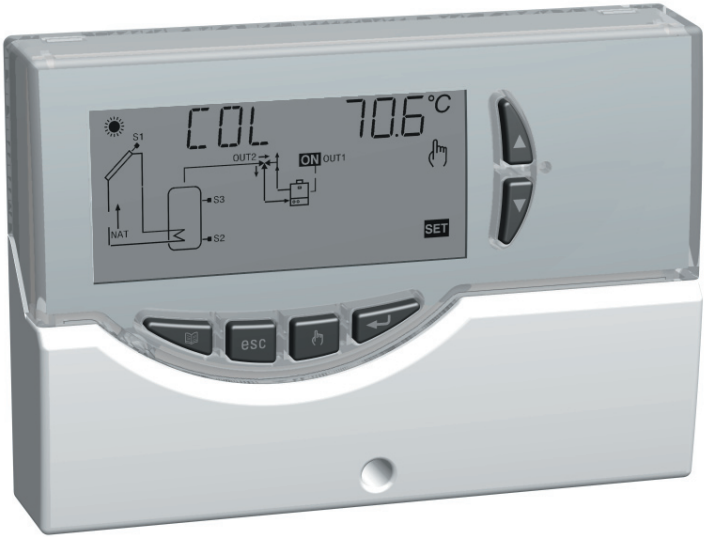
DIGITAL CONTROL UNIT
FOR THERMAL SOLAR SYSTEMS

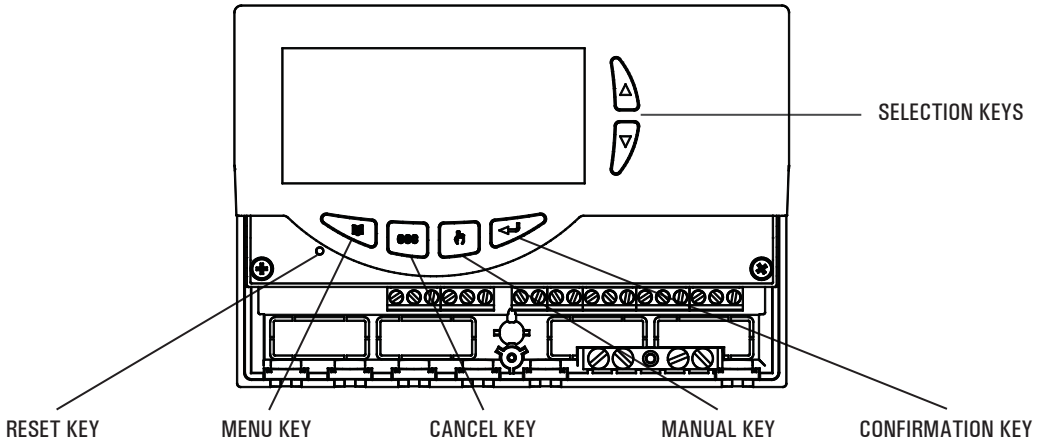


CE

OVERVIEW

This device is a centralized control unit for thermal solar panels. Supplied with 3 outputs (Load Relays + Alarm Relays) and 3 Inputs (Probes) it is able to manage a system configuration that can be selected among 7 common types of layouts. When a specific installation is selected, the control unit automatically manages the outputs and inputs used to control the valves, the pumps, the integrative sources and the probes used in the type of installation selected.
Moreover on the backlit LCD display it is possible to visualize the hydraulic diagram of the installation set up, the state of the outputs, the probes as well as several other data and informations.

DESCRIPTION OF THE KEYS



TECHNICAL FEATURES

Power supply:	230V ~ ±10% 50Hz
Power absorption:	< 2 VA
Sensors type:	3 x NTC 10K @ 25 °C ±1 %
Sensor operating range:	-50 °C .. +200 °C (collector)
	-50 °C .. +110 °C (boiler)
Temperature reading range:	-20 °C .. 180 °C
Accuracy:	±2 °C
Resolution:	0,1°C (-20°C .. 144,9°C)
	1°C (145°C .. 180°C)
Offset adjustment:	on S1: ±5.0°C
	on S2: ±5.0°C
	on S3: ±5.0°C
Installer Password:	0000 .. 9999 (default 0000)
Acoustic Signal:	On/Off (default On)
Backlight timing:	20 sec from last keypress
OUT2 Relay Logic:	NOR=N.O. REV=N.C. (default N.O.)
Output relay contacts rating:	2 x 2(1)A max @ 250V ~ (SPST) Voltage free
Alarm relay contacts rating:	4(1)A max @250V ~ (SPDT)
Protection grade:	IP 40
Operating temp. range:	0°C .. 40°C
Storage temp. range:	-10°C .. +50°C
Humidity limits:	20% .. 80% RH non-condensing
Case: Material:	ABS V0 self-extinguishing
Color:	Signal White (RAL 9003)
Dimensions:	156 x 108 x 47 (W x H x D)
Weight:	~ 723 gr. (version with probe)
	~ 553 gr. (version without probe)
Installation:	Wall-mount

