

Setting Up ZigBee-Ethernet Gateway – North America

This Application Note describes how to install and set up ZigBee communication between a SolarEdge inverter and a ConnectPort X2 Zigbee-Ethernet Gateway.

What's in the Box

Make sure all of the items listed below are included in your box.

- 1 Router (Slave) XBee Pro ZigBee module
- 8.5" RG-174 RF cable, RP-SMA connectors (for each module)
- 2.11" Helical whip 2.4 GHz omni-directional Antenna

In addition, make sure you have the SolarCity ZigBee Ethernet Gateway installed:

- 1 ConnectPort X2 ZigBee Ethernet Gateway
- 1 CAT5 Ethernet cable
- 1 Universal Power Supply
- Hardware & Software Setup CD, Quick Start Guide and this Installation Guide.

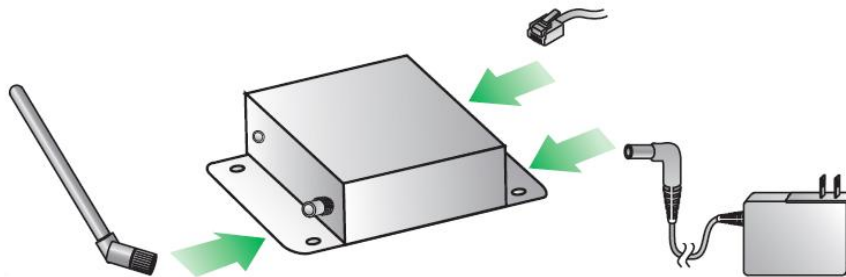


Figure 1 - ConnectPort X2 kit with Zigbee Antenna, Power Supply and Ethernet cable

Creating a ZigBee Connection

ZigBee is a technology that enables you to wirelessly connect the master inverter to a remote Ethernet gateway. In this configuration, the inverter acts as a Zigbee Router, and the ZigBee Ethernet gateway is the ZigBee Coordinator.

► Physically connect the ZigBee module:

- 1 Make sure you install the router (slave) module in the main Inverter, which is connected to the Monitoring Portal.
- 2 Turn the Inverter off.
- 3 Open the Inverter and insert the ZigBee module in its place on the digital board as shown on the picture below:

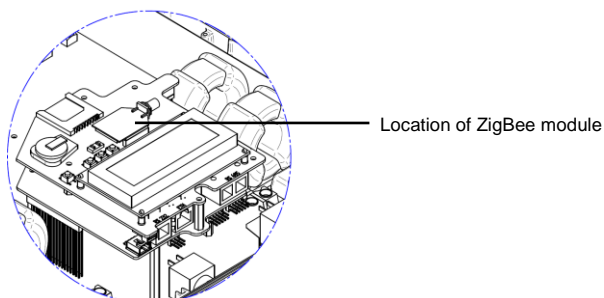
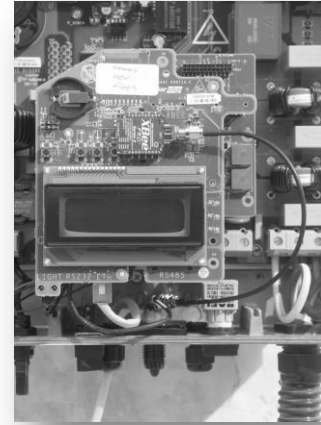


Figure 2: ZigBee module location

- 4 Connect the RF cable to the module. Tighten the bolt, but not too firmly. Ideally, use a 5/16" torque wrench set to 3-5 in·lbf (0.3-0.6 N·m).
- 5 Connect the antenna to the cable. Tighten as instructed in the previous step.
- 6 Slide the antenna from the inside through on open gland at the bottom of the inverter. See the pictures below:



- 6 Screw the gland nut back on, around the antenna.

