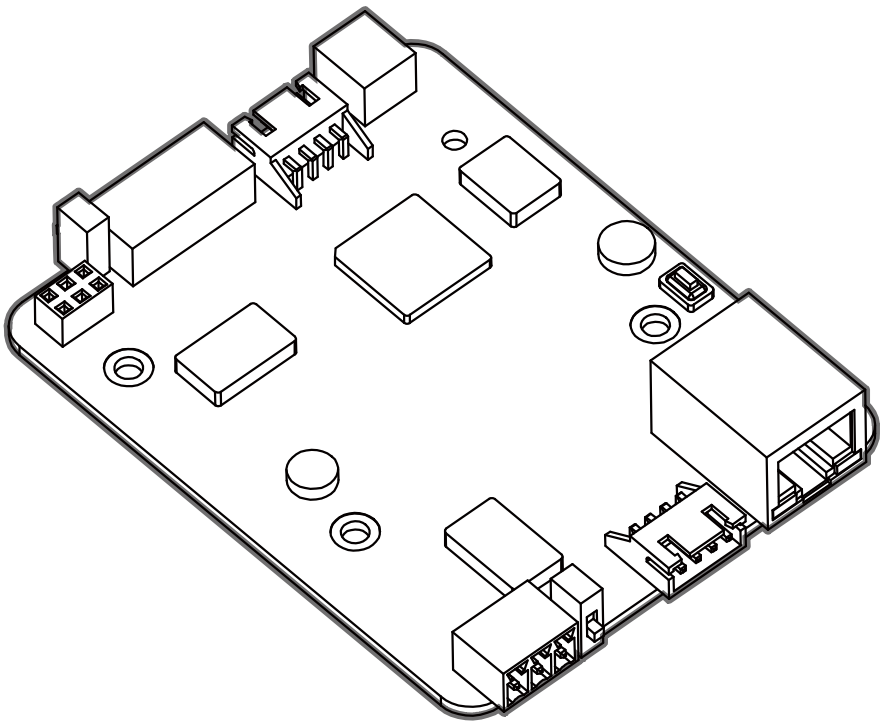
YASKAWA
SOLECTRIA SOLAR



# Quick Guide for Ethernet Network Card G2

06/01/2019
Revision 8

# Introduction

The Ethernet Network Card is used for monitoring and controlling purposes. The Ethernet Network Card supports industry standard Modbus RS485 communication and TCP/IP protocol. When used with an Internet connection, it can send data to an online portal from where up to 32 inverters can be monitored. It can also be used to remotely update the inverter firmware.

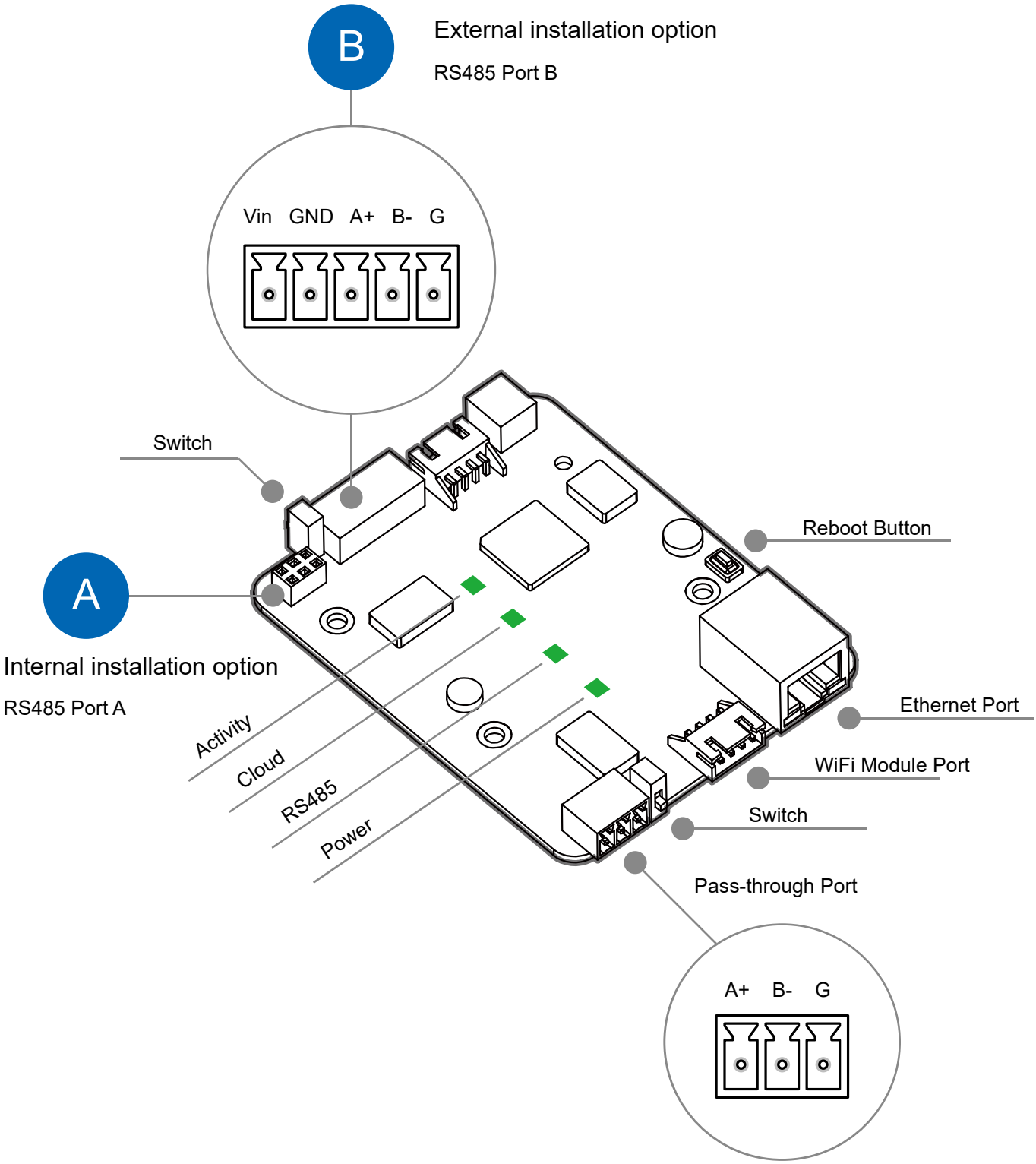
# Capabilities

● Remote inverter firmware upgrade support by Yaskawa Solectria Solar (YSS).
● Remote diagnostics by YSS Technical Support & Service.
● Direct customer data from the Ethernet Network Card via a programmable Ethernet XML Sunspec Data Exchange connection for customers who want to manage their own data directly.
● Pass-thru Modbus communications to a third-party gateway.

| **Communicate to** | |
|---|---|
| Modbus daisy chain | Isolated RS485, Max. 32 devices |
| Third-party data logger | Pass-thru port, Isolated 3 Pin RS485 |
| Cloud service | Ethernet port, MQTT |
| Third-party server | Ethernet port, HTTPS |
| Raw data client | Ethernet port, Modbus/TCP |
| **Connections** | |
| RS485 port A | Internal installation, RS485+DC Input, 6 Pin |
| RS485 port B | External installation, RS485+DC Input, 5 Pole 3.5 mm pitch EDG |
| | Only one effective at the same time between port A and B |
| Pass-thru | RS485, 3 Pole, A+ / B- / G |
| Ethernet | RJ45, 10Base-T / 100Base-T |
| WiFi module | 4Pin connector |
| **Voltage supply** | |
| Input voltage | 9 ~ 24 Vdc |
| Power consumption | < 1 W, Max. 5 W |
| **Ambient conditions** | |
| Degree of protection | Installed in inverter wire-box or 3rd party enclosure |
| Ambient temperature | -40√ to +85√ , Natural convection |
| Relative humidity | < 85%, Non-condensing |
| **General data** | |
| Dimensions ( W/H/D) | 140 mm / 70 mm / 15 mm |
| Weight | 50 g |
| Status display | LEDs for Activity, Cloud, RS485 and Power |

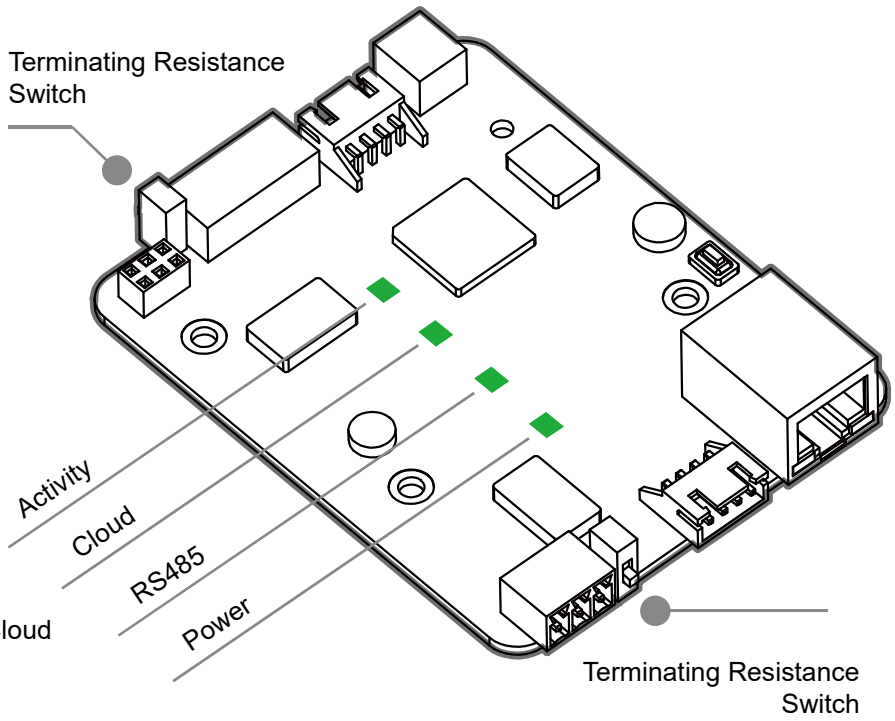
# Interface & Indicators

## Ethernet Network Card (ENC) G2



## Caution:

The termination switch should always be ON if it is the last device in a daisy chain.
If the length of the cable connecting to RS485 port or Pass-through port of
the ENC is over 1000 meters, the termination switch button must be set to ON.