NORMATIVE REFERENCES

The product complies with the following standards (EMC 2004/108/EC and LVD 2006/95/EC):

CEI-EN-60730-1	(1996)
CEI-EN-60730-2-9	(1997)

AVAILABLE ACCESSORIES AND SPARES

- Accessories for free contacts: 2 x 230V ~ inputsand 2 free voltage outputs
- NTC probe 10K Ohm @25°C ±1%, -50°C .. +200°C (yellow cable)
- NTC probe 10K Ohm @25°C ±1%, -50°C .. +110°C (blue cable)
- Brass pocket 1/2" 6x33mm

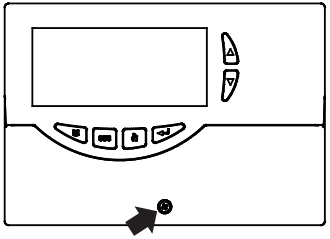
INSTALLATION

WARNING

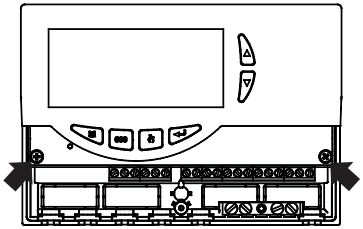
The installation technician shall operate in full compliance with all the applicable technical standards in order to grant the unit safety

TO INSTALL THE DEVICE, PERFORM THE FOLLOWING OPERATIONS:

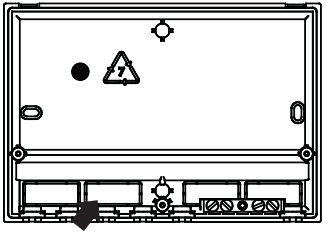
1. Remove the central screw and the plastic door.



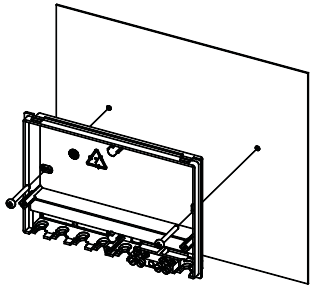
2. Remove the two screws shown in the drawing, then remove the whole body from the base.



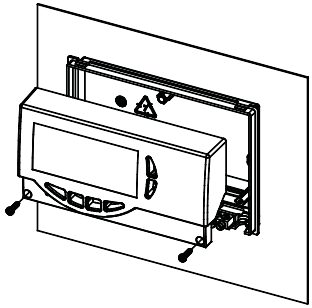
3. ASSEMBLY WITH CABLE INPUT ON THE REAR PANEL: if the cable fasteners (delivered with the unit) are not required for installation, use a screwdriver to remove the base blocks permitting the cables to pass through, and fit the blocks delivered (6).



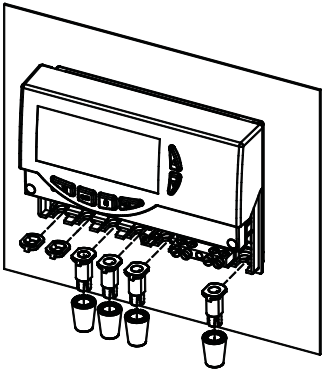
4 Fix the power unit base to the wall.



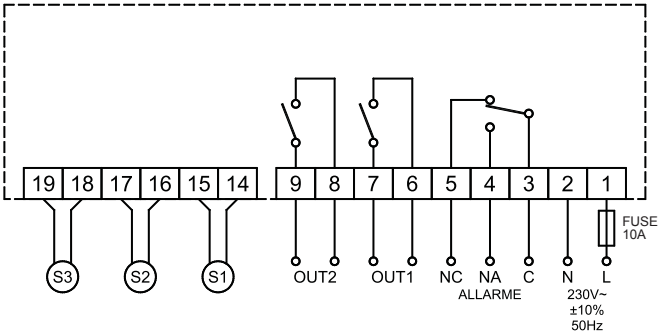
5 Fit the cover again with the electronics at the base.



6 ASSEMBLY WITH CABLE INPUT ON THE LOWER SIDE: fit the cable fasteners and/or the blocks delivered with the unit.



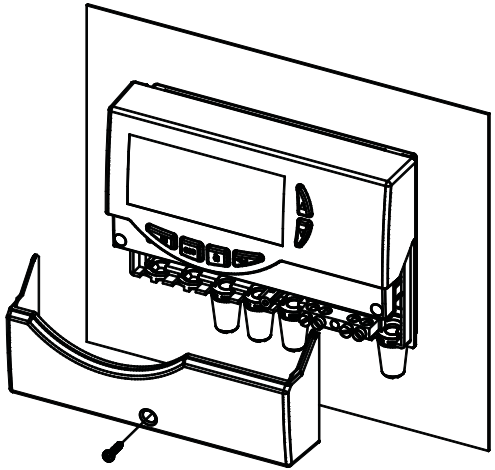
7 Make the electrical connections according to the following layout.



