

GridNavigator

GN Bridge Controller

Installation Instructions

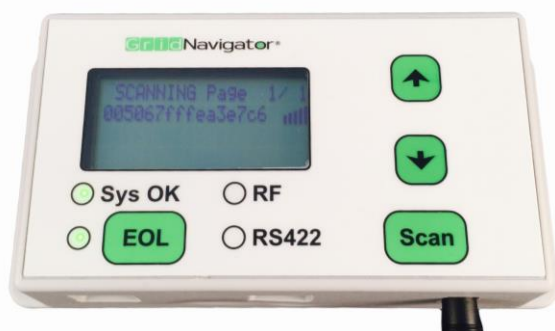
GridNavigator

200 Varick Street # 508

New York, NY 10014

www.GridNavigator.com

Model Number:GN-BR-001



Description

GridNavigator's GN Bridge is an integrated hardware/software solution that provides the essential web-based commissioning and remote managing capabilities required to control and optimize energy usage within the GridNavigator wireless EMS network. It acts as the system hub, using two methods of communication: 1) a bi-directional connection to send and receive messages from the cloud-based platform, and 2) a secure wireless network for all the devices in the system.

The GN Smart Server host connects with the GN Bridge through a RS-422 bus. The GN Bridge communicates with "end point" devices such as the GN Sensor, GN Dimmer, GN Switch, and/or the GN thermostating radio frequencies over the secure wireless network. The GN Smart Server initiates communication with the GN Bridge, and the GN Bridge initiates communication with thermostats. End point devices, on the other hand, send requests to the GN Bridge to establish an association or pairing communication.

The radio range of a GN Bridge is about 100 meters. If more than one GN Bridge is necessary for greater coverage to control all the GN EMS end points in a network, additional GN Bridges can be connected in a daisy chain fashion. Only the first GN Bridge needs power, and the last GN Bridge in the chain needs to be terminated in order to avoid electrical interference.

Specifications

General	
Power	24-volt DC from included power supply
Operating Conditions	-40° to + 65° C
Operating Humidity Range	0% to 95% RH
Storage Conditions	-40° to + 90° C
RF Frequencies: Radio A	A: 802.15.4 (for dimmer, light sensor, light switch) 2.405 GHz-2.48 GHz
Radio B	B: "Laird" (for Smart Thermostat) 2.400-2.4835 GHz
RF Range	100 ft. to 1000 ft. depending on architecture
Housing	ABS Plastic
Dimensions	6.62" wide, 3.30" high, 1.60" deep
Weight	

Installation

The GN Bridge is easy to install. Follow these steps to ensure proper installation and operation of the GN Bridge.

1. GN Bridge Placement

GridNavigator recommends installing the GN Bridge near an electrical utility service sub-panel because it must connect to the GN Radar device. Other considerations in selecting a mounting spot include the following:

- Easy access to electrical power from the included transformer power supply.
- Easy access to the GN Smart Server.
- Sufficient radio coverage to send and receive signals from end point devices.
 - a. Connect the power supply to the GN Bridge.
 - b. Press the **Scan** button on the GN Bridge to survey the devices within radio range.
 - c. The LCD display lists the serial numbers of all the devices within range. Use the up and down arrow buttons to scroll through the numbers if multiple devices appear in the list.

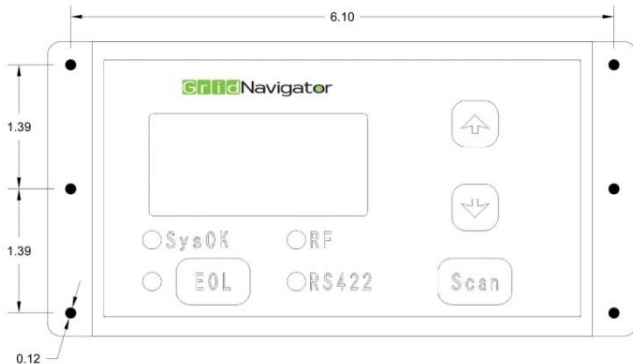
Note: The RF LED blinks when there is radio activity. Scanning is a passive utility and does not pair the components. The pairing occurs in the commissioning process described in [Step 3](#) below.

- d. Move the GN Bridge around the room to find a spot with stronger coverage for more devices if that is necessary. If one GN Bridge cannot detect all known end point devices, additional GN Bridges may be necessary. [Step 4](#) describes how to add more GN Bridges.

2. Mounting the GN Bridge

Once you have found a suitable spot for the GN Bridge with access to power, the Smart Server, and the GN Radar device and with sufficient coverage for end point devices, attach it screwing it through the holes on the sides of the mounting plate. See the mounting template in Fig. 1 below.

Fig. 1: Mounting Template

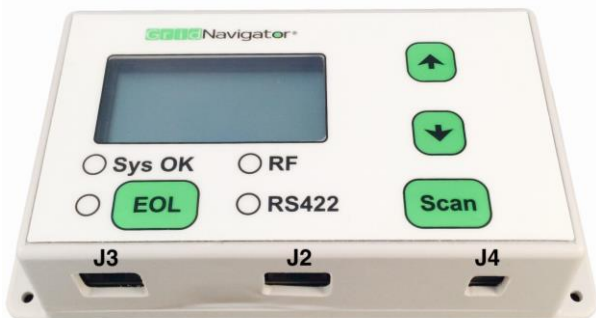


3. Commissioning the GN Bridge

This step makes the connection to the management software on the GN Smart Server and establishes the control network.

