Installer Training

SA Smarter Homes requirements
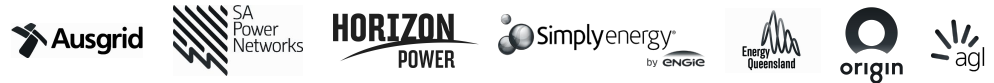
switchDin

We bridge the gaps between energy companies, equipment manufacturers and energy users.

We integrate & organise the world's energy resources to create a cleaner, smarter electricity system.

Energy utility & retailer partners include:

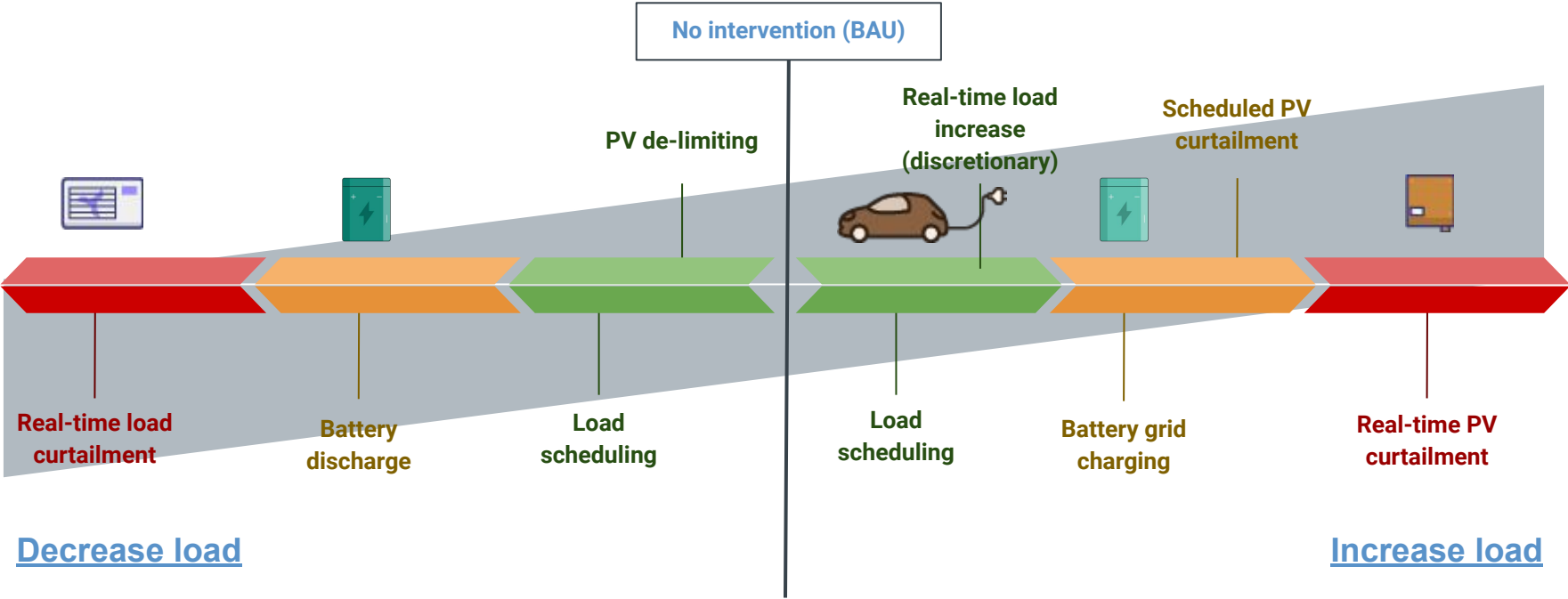Ausgrid · SA Power Networks · HORIZON POWER · Simply energy by ENGIE · Energy Queensland · origin · agl

Manufacturing partners include:

Fronius · SMA · EGUANA TECHNOLOGIES · Q CELLS · victron energy · HUAWEI · RedEarth ENERGY STORAGE · SENEC Your Life. Your Energy.

VARTA · SELECTRONIC · sonnen · LG Chem · GOODWE YOUR SOLAR ENGINE · SOLTARO · SUNGROW Clean power for all

Platform integrations include:

Zepben · PXiSE Energy Solutions · GreenSync

Our vision for DER

Flexibility with customer engagement

No intervention (BAU)

PV de-limiting

Real-time load increase (discretionary)

Scheduled PV curtailment

Real-time load curtailment

Battery discharge

Load scheduling

Load scheduling

Battery grid charging

Real-time PV curtailment

Decrease load

Increase load

Merit order customisation & DER device class grouping
for setting priorities & streamlining management

Hardware:
Droplet controllers

- Powerful, affordable energy management devices using off-the-shelf components
- Connect & communicate directly with inverters & other devices (no CTs) via ethernet or internet router
- Vendor-agnostic: Compatible with many popular brands
- Enable detailed system monitoring (solar, batteries, loads) for end users
- Utility-grade security in communications
- Enable virtual power plants & eligibility for a range of incentive schemes (including HBS & elements of Smarter Homes)

Droplet

Utility Droplet

Cloud software: Stormcloud platform

- Collects, aggregates, stores and distributes measurements in real time with sub-second latency

- Determines optimal use of DERs within the network and communicates setpoints & targets to Droplets for application to local DERs.

- If communications are lost, Droplet will carry out last wishes of Stormcloud

- Complete virtual power plant & microgrid management toolkit for utilities & aggregators

- New mobile & web app coming early 2021
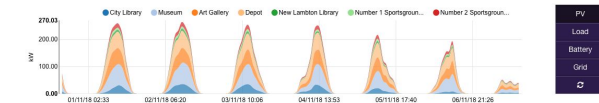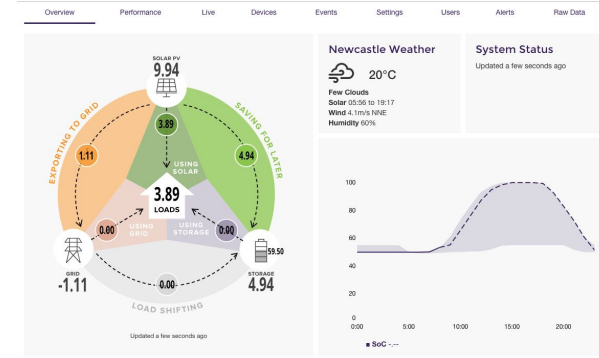
SA Smarter Homes: Overview

- Emergency backstop in case the SA-VIC interconnector fails during a time uncontrolled rooftop solar meets total demand of the network

- Agents are required to shed generation when they are asked to.

- SAPN to work with technology providers to provide services

- Agents are required to get permission from owners of a system. Creates difficulties with people moving houses. SAPN, retailers and MSPs know when you move house which simplifies this requirement.

- There are various solutions for compliance on the market.

SA Smarter Homes Compliance: Why SwitchDin?

Droplets vs API integration

- Complete end-to-end security with Australia-based data storage & control infrastructure

- Sub-second latency for real time monitoring, management & control (for FCAS markets, etc)

- Future-proof for system add-ons & upgrades with other equipment brands

- SwitchDin can also provide API integration, but not preferred option

Droplets vs contactor

- Contactor not compatible with AC-coupled / hybrid inverters

- Limitations for adding batteries

- Not possible to use inbuilt inverter consumption monitoring

- Makes typical export limit controls non-functional

- Metering service providers must do extra wiring - inflexible installation

SA Smarter Homes Compliance: Why SwitchDin?

Droplets vs zero export

- Get the full value of your investment over many years

- Increase the penetration of PV into the Australian Energy system

- Reduce the entire community's carbon footprint

- Access to future energy markets which require ability to export

Get more with SwitchDin

Customers who choose the SwitchDin / SA Power Networks Relevant Agent Solution also get:

Free energy monitoring for the whole system

- **Free basic home energy monitoring** & system health check for solar, batteries & grid

- **Free advanced energy monitoring until April 2021**, including real-time & historic data views and csv download

- **Amazing new app coming in 2021**

Future-proofing

- **Earn credits & discounts on your energy bill:** Freedom to join a growing number of virtual power plant (VPP) offers, at no cost to customer and with no lock-in to a single provider or technology

- **Easily upgrades with no additional hardware or cost:** Systems will continue to comply with Smarter Homes rules even if you add more compatible equipment

Support Australian technology and Australia's energy system

- **Australian technology, with local support:** SwitchDin is based in Newcastle, NSW

- **SwitchDin's tech is enabling Australia's energy transition:** By supporting us, you are supporting a cleaner & more distributed grid

- **Complete end-to-end security** with Australia-based infrastructure

Installers: Why SwitchDin?