WARNING!
Before wiring the appliance be sure to turn the mains power off.

WARNING! S1 (or 'COL'), S2 and S3 are NTC temperature sensors. For S1 sensor the -50°C..+200°C range probe (blue cable) must be used, while the probes with the range of -50°C..+110°C (yellow cable) can be used for the other probes. When setting up installations with 2 solar panels, the probes corresponding to S1 and S3 must be exclusively of the -50°C .. +200°C range type. The outputs OUT1, OUT2 and Alarm, are voltage free. It is advisable to fit a 10A 250V ~ fuse on the power unit mains capable to intervene in case of short circuits on loads.
TERMINAL BOARD GROUNDING: On the base of the control unit case is located a brass terminal board for connecting the ground protection conductors of the load devices connected to the control unit.

8 Fit the door again to close the power unit.



WARNING!

When closing the unit please ensure that the removable wiring terminals have been inserted with the correct orientation (the terminals screws must be facing upward).

STARTING

TURNING ON AND OFF

To turn the control unit on and off, press the ' **esc** ' key for at least 3 seconds. When the control unit is turned on it will carry out a diagnosis of the internal circuitry to verify its correct operation and the red led will flash three times.
If the control unit reveals no anomalies the red led will remain on, otherwise it will continue to flash quickly and the display will show the type of error.

BACKLIGHT

By pressing any key the backlight of the display is activated. The backlight automatically shuts off after about 20 seconds from the last key depressure.

ACOUSTIC SIGNALS

The control unit is supplied with an internal buzzer that gives the user an acoustic feedback in case of pressure on the keys, alarms and failure. The acoustic signal can be disabled by properly setting the relevant ' Installer Parameter '.

TEST FUNCTION FOR LOAD WIRINGS CHECK

Through this function, available at the Installer Parameter P7, the control unit cyclically activates the loads wired to the unit

so that the installer can verify the accuracy of the wirings performed.

DISPLAYING THE TEMPERATURE

During normal operation the control unit alphanumeric display will show the temperatures measured by the probes connected to it. By pressing the ' ▲ ' or ' ▼ ' keys it is possible to cyclically choose which probe temperature will be shown on the display:

➔ COL ➔ S_2 ➔ S_3 ➔

AUTOMATIC / MANUAL / ABC (Automatic Boiler Control) OPERATION

The control unit can manage the installation selected in 3 different modes:

- AUTOMATIC: in this mode the control unit automatically manages and controls the operation of the installation according to the programmed data (normal controller operation).
- MANUAL: the collector pump is continuously powered; the only active controls will be those related to the maximum temperature and safety.
- ABC: this mode is identical to the Manual mode except that the collector pump will be activated only when the temperature of the collector exceeds ' T ABC ' programmed in the relevant installer parameter.

RESET

In order to reset the device, press the key labelled as ' **RESET** ' located behind the removable door; **DO NOT USE PINS OR NEEDLES**.

INSTALLER PARAMETERS

To access the installer parameters press the ' ↵ ' key.

Entering the Password

The display will show '**PWD 0000**' with the leftmost digit flashing thus requesting for the correct password.
In order to set the 4 password digits use the ' ▲ ' or ' ▼ ' key; by pressing the ' ↵ ' key, the current digit is confirmed and the flashing is transferred to the following digit.
After confirming the last digit, the ' ↵ ' key will give access to the installer parameters.
The initial password is factory set as '0000'.

Modifying the Password

In order to modify the stored password, first press the ' ↵ '

key, then proceed as follows:

PRESS THE ' MENU ' KEY.

THE DISPLAY SHOWS
' PWDH0000 '.

ENTER THE CURRENT PASSWORD.
(same procedure described above)

THE DISPLAY SHOWS
' PWDN0000 '.

INSERT THE NEW PASSWORD.

THE DISPLAY SHOWS
' PWDC0000 '.

INSERT NEW PASSWORD.

THE CONTROL UNIT WILL MEMORIZE THE NEW PASSWORD
AND GIVE ACCESS TO THE INSTALLER PARAMETERS.

Pressing the ' **esc** ' key at any time will exit the password management mode.

Using installer parameters

Inserting the correct Password gives access to the installer parameters change mode (' **SET** ' icon lights). The first information displayed is the model of the control unit in use and the parameter ' **P1** ' value.
By pressing the ' ▲ ' or ' ▼ ' keys it is possible to scroll through the various parameters.
Pressing the ' ↵ ' key takes the user to the parameter modifying mode selected.
To exit the installer mode press the ' **esc** ' key or wait 20 seconds.

