

Communication Gateway

Installation Guide



Read this Installation Guide thoroughly before installing the Communication Gateway and keep it handy for reference at all times.

Safety Precautions

Read these instructions thoroughly before installing. Become familiar with all required parts and equipment before installing, operating, or maintaining the Communication Gateway.

IMPORTANT SAFETY INSTRUCTIONS—PLEASE SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE

Install, wire, test and service in accordance with manufacturer's instructions, and local and national codes.

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Use appropriate personal protective equipment and follow safe electrical work practices.
- Before you start, turn off all power supplies connected to the device and all associated equipment.
- Always use a properly balanced voltage sensor to confirm the power shutdown.
- Respect the rating limits set for the device in these instructions.

To reduce the risk of severe injury or death, follow all installation instructions.

Who Should Read this Guide

This installation guide is for integrators of Communication Gateways with AddEnergie® Charging Station Solutions. It provides crucial information for setting up your electric vehicle's Charging Site and the installation and commissioning of the Communication Gateway. You must be an engineer, technician, or qualified service person to perform the installation at a client site. Note that only the installation of a junction box (see p.8) Junction Box Enclosure Requirements) requires an electrician if an outlet isn't already installed.

All networked charging stations are monitored and connected to a cloud-based Web Portal where the station owner has access to a unique Dashboard. This online tool provides a snapshot of the owner's charging stations, with functionality to control and restrict access to select drivers, implement payment services to cover operational expenses, and understand utilization and plan for future expansion through analyzing charging session records which are reported to the customer's Dashboard.

AddEnergie Charging Stations can be connected to a network through the provision of a Communication Gateway. The Gateway is an independent device (supplied separately from a Charging Station) and connects to a network primarily via cellular link.

Follow these instructions to minimize the probability of any critical issues occurring during installation and commissioning of the Communication Gateway.

About this Guide

This guide provides instructions for the physical installation and commissioning of a Communication Gateway with AddEnergie Level 2 Charging Station.

For more information visit us at addenergietechnologies.com

This guide focuses on a full installation and commissioning of the Gateway with a built-in Wireless Controller Driver Card in a ZigBee Pro Adapter environment.

About ZigBee

The wireless card and Level 2 Network Ready Charging Stations operate using the ZigBee Pro/IEEE 802.15.4 physical layer for communication:

- A wireless physical layer of 2.4 GHz with data rates of 250 kbps
- Low-cost installation deployment
- Easy implementation
- Reliable data transfer
- Short range operation
- Very low power consumption

These properties of the physical layer are concealed to maintain and secure the configuration and commissioning of the network database.

Before You Start

Design and Deployment

IMPORTANT: Establish potential connectivity limitations and design layout of the device by performing a proper field survey on ALL sites considered for deployment with a Communication Gateway. Cellular connectivity is required for a Communication Gateway device to operate.

NOTE: An electrical contractor must validate and confirm the site has sufficient cellular signal to operate. A NEMA 4 PVC enclosure must be provided by the contractor to protect the Gateway.

Site Considerations

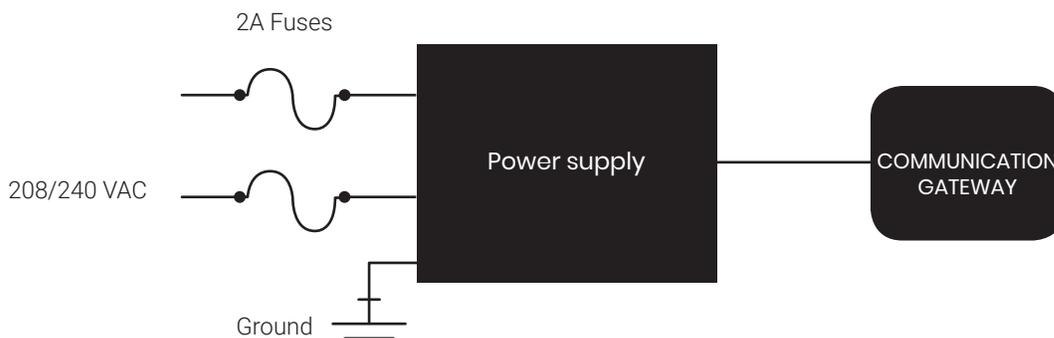
When setting up a ZigBee Pro wireless environment, prefer a per floor horizontal architecture over a vertical one. Transmitting from floor-to-floor is possible in specific applications (such as through stairways), however, a horizontal configuration is preferred. Use at least one Gateway per floor.

Outdoor installations require a junction box enclosure. Use only the NEMA 4 rated PVC junction box enclosure. The outdoor waterproof NEMA 4 rated PVC junction box enclosure is not included and must be purchased separately. See “Junction Box Enclosure Requirements” for details.

Key Technical Requirements

The Communication Gateway is connected with a 120 V electrical outlet.

Alternatively, the Communication Gateway can be connected to the same power supply as the Charging Station (208 V). To power the Communication Gateway via a Charging Station, the installer requires a junction box and connect L1 and L2 with the ground and install a line fuse.

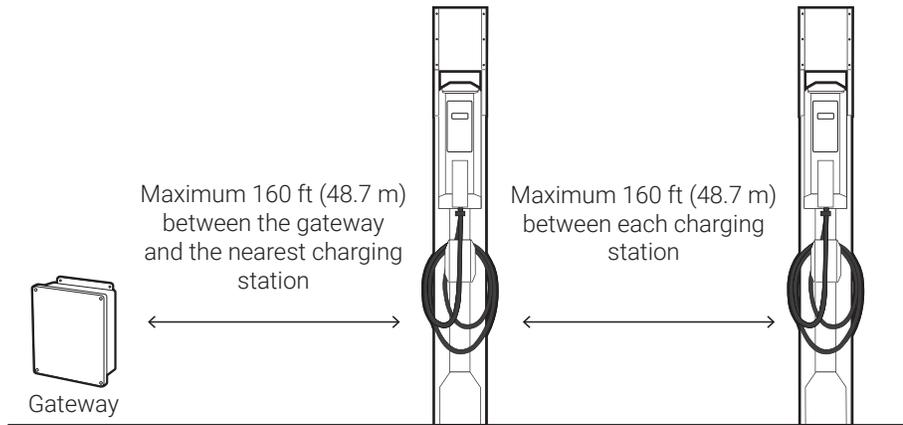


One Communication Gateway can support up to 20 stations with a single wireless mesh on sites that support multiple Charging Stations on the same electrical circuit.

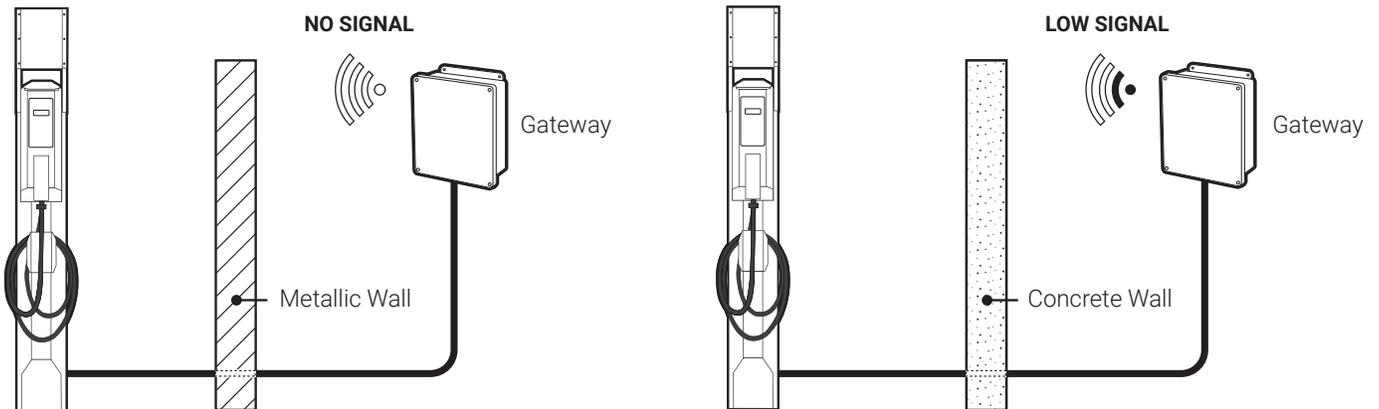
Gateway Installation

Deployment

The maximum distance between the Gateway and a Charging Station is 160 ft (48.7 m).



Objects in the line of sight of the Communication Gateway reduce the range of the signal. Wooden or concrete walls limit the range to only a few meters while metallic walls completely block the signal.

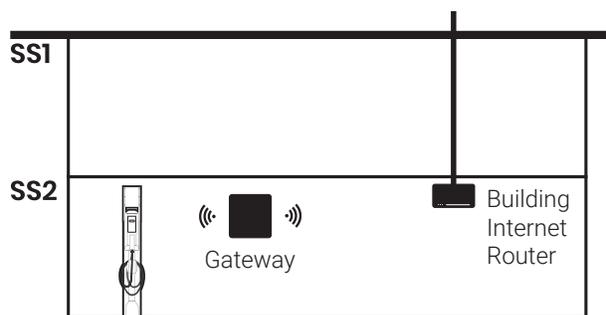
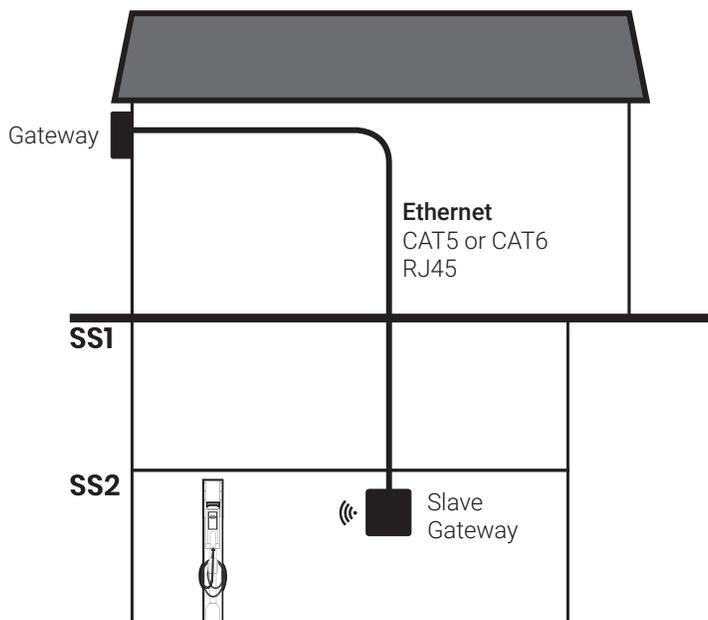


Site Survey

A multi-storey car park, large parking lot or underground parking site deployment may require several Communication Gateways. A master Gateway device is installed in a location where the cellular signal is strong. The slave Gateway devices can then be installed in locations which do not have cellular signal and be connected to the master Gateway device via an ethernet cable.

The Gateway is the property of AddEnergie and must remain connected on the network in accordance with the terms and conditions and part Global Management Services Agreement.

NOTE: It is essential to validate the availability of cellular service before proceeding with the installation. It is common for underground parking to include cellular repeaters.



Junction Enclosure Requirements

Outdoor installations require a junction box enclosure.

Use only a NEMA 4 rated PVC junction box enclosure.

- Must not be made of metal. Metal enclosures block radio frequency (RF) signals.
- Desirable form factor: 12" x 12" x 4" (30.5 cm x 30.5 cm x 10.2 cm) or larger.
- In this PVC junction box, a 120 Vac outlet must be installed to supply the Gateway.
- **NOTE:** Never use a GFCI (Ground Fault Circuit Interrupter Outlet).

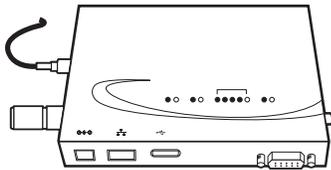
THE OUTDOOR WATERPROOF NEMA 4 RATED PVC JUNCTION BOX ENCLOSURE IS NOT INCLUDED AND MUST BE PURCHASED SEPARATELY.

THE JUNCTION BOX ENCLOSURE MUST BE INSTALLED BY A CERTIFIED ELECTRICAL CONTRACTOR.

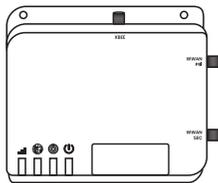
When the junction box enclosure installation is completed, install the gateway inside the junction box enclosure and plug it.

Digi Router Installation

The Digi Routers are rugged, programmable gateway solutions to connect networks. AddEnergie offers two models.



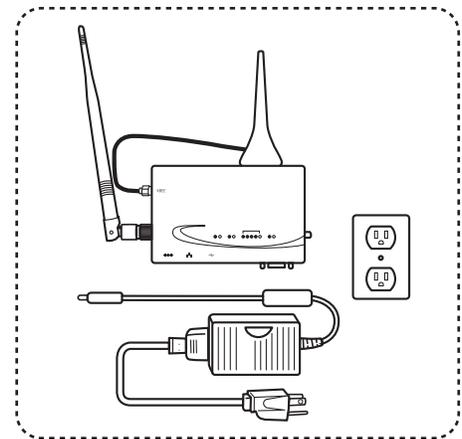
Digi X4—Communication network HSPA+ only
www.digi.com



Digi Industrial Gateway—Communication network LTE (4G) and HSPA+
www.digi.com

Installation Minimum Spacing Distance Requirements

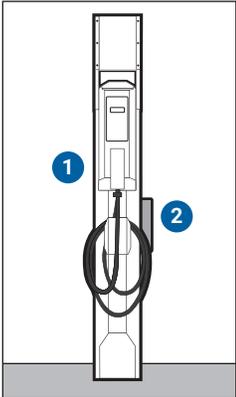
Ensure that the minimum spacing distance is available to allow free rotation of the wireless antenna in all possible orientations, as indicated at right.



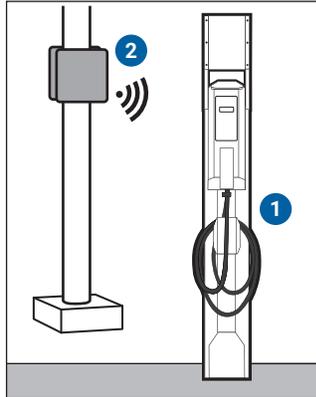
Gateway Typical Installation

Following the deployment recommendations, select the best location onsite for the Gateway. These are the three typical set-ups.

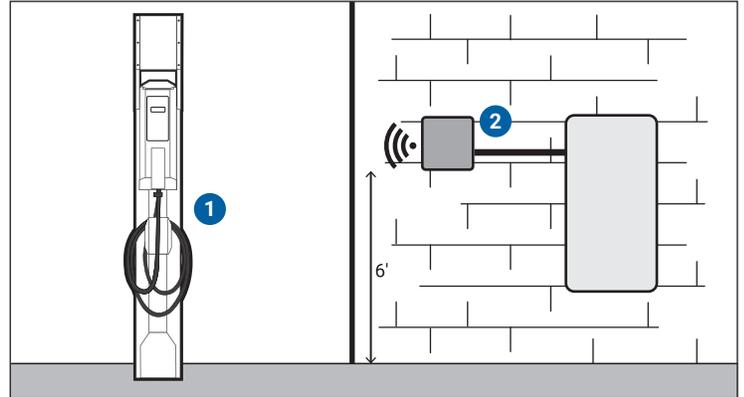
Installed to the back of a double pedestal.



Installed to a pole nearby.



Installed on an outdoor building wall.



1 Charging station 2 Gateway

Enclosure installation procedures:

1. Turn off the main power.
2. Install the junction box at best onsite location.
3. Pull the cables into the junction box.
4. Install a 120 V power outlet.
5. Insert the Digi Router and secure it.
6. Connect the Digi router.
7. Turn the power on.

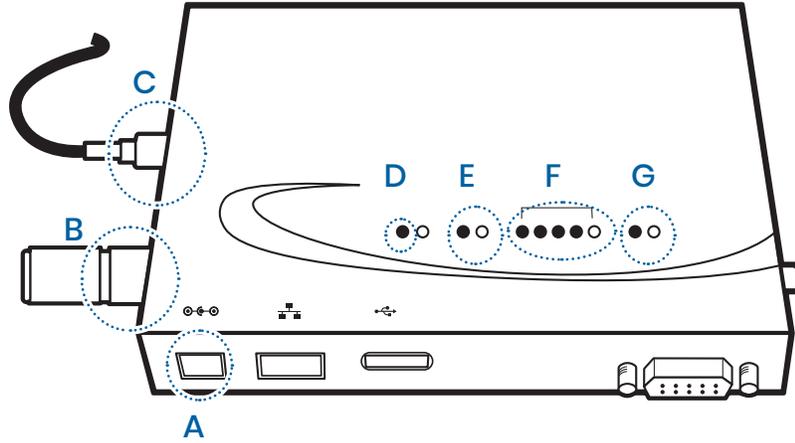
NOTE: The communication between the Charging Stations and the Communication Gateway is wireless (no network cable is necessary).

The Gateway is already set up to communicate with our server via cellular link. No configuration is needed.

Power-Up and Initial Check

Digi X4

When power is on, the green LED labelled “Power” lights. Boot time should begin within a few seconds.



Checklist:

1. The gateway should be powered on (A).
2. The cellular antenna should be firmly screwed into the “PRIMARY CELLULAR(B)” port.
3. The flexible antenna should be firmly screwed into the Xbee port (C)

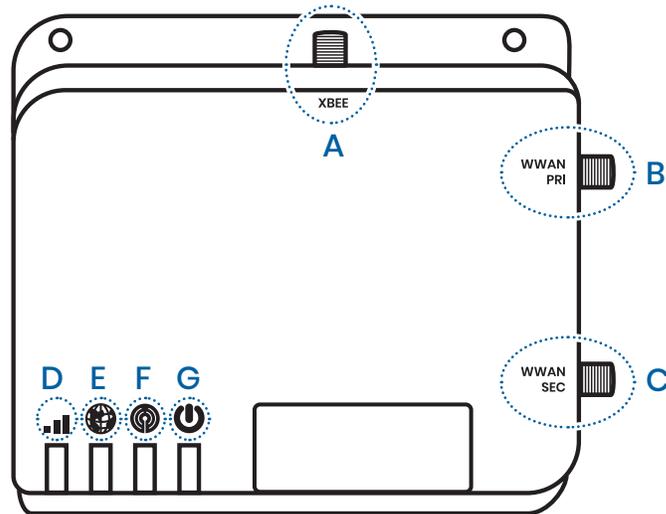
Green lights should appear in all the following areas:

- D Power
- E Cellular Link
- F Signal Strength
 - Less than three lights: No (or very poor) cellular signal.
 - Three lights or more: Good cellular service and optimal gateway position
- G XBee Link

NOTE: If less than 3 lights are on (F), moving device to a better location is recommended, a poor signal may result in an unstable connection or a disconnection. Contact AddEnergie’s Technical Support for recommendations.

Digi Industrial Gateway

When power is on, the green LED labelled “Power” lights. Boot time should begin within a few seconds.



Checklist:

1. The gateway should be powered on (**G**).
2. The cellular antennas should be firmly screwed into the “PRIMARY” (**B**) and “SECONDARY” (**C**) ports.
3. The flexible antenna should be firmly screwed into the XBee port (**A**).

Green lights should appear in all 4 of the following areas:

D Signal Strength:

- OFF (dark): No (or very poor) cellular signal.
- Solid yellow: Adequate, signal strength works for most applications.
- Solid green: Good cellular signal and optimal gateway position

E Cellular Link

F XBee Link

G Power

NOTE: If LED is dark (**D**), moving device to a better location is recommended, a poor signal may result in an unstable connection or a disconnection. Contact AddEnergie’s Technical Support for recommendations.

Verify Signal Strength

For optimal communication quality, the cellular signal must be sufficiently strong (measured in dBm).

- **GOOD:** -79 dBm and more. Recommended level.
- **MODERATE:** -90 dBm. Required minimum level
- **BAD:** -103 dBm and less. Inadequate level.

To test the signal's strength in a specific location different tools can be used.

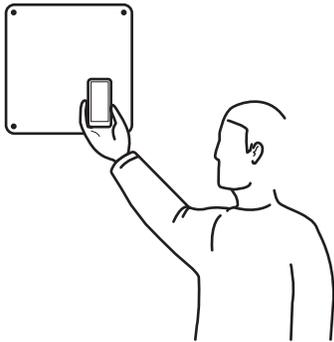
Using a mobile phone

- Android phones have several applications, such as "G-NetTrack" available on "Google Play"
- iOS, offer **NO** reliable application.

Using a dedicated device

Contact Technical Support for a list of available tools.

NOTE: Measurement must be taken at the precise location of installation.



Validation and Commissioning Activation

When the Communication Gateway is installed, validate the signal levels and activate commissioning.

Please contact us at 1 877 505-2674.

Absence of Cellular Signal

If no cellular signal on site, the Communication Gateway can be set up to work with an existing internet service via ethernet cable.

If the site requires this setup, the Communication Gateway will need a particular configuration before leaving our facility.

Please contact us at 1 877 505-2674.

Installation or Commissioning Questions:
1 877 505-2674

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