach the mounting hole from the cellular module location, which is usually in the top bay.
- You must leave a minimum of 3/4 in. (19 mm) around the center of the antenna cable connector for ease of installation.
- Always mount the remote antenna vertically.
- Antenna extension cables are power-limited.
- You cannot link antenna extensions together.
- Use the full length of the antenna extension cable. Do not cut or splice the cable.
- Coil excess cable near the FACU. Do not coil cables tighter than a 12 in. (30.5 cm) diameter loop.

6.3 Mounting the antenna on the IP Gateway External Box

Consult the following guidelines before mounting the antenna on the IP Gateway External Box:

- Antenna holes are located with knockouts in the IP Gateway External Box. Choose any two of these holes to mount the antenna.
- Mount the antenna vertically aligned.
- The cellular module kit for the external box comes with a shorter antenna cable that reaches all of the knockouts in the external box.

7 Mounting the antenna

Before you begin, see Installing the cellular module for information about the installation type you are performing. All of the parts you require to mount the antenna cable are included in the cellular module kit.

To mount the antenna, perform the following steps:

1. Drill or punch a 21/64 in. (8.3344 mm) hole in the unit. If you are mounting the antenna on the external box, use knockouts instead.
2. Remove the nut from the SMA connector, leaving the lock washer in place.
3. Place the lower, thicker nylon shoulder washer on top of the lock washer, with the collar side facing up, see Figure 6.
4. Insert the SMA connector through the hole from the inside of the unit.
5. Place the second, thinner nylon washer over the SMA connector.
6. Replace the nut and tighten firmly, so that the cable does not spin freely.
7. Connect either the antenna or the extension cable to the SMA connector.
8. Route the antenna cable through the unit as power-limited wiring to the cellular module on the IP Gateway.

   Note: The primary antenna connects to the cellular module at J2. The secondary antenna connects to the cellular module at J1.
9. Press the antenna cable MMCX connector firmly to the connection on the cellular module until it snaps into place.

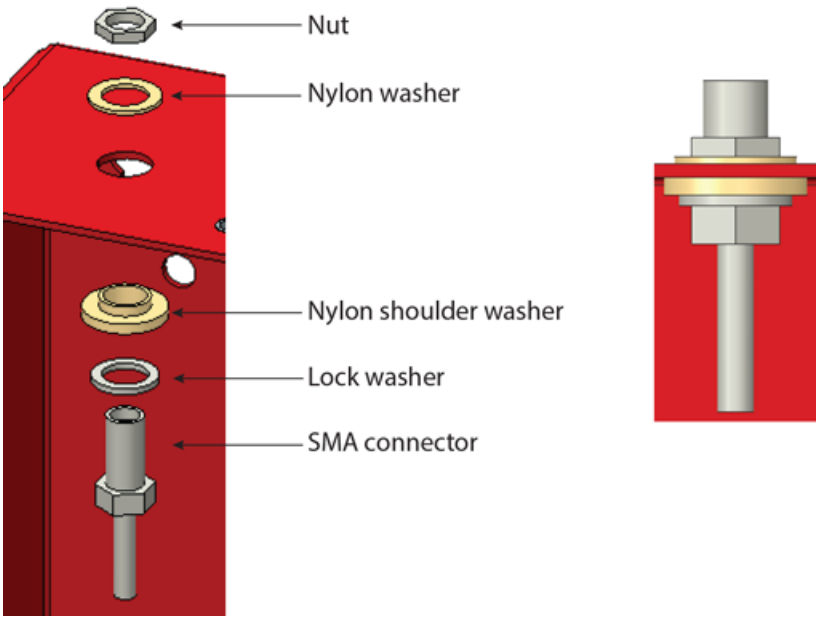

Figure 6: Installing the antenna cable

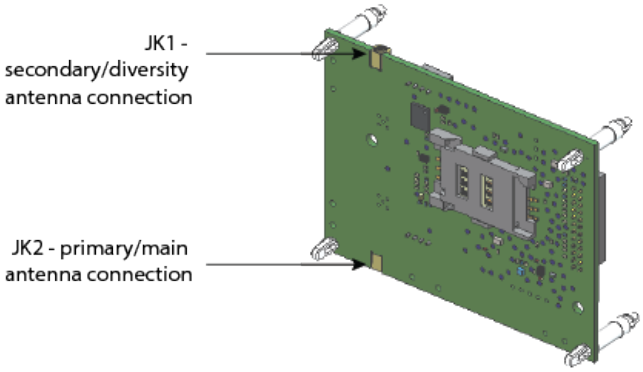

Figure 7: Antenna connector on the cellular module