

# ***User's Instructions***

Also includes Installation and Servicing instructions at back

## **Alpha SolarSmart 100**

**Pre-Heat Drain Back Solar System and Wall Mounted  
Unvented Hot Water Solar Cylinder  
for use with an Alpha Combination Boiler**

For Technical help or for Service call ...  
**ALPHA HELPLINE Tel: 0844 871 8764**  
email: [info@alpha-innovation.co.uk](mailto:info@alpha-innovation.co.uk)  
website: [www.alpha-innovation.co.uk](http://www.alpha-innovation.co.uk)

**Alpha**  
HEATING INNOVATION

Alpha Therm Limited  
Nepicar House, London Road,  
Wrotham Heath, Sevenoaks,  
Kent TN15 7RS



SOLAR Key Mark Certified

**Leave these instructions with the User**

# 1 DESCRIPTION

The Alpha SolarSmart system is a pre heated drain back solar collector system which includes an unvented 103 litre cylinder to store the water heated by the solar collector. It is recommended that the system is used in conjunction with an Alpha combination boiler fitted with the Alpha solar inlet sensor which is supplied with the system.

The SolarSmart system consists of an unvented cylinder, one or two flat plate solar collectors and a drain back unit. The cylinder is fitted with a pump and temperature sensors – a control unit with display is fitted within the cylinder casing. The drain back unit is fitted with a heat exchanger and pump.

A pressure reducing valve and isolation valve is supplied which must be fitted in the mains water supply to the cylinder.

# 2 USER CONTROLS

The Solar cylinder is fitted with a control unit with integrated display panel and push button controls. The display indicates the working modes of the system with symbols to indicate the working components of the complete system.

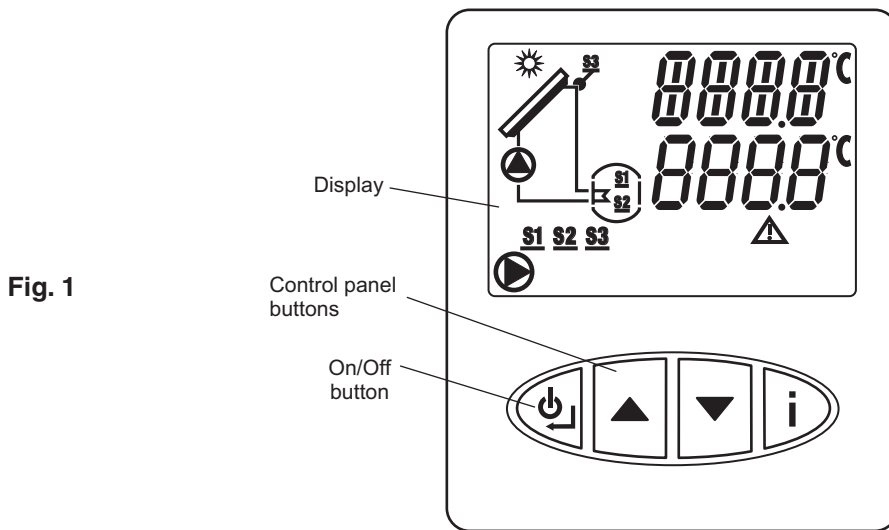


Fig. 1

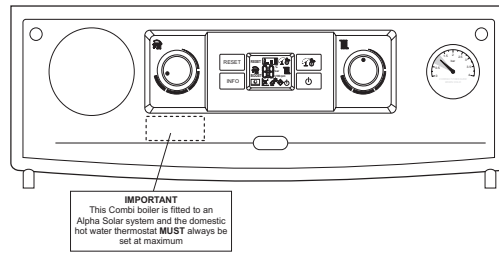
Button	Description	Function
	On/Off	Switches the system on and off
	Increase	Not used in this instance
	Decrease	Not used in this instance
	Info	Sensor temperature info: Keep it pressed in for 1 sec. displays sensor S2 and S3, press in once more to display sensors S1 and S3 (S3 is always the upper temperature on the display)

Symbol	Description	Function	
		State	Description
	DBU pump	On	DBU pump in standby state
	DBU pump	Flashing	DBU pump operational
	Cylinder pump	On	Cylinder pump in standby state
	Cylinder pump	Flashing	Cylinder pump operational
	Warning	Flashing	Fault code will be displayed
	Sun	Flashing	Solar system operational
	Degrees celsius	On	Unit of temperature
	Digits	On	Display temperature, parameters values and fault codes
	Temperature sensors	On	Active sensors
	Solar cylinder	On	Cylinder state correct
	Solar collector	On	Solar collector correct

The boiler domestic hot water thermostat **must** always be set to the maximum setting. A label has been supplied which should have been positioned adjacent to the domestic hot water thermostat knob, as shown in Fig. 2, to ensure the maximum setting is maintained.

Fig. 2



### 3 POSITIONING OF THE COLLECTOR

The solar energy supplied by a system varies with the orientation and tilt of the collector, which will usually be determined by the existing roof. However, the predicted variation is slight. For a collector facing anywhere between SE and SW and tilted between 15° and 75° from the horizontal, the annual solar energy supplied will be at least 90% of that obtained at the optimum collector position (South at 30°).

It should be remembered that shading from trees, buildings etc., can produce a significant decrease in system performance, and collectors should be positioned to minimise shading from the sun.

### 4 SYSTEM OPERATION

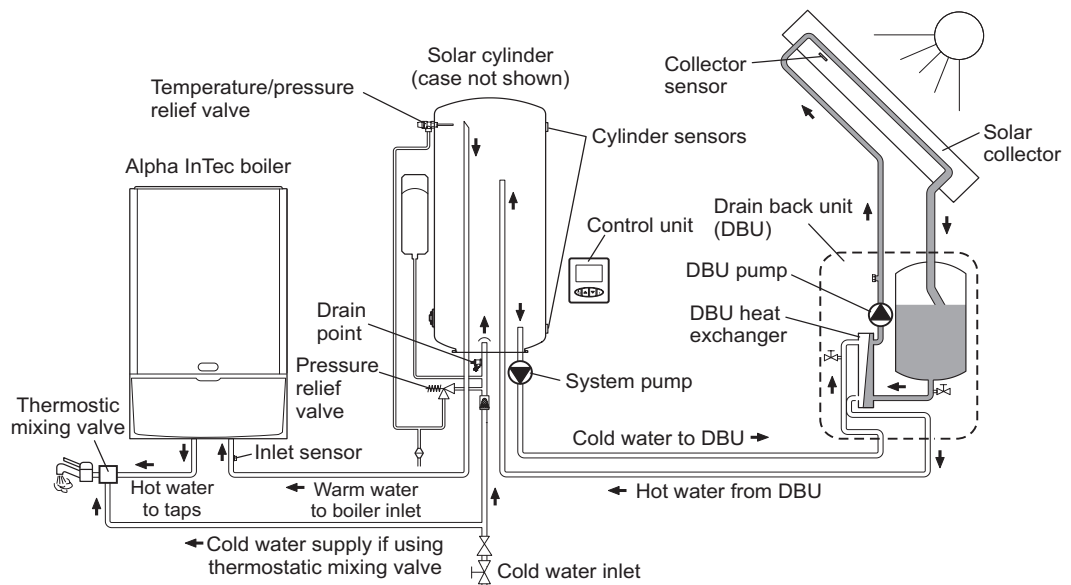
#### WORKING PRINCIPAL - Fig. 3

The solar collector uses the energy of the natural light to heat the water being circulated around the collector. When the heated water enters the drain back unit, heat is transfer into the stored water via a heat exchanger. Stored domestic hot water is pumped from the bottom of the solar cylinder through the drain back unit heat exchanger where it is heated and returned to the cylinder.

When a hot water tap is turned on mains water flows into the bottom of the solar cylinder and hot water flows out of the top towards the boiler. If the boiler inlet sensor detects that the water from the cylinder is above 60°C the water flows directly through the boiler to the tap, if the temperature is less than 60°C the boiler heats up the water. When the flow is less than 60°C the water temperature is maintained by the boiler.

As the temperature of the water entering the boiler is higher than the normal incoming mains water, less gas is required to heat the water to the set temperature of above 60°C thereby saving energy costs.

Fig. 3



#### OPERATION OF THE SOLARSMART SYSTEM - Fig. 3

When the controls detect a collector sensor temperature that is at least 10°C higher than the lower cylinder sensor and the solar cylinder temperature is less than 65°C, the drain back unit pump will start to circulate water around the collector. At the same time that the drain back unit pump starts the cylinder pump will start at 16% full speed to circulate the cylinder water through the drain back unit heat exchanger. The drain back unit pump will stop when the temperature difference between the collector sensor and the lower cylinder sensor falls to 3.5°C or the cylinder temperature reaches 70°C. The cylinder pump will continue to run for 120 seconds to collect any excess heat from the drain back unit then it will also stop.

When the pumps are operating, a flashing pump symbol will be visible in the display (Fig. 1). If a fault occurs, a fault code will be visible in the display.

## 5 ELECTRICAL SUPPLY

The SolarSmart requires a 230/240 V ~ 50 Hz supply, fused at 3 A if a 13 A 3-pin plug is used or a 5 A fuse if any other type of plug is used.

### To connect a plug:-

The colour of the wires in the mains lead may not correspond with the coloured markings identifying the terminals in your plug. In this case proceed as follows:-

The wire coloured green and yellow must be connected to the terminal in the plug that is marked with the letter **E**, or by the earth symbol  $\perp$ , or coloured green or green and yellow.

The blue wire must be connected to the terminal which is marked with either the letter **N** or coloured black.

The brown wire must be connected to the terminal which is marked with the letter **L** or coloured red.

## 5 IMPORTANT NOTES

### THE APPLIANCE MUST BE EARTHED.

*Proviso: WRAS Approval - Solar heating system components. Compliance with the relevant requirements of the Water Supply (Water Fittings) Regulations 1999 has been assessed for this product only as a component of a heating system. If it is to be installed as part of a system using solar energy or ground - or air - source heat pumps for pre-heating water which is to be used as domestic hot water, the Water Fittings Regulations place a legal duty on the installer and user to ensure that the installation and operation of the complete system prevents contamination of domestic hot water by Legionella bacteria, which can grow in water stored at temperatures between 20° and 45°C. Where disinfection by heating is relied on to meet this obligation, information on minimum conditions for thermal disinfection of Legionella bacteria can be found on the WRAS website - [www.wras.co.uk](http://www.wras.co.uk)*

**1. Location** - Always ensure the following clearances are available around the units for servicing:-

**Cylinder** - Top: 100 mm, Bottom: 300 mm, Sides: 10 mm, Front: 450 mm.

**Drain Back Unit** - Top: 100 mm, Bottom: 100 mm, Sides : 10 mm, Front: 450 mm.

**2. Mains Failure** - In the event of an electrical supply failure the system will not operate. When the supply is restored, the system will return to normal operation. If the mains water supply fails, there will be no hot water from the taps.

**3. Pressure Relief Valves** - If the hot water system overheats and steam or water is discharged from the pipe connected to the tundish, turn the Solar system off and contact your Installer. Your Installer should have told you where these pipes terminate.

**4. Hot Water** - To prevent very high temperatures at the hot water taps, the Installer should have fitted a thermostatically controlled mixing valve after the combination boiler.

**5. Hot Piping** - The temperatures of pipework from the collector panel, drain back unit and solar cylinder can be very high. Therefore all Solar system pipework should have been insulated to not only reduce heat loss, but more importantly to prevent injury from burns. Ensure your Installer has done this!

**6. Frost** - Always ensure the room/area where the various parts of the solar system have been installed are protected from frost.

**7. Holidays** - The SolarSmart system uses a very small amount of energy for its operation and during normal vacations (1-2 weeks) we recommend that the system is left switched ON.

If hot water is not used for an extended period of time or the property is vacant then we recommend the system is switched off and the cylinder is drained at the drain point provided. Further details of this procedure can be found in the Installation and Servicing Instructions alternatively contact your installer or engineer.

**8. Servicing** - To maintain efficient and safe operation of the SolarSmart system, it is recommended regular inspection and checks are carried out.

**9. Electric Immersion Heater** - The facility to fit an electric immersion heater is available which can be used to provide additional heat to the cylinder contents if required.

If you contact the Alpha Helpline (Tel: 0844 871 8764) for advice, you will be asked for the serial number of your solar cylinder. The serial number of the cylinder is located on lefthand side of the case and on the bottom.

## **Warranty terms and conditions**

### **How to validate the warranty period**

The appliance must be registered with Alpha Heating Innovation within 30 days of installation. This can be done by completing the registration form on our website: [www.alpha-innovation.co.uk](http://www.alpha-innovation.co.uk) or completing the form included with your boiler and sending it to Alpha Heating Innovation, Nepicar House, London Road, Wrotham Heath, Kent TN15 7RS.

Your appliance is then guaranteed against faulty materials or workmanship from the date of installation (not the date of first use) subject to the conditions and exceptions described below.

### **Our promise to you**

If you experience a fault with your SolarSmart system, we aim to provide a safe and high quality repair service, supported by our dedicated national network of highly skilled engineers.

During the warranty period, any components which are proved to be faulty or defective in manufacture will be exchanged or repaired free of charge, if repaired directly by Alpha Heating Innovation or one of its appointed agents.

Invoices for attendance and repair of the appliance by third parties will not be accepted by Alpha Heating Innovation.

This guarantee does not affect your statutory rights.

### **The warranty is valid provided that:**

- The system is fed from the public mains water supply.
- The cylinder has only been used for the storage of potable water.
- The system has not been subjected to frost damage, scaling, nor has it been tampered with or been subjected to misuse or neglect.
- The system has been serviced annually.
- The Benchmark Log Book has been filled in after each annual service.
- The system has been correctly installed by a qualified and competent installer and as per the instructions contained in the Product Guide and all relevant Codes of Practice and Regulations in force at the time of installation.
- Any disinfection has been carried out in accordance with BS 6700.
- The appliances have not been modified in any way other than by Alpha Heating Innovation or Alpha Heating Innovation approved engineers.
- No factory-fitted parts have been removed for unauthorised repair or replacement.
- It has been installed in the UK. This guarantee is not valid for installations outside the United Kingdom.

### **What this warranty does not cover**

- Free of charge repairs to appliances that have not been installed by a qualified and competent person.
- Repairs to appliances that have not been installed and commissioned correctly, as outlined in the installation instructions.
- Any damage caused by defects or failures in the system, outside of the appliance itself.
- The effects of scale build up.
- Faults caused by an inadequate supply of electricity or water to the property.
- The replacement of any decorative parts such as badges, trim and case.
- Compensation for consequential losses (e.g. loss of earnings, business losses, stress and inconvenience arising from a production breakdown, including repair delays caused by factors outside our reasonable control).

### **What to do if you experience a problem with your heating system or the operation of your Alpha appliance**

- You should always contact your installer in the first instance.
- If your installer confirms that the fault is with your Alpha appliance and they cannot repair it because of a component failure, our customer service technical helpline is on hand to help. Simply call 0844 871 8764 for advice or to book an engineer's visit.
- Our technical helpline is open 08.00 – 17.30 Monday to Friday, 09.00 – 16.00 on Saturday and 09.00 – 14.00 on Bank Holidays (excluding Christmas Day).

### **PLEASE NOTE**

If you cannot provide details of your installer, who must be a qualified and competent person, and we have not been notified of this information previously, a "call-out" charge of £50+VAT will be levied before we agree to attend site.

This fee must be paid by debit or credit card over the telephone prior to us agreeing to send an engineer to attend to the appliance. If evidence that the appliance has been installed by a legally registered engineer can be presented when our service engineer visits site then any fee will be reimbursed.

'Evidence' is strictly defined as any of the following:

- 1 A copy of a Building Regulations Compliance certificate (giving the details of the registered installer who carried out the work), or
- 2 A copy of a receipt for the installation clearly showing the installation company's address details and their current Gas Safe registration number.

Alpha Heating Innovation is a trading name of Alpha Therm Ltd., Nepicar House, London Road, Wrotham Heath, Kent TN15 7RS. Registered in England no. 882439.