- Ensure that the GN Smart Server is running and connected to the Internet.
- Connect the RS-422 Ethernet-type cable included with the GN Bridge to the J2 jack on the bottom of the GN Bridge. See Figs. 2 and 3 below.
- Contact GridNavigator ([phone?](#) [Email?](#) [Hyperlink on the website that I can add here?](#)) and request a remote commissioning.

Fig. 2: Identification of the Jacks



- Once the GN Bridge is commissioned, it sends an RF signal to all GridNavigator Smart Thermostats to initiate communication. The GN Bridge will also establish associations with other GridNavigator smart

devices as they send requests for pairings with the GN Bridge.

4. Operating the Bridge

Four LEDs on the face of the GN Bridge display its status within the EMS system.

- **Sys OK** – when this LED is illuminated,
- **RF** – the radio frequency LED blinks whenever the Bridge detects radio activity within its network.
- **RS422** -
- **EOL** – End of Line. The button accompanying this LED terminates the last GN Bridge in a daisy-chain arrangement of multiple bridges so that the last bridge does not introduce radio interference into the network. Step 5 below describes this optional arrangement in greater detail. **The LED lights.....**

Pressing the **Scan** button on the Bridge instructs it to survey and display all the GridNavigator devices within radio range. Once the Bridge detects a device within range, it displays the serial number of that device in the LCD display. The up and down arrow buttons allow the user to scroll through the numbers if multiple devices appear in the list.

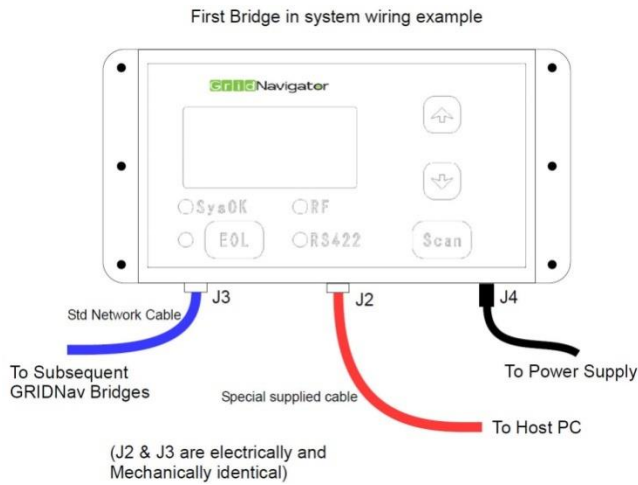
5. Adding GN Bridges to the Network (Optional)

In those cases where a single GN Bridge is insufficient to make radio connections to all the smart devices in a network, you can add more GN Bridges to the system. Fig. 3 below shows how to wire additional GN Bridges in a daisy-chain fashion.

- Follow the directions in [Step 1](#) to determine where to place additional GN Bridge(s) for complete coverage of all the smart devices in the GridNavigator network.
- Once you have mounted an additional GN Bridge, connect its J2 jack to the J3 jack on the first, powered GN Bridge in the chain. Use a standard network cable as shown in Fig. 3 Below.
 - Only the first GN Bridge requires a power supply. The J3 jack of the first GN Bridge supplies 24 volts to all other GN Bridges in the chain through the Ethernet cables.
 - If more than one GN Bridge is added to the chain, connect each additional GN Bridge to the previous GN Bridge using standard network cables from the previous J3 jack to the J2 jack of the next GN Bridge in the chain.

Note: The J3 and J2 jacks are internally identical, so the connection order is not critical except for the first GN Bridge that must have a special cable into its J2 jack and the power supply connection. See Fig. 3 below.

Fig. 3: Wiring Diagram



- The last GN Bridge in the chain must be terminated in order to avoid radio interference in the system. Once you have connected the last GN Bridge, press the **EOL** ("End of Line") button on the face of the GN Bridge to terminate the line.

GN Bridge Controls and Displays

LCD Display	Displays the serial number of each GridNavigator device within radio range of the Bridge
SYS OK	
RF	Light blinks whenever the Bridge detects radio activity within range
EOL Button	When pressed, it terminates the last Bridge in a string if more than one Bridge is required for coverage.
EOL	
Up / Down Arrows	Allows a user to scan through all the serial numbers displayed in the LCD screen if more devices have been detected than can fit in a single view.
Scan Button	When pressed, it instructs the Bridge to survey the area to detect all the GridNavigator devices within range.

WARRANTY

All products sold by GRIDNAVIGATOR are guaranteed against defects in material and workmanship for a period of one year from the date of shipment. GRIDNAVIGATOR responsibility is limited to repair, replacement, or refund, any of which may be selected by GRIDNAVIGATOR at its sole discretion. GRIDNAVIGATOR reserves the right to substitute functionally equivalent new or serviceable used parts.

This warranty covers only defects arising under normal use and does not include malfunctions or failures resulting from: misuse, neglect, improper application, improper installation, waterdamage, acts of nature, lightning, or repairs by anyone other than GRIDNAVIGATOR.

Except as set forth herein, GRIDNAVIGATOR makes no warranties, expressed or implied, and GRIDNAVIGATOR disclaims and negates all other warranties, including without limitation, implied warranties of merchantability and fitness for a particular purpose. Some states or jurisdictions do not allow limitations on implied warranties, so these limitations may not apply to you.

Limitation of Liability: In no event shall GRIDNAVIGATOR be liable for any indirect, special, incidental, or consequential damages. Some states or jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.

Regulatory Compliances

Contains:

- Wireless Antenna FCC ID: KQL-RM024 Antenna
IC: 2268C-RM024
- Transmitter Module FCC ID: OA3MRF24J40MC

The enclosed device complies with Part 15 of the FCC Rules and Industry Canada License Exempt RSS Standard(s). Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B 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 not cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one or more of the following measures:

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

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