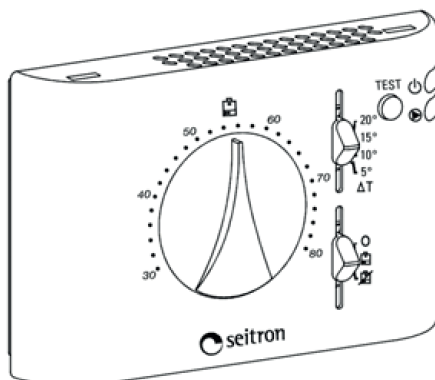


S307

CONTROL UNIT FOR THERMAL SOLAR SYSTEMS



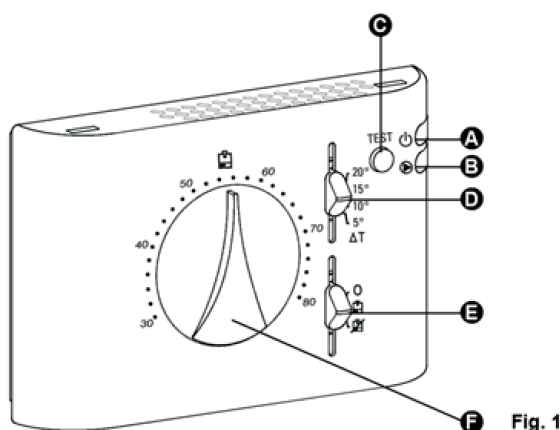
OVERVIEW

This device is an analogue controller for solar panel heating systems. It features 2 on/off relay outputs and 3 inputs for NTC temperature sensors and is capable of configuring and controlling up to 5 different types of solar systems (see 'systems that may be set up'). The solar controller is designed with an ability to control the temperature differential between the collector and boiler and turning on a supplemental heating source (where the function is enabled) when the temperature in the boiler falls below a set value.

The antifreeze function can be set on one of 3 fixed levels using an internal connector.

Two LEDs located on the right side of the unit show the presence of power for the control unit and the activity of the collector pump.

DESCRIPTION OF THE KEYS



LEGEND:

- A** Power LED
- B** Pump activity LED
- C** Test mode key
- D** Differential selector (ΔT collector - boiler)
- E** Mode selector (with integration | without integration) | Off.
- F** Supplemental heat knob

INSTALLATION

TO INSTALL THE DEVICE, PERFORM THE FOLLOWING OPERATIONS:



WARNING

The installer must comply with all applicable technical standards in order to assure the safety of the system.

- 1** Release the plate attached to the thermostat base by pushing it to the left. This releases the teeth shown in Fig. 2.

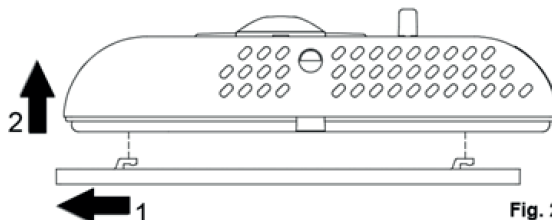


Fig. 2

- 2** Move both sliders all the way down and position the knob at 'Off'; lift the knob using a screwdriver as shown by the arrow in Fig. 3, being careful not to scratch the cover.

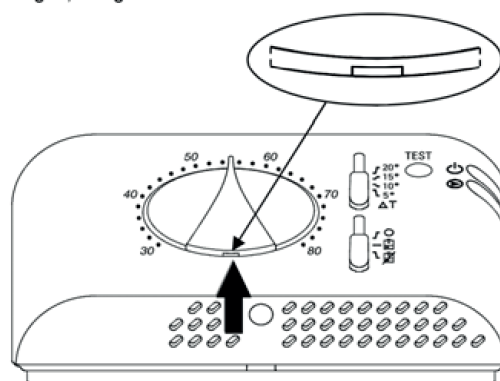


Fig. 3

- 3** Push the plastic tab in the lower slot using a screwdriver, slightly lifting the cover (Fig. 4).

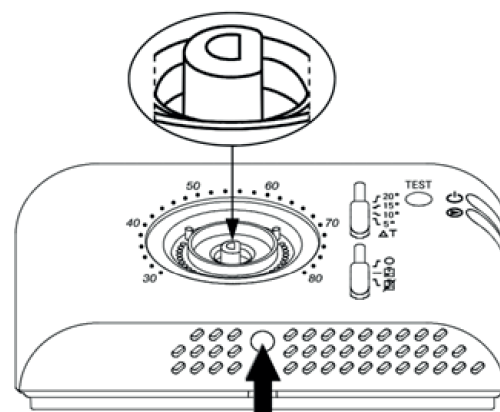


Fig. 4

- 4 Turn the cover, while pressing it slightly, until it is fully extracted (Fig. 5).

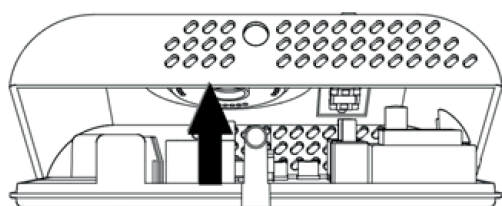


Fig. 5

- 5 Fix the plate to the wall, using the two screw seats with centre distances of 60 mm or 85 mm (use the supplied wall plugs and/or screws). Pass the wires through the rectangular openings.

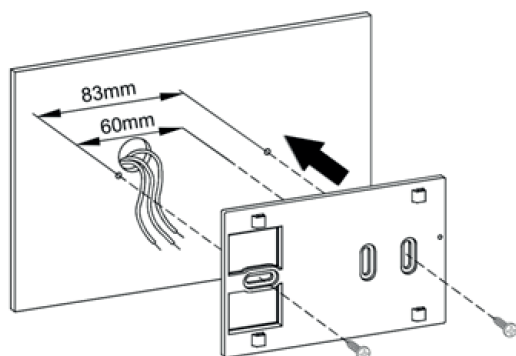


Fig. 6

- 6 - Connect the thermostat base to the wall plate (pass the wires through the rectangular openings). Align the base holes with the special wall plate teeth, then press the base to the left until the plate's plastic teeth click (Fig. 8).
- Fix the thermostat base to the wall with the supplied screws.

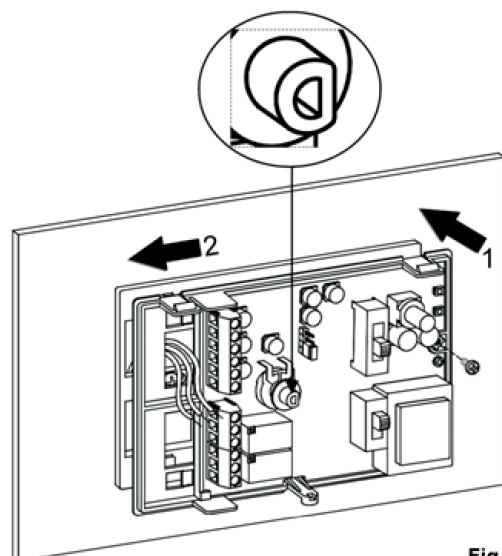


Fig. 7

- 7 - Make the electrical connections according to the following diagram.

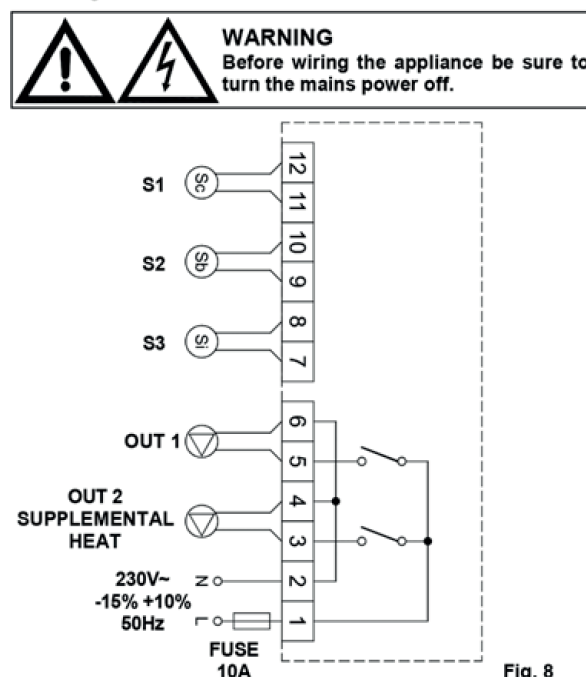


Fig. 8

WARNING!

S1, S2 and S3 are NTC temperature sensors. For S1 sensor the $-50^{\circ}\text{C}..+200^{\circ}\text{C}$ range probe (blue cable) must be used, while the probes with the range of $-50^{\circ}\text{C}..+110^{\circ}\text{C}$ (yellow cable) can be used for the other probes.

The relay outputs associated with loads OUT1 and OUT2 are powered (230V~). It is advisable to fit a 10A 250V~ fuse on the power unit mains capable to intervene in case of short circuits on loads.

- 8 - Set the desired antifrost temperature (See section 'ANTIFROST TEMPERATURE SETTING' at page 4).

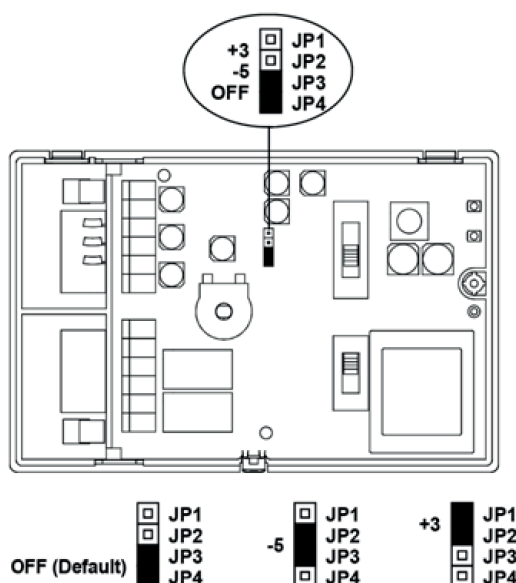


Fig. 9

- 9 Perform the following operations to reclose the thermostat:
- Position the two teeth from the top of the cover into the specific slots and leave both sliders at the bottom.
 - Turn the cover making sure the sliders coincide with the relative switches, push the plastic tab on the lower part of the base inwardly (see the arrow in Fig. 10) and press it so that the plastic fixing tab inside the special hole, at the bottom of the cover, clicks. Check the sliders' correct stroke.

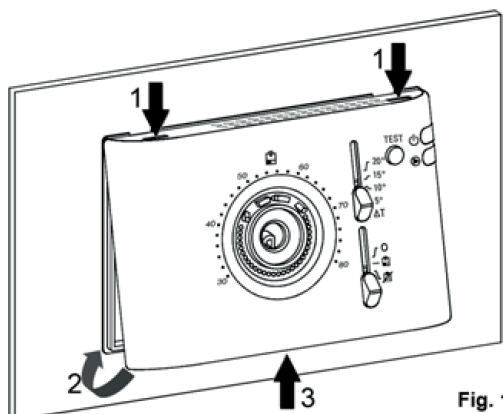


Fig. 10

- 10 Position the knob at '☀' and insert it on the cover.

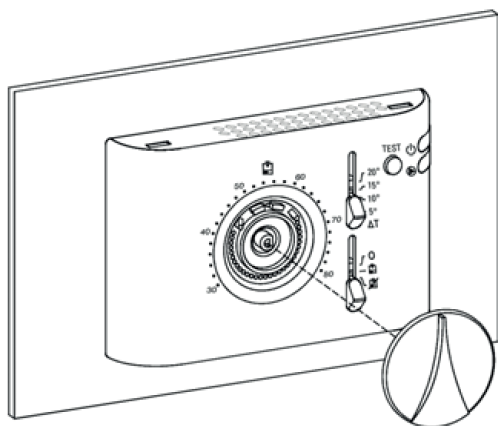


Fig. 11

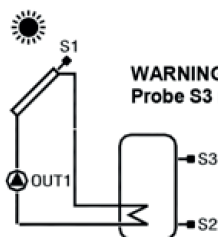
SYSTEMS THAT CAN BE SET UP



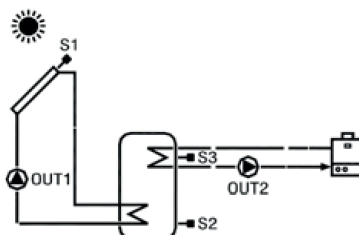
WARNING!

All outputs are 230V~ powered and are NOT potential free.

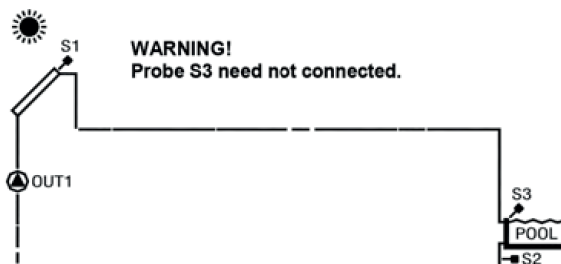
N° 1: Solar heating installation with 1 tank and no integrative heat source.



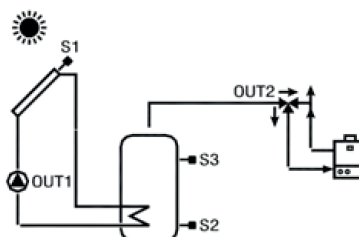
N° 2: Solar heating installation with 1 tank and additional thermostatic heating.



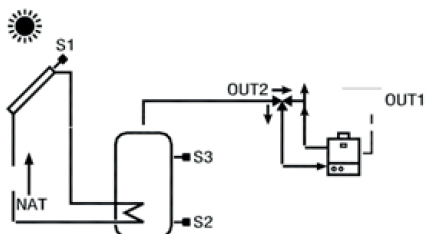
N° 3: Pool solar heating installation.



N° 4: Solar heating installation with 1 tank, direct integration by means of valve logic.



N°5: Natural circulation solar heating installation with 1 tank and direct integration by means of valve logic.



STARTING

TURNING ON AND OFF

Selector **E** in Fig. 1, allows to power on and off the solar control unit.

When the selector is in '0' position, the unit is off and all outputs are disabled, nonetheless pressing the key 'TEST' results in activating the collector pump.

When the selector is in 'I' position the unit is turned on with the integrative source enabled (normal operation of the unit).

When the selector is in 'Z' position the unit is turned on but the integrative source is disabled.

TEST FUNCTION

Keeping depressed the 'TEST' key, **C** in Fig. 1, the collector pump is activated so that its correct operation can be checked.

DIFFERENTIAL SELECTOR

With selector 'ΔT' (**D** in Fig. 1) you can set the temperature difference between the collector and boiler, among the following values: +5°C, +10°C, +15°C and +20°C.

If, for example, selector 'ΔT' is set on 10°C and the boiler water temperature is 60°C, the collector pump will switch on only when the collector temperature rises above 70°C.

SUPPLEMENTAL HEAT KNOB

By means of the 'F' knob you can set the minimum temperature of the water contained in the boiler.

This function is useful when the solar panels are no longer able to heat the water in the boiler, particularly during winter months.

For example, if the knob is set to 50°C and the boiler water falls below this temperature, the controller will switch on the supplemental pump, which will draw water from a water heater or another heat source and introduce it into the boiler.

When the boiler temperature is 2°C above the temperature set by means of the knob, the supplemental pump will switch off.

When the power selector is in 'Z' position, the integrative source is disabled.

ANTIFREEZE FUNCTION

Through a connector located close to the unit knob ('Antifrost connector selection', Fig. 9), you can disable or enable the antifreeze function as described below:

- **Antifreeze OFF (default)**
Jumper set in lower position (JP3-JP4), OFF position.
- **Antifreeze set on -5°C**
Jumper set in central position (JP2-JP3), -5 position.
- **Antifreeze set on +3°C**
Jumper set in upper position (JP1-JP2), +3 position.

CONNECTED LOADS

The controller features two powered outputs.

OUT 1 should be connected to the collector pump; the activation of this output will be signalled by the lighting up of the red 'P' LED on the front panel.

Output OUT 2 must be connected to an integrative heat source.

TEMPERATURE SENSORS

The controller features three inputs for connecting the temperature sensors.

- The controller features three inputs for connecting the temperature sensors (blue cable, -50°C .. +200°C).
- The controller features three inputs for connecting the temperature sensors (yellow cable, -50°C .. +110°C).
- The controller features three inputs for connecting the temperature sensors (yellow cable, -50°C .. +110°C).

TECHNICAL FEATURES

Power supply:	230V~ -15% +10% 50Hz
Electrical input:	2,3 VA
Sensor type:	NTC 10K Ohm @ 25°C ±1%
Sensor operating limits:	-50°C .. +200°C (collector) -50°C .. +110°C (boiler)
Contact capacity:	2x5(1)A max @ 250V~(SPST) contacts powered ± 1,5 °C
Accuracy:	± 1,5 °C
Antifreeze:	Available settings +3°C, -5°C, OFF (default OFF)

Adjustment range:	
ΔT collector - boiler:	5°C, 10°C, 15°C, 20°C
Supplemental heat source:	30°C .. 80°C

Resolution:	
Supplemental heat source:	2°C

Supplemental heat source:	
Differential:	+1,5°C
Supplemental heat source:	2°C

Protection rating:	IP 30
Operating temp.:	0°C .. 40°C
Storage temp.:	-10°C .. +50°C
Humidity limits:	20% .. 80% RH non-condensing
Enclosure:	Material: Self-extinguishing ABS V0
Colour:	Signal white (RAL 9003)
Dimensions:	132 x 87 x 37 mm (L x A x P)
Weight:	~570 gr. (version w/ sensors) ~550 gr. (version w/o sensors)
Mounting:	On the wall.

NORMATIVE REFERENCES

The product complies with the following standards (EMC 2004/108/EC and LVD 2006/95/EC):
EN-60730-1 (2011)
EN-60730-2-9 (1995)

AVAILABLE ACCESSORIES AND SPARES

- Accessories for voltage free contacts: 2 x 230V~ inputs and 2 voltage free outputs
- NTC probe 10K Ohm @25°C ±1%, -50°C .. +200°C (blue cable)
- NTC probe 10K Ohm @25°C ±1%, -50°C .. +110°C (yellow cable)
- Brass pocket 1/2" 7x38mm

WARRANTY

In view of its commitment to continuous product development, the manufacturer reserves the right to change technical and performance specifications without notice. Consumers are protected by a warranty against product nonconformities in accordance with European Directive 1999/44/EC and the manufacturer's warranty policy. The complete text of the warranty is available from the dealer on request.