PRESS THE ' ↵ ' KEY ON THE START PAGE.

THE DISPLAY SHOWS ' PWD 0000 '.

INSERT THE CURRENT PASSWORD.

THE DISPLAY SHOWS THE FIRST ' INSTALLER PARAMETER '.

USING THE ARROWS ' ▲ ' OR ' ▼ ' IT IS POSSIBLE TO CYCLICALLY SCROLL THROUGH THE INSTALLATION PARAMETERS:

P1:	SELECTION INSTALLATION TYPE	' MIDI '
P2:	SETTING THERMAL DATA	' DATA '
P3:	ANTIFROST PARAMETERS MANAGEMENT	' O AF '
P4:	ACOUSTIC SIGNAL MANAGEMENT	' BEEP '
P5:	LOGIC RELAY SELECTION	' ACT '
P6:	INTEGRATION HOURS COUNTER	' C AH '
P7:	LOADS WIRING TEST	' TEST '
P8:	LIMITATION OF COLLECTOR MINIMUM TEMP.	' MTL '

PRESS THE ' ↵ ' KEY TO MODIFY THE SELECTED PARAMETER.

CONFIGURE DATA FOR EVERY SINGLE PARAMETER AS EXPLAINED BELOW.

PRESS THE ' **esc** ' KEY TO RETURN TO THE INSTALLER PARAMETERS SELECTION.

WAIT 20 SECONDS OR PRESS THE ' **esc** ' KEY TO EXIT THE INSTALLER MODE.

Note: in the ' installer parameters ' mode all the outputs are disabled.
All default values are to be considered as indicative, being they subject to changes due to the version and without prior notice.

P1: SELECTION INSTALLATION TYPE

Pressing the ' ▲ ' or ' ▼ ' keys will show all the installations that can be set up (if the probe for the selected installation has a problem or is left unconnected, that probe will flash on the display).

To confirm the selected installation press the ' ↵ ' key; the control unit will memorize the choice and the display will again show the parameter list.

To cancel the selection, press the ' **esc** ' key. In this case the control unit will abandon the changes made and will show again the parameter list.

The parameters influencing the regulation of the selected setup are listed in the following and can be modified through the second installer parameter (P2).

Note: When going into parameter P1, the controller will reset the maximum temperatures (MT) detected until that moment. Furthermore, when quitting this parameter, the controller will set again the temperature display on the sensor S_1.

List of thermal data to be eventually programmed:

Parameters	Description
TS1-TS2-TS3	Probe safety temperature
ΔT 12	Differential between the probes S1-S2
MTC	Adjustment of collector minimum temperature
MTEN	Enabling/disabling the collector minimum temperature
TM3	Maximum temperature of the probe S3
TAH	Integration temperature on the probe S3
HY12	Hysteresis of ΔT 12
HYT	Thermostatic hysteresis
HYTS	Safety thermostatic hysteresis

WARNING!

The thermal parameters to be set are displayed when the relevant scheme is selected, this means the power unit will only display the thermal parameters actually activated for the selected hydraulic scheme.

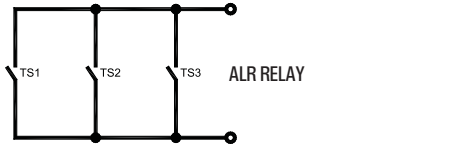
CONTROL LOGIC

WARNING: The following control logics must be applied to all the diagram described hereinafter.

CONTROL LOGIC IN MANUAL MODE OR IN ABC

The control logic concerning the commands of the 'ABC' function or the ' MANUAL ' operation mode takes the place of the differential gear control. The controls concerning the Safety and Maximum temperatures are always active. The integrative source in Manual mode or in ABC is deactivated. It will be automatically reactivated when the above modes are deactivated.

CONTROL LOGIC OF THE SAFETY THERMOSTATS

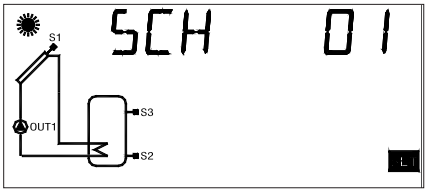


The control is not active when the unit is in ' **OFF** ' status.

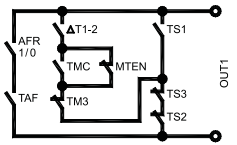
AVAILABLE DIAGRAMS

SCH 01

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

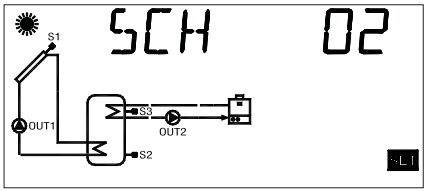


Control logic

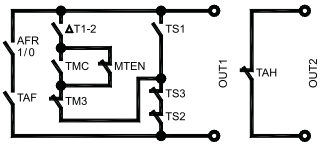


SCH 02

Solar heating installation with 1 tank and additional thermostatic heating.

