

SunStash v 1.3



Installation Instructions

(NOTE: Installation must be performed by a registered electrician, solar installer etc)

Specifications:

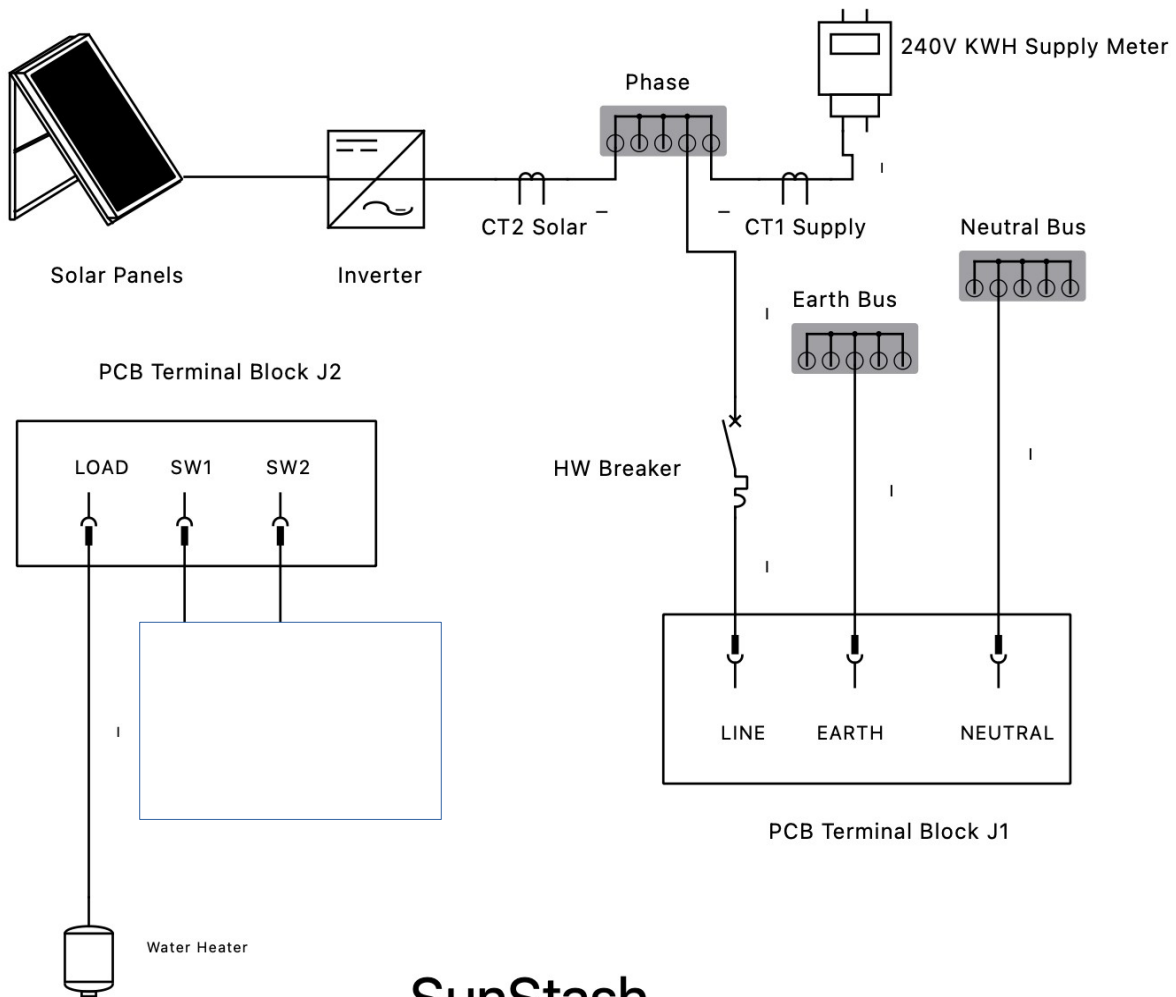
Operational Voltage	230 / 240VAC
Operational Frequency	50Hz
Maximum AC Load	3.8kW (16 Amp)
Load Types	Resistive Only (e.g HW Element)
Control Technology	Zero-Cross, Phase-Locked-Loop
Power Control	Continuous Automatic Control of Power
Diversion Start	<1W
Boost	Automatic nightly boost if required
User Controls	Web page monitoring only.
Operating Temperature range	-10°C to +45°C
Size	150W x 150H x 90D (mm)
Standards Conformity	IEC 60730-1

Inside the package

- One **SunStash** Solar Diverter.

- 2 x CT (current transformers)
- 2 x 20A wiring plugs.
- One lock and key.

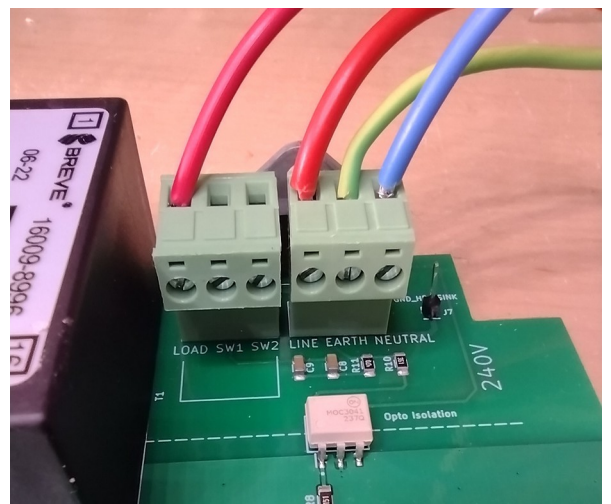
240v Wiring:



SunStash

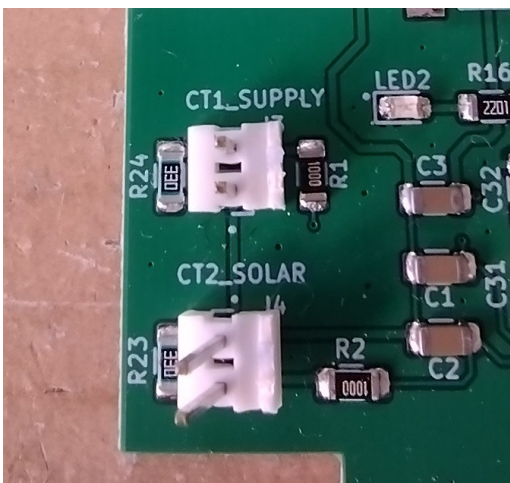
Wire up as follows: (Using 20A 4-core cable)

1. Connect EARTH and NEUTRAL to switchboard respective bus's.
2. Connect LINE to Hot Water Circuit Breaker.
3. Connect LOAD to Hot Water Element.
4. Make sure unit is protected by a MCB of max 16A



Please note: Do not use the Solar Diverter with a Boon Cylinder, unless the wiring of the Cylinder is modified to have a constant load, and/or the elements are changed. Contact us for details.

CT Wiring:



Wire these up as follows:

There are two CT clamps included:

1. The first CT is clamped around the phase of main feed from the switchboard to the Meter and is connected to CT1_SUPPLY. Current direction is from switchboard to meter (Mains CT arrow is direction of “Export” current.)
2. The second one is clamped around the solar panel phase from the Inverter. This gets connected to CT2_SOLAR in the picture. Current direction is from Solar Inverter to switchboard.

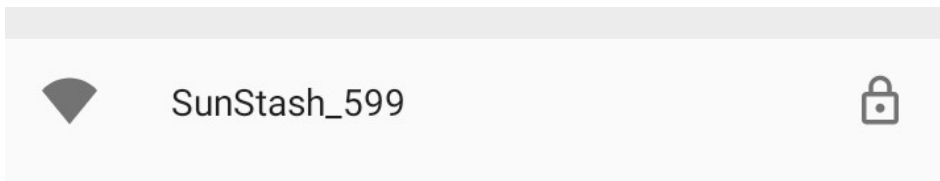
(WARNING! Please do not connect/disconnect plugs to CT1_SUPPLY or CT2_SOLAR connectors with the CT clamps under load, this could result in damage to the board, the connections to the board should be made first, then clamps made around cables.)

Connecting to WiFi:

After the unit has been completely wired up as above. You are ready to connect to your home Wifi.

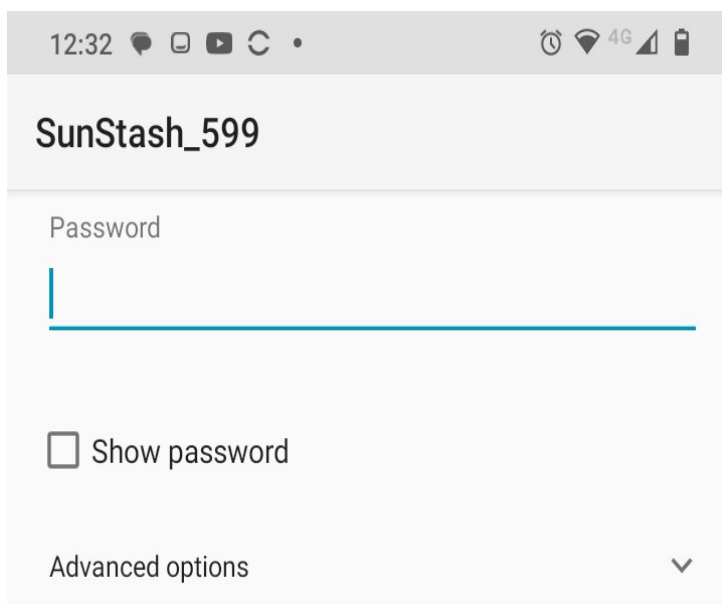
Using a Phone or Tablet etc, go to the WiFi Settings and look for an Access Point (AP) Labeled

SunStash_nnn Where (nnn) is a random number. This may take up to a minute to



appear, as it tries to connect to a valid network. Finding none, it will launch the AP.

When it does appear, it will look similar to the above, clicking on it will show:



Enter the password **12345678**

Once that is done, you should be presented with the captive portal web page as shown below:

(It may look different depending on the type of device “Android/Apple etc “)

SunStash v1.0 - Update Wi

SSID:

Password:

NETGEAR30_EXT
GWN3D4E1C
Ash2001123
SPARK-XNSZJ9
SPARK-B618-4DF1


The Captive Portal page shows the available networks at your location. Example above.

Once you have identified your network, you can cut/paste the name into the SSID field, then add your network password, and you once done, that page will go away (*may take up to 40 seconds as the device logs into your network, or over a minute if a firmware update is pending*) Note: The two LED's inside the box will flash in unison, when device is connected.

After the page has closed, and **both LED's flash**, you can then begin to find the IP address allocated to the diverter. The easiest way to do this, is to install the **Fing** app on your phone (Android or iOS) It is a free app. Next, log into the house Wifi, then run the app. The device will show the IP under "Smart Device" or "Unknown device" you would then enter <http://192.168.1.6:1234/start.html> as a webpage address in a web browser, (replace the "192.168.1.6" part with whatever IP **Fing** specified).

You should then see the following page:

SunStash v1.0 - Solar Diverter



Enter the element size in watts, input as a 4 digit number, i.e 2000 (for a 2kW element)
Element size:

Enter how many watts to export, before diversion will start. The number must be between 100 and 9999. Enter "0" to divert on any excess.
Diversion Start:

Please choose a New Zealand or Australian Timezone.
Select Time Zone:

Enter the details in the form, as above. Then press **Update**


Default values are shown. Filling in the **Diversión Start** field is only necessary if you want delayed diversion mode of operation. The “Element size” field is compulsory.

If you use “0” for Diversión Start and don’t like Sunstash fluctuating around zero +/-200W, then you could instead put 250 as Diversión Start.

After Update is pressed, you will then should be taken to the default web page: http://your_sunstash_ip:1234/index.html shown below: If the page does not show, replace thestart.html part of the URL with index.html and you should be good to go.

Please bookmark this page on the customers device.

SunStash v1.3 - Solar Diverter



Solar Power	1798.68 W
	4443.41 W (Max)
Total Solar today	4.26 kWh
Diversed Power	0.00 %
Total Diversed today	1.66 kWh
Total Diversed Lifetime	980.09 kWh
Mains Supply	52.05 W <= Importing
Total Imported today	1.93 kWh
Total Exported today	0.27 kWh
Self Consumption	93.68 %
Current Boost time	Disabled

Top-up boost start hr:

Enter number between 1 and 12. (1pm to 12 midnight)
(Enter "0" to disable boost)

To see the change, you may need to refresh the page.

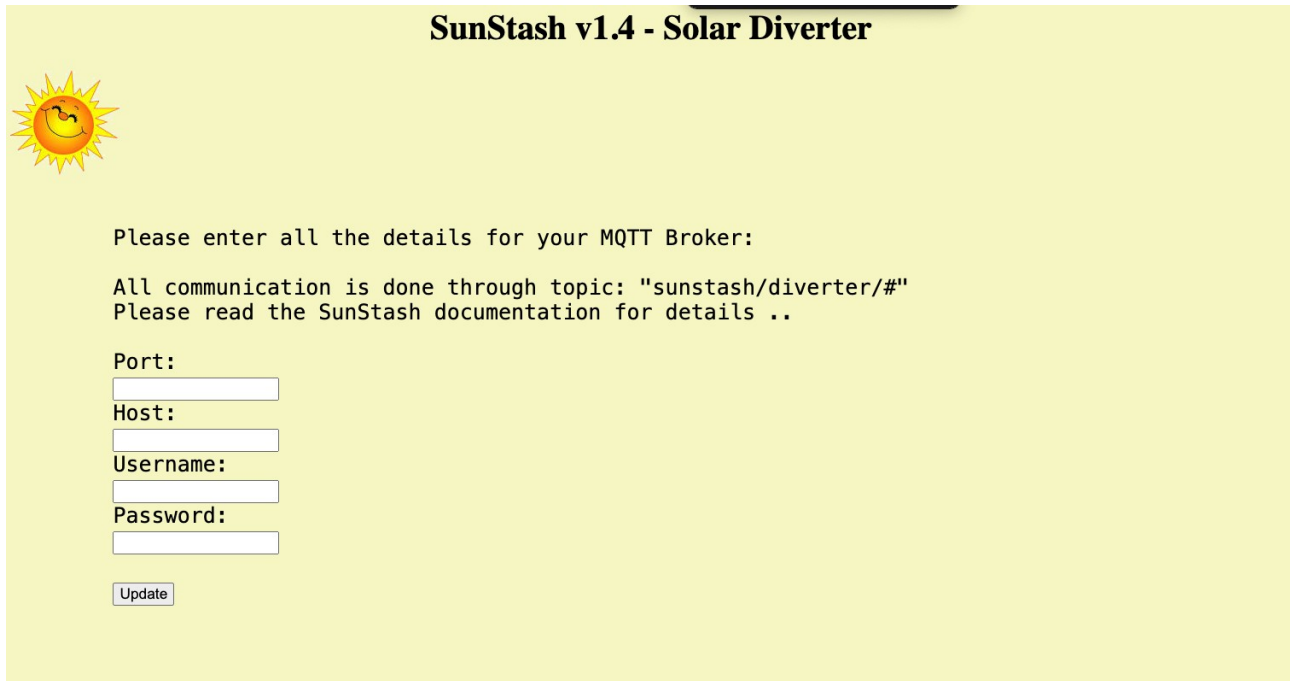
A brief description of key fields:

- | | |
|--|---|
| 1. Solar Power | current power produced by the panels. (Real power) |
| 2. Total Solar Today | Accumulated power in kWh for the day. |
| 3. Diverted Power | Diverted power as percentage of Element power rating. |
| 4. Total Diverted today | Accumulated power in kWh for the day. |
| 5. Total Diverted Lifetime | Total diverted power since unit was installed. |
| 4. Mains Supply
(neg) | Power being drawn from the grid (pos) or exported to grid |
| 5. Imported Power | Power imported from the grid, in kWh, for the day. |
| 6. Exported Power | Power exported to the grid, in kWh, for the day. |
| 7. Self Consumption
for the day so far. | Percentage of the Solar power your house utilized |
| 8. Top-up Boost Start | As explained in the image above. |
| | (The boost runs until your HW thermostat trips, or max 4hrs) |


SunStash Version 1.4 onwards now supports “Home Assistant” and/or “Node Red” via the MQTT protocol.

You can access the setup page at: http://your_sunstash_ip:1234/mqtt.html

The page will look like the following:



SunStash v1.4 - Solar Diverter



Please enter all the details for your MQTT Broker:

All communication is done through topic: "sunstash/diverter/#"
Please read the SunStash documentation for details ..

Port:

Host:

Username:

Password:

You can enter all your MQTT Broker details on this page, then press the “Update” button.

In Home Assistant, to read all available data from the SunStash, use the topic: **sunstash/diverter/data**. JSON data is published every 2 seconds.

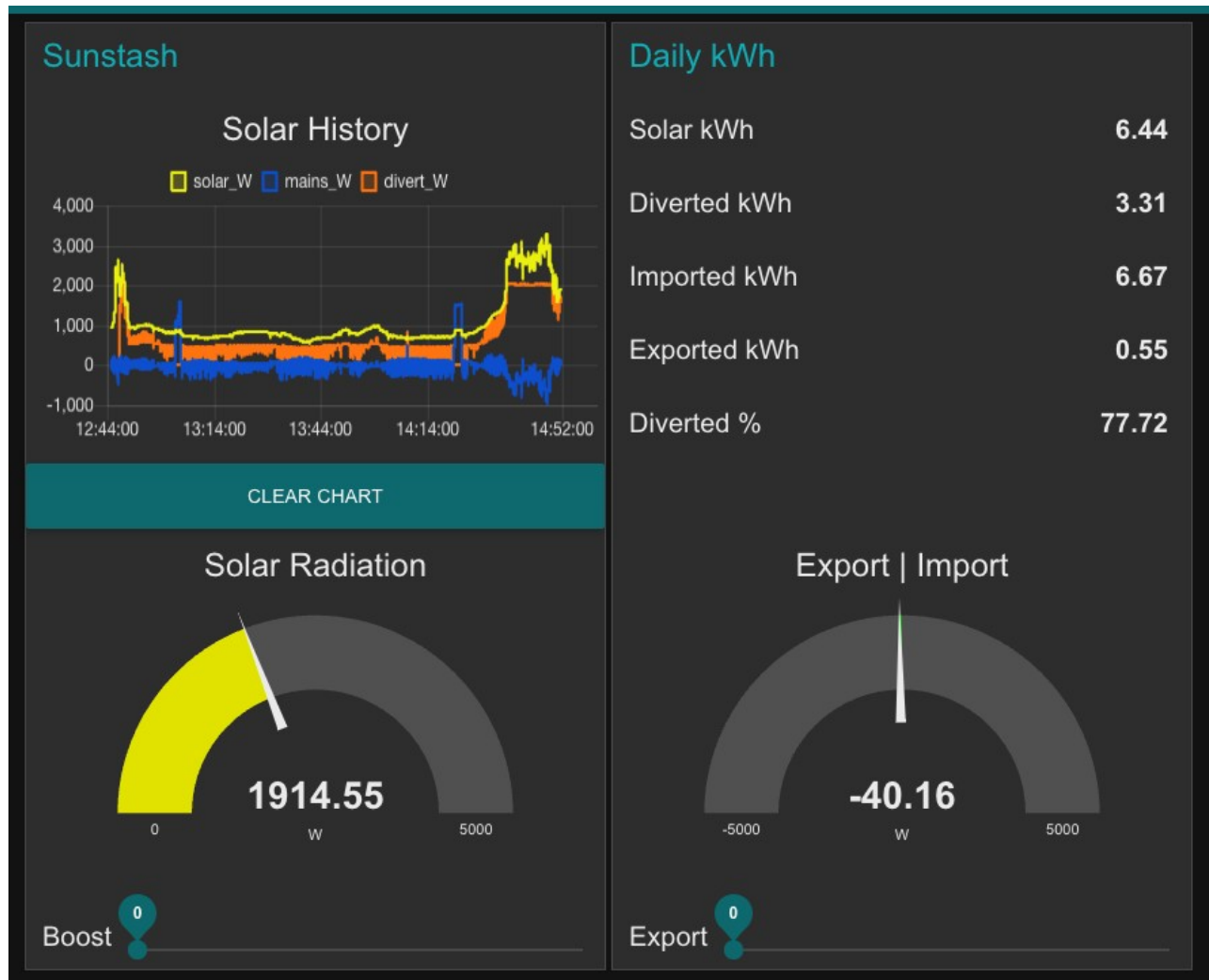
To send data to control the SunStash, use the topic **sunstash/diverter/control**. Currently you can control the boost start time with the JSON packet { **“boost”: 5** } (That would set the boost start time to 5pm. You can use numbers 1pm through 12 midnight, or “0” to disable boost)

You can also set the export threshold, with the JSON packet { **“export”: 4800** } that would set the export threshold to 4800W before diversion starts, “0” is the normal divert at any excess mode.

You can send these commands at the same time with the packet { **“boost”: 12, “export”: 0** }

Boost in this example would be set to midnight and export threshold disabled, so normal divert anytime operation.

A simple Node Red Dashboard could look like the following, using SunStash MQTT data, and allowing both the Boost time and Export threshold levels to be set.



Make contact with me if you would like the Node Red flow to achieve the above.