



# Installation Instructions

(Installation by Qualified Electricians Only)

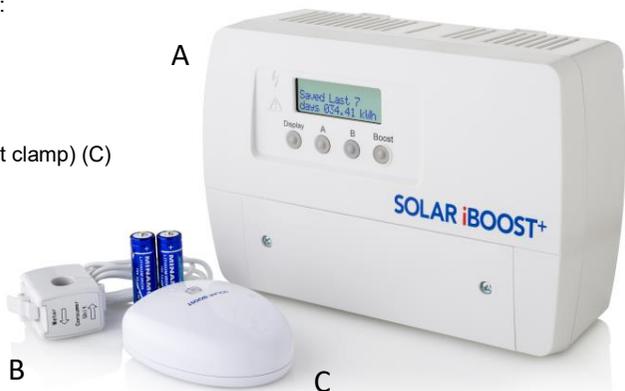




## 1 Checks Before Commencing Installation

Check you have received the following:

- Solar iBoost+ main unit (A)
- Measurement Clamp (B)
- Sender (connects to measurement clamp) (C)
- 2 x AA batteries (for Sender)
- Wall fixings
- Solar iBoost+ user manual
- Wall fixing template



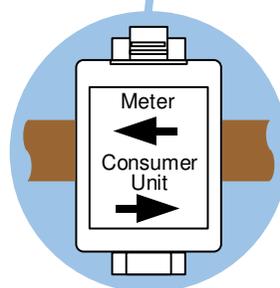
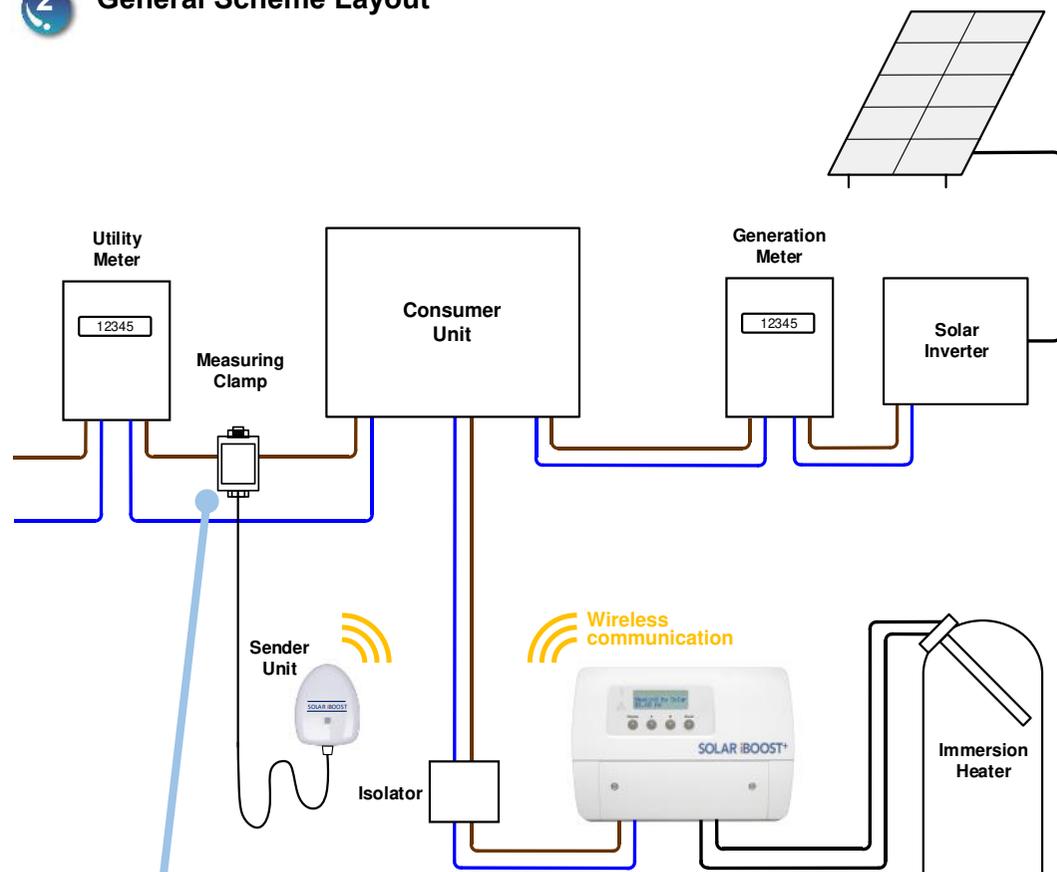
**Please note and ensure the following before commencing any installation...**

1. The electrical installation of this device must only be undertaken by a **suitably trained and qualified electrician**; all local safety standards must be observed.  
To comply with safety regulations it is necessary to have a means of full disconnection of the iBoost+ from the supply after installation, it is recommended the installation incorporates a double pole isolation switch in the incoming supply.  
All work must satisfy Building/IEE Wiring regulations in force at the time.
2. Solar iBoost+ is designed for heating water tanks in a domestic setting with up to two immersion heaters rated up to 3kW each which **MUST include a working mechanical thermostat**.
3. There should be NO electronic controls or switches between the Solar iBoost+ and the immersion heater, only direct connection to the immersion and mechanical thermostat are suitable for Solar iBoost+. It is therefore recommended that the Solar iBoost+ be located at the water tank (assuming this not within a safety zone of a bathroom which may prohibit the fitting of electrical devices). Cable lengths between the Solar iBoost+ and the immersion heater should not exceed 3 metres.
4. If the installation can not be effected at the water tank and cable lengths between the Solar iBoost+ and the immersion **exceed 3 metres**, it is recommended that shielded cables be installed.
5. If the existing cable to the immersion heater appears to be aged or damaged in any way, replace the cable.
6. The Output of the Solar iBoost+ is a specially modulated DC output which must never be connected to the normal AC circuit. The Solar iBoost+ output must be the only supply to the immersion heaters and connected through a good quality, working mechanical thermostat.

**Failure to comply will damage the unit and invalidate the warranty.**



## 2 General Scheme Layout



### IMPORTANT!

Ensure the clamp is orientated on the Live cable correctly as shown on the label. This is critical for correct operation.



- **Never connect AC Live or Neutral to the HTR1 or HTR 2 terminals**
- **Solar iBoost+ must be the only supply to the immersion heaters**
- **DO NOT CONNECT ANY WIRES TO A LIVE Solar iBoost+**

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## Installation

### Positioning - Use the installation template provided

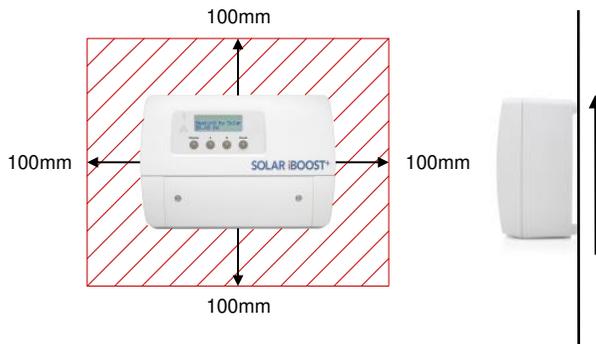
Locate the Solar iBoost+ close to the hot water tank and connect electrically between a fused outlet or MCB and the immersion heater(s). Keep cable distances to a minimum whilst ensuring they are secured to prevent connection movement in service.



**Install the unit with a minimum 100mm clearance on each side.**

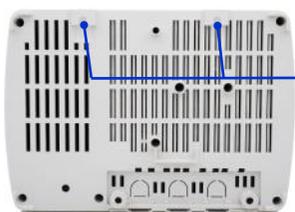
Do not allow airflow to be obstructed. Ensure nothing is fitted within the red zone shown around the unit.

The unit must be fitted vertical on the wall.



### Fixing the Solar iBoost+

Using the screws and wall plugs provided or suitable screws for the mounting surface, fix the Solar iBoost+ using the 4 fixing points...



Rear Hanging Brackets

Fixing Screw Points



### 4

## Connecting the Solar iBoost+



#### SUPPLY

**L** 220-240V ac Input - must be protected by 16A MCB or 13A fused outlet.

**N** Neutral

**⊕** Earth (all earth terminals common)

#### HTR 1 / HTR 2 (IMMERSION HEATER CONNECTIONS)

**+** Connect to the Live terminal of the immersion heater thermostat, max 13A.

**-** Connect to the Neutral terminal of the immersion heater

**⊕** Earth

- Wire the Solar iBoost+ in accordance with the Wiring Diagram.
- HTR2 Terminals allow the connection of a second immersion, if fitted.
- Terminals allow the connection of up to 4mm<sup>2</sup> solid copper conductor or multi-strand cable.
- Solar iBoost+ has overvoltage protection and will temporarily stop diverting if the supply voltage is above 260V ac.
- Ensure terminals are fully tightened and cable is clamped using the cable clamps provided. Where necessary, invert the plastic cable clamp to provide the correct grip.
- After wiring replace the terminal cover. Only use the screws provided with the cover. DO NOT switch on at this stage.
- **Ensure the cover is tightened down as this prevents vibration of the fan unit and unwanted fan noise.**

## Wiring Diagram

For all installations -

- Test the immersion heaters and thermostats before installation and replace defective parts where necessary. Do not install the Solar iBoost+ where a functioning thermostat is not present. A good 3kW immersion will give a resistance reading of 20 ohms. Replace any aged or damaged cables.
- There must be no control of the immersion heater(s) by any equipment other than the Solar iBoost+. In addition, there should not be any additional source of power connected to the immersion heater. The Solar iBoost+ will replace any Boost controls or Hot Water Timers.

**Failure to comply will result in damage to the Solar iBoost+ and invalidate your warranty.**

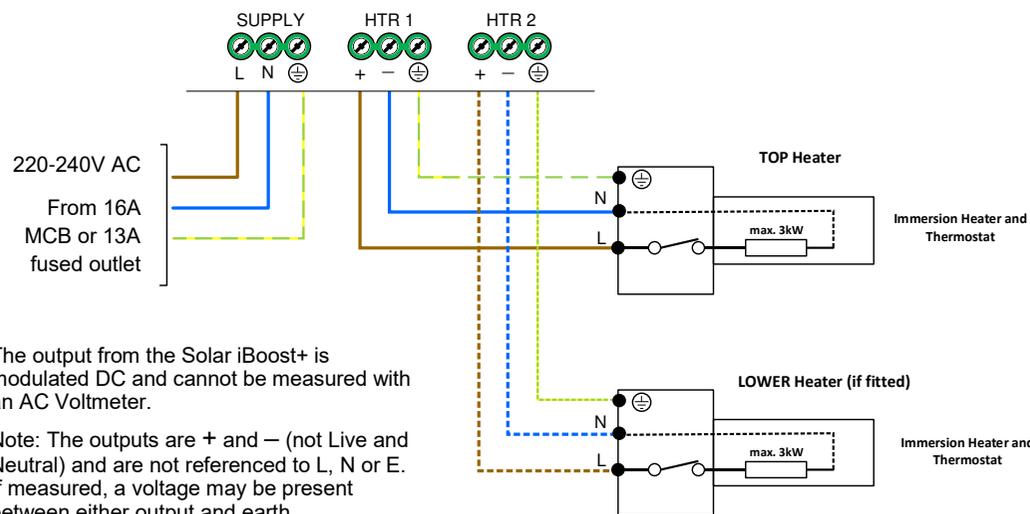
### Single or Dual Immersion Heater connection



Where a single immersion heater is fitted (most common installation) it should be connected to the terminals marked HTR 1.



Where two immersion heaters are present, connect the upper most heater in the tank to the HTR1 terminals and the lower heater to the HTR2 terminals. Correct connection is important so that the upper most heating element receives heating priority.



The output from the Solar iBoost+ is modulated DC and cannot be measured with an AC Voltmeter.

Note: The outputs are + and - (not Live and Neutral) and are not referenced to L, N or E. If measured, a voltage may be present between either output and earth.

### Dual Immersion Heater Operation

The Solar iBoost+ automatically detects when two immersion heaters are connected.

As hot water is drawn from the upper part of the tank, it is important the heaters are connected as described so that the Solar iBoost+ can automatically give heating priority to the top heater. Excess generation is diverted to the top heater until temperature is reached and the heater thermostat opens. Solar iBoost+ then automatically switches to the lower heater to continue to divert excess generation until the lower heater is also satisfied and 'Water Tank HOT' is displayed.

When diverting to the lower heater the Solar iBoost+ will periodically (every 15 minutes) switch to the top heater and the cycle of heating begins again. This maintains the temperature in the upper part of the tank.

An indication of the current heater being supplied is shown on the 'Heating by Solar' display.

This operating mode is the same whether diverting excess generation or in boost function.

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### Assembling the Sender and Measurement Clamp

The Sender unit has a Measurement Clamp that detects export current when fitted around the incoming Live supply cable from the utility meter. The unit sends measurements wirelessly to the Solar iBoost+ unit.

**Note: The Sender and Solar iBoost+ units are factory paired. Do not press the button on the sender or pairing may be lost.**

1. Fit the plug from the Measurement Clamp cable into the Sender.



2. Fit batteries (included).

When fitting the batteries the sender should be at least 1-2m away from the Solar iBoost+



3. Switch on the power to the Solar iBoost+. A set up procedure runs and the two devices connect automatically, usually within 30 seconds.

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### Fitting the Measurement Clamp

At the utility meter (**Caution!** not the Generation meter) identify the **Live cable feed to the property's consumer unit**.

Open the Measurement Clamp and remove any plastic packaging. Position the clamp around the cable observing the correct orientation as shown below. Close the Clamp and ensure that the latch is engaged.

For best results, install the sender upright as shown below, using the rear hanging hook.

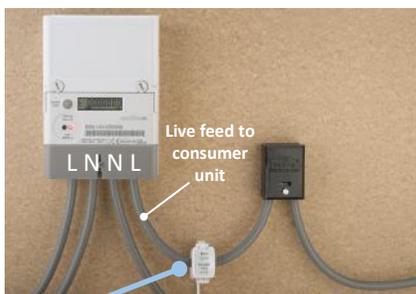
**Note:** Mechanical meters (with rotating disks) can cause distortions to measurements. Position the clamp along the meter cable, away from the base of the meter.

#### Installation Examples

A. Utility meter live input to consumer unit **without** Henley /Connector blocks.



B. Utility meter live input to consumer unit **with** Henley / Connector blocks.



Where a Henley or other connector block is fitted, the Measurement Clamp is fitted between the utility meter and the connection block.



**IMPORTANT:** the orientation markings on the clamp must be observed to ensure only excess current is detected and used for water heating.

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### Commission and Test the System

These tests are designed to verify that only excess generation is used by the Solar iBoost+. Installers must check that increased home energy consumption results in reduced diversion to the immersion heater. The availability of high energy appliances (e.g. kettle, electric showers etc.) are useful during these tests.

- Before testing, if 'Tank Hot' is shown on the Solar iBoost+, run off some hot water.
- 'Heating by Solar' is displayed only when excess energy exceeds 100W. Switch off appliances to enable energy to be exported for these tests.
- Perform tests 1, 2 and 4 when excess generation is available. When there is no PV generation, perform tests 3 and 4.

#### Test 1

Check that the Solar iBoost+ stops diverting energy when the PV system is shutdown.

- Shutdown the PV array and the Solar iBoost+ display changes to "Water Heating OFF."

Reinstate the PV array.

#### Test 2

Check that switching appliances on and off in the home results in varying levels of 'Heating by Solar'.

- Switch off all the MCB's / Fuses except for the PV and immersion.
- Check the level of PV generation on the inverter.
- The "Heating by Solar" level should be approximately 100W less than generation.
- Reinstate MCB's / Fuses.
- Switch on one or two low energy appliances to see the level of 'Heating by Solar' proportionally fall. As further appliances are switched on 'Water Heating OFF' may be seen.

#### Test 3

Perform this test if no PV generation is available when commissioning. Export energy can be simulated by temporarily reversing the orientation of the Measurement Clamp.

- Shut down the PV array
- Reverse the orientation of the measurement clamp (consumption in the home is then measured as export energy)
- Switch on a kettle or high energy device
- Whilst the kettle is on 'Heating by Solar' is displayed and Solar iBoost+ function is proved.

**IMPORTANT! Return the clamp to its correct operating position and reinstate the PV array.**

#### Test 4

Test the Boost function is operational.

- Press the Boost button 2 times, "Manual Boost ON" displays
- Check that water is heating
- Scroll the Boost button until it reads "Manual Boost OFF"

### Operation

Consult the User Manual provided for the following:

**Hot Water Boost** - Solar iBoost+ incorporates manual Boost and timed Boost features to enable the user to heat water via the immersion during times of low PV generation.

**Battery Storage** - Where the Solar iBoost+ is installed in conjunction with battery storage, an offset may be configured to allow the battery storage to take priority over water heating.

**Language** - The display can be set to operate in other languages via the programming options.

# Technical Specifications

## Solar iBoost+ Controller:

Operating Voltage:	220-240 Vac	
Control type:	1B (Pulse Width Modulation)	
Maximum Permissible Loads:	Maximum 3kW immersion heaters (13A Resistive)	
Rated Impulse Voltage Withstand	4kV	
Insulation Properties	Pollution Degree 2 in accordance with IEC 664	
Operating Ambient Temperature Range:	0 to 40°C	
Approvals:	EN 60730-2-7 EN 300 220 EN 55014-2	EN 301 489-3 EN 55014-1
	AS/NZS 4268	
Weight/Dimensions:	1.36kg	225 x 158 x 92 mm

## Solar iBoost+ Sender:

Battery Type:	2 x AA IEC LR6 1.5V alkaline (supplied)	
Battery Life Cycle:	1 year (user replaceable)	
Operating Radio Frequency	868.3 MHz (United Kingdom/Europe) 925 MHz (Australia/New Zealand)	
Radio Range	1 to 30m indoors (dependant on construction and local conditions)	
Operating Ambient Temperature Range:	-5 to 40°C	
Approvals:	EN 60950 EN 300 220	EN 301 489-3
	AS/NZS 4268	
Dimensions:	95 x 75 x 35 mm (excluding clamp)	

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

## Further Support

Technical support for qualified installers and electricians, visit:

[www.marlec.co.uk/troubleshootmysolariboost](http://www.marlec.co.uk/troubleshootmysolariboost)