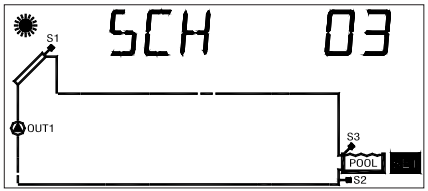


Control logic

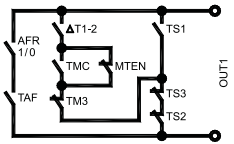


SCH 03

Pool solar heating installation.

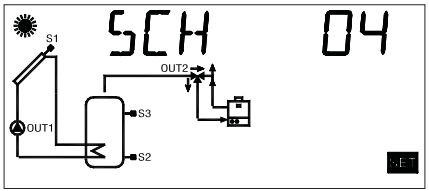


Control logic

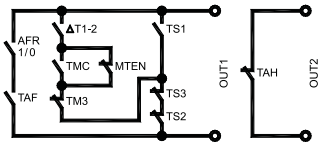


SCH 04

Solar heating installation with 1 tank, direct integration by means of valve logic.

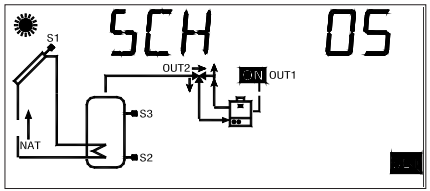


Control logic

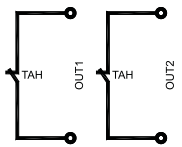


SCH 05

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

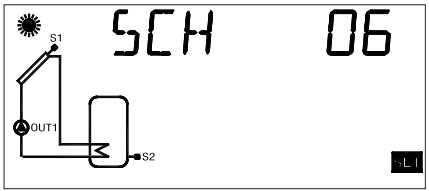


Control logic

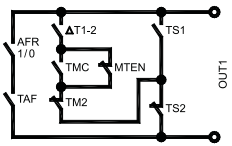


SCH 06

Solar heating installation with 1 tank and only 2 probe.

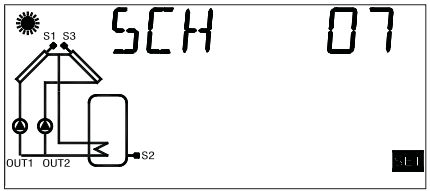


Control logic

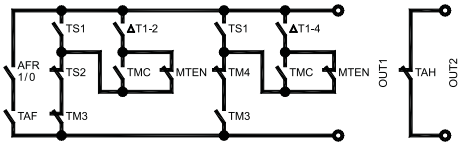


SCH 07

Solar heating installation EAST / WEST, 1 tank and no integrative heat source.



Control logic



P2: SETTING THE THERMAL DATA

Using this parameter it is possible to set the thermal data related to the selected installation:

Note: The control unit is supplied with pre-programmed thermal data for optimal operation. Any change to these values must be performed by qualified personnel only. When changing the hydraulic scheme by means of the parameter P1, the thermal values (TS, TM, TAH and TABC) already set will be reset at the default values.

AFTER SELECTING PARAMETER P2 PRESS THE ' ↵ ' KEY.

USING THE ▲ ' OR ' ▼ ' ARROWS IT IS POSSIBLE TO SCROLL CYCLICALLY THROUGH THE THERMAL DATA:

- Safety temperatures
- Differentials
- Hysteresis of the differentials
- Hysteresis of the safety thermostats
- Hysteresis of the thermostats
- Offset
- Maximum temperatures
- Integration temperature
- ABC (Automatic Boiler Control) temperature

PRESS THE ' ↵ ' TO MODIFY THE THERMAL DATA SELECTED; THE DATA WILL START FLASHING.

SET THE DESIRED NUMERIC VALUE USING THE ' ▲ ' OR ' ▼ ' ARROWS.

PRESS THE ' ↵ ' KEY TO CONFIRM THE PROGRAMMED SETTINGS OR PRESS THE ' **esc** ' KEY TO CANCEL THE CHANGES.

In the following the regulation ranges allowed for each parameter are listed.

WARNING!

The thermal parameters to be set are displayed when the relevant scheme is selected, this means the power unit will only display the thermal parameters actually activated for the selected hydraulic scheme.

Probe safety temperatures		
Data	Regulation range	Default
TS1	60.0 .. 240.0 °C	140.0 °C
TS2	20.0 .. 90.0 °C	80.0 °C
TS3 [1]	20.0 .. 90.0 °C	80.0 °C
TS3 [2]	60.0 .. 240.0 °C	140.0 °C

WARNING!