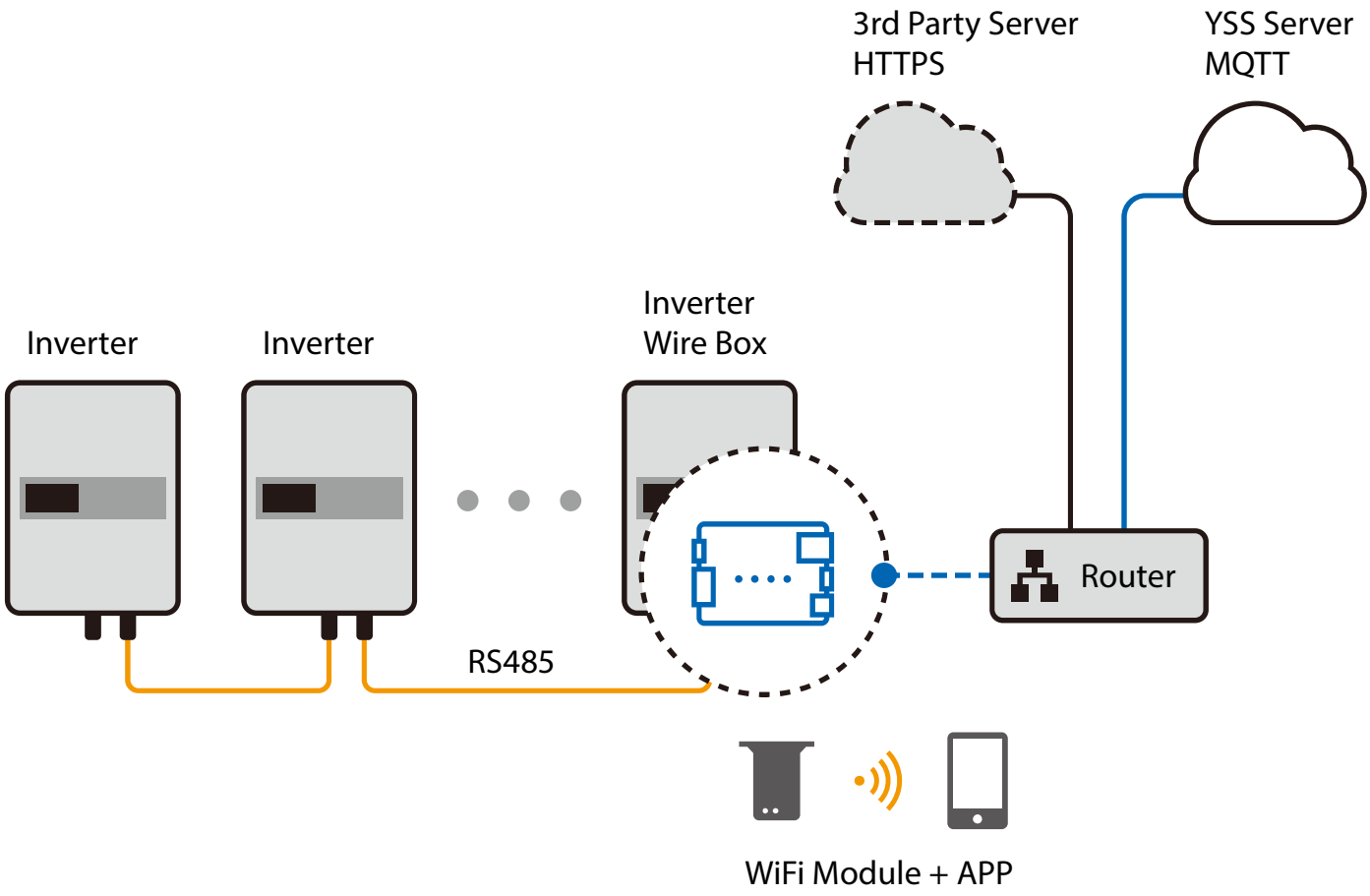

- Activity
  Fast Blink: Executing Command
  Blink: Gateway Heartbeat
- Cloud
  ON: Connected
  Fast Blink: Communication with Cloud
  Blink: LAN Activity
  OFF: Disconnected
- RS485
  Blink: Device R/W
  OFF: No Activity
- Power
  ON
  OFF

# Scope of Delivery

| Contents | Note |
|---|---|
| ENC G2 | DC 9~24V, Max. 5 W |
| WiFi Module | |
| Accessories | D2XH Cable, 3 Standoffs with Screws,<br>3-Pin Connector, 5-Pin Connector |
| ENC Enclosure | 80mm * 92.5mm * 35mm |

# Installation Option

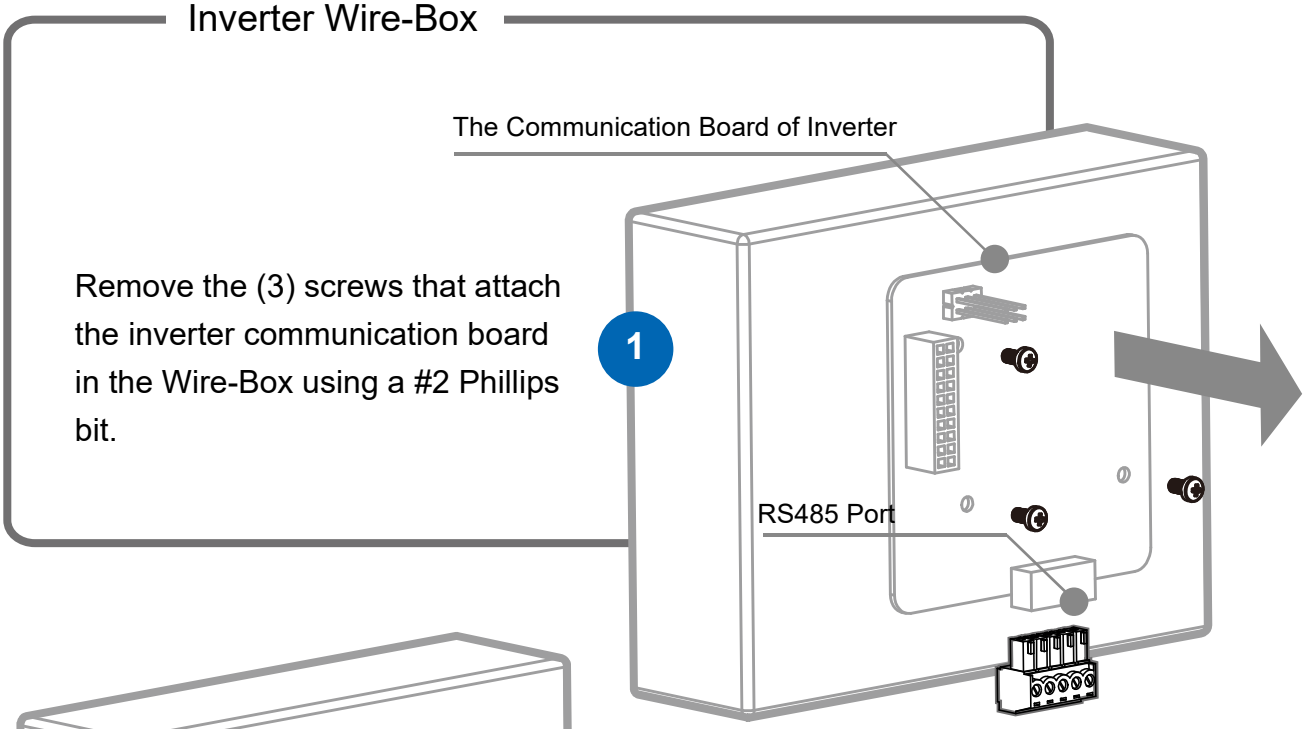
## A Internal in Wire-Box of the Inverter



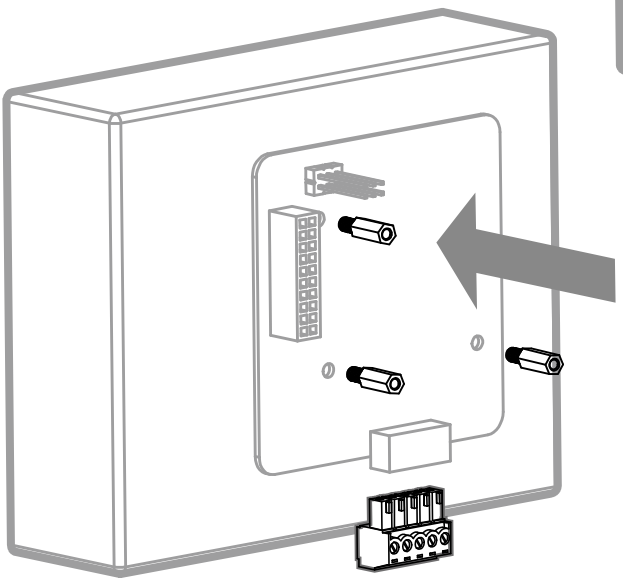

When the inverters are monitored via the ENC, a unique RS-485 address for each inverter can be set up through the LCD interface.

Up to 32 inverters can be connected together in the communication network.

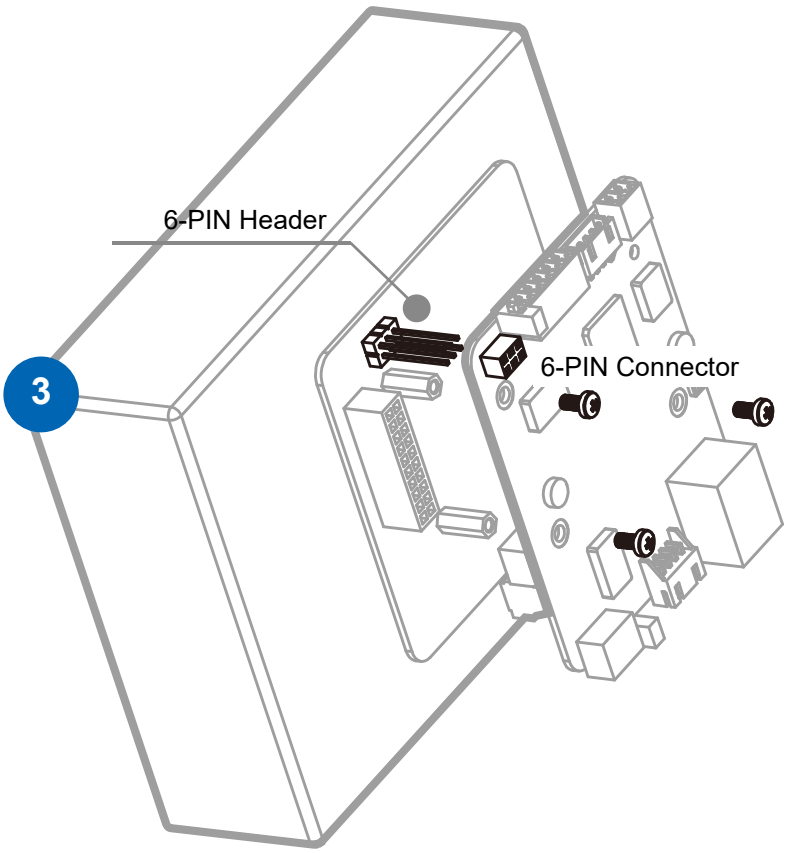
## Inverter Wire-Box




1 Remove the (3) screws that attach the inverter communication board in the Wire-Box using a #2 Phillips bit.



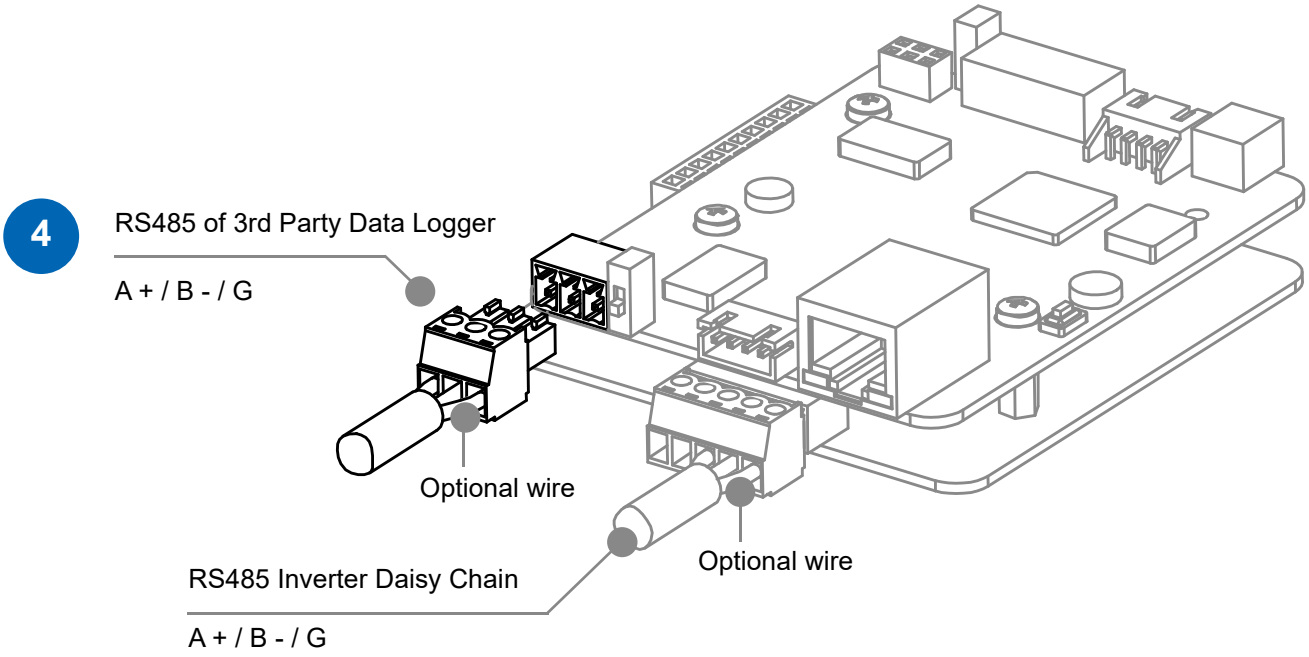
2 Replace the screws with the (3) standoffs included in the ENC Kit.



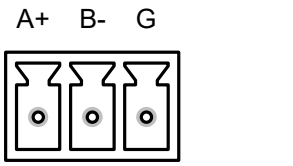

3 Install the ENC by carefully aligning the 6-PIN connector in the upper left-hand corner of the communication board.

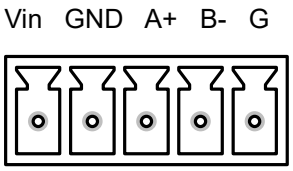
Install the (3) screws into the stand-offs to secure the ENC in place. Install the 3 screws and torque to 7 in-lbs using a #2 Phillips bit.

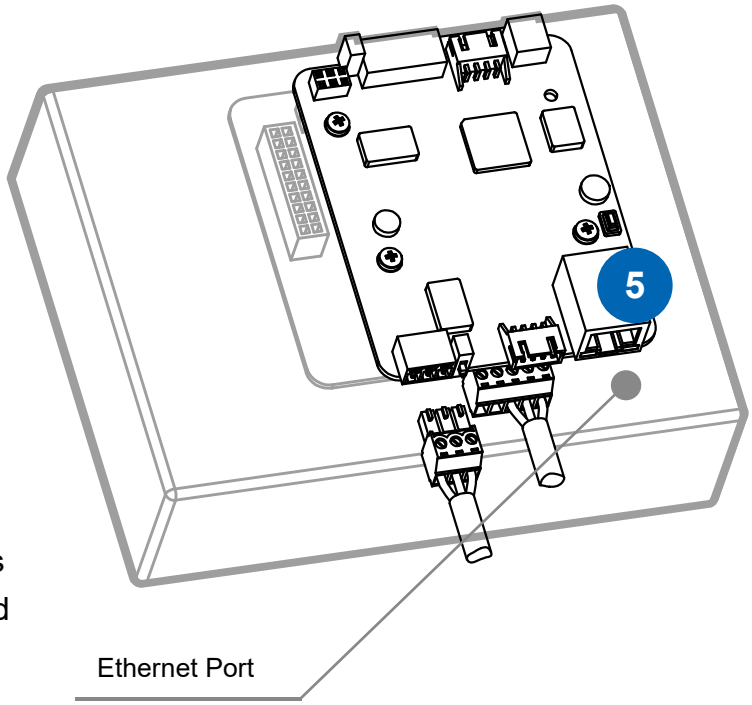
Connect the 3rd party Datalogger to the Pass-Through in the bottom left-hand corner of the ENC using the 3-Pin Connector provided in the ENC Kit.



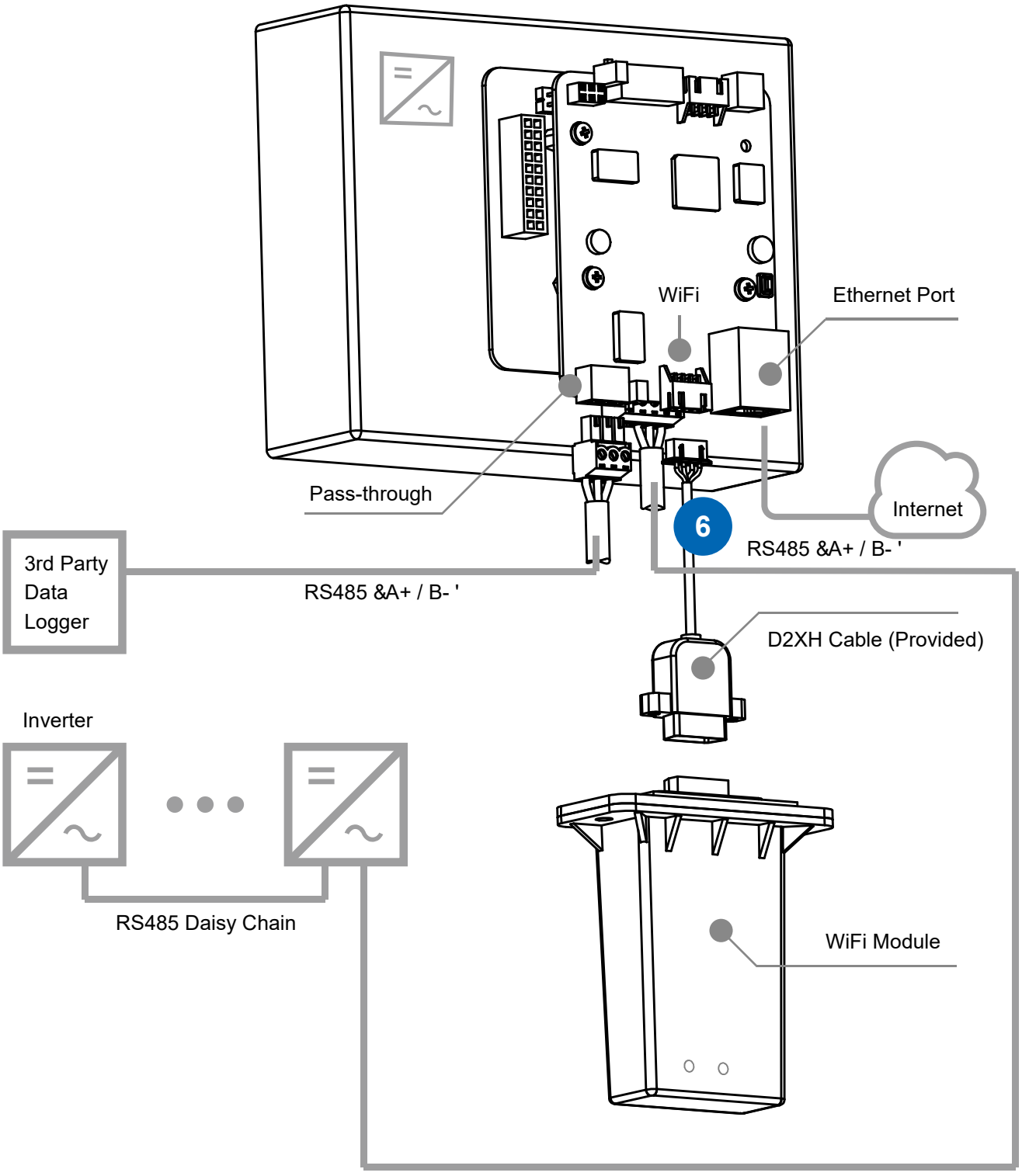

Connect the RS485 inverter daisy chain to the inverter communication board using the 5-Pin Connector provided in the ENC Kit.
NOTE: The 5-Pin Connector is installed on the port on the bottom of the inverter communication board (behind the ENC) .




The RJ45 LAN cable is inserted into the Ethernet port of the ENC.
The LAN cable must be able to access the Internet without port filtering behind the firewall.

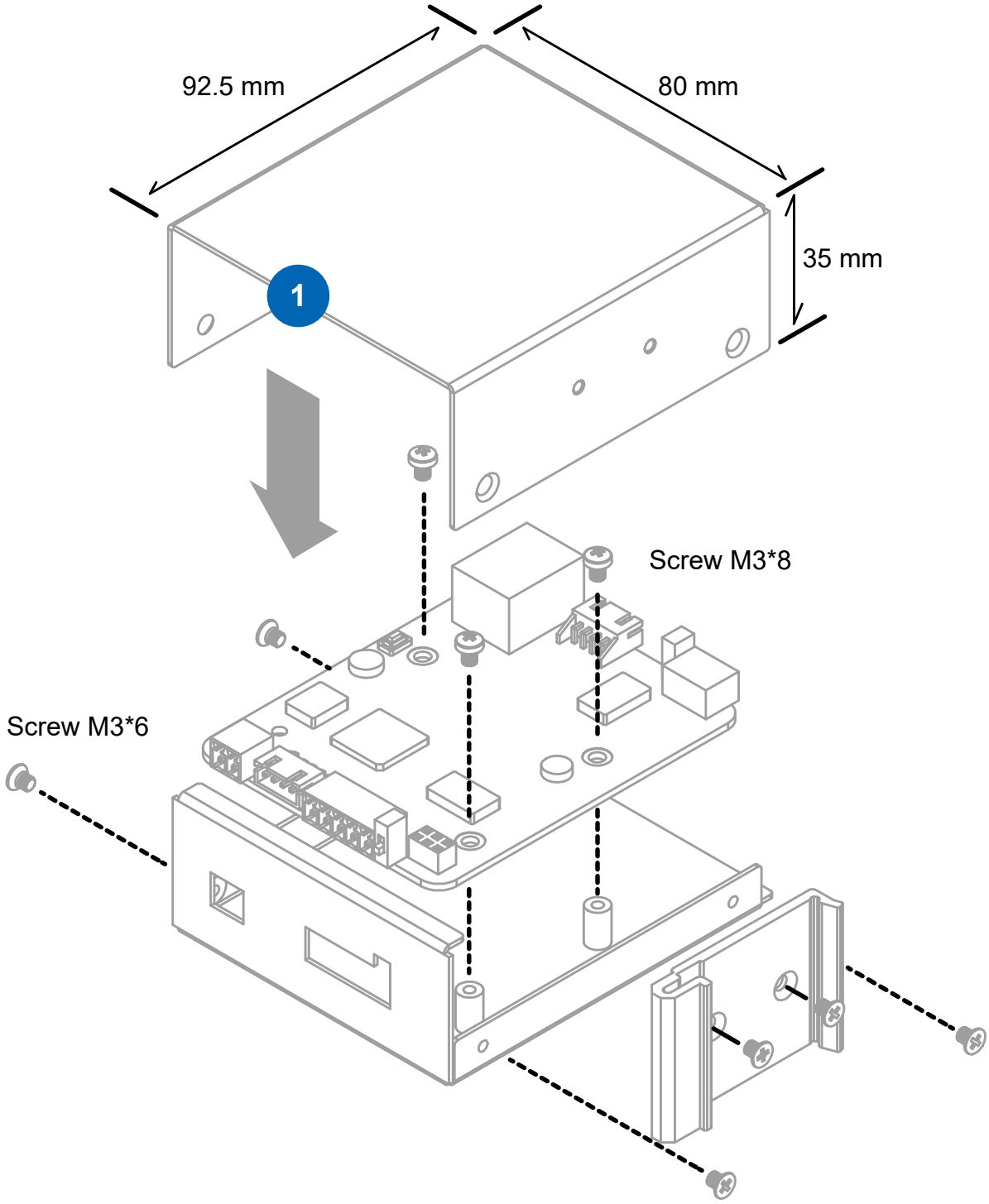



The WiFi module is connected to the WiFi port of ENC via the D2XH cable provided.

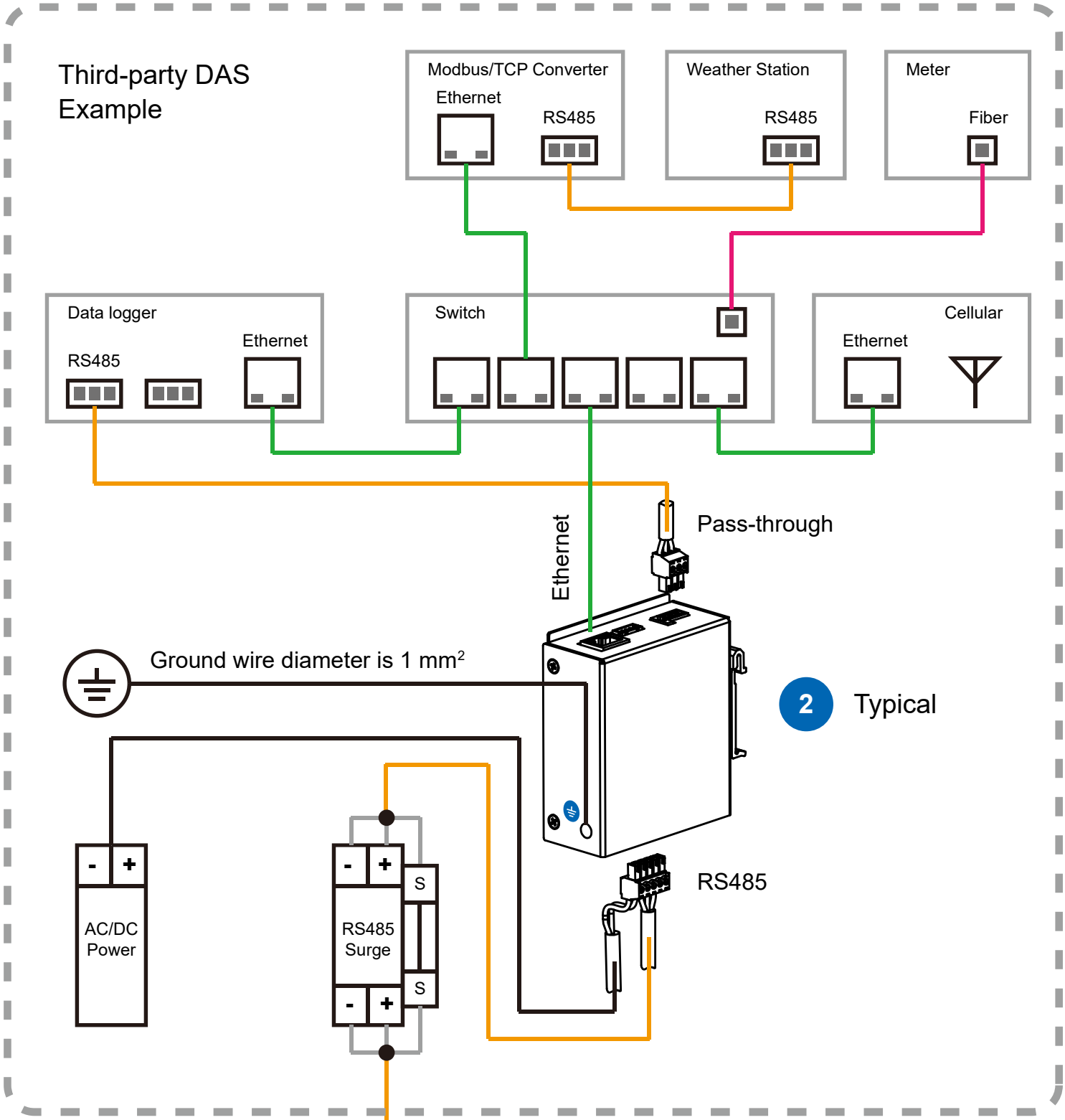
Download and install the "Yaskawa Connect " app from the Apple Store and Google Play.

# Installation Option

## B ENC in external enclosure




The ENC may be installed in an enclosure as shown.
The ENC Enclosure includes a DIN rail mounting clip for installation in a NEMA4 communication box.




Don't use the Modbus ID 160. It is reserved for broadcast commands.

ID:101 Inverter

ID:102 Inverter

ID:117 Inverter

## Open the firewall ports before commissioning !

If a firewall is used to protect the network, the following ports must be opened both ways (incoming and outgoing communications):

### TCP 1883 with destination IP 47.254.52.209

The following outgoing ports must be opened :

### TCP 443 with destination solrenview.com

### (IP 209.160.64.80)

if the firmware of ENC installed is lower than 1.6000, the following port must be opened both ways:

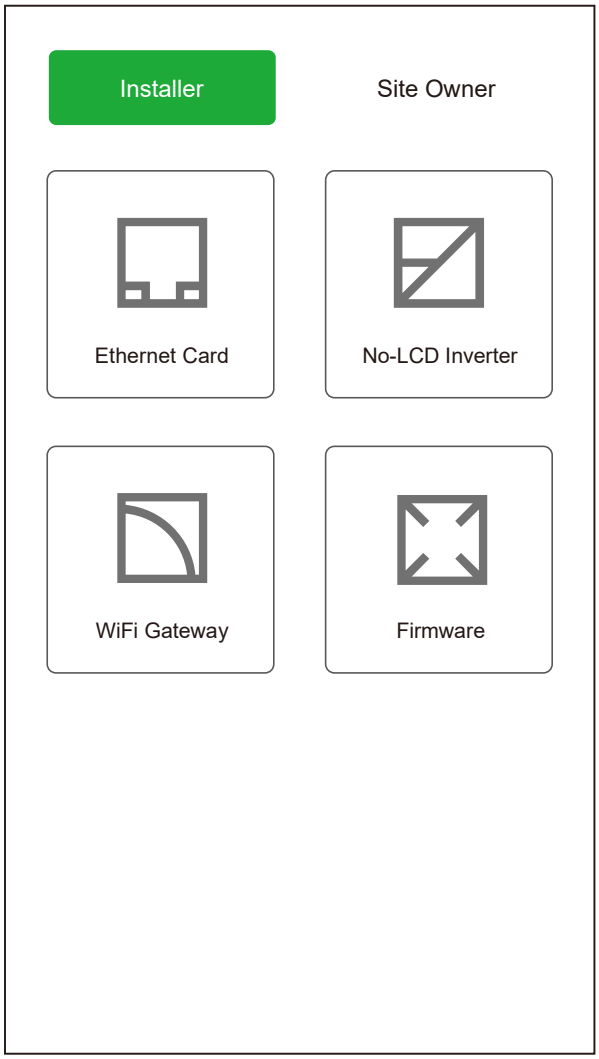
### TCP 80 and 88 with destination IP 47.254.31.163

If the user cannot have these ports open, remote diagnostics and firmware updates will not be available.

It is recommended to use a separate modem/router so that the inverters' network is not part of the high security network used on the site.

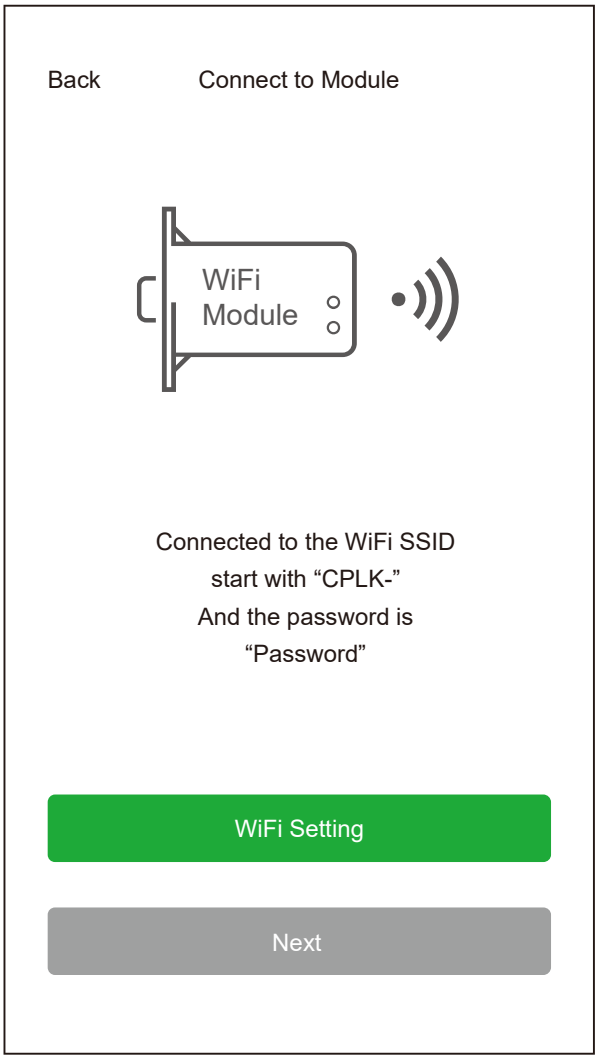
# Setup and Activation

1




Open the APP and click “Ethernet Card” under the “Installer” tab.
Ensure the D2XH Cable and WiFi Module are connected to the ENC.

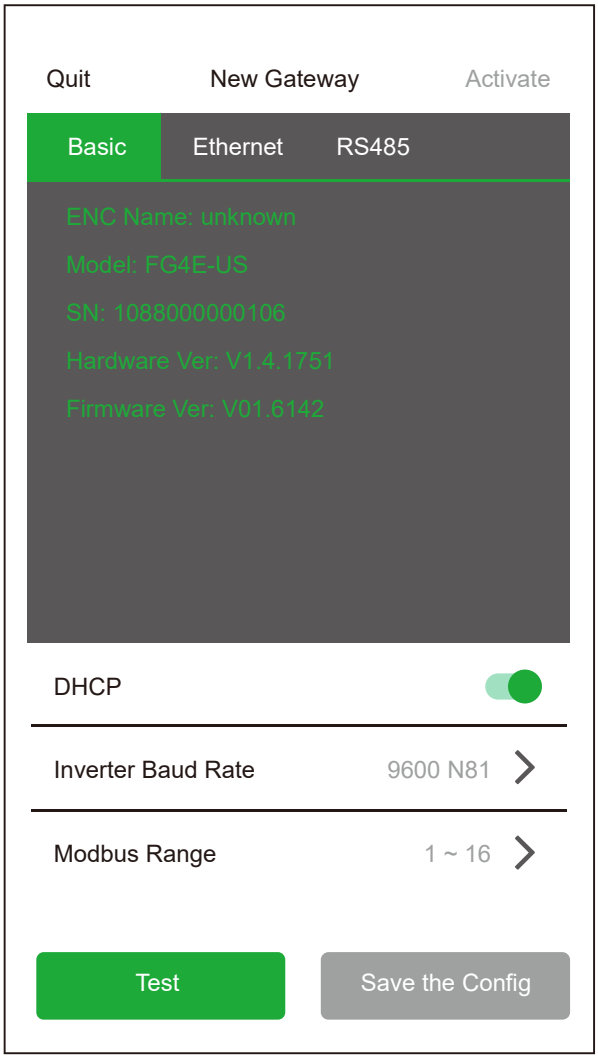
2




Select WiFi settings and connect to the network name beginning with “CPLK-“.

The password is “Password”.
The ‘P’ is capital and it is case sensitive.

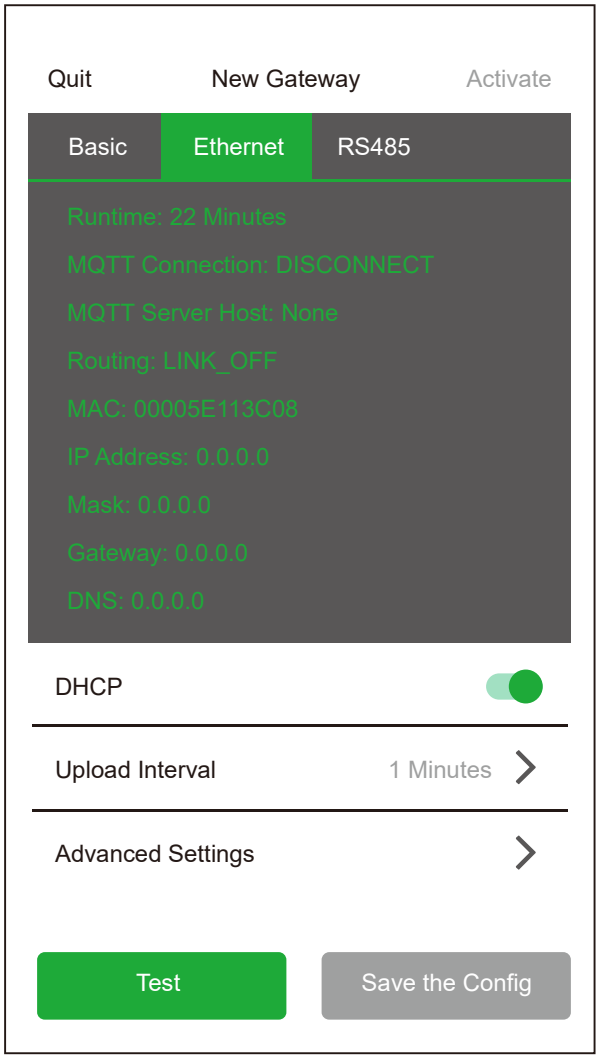
3




Once connected to the network navigate back to the APP. Note do not close the app as you will need to repeat the previous steps.

“DHCP” enabled means that the card will try to obtain IP and DNS by itself from your server.
This is the recommended settings. If you network administrator requires a static IP, disable this feature and enter it manually.

4

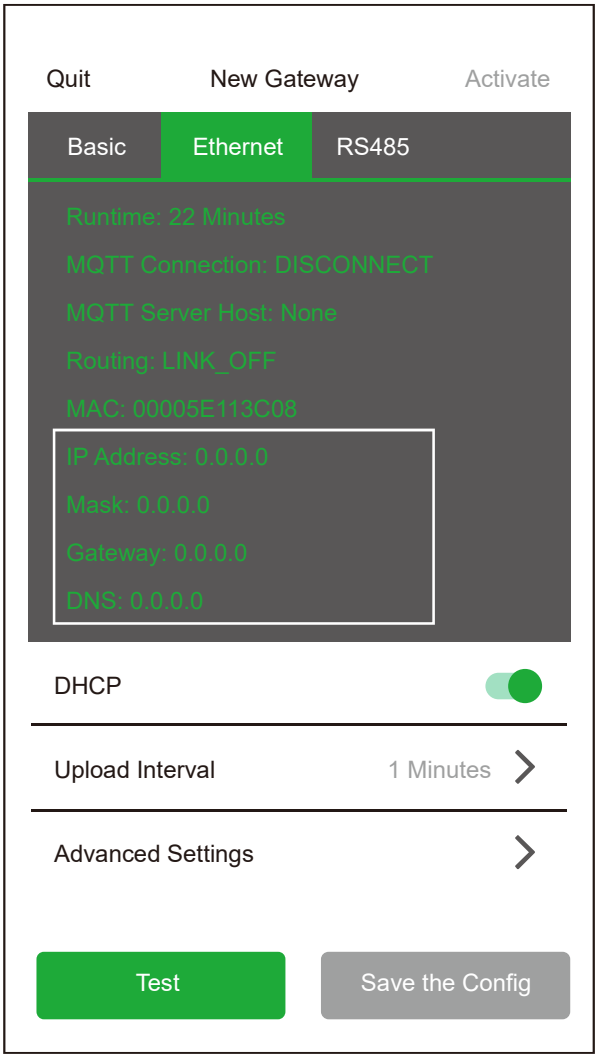



“Inverter Baud Rate” :
Speed 2400 / 4800 / 9600 / 14400 / 19200
Parity E / N / O
Data 8 / 9
Stop 1 / 2

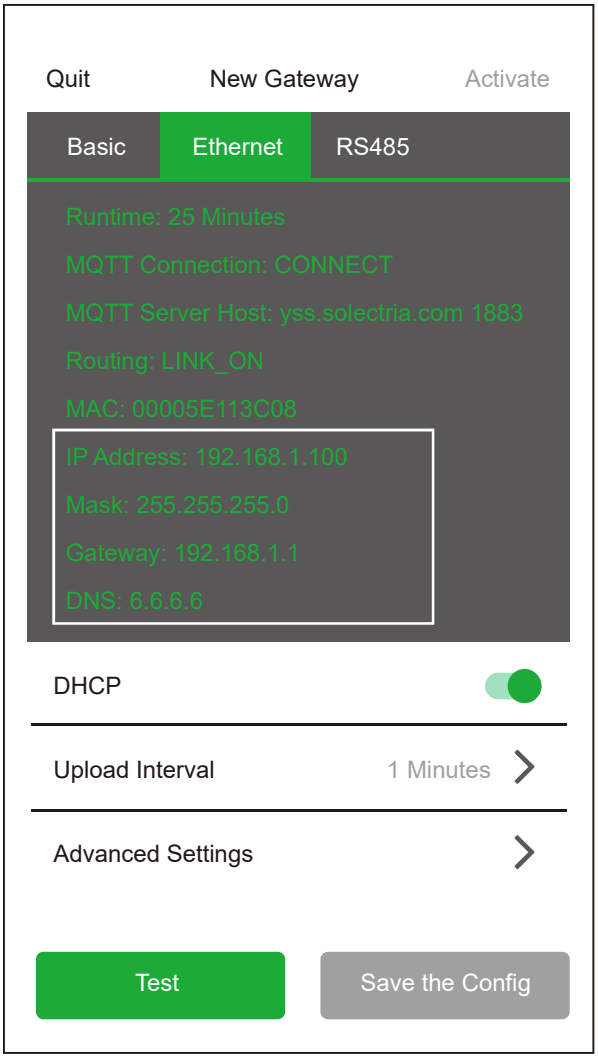
“Modbus Range” can be selected in the range of 1 - 246. Modbus ID 160 should not be used.

Upload Interval (minutes): You can select the upload interval for the data going to the cloud.

5

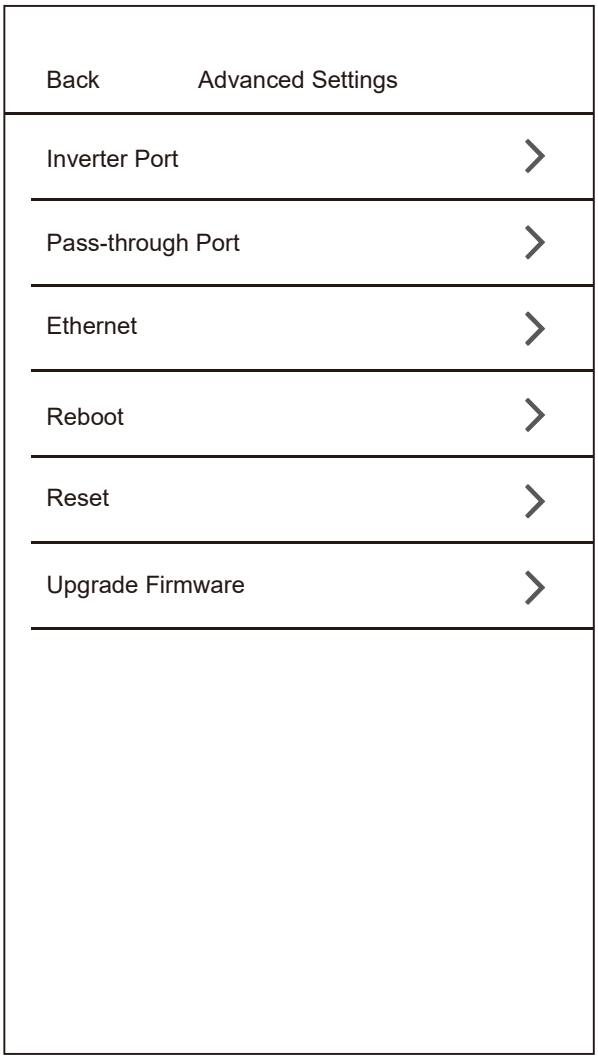



If the boxed items above are showing 0.0.0.0 , please contact your network administrator for further help.




If the card has successfully obtains an IP address, it will be displayed as shown.

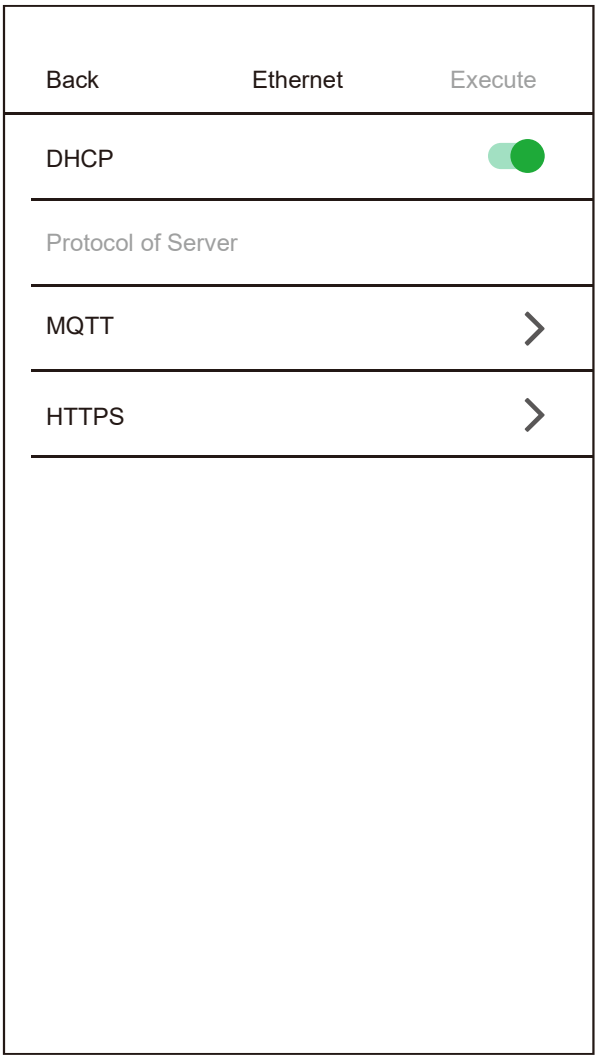
6




”Reboot” will only restart the ENC. It will not erase any settings.

“Reset” will restore the ENC to factory settings. All previous data will be permanently deleted.

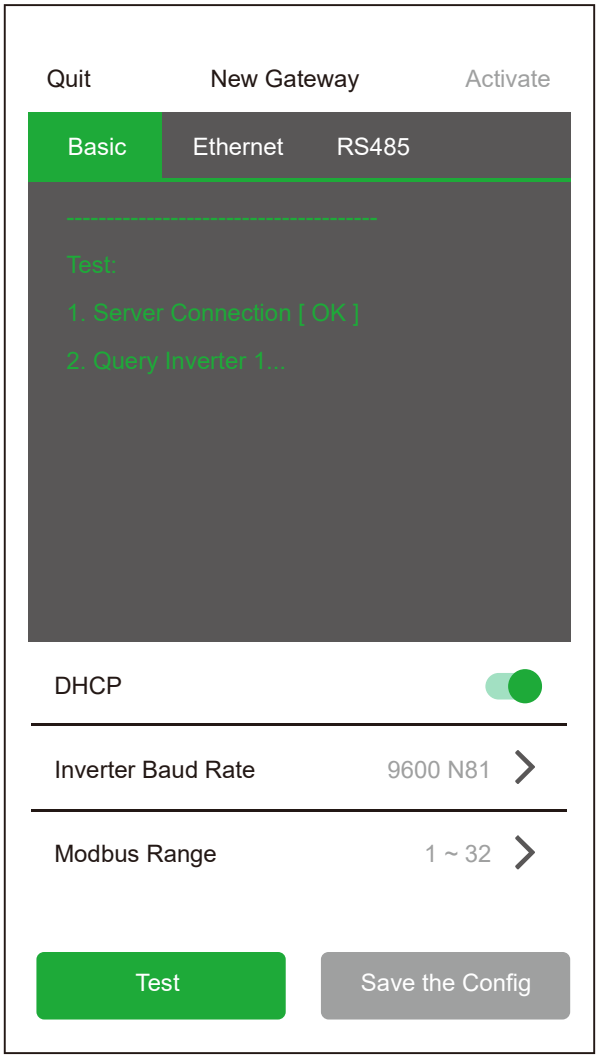
7




In the “Ethernet” area, the user can connect the ENC to the two different servers.

This setting should not be changed.

8

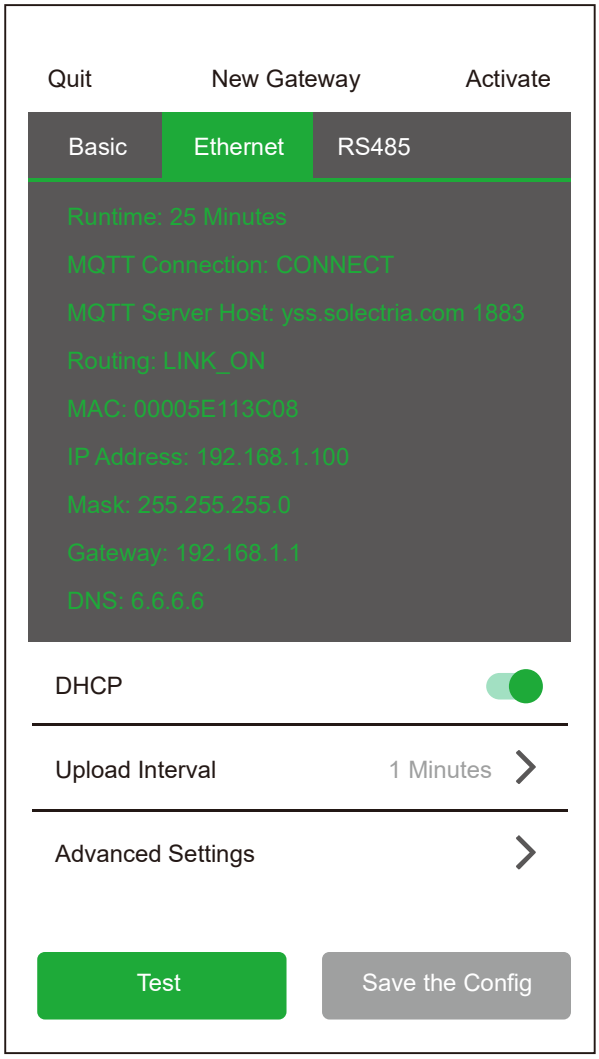



Click “Test” to check the default configuration and the ENC will query each inverter in the daisy chain and display the connection with all units.

Make sure all inverters have unique Modbus ID addresses. Select the appropriate Modbus Range for your system.

If the card has internet access and it is not being blocked, it will display [OK]. Please contact your network administrator, if another message is received.

9

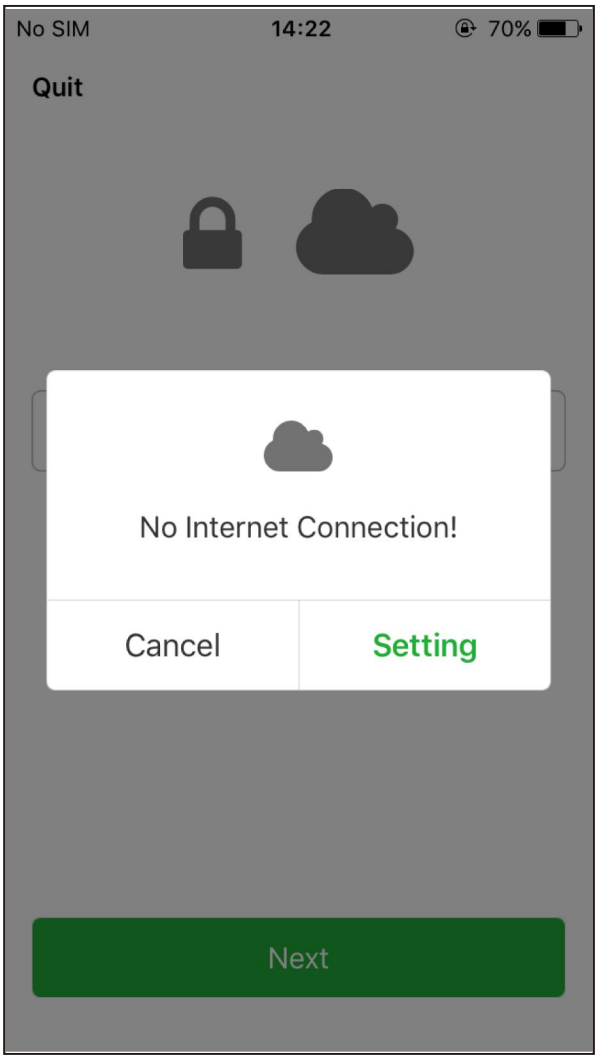



Once the “Test” is complete, the user should be able to see all the inverters that were found in the given range.

If the user is missing an inverter, make sure it has a unique ID and it is within the range. Once you find all the expected inverters, please press “Save the Config”.

At this point the “Activate” button at the top right corner should be highlighted.

10

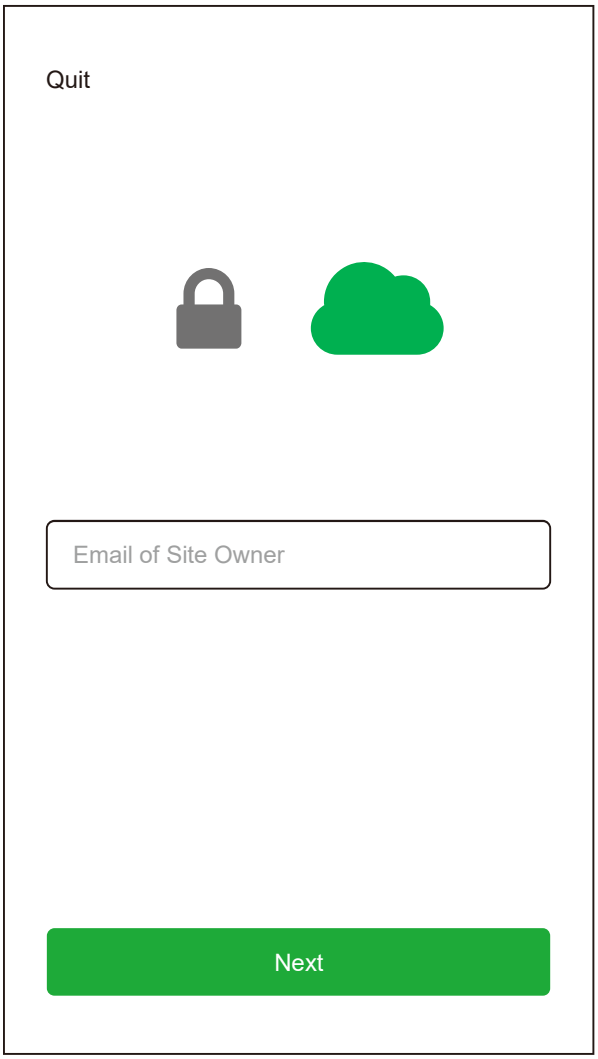



Press “Activate”. The APP will prompt you for an internet connection.

This will require the user to disable the WiFi between his/hers smart device and the WiFi module and enable the 3G/4G network of the smart device to take over.

Once you disable the WiFi, navigate back to the APP. Do not close the APP.

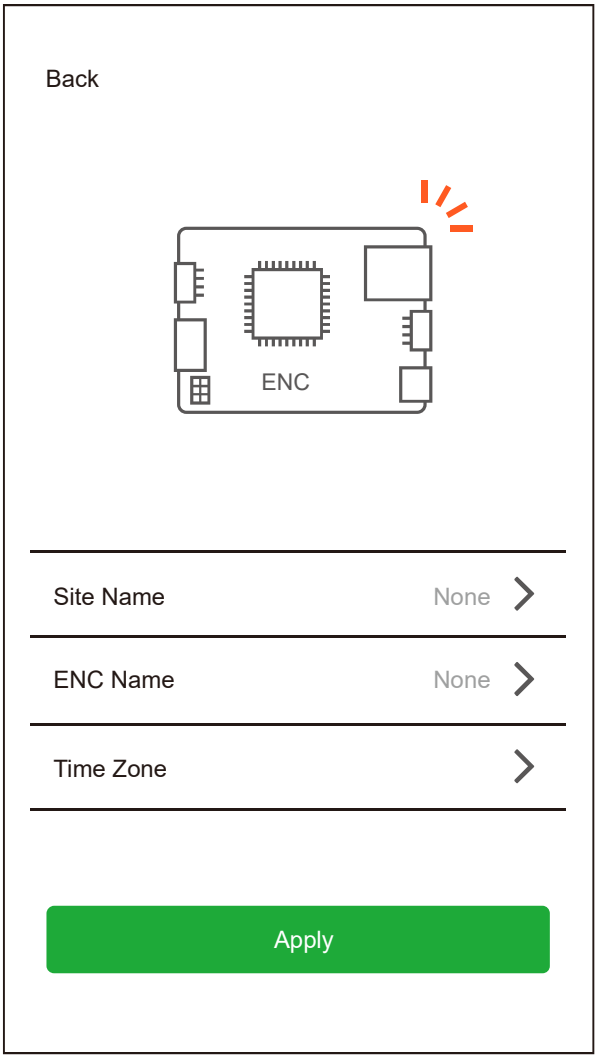
11




Ensure the mobile phone is connected to the Internet during this step.

For email type enc@solectria.com and then press “ Next”. This is the only email you can use in this step.

12

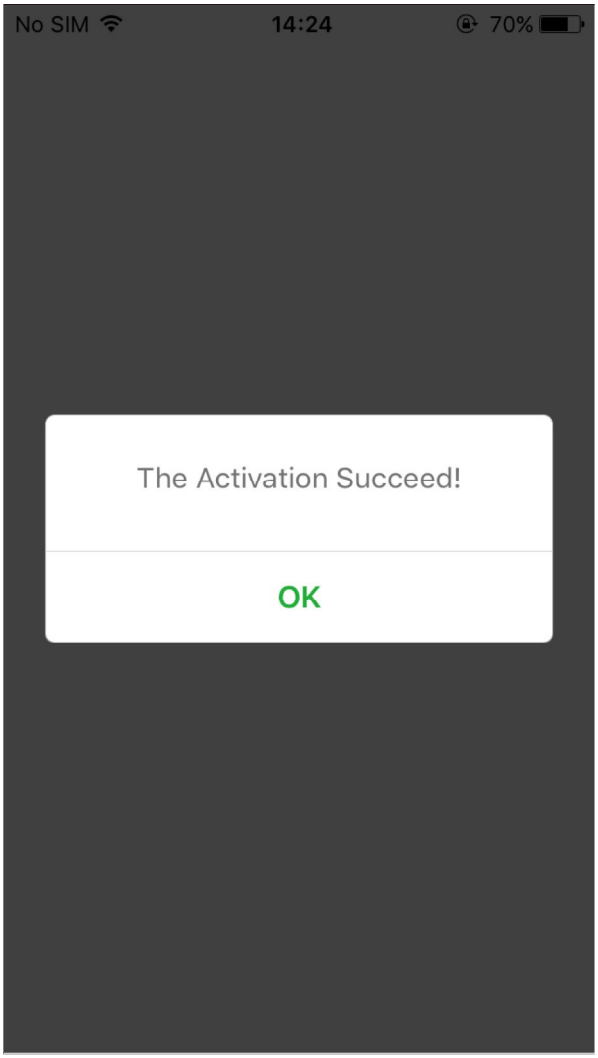



Name a new site or choose an existing site. Please ensure that the Yaskawa Solectria Solar Technical Support & Service team has the same site name on file.

Name a new ENC.

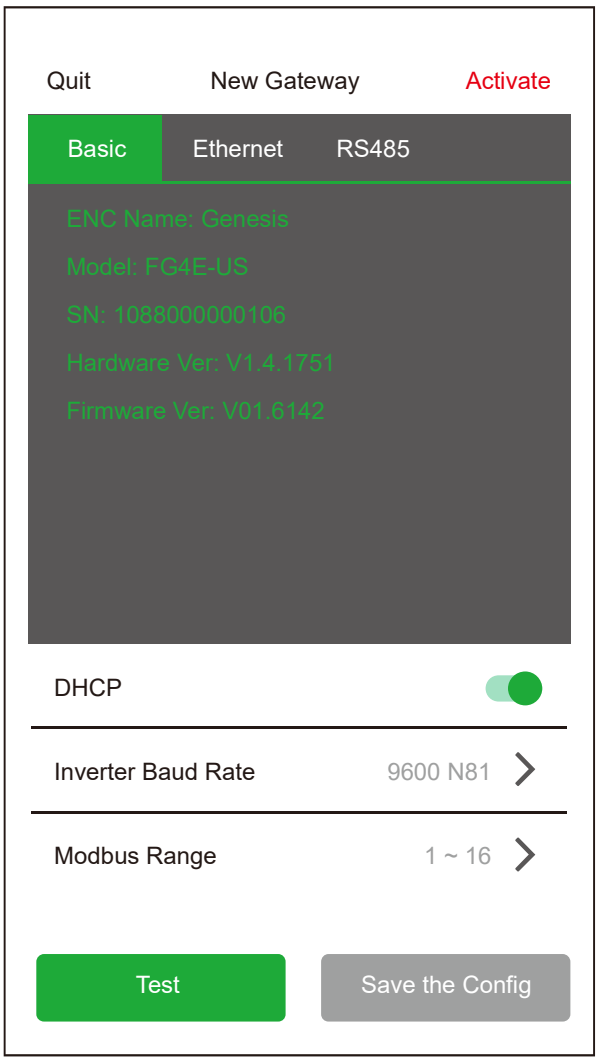
Choose the time zone of the site.

13




Click “Apply” to proceed with activation.

14




For verification purposes, please log out and close the app

Connect via WiFi to the ENC.

If the Connection is successful the user will see an “Activated” status at the top right corner.

The ENC name is also visible in this screen.

Upon successful creation of the site, it will appear on the Service portal.

The service portal is only available for service personnel. Please call Yaskawa Solectria Service to ensure that your site was successfully created.

YASKAWA
SOLECTRIA SOLAR

**Monitoring Support**
Phone: ( 978 ) 683 9700, Option 5
Hours: 8:30 AM to 5:30 PM (EST) Mon-Fri
Email: monitoring@solectria.com