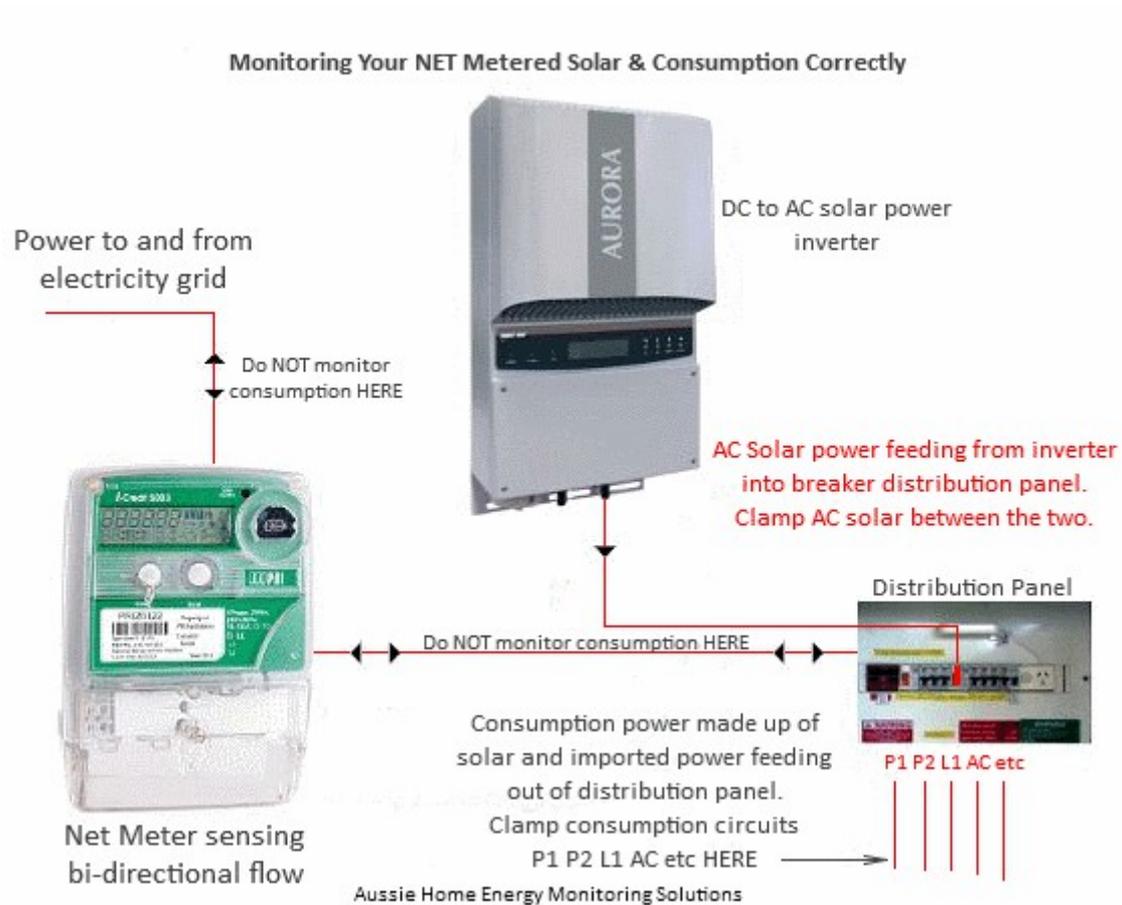


Correct Current Clamp Placement For NET Metered Solar And Consumption



Document Created : Because of client's frustration and ours after hearing of electricians NOT placing the current clamps in the correct place. For the successful monitoring of solar and total consumption power in a net metered environment, there are a few basic rules that need to be understood and followed.

The Goal : Is to reduce both client frustration and a revisit by the electrician to ZERO. Therefore all parties need to understand this document.

If you are the client, then please forward this document to your electrician!

CALL US At ONCE : If you the electrician DO NOT understand this document!

Single Flow & Bi-Directional Flow : It is important to note there are cables with single flow and cables with bi-directional flow in the power box. Bi-directional flow occurs especially between electricity meter and any distribution panel. Flow is marked on the above diagram by a < and > symbol.

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Multiple Power Distribution Panels : When there are multiple power distribution panels with solar power feeding into one distribution panel, then bi-directional flow needs to be found and understood 100%. Otherwise the placement of any current clamps for consumption power, will simply not be correct. See our Support page for more details on [MULTIPLE DISTRIBUTION BOARDS WITH SOLAR PV INSTALLED](#).

Current Clamp Basic Rule : No current clamp is to be attached to any bi-directional cable, when using the method in this document! See an **Alternate Method** for clamping the consumption cables [HERE](#). Current clamps ONLY measure the current flow in a one way direction correctly. Whilst the clamp itself can be installed 180 either way [as it does not know which way the current is flowing] it needs to be installed in the correct place.

Energy monitoring readings will make little sense if connected incorrectly. Leaving the client with rubbish data for both solar and total consumption power! Expect any error to show itself, when the solar power starts to generate.

The Client Is Logged In And Is Expecting Correct Clamp Placement : In most cases we configure our energy monitoring solutions for the client. Thus they are 'ready to go' out of the box, except for the placement of the current clamps. The client will be logged into the energy monitoring dashboard and be expecting correct readings after the correct placement of current clamps.

Incorrect Placement Of Consumption Power Clamps : This is the most common of incorrect clamp placement procedures, carried out by electricians so far.



This Is Incorrect!

This image clearly shows the position of the consumption power current clamps as being INCORRECT. The consumption power current clamps have been placed between the distribution panel and the electricity meter.

Clearly the solar power is feeding back through the consumption power current clamps, causing the consumption power to follow the solar power!

Please Think Again : If you THINK you know where to add the clamps, without understanding and following this document. As you will fail and join a number of electricians that have enjoyed revisiting an unhappy client!

You may be the professional electrician reading this, we are the Energy Monitoring Specialists offering you a helping hand for successful energy monitoring.

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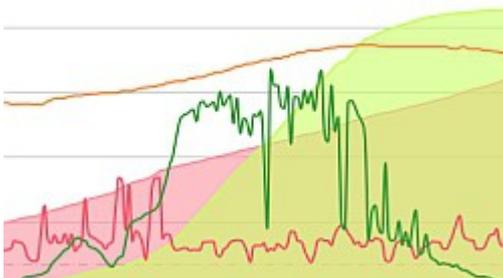
So let us make sure we are all on the same page.

Do This Correctly & It Works 100%

Important Facts To Note!

- Current clamps measure correctly current flow in one direction. Meaning the cable clamped must NOT have bi-directional current flow!
- Current clamps ONLY measure AC and NOT DC!
- NET metered environments **Consumption = Imported + Generated Power** ONE WAY flow to all appliances from the distribution panel!
- Current clamps SUM ALL cables clamped in any particular clamp
- Transmitters SUM ALL current clamps
- Transmitters may be marked with 1,2,3 for three phase applications. Keep ALL cables clamped for ANY phase in a particular clamp. DO NOT mix phases into one clamp as one phase can offset the other.

Correct Placement Of Consumption Power Current Clamps : This will result in the correct monitoring of solar power and consumption power in a net metered environment.



Installing the consumption power current clamps correctly, will result in the consumption power NOT following the solar power, as shown here.

All good to go now for knowing:

Generation : Consumption : Import : Export

This Is CORRECT!

Where To Clamp The Solar Power : The solar power inverter's red live AC output cable is wired directly into a breaker switch, often located in the power distribution panel. This means solar power will be feeding out of the panel and back to the grid via the electricity meter. The solar power can be correctly clamped anywhere between the inverter and the solar power breaker switch. Current flow in this cable will be one way from the inverter into the breaker switch.

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Where To Clamp The Total Consumption : Remember this is the part where electricians make the error! For successful consumption power monitoring any consumption clamp/s will need to be ONLY attached on the output side [output

meaning going to the appliances] of the distribution panel. Thus allowing for ALL power to flow in a one direction ONLY to the appliances in the home.

An example is to clamp P1, P2, L1, AC, Hot Water, Pool Pump, Cooker etc etc.

Why Two Consumption Clamps? : For single phase homes we often supply two current clamps for total consumption power circuits. This allows for all circuits / situations to be covered. There may be difficulty with one clamp or cables for the hot water may be some distance away. ALL clamps will be SUMMED by the transmitter.

Consumption power will be a total of the ever changing % of imported power and generated solar power during the sunny hours of the day! At night simply imported power and any from batteries.

Do not be concerned about connecting the consumption power clamps in this way, if different from your beliefs. As it is 100% correct for the all of the energy monitoring solutions we offer.

Transmitter And Current Clamp Basics : Each transmitter will SUM all the current clamps [maximum of three] connected to it. In single or three phase environments.

Clamping 3Ph And 1Ph Circuits : Consumption current clamps as mentioned are placed on the outgoing side of the fuse / breaker array. Importantly ALL 3Ph circuits EACH need the same phase to go into a particular current clamp for that phase. The transmitter has clearly marked inputs.

Please mark the clamps 1,2,3 if this will help you. ALL 1Ph circuits need to go into the clamp that supports that particular phase the single phase appliance is connected to. If you cross phase you run the risk of one phase cancelling out the other.

You may further want to note what circuit / appliance is in each current clamp, if you are using any application that shows you the power for each phase / clamp. Currently this facility of seeing each phase is only available via the Energeniaal / CC 128 Professor Windows based PC software. Currently NOT available via any online energy monitoring dashboard.

Remember We Created This Document : Primarily to help you! After initially hearing back to many times from our energy monitoring client, that clamps were not installed in the correct place by the electrician! Simply not funny!

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Amusingly though we have seen the current clamps sited :

- For solar power sited on the feed to the shed instead! After a five hour one way trip to the client!
- The DC power instead of the AC power! Yet again the electrician had left site and had to return!

She Will Be Alright Mate! : Well that approach does not and will not work! Failed to many times already! This document does work though!

Do This Correctly As It Works 100%

The Kettle Test [Current Clamp Placement Final Test] : Carried out before the electrician leaves site, is a simple 'kettle test'. Power up the kettle noting consumption readings rising a couple of kilowatts. Making importantly sure the solar feed does not change, due to this action.

Checking the inverter's output against the dashboard will confirm solar power correctness as well! Enjoy :)

See an **Alternate Method** for clamping the consumption cables [HERE](#).

Happy Energy Monitoring & Savings!