

Enphase AC Battery Technical Training

Martyn Berry
Enphase Service & Support



Enphase AC Batteries from Segen

Enphase AC Battery Storage Package - 2.4kWh

Part No: EN-STOR-2.4 Storage Systems - Self Consumption Packages

**SPECIAL
OFFER**

This

Part

2 x 

1 x 

2 x 

This Self Consumption
The Enphase batteries

Please note that curre



 ENPHASE.

Enphase AC Battery Storage Module - 1.2kWh

Part No: EN-STORAGE-AC-1.2 Storage Systems - Li-Ion Battery Pack
Enphase AC Battery

The Enphase AC Battery is an integrated energy storage system that delivers high performance, superior reliability, modular architecture, and safety.

- Capacity: 1.2 kWh
- Depth of discharge: >95%
- Roundtrip cell efficiency: 96%
- Peak output power: 270 VA
- Chemistry: Lithium Iron Phosphate (LFP)
- Cell safety certifications: TUV Rheinland, UL

Please note, the Enphase Storage system is certified G83/2. It cannot be installed at sites in Northern Ireland or the Republic of Ireland.

On Special Offer!

[EN-STOR-1.2](#) Enphase AC Battery Storage Package - 1.2kWh

[EN-STOR-2.4](#) Enphase AC Battery Storage Package - 2.4kWh

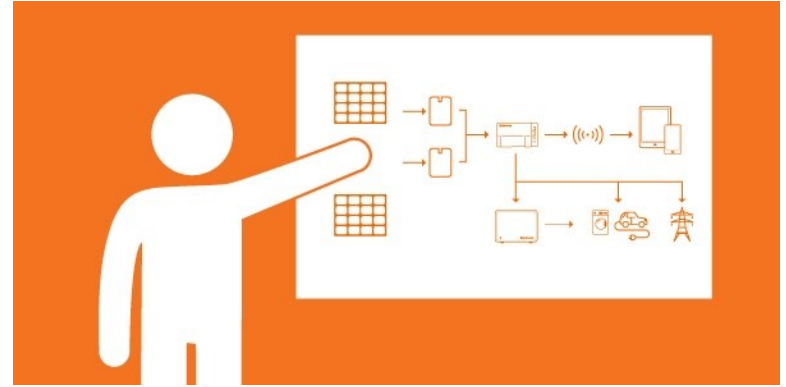
[EN-STOR-3.6](#) Enphase AC Battery Storage Package - 3.6kWh

[EN-STOR-4.8](#) Enphase AC Battery Storage Package - 4.8kWh

[EN-STOR-INTRO](#) Enphase AC Battery Introduction Package

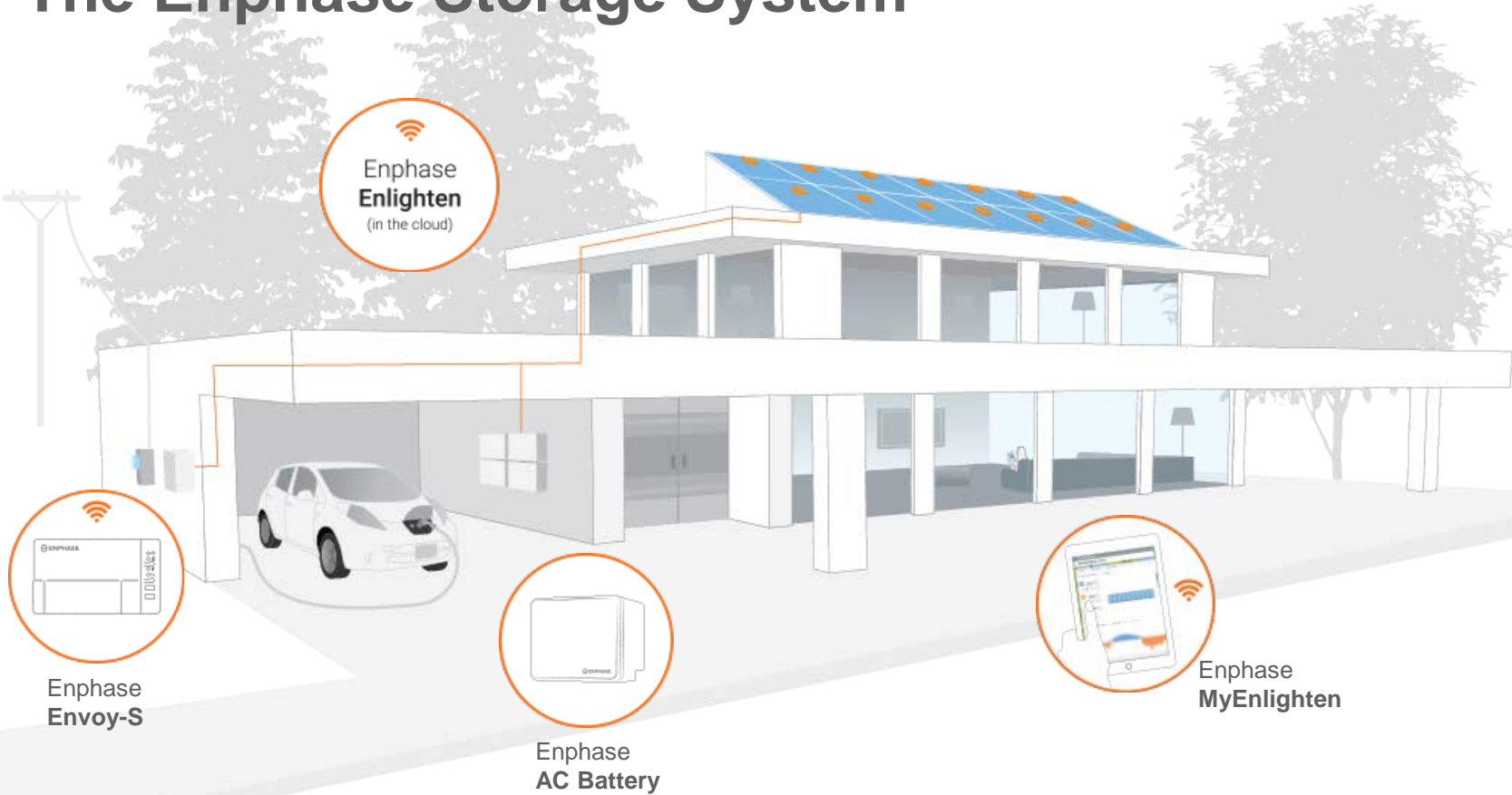
Welcome to Enphase AC Battery Training

- Introduction to the AC Battery
- System Overview
- Electrical Design
- Before going to site...
- Envoy-S & CT Installation
- AC Battery Location & Installation
- System Setup & Commissioning
- Most Important Small Print
- Help & Support



Introduction to the Enphase AC Battery

The Enphase Storage System



Enphase AC Battery (ACB)

Features

- 1.2 kWh energy capacity, 270 W power
- Weight: 25 kg
- Embedded bi-directional microinverter
- Depth of discharge: >95%
- 96% round-trip efficiency for the battery
- LFP* chemistry: Safety certified by TÜV Rheinland
- IP 20 rated
- Warranty: 10 years or 7,300 cycles**
- UN38.3 certified

Notes: Actual cycle life depends on rate and depth of charge, and battery temperature

*Lithium Ferrous Phosphate

**1 cycle= 1 full charge and 1 full discharge



Enphase ACB Wall Mount Brackets

Features

- Integrated junction box
- 2.5mm² to 4.0mm² wire
- 2 versions (450mm and 600mm)
- Can be pre-installed



Envoy-S Metered

Features

- Data and management
- Monitoring and control
- Production and consumption metering with CTs
- ACB & microinverter connectivity
- Flexible internet connectivity & integrated Wi-Fi
- Single or multiphase (with additional CTs)
- Charge and discharge management, including phase balancing
- 5 year warranty

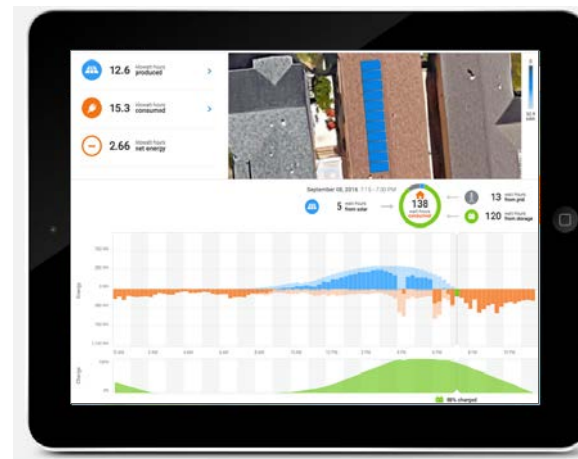


Enlighten Monitoring Platform

Features

- Monitor energy consumption and production in one interface
- Quickly view net energy
- Manage ACB time of use and night time charging options

**Enlighten
Manager**
for Installers
& Maintainers



MyEnlighten
for System
Owners

Installer Toolkit App (ITK)

Features

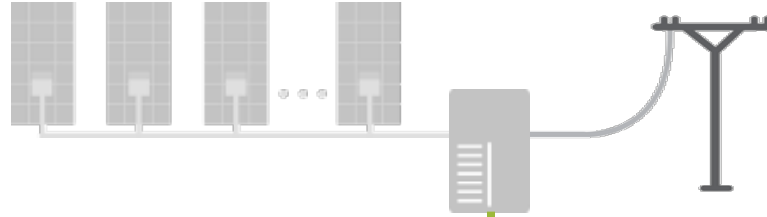
- Accelerates Envoy and AC Battery commissioning
- Use phone camera to scan serial numbers
- Configure system and apply grid settings without a laptop
- View and email the status report to verify install success
- Available for iOS and Android
- Set ACB time of use and night time charging options



System Overview

Basic Enphase Microinverter Architecture

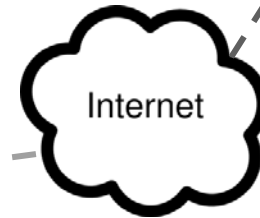
Independent
Microinverters for
every solar module



Enlighten

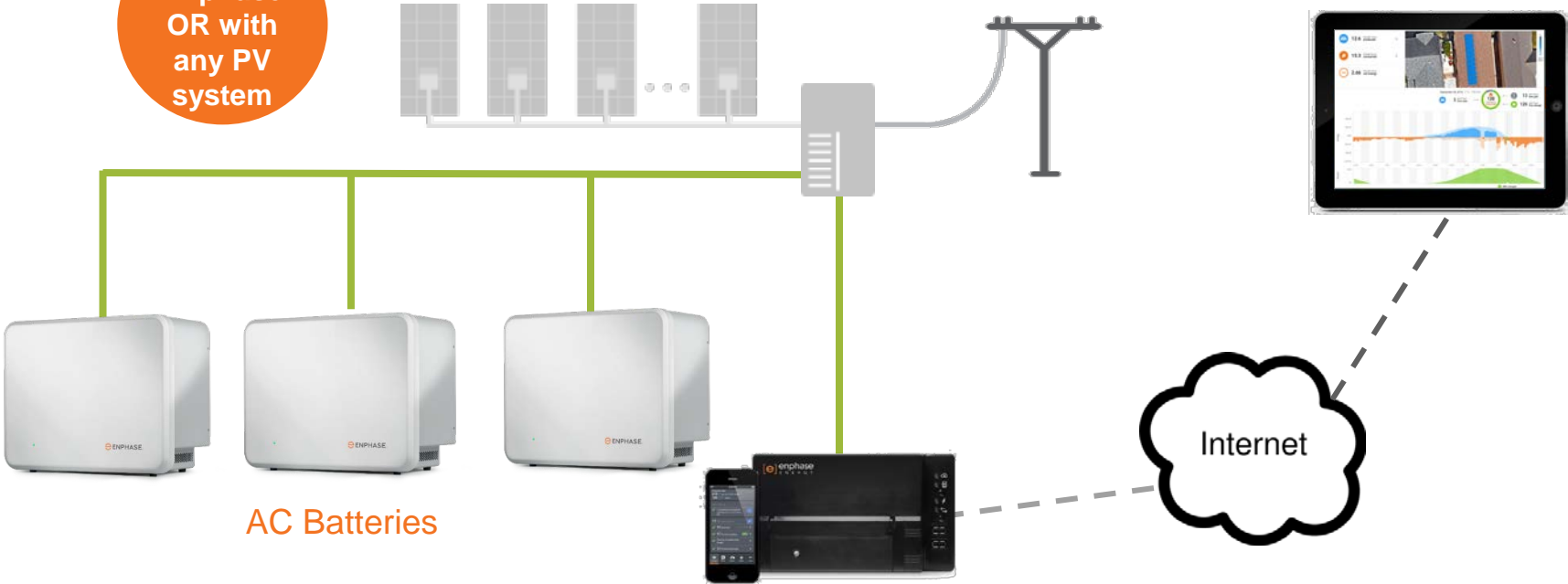


Envoy-S and ITK



AC Battery System Architecture

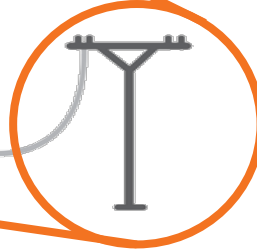
With Enphase OR with any PV system



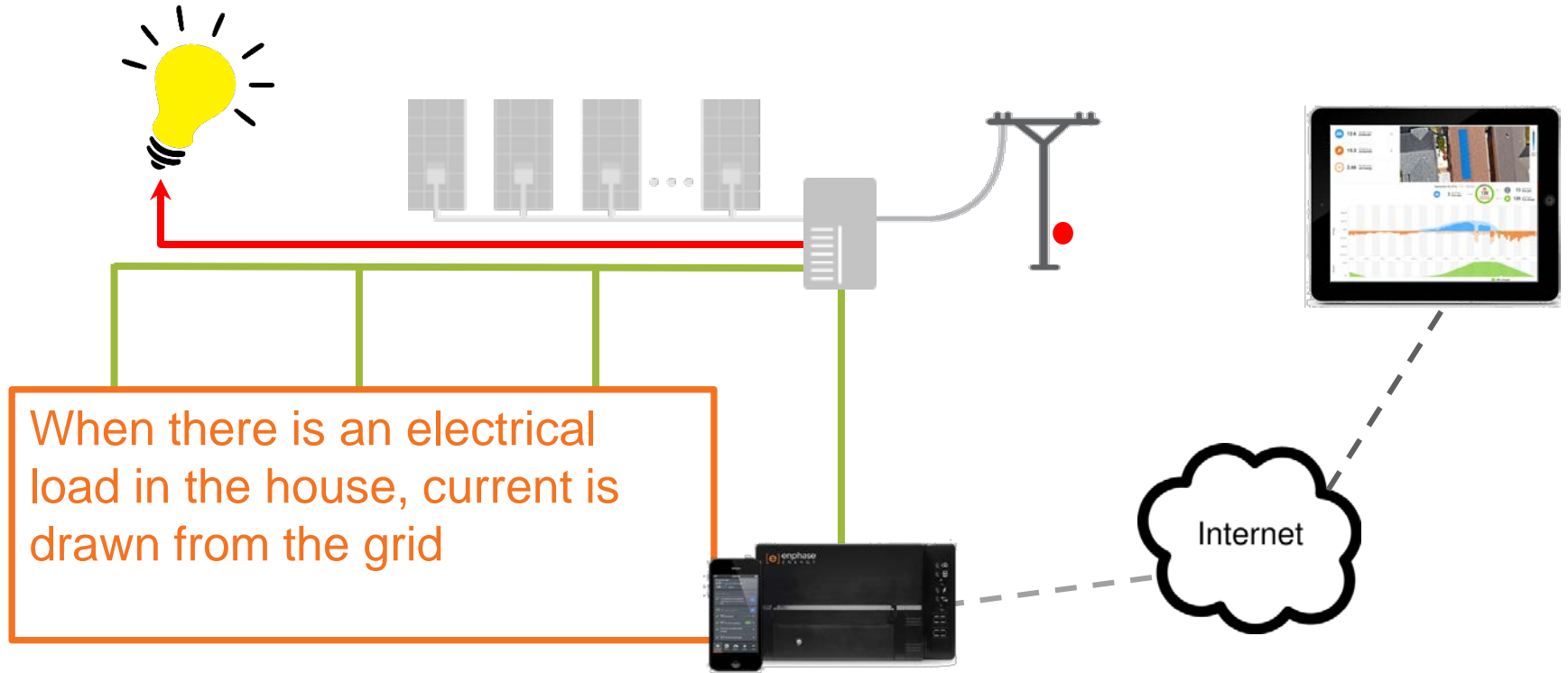
AC Batteries

How the AC Battery System Works

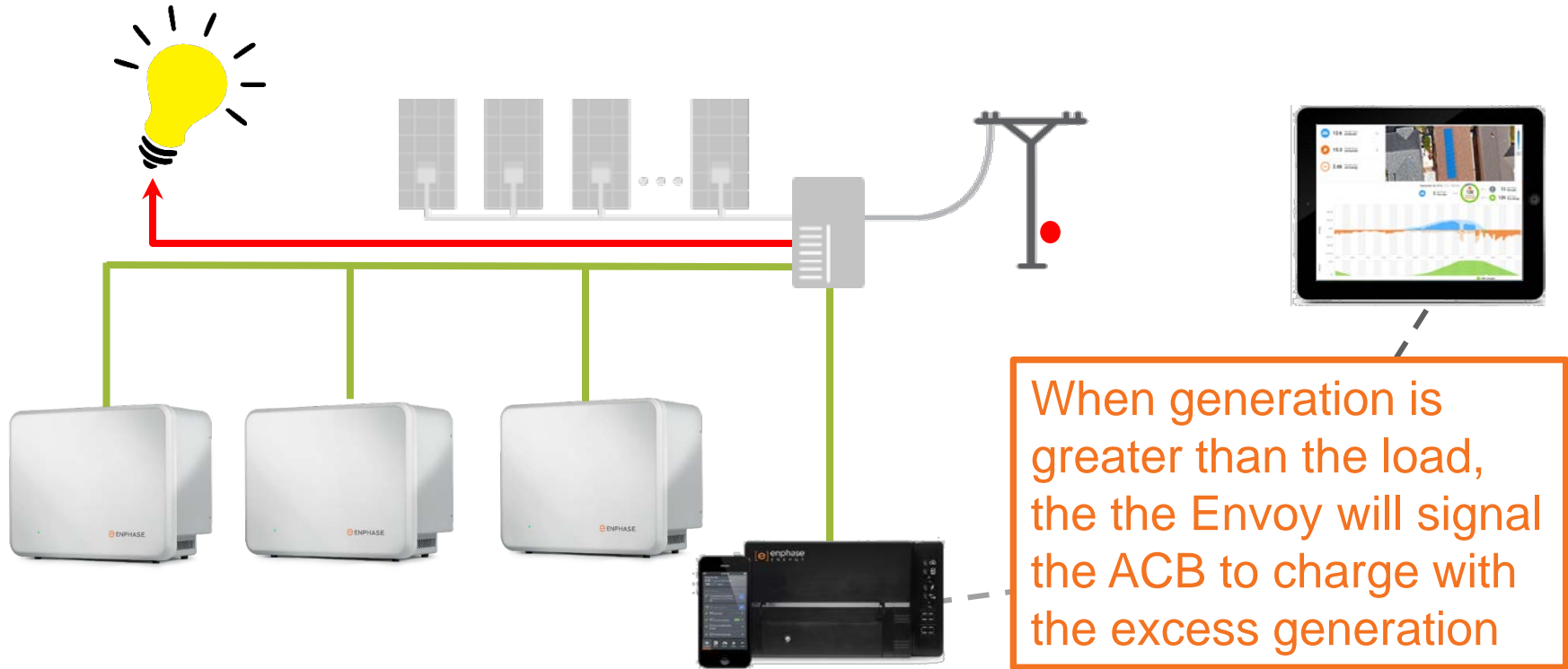
The HES storage system is grid tied and the grid must be up and running!



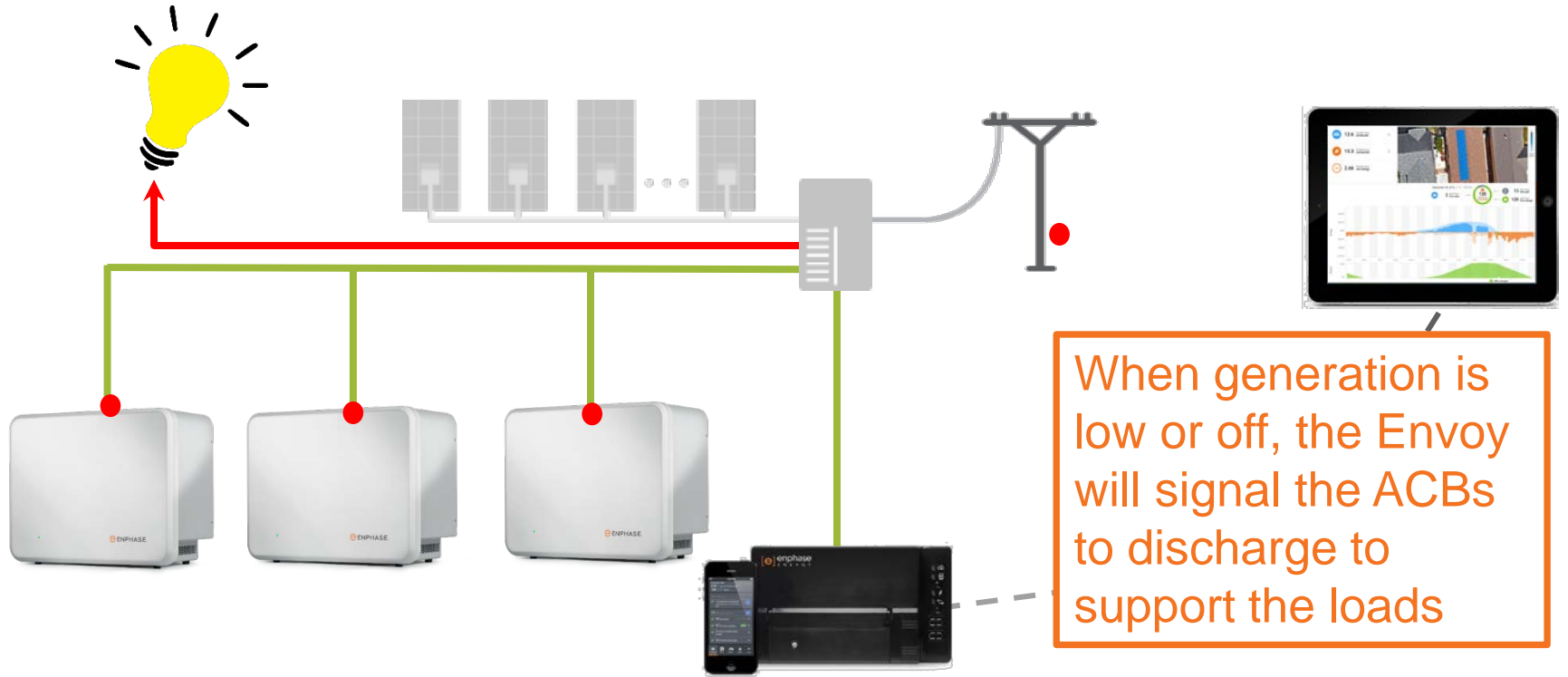
How the AC Battery System Works



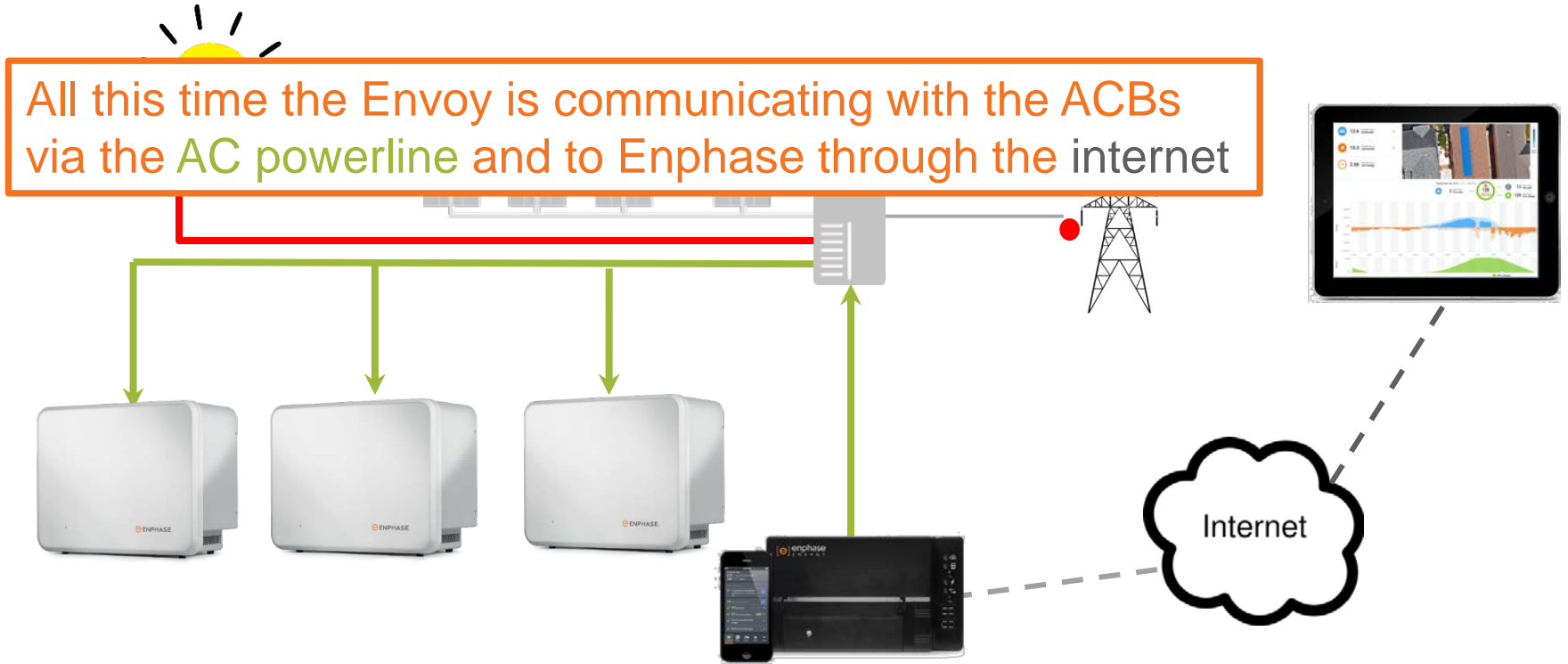
How the AC Battery System Works



How the AC Battery System Works



How the AC Battery System Works



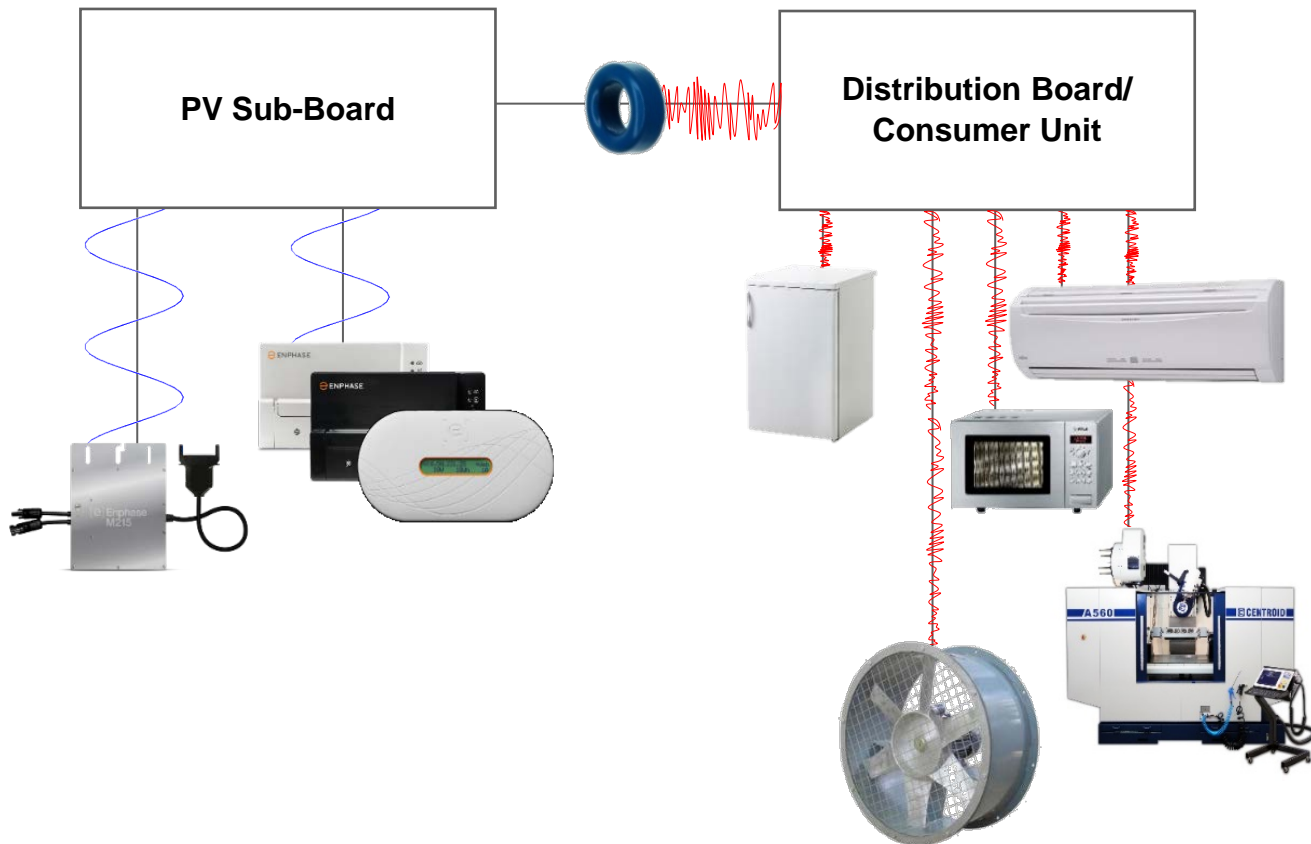
Electrical Design

Locating and Mounting the Envoy-S

- Location
- Powerline communication
- Internet
- Switchboard device
- CT wiring



Things That Can Create Competing Noise

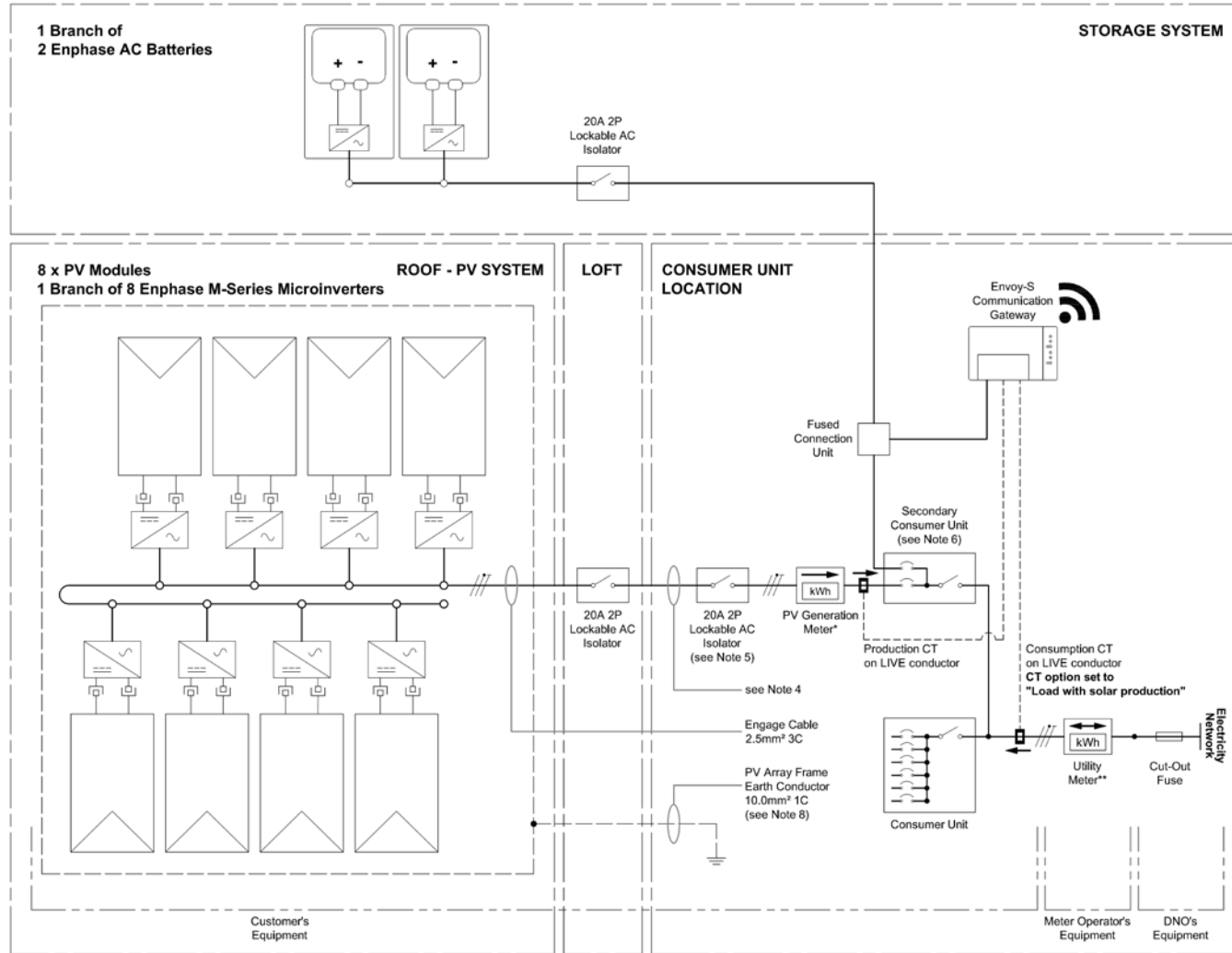


Also...

- String Inverters
- Solar iBoost
- Dimmer switches
- Pool pumps

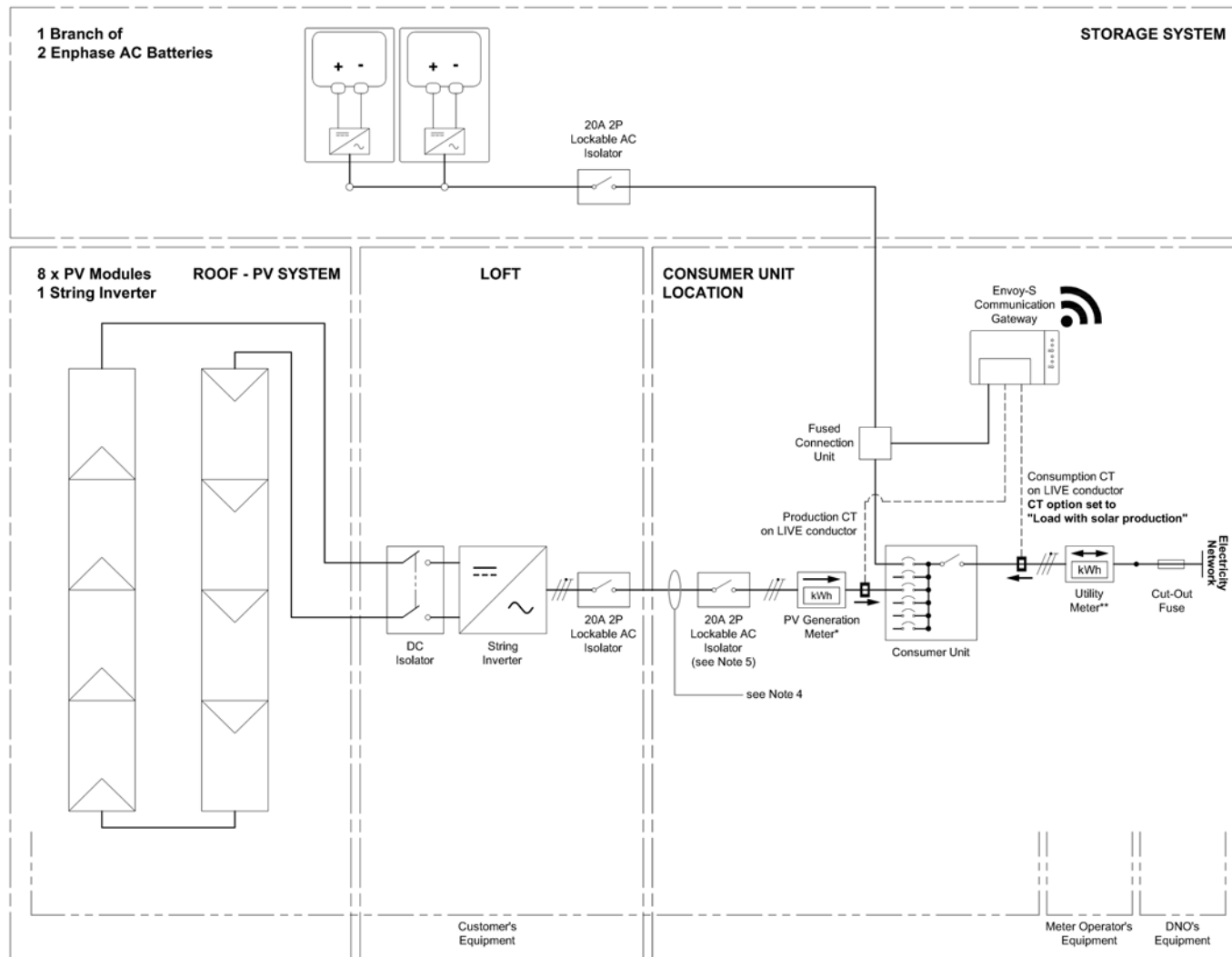
Example Schematic

Microinverter site



Example Schematic

String inverter site



Before going to site...

Get Online with ITK

Features

- Make sure you know your Enlighten installer Login
- Installer the ITK App



- Make sure your App is up-to-date before you leave your WiFi

Enlighten

Language

Email:
mberry@enphaseenergy.com

Password:
.....

[Forgot your password?](#)

[Sign In](#)

Installing your first Enphase system? [Sign up for Enlighten](#)

Want to see Enphase in action? [View public systems](#)

Enlighten is compatible with the following browsers: Chrome 44 or higher, Firefox 41 or higher, Internet Explorer 11, Microsoft Edge for Windows, Safari 8 or higher. Cookies must be enabled.

