



Megaflo Eco Solar PV Ready Incorporating

SOLAR iBOOST+



INSTALLATION AND OPERATING INSTRUCTIONS

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Solar iBoost+ Controller:

Operating Voltage:	220-240 Vac
Control type:	1B
Maximum Permissible Loads:	13A Resistive (max 3kW immersion)
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 301 489-3, EN 300 220
Dimensions:	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
Radio Range	1 to 30m indoors (dependant on construction and local conditions)
Operating Ambient Temperature Range:	-5 to 40°C
Approvals:	EN 60950, EN 301 489-3, EN 300 220
Dimensions:	95 x 75 x 35 mm (excluding clamp)

This appliance can be used by children aged from 8 years and above and persons with reduced physical sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

Children must be supervised to ensure they do not play with the appliance.

Thank you for purchasing a Megaflo Eco incorporating Solar iBoost+

Before use, please read these instructions carefully

These instructions provide information on the installation, operation and programming of the unit. Please keep this booklet safe for future reference.

The Solar iBoost+ is designed to be used in conjunction with micro-generation systems, e.g. solar PV, where surplus energy generated can be stored within a domestic hot water cylinder in the of hot water. By monitoring the amount of energy being exported to the National Grid the Solar iBoost+ unit will divert energy into an immersion heater when the energy generated exceeds the amount of energy consumed within the property. Solar iBoost+ controls the energy delivered to the immersion heater in proportion to that exported.

Solar iBoost+ Features.

- Up to two immersion heater connections, when the first immersion heater is satisfied the energy flows automatically to the second immersion heater
- Manual Boost and programmable Timed Boost (eg. For economy settings)
- A single, battery powered, wireless sender with measurement clamp
- Displayed energy saving information
- 6kW immersion heater capability (2 x 3kW@240v ~)
- Solar iBoost+ is pre-programmed for wireless connection to the optional iBoost+ Buddy home energy monitor
- Programmable language option

Solar iBoost+ Quick Start Guide

Pre-Installation

1. Read checks before commencing installation and ensure compliance.
2. Check the Megaflo Eco with iBoost+ has been installed in accordance with Building Regulations before connecting up the iBoost controller.

Connection

3. The Solar iBoost+ comes already wired in accordance with the selected wiring diagram on page 5.
4. Connect the Measurement Clamp into the Sender and fit the batteries in the Sender. Keep the Sender at 1-2m from the main unit. Do NOT press the button on the Sender.
5. Switch on the power supply to the Solar iBoost+ and a short start up procedure runs until Water Heating Off is displayed.
6. Programme Time and Timed Boosts if desired, see page 11.

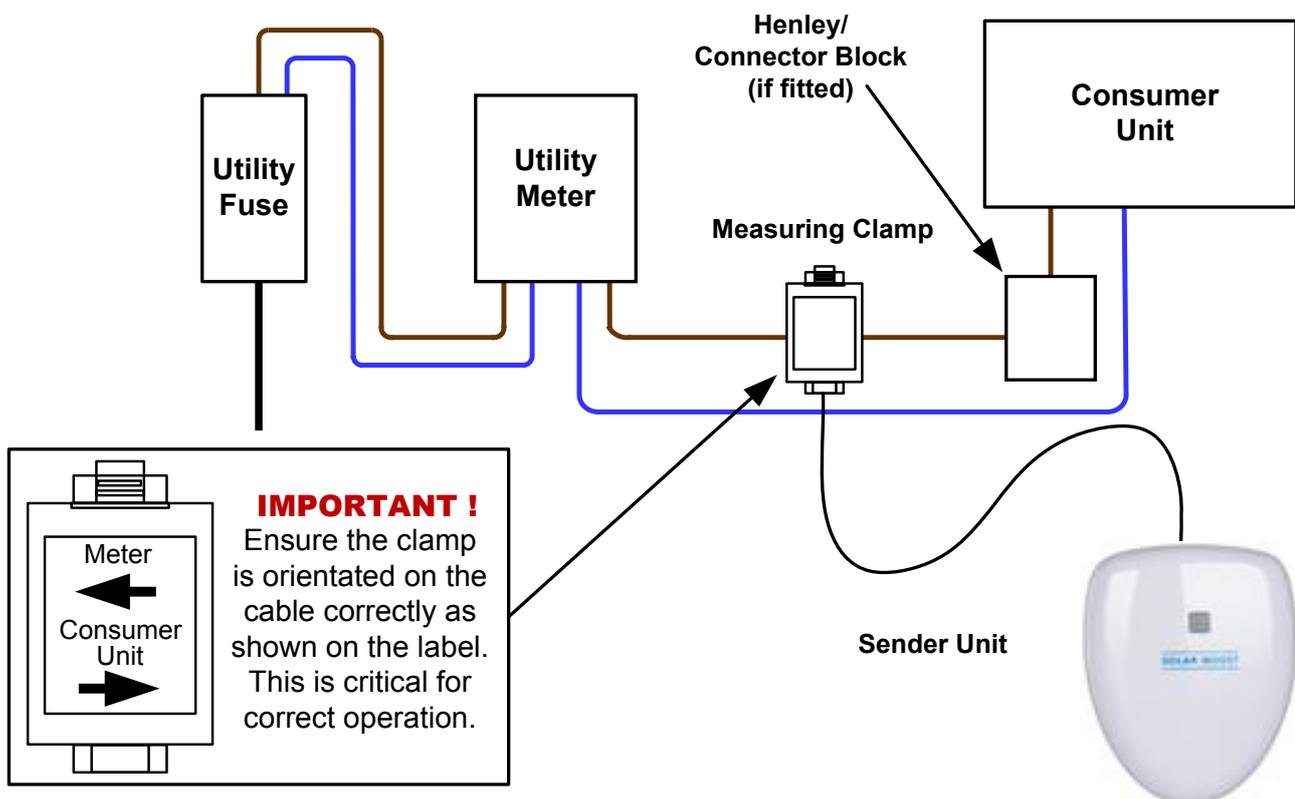
Locate the Sender

7. At the utility meter (NOT the Generation meter) place the Measurement Clamp over the household main incoming live cable and latch into place. Note that the Clamp must be installed on the utility meter side of any connector (or Henley) blocks.

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

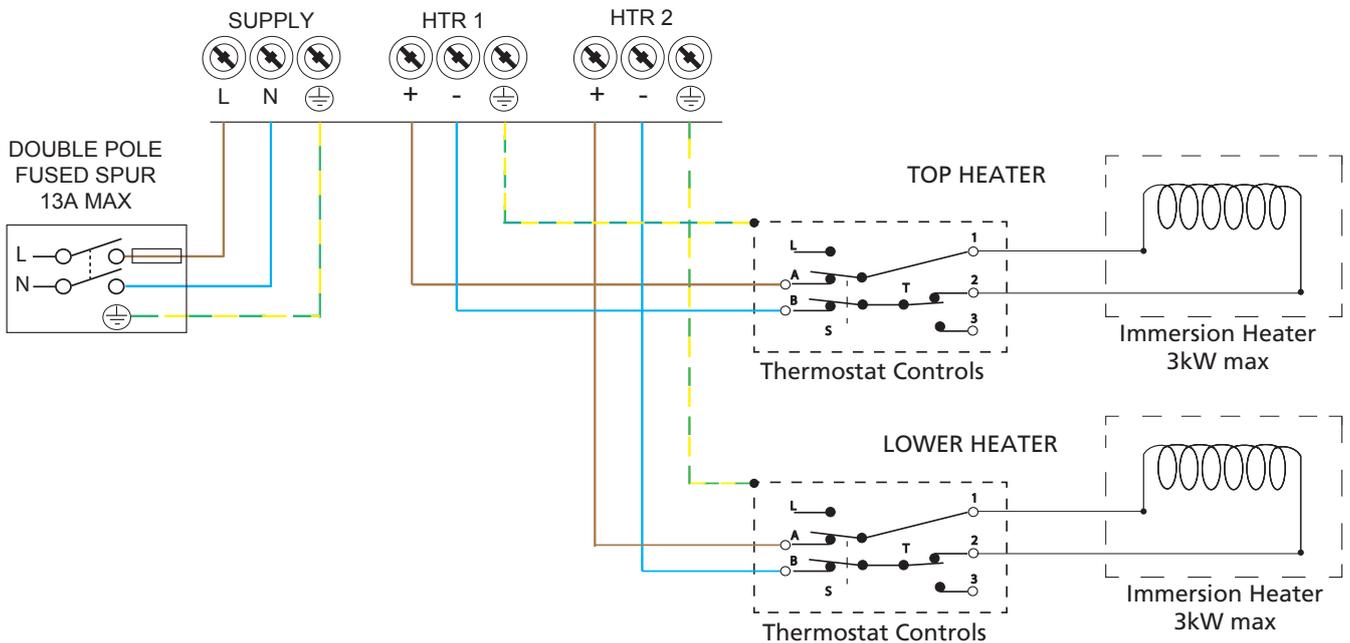
Commissioning

8. To commission, perform the tests shown section 5, page 8.

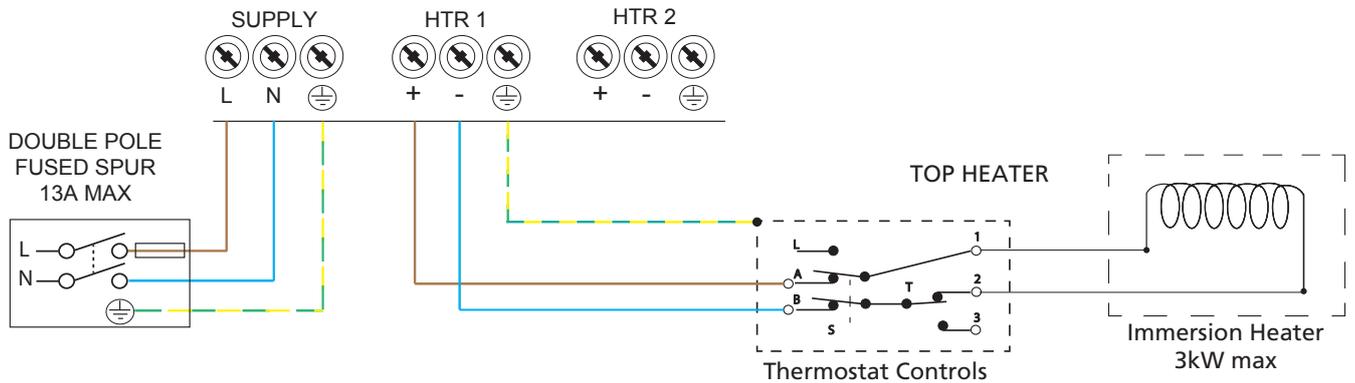


Installation

The solar iBoost+ comes already pre-wired to the cylinder and all the installer has to do is wire up the power supply to the supply terminals.



Dual Immersion Heater



Single Immersion Heater

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 shown 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, see page 9.

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

3. Assembling the Sender and Measurement Clamp

The Sender unit has a Measurement Clamp that detects export current when correctly fitted on the live incoming 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.

Assemble the Sender

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



2. Fit batteries (included) or DC mains power supply (supplied separately).

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

A DC mains power supply is available to purchase separately.

Only an approved iBoost+ power supply should be used, contact your supplier for details.



Fit the connector from the power supply into the socket marked on the sender.

3. Switch on the power to the Solar iBoost+. A set up procedure runs and the 2 devices connect automatically, usually within 30 seconds. If necessary follow the instructions for pairing on page 12.



Initialising
Please Wait

4. 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.

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.

Fitting Examples

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



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



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



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



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

5. Test the System

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

- Before testing, if "Tank Hot" displays, run off some hot water.
- Perform tests 1, 2 and 4. When there is no PV generation, perform tests 3 and 4 .

Test 1

When sufficient excess generation is available and "Heating by Solar" is displayed, check that the Solar iBoost+ stops diverting energy when the PV system is off.

- Shutdown the PV array and the display changes to "Water Heating OFF."
- Reinststate the PV array.

Test 2

When the PV generation is above 100W, check that switching off appliances in the home results in greater energy diversion by the Solar iBoost+ unit.

- Shut down 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.
- Reinststate MCB's / Fuses.

NB. If no reading is possible from the inverter a reduction in "Heating by Solar" value or "Water Heating OFF" should be seen after the MCB's / Fuses have been reinstated, switch on a high energy appliance if necessary.

Test 3

At times when no PV generation is available (e.g. commissioning after dark) test the installation by simulating export energy, achieved by 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 reinststate 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".

User Operation

 Flashes when energy is being diverted to the immersion heater. Symbol is permanently lit when any boost function is on

 Indicates a problem with the unit when lit (see Trouble Shooting)

Display
Each press moves through the Display Cycle (see Display Cycle)

A
Enables programming mode (see Programming)

B
Enables the sender pairing process (see Pairing the Sender)

Boost
Provides a Boost of Hot Water (see Manual Boost)



Normal Operation

During normal operation the unit will show one of the following displays:

Heating by Solar
01.45 kW Htr1

Solar iBoost+ is diverting energy to the hot water tank. The instant value of energy being diverted is shown together with an indication of the immersion heater currently being supplied (if two heaters are connected will switch between Heater 1 and 2).
When energy is diverted the blue symbol flashes: 

Water Tank
HOT

Shown when the unit is attempting to divert energy to the immersion heater but tank has reached maximum temperature and switched off.

Water Heating
OFF

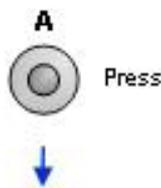
There is no excess generation for the Solar iBoost+ to divert to the hot water tank.

These messages will be overridden when other functions such as timed or manual boost are active.

Display Cycle

The display cycle allows the user to view the recorded energy saving. Each press of the Display button will move through the following sequence:

Saved Today 03.66 kWh	Present days energy diverted into the immersion heater
Saved Yesterday 10.56 kWh	Previous days energy diverted into the immersion heater
Saved Last 7 days 03.66 kWh	Total energy diverted into the immersion heater in the past 7 days
Saved Last 28 days 65.53 kWh	Total energy diverted into the immersion heater in the past 28 days
Saved Amount 390.20 kWh	Total value of energy diverted into the immersion heater since Solar iBoost+ was installed
Time 10:15 01/07/15	Current time and date in 24hr format
In Winter Boost Toggle Press A	



Boost Season selection.

Hot water boosts can be programmed for different seasons (see programming section).

The boost season can be changed here by pressing the A button when required.

Each press of the A button will change the setting between Summer, Winter and Boost OFF selections.



Switching the timed programme function between Winter/Summer/OFF can be activated remotely within the home using the iBoost+ Buddy home energy monitor.

Programming

The programming function allows:

- Setting the time and date of the clock
- Programming of Timed Boosts when grid power is automatically switched on to heat the water. This feature can be used in place of existing timers.

The Solar iBoost+ unit is programmed using push buttons A and B. The first press of any button switches on the backlight only. To programme:

1. Press and hold button A for 3 seconds, release. The first item in the sequence below is shown (set time).
2. The first digit becomes active and flashes. Press button B, each press adds 1 to the value until the digit required is reached.
3. Press button A once to confirm and move on. Repeat 2, press A to confirm and move on.

Set Time 10:15 01/07/15
B1 Summer Wk/Day 00:00 0.00hrs
B2 Summer Wk/Day 00:00 0.00hrs
B3 Summer Wk/End 00:00 0.00hrs
B4 Summer Wk/End 00:00 0.00hrs
B5 Winter Wk/Day 00:00 0.00hrs
B6 Winter Wk/Day 00:00 0.00hrs
B7 Winter Wk/End 00:00 0.00hrs
B8 Winter Wk/End 00:00 0.00hrs

Timed Boosts

Timed Boost periods can be entered against Summer and Winter seasons. This enables longer boost times to be set in Winter periods when solar generation maybe less. Two boost periods are available each day and can be programmed on a 5 day weekday/2 day weekend basis.

Programme the start time and duration of the boost using the A and B buttons as described above. Start times are selectable in 15 minute steps and the duration of the boost in 30 minute steps.

e.g. a setting of 07:00 1.5hrs will switch on the boost at 7 am for 1 hour 30 minutes.

An unused boost is left at 00:00 for 0:00 duration.

The operating boost season is set manually using the Boost Season feature found at the end of the normal Display Cycle, see page 13. Boosts may be temporarily disabled (e.g. for holiday periods) by selecting 'Timed Boosts OFF'.

Pairing the Sender Unit

The Solar iBoost+ and Sender are supplied uniquely paired and should not require the following operation.

However, if the signal becomes lost or a new pairing is required the following procedure should be performed with the sender positioned 1m or more from the Solar iBoost+.

1. Press any button on the Solar iBoost+ to switch on the backlight.
2. Press and hold button B for 5 seconds then release.
3. When **Pairing with Sender** is displayed, press and hold the green button on the Sender for up to 10 seconds to pair the devices.

Repeat the procedure if necessary until pairing is achieved.

The result of pairing is shown on the screen as follows:



IMPORTANT! Do not press the sender button except when performing the pairing process. If it is pressed for more than one second the pairing may be lost and the display shows a 'Lost Signal' message (see Trouble Shooting). To correct, either reset the sender by removing and refitting the batteries or use the above procedure to reset the pairing.

Language Settings

The Solar iBoost+ can be configured to show different languages on the display.

To change language, press the display button once to light the display then press and hold the Boost button for 5 seconds or more and release. Each long press of the Boost button will move the language between:

English - French - Italian - Spanish - Portuguese - German - English

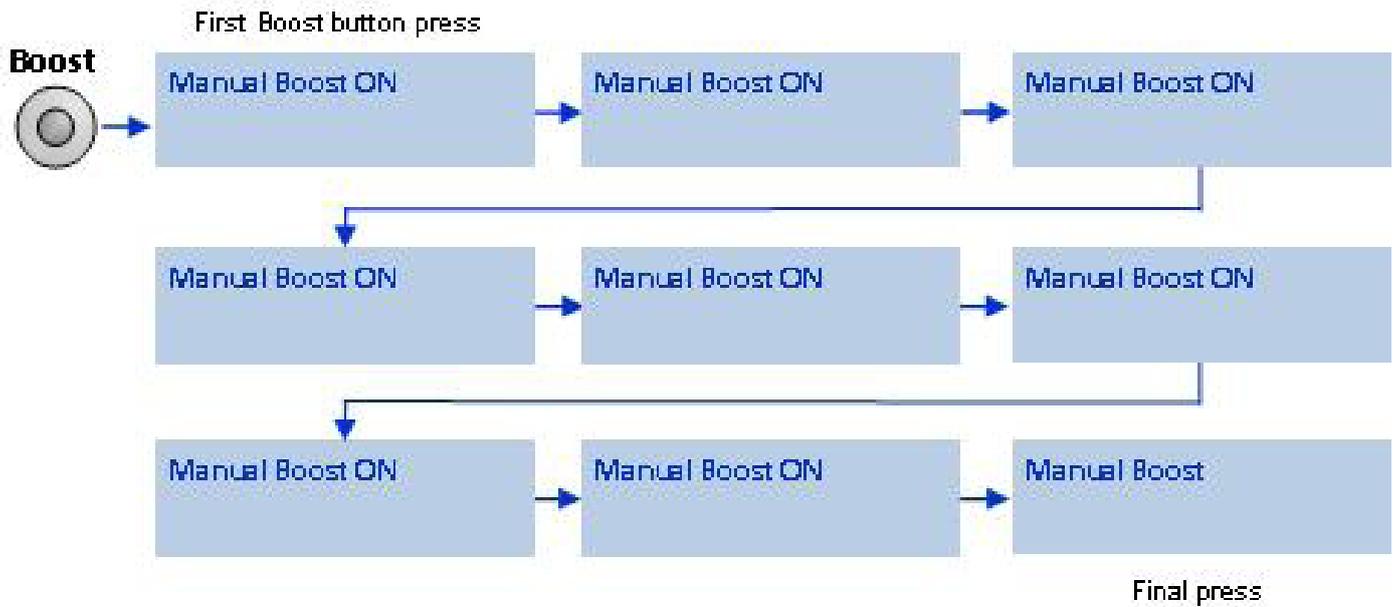
All programming and information displays will be shown in the selected language.

With the iBoost+ Buddy is fitted, the unit will automatically change to the language chosen on the Solar iBoost+

Manual Boost

Switches on full power to the immersion heater for the period of time selected. Note that electricity is drawn from the grid if the excess generation is too low.

1. Press any button on the Solar iBoost+ to switch on the backlight.
2. Each press of the Boost button adds 15 minutes to the boost time up to maximum of 2 hours. The amount of time remaining is shown on the display.
3. To cancel the boost simply press the Boost button repeatedly until 'Manual Boost OFF' is shown.



The Boost function can be activated remotely within the home using the iBoost+ Buddy home energy monitor.

Troubleshooting - Warnings and Messages

The Solar iBoost+ internal diagnostics notify if any fault arises in the system. When a fault is detected the red warning triangle on the front of the unit is illuminated.



A message on the display details the specific fault:

Sender Battery

LOW

Batteries are low in the sender unit – replace batteries at earliest opportunity. Do not use rechargeable batteries.

Lost Signal to

Sender

The unit is no longer receiving messages from the sender unit. Possible causes:

1. Batteries may be exhausted.
2. Solar iBoost+ is positioned too far or near to the sender.
3. Sender unit pairing button may have been pressed inadvertently outside of the pairing process (see Pairing the Sender).

Unit Cooling...

Check vents

The Solar iBoost+ unit is over its working temperature - check that the unit is clear of obstructions and that there is adequate airflow to the unit. The unit will automatically recover when the internal temperature has reduced to within the normal operating range.

Maximum Power

Exceeded Htr 1

The Solar iBoost+ will check for overload during initialisation and during normal operation. If overload of either heating circuit is detected the output will be disabled. Check the load of the immersion heater and supply voltage are within specification. This warning can be reset by power cycling the Solar iBoost+ unit.

Shutting Down

Solar iBoost+ can be left to operate all year round. Should you wish to power it down (e.g. during holidays) the following options are possible:

- Switch off at the fused spur - No solar energy will be captured by the Solar iBoost and timed settings will not operate.
- Temporarily remove the batteries from the sender - No solar energy will be captured but timed settings will continue to operate.
- Select OFF in Winter/Summer/OFF timed settings. Solar energy will be captured but timed settings will not operate.

Accumulated savings and programmed times are retained in memory.

Further Support

To find out more about how Solar iBoost+ works visit www.heatraesadia.com.

Consult your qualified installer / electrician for any user queries.

Technical support for qualified installers and electricians +44 (0) 344 871 1535.

Important Information about Legionella

Legionella bacteria are common and can be found naturally in environmental water sources such as rivers, lakes and reservoirs, usually in low numbers. As legionella bacteria are commonly encountered they may eventually colonise manufactured water systems and if conditions are favourable the number of bacteria may grow. Contamination risks are however low due to the low availability of nutrients and the regular chlorination of the water supply.

As with any hot water storage system it is important to avoid water stagnation and ensure the water is regularly heated to a minimum temperature of 55-60°C to reduce potential risks.

It is therefore recommended that the hot water tank be heated to 55-60°C at least once per week either using Boost facility or through other heating controls.

Megaflo Accessory Warranty:

The cold water combination valve (and expansion vessel, where supplied) is covered by a five year warranty from the date of purchase of the MEGAFLO product that includes both parts and labour. All other components, including any other valves, fittings and controls are covered by a two year warranty from the date of purchase of the MEGAFLO product that includes both parts and labour.

In the case of the Megaflo SystemReady, Megaflo SystemFit and Megaflo SolaReady units the supplied pumps and motorized valves (where fitted) are also covered by this two year warranty.

Incolloy immersion heaters (where fitted) are covered by a two year warranty.

Titanium Immersion heaters (where fitted) are covered by a five year warranty.

Disclaimer

Megaflo has a policy of continuous improvement in product quality and design. The company, therefore reserves the right to change the specification of its models at any time. All items in this guide are for illustration purposes only and may not apply to your particular situation.

Disposal of Old Electrical Appliances

For electrical products sold within the European Community. At the end of this products useful life, it should not be disposed of with household waste.

Please recycle where facilities exist. Check with your local authority or retailer for recycling advice in your local area.





Maximise the benefit of the Megaflo Solar PV Ready

We want you to get the most from owning Megaflo Solar PV Ready cylinder so here's a few tips to help capture and save more energy using your Solar iBoost+.

Reduce or Delay the "ON" Periods of your Current Water Heater

Change your heater settings to later in the day, after sundown if possible, as this allows the Solar iBoost+ to preheat water in the tank using the excess PV energy. Normal water heating will top-up to the thermostatically set temperature of your tank so you have plenty of hot water available but your usual fuel usage and costs will be reduced. Adjust any morning settings according to your household need but mindful that greater benefits are achieved if there is excess PV available and the tank is not already hot at the start of the day.

Vary your Heating Times by Season

In Summer months the Solar iBoost+ alone may provide a plentiful supply of hot water and other water heating systems can be temporarily switched off. When required the built-in Boost feature can be used for short top-ups from the grid. This is activated on the Solar iBoost+ or remotely using the iBoost+ Buddy if installed.

Using the **Winter / Summer / Off** timed programming feature you can set and store 2 timed periods of grid power operation on a 5 day/2 day basis for Winter and Summer. Simply swap between the stored settings at the press of a button on the Solar iBoost+ or remotely on iBoost+ Buddy. This timer can, in most circumstances, replace existing economy tariff timers on electrical water heating systems. OFF can be simply selected during holiday periods.

Minimise the Base Levels of Energy Consumption in your Property

Reducing your home's energy consumption will maximise the excess power available for Solar iBoost+ to divert.

For example instead of using standby why not power down appliances when not in use?

Customer service

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