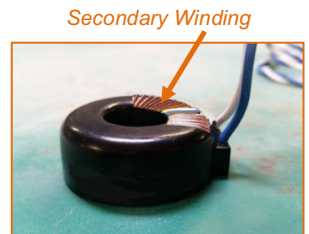# Quick Guide: Four Simple Guidelines for Successful Current Transformer Installation

This guide is for the solar energy professional who will install current transformers (CTs) with the Enphase Envoy-S Metered™. Refer to the Envoy-S Metered Installation and Operation Manual for complete installation instructions and safety warnings.

How CTs Work

The Envoy-S uses readings from CTs to report measurement data for energy production and energy consumption. When current transformers (CTs) are wrapped around a live wire, the current going through the wire induces a current in the CT's secondary winding. The current on the secondary winding is proportional to the current on the original circuit and is used for making measurements.
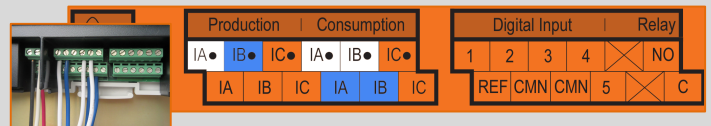

Secondary Winding

View of Internal Winding

Polarity Correctness

CTs have a specific polarity, which is determined by the direction of the secondary winding. It is important to maintain proper CT polarity in all installations, otherwise readings will be negative.
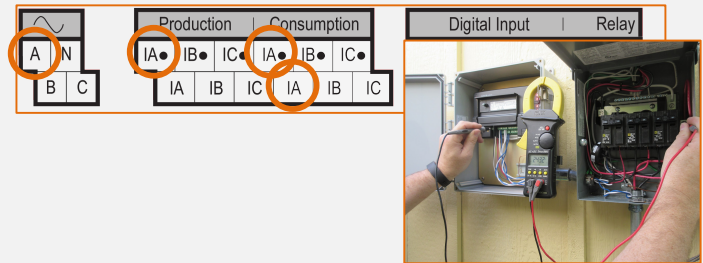
Guidelines

If your meter readings are incorrect, use these guidelines for troubleshooting.

1. CT wire leads must land on the correct terminals on the Envoy-S.
   (Note: AC Combiner Box wiring differs.)

2. The Envoy-S power terminal A and Line 1 consumption and production CTs must be fed by the same line (phases must match).
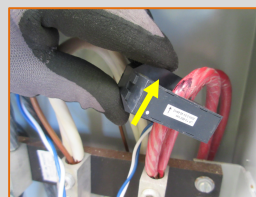
   To verify using a voltmeter, measure voltages between endpoints:

   - Power terminal A to Line 1 = 0V
   - Power terminal A to Line 2 = 240V

3. To ensure correct polarity, CT arrows must be pointing toward the loads.

   - For production CTs, toward the loads, away from the Solar PV.
   - For consumption CTs, toward the loads, away from the grid.

4. Meters must be enabled using the Enphase Installer Toolkit™ mobile app to report meter data to Enphase Enlighten™.

   - Select the consumption meter type based on where you installed the consumption CTs:
     - If the circuit includes "load with solar production", select **Net**, *or*
     - If the circuit includes "load only", select **Total**.
   - Enable both the production and consumption meter.