TECHNICAL BRIEF

Installing the extendable antenna to Mobile Connect CELLMODEM-07

Applicable regions: North America, Europe, LATAM, APAC

Contents

1. About this guide

This document contains information for installers and field service technicians (FST) who wish to install the extendable antenna to the Mobile Connect cellular modem (CELLMODEM-07) in indoor and outdoor installations. This document supplements the information in the data sheet and quick install guide. The diagrams and information are demonstrative of system configurations and installations. They may not include all additional state and local codes, standards, and other Authorities Having Jurisdiction (AHJs) applicable to a site.

2. Use of external antenna

Mobile Connect CELLMODEM-07 has the added functionality of an external antenna that allows the cellular modem to obtain greater signal strength. It is useful for sites where the device is installed in a location with poor signal strength, such as basements.

WARNING: The external antenna does not guarantee better signal strength. It is possible that the site has very poor operator signal coverage. The antenna should be installed at the user's discretion and after checking signal at the site.

The external antenna can be used with a standalone Mobile Connect CELLMODEM-07 or a modem installed within a system component. In most cases, the external antenna replaces the attached antenna supplied with the modem by default. Suitable antenna requirements and models can be found in Appendix A: External antenna compatible for different regions. The antenna available with CELLMODEM-07 can also be extended using an RF cable. Suitable cable requirements can be found in Appendix C: Extending the Enphase antenna using RF cable. For the purposes of this document, the external antenna would refer to any of the antenna builds, i.e., third-party or the Enphase one with RF cable.

Based on the region and type of Enphase system installed, the external antenna can be used in the following configurations:

- With standalone CELLMODEM-07
- With CELLMODEM-07 installed in IQ Combiner for North America (IQ Combiner 5/5C, 4/4C, 3/3C)
- With CELLMODEM-07 installed in IQ Combiner EU (IQ Combiner 3P EU, IQ Combiner 2P EU)
- With CELLMODEM-07 installed in IQ System Controller 3 INT

In addition, whenever the external antenna is placed at the highest point of the site (for example, the apex of a roof), a lightning surge arrestor should also be installed with it to protect the system from damage. Suggested models and requirements can be found in Appendix B: Installing the lightning surge arrestor.

3. Installing the external antenna

This section covers the installation steps for each of the configurations in which an external antenna can be installed. The steps to install the lightning arrestor are mentioned in Appendix B: Installing the lightning surge arrestor.

3.1 Installation with standalone CELLMODEM-07

The external antenna can easily be installed onto the standalone CELLMODEM-07 through the SMA port. The steps are as follows:

1. Screw the antenna to the SMA connector on the Mobile Connect.

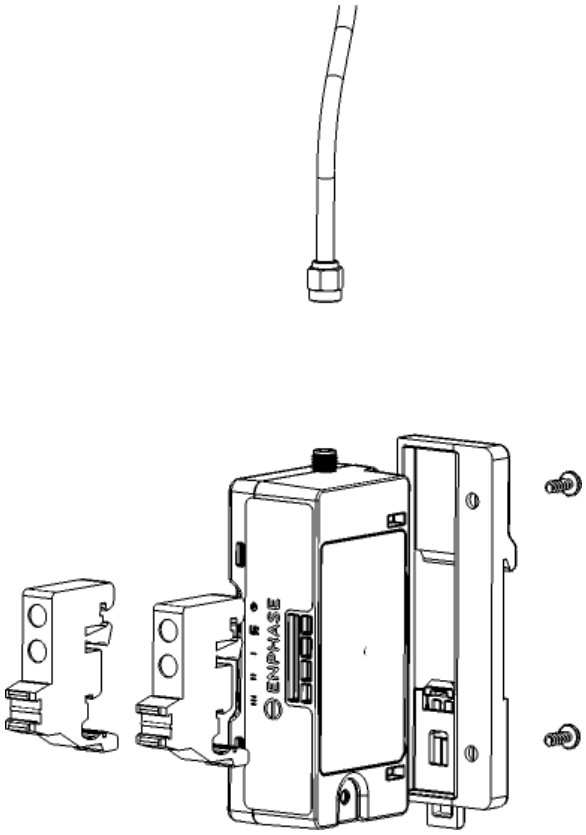


Figure 1: Installing the external antenna to CELLMODEM-07

2. Follow the steps in the quick install guide to mount the modem.
3. Connect the other end of the USB cable to the IQ Gateway.
4. Install the external antenna at the required location and use it safely.

NOTE: The antenna must be oriented upwards for optimal modem performance.