Get granular AC and DC side data

- 10 second live stream of AC and DC parameters
- 1 minute interval historical data

OEM agnostic

- A single login for multiple inverter and battery brands
- Single sites can easily have multiple OEM brands

Save a truck roll

- Get access to an inverters local WUI through a secure connection between the Droplet and Stormcloud
- Detailed inverter settings and diagnostics without returning to site.
- Get in touch support@switchdin.com to learn more about this feature

Save a truck roll

SA Smarter Homes Landing Page

- Resources and information

- Sign up for updates

- Product vendor compatibility

- …..and more

SwitchDin's SA Smarter Homes Landing Page

Nominating SAPN as an Agent

SEG form

Select the following on the application:

Relevant Agent: **SA Power Networks**

Relevant technology: **SwitchDin - Internet connected SwitchDin Droplet device connected to supported inverters via Modbus**

Installation

As part of installation, ensure the system is connected to the internet and correctly set up in Stormcloud as per the following installation instructions.

eCoC

When completing the electronic Certificate of Compliance (eCoC), confirm the same Relevant Agent and technology as the SEG.

Droplet Specifications

- Wifi
- Ethernet
- USB
- RS232, RS485 and more via converters

- Rugged aluminium enclosure
- 2 x Ethernet
- USB
- RS232, RS485 and more via converters
- 3G/4G LTE modem

Compatibility Stage 1

Fronius (with data manager)	SMA	Redearth	Q CELLS	Eguana Technologies
ECO Symo Primo Symo Hybrid GEN24 Smart Meters (through inverter)	Sunny Boy AV series Sunny Tripower up to 25kW CORE1 Sunny Boy Storage SMA Energy Meter	Sunrise	Q.HOME Meter (through inverter)	Evolve (battery inverter yet has built in Droplet allowing compliance to whole system)

Compatibility Stage 2 (in progress)

Goodwe	SolaX	Growatt	Sungrow	Fimer (Complete)
XS DNS MS SDT SMT MT	X1 Hybrid X3 Hybrid	TL-X TL3-X	SG5KTL-MT SG10KTL-MT SG15KTL-M SG20KTL-M SG30CX SG50CX SG110CX SH-RT	UNO-DM-PLUS PVS-50/60 PVS-100/120

Droplet Overview

Status Indicators

Power
(Micro USB)

Ethernet Port

4 x USB
Ports
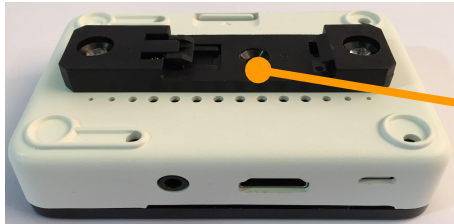
DIN rail mount

Notes for pre-installation

- To ensure devices are discovered and controllers can be added on-site the **droplet software needs to be updated before installation**.
- This requires that the droplet is powered on and connected to the internet via ethernet overnight.
- The update will occur automatically at ~ 11:30 PM AEDT.

Required LED indicators for successful internet connection (G,R,B,G,G)

Ethernet

Resi Droplet Installation

Packing List

- 1 x SwitchDin Droplet
- 1 x Power Supply
- 1 x USB adaptor (optional depending on inverter)

Inspection

- Check that all parts are as per packing list.
- Check for signs of physical damage.
- If any parts are missing or visibly damaged, please contact SwitchDin prior to installation.

Mounting

- The Droplet can be mounted on a standard DIN rail.
- Indoor installation.
- Below 40 degrees ambient

Utility Droplet Overview

4G antenna connector

WiFi antenna connector

Power LED

4 x USB Ports

DIN rail mount

Power Connector
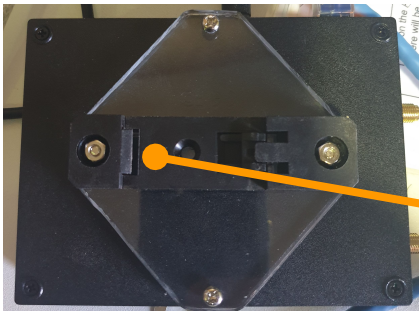
2 x Ethernet Port

Utility Droplet Installation

Packing List

- 1 x SwitchDin Droplet
- 1 x Power Supply
- 2 x antenna
- 1 x din rail mount

Inspection

- Check that all parts are as per packing list.
- Check for signs of physical damage.
- If any parts are missing or visibly damaged, please contact SwitchDin prior to installation.

Mounting

- The Droplet can be mounted on a standard DIN rail.
- Indoor installation.
- Below 60 degrees ambient

Droplet internet connection

Resi Droplet
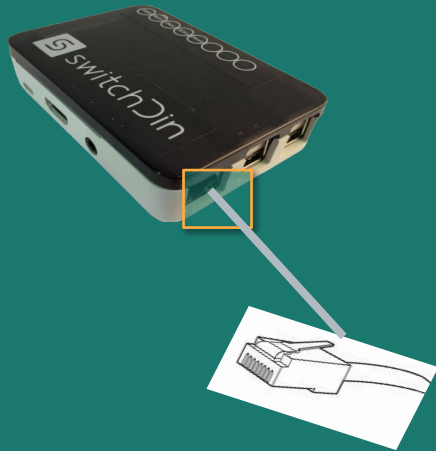
Utility Droplet
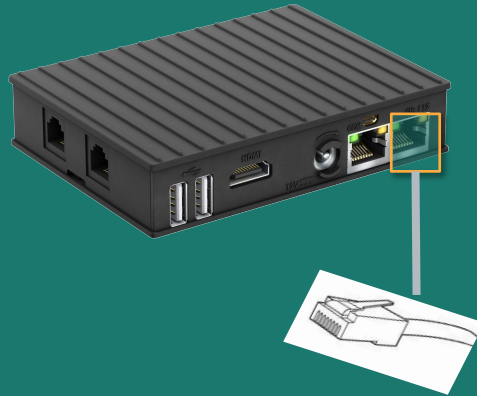
WiFi (Resi only)

Connect to Eth0

Download the **SwitchDin Installer app** from the Google Play or iOS App store and follow the instructions.

Notes for internet/network connection

- The best place to install the Droplet is close to the router/modem with an ethernet connection. This simplifies installation and provides the highest reliability.
- If a wifi or ethernet over powerline extender is being used, it is compulsory to connect the device directly to the USB port of the Droplet using an Ethernet - USB converter (see below)

Power the Droplet

Resi Droplet

Plug power supply into GPO

Utility Droplet

Plug power supply into GPO

Internet prerequisites

Mobile/tablet being used for commissioning is required to have an internet connection (wifi/4G) to configure the Droplet.

Internet connection required on site for Droplet/Stormcloud operation.

Fronius connection
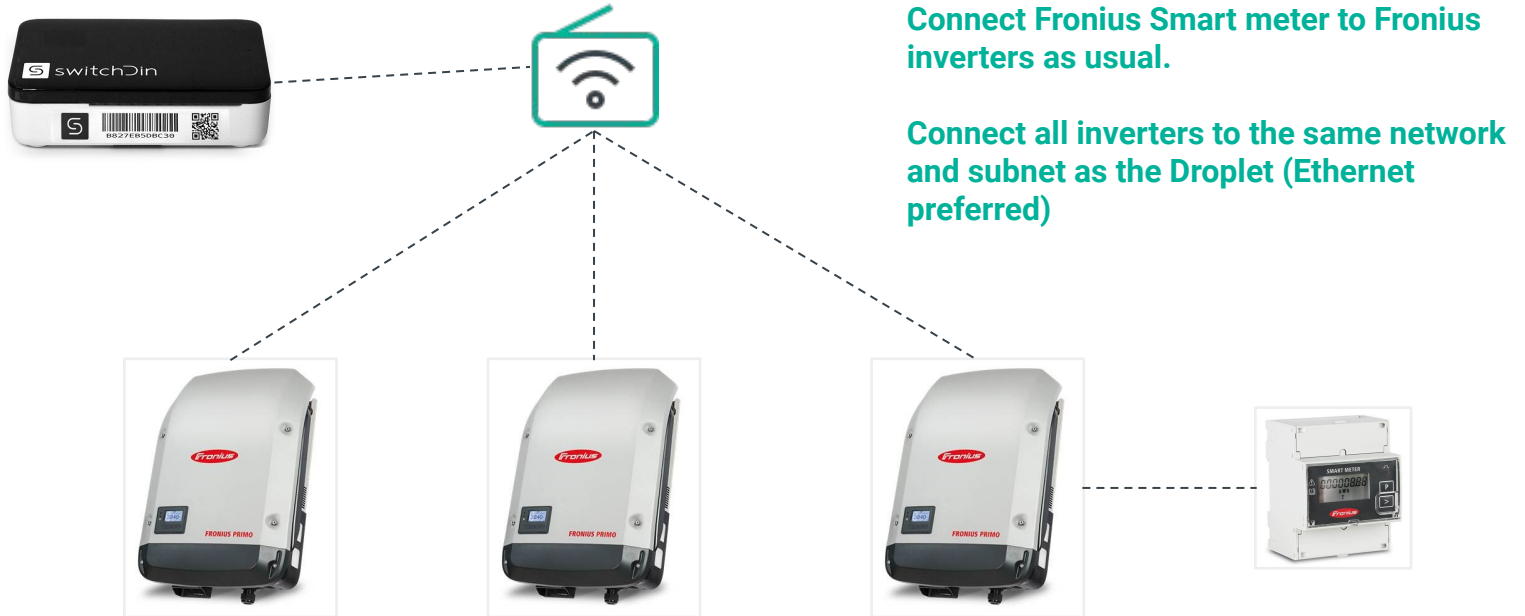
Connect Fronius Smart meter to Fronius inverters as usual.

Connect all inverters to the same network and subnet as the Droplet (Ethernet preferred)

Activate Modbus TCP Port 502
([Fronius Datamanager Modbus TCP & RTU](#) document page 69 onwards)

Fronius daisy chain connection
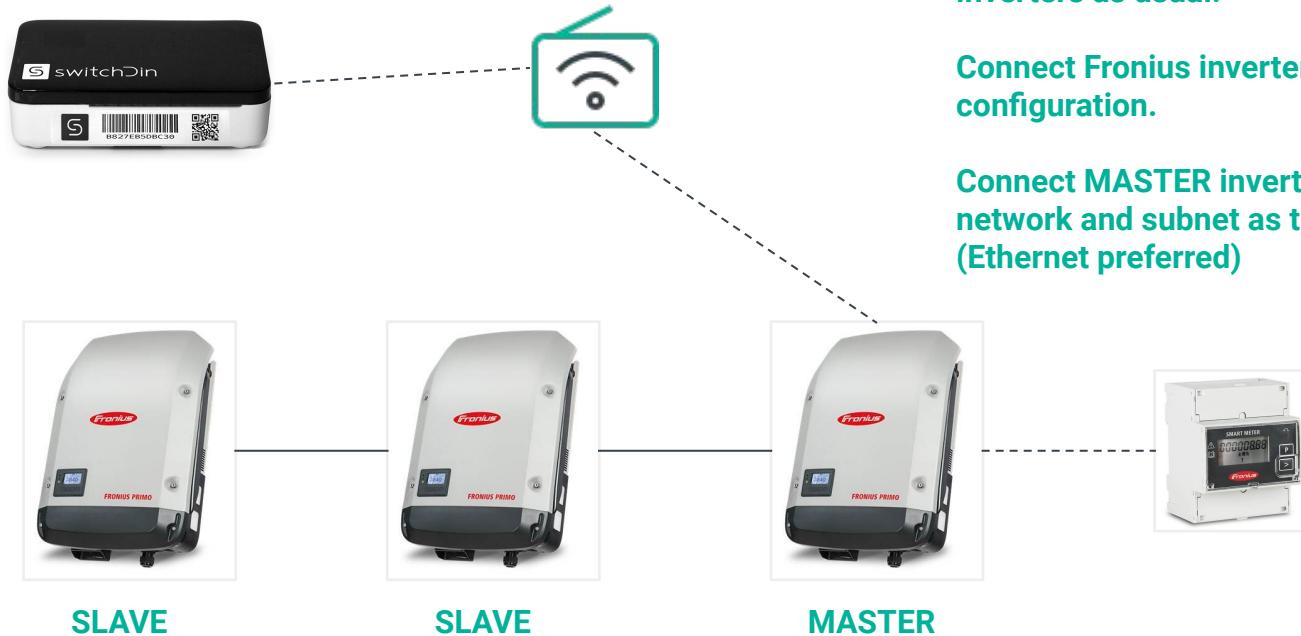
Connect Fronius Smart meter to Fronius inverters as usual.

Connect Fronius inverters in daisy chain configuration.

Connect MASTER inverter to the same network and subnet as the Droplet (Ethernet preferred)

SLAVE　　　　　**SLAVE**　　　　　**MASTER**

Activate Modbus TCP Port 502 on MASTER inverter
([Fronius Datamanager Modbus TCP & RTU](#) document page 72 onwards)

SMA connection

Connect all inverters an energy meter to the same network and subnet as the Droplet (Ethernet preferred)

Activate Modbus TCP Port 502
(Technical Information - SMA and SunSpec Modbus® Interface document page 20)

Q CELLS connection Option 1
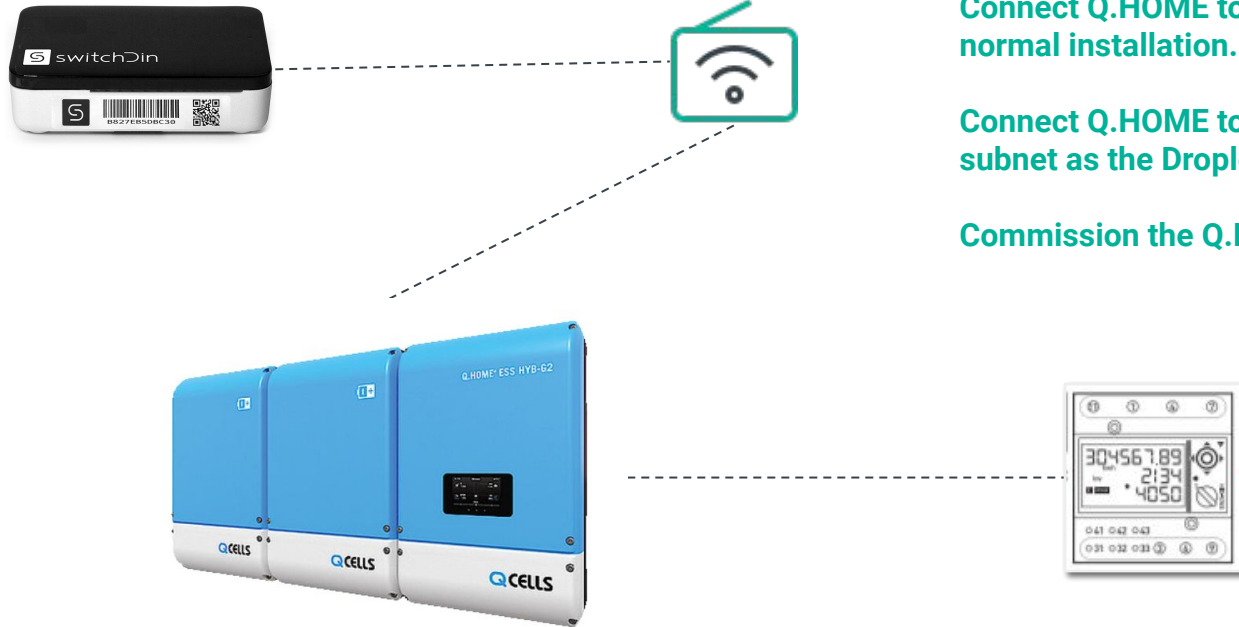
Connect Q.HOME to energy meter as per normal installation.

Connect Q.HOME to the same network and subnet as the Droplet (Ethernet preferred)

Commission the Q.HOME

Q CELLS connection Option 2 (if converter is supplied)

Connect Q.HOME to energy meter as per normal installation.

Connect inverter Ethernet directly to Droplet via Ethernet to USB converter provided.

The Droplet will provide internet connection to the Q.HOME.

Commision the Q.HOME.