ENPHASE ©2008-2017 Enphase Energy Inc. All rights reserved. [Privacy](#) | [Terms](#)

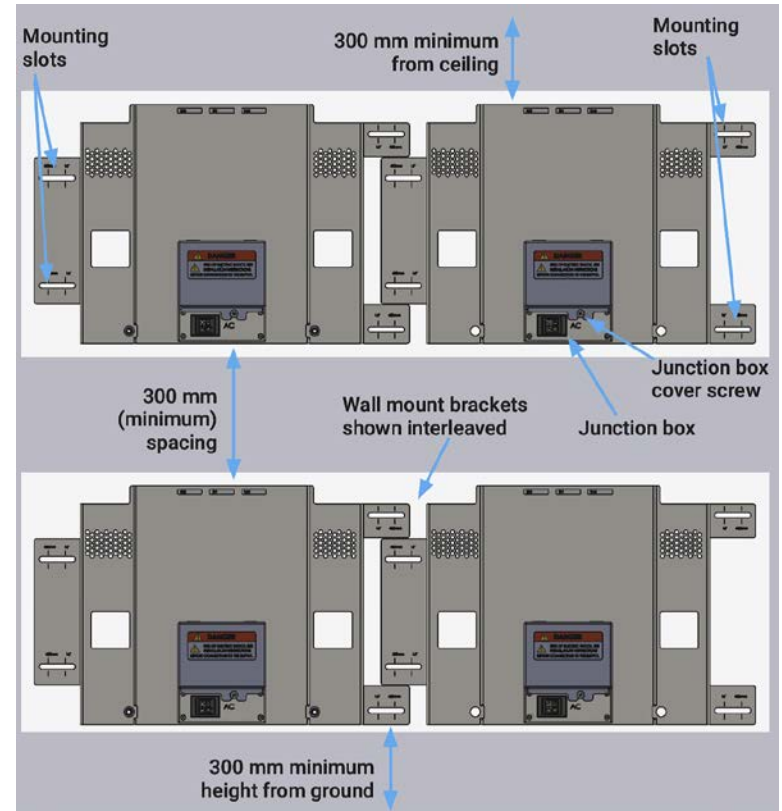
Site Assessment and Location Planning

- IP20 rated locations
 - Away from water
 - Indoor unoccupied space (garage)
 - Readily accessible
- Temperature considerations
 - -20°C to +40°C
 - Out of direct sunlight
 - Well ventilated



Site Assessment and Location Planning

- Approved clearances
 - Minimum 300mm above and below
- Physical mounting requirements
 - 25kg load capacity per unit
- Envoy Powerline Communications
 - Minimum cable run to Envoy
 - Shared sub board to minimize risk of noise



Which Type of Envoy for AC Battery Sites?



Envoy



Envoy-S Standard



Envoy-S Metered

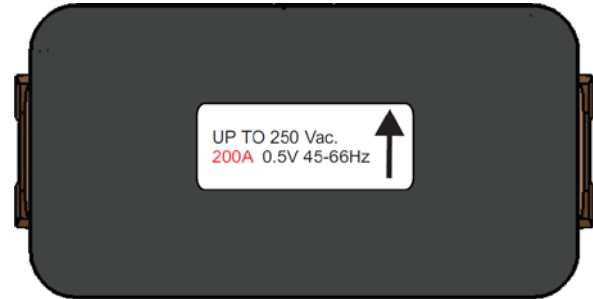
Only the Enphase AC Battery will only work with the Envoy-S Metered!!!

Envoy-S & CT Installation

Current Transformers (CTs)

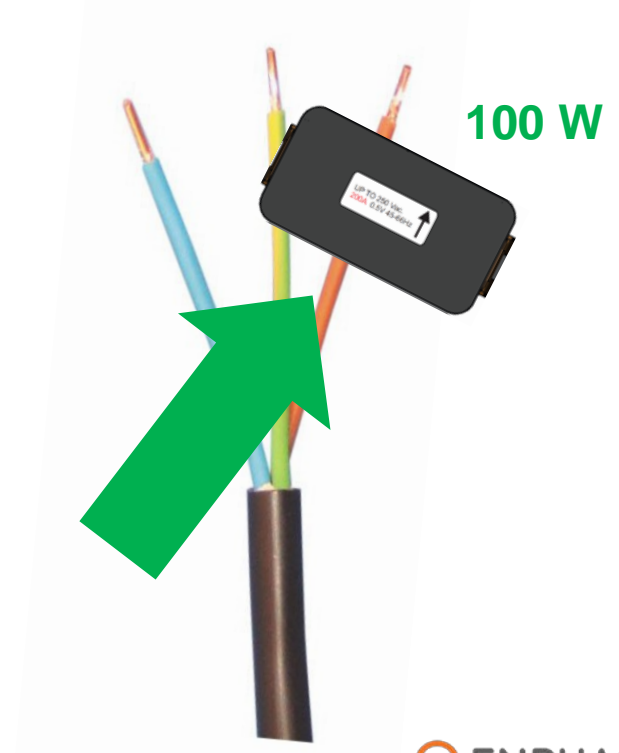
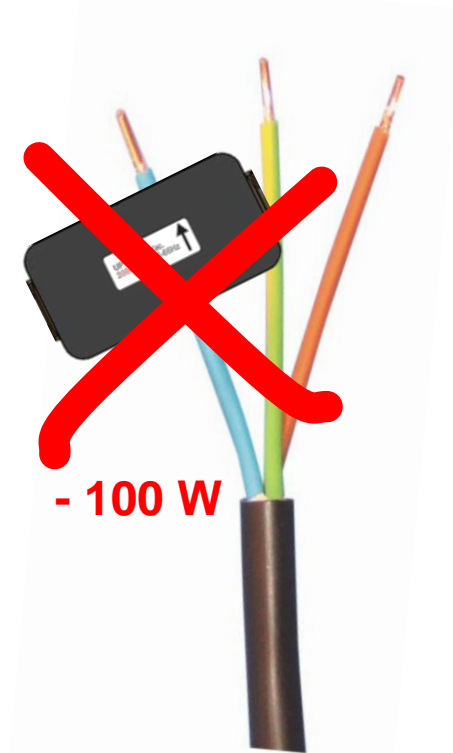
- A CT is a device used to measure power flowing through a conductor.
- Enphase provides a proprietary CT : **do not use any other, you risk to damage the Envoy**
- CTs must be installed in specific direction, as indicated by arrow sticker.
- Terminate CT wiring Before closing CT.

Remember! CTs can produce dangerous voltage and current if left unterminated while closed around an active conductor

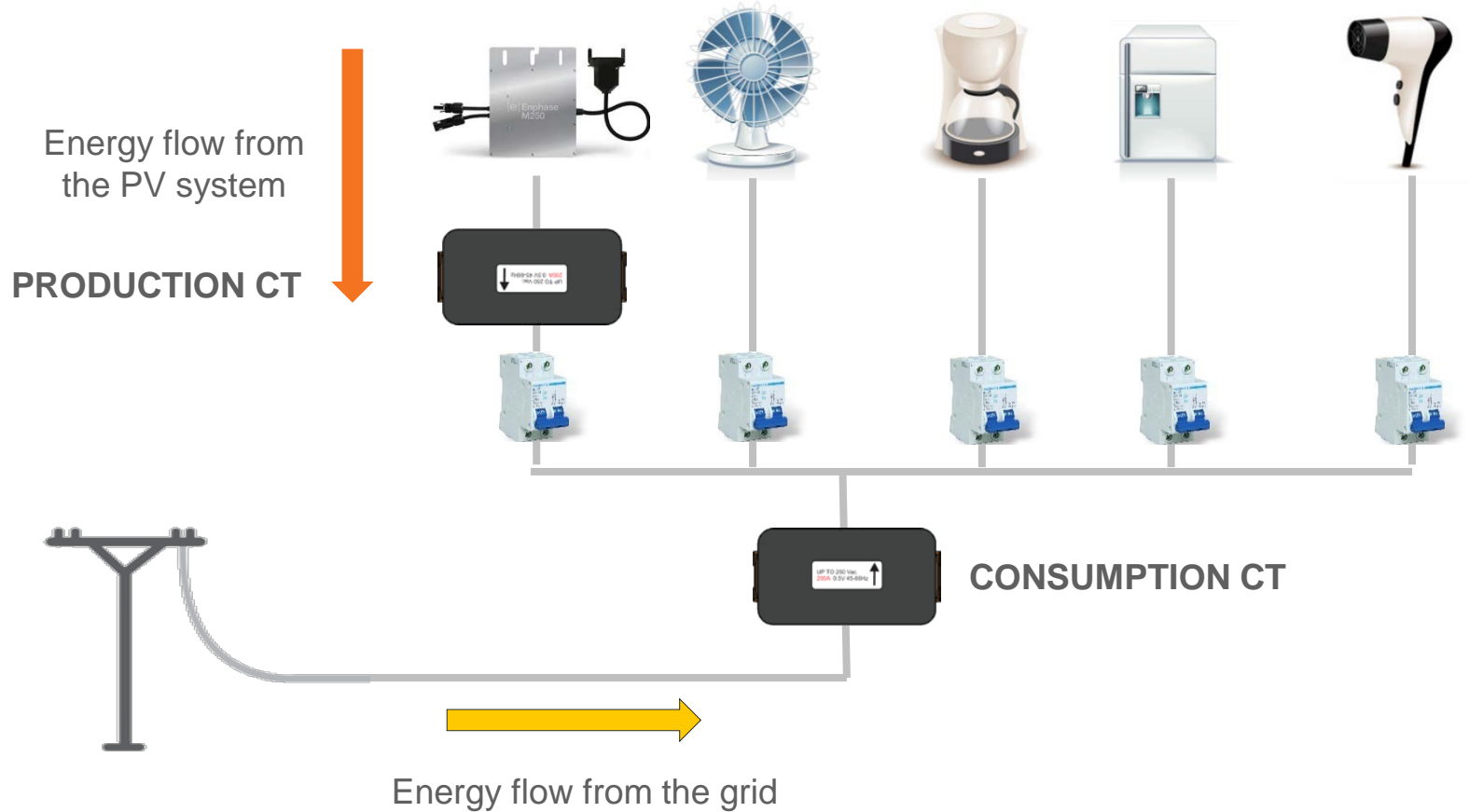


Current Transformers (CTs)

Must be installed on a phase conductor, not on a multicore cable, not on neutral



Current Transformers (CTs)



Under the Hood



Power Supply (N,L1) & Voltage Reference (N,L1,L2,L3)



Connection to Enlighten



AP mode (Access Point) for Installer Toolkit LEDs & button



Communication (LED Production (LED) Scan Button for micros/ACB



Terminal blocks for CTs

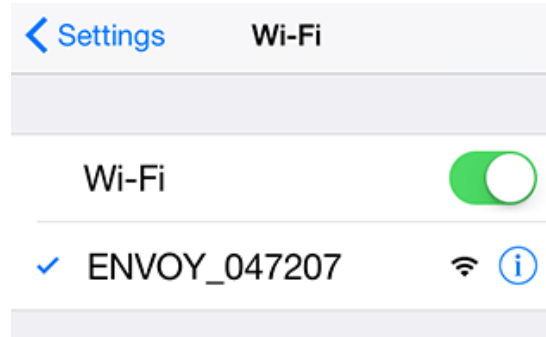
Terminal blocks **not used** (Australian use only)



USB port for Mobile connect

Configuration Meters in ITK

Connect to Envoy with AP
(Access Point) Mode



Configuration Meters in ITK

Configure the meters with The Enphase Installer Toolkit App.



Configuration Meters in ITK

Do the readings make sense?

- Negative readings are a clear sign of incorrect polarity of the production CT
- Don't install the production CT on a place where it could also measure the Envoy consumption
- Don't forget to enable the meter

Production Meter

Mode
Single-Phase (L-L)

The meter is not yet enabled. Verify the readings, then tap **Enable Production Meter** at the bottom of the screen.

Production

Sep 08, 2016 11:11 AM
3.33 kW Active Power

L1(A)	
998 W	99.7 Vrms

L2(B)	
999 W	100.7 Vrms

Enable Production Meter

Overview Micros Storage **Meters** Network

Configuring Meters

Complete Consumption Meter configuration

- Verify readings
- If the consumption meter selection is incorrect, now is the time to make the change
- Enable the meter

Consumption Meter

Mode
Single-Phase (L-L)

The meter is not yet enabled. Verify the readings, then tap **Enable Consumption Meter** at the bottom of the screen.

Load only
These readings reflect the total home load.

The production meter must be enabled before these readings can be displayed.

Load with solar production
These readings reflect the difference between the total home load and solar production. They should approximately match the home's utility meter readings.

Sep 09, 2016 4:38 PM
1.54 kW Active Power (Exporting)

L1(A) Importing	198 W	119.7 Vrms
L2(B) Exporting	199 W	120.7 Vrms

Overview Micros Storage **Meters** Network

Load Only
These readings reflect the total home load.

The production meter must be enabled before these readings can be displayed.

Load with solar production
These readings reflect the difference between the total home load and solar production. They should approximately match the home's utility meter readings.

Sep 09, 2016 4:39 PM
1.54 kW Active Power (Exporting)

L1(A) Importing	198 W	119.7 Vrms
L2(B) Exporting	199 W	120.7 Vrms

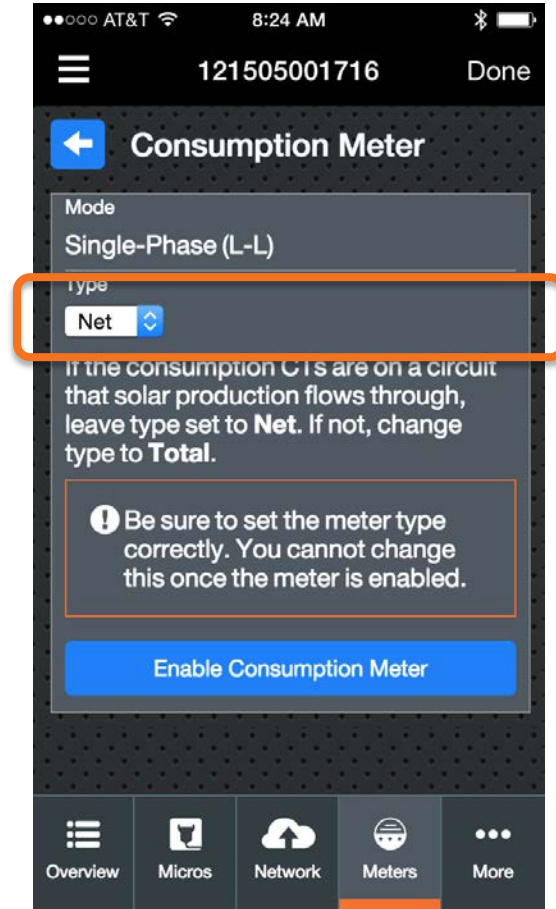
Metered Circuit
Does the circuit passing through the consumption CTs include load with solar production or load only?

Load with solar production

Enable Consumption Meter

Overview Micros Storage **Meters** Network

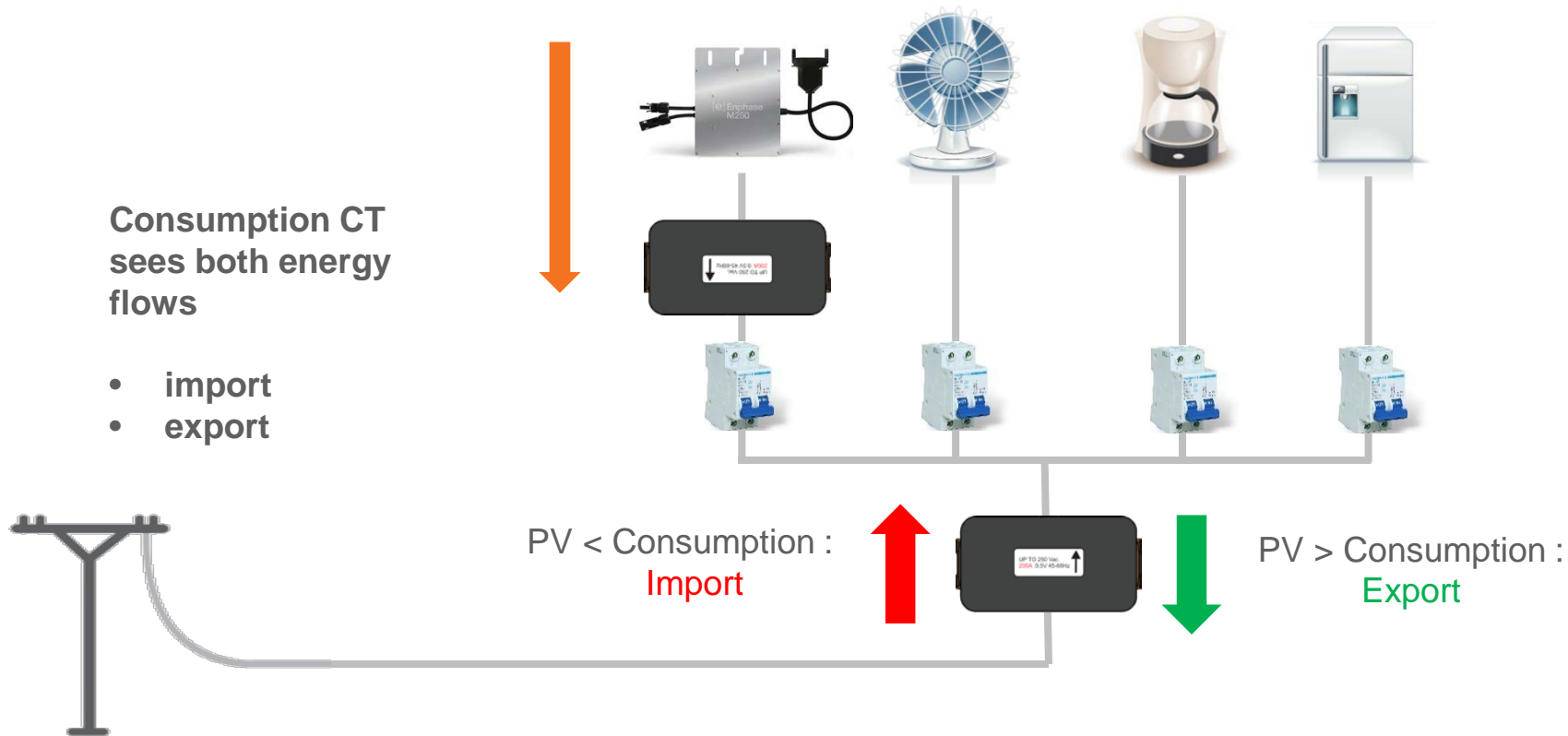
Configuration Meters in ITK



Configuring Meters : Load with PV (NET)

Consumption CT
sees both energy
flows

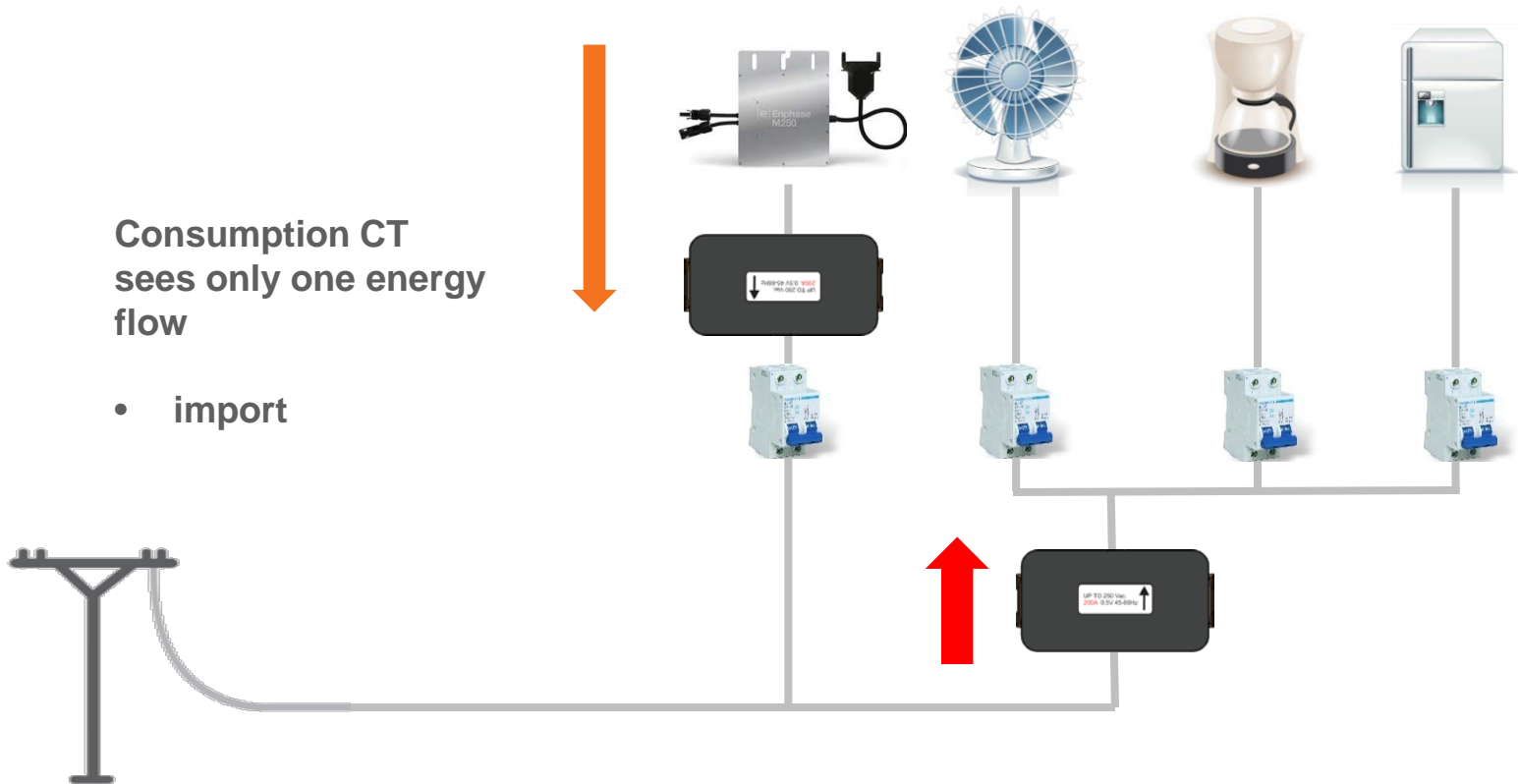
- import
- export



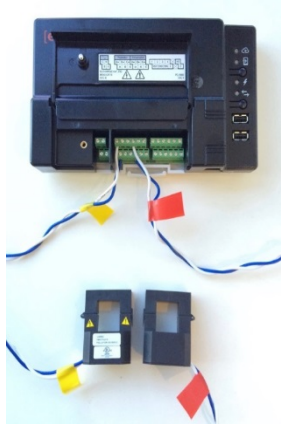
Configuring Meters : Load without PV (TOTAL)

Consumption CT
sees only one energy
flow

- import



CT Installation Workflow



Install the Envoy

Install the CTs

Connect to the Envoy with ITK

Scan the micros & propagate the grid profile

Check the production meter and enable

Switch off the PV breaker

Check the consumption meter and enable

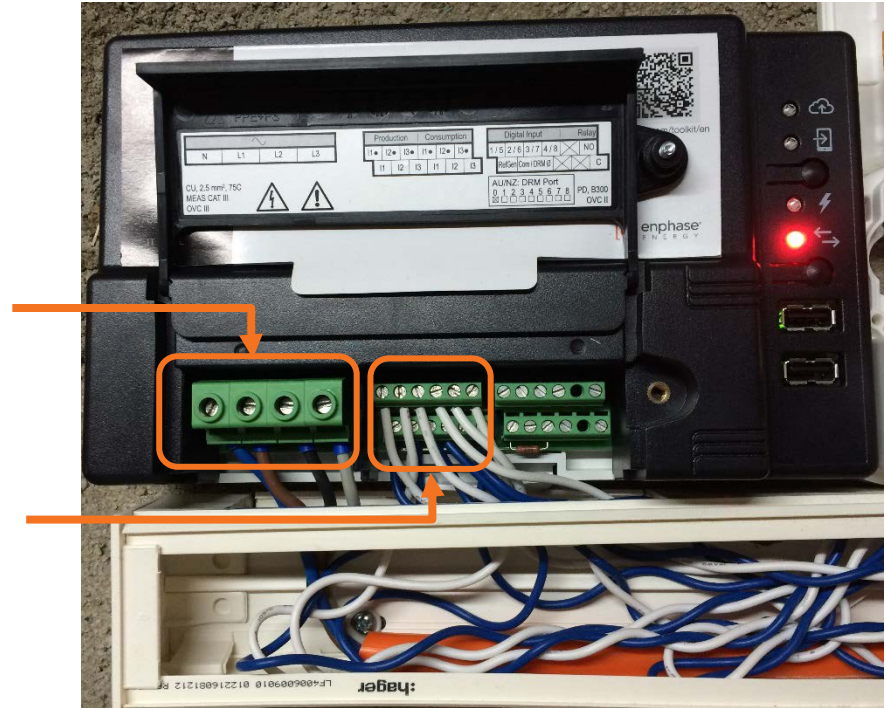
Switch on the PV breaker



Common Mistakes

If the CTs are not correctly installed, the Envoy will read negative values that will not be used or seen on Enlighten and ACB will not function correctly.

- CTs installed in a correct direction : arrow to match energy flow measured.
- CTs correctly wired on the Envoy : BB => blue on bottom.
- Envoy Power supply : **Line & Neutral must be correctly terminated** If reversed, all CT readings will be reversed !
(check with an electrical tester or measure the voltage)



AC Battery Location & Installation

Junction Box Cable Entry



- Grommets, similar to a metal patrix box.
- Knock-outs in the rear cables to be hidden if desired.

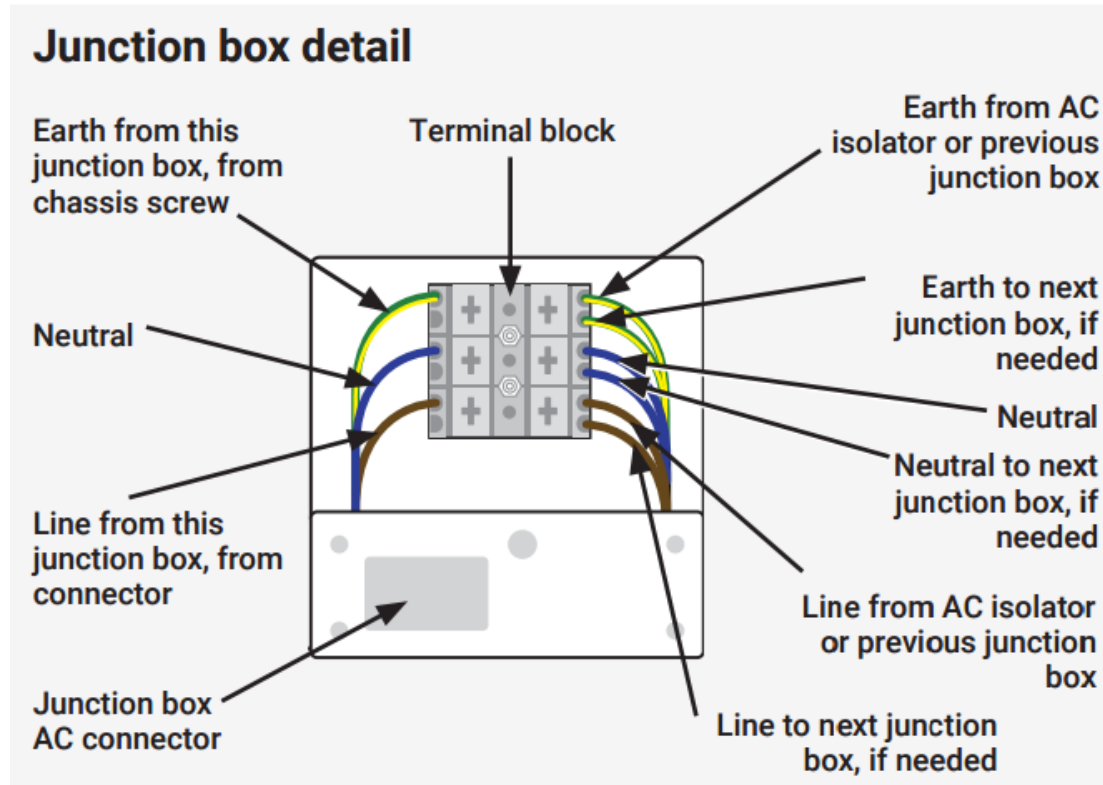
Mount to Wall



- 450mm and 600mm plates
- 25kg weight load
- 13 maximum AC Batteries / Circuit
- Use fasteners that ensure structural stability on mounting

Terminate Wiring

- Remove junction box cover
- 2.5mm² to 4mm² wire
- Uses push connectors
- Route, secure and check all wires
- Replace box cover

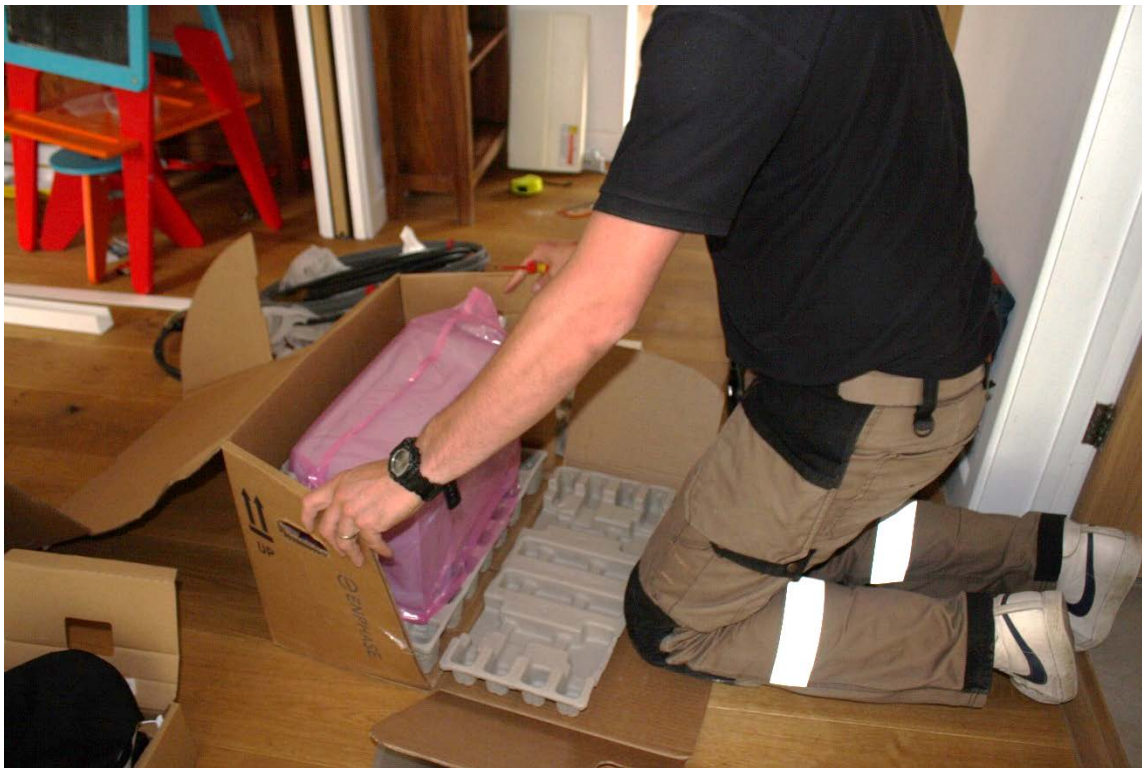


Unpacking the AC Battery



- Unpack the battery and check for damage.
- **Do not install if there are signs of mis-handling or damage!!**

Unpacking the AC Battery



- Packaging opens to allow ACB units to be easily lifted.
- Packaging re-usable

Unpacking the AC Battery

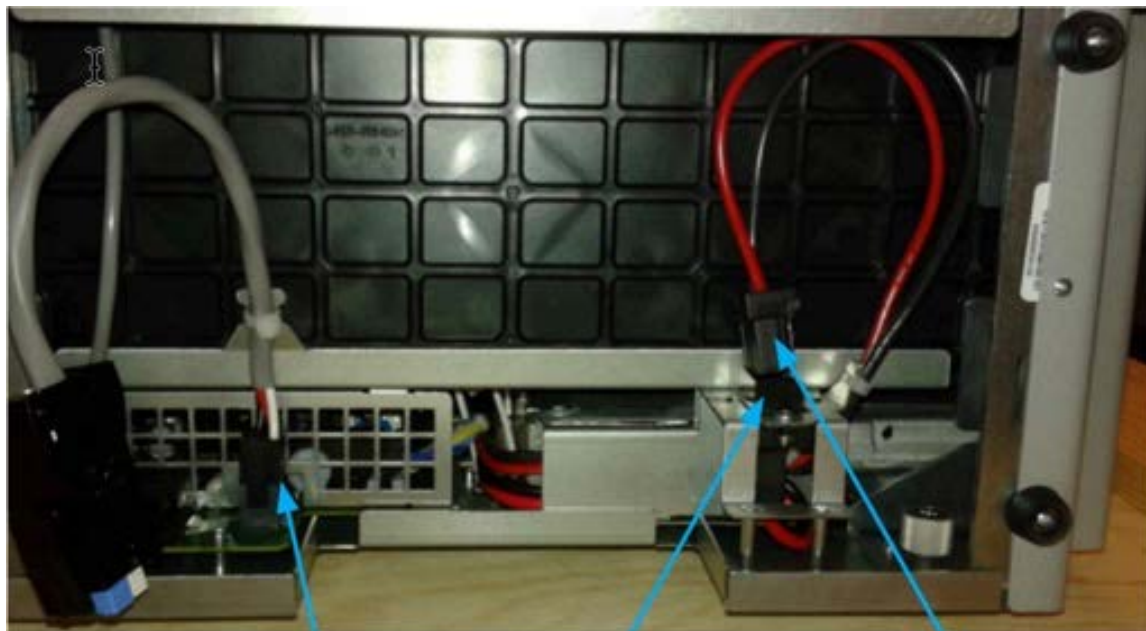


Mounting the AC Batteries



- Hang ACB onto bracket on tabs
- Take care in lifting (25kgs)
- Ensure “bonding screws” on ACB align to bracket and are fully secured

Connecting the AC Batteries – DC & AC!!!



AC Connector B

DC Connector B

DC Connector A

- **FIRST Connect DC Connector (Click!)**
- Second Connect AC Connector (Click!)

Completed Installation



- Installation almost complete, AC isolator as a point of emergency switching.
- Cover plate (shown below) is fitted to underside with two Allen bolts.



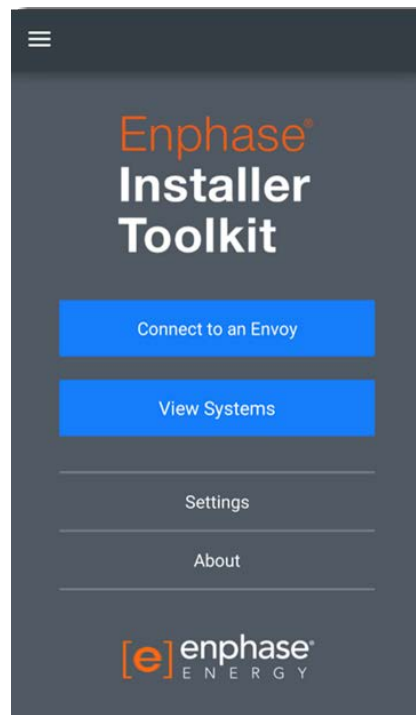
Energising and Reading the Status Light

State	Description
Solid red	Starting up
Red flashes in sequences of 2	Error. See "Troubleshooting".
Solid amber	Not operating due to high temperature. See "Troubleshooting".
Solid blue or green	Idle - color transitions from blue to green as state of charge increases. You can check Enlighten for charge status.
Slowly flashing blue	Discharging
Slowly flashing green	Charging
Green one second flashing	Looking for noncommissioned unit
Off	Not operating. See "Troubleshooting".



Installer Toolkit (ITK)

- **The commissioning tool for Enphase Microinverters and AC Batteries**
 - Metering configuration
 - ACB grid profile programming
 - Discharge time configuration option
 - System operation verification



System Setup & Commissioning

Commissioning the AC Batteries

Things to know for ACB Commissioning

- How many microinverters (might be zero)
- How many AC batteries
- Setting Grid Profiles is required (G83/2, G59/3)

The screenshot displays the 'System Size' and 'Grid Profile' sections of the Enphase commissioning interface. The 'System Size' section includes two input fields: 'Microinverters' with the value '2' and 'AC Batteries' with the value '5'. The 'Grid Profile' section features a dropdown menu with the following options: 'AS4777_3_2005', 'AS4777_3_2005 ENERGEX', 'AS4777_3_2005 ERGON PF POINT_9', 'HEI 2015 Grid Supply' (highlighted in blue), 'HEI 2015 Self Supply', and 'Hawaii KIUC 20121201'. Two orange arrows point to the 'Microinverters' and 'AC Batteries' input fields, and another orange arrow points to the 'Grid Profile' dropdown menu.

System Size

Enter the number of devices that you expect to report to this Envoy.

Microinverters
2

AC Batteries
5

Grid Profile

Select a location-specific grid profile.

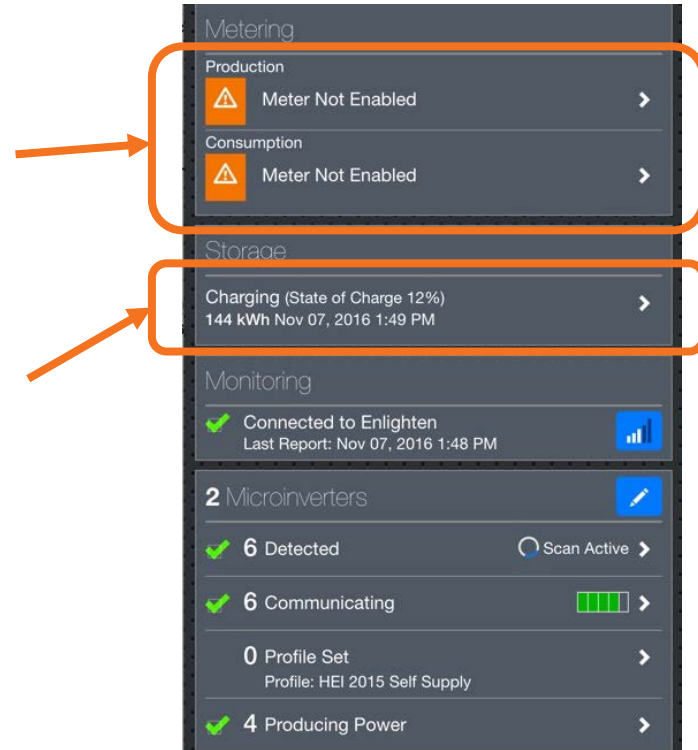
Select One

- AS4777_3_2005
- AS4777_3_2005 ENERGEX
- AS4777_3_2005 ERGON PF POINT_9
- HEI 2015 Grid Supply
- HEI 2015 Self Supply
- Hawaii KIUC 20121201

Commissioning the ACB Batteries

Things to know for ACB Commissioning

- Meters must be enabled
- The Envoy depends on correct readings to control the battery
- ITK will display the ACB's state of charge



Commissioning the AC Batteries

AC Batteries are successfully installed when all line items have green ticks



Most Important Small Print

AC Battery Warranty

- Period is **10 years** or **7300** cycles.
- Starts at **date of end user installation** or **6 months** after date of manufacture.
- Warranty is **void** if product is not registered or does not report to Enlighten for more than 45 days.
- European warranty document is published here: <https://enphase.com/warranties>



Enphase Energy AC BATTERY Limited Warranty – Covered European Countries

Subject to the exclusions and limitations described below, Enphase Energy, Inc. ("Enphase") provides the following manufacturer's warranties (the "Warranty") for Enphase AC Batteries purchased from Enphase or an entity expressly authorized by Enphase to resell the Enphase AC Battery (the "Authorized Reseller") installed in Covered European locations where we have approved the AC Battery for installation, including France, the Republic of Ireland, the Netherlands, and the United Kingdom.

Warranty claims may only be made by the end user (pursuant to the terms of Section 5 – RMA Process) who acquired and put the AC Battery into use for the first time (the "End User") or to a different end user (the "Transferee") as long as the AC Battery remains at the original End User location (the "Original Location") and the Transferee submits to Enphase a "Change of Ownership Form," and pays the applicable fee (the "Transfer Fee") within 30 days from the date of transfer to the Transferee. This submission is a requirement for continued Warranty coverage. The Transfer Fee is set forth in the Change of Ownership Form, and is subject to reasonable adjustment from time to time (as determined at Enphase's discretion). The Change of Ownership Form and payment instructions are available at <http://www.enphase.com/warranty>.

1. **Warranty Period.** The "Warranty Period" (a) begins on the earlier of (i) 6 months from the AC Battery's date of manufacture or (ii) the installation of the AC Battery at the Original Location (either, first) from the Warranty Start Date; and (b) ends 10 years or 7,300 fully discharged cycles (whichever occurs first) from the Warranty Start Date. If Enphase repairs or replaces an AC Battery, the Workmanship Warranty and the Capacity Retention Warranty will continue on the repaired or replacement AC Battery for the remainder of the original Warranty Period, as long as the replacement AC Battery is installed and energized within 90 days from date of receipt of Enphase's return shipment of the repaired or replacement AC Battery.

2. **The Workmanship Warranty.** During the Warranty Period, the AC Battery will, under use and conditions as set forth in the Installation Guide and the Enphase User Manual, conform to the AC Battery specifications set forth in the Enphase AC Battery Installation Manual and be free from defects in workmanship and materials.

3. **Capacity Retention Warranty.** The AC Battery will maintain the ability to store and discharge energy during the Warranty Period at the minimum percentages set forth in the table below (the "Capacity Retention Warranty"), depending on the average annual internal temperature in the location in which the AC Battery is installed. Enphase will determine the average annual internal temperature as measured by the temperature sensors inside the AC Battery. The rated capacity of the AC Battery is based on a 1.2 kWh charge capacity, as measured during a continuous charge from zero to full capacity at a current less than 10A and at a temperature of 20°C (+/- 10°C).

If the average annual internal AC Battery temperature is below 28 degrees Celsius:

WARRANTY PERIOD:	AC BATTERY CAPACITY:
Year 1 of the Warranty Period or 0.74 MWh of aggregate AC energy discharge throughput, whichever occurs first	Cumulative average energy storage capacity at least 90% of AC Battery nameplate rating
Years 2-5 of the Warranty Period or 3.53 MWh of aggregate AC energy discharge throughput, whichever occurs first	Cumulative average energy storage capacity at least 85% of AC Battery nameplate rating

1

© 2016 Enphase Energy, Inc.

Effective 2016-11-01
LGL-00015, 1.0

AC Battery Shelf-life

- All batteries are subject to shelf life due to internal self discharge.
- Shelf life is **6 months** from date of manufacture
- Each AC battery has a “**MUST ENERGIZE BY**” date on the carton label.



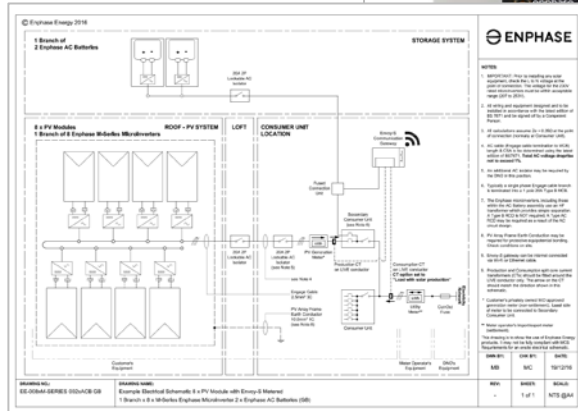
Help & Support

Support : Online Support Documents

The screenshot shows the Enphase website's support section for system owners. At the top, the Enphase logo is on the left, and navigation links for Homeowners, Commercial Solutions, Residential Solutions, and Products & Services are on the right. Below this is a secondary navigation bar with links for Overview, Success Stories, Go Solar, Intro to Solar, and Support. The main content area features a house icon and the heading "System owners support", followed by a sub-heading: "For resources on installation and maintenance of Enphase products and services, you've come to the right place." A search bar with the placeholder text "Type your question here..." and a magnifying glass icon is positioned below. At the bottom left, there is a "Filter" section with a dropdown arrow and a "Reset all" link. Below the filter is a "MyEnlighten help" section with an upward-pointing triangle and a "View All (27)" link. To the right of the filter is a "MyEnlighten Help" section containing two video thumbnails: "MyEnlighten Introduction" and "MyEnlighten Consumption Monitoring Walkthrough", each with a play button icon and a right-pointing arrow.

Envoy-S Resources for Installers

Full Manual



Example Schematics

Data Sheet
Enphase Networking

Enphase Envoy-S Metered

The **Enphase Envoy-S Metered™** gateway delivers solar production, consumption data to Enphase Enlight and analysis software for comprehensive maintenance and management of your system.

With production metering and monitoring options, Envoy-S is the energy management and integrate the Enphase AC Battery™.



Smart

- Enable web-based monitoring and control
- Bidirectional communications for remote updates

Simple

- Easy system configuration using Enphase Installer Toolkit™ mobile app
- Flexible installation with Wi-Fi, Ethernet, or mobile

Reliable

- Designed for installation indoors or in an outdoor enclosure
- Five-year warranty

CE
To learn more about Enphase offerings, visit enphase.com/uk

Datasheet

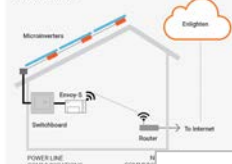
QUICK INSTALL GUIDE (Model ENVOY-S-WM1-230)

ENPHASE

Installing the Enphase Envoy-S Metered

To install the Enphase Envoy-S Metered™ gateway with integrated meter, read and follow all warnings and instructions in this Guide and in the Enphase Envoy-S Installation and Operation Manual at enphase.com/support. Safety warnings are listed on the back of this guide.

How It Works

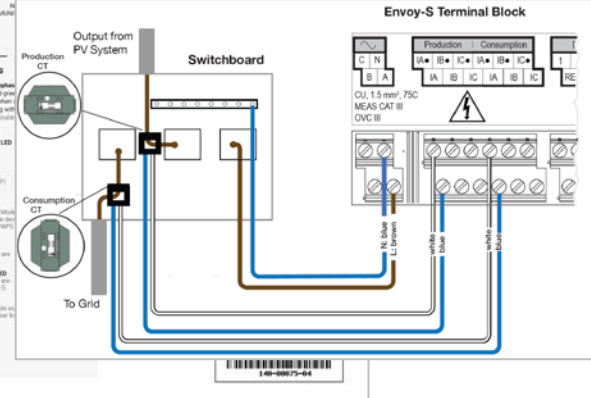


PREPARATION

- Download the latest version of the Enphase Installer Toolkit mobile app and open it to log in to your Enphase account. With this app, you can connect to the Envoy-S to track system installation progress. To download, go to enphase.com/uk/itk to scan the QR code at right.
- Check the box for the following items:
 - Enphase Envoy-S Metered gateway
 - Two split-phase current transformers (CTs) for production and consumption metering
 - Length of 3/16" rail for mounting
 - Wires to feed to attach to your Ethernet Cable, if used
 - Quick Install Guide** (this document) and the **Installation Supplement** (for multi-phase installations)
- Check that there is enough space in the switchboard to install CTs. Do not install the CTs in a panel where they exceed 20% of the working space of any cross-sectional area within the panel.
- You must install the Enphase CTs in an IEC-compliant or better enclosure.

Envoy-S Display and Controls

- Track system installation progress with the Enphase mobile app.** The LEDs on the Envoy-S are solid green and amber for pending an update, flashing when an update is pending or solid amber when troubleshooting is required. For a legend of all LED states, see Troubleshooting.
- Network Communications LED** Green when Enphase Link is connected to Enphase.
- AP Mode LED** Green when Enphase AP Wi-Fi network is available.
- AP Mode Button** Press to enable Enphase AP mode for connecting with a mobile and Mac/iOS. (Available in most markets)
- Power Production LED** Green when production is generating power.
- Device Communications LED** Green when microinverters are communicating with Envoy-S.
- Device Scan Button** Press to scan for up to 16 microinverters using the power in



ENPHASE

Quick Install Guide

ENPHASE

AC Battery Resources for Installers

ENPHASE

GB32 Appendix 4 Type Verification Test Report


Type Approval and manufacturer/supplier declaration of compliance with s Engineering Recommendation G532.			
SSEG Type reference number	S270-ACB-LN-YY		
SSEG Type	Microinverter		
System Supplier name	Enphase Energy Inc		
Address	1 Treflers Rd Wigram Christchurch, 8042 New Zealand		
Tel	+64-3-345 5339	Fax	
E-mail	amemerk@enphaseenergy.com	Web site	www.enp
	Connection Option		
Maximum rated capacity, use separate sheet if more than one connection option.	s 3.68		
	XW single phase, single, split or three		
	XW three phase		
	XW two phases in three phase system		
XW two phases split phase system			
SSEG manufacturer/supplier declaration I certify on behalf of the company named above as a manufacturer/supplier of Sm Generators, that all products manufactured/supplied by the company with the reference number will be manufactured and tested to ensure that they perform a Verification Test Report, prior to shipment to site and that no site modifications at that product meets all the requirements of GB32.			
Signed		On behalf of	Enphase
Note that testing can be done by the manufacturer of an individual component, house, or by the supplier of the complete system, or any combination of them as Where parts of the testing are carried out by persons or organisations other than supplier shall keep copies of all test records and results supplied to them to verify, been carried out by people with sufficient technical competency to carry out the			

© 2016 Enphase Energy, Inc.

ENA Certificates

INSTALLATION MANUAL

Enphase AC Battery



2016-11 141-00037, Rev 01

Enphase AC Battery

The Enphase AC Battery™ is simple to install, safe, very reliable, and provides the lowest lifetime energy cost for both new solar customers and retrofit customers. In addition, as an installer, you can design the right system size to meet the needs of the homeowner.

Simpler

- Quick and easy single person installation
- Plug and play installation
- Interconnects with standard household AC wiring

Safer

- No high voltage DC in system
- Cable safety-wired and certified by TÜV Rheinland
- Prismatic cells are highly stable over time

Greater Reliability

- Lithium iron phosphate (LFP) chemistry for long cycle life
- 10-year warranty
- Modular design promotes redundancy



CE
To learn more about Enphase offerings, visit enphase.com/uk

ENPHASE

Full Manual

ENPHASE

INSTALLATION GUIDE (Model S270 1200 LN 1 E400 RW)

Installing the Enphase AC Battery

Enphase AC Battery™ and the Enphase Microinverter™ (MIB) must be followed when installing and must be followed in the Enphase AC Battery and Operation Manual at enphase.com/support. Safety warnings are listed on the back of this guide. These instructions are not meant as a replacement of how to design and install an entire system. The system must comply with national and local electrical codes. Only qualified electricians shall install, troubleshoot, or replace the AC Battery.

Enphase Storage System includes the AC Battery with integrated Enphase Meter™. The system uses the Enphase Meter™ to measure PV production and energy consumption. The system knows optimal to charge or discharge battery that energy is stored when it is abundant when scarce.



INSTALLATION

- Choose a location for the AC Battery array**

The AC Battery housing is an IP20-rated metallic enclosure. The terminal blocks on the wall-mount bracket accept a maximum conductor size of 4 AWG.

 - Following local standards**, choose a suitable accessible, well-ventilated, indoor location (like a garage) that is out of direct sunlight and where the ambient temperature and humidity are within 32° C to 45° C and 5% to 95% RH, non-condensing.
 - Ensure that the mounting location can support the weight of the AC Battery and mounting bracket (25 kg or 60 lb per battery).
 - Ensure the mounting location is flat at least 300 mm (one foot) off the ground and 300 mm (one foot) from the ceiling. Keep the AC Battery away from falling or moving objects, including motor vehicles.
 - Ensure that there are no pipes or electrical wires where you plan to install.
 - Plan to maintain at least 300 mm (one foot) of clearance in front of each battery.
 - Consider the dimensions of the AC Battery, entry access, height, and length of cable when selecting the location.
 - Do not block the vents or allow fluids to contact the AC Battery. The AC Battery is not waterproof.
 - Select a location where you can connect to the site's utility-based load center using an appropriate branch circuit.
 - Following local standards**, decide whether to connect using a dedicated branch circuit or by using breakers in the main. This determines which knockouts to use in the junction box. Check if an AC isolator is needed. Plan the location for the AC isolator, if needed.
 - If you are installing more than one AC Battery, continue to maintain minimum required clearances as shown in **Step 2**.

For use between fuseless (twice) and wall-mount brackets for 4-level (11 mm strip length) copper conductors listed at 90° C for panel terminals, please refer to the following table for each used conduit opening in section 6.2.

Ensure wire current protection in accordance with local code.

production equipment (PV) for handling lithium ion are required for local safety standards.

you have the following **optional** items, if needed:
 - AC isolator
 - PV system and the Enphase-5 as directed by the installation.

the location(s) of the AC Battery(s), post the removable label from each battery and affix it to the respective paper installation map. You will scan this map later with the Enphase Installer™ and your mobile device. You can find installation map at the back of any Enphase Microinverter.

ENPHASE



1-800-899-911

Datasheet

Quick Install Guide

Support : Help on enphase.com

[e] Enlighten Manager

DASHBOARD SYSTEMS ACCOUNT SUPPORT ADMIN My Account

Support

For the fastest answers, visit the [Enlighten Help Center](#). If you still have questions, email us using the form below or call the nearest support office.

Subject:

Message:

Submit

Enphase Support

Have your User ID and Site ID ready when you call:

User ID: 298630

Site ID:

France

+33 (0)4 74 98 29 56

Italy

+39 0294 751617

United States

+1 877-797-4743

United Kingdom

+44 (0) 1908 828 928

Contact Support via Enlighten site

Help, Support & Further Training

Customer Support:

Team based in Milton Keynes office

01908 828 928

support_uk@enphase.com

Online Help:

Guides, Certificates, Videos & Advice

<https://enphase.com/en-uk/support/>

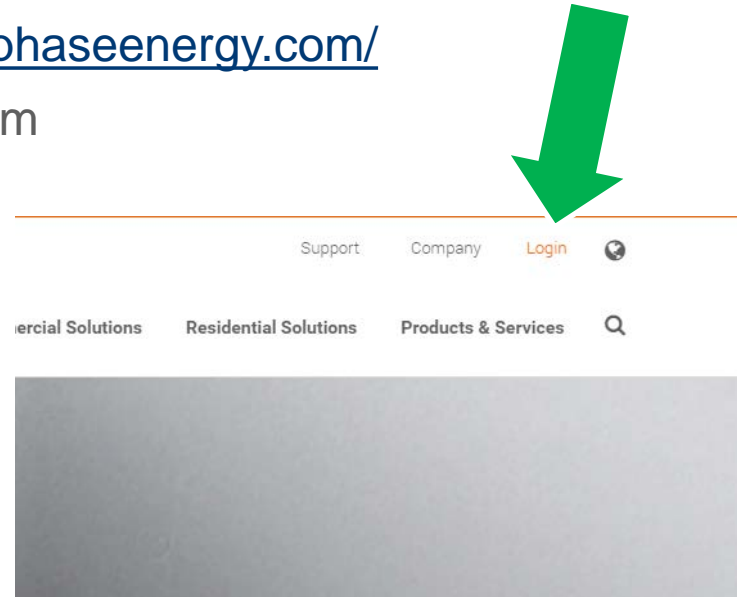
More Product Training:

Seminars, Webinars

<https://enphase.com/en-uk/events>

Enlighten Demo Account Login

- **Goto:** <https://enlighten.enphaseenergy.com/>
- **Email:** demo@enphase.com
- **Password:** Enlighten!





Annex : Microinverters

Microinverter System Components

Microinverters



Envoy



Accessories



Enlighten



Engage Cable



Installer Toolkit



Microinverter M215

- Peak Output Power: 225W AC
- Recommended max input power: 270W
- Operating Range: 16 - 48V
- Euro Efficiency: 95.7%
- Module Compatibility: 60-cell modules
- IP67 rated
- Warranty: 20 years



Microinverter M250

- Peak Output Power: 256W AC
- Recommended max input power: 310W
- Operating Range: 16 - 60V
- Euro Efficiency: 95.7%
- Module Compatibility: 60- and 72-cell modules
- IP67 rated
- Warranty: 20 years



Engage Cable : Specifications

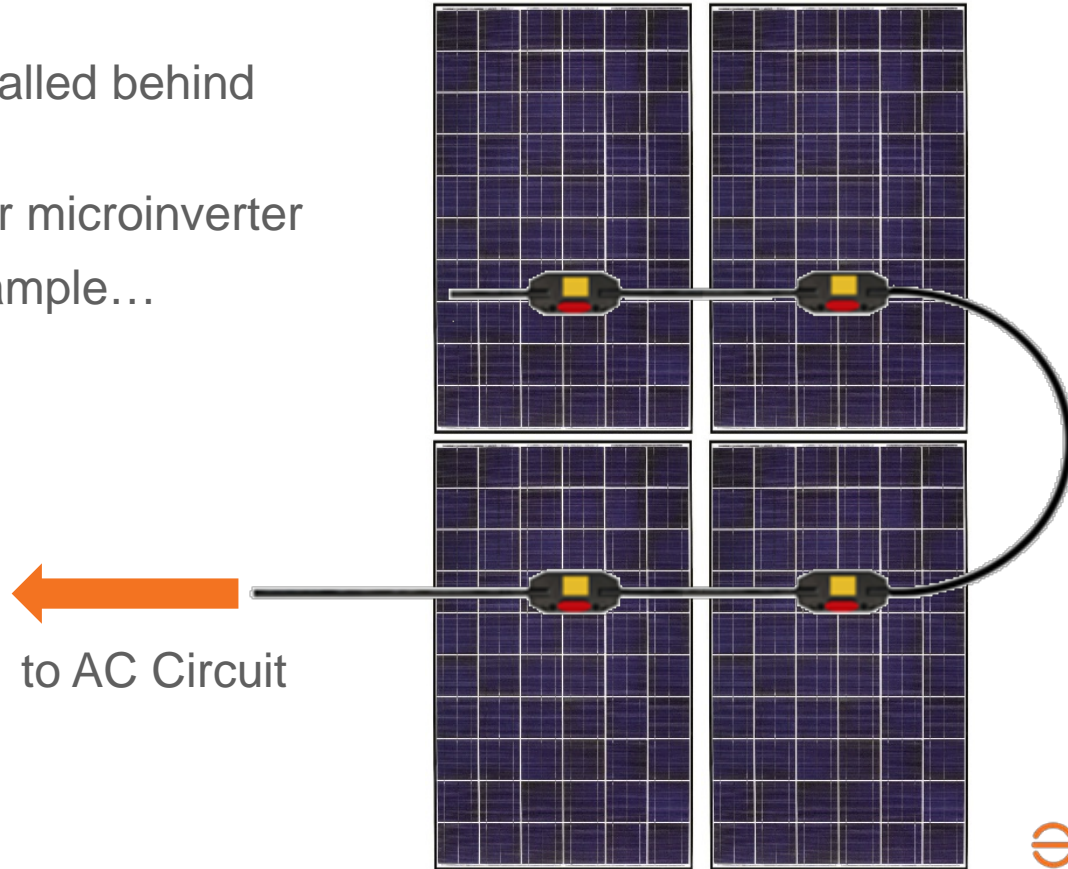
- Connectors at 1m Spacing for portrait
- 2.5mm², 3 core conductor
- Up-to 17 M215 on one branch
- 20A MCB Maximum
- Supplied with dust caps



More details: [datasheet link](#)

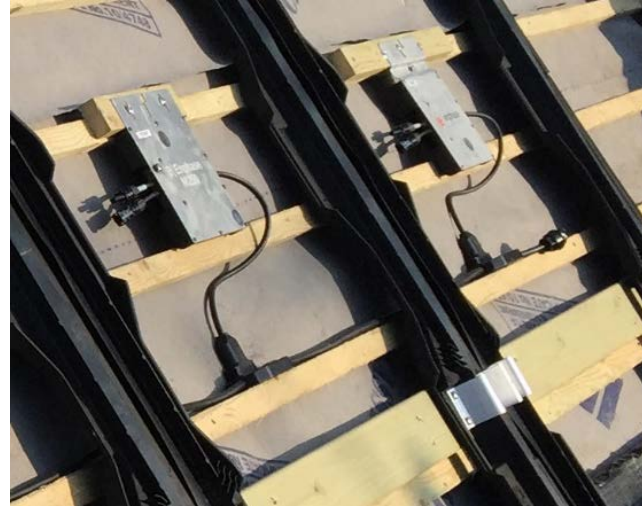
Engage Cable : Set out & Installation

- Engage cable installed behind modules
- One connector per microinverter
- 4x PV module example...



Engage Cable : Managing Cables

- With mounting rails use outdoor rated cable tiles
- With Inroof Integrations use the timber roof structure



Engage Cable : Accessories

Branch terminator

- Fitted at the end of the Engage cable branch



Disconnect tool

- Disconnecting AC & DC connectors



Engage Cable : Fitting Branch Terminator



Engage Cable : Connecting to AC Circuit

- Terminate directly to AC isolator fitted in loft
- T&E to consumer unit
- Extend AC cable as required on roof using an inline coupler
- Use an outdoor rated coupler (IP67 or higher) & AC cable



Example from Hylec

Connecting the Microinverters : DC

Connection with standard MC4 connectors

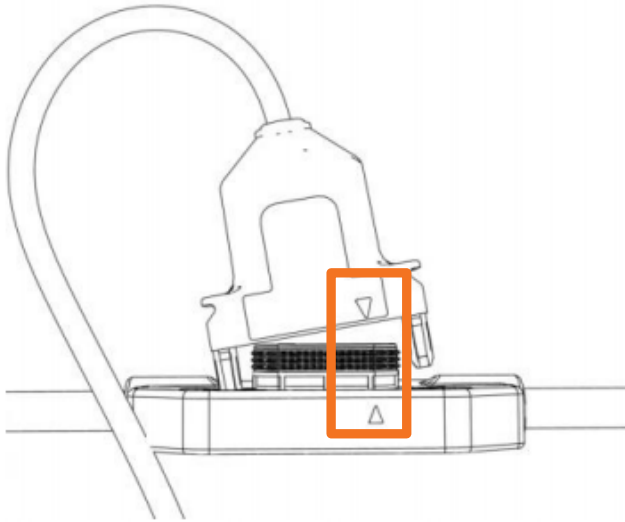
Check LED indicator after DC connection to PV module

- Six seconds after DC power is applied LED turns green
- Remains solid green for two minutes, followed by six green flashes
- After that, flashing red indicates that no grid is present



Connecting the Microinverters : AC

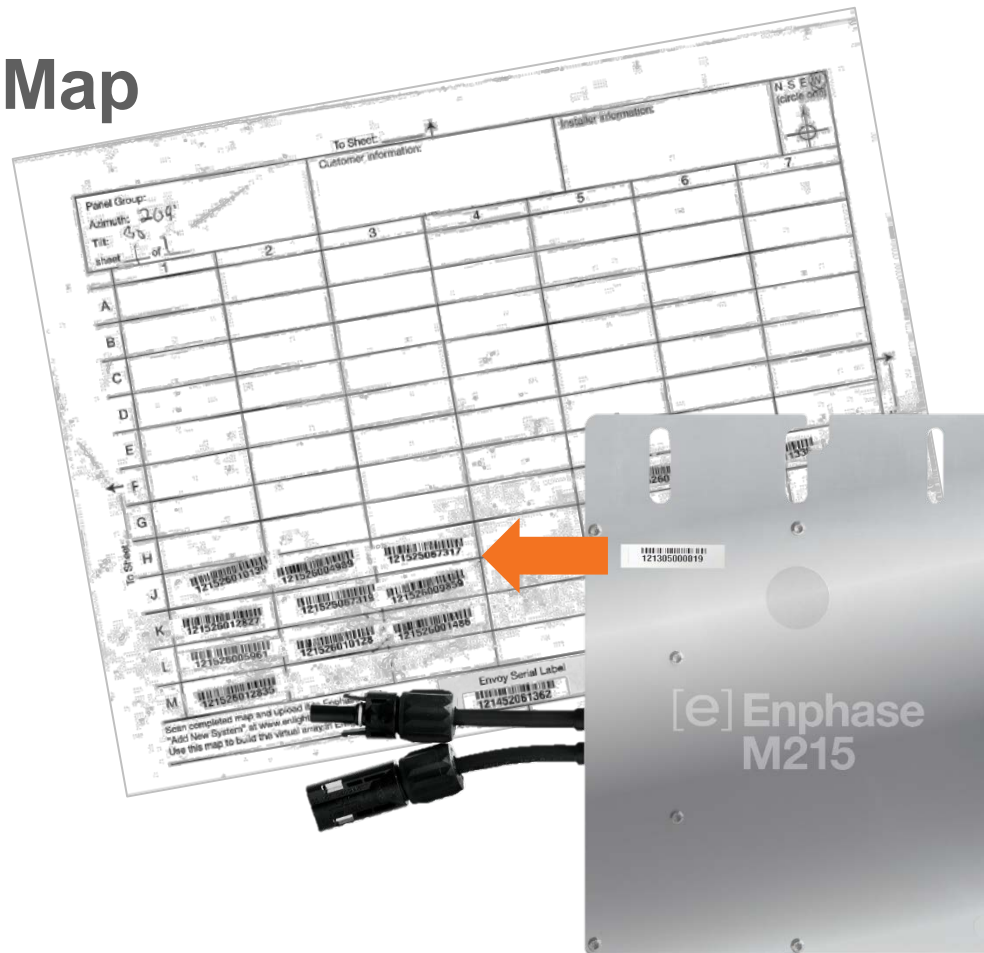
- Check arrows match up before plugging in... don't force it!
- Be sure AC connector clicks twice to make a good IP67 seal



Admin : Make an Array Map

Record microinverter locations using Serial Numbers

- Know how to find a faulty inverter if you have one
- Prepare for future upgrades with larger systems and/or monitoring



Envoy-S



Example Schematic

Microinverter site