If the selected scheme has only one manifold, the default value of the safety temperature (TS3) will be 80°C ([1]); if the selected scheme has two manifolds, the default value of the safety temperature (TS3) will be automatically set at 140°C ([2]). When changing from a two-manifold scheme to one-manifold scheme and the maximum temperature (TM3) is higher or equal to 75°C, the safety temperature (TS3) will be automatically limited to the value TM3 +5°C.

It is not possible to set the Safety Temperatures TS2 and TS3 to a value lower than the relevant Maximum Temperature, as the value of the Safety Temperature is limited to the value of the Maximum Temperature +5°C. To lower the Safety Temperature, it is first necessary to decrease the Maximum Temperature and then set the Safety Temperature to the desired value.

If the Safety Temperature is displayed but the relevant Maximum Temperature is not, then the Safety Temperature will be limited according to the Maximum Temperature operating in the current scheme (i.e. in scheme no.1, the value of the TS2 safety temperature will be limited according to the value of the TM3 maximum temperature). Should the hydraulic scheme be changed and SCH5 scheme previously activated, all the Safety and Maximum temperatures will be set at the factory-set default values.

Differential between the probes S1-S2 (ΔT12) or S3-S2 (ΔT32)		
Data	Regulation range	Default
ΔT12	1.0 .. 20.0°C	8.0 °C
ΔT32	1.0 .. 20.0°C	8.0 °C

WARNING!

It is not possible to set the Differential to a value lower than the relevant hysteresis because the value of the Differential is limited to the value of the hysteresis +1°C. To lower the Differential it is first necessary to decrease the value of the hysteresis.

Hysteresis of the differential Δ12		
Data	Regulation range	Default
HY12	1.0 .. 15.0°C	4.0 °C

WARNING!

It is not possible to set the Hysteresis (HY) to a value higher than the relevant Differential (ΔT), because the value of the hysteresis is limited to the value of the Differential -1°C. To increase the value of the Hysteresis it is first necessary to increase the value of the Differential (ΔT).

Hysteresis of the safety temperatures		
Data	Regulation range	Default
HYTS	1.0 .. 15.0°C	2.0 °C

Thermostatic hysteresis		
Data	Regulation range	Default
HYT	1.0 .. 15.0°C	2.0 °C

Probe Offset		
Data	Regulation range	Default
OS1	-5.0 .. +5.0°C	0.0 °C
OS2	-5.0 .. +5.0°C	0.0 °C
OS3	-5.0 .. +5.0°C	0.0 °C

Maximum temperature of the probes S2 (TM2) o S3 (TM3)		
Data	Regulation range	Default
TM2	20.0 .. 90.0°C	70.0 °C
TM3	20.0 .. 90.0°C	70.0 °C

WARNING!

It is not possible to set the Maximum Temperature (TM) to a value higher than the relevant Safety Temperature, as the Maximum Temperature value is limited to the value of the Safety Temperature (TS) -5°C. To increase the Maximum Temperature value, it is first necessary to increase the value of the Safety Temperature.

Integration Temperature (After Heating) on probe S3		
Data	Regulation range	Default
TAH	20.0 .. 90.0°C	45.0 °C

WARNING!

It is not possible to set the value of the integration temperature (TAH) at a value which is higher than the Maximum Temperature (TM3) because the value of the integration temperature (TAH) is linked to the Maximum Temperature (TM3) -5°C.

In order to lower the value of the Maximum Temperature (TM3) below the value of the integration temperature (TAH) already set, first of all lower the value of the integration temperature (TAH), then change the Maximum Temperature (TM3).

ABC Temperature (Automatic Boiler Control) on probe S3		
Data	Regulation range	Default
TABC	20.0 .. 80.0°C	30.0 °C

P3: ANTIFROST PARAMETER MANAGEMENT

Using this parameter it is possible to set the data managing the antifrost function.

The control unit is supplied with preset antifrost data for optimal operation.

Any change to these values must be performed by qualified personnel only.

AFTER SELECTING PARAMETER P3 PRESS THE ' ↵ ' KEY.

IT IS POSSIBLE TO SCROLL CYCLICALLY THROUGH ANTIFROST DATA USING THE ' ▲ ' OR ' ▼ ' ARROWS:

- Antifrost temperature ' TAF '
- Collector pump ignition interval ' P ON '
- Collector pump shut off interval ' P OF '
- Antifrost test duration ' TMR '

PRESS THE ' ↵ ' KEY TO MODIFY THE THERMAL DATA SELECTED; THE DATA WILL START FLASHING.

USE THE ' ▲ ' OR ' ▼ ' ARROWS TO SET THE DESIRED NUMERIC VALUE.

PRESS THE ' ↵ ' KEY TO CONFIRM THE PROGRAMMING OR PRESS THE ' **esc** ' KEY TO CANCEL THE CHANGES.

BY PRESSING THE ' ↵ ' KEY AFTER MODIFYING THE DATA RELATIVE TO THE DURATION OF THE ANTIFROST TEST, THE CONTROL UNIT WILL CONFIRM THE DATA AND WILL START THE TEST.

In the following the regulation ranges allowed for each parameter are listed.

Antifrost temperature		
Data	Regulation range	Default
TAF	-10.0°C .. +10.0°C	4.0 °C

Collector pump 'on' time		
Data	Regulation range	Default
P ON	5 .. 60 sec.	10 sec.

Collector pump 'off' time		
Data	Regulation range	Default
P OF	1 .. 60 min.	20 min.

Antifrost test duration		
Data	Regulation range	Default
TMR	5 .. 60 sec.	10 sec.

P4: ACOUSTIC SIGNAL MANAGEMENT

Using this parameter it is possible to enable or disable the acoustic signalling of the control unit (keyboard tones, alarms, and diagnostics).

Enable (1)/Disable (0) acoustic signal		
Data	Regulation range	Default
BEEP	0 .. 1	1

Note: '1' enables acoustic signalling, while '0' disables it.

P5: RELAY LOGIC SELECTION

Using this parameter it is possible to reverse the output logic from Normally Open (N.O.) to Normally Closed (N.C.) and vice-versa. It is only possible to modify the output logic for the relays actually active in the selected setup.
Value '1' for these parameters means that the output logic is reset to the N.O. value (default).
OUT 2 is the only output for which the output logic can be changed.

If the controller displays 'NONE' it means that 'OUT2' is not provided for in the selected layout.

Output logic for OUT 2		
Data	Regulation range	Default
OUT 2	0 .. 1	1

If the function is not supported by the layout selected the controller will display 'NONE'.

Note: '1' means Normally Open (N.O.) logic, while '0' means Normally Closed (N.C.) logic.

P6: INTEGRATION HOURS COUNTER

Using this parameter it is possible to display the actual number of hours of the integrative source operation or reset it.

AFTER SELECTING PARAMETER P6 PRESS THE ' ↵ ' KEY.

THE DISPLAY SHOWS 'H' AND ACTUAL HOURS OF ACTIVITY OF THE INTEGRATIVE SOURCE.

PRESS THE ' ↵ ' KEY , THE DISPLAY SHOWS 'H' FLASHING.

PRESSING THE ' ↵ ' KEY RESETS THE COUNTER, PRESSING THE ' **esc** ' AGAIN SHOWS THE CURRENT RUNNING HOURS.

The counter recording the running hours of the integrative source can handle values up to 9999. Once the maximum value is reached the counter stops.

P7: LOADS WIRING TEST

This parameter allows to set the test of the loads wired to the control unit as well as the wirings themselves.
The control unit tests the loads connected to it, according to the selected diagram, by turning on all the available outputs in sequence for 10 seconds each.
The number of times for which the entire test is repeated, in multiples of 3, can be set using the single ' TMR ' parameter present. The activation of the test is signalled on the display with the ' TIMER ' icon.

AFTER SELECTING PARAMETER P7 PRESS THE ' ↵ ' KEY.

THE DISPLAY SHOWS ' TMR ' AND THE NUMBER OF CYCLES IN THE TEST.

PRESS ' ↵ '. THE DISPLAY SHOWS 'TMR' FLASHING.

USING THE KEYS ' ▲ ' OR ' ▼ ' SET THE NUMBER OF CYCLES TO 3, 6, 9, 12 OR 15.

PRESS ' ↵ ' TO CONFIRM THE PROGRAMMED DATA AND START THE TEST. BY PRESSING ' **esc** ' THE MODIFICATIONS ARE CANCELED AND THE DISPLAY AGAIN SHOWS THE NUMBER OF PRESET CYCLES.

Test sequence cycles number		
Data	Regulation range	Default
TMR	03 .. 15	03

P8: LIMITATION OF COLLECTOR MINIMUM TEMPERATURE

The parameter 'Minimum Temperature Limitation' on collector is used to manage the Minimum Temperature Thermostat used for activation of the collector pumps. This thermostat stops the pumps operation whenever on the relevant panel is measured a temperature lower than the one set in this parameter.
The function 'Minimum Temperature Limitation' is not active when in Manual operation mode, in ABC operation or in case the pumps activation is caused by the intervention of Recooling or similar functions.

AFTER SELECTING PARAMETER P8 PRESS THE ' ↵ ' KEY.

WITH ARROWS ' ▲ ' OR ' ▼ ', YOU CAN CYCLE AMONG THE FOLLWOWING THERMAL DATA FOR REGULATION:
- Setting of the collector minimum temperature ' MTC '
- Enabling/Disabling of the minimum temperature limitation ' MTEN '

PRESS THE ' ↵ ' KEY TO MODIFY THE THERMAL DATA SELECTED; THE DATA WILL START FLASHING.

USE THE ' ▲ ' OR ' ▼ ' ARROWS TO SET THE DESIRED NUMERIC VALUE.

PRESS THE ' ↵ ' KEY TO CONFIRM THE PROGRAMMING OR PRESS THE ' **esc** ' KEY TO CANCEL THE CHANGES.

In the following the regulation ranges allowed for each parameter are listed.

Adjustment of collector minimum temperature		
Data	Regulation range	Default
MTC	10.0°C .. 90.0°C	10.0 °C

Enabling/disabling the collector minimum temperature		
Data	Regulation range	Default
MTEN	0 .. 1	0

Note: with ' 0 ' the limitation of minimum temperature on collector is disabled, while with ' 1 ' it is enabled.

FUNCTIONS ACCESSIBLE TO THE USER

The functions accessible to the user are limited and do not allow setting those data influencing the installation management.
The only operations allowed to the user are the following:

Turning on / Turning off the control unit

Manual Management of the installation
By pressing the ' ✋ ' key it is possible to activate or deactivate the manual operation of the control unit.

When manual function is chosen the display shows the icon ' ✋ '. In manual operation the collector pump is always active, regardless of the measured temperatures and the integrative heat source is always disabled.
The only active controls are those related to the maximum temperatures and safety.

User menu

PRESS THE ' 📖 ' KEY TO ACCESS
' USER PARAMETERS '.

▼

THE FIRST ' USER PARAMETER '
IS SHOWN.

▼

USING THE ' ▲ ' OR ' ▼ ' ARROWS IT IS POSSIBLE TO SCROLL CYCLICLALLY THROUGH THE USER PARAMETERS:

U1: SHOWS MAXIMUM TEMPERATURES
U2: ENABLES / DISABLES ANTIFROST
U3: ENABLES / DISABLES ABC

▼

PRESS THE ' ↵ ' KEY TO SELECT THE DESIRED PARAMETER.

SET THE DESIRED VALUE FOR EVERY SINGLE PARAMETER AS EXPLAINED BELOW.

PRESS THE ' **esc** ' KEY TO RETURN TO THE USER PARAMETERS SELECTION MENU.

WAIT 20 SECONDS OR PRESS THE ' **esc** ' KEY TO QUIT THE USER MODE.

WARNING!

In the ' USER PARAMETERS ' mode all the outputs are disabled.

Displaying the Maximum Temperatures recorded

Parameter ' TMAX U1 ' allows to display the maximum temperature recorded in the system for each probe TM-.

PRESS THE ' ↵ ' KEY TO VIEW THE TEMPERATURE.

USING THE ' ▲ ' OR ' ▼ ' ARROWS IT IS POSSIBLE TO SCROLL CYCLICALLY THROUGH THE RECORDED TEMPERATURES:

TM1 ➔ TM2 ➔ TM3

PRESS THE ' ↵ ' KEY. THE DISPLAY SHOWS FLASHING THE NUMBER OF THE PROBE.
PRESSING THE ' **esc** ' KEY RETURNS TO SHOWING THE USER PARAMETERS.

PRESSING ' ↵ ' RESETS THE TEMPERATURE RECORDED TO THAT POINT;
PRESSING ' **esc** ' RETURNS TO SHOWING THE MEMORIZED TEMPERATURE.

PRESS THE ' **esc** ' KEY TO QUIT THE MAXIMUM TEMPERATURE DISPLAY MODE.

Antifrost Activation

The ' AFR U2 ' parameter (anti-frost) enables or disables the antifrost function. The management of the antifrost data is performed through the user parameters.

PRESS THE ' ↵ ' KEY;
THE DISPLAY SHOWS 'AFR' FLASHING.

⮟

USING THE ' ▲ ' OR ' ▼ ' ARROWS IT IS POSSIBLE TO ENABLE OR DISABLE THE ANTIFROST:
0: DISABLED
1: ENABLED (THE DISPLAY SHOWS ❄)

⮟

PRESS THE ' ↵ ' KEY TO CONFIRM THE PROGRAMMING OR PRESS THE ' **esc** ' KEY TO QUIT USER PARAMETERS.

Automatic Boiler Control by means of Collectors (ABC)

The function ' ABC U3 ' is an interesting addition to the Manual mode.

When the function ' ABC ' is enabled, the collector pump, in contrast to the Manual mode, in which it is always running, is stopped if the collector temperature, measured by the probe S1, drops below the temperature set in the ' TABC ' parameter in the installer parameters.

PRESS THE ' ↵ ' KEY;
THE DISPLAY SