



Solar Relay

Cloud Tethering Guide

Cloud Tethering refers to the configuration of the CATCH Solar Relay to get its power data from the internet rather than a local CT.

Before reading this guide, we advise you to check out the **Solar Relay Electricians Guide** available on our website.

CATCH Power

A trademark of Project H Pty Ltd

180 Dumaresq Street

Glen Innes

NSW 2370

Australia

Ph: +64 2 5700 5717

W: www.catchpower.com.au

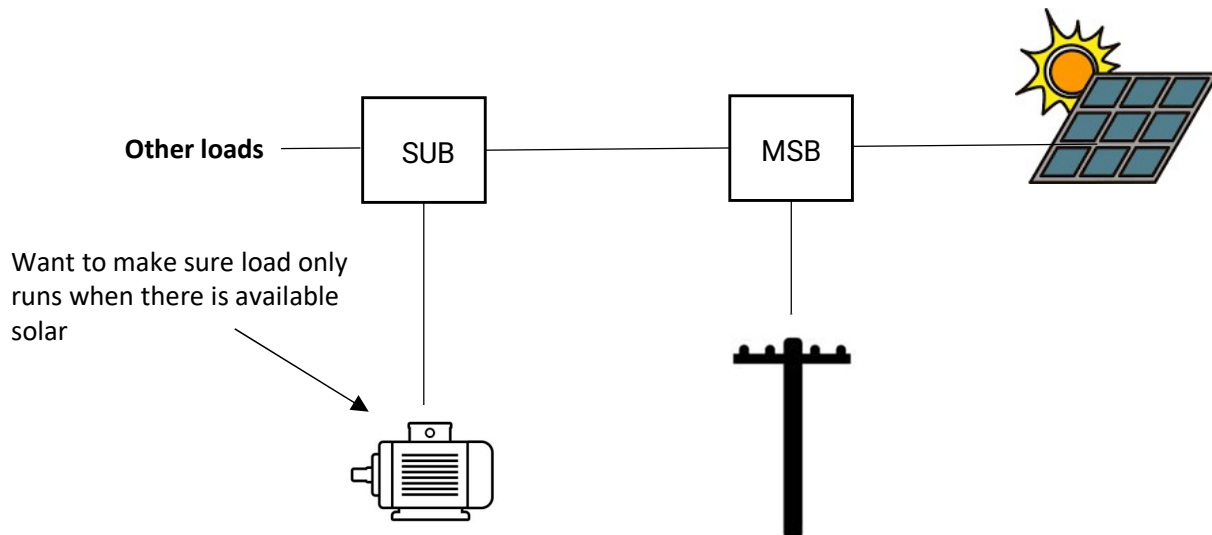
E: sales@catchpower.com.au

Why Cloud Tether at all?

Before digging into the nuts and bolts of Cloud Tethering I thought I should go through some scenarios where cloud tethering will help solve a problem.

Scenario 1: A remote circuit that needs to be load controlled

Ever had a circuit on a sub board that has a load you want to keep under the solar curve. Pool heaters, etc are prime examples of this. Cloud tethering makes this possible.



You only want to turn the motor load on and off based on solar exports, so you cannot switch the submain from the Main Switchboard.

Scenario 2: multi phase (including Split Phase) load control

Poly phase meters will sum the power across all phases and that is what the customer is charged. For example:

In a 3 phase site.

Phase 1:	1kW import
Phase 2:	2kW import
Phase 3:	5kW export

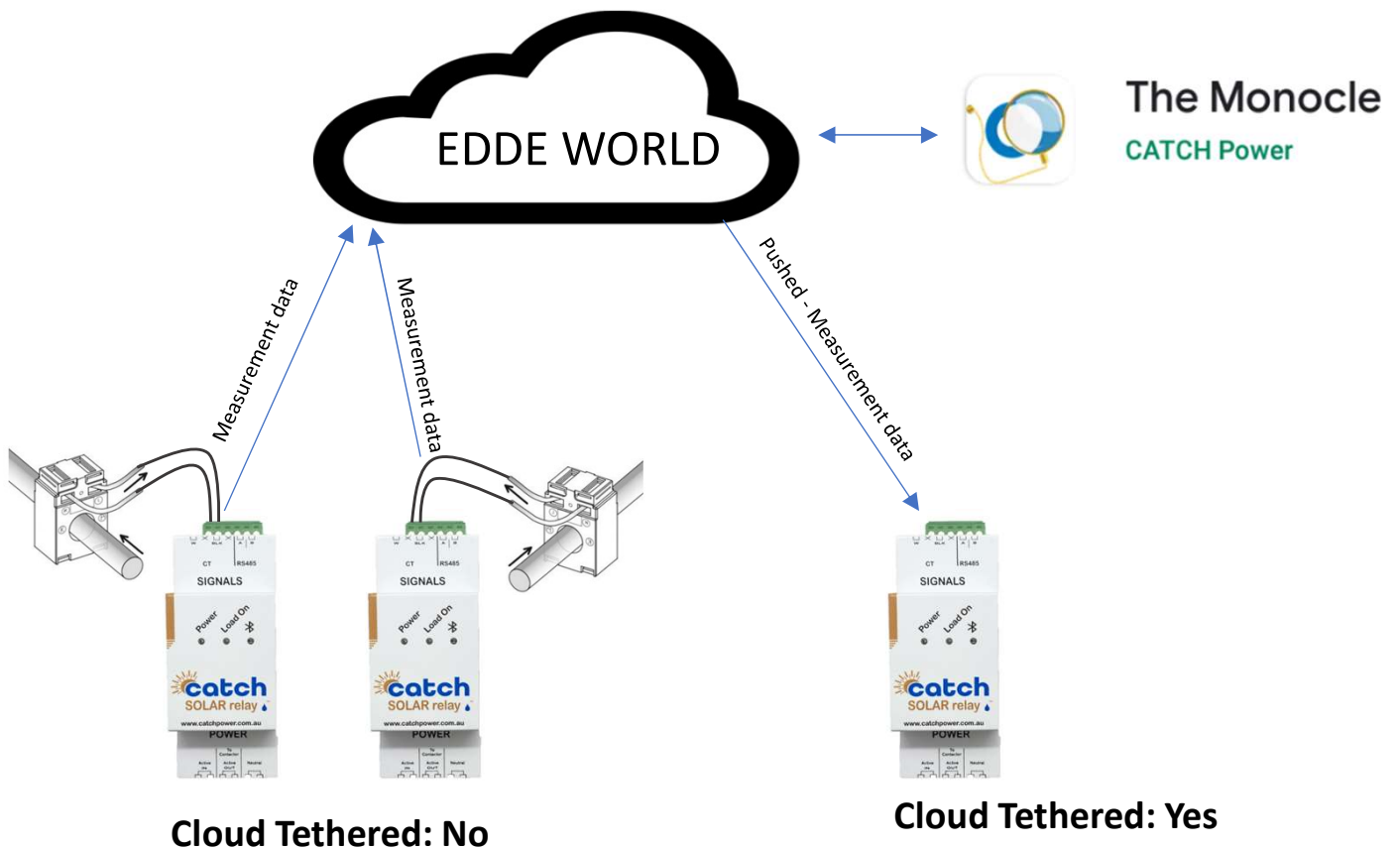
Net	2kW export

This site has 2kW of exporting solar that can be re-routed into a load in the house. But you only know that if you measure and sum all the power across all three phases.

[A Cloud Tethered CATCH Solar Relay can control loads based on the sum of all the phases.](#)

How does Cloud Tethering Work

- When you connect a CATCH Solar Relay to the internet, all of its power readings are sent to our cloud platform. We call the cloud platform EDDEWORLD.
- Normally the CATCH Solar Relay relies on measurements from its CT's to perform its load control and inverter control functions.
- If you tell a CATCH Solar Relay to become Cloud Tethered, the relay stops using its CT's and uses measurement data received from our EDDEWORLD Cloud platform.



Cloud Tethered: No

These devices use the CT readings to perform load control and inverter control. The measured data is sent to the EDDE WORLD

Cloud Tethered: Yes

This devices uses the measurement data from EDDEWORLD to perform its load control and inverter control operations.

Before Getting to Site

1 - Getting the right software on your phone.

You will need **BOTH** of these.. Download them from your phone's app store.



CATCH Power Configurator
CATCH Power



The Monocle
CATCH Power

The “**CATCH Power Configurator**” is used for setting up the hardware while you are on site.

“**The Monocle**” is the CATCH Power monitoring platform used by you and your customer for consumption monitoring and load control. The monocle is your window into EDDEWORLD, our cloud platform.



ARE YOU UP FOR THE CHALLENGE?

Throughout this manual we assume you are a **CUTTER** quality electrician. If you are scratching your head wondering how to download an app onto your phone you may want to give this job to somebody else...it only gets more technical from here.

Before Getting to Site

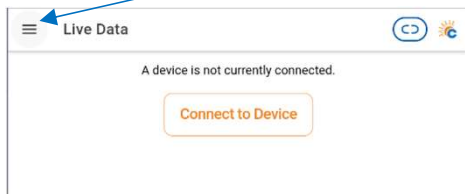
2 – Create your Configurator Account



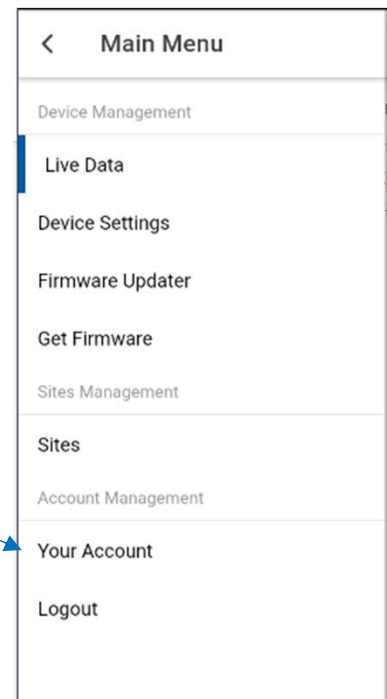
CATCH Power Configurator
CATCH Power

Use the CATCH Power Configurator App on your phone for this...open it.

1. Click on the menu button on the top left.



2. Click Here



Before Getting to Site

2 – Create your Configurator Account...Cont'd

3. If you already have a Configurator account put the username and password in here.

Account Access

Login

Email

Password

Log in

Other Actions

- Enter Access Code >
- Request Access Code >
- Create Account >

4. Need to create a new Account?



SUGGESTION!!

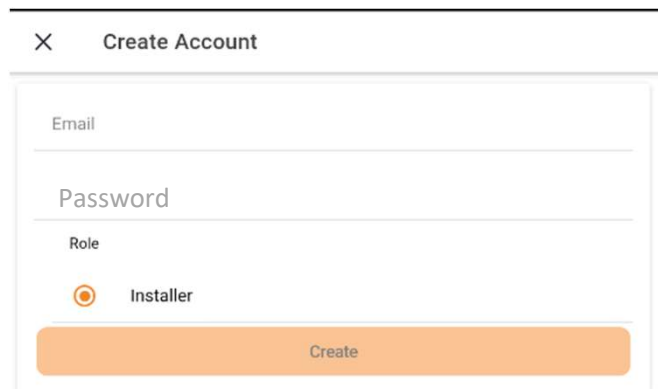
If you have multiple contractors doing work for you then we suggest you create a single company wide account and have everybody log in using that account..

we aren't NETFLIX, we are happy for you to share.

Before Getting to Site

2 – Create your Configurator Account...Cont'd

5. You know what to do here... Username and password please.



X Create Account

Email

Password

Role

Installer

Create

**AND YOU ARE DONE...
OFF TO SITE WE GO.**



IMPORTANT!!

Check your email address before pressing save...an incorrect email address is going to mean you miss out on heaps of cool features...



AUTO LOGIN

The configurator will keep you logged in for a few days, but for security reasons it will ask you to re-login every now and then, so you need to store the username and password away somewhere. You might be cutter Spec, but you're not superman/woman, you will forget the login details for sure.

Hardware Installation Overview

A cloud Tethered installation will have 2 or more CATCH Solar relays involved. These relays are broken down into two functional groups.

- **Data Collection Relays.** These relays will have CT's attached to them, and their measurement data is sent to the EDDEWORLD cloud platform.
- **Tethered Control Relays** – These are the relays receiving measurement data from EDDWORLD and controlling loads and inverters based on that data.



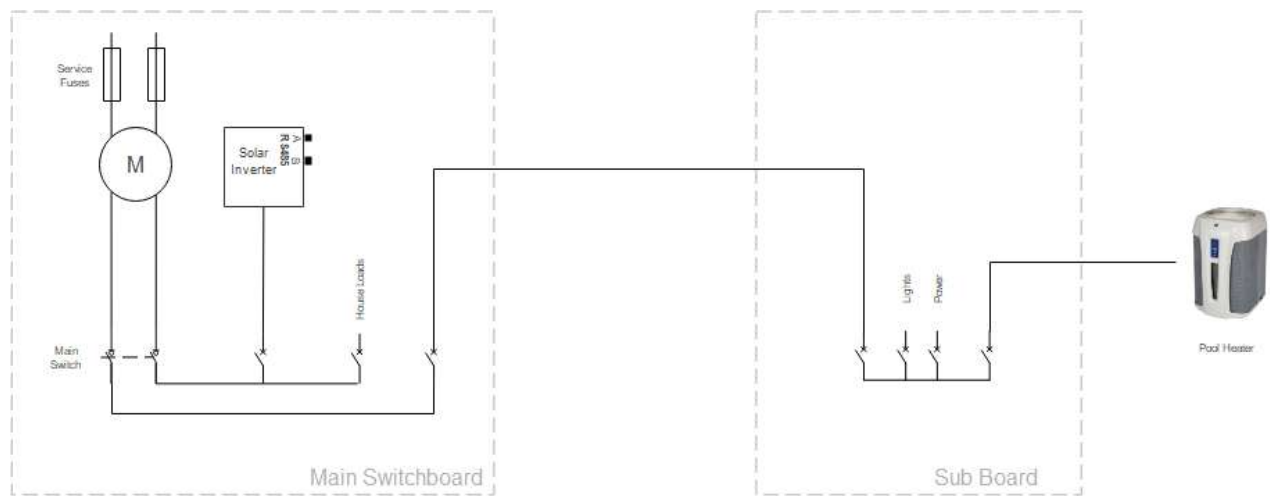
TETHER FUN FACT

A single relay can operate in both of these groups. For example you may wish to setup a tethered control relay to turn a motor on, but you may also want to report the motor consumption data into EDDEWORLD. You can do this by attaching a CT to the tethered relay and the data will be sent into EDDEWORLD.

Hardware Installation Overview

To demonstrate the installation process we are going to use an example. The single line diagram outlines the site electrical connections.

We will build our installation using this line diagram as a baseline.



Site Highlights:

- Site is split phase (2 Phase)
- 6.6kW Solar installed on one phase.
- Sub board located at pool house.

Design Objective:

Maximise self consumption of solar by running pool heater when there is enough solar to do so, then run the Pool heater after 10pm (off peak time) if required.

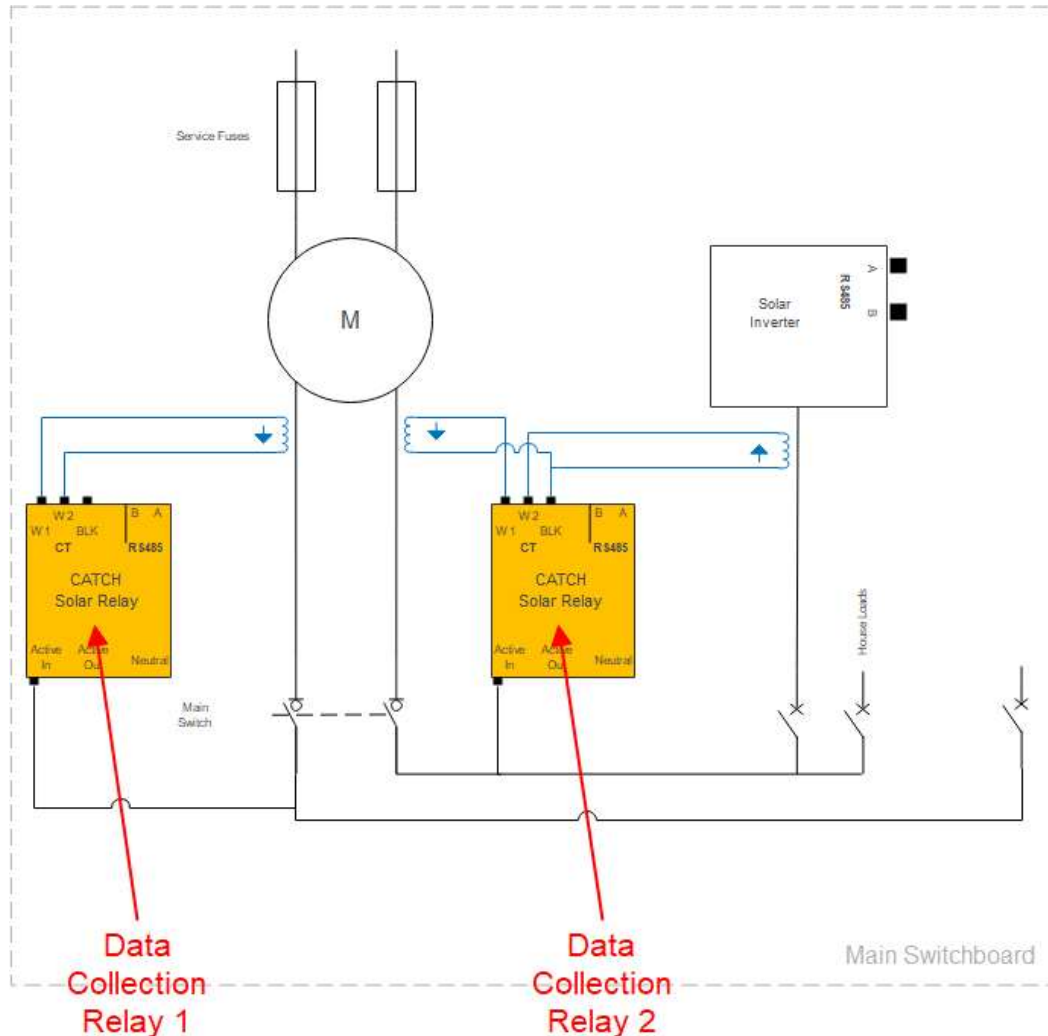
Hardware Installation Overview

Installation Steps.

1. Install 2 x data collection relays (one per phase) to measure each mains phase.
2. Install Tethered control relay to control pool heater.

Step 1 Data Collection Relays

Installation 2 x Data Collection Relays.



- This diagram only shows the key connection points.
- See “Solar Relay Electricians Guide” for detailed instructions on installing each relay.
- These two relays are to be installed as per a standard relay. The only change is with the configuration which is outlined on next page.

Cloud Tethering can only occur amongst relays that are connected to the internet and have been attached to the same site within the Configurator app. The first step is to create a new site as per the “Solar Relay Electricians Guide”. Once done following the steps below

Step 1 Data Collection Relays

Channel Types and Names

In the next step you will register the relays. But before you do we should discuss channel Types and channel names, just so that the setting make sense.

Channel Types:

There are three channel types available when setting up a CATCH Solar Relay.

MAINS:

This channel type indicates the CT is wrapped around a wire that passes through a revenue meter. There can be more than one relay and more than one channel on a relay configured as a MAINS channel. When this happens ALL of the MAINS channels are summed together to create a consolidated view of the MAINS power flow.

SOLAR:

This channel type indicates the CT is wrapped around a wire that carries solar energy only. There can be more than one relay and more than one channel on a relay configured as a SOLAR channel. When this happens ALL of the SOLAR channels are summed together to create a consolidated view of the SOLAR generation.

OTHER:

This channel type indicates the CT is wrapped around a load wire. There is no special rules or logic tied up with the OTHER channel type.

Channel Names:

If you want to see the power data of a specific channel appear in the MONOCLE you need to give it a name.

The name assigned to a channel is also made available to a relay when it is being configured for Cloud Tethering.

Step 1 Data Collection Relays

Attach Data Collection Relay 1 to the site

1. Type in device serial number and model

if you are connected to the device via Bluetooth these values will default for you.

2. Specify the channel types

Relay 1 is monitoring one of the two mains phase. By Giving it a type of **Mains**, we are adding all measurement data to a consolidated Mains channel. And by also giving it a name we can see this channel by itself as well.

Channel 2 is not monitoring anything, so we give it a type of Other and do not provide a name.

The screenshot shows the 'Add Device' screen in a mobile application. It features several sections with blue headers: 'Device Identity' containing 'Device Serial Number' (9010) and 'Device Model' (CATCH RELAY WIFI e-series (100...)); 'Channel One' with 'Type' (Mains) and 'Name' (Phase1); 'Channel Two' with 'Type' (Other) and an empty 'Name' field; and 'Device Controlling' with 'Controlling Load' (True) and 'Controlling Inverter' (True). A 'Submit Device' button is located at the bottom. A blue arrow labeled 'Scroll down' points from the 'Channel One' section to the 'Channel Two' section.

**Press "Submit Device"
And you are done with Relay 1.**

Step 1 Data Collection Relays

Attach Data Collection Relay 2 to the site

1. Type in device serial number and model

if you are connected to the device via Bluetooth these values will default for you.

2. Specify the channel types

Relay 2 is monitoring the other mains phase. By Giving it a type of **Mains**, we are adding all measurement data to a consolidated Mains channel. And by also giving it a name we can see this channel by itself as well.

Channel 2 is monitoring the solar production for the site, so we give it a type of Solar. In this case there is only one solar channel for the site so we don't need to give it a name.

The screenshot shows the 'Add Device' screen in a mobile application. It is divided into several sections:

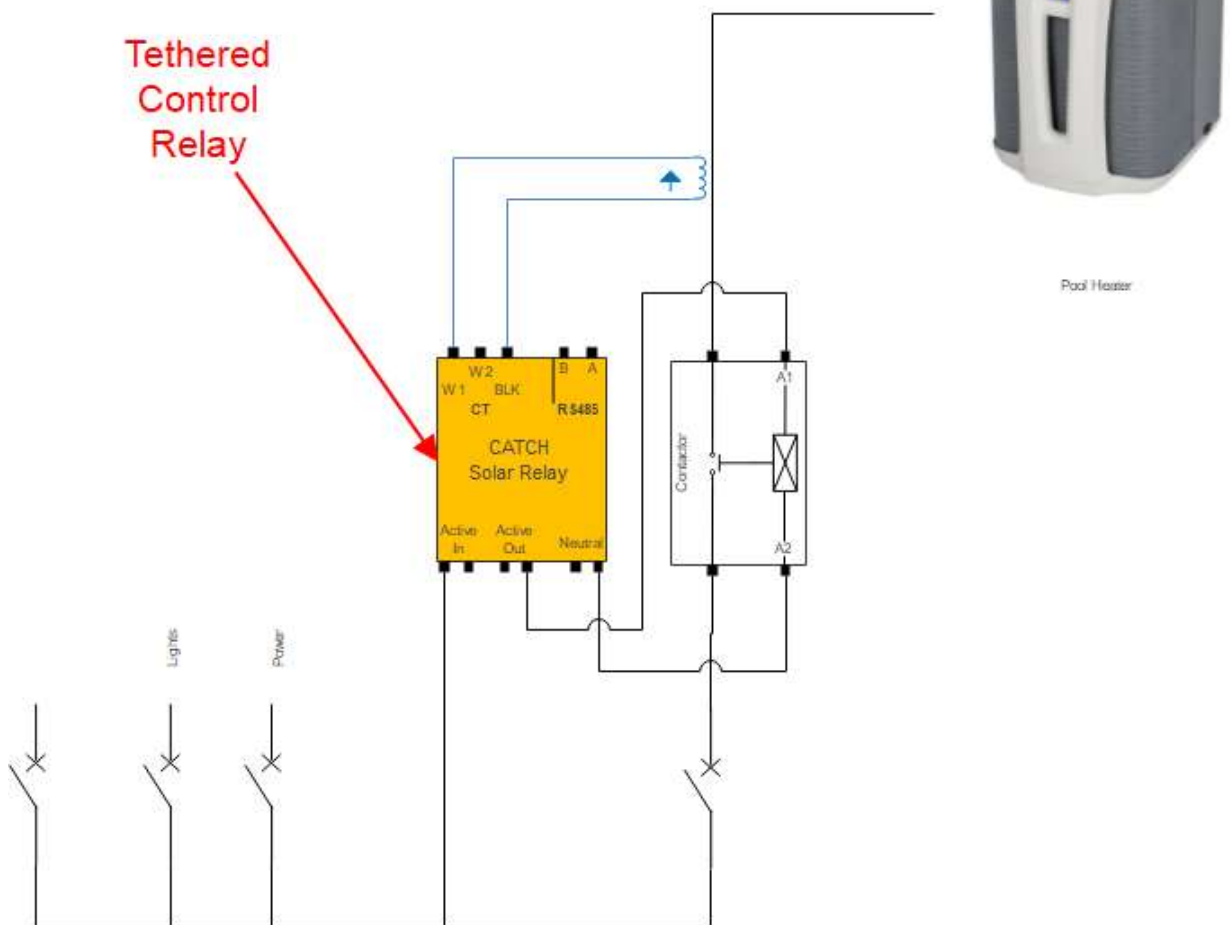
- Device Identity:** Contains fields for 'Device Serial Number' (value: 9011) and 'Device Model' (value: CATCH RELAY WIFI e-series (100...)). There is also a 'Device Notes' field.
- Channel One:** Contains a 'Type' dropdown menu set to 'Mains' and a 'Name' field set to 'Phase2'.
- Channel Two:** Contains a 'Type' dropdown menu set to 'Solar' and an empty 'Name' field.
- Device Controlling:** Contains two dropdown menus: 'Controlling Load' set to 'True' and 'Controlling Inverter' set to 'True'.
- At the bottom, there is an orange button labeled 'Submit Device'.

A blue arrow labeled 'Scroll down' points from the 'Channel One' section to the 'Channel Two' section.

**Press "Submit Device"
And you are done with Relay 2.**

Step 2 Tether Controlled Relay

Install Tethered Control Relay



- This diagram only shows the key connection points.
- See "Solar Relay Electricians Guide" for detailed instructions on installing this relay.
- This relay is to be installed as per a standard relay. The only change is with the configuration which is outlined on next page.

Step 2 Tether Controlled Relay

Configuration Steps.

1. Follow the “Solar Relay Electricians Guide” configuration steps, including getting the relay connected to the WiFi network and connecting the relay to the site.
2. Set up the Device Channels.
3. Configure Cloud Tethering.

Step 2 Tether Controlled Relay

Attach Cloud Tethered Relay to the site

1. Type in device serial number and model

if you are connected to the device via Bluetooth these values will default for you.

2. Specify the channel types

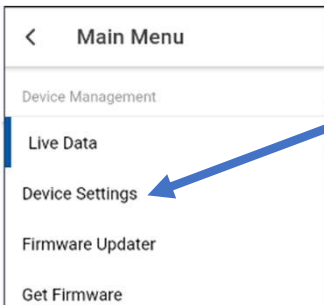
This relay is monitoring the Pool heater load. It is also controlling this load. By Giving it a type of **Other**, and a name of "PoolH" we will see this load in the monacle.

Channel 2 is not monitoring anything, so we give it a type of Other and do not provide a name.

The screenshot shows the 'Add Device' screen in a mobile application. It has a dark theme with blue and orange accents. The top section is 'Device Identity' with fields for 'Device Serial Number' (9012) and 'Device Model' (CATCH RELAY WIFI e-series (100...)). Below that is 'Channel One' with 'Type' set to 'Other' and 'Name' set to 'PoolH'. The next section is 'Channel Two' with 'Type' set to 'Other' and 'Name' blank. The final section is 'Device Controlling' with 'Controlling Load' and 'Controlling Inverter' both set to 'True'. A blue arrow labeled 'Scroll down' points from the 'Channel One' section to the 'Channel Two' section. At the bottom, there is an orange 'Submit Device' button.

Press "Submit Device"

Configure Cloud Tethering



Use the top left menu to navigate to device settings.

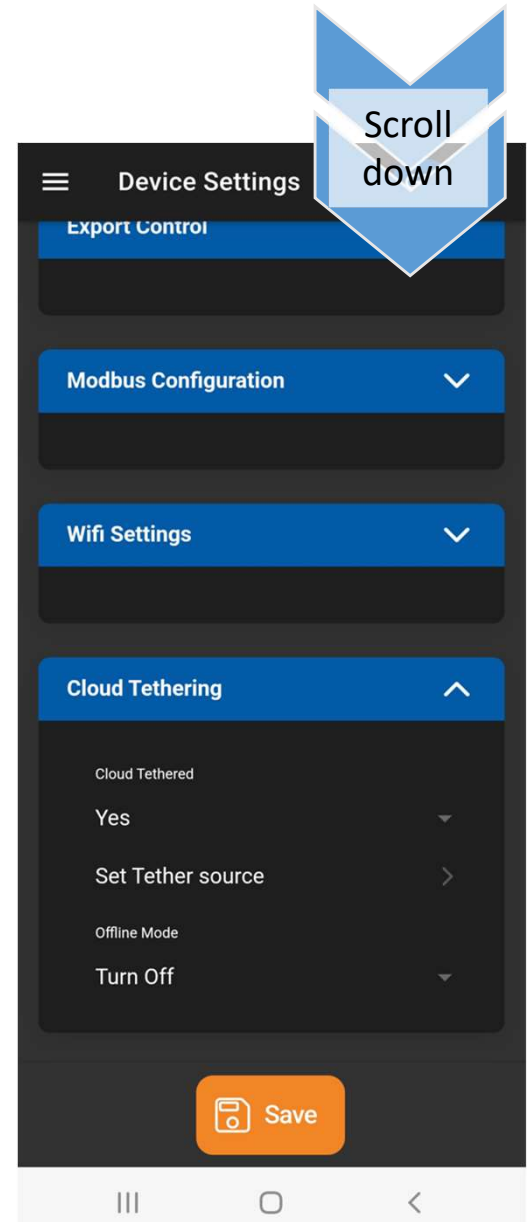
Expand the **Cloud Tethering** panel.

Cloud Tethered: Yes. This turns cloud tethering on for the device.

Set Tether Source: will take you to a screen where you can choose the EDDEWORLD channel you want to use to control the relay.

Offline Mode: Determines what to do if the relay loses the internet connection. There are three Options: Turn On, Turn Off, Hold Current.

Hold Current tells the device to keep doing what ever it was doing at the point it lost the internet connection.



In order for cloud tethering to be enabled you need to make sure Cloud Tethered = Yes, and you have chosen a tethering channel.

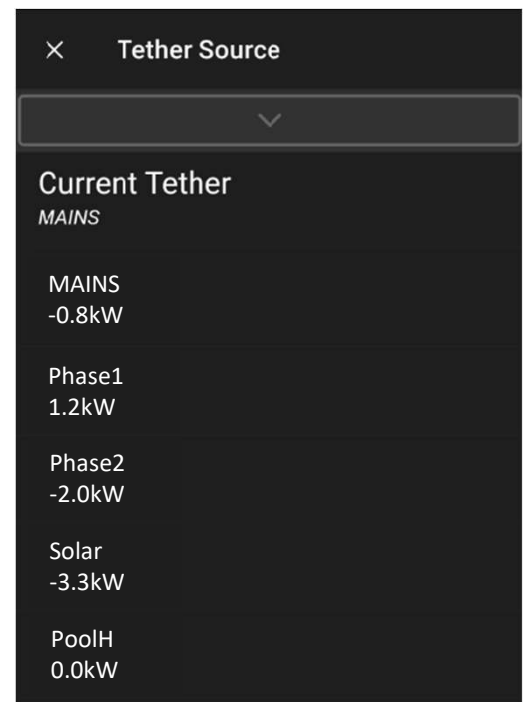
Configure

Cloud Tethering

Choosing a Tethering Channel

It can take up to 60sec for the tethering channels to appear in this screen. Just swipe down to keep refreshing. Once the channels appear you will see all of the channels you setup in the previous device configurations will appear here. Notice in this example that MAINS = Phase1 + Phase 2, which is exactly what we wanted.

In this example we want to control the pool heater based on the Mains power flow so we choose MAINS as the channel. But you can choose any channel in this list.

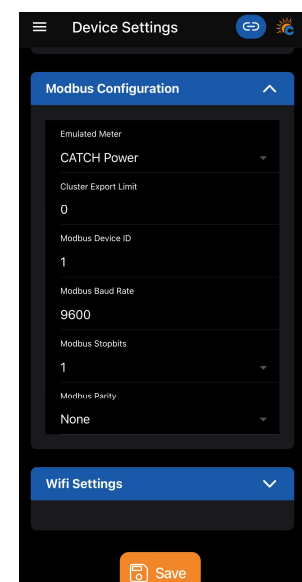


Cloud Tethering – Inverter Control

For Cloud Tethered Inverter Control (emulating an energy meter), simply choose the brand of inverter that the Relay is emulating as per the image.

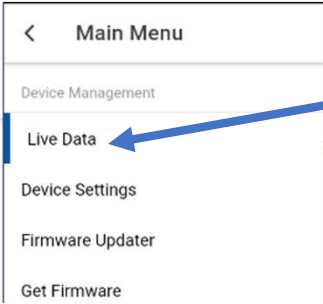
This is the same process as if directly connected to the inverter via RS 485.

Refer to the Electricians Guide for more information.



Configure Cloud Tethering

Check Tethering is working



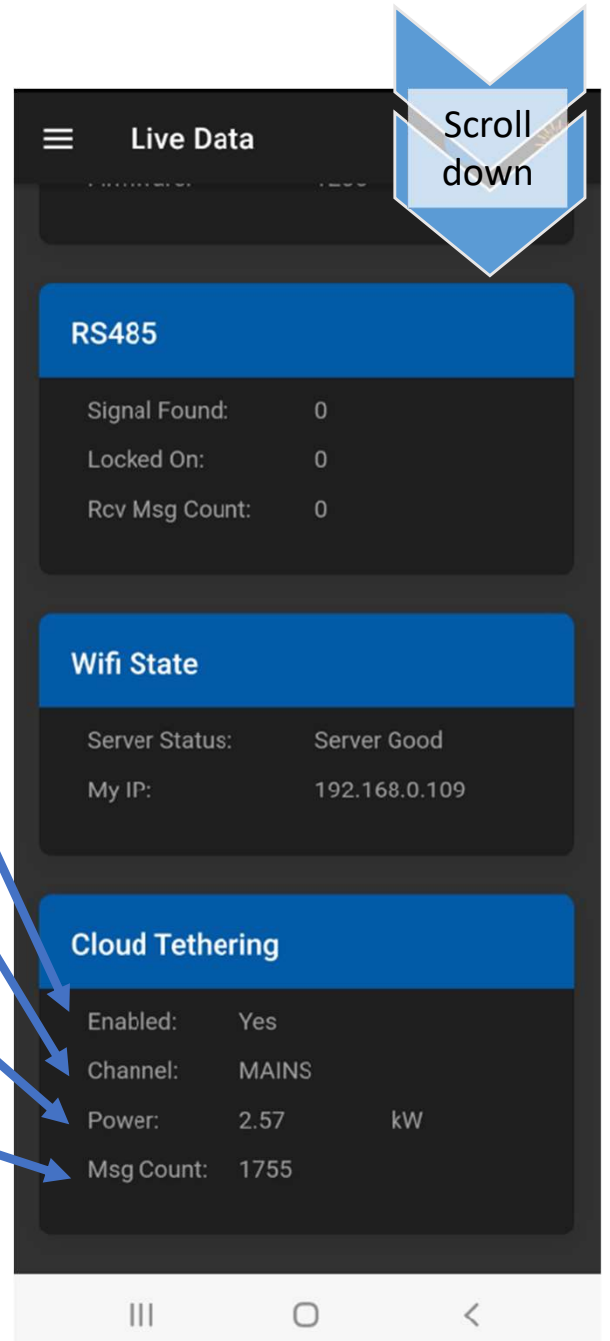
Go to the Live data screen

Cloud Tethering
has been turned on

The channel chosen
for control

The current power
reading for the
channel

The number of power
measurements that have
been pushed to the device.
You can use this as an
indicator of the quality of the
connection. One message
every 1.5sec should be
received.



IMPORTANT NOTES!!!

- Cloud Tethering requires ALL relays to have a strong reliable internet connection.

WHY?

- Cloud tethering data will not be sent to the relays unless ALL devices registered for a channel are online and sending data.

Example:

If Relay 1 in our example was no long online. Then the tether controlled relay will not receive any data from the servers.

- If a relay has not received any tether data from our servers within 15sec it will treat itself as being disconnected, and the default mode of operation will take over control.



Tether controlled relays will not operate reliability unless **ALL** relays involved in the data collection have a reliable internet connection.

FINISHED!!!

At this point you are done with the Cloud Tethering setup. You can now follow the “Solar Relay Electricians Guide” for deciding when to turn your loads on and off...BUT REMEMBER.

Your load will be controlled using the power data on the tethering channel instead of power readings coming from the CTs.

What about Voltage and Frequency?

Any control using voltage and frequency will be based on local voltage and frequency readings. They are not based on EDDEWORLD data measurements.