SOLAR RELAY

INVERTER CONTROL
with SOFAR Solar

SOFAR 3-10KTLM- G3, ESI 3-6K-S1 & HYD 3-6K EP

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

IMPORTANT..PLEASE READ

The CATCH Solar Relay works by emulating the energy meter the inverter would normally use.

This means two things are really important.

1. You need to read the inverter manual:

Make sure you understand how to setup the inverter for export control. When you read the manual it will talk about an energy meter or CT…Follow the instructions exactly as they are in the manual. If there are any changes required we will let you know further down in this document.

2. Read the CATCH Solar Relay installation manual:

The manual outlines how to setup the CATCH Solar Relay to control loads. It also outlines circuit breaker requirements, how to use the CATCH Configurator App, etc.

Once you have followed step one and two you are ready to proceed….

Wiring Instructions

CATCH Solar Relay and the inverter communicate using RS485. Connecting the two pieces of hardware requires a 2 core RS485 cable. When the RS485 cable run is greater than 20m it is recommended to use a 2 core cable designed specifically for RS485 communication, it will typically have a 120 Ohm characteristic impedance. However, for short cable runs any 2 core cable will typically do the job, as long as it is rated for the voltages it will be exposed to. The pink CBUS data cable is ideal for short cable runs.

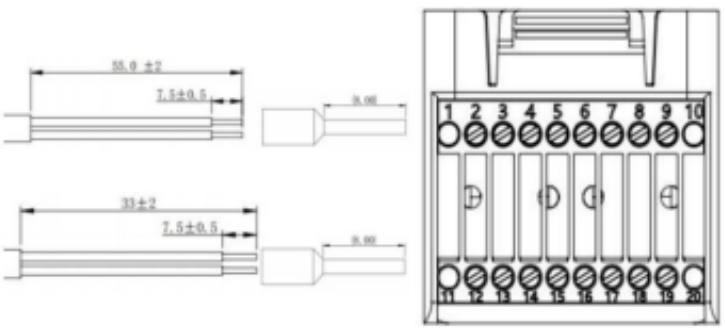
Connecting the RS485 Wires to CATCH Solar Relay ESI 3-6K-S1

Connect the RS485 port of the CATCH Solar Relay to the RS485 pins on the inverters COM port. The table below taken from the SOFAR Solar manual shows the RS485 needs to be connected at pins 2 & 3 to terminals 6 & 7.

RS485 wires are connected in parallel between inverters, (NOTE: When multiple inverters are connected via RS485 wires, set communication address to differentiate the inverters.

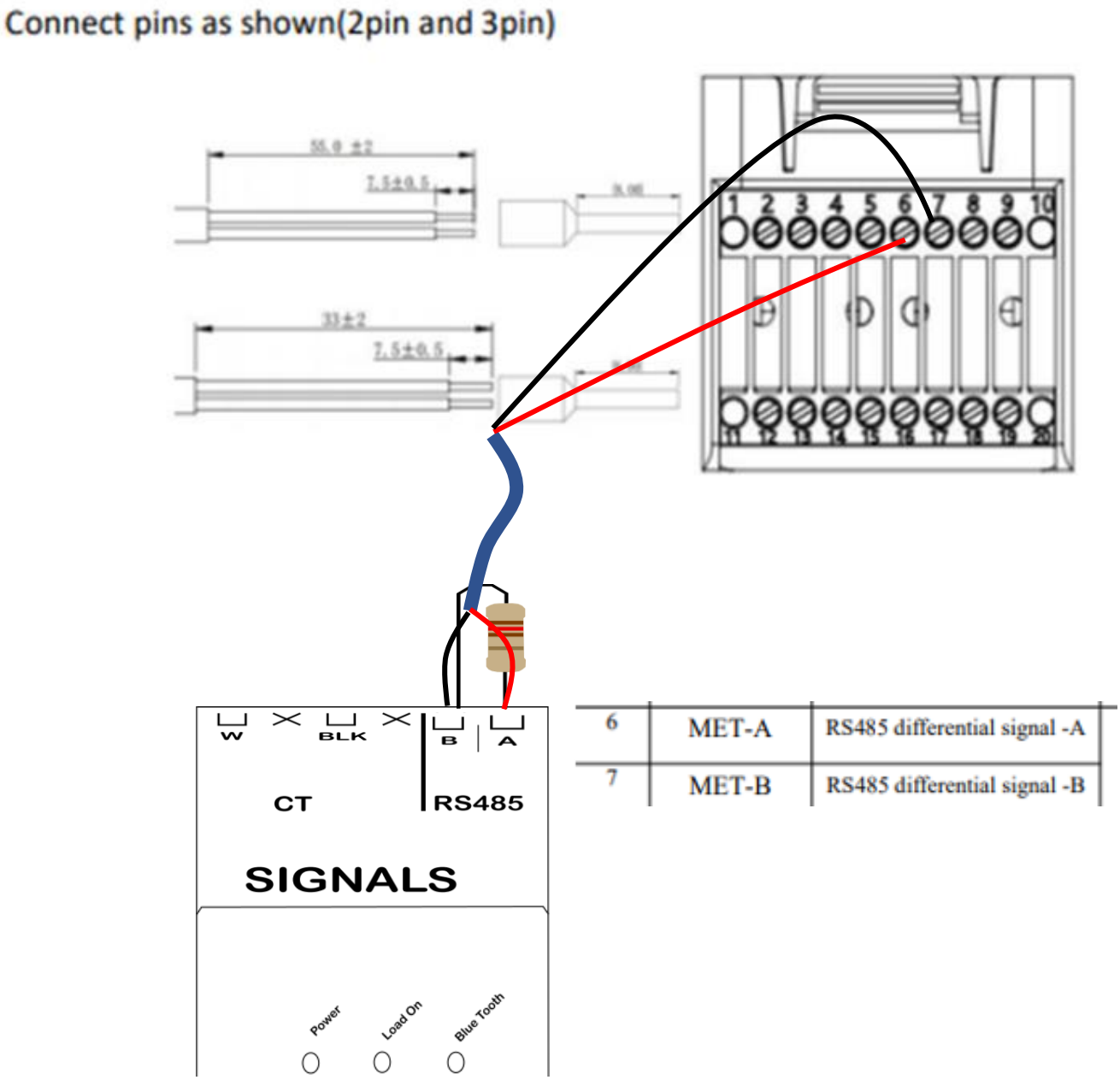
PIN	Definition	Function	Comment
1	N/A	N/A	
2	UC-A	RS485 differential signal -A	Inverter monitoring 485 signal
3	UC-B	RS485 differential signal -B	
4	EN+	RS485 differential signal +	Battery 485 signal
5	EN-	RS485 differential signal -	
6	MET-A	RS485 differential signal -A	Smart meter 485 signal
7	MET-B	RS485 differential signal -B	
8	CANH	CAN high data	Battery CAN communication signal
9	CANL	CAN low data	
10	N/A	N/A	
11	N/A	N/A	
12	GND	Logic interface signal	（DRMS）Logical interfaces

Connect pins as shown(2pin and 3pin)



Connecting the RS485 Wires to CATCH Solar Relay

The diagram below shows the CATCH Solar Relay connected to the Solar Inverter plug



6	MET-A	RS485 differential signal -A
7	MET-B	RS485 differential signal -B

Ensure the data cable is rated for the voltages it will be in close proximity to.
A 120 Ohm terminating resistor may be required at the CATCH Relay terminals as shown in the diagram below if the cable run is longer than 10m.

Connecting the RS485 Wires to CATCH Solar Relay 3-10KTLM- G3 & HYD 3-6K EP

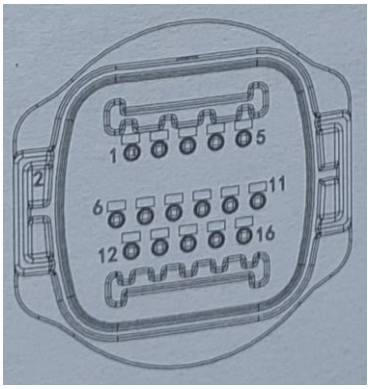
Connect the RS485 port of the CATCH Solar Relay to the RS485 pins on the inverters COM port.

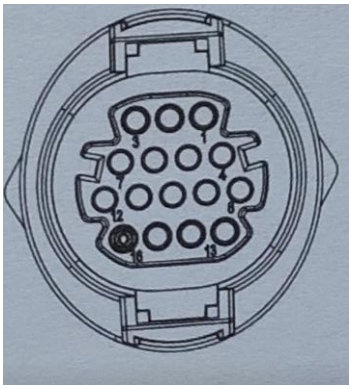
The table below taken from the SOFAR Solar manual shows the RS485 needs to be connected at pins 5 & 6.

Table 4-3 Com port pin definitions

PIN	Definition	Function	Note
1	485_TX+	RS485 differential signal +	Wired monitoring or inverter cascade monitoring
2	485_TX+	RS485 differential signal +	
3	485_TX-	RS485 differential signal –	
4	485_TX-	RS485 differential signal –	
5	RS485-A	RS485 differential signal +	Meter communication
6	RS485-B	RS485 differential signal –	

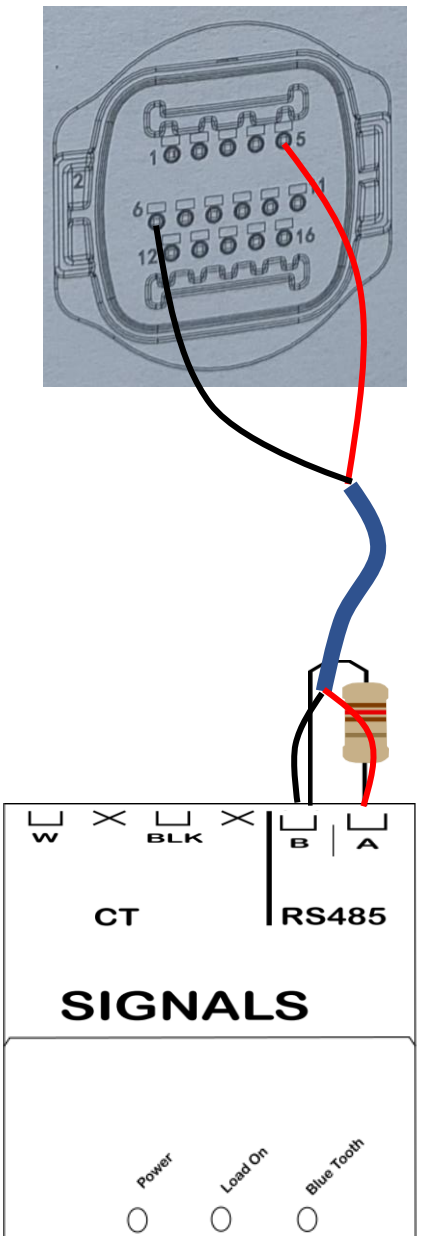
The COMM port plug comes in two types. The images below show the different types. Regardless of the plug type, It is pins 5&6 that need to be used.





Connecting the RS485 Wires to CATCH Solar Relay

The diagram below shows the CATCH Solar Relay connected to the Solar Inverter plug



Ensure the data cable is rated for the voltages it will be in close proximity to.
A 120 Ohm terminating resistor may be required at the CATCH Relay terminals as shown in the diagram below if the cable run is longer than 10m.

Inverter Setup

Enable the use of an Energy Meter

By default the inverter assumes a CT is used. This will need to be changed to an energy meter. Following the menu path below to set enable the use of a meter.

Enter Settings -> 13. PCC Select

PCC CT
PCC Meter ← Choose this one.
PCC None

If you need to enable export limiting follow the normal process as outlined in the installation guide. The highlights are below, note these are taken straight out of the SOFAR Solar installation guide.

Enable Export Limiting

SOFAR refer to this as Anti Reflux Control

Enter Settings -> 10. SetAntiReflux

Reflux Enable

10. SetAntiReflux

0000.0kW

And finally enable the hard or soft reflux options based on your DNSP requirements.

SOLAR RELAY Setup

The screen below is from the CATCH Power Configuration App. The App can be downloaded from Google Play Store or the Apple iStore.

IMPORTANT

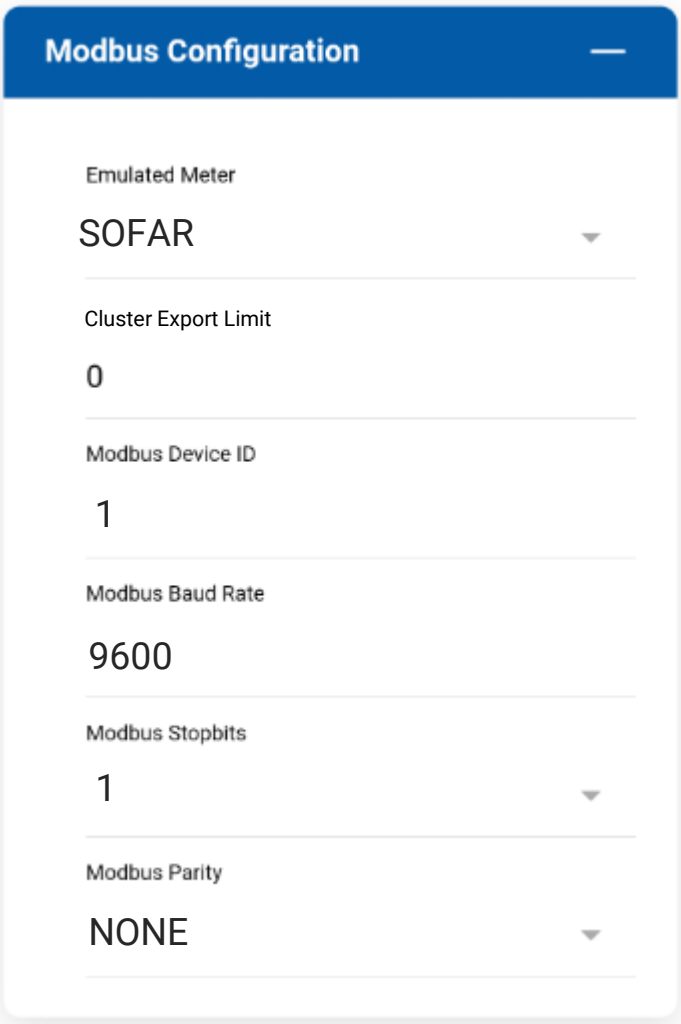
DO A FIRMWARE UPGRADE BEFORE YOU BEGIN

We are adding new inverters, and new control features all the time. Your relay firmware is most likely out of date already. Follow the onscreen instructions and perform a firmware update before you continue on

SOLAR RELAY Setup

Navigate to the Configuration screen and expand the Modbus Configuration section.
Fill it out using the details below.

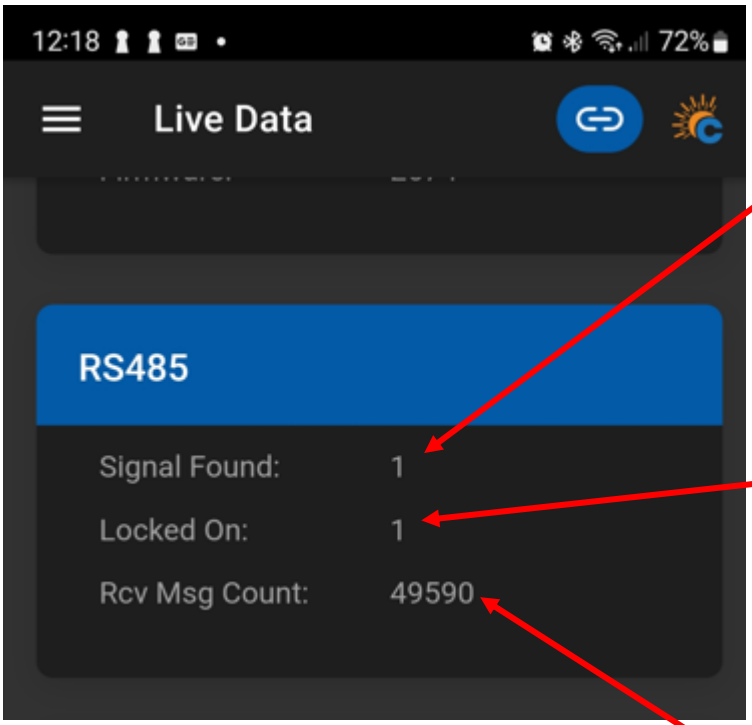
Save your changes.



Checking the status of the RS485 interface

Within the CATCH Power app if you navigate to the bottom of the Live Data screen you will see something similar to the screen below.

The RS485 Status Can be used to confirm correct operation



Indicates the inverter is transmitting data on the RS485 cable.

If this is zero it means the inverter is not communicating or there is a break in the cable.

This indicates the inverter and the CATCH Relay are talking the same language.

If this is zero it is likely you have not chosen the correct meter when configuring the relay or the +ve and –ve wires are crossed over.

This number continually counts the number of successful messages. This number will continue to rise if communications the link is good.

DYNAMIC / FLEXIBLE EXPORT CONTROL

THE FOLLOWING ONLY NEEDS
TO BE FOLLOWED IF YOU ARE ENABLING
DYNAMIC / FLEXIBLE EXPORTS

DYNAMIC / FLEXIBLE EXPORT CONTROL

RTU Control

DYNAMIC / FLEXIBLE Export Control

NO NATIVE MONITORING

If you choose to use RTU Control for this inverter, the inverter monitoring platform will not work

NO BATTERIES

RTU Control cannot be used on Hybrid inverters that have a battery connected.

Set the Export limit to ZERO

SOFAR refer to this as Anti Reflux Control

Enter Settings -> 10. SetAntiReflux

Reflux Enable

10. SetAntiReflux

0000.0kW

Make sure this is ZERO

And finally enable the hard reflux option

DYNAMIC / FLEXIBLE EXPORT CONTROL

DYNAMIC / FLEXIBLE EXPORT CONTROL

SUNSPEC Configuration

SOFAR Does not support SUNSPEC
over modbusTCP

DYNAMIC / FLEXIBLE EXPORT CONTROL

REGISTER SITE

DYNAMIC / FLEXIBLE Export Control

DYNAMIC / FLEXIBLE EXPORT CONTROL

Follow the Configuration steps in the Electricians Guide to register the site for the MONOCLE, and for Dynamic / Flexible Exports

DYNAMIC / FLEXIBLE EXPORT CONTROL