Qcells activating Modbus TCP port 1502

Directly from inverter

Enable PMS External Mode as per Section 7 in the Q.HOME manual.

Through qhomestory.com

Log in and within the basic setting > product details page enable 3rd party control

Having issues? Please call 1800 QHOME 0 and Q CELLS can support

Eguana Technologies Evolve
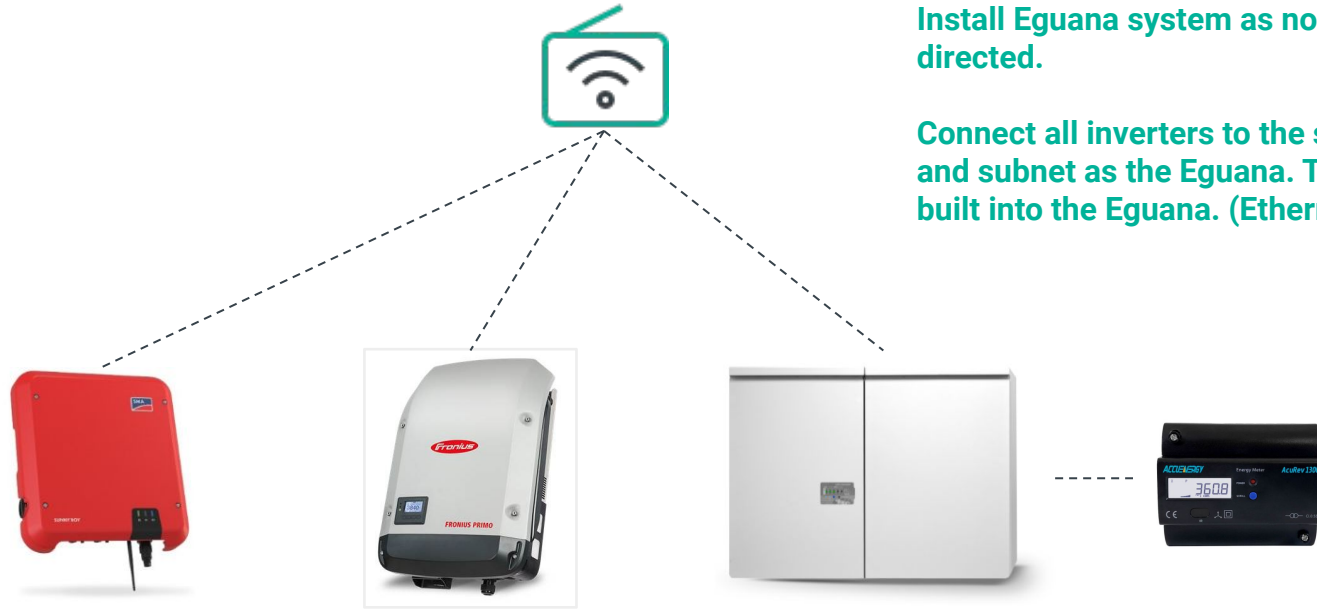
Install Eguana system as normally directed.

Connect all inverters to the same network and subnet as the Eguana. The Droplet is built into the Eguana. (Ethernet preferred)

Activate Modbus TCP Port on PV inverters

Redearth Sunrise

Droplet already built in with 3G/4G capability from Redearth.

Install and commission as normal.

Ensure NMI and choice of Agent is provided to Redearth

Wiring while using a wifi/powerline extender
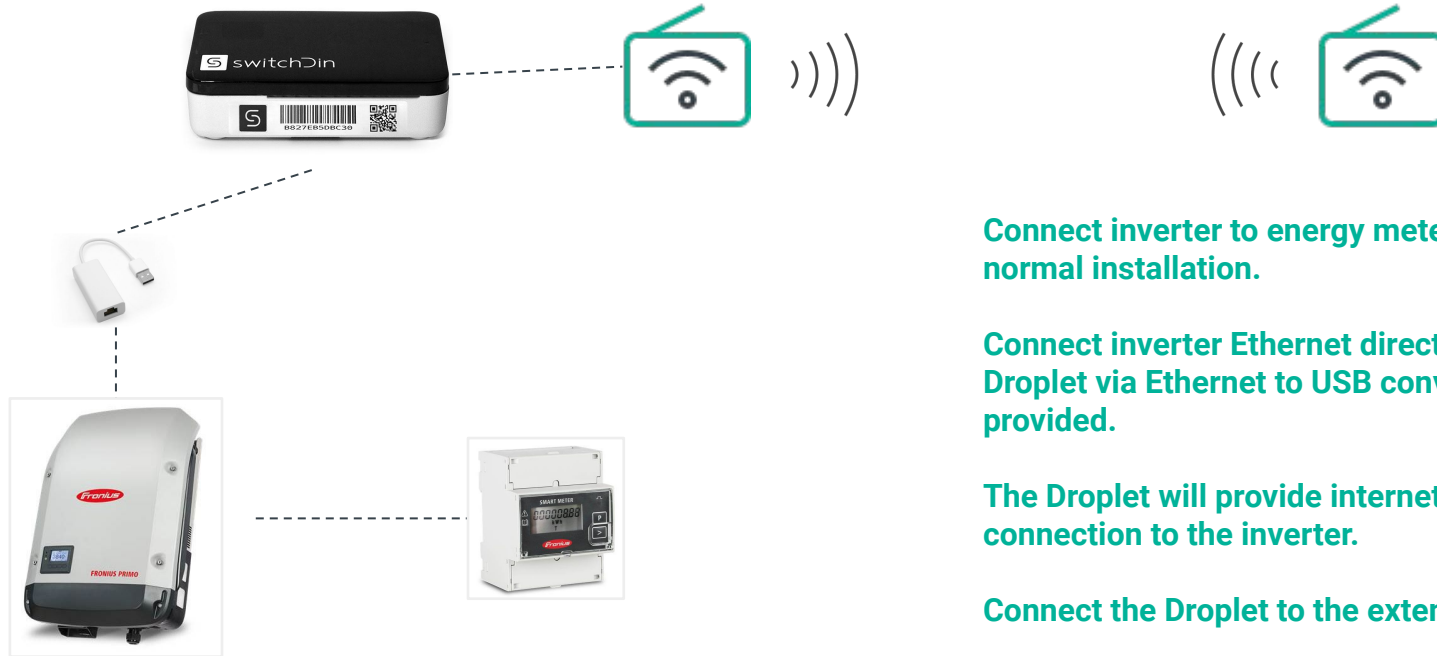
Connect inverter to energy meter as per normal installation.

Connect inverter Ethernet directly to Droplet via Ethernet to USB converter provided.

The Droplet will provide internet connection to the inverter.

Connect the Droplet to the extender.

Commision the inverter.

Fimer connection
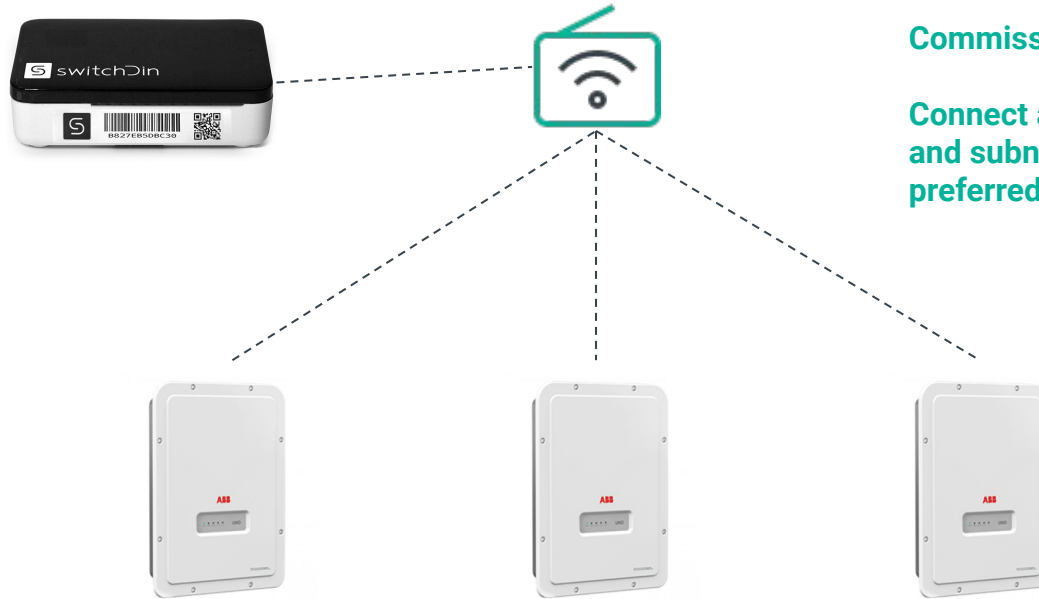
Commission FImer inverters as per usual.

Connect all inverters to the same network and subnet as the Droplet (Ethernet preferred)

Fimer Ethernet daisy chain connection

Commission Fimer inverters as usual.

Connect Fimer inverter in daisy chain.

Connect one inverter to the same network and subnet as the Droplet (Ethernet mandatory)

Status and Installer App

Status Indicators

	Indication	Red	Green	Blue
PWR	Power	N/A	Power	N/A
WiFi	WiFi	No WiFi	WiFi connected	Weak WiFi signal
iNet	Internet	No internet	Internet connected	Configure via SwitchDin app
SDin	SwitchDin comms	Cannot see SwitchDin	Connected to SwitchDin	N/A
Devs	Devices attached	No devices	Devices detected	N/A

PWR WiFi iNet SDin Devs
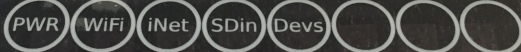
Download and open the Installer app

The app is available by searching for "SwitchDin" in the Apple iOS App Store or the Google Play store. **Create an account!**

V0.2.28+

Commissioning

Scan QR Code
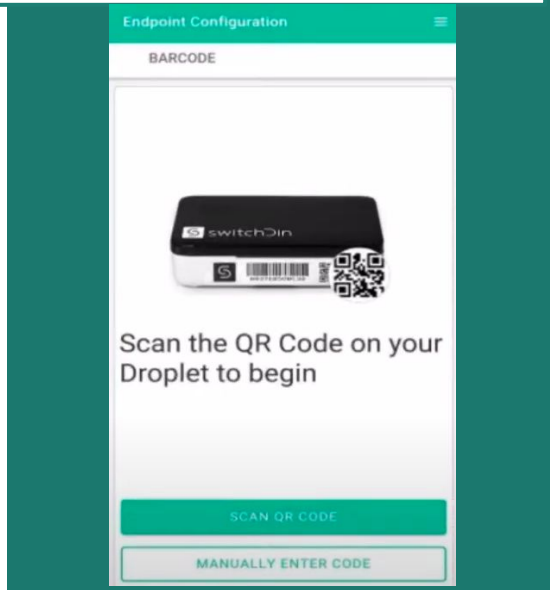
Or manually enter serial number
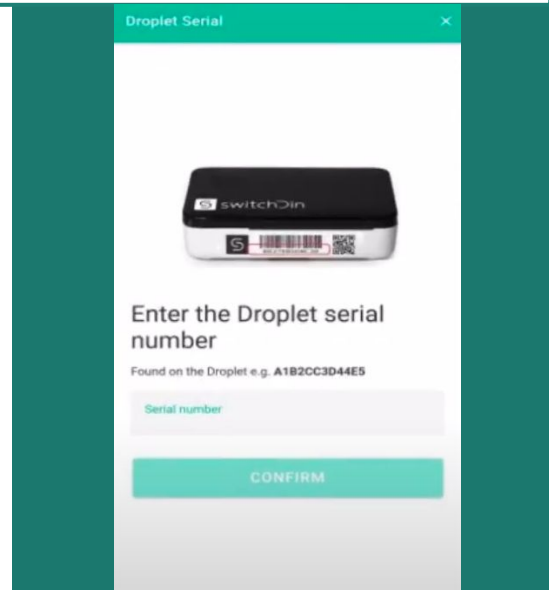
Create portfolio or add to existing
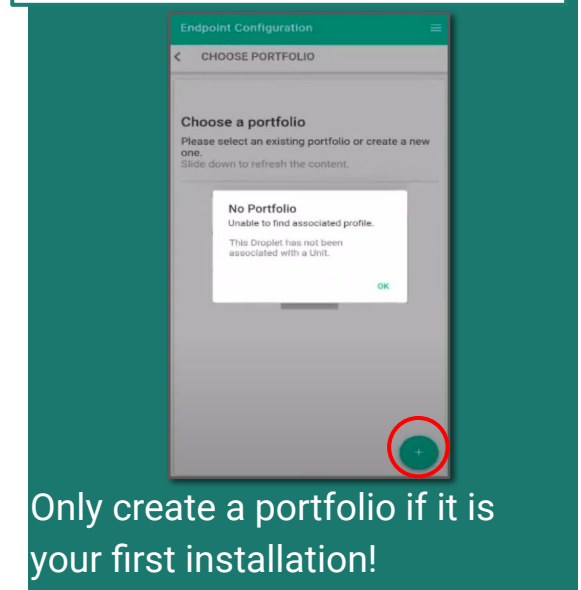
Only create a portfolio if it is your first installation!

Use a single portfolio for systems which require an agent!

Commissioning - setting up a site

Create a UNIT or choose an existing UNIT

Enter UNIT details

Add Droplet to UNIT

Commissioning - Ethernet preferred

Connect via Ethernet Connection should be automatic
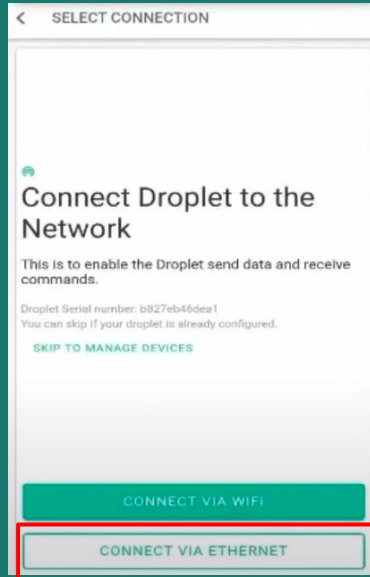
If Ethernet is not available. Connect via WiFi
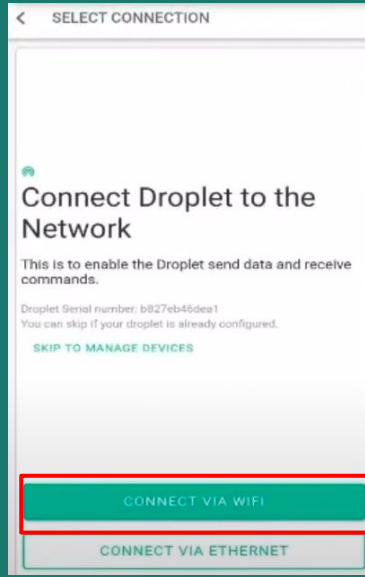
Turn off mobile data to ensure personal hotspot is off
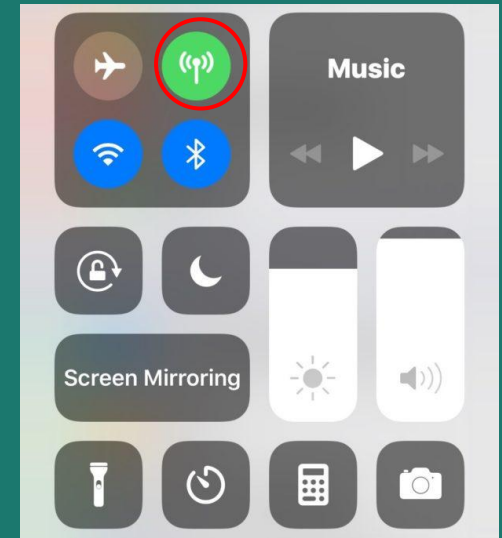
Commissioning Wifi - skip if Ethernet is used

Connect to Droplet

Select WiFi network

Enter WiFi password

Commissioning

Turn on your mobile data
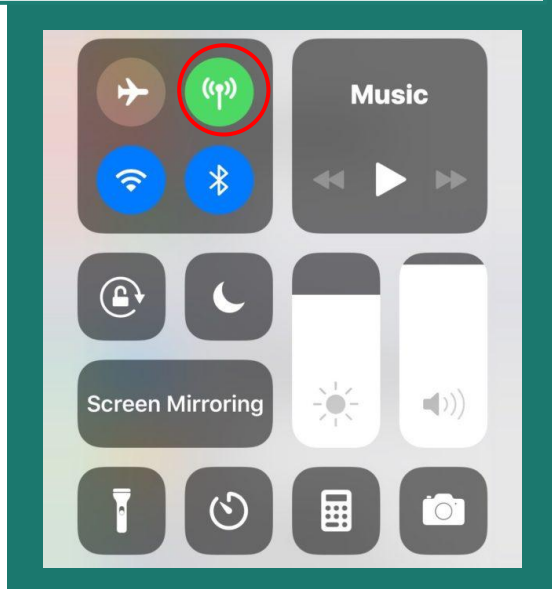
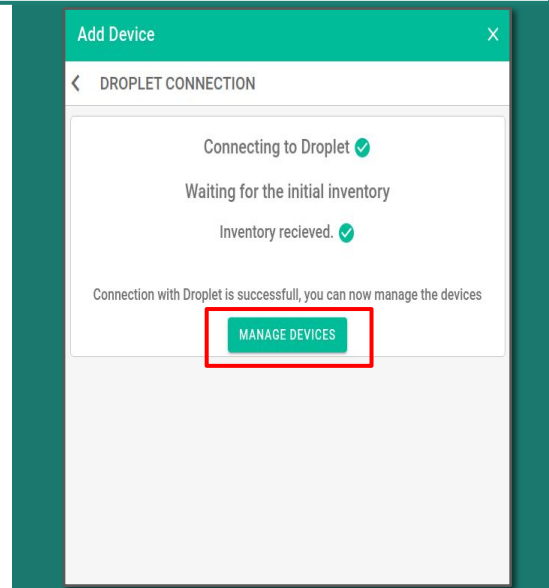## Select <u>MANAGE DEVICES</u>
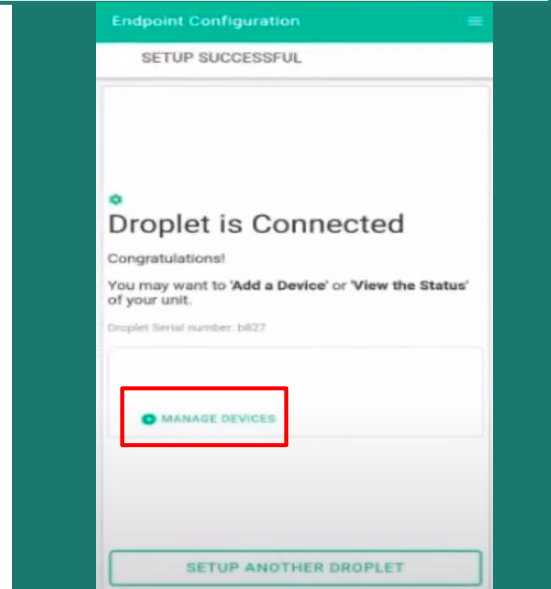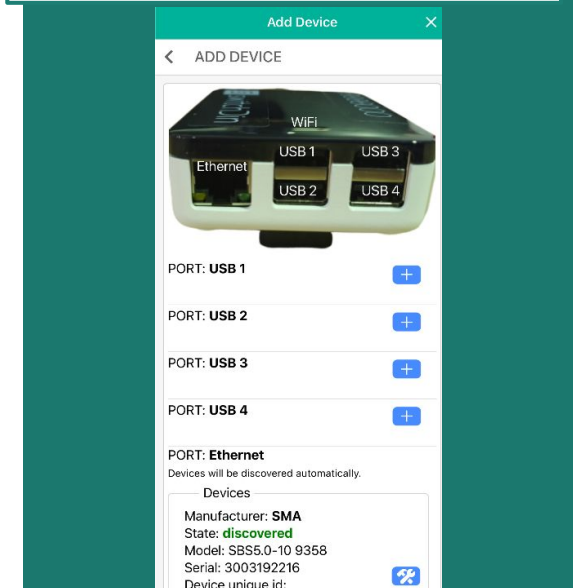
Add a device
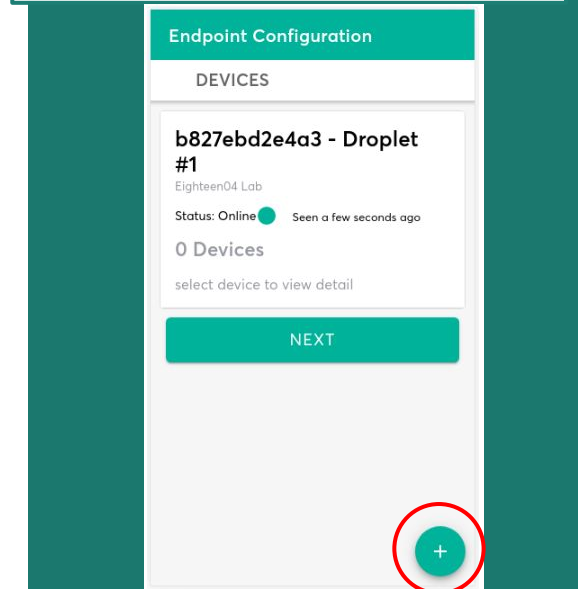
Commissioning

Choose DISCOVERY option
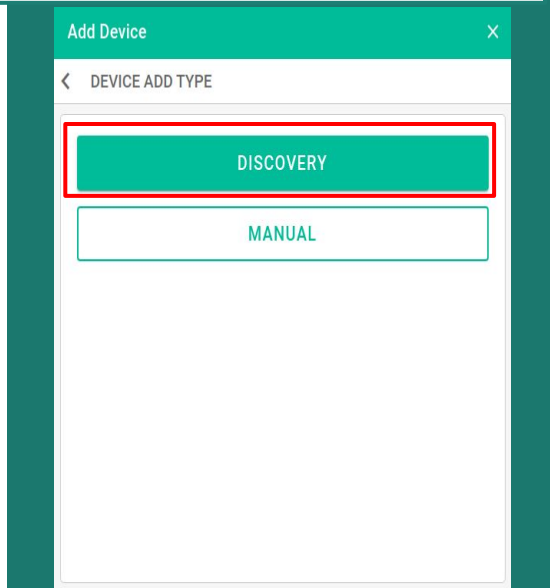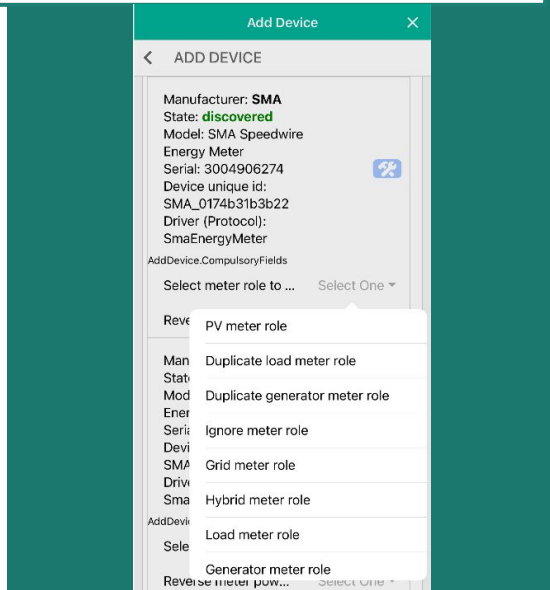
Select MANAGE DEVICES

The Droplet will automatically discover the devices

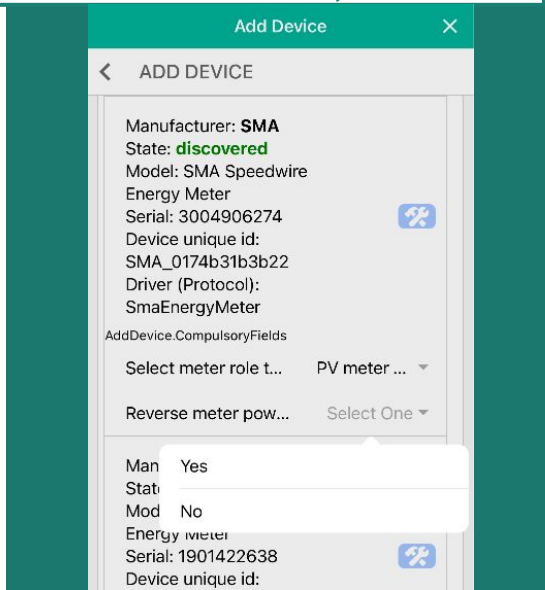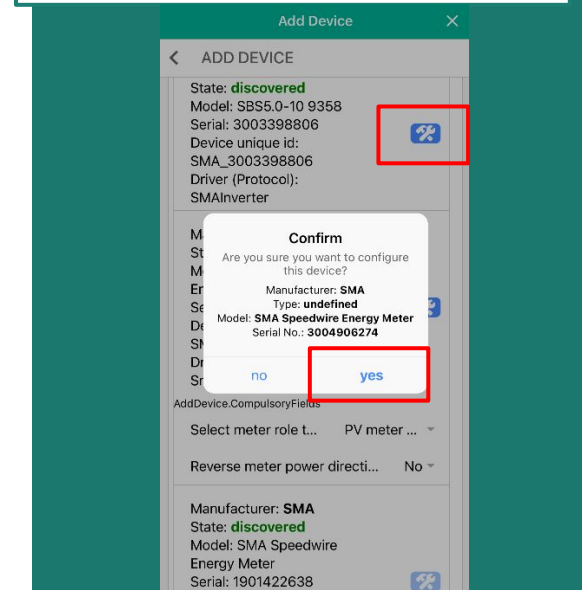# Configuring meter connection point

Choose PV or GRID meter role from drop down menu
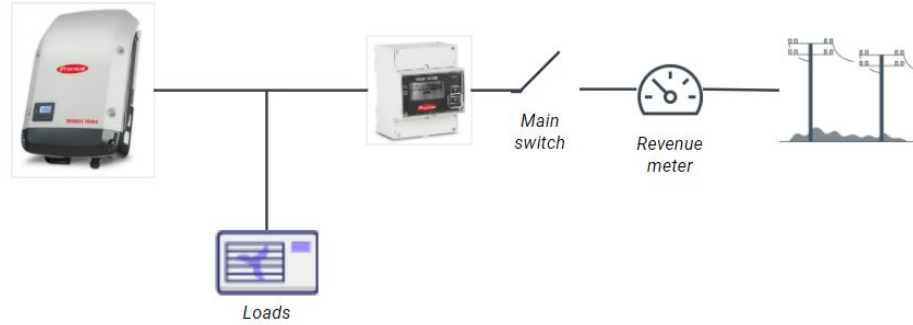
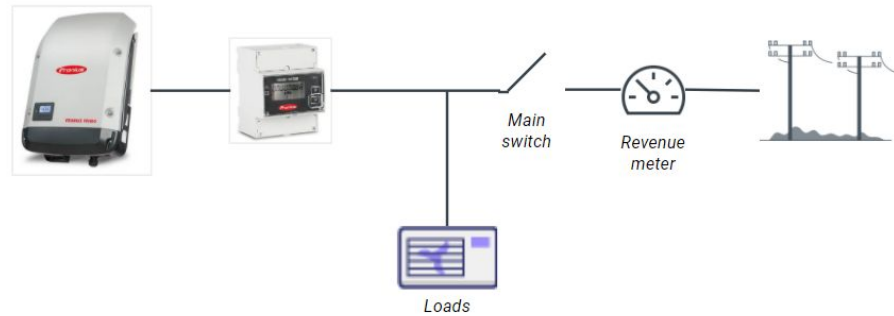**Reverse meter power (if meter is installed in reverse)**

Configure meter

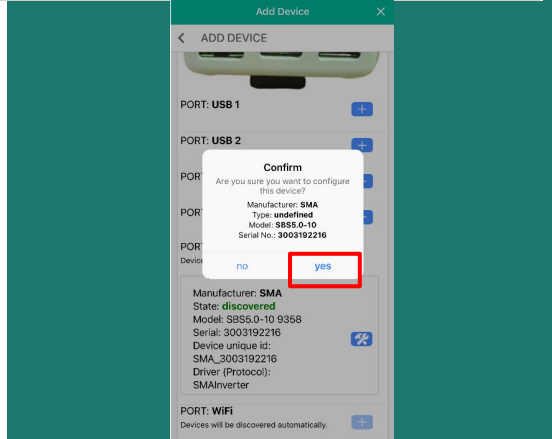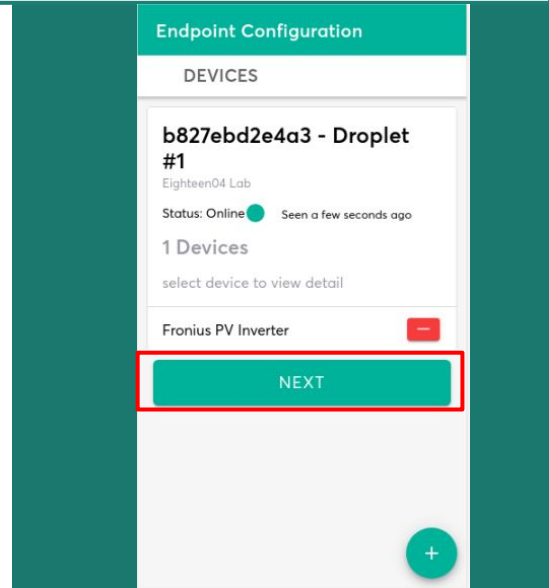# Definitions

Grid meter

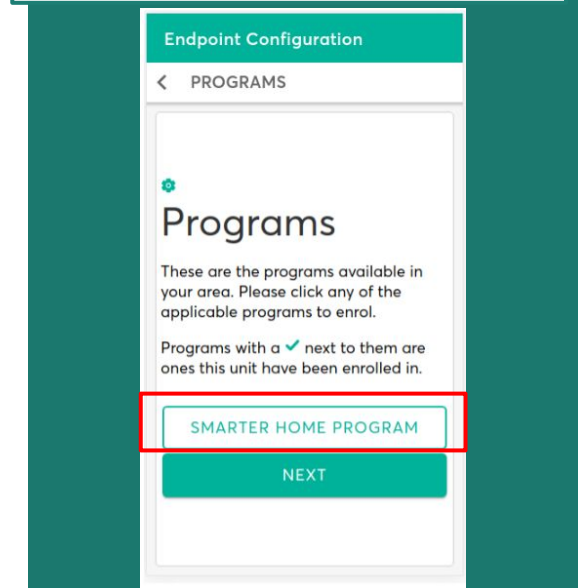## PV meter

Commissioning

Configure the inverter

Manufacturer: **Fronius**
State: **discovered**
Model: Symo Hybrid GEN24
Serial: 30427994
Device unique id: Fronius_30427994
Driver (Protocol): FroniusInverter

Add Device ✕

< ADD DEVICE

PORT: **USB 1**

PORT: **USB 2**

Confirm
Are you sure you want to configure this device?
Manufacturer: SMA
Type: undefined
Model: SBS5.0-10
Serial No.: 3003192216

no   **yes**

Manufacturer: **SMA**
State: **discovered**
Model: SBS5.0-10 9358
Serial: 3003192216
Device unique id:
SMA_3003192216
Driver (Protocol):
SMAInverter

PORT: **WiFi**
Devices will be discovered automatically.

Ensure devices are in the list and choose NEXT

Endpoint Configuration

DEVICES

b827ebd2e4a3 - Droplet #1
Eighteen04 Lab

Status: Online ● Seen a few seconds ago

1 Devices

select device to view detail

Fronius PV Inverter ▬

NEXT

Choose SMARTER HOMES PROGRAM

Endpoint Configuration

< PROGRAMS

⚙

Programs

These are the programs available in your area. Please click any of the applicable programs to enrol.

Programs with a ✔ next to them are ones this unit have been enrolled in.

SMARTER HOME PROGRAM

NEXT

Enrolling in Smarter Homes Program
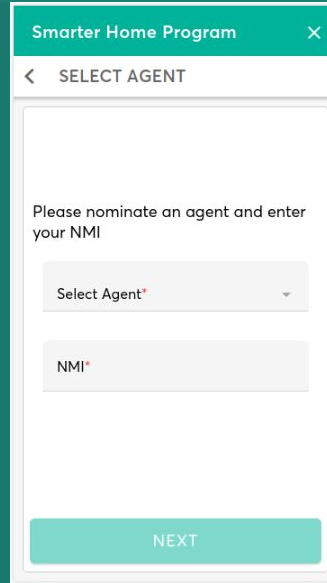
Choose START

Nominate your RELEVANT AGENT and enter customer NMI
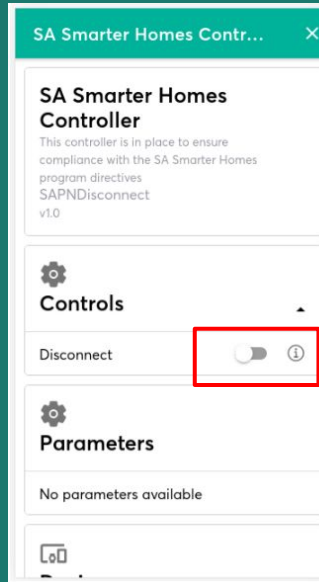

Choose NEXT

Testing control - inverter must be outputting power
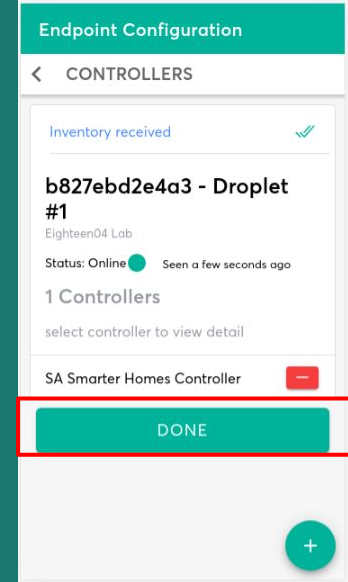
Select controller
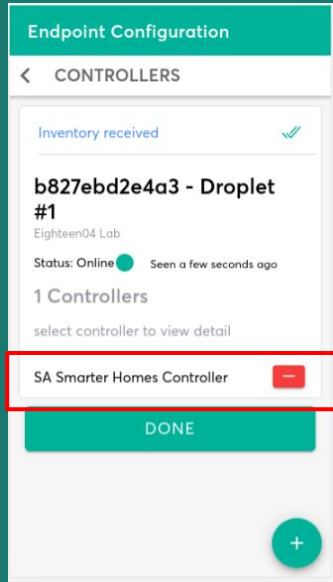
Test Control. Unit should either disconnect from grid or reduce output.
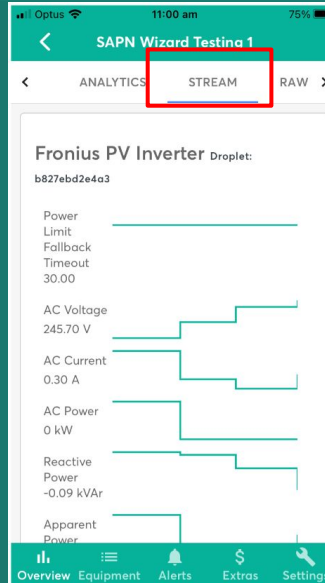

Finish Smarter Homes Enrollment.

Checking if the device is communicating

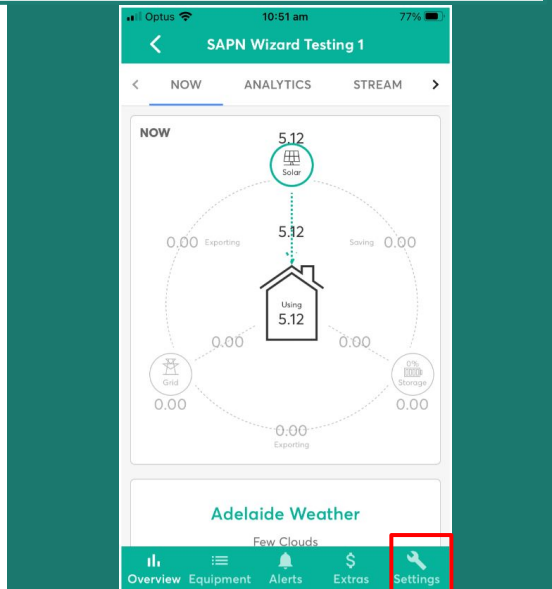**Check to see if device data is available**
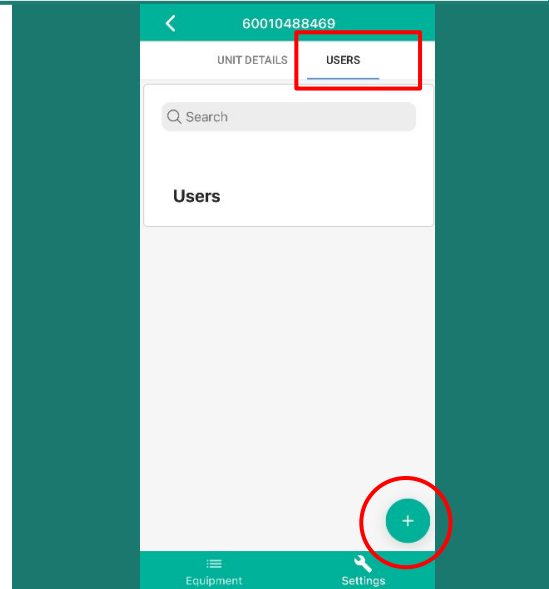

You can also check a 10 second stream of parameters
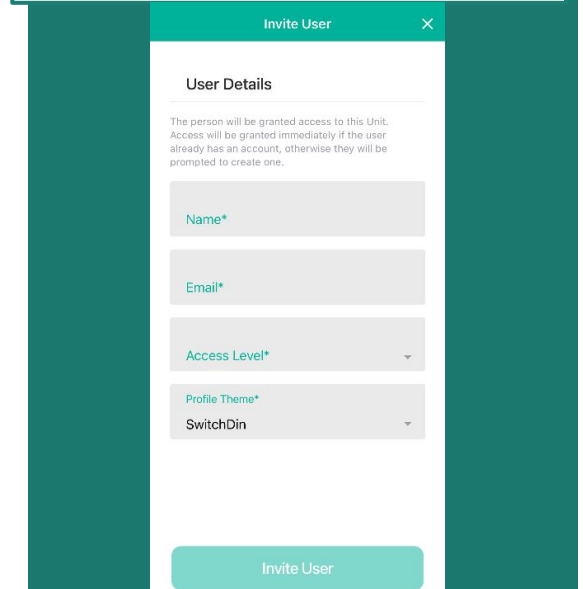
Add end customer to the unit

Go to SETTINGS

Invite users

Enter details and UNIT SERVICE CUSTOMER access level

Troubleshooting

Troubleshooting

The LED Header indicates that there is no power. What should I do?

1. Check the GPO is switched on and has voltage.
2. Check whether the micro USB connector has become dislodged from the Droplet.
3. Test another power supply which uses micro USB. A mobile phone charger may be suitable.

Link to video troubleshooting guide

The LED header indicates the inverter is not connected. What should I do?

1. Is the inverter on the same network/subnet as the Droplet?
2. Is the inverter powered up?
3. Is the Modbus TCP port open/activated?
4. Is the Droplet connected to the network?
5. Have the cables connecting Droplets to inverters been tested for continuity?
6. Power cycle inverter and Droplet.

Troubleshooting

The Droplet will not connect to the network. What should I do?

1. Reboot router/modem/switch.
2. Check number of devices connected to the network. Home networks may have a limit of 10-20 devices.
3. If possible, try ethernet instead of wifi as the wifi may be weak.
4. Ensure password entered is correct.
5. Check internet connectivity of the Ethernet cable by plugging into a laptop.
6. IF using Ethernet, are the two lights on the ethernet port blinking. If there are no blinking lights the link is broken. Check the continuity of the Ethernet cable.

Link to video troubleshooting guide

Process for support

Troubleshooting

Follow the troubleshooting guide in this document and videos on support page.

Send information

If the Troubleshooting does not fix the issue, send the following info to support@switchdin.com

1. Droplet ID
2. How is the droplet Connected to devices/inverters?
3. Brand/model of inverters/meters?
4. Description of issue and relevant troubleshooting results.

If the Droplet is connected to the internet, we will be able to remotely perform diagnostics.

If needed, call.

If the Droplet is not connected to the internet and there is an urgent need of support, please call our helpdesk on +61 02 4786 0426

For more information

General enquiries: info@switchdin.com
Warranty claims & support: support@switchdin.com
Phone: +61 (0) 2 4786 0426

or visit:
SwitchDin Support
SA Smarter Homes landing page