

March 20th 2020

Deploying two Envoys at the same site

Description

Enphase microinverter systems support a diverse range of installation outcomes.

The Envoy-S Metered is a monitoring and control communications gateway for Enphase microinverters.

The Envoy is required to be hard wired adjacent to the solar circuit(s).

Every Envoy is supplied with 1 x Production (solar) CT and 1 x Consumption (load) CT.

For consumption monitoring to be enabled, an Envoy requires each CT to be hard-wired from the respective CT location back to the Envoy CT terminals.

The Envoy performs the following functions:

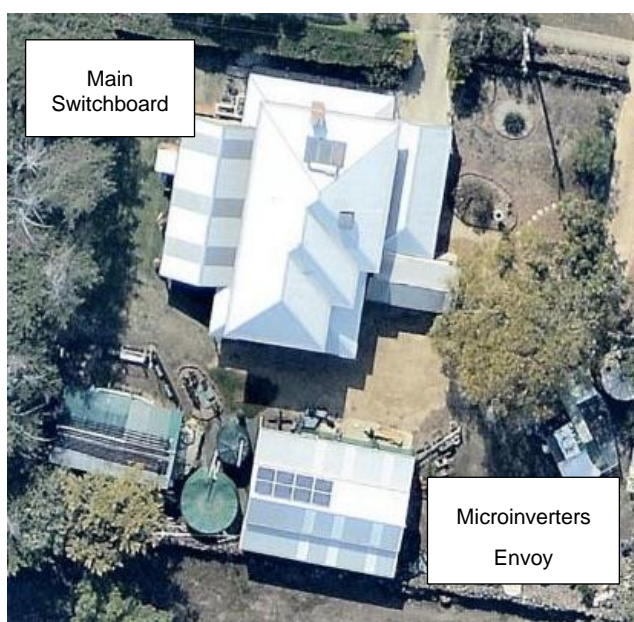
1. 'Talks' to each microinverter using AC Powerline signal.
2. Measures solar production and load consumption CTs to enable graphing in Enlighten Monitoring.
3. Measures solar production and load consumption CTs to Power ramp microinverters using AC Powerline signal for secondary control such as power export limiting and phase imbalance management

This technical brief provides recommendation for design and installation of Enphase system components for a specific use case:

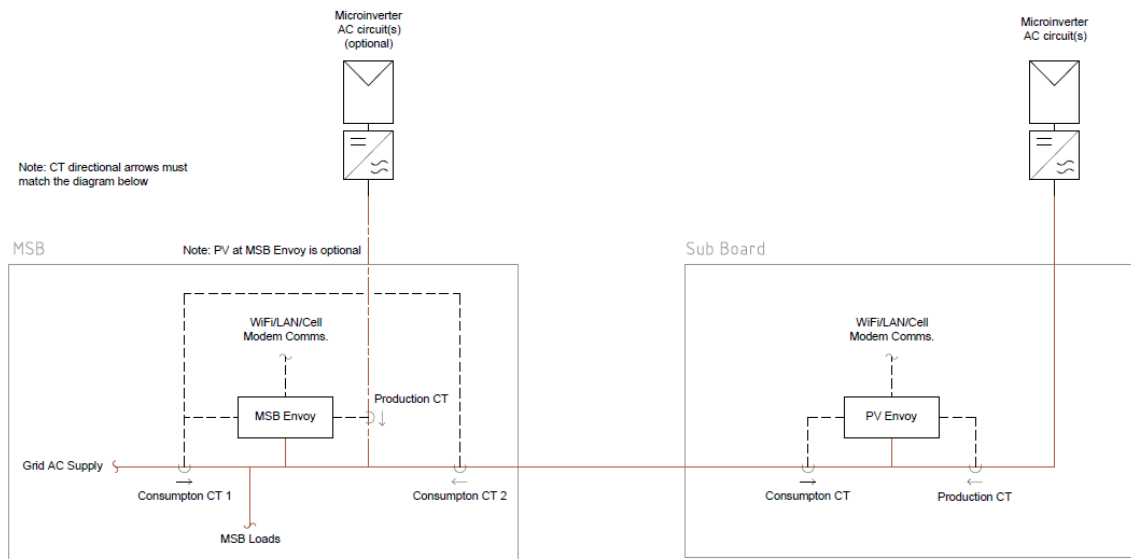
Technical Brief for installation sites where microinverters and the Envoy gateway are remote (Eg, installed at a garage with a sub-board), from where the main consumption loads are located. In other terms, where consumption CT's cannot be extended across the site.

LAYOUT EXAMPLE:

A common arrangement where the MSB is located in the main house, and solar installed onto the garage.



WIRING DIAGRAM:



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For export limiting to be enabled, only the MSB Envoy can be used to ramp down its associated micros, and each production and consumption CT **MUST** be wired directly back to the MSB Envoy. You cannot control or export limits the microinverters on the PV Envoy.

If there is only an MSB Envoy, then you will be relying on powerline communication from the Envoy to the furthest microinverter. In this scenario it is advised to put the production CT around the submain connection.

Design and Installation Steps: Two Envoys for Consumption Monitoring

In certain sites (e.g. The CT cabling cannot be extended between two buildings), multiple Envoys can be installed to gather total consumption data across the entire site

Description of requirements for single phase sites:

- Two envoys are required: 1 x Envoy at MSB (MSB ENVOY) and 1 x Envoy at the sub board (PV ENVOY) for the PV connection
 - **MSB Envoy:**
 - 2x CT's connected in parallel into Envoy consumption CT terminal.
 - 1x Consumption CT connected onto line side of the main switch, with arrow facing towards the loads and 1 x Consumption CT installed on the PV submain, arrow facing towards the MSB.
 - *A production CT should only be installed when the MSB has a solar circuit(s).*
 - **PV Envoy:**
 - 1x Production CT installed around solar supply circuit(s), arrow facing away from the incoming PV.
 - 1x Consumption CT installed on incoming sub mains, arrow facing towards the sub board.

The reversed CT on the **MSB Envoy** ensures that Enlighten subtracts the measured energy from the sub-board. Enlighten will now aggregate accurate data from each Envoy and combine graphs and report for the energy production and consumption of the site correctly, including any smaller loads from the **PV Envoy**.

Multiphase Application Note: One CT for each phase is required e.g. a three-phase site will require 6 CT's per Envoy one for each phase.

Commissioning Steps

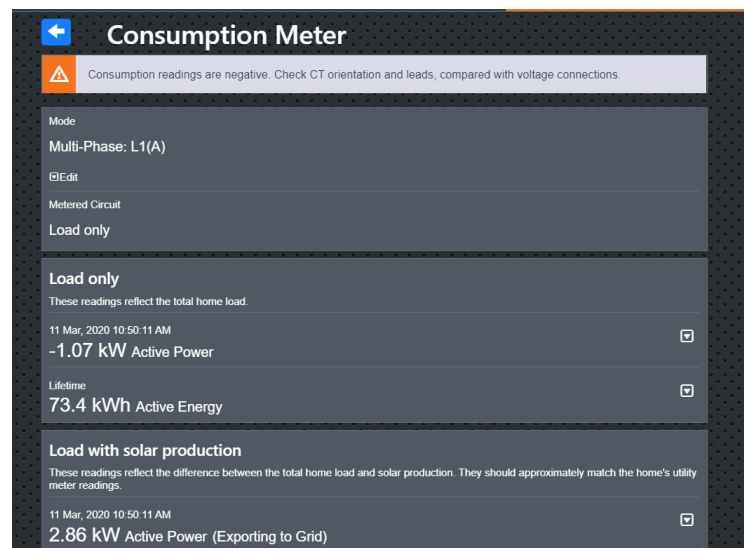
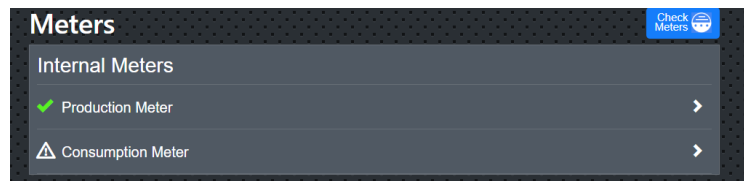
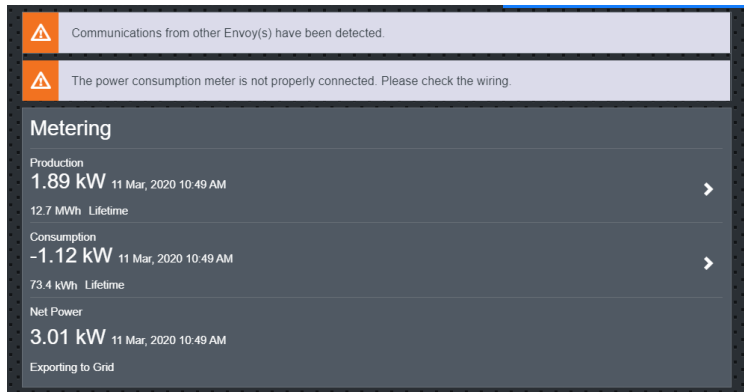
Step 1:

- Commission the PV Envoy with the micros associated to it first.
- Ensure that the MSB Envoy is OFF and solar circuits on the MSB are disconnected or isolated.

Step 2 - Installer Toolkit:

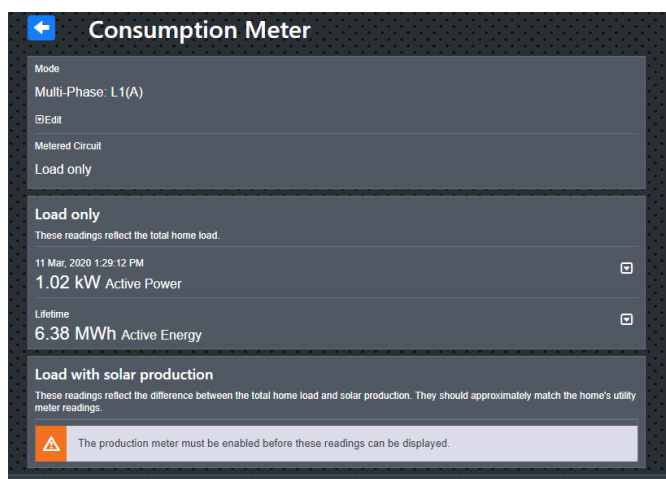
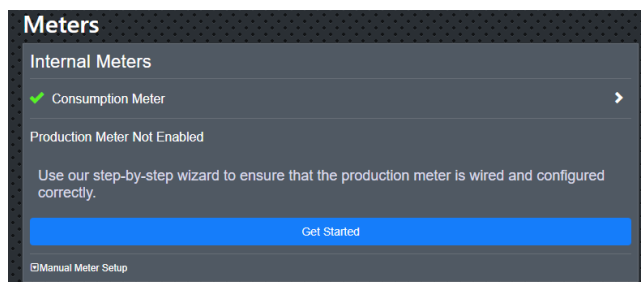
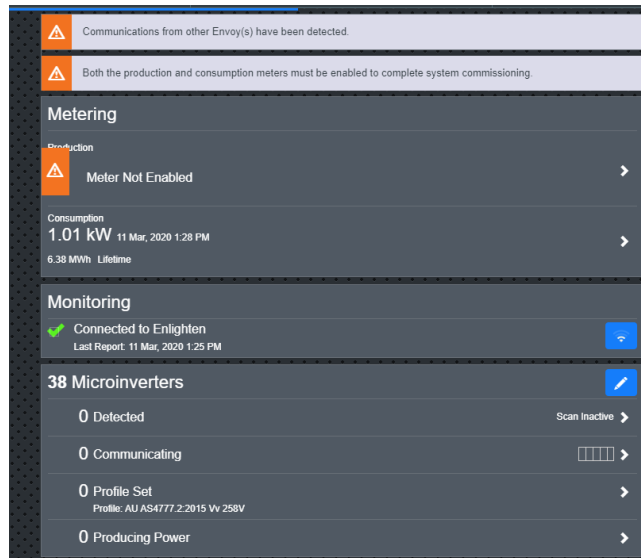
PV Envoy

- The PV Envoy should have Production and Consumption enabled with the Consumption being enabled as Net (Loads + Solar).
- As shown below, the PV Envoy may show the following alert notifications. These can be ignored.



MSB Envoy

- The MSB Envoy should be commissioned Production disabled, and Consumption enabled with Net (Loads + Solar) *when there are no microinverter circuit(s) at the MSB Envoy.*
- Enable Production Metering if you have microinverter circuit(s) on the MSB Envoy.
- The following alert Notifications may appear. These can be ignored.



Once the System has been commissioned onsite, and the online Activation completed, it will now display correctly in the Enlighten Manager System page.

Example of Enlighten data with MSB Envoy for consumption only

Envoy Communication Gateways

Name	Type	Connection	Last Report	Status
Envoy	800-00554-r03 (Envoy-S-Metered-EU)	Wi-Fi	03/19/2020 01:56 PM AEDT	Normal
Envoy	800-00554-r03 (Envoy-S-Metered-EU)	Wi-Fi	03/19/2020 02:15 PM AEDT	2 Issues

Production Meter

Meter Type	Part Number	Serial #	Lifetime Energy	Last Report	Status
Enphase Integrated Production Meter Multi-Phase: L1(A)	800-00554-r03		13.0 MWh	03/19/2020 02:15 PM AEDT	Normal
Enphase Integrated Production Meter Multi-Phase: L1(A)	800-00554-r03		0 Wh	08/07/2019 03:00 PM AEST	Not Enabled

Consumption Meter

Meter Type	Part Number	Serial #	Config Type	Lifetime Energy	Last Report	Status
Enphase Integrated Consumption Meter Multi-Phase: L1(A)	800-00554-r03		Load Only	6.45 MWh	03/19/2020 01:45 PM AEDT	Normal
Enphase Integrated Consumption Meter Multi-Phase: L1(A)	800-00554-r03		Load Only	75.0 kWh	03/19/2020 02:15 PM AEDT	Normal