► **To configure ZigBee communication to a ZigBee Ethernet Gateway:**

- 1 Under the **5. Communication** menu, configure the **5.1 Server** option, as described in the *Configuring the Inverter Using the LCD Panel and User Buttons* section of the *SolarEdge Installation Guide*. Set the main Inverter Server as **ZigBee**.
- 2 Configure the **5.2 Bus** option to **Zigbee**.
- 3 Enter the **5.5 ZigBee Conf** option.
- 4 Use the **5.5.1 Mode** option to select MP Slave.

This concludes the XBee module installation. Continue below only in case the units fail to communicate.



NOTE:

If the inverter does not succeed to communicate with the gateway on a specific channel, we recommend that you set them all to a different channel.

- 5 The PAN ID is a unique identifier to a ZigBee network. The module comes configured with PAN ID = 1AB7 by default, but may be set to any value so long as both units (the inverter unit and the gateway) are configured the same way. Use the **5.5.2 Pan ID** option to configure Pan ID for each device in the ZigBee network.
- 6 The ZigBee protocol searches for a clear Radio Frequency channel from a given set. The channels from which to select are defined using the SCAN CHANNELS parameter. Use the **5.5.3 Scan Channels** option to configure the Scan Channel for the ZigBee connection. This is 1FFE by default, but may be set to any value so long as both units (the inverter unit and the gateway) are configured the same way.
- 7 Select the **5.5.5 Apply Settings** option to apply these settings.

To verify the connection, you may refer to the *Verifying the Connection* section on page 4.

► **To configure the ZigBee Ethernet Gateway:**

- 1 Connect the ZigBee antenna supplied.
- 2 Connect Ethernet cross-over cable (supplied) to LAN connection (usually your home router or switch).
- 3 Connect the Power supply.

This concludes the installation. Continue below if you wish to change any of the default parameters or if you're having trouble connecting:

- 4 Insert the Digi CD to a computer connected to the same LAN connection and click on Gateway Software → ConnectPort X → Configuration → Device Discovery.

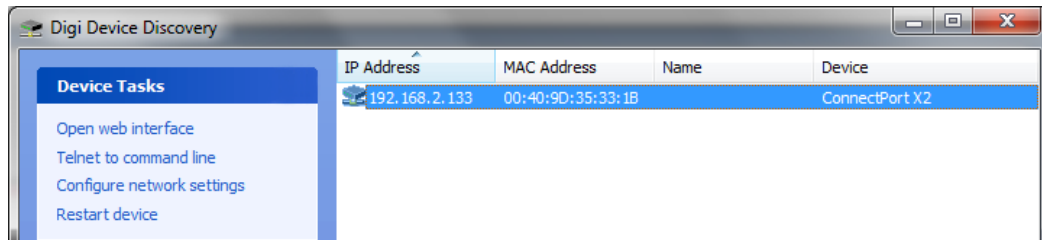


Figure 3 - Digi Device Discovery Window with an identified device



NOTE:

The ConnectPort X2 ship with a a default static IP address for the Ethernet port of 192.168.1.1 and a a DHCP server enabled by default. Therefore, simply connecting a laptop computer to the Ethernet port of these products allows direct access to the web interface for configuration.

If you have a static IP address and don't have DHCP, see the chapter *Alternatives for configuring network communications* on page 76 of the ConnectPort User's Guide (on the attached CD).

- 5 Once your device is discovered you will be automatically connected to the SolarEdge server. The device comes preconfigured with network and ZigBee parameters.
- 6 If changes are made to either Pan ID or Scan Channels (see the section *To configure ZigBee communication to a ZigBee Ethernet Gateway* above), use the device's web interface to do so:
 1. Open the Digi Device Discovery
 2. Double-clicking the device
 3. Select *XBee Network* on the left-hand side menu
 4. Click the device's address on the list that appears
 5. Set the the parameters under **XBee Network** → **Basic Settings** (see Figure 4 below).

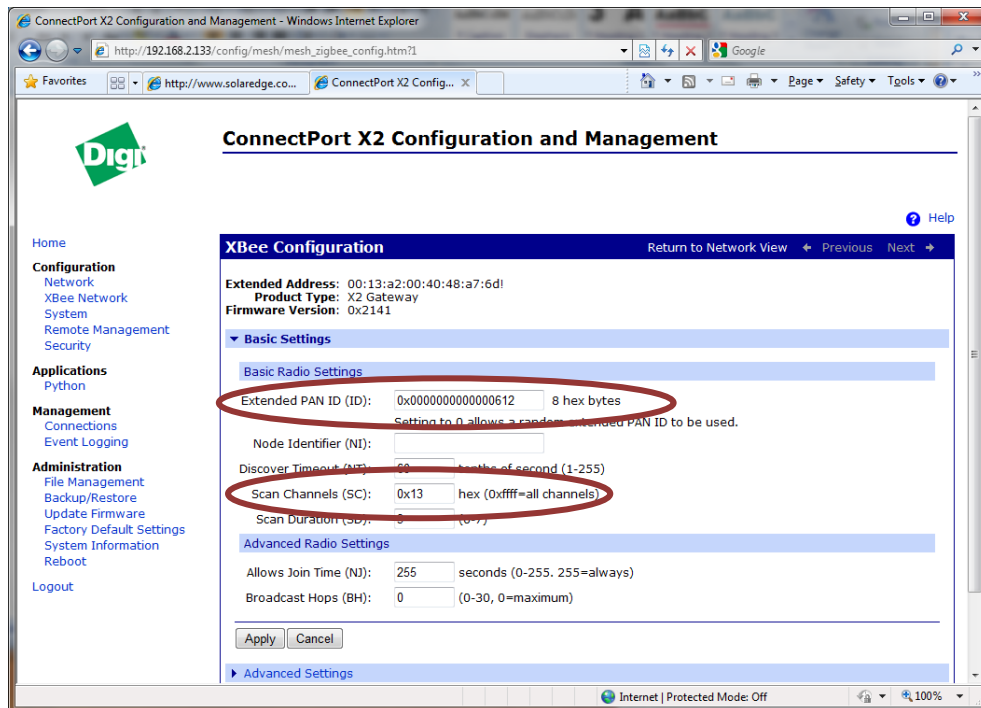
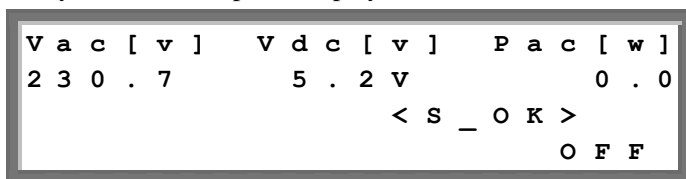


Figure 4 – Configuring PAN ID and Scan Channels parameters of the ConnectPort X2

Verifying the Connection

► To verify the connection:

- 1 Verify that the DC circuit breaker is OFF.
- 2 Verify that the inverter’s ON/OFF switch is still OFF.
- 3 Turn ON the AC to the inverter by using the circuit breakers on the main circuit board.
- 4 Wait for the inverter to connect to the SolarEdge Monitoring Server. This may take up to two minutes.
- 5 Verify that the LCD panel displays a window similar to the following:



- **S_OK:** Verify that **S_OK** appears on the panel to indicate a functioning connection to the SolarEdge Monitoring Server, which was validated during the last two minutes.



NOTE:

If the **S_OK** indication is not displayed, perform the following:

- Use another method (unrelated to the SolarEdge Inverter) to check whether the network and modem are operating properly. For example, connect a laptop to the Ethernet modem and connect to the internet.
- Check whether a firewall or another device is blocking transmission.
- Check the configuration of the inverter.

You may refer to the *SolarEdge Installation Guide* for detailed instructions.



Support and Contact Information

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