3.2 Installation with Mobile Connect cellular modem (CELLMODEM-07) in IQ Combiner for North America (IQ Combiner 5/5C, 4/4C, 3/3C)

An extra hole must be drilled to install the external antenna with the cellular modem in IQ Combiner for North America. With this extra requirement, the following steps need to be followed:

1. Screw the antenna to the SMA connector on the cellular modem.

2. Line up the mounting holes on the mounting bracket and the dead front and secure them in position using the mounting rivets. The following figure shows the slot in an IQ Combiner.

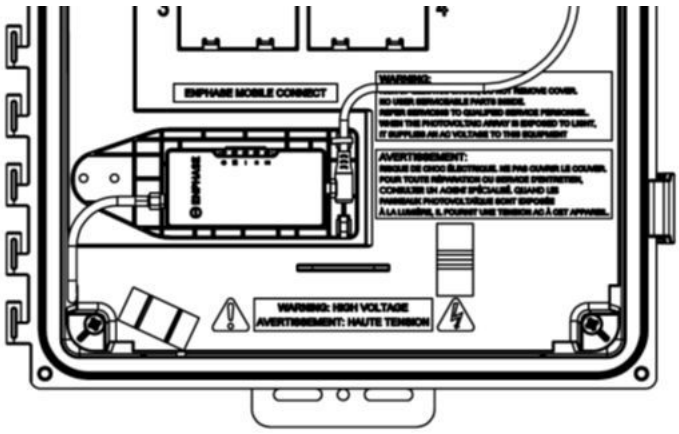


Figure 2: Placing the CELLMODEM-07 with external antenna into IQ Combiner for North America

3. The external antenna can be routed through a custom drill conduit point at the bottom of the combiner box, as shown in the following figure.

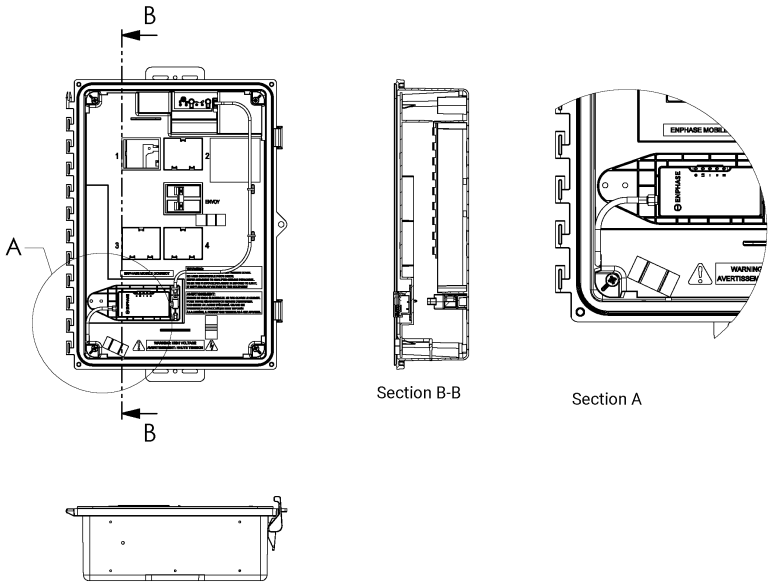


Figure 3: Custom external conduit point to route the cable

4. Ensure that the custom drill point is safely sealed using sealing plugs.
5. Connect the other end of the USB cable to the IQ Gateway.
6. Install the external antenna at the required location and use it safely.

3.3 Installation with Mobile Connect cellular modem (CELLMODEM-07-INT-05) in IQ Combiner EU (IQ Combiner 3P EU, IQ Combiner 2P EU)

The external antenna can easily be installed in the IQ Combiner EU with Mobile Connect cellular modem by using the drill holes locations available for passing cables. The steps followed are as follows:

1. Screw the antenna to the SMA connector on the Mobile Connect.

2. Follow the instructions in the quick install guide to mount the modem on the middle DIN rail.

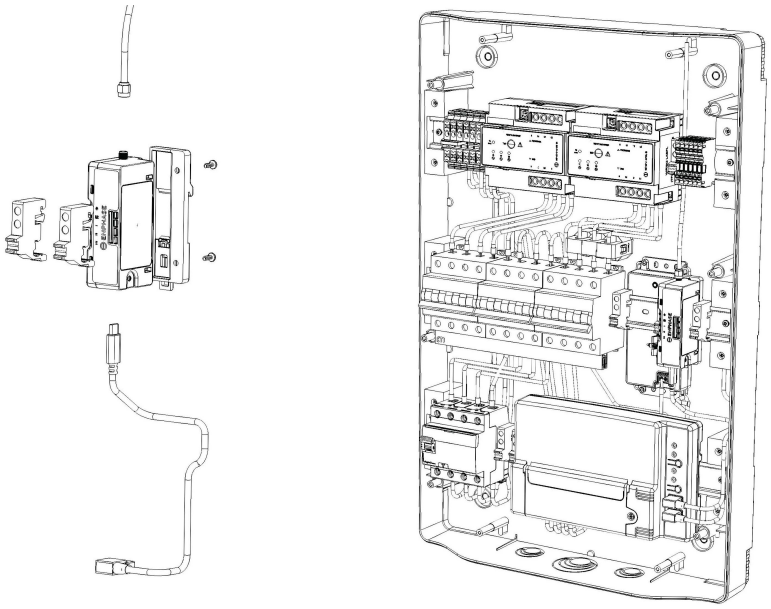


Figure 4: Placing the CELLMODEM-07 with external antenna into IQ Combiner EU

3. After placing the Mobile Connect on the mount in the position shown in the figure above, connect the USB cable provided with the package to the Mobile Connect.
4. Route the external antenna wire through the top conduit point, as shown in the figure below.

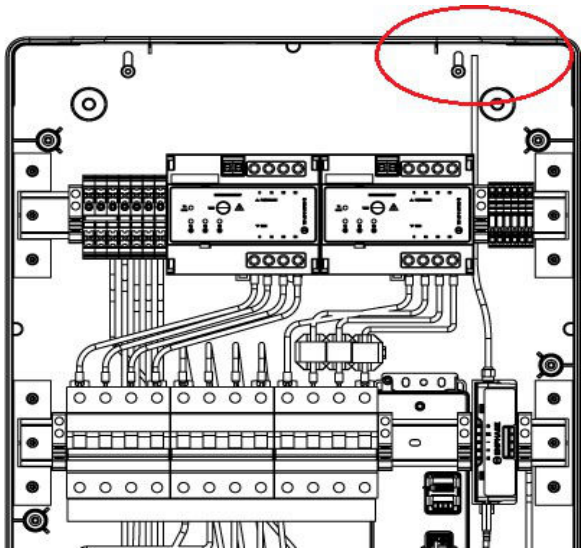


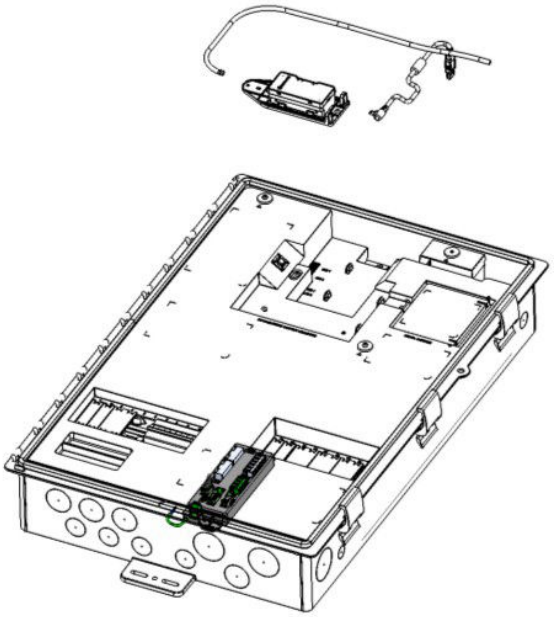
Figure 5: Route the external antenna wire through the top conduit point

5. Connect the other end of the USB cable to the IQ Gateway.
6. Install the external antenna at the required location and use it safely.

3.4 Installation with Mobile Connect cellular modem (CELLMODEM-07-INT-05) in IQ System Controller 3 INT

The external antenna can easily be installed with a Mobile Connect cellular modem by using the drill hole locations available for passing cables. The steps are as follows:

1. Screw the antenna to the SMA connector on the Mobile Connect.
2. Line up the mounting holes on the mounting bracket and the dead front and secure them in position using the mounting rivets. The following figure shows the slot in an IQ System Controller 3 INT.



3. Place the cellular modem on the mount in the position shown in the figure. Connect the USB cable provided with the package to the cellular modem.
4. Connect the other end of the USB cable to the IQ Gateway.
5. Route the external antenna wire through the side conduit point, as shown in the following figure.

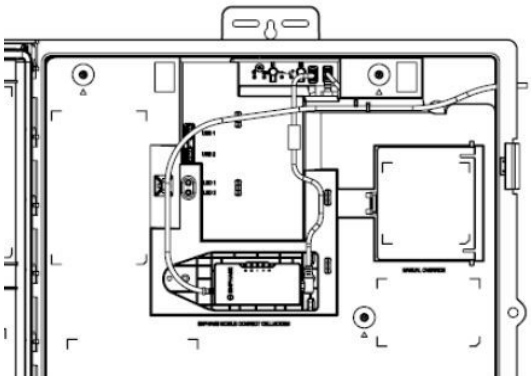


Figure 6: Route the external antenna via available conduit point

6. Install the external antenna at the required location and use it safely.

Appendix A

Compatible external antenna for different regions

Enphase recommends certain antennas based on their compatibility with the CELLMODEM-07 and the frequencies supported in different regions. If the installer/customer seeks to install a different model of the antenna, they can refer to the specification table based on their region.

A.1 For North American countries

The external antenna must meet the following set of requirements:

S.No	Parameters	Specification	Remarks
1	Connector interface	SMA MALE Type	—
2	Supported technology	LTE 4G	—
3	Operating frequencies	660 to 2600 MHz	Includes B71 and supported NA bands
4	LTE 4G bands support	FDD:B2/B4/B5/B12/B13/B14/B66/B71	—
5	Mount options	Wall mount, preferably with an L clamp	—
6	Operating temperature	-20 to 80°C	Preferred -40 to 85°C
7	Ground plane impact	Ground plane independent	—
8	Weatherproof	Indoor application	Outdoor antennas need to be weatherproof, and a lightning surge arrestor needs to be used for outdoor antennas
9	RF Cable - Low-loss RG58LL or equivalent	<0.6 dB/m	—
10	Cable operating frequency Max	up to 3 GHz	—
11	Cable length	<10 m	Length based on site coverage. It can be extended if coverage is very good on the site.

Based on these requirements, Enphase suggests the Quectal YECN001J1A external antenna.

A.2 For Europe, LATAM, and APAC

The external antenna must meet the following requirements:

S.No	Parameters	Specifications	Remarks
1	Connector interface	SMA MALE Type	—
2	Supported technology	LTE 4G	—
3	Operating frequencies	700 to 2600 MHz	Supported European and International bands
4	LTE 4G Bands support	FDD:B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28/B66 TDD:B34/B38/B39/B40/B41	—
5	Mount options	Wall mount, preferably with an L clamp	—
6	Operating temperature	-20 to 80°C	Preferred -40 to 85°C
7	Ground plane impact	Ground plane independent	—
8	Weatherproof	Indoor application	Outdoor antennas need to be weatherproof, and a lightning surge arrestor needs to be used for outdoor antennas
9	RF Cable - Low-loss RG58LL or equivalent	<0.6 dB/m	—
10	Cable operating frequency max	Up to 3 GHz	—
11	Cable length	<10 m	Length based on site coverage. It can be extended if coverage is very good on the site

Based on these requirements, Enphase suggests the following two products:

- Sira OSCAR1A/10M/SMAM/S/S/31.
- Quectel YECN001J1A.

Appendix B

Installing the lightning surge arrestor

If the antenna is installed outdoors at the highest point on the site, a lightning arrestor must be installed.

Enphase recommends a lightning surge arrestor sold by TE Connectivity. The details are available here: DDEController. The arrestor is installed in line with the antenna wire, and a separate ground wire needs to be installed. The method for completely assembling it to the antenna is described on the product website. A suitable arrestor with the exact specifications can be used as needed.

NOTE: The ports of the lightning arrestor may not be compatible with the antenna wire ends. A suitable RF cable or port converter needs to be purchased as per the product used on-site.

Appendix C

Extending the Enphase antenna using RF cable

The installers or homeowners may choose to extend the Enphase antenna included with CELLMODEM-07 by using an RF cable that meets the minimum requirements. These requirements are defined as follows:

Parameters	Specifications
Cable type	RG58 or RG58LL
Operating frequency	at least up to 3 GHz
Sheath	Low smoke, zero halogen
Max loss	0.6 dB/m
Connector type	SMA male at the modem end. The other end based on a 4G antenna mating connector
Recommended cable length	<10 m (see note for longer distances)

Refer to the RG58LL data sheet RG58LL data sheet for details. The installation method for this setup is the same as that of a standard external antenna.

NOTE: The setup can potentially reduce setup costs. However, it is the owner's responsibility to manually assemble the antenna with the relevant RF cable.

NOTE: For RF cable extensions longer than 10 m, use LMR400 to minimize signal loss. For extensions beyond 25 m, a cellular booster or line amplifier is required.

7. Revision history

Revision	Date	Description
TEB-00252-2.0	February 2026	Updated Appendix C. Editorial changes.
TEB-00252-1.0	March 2025	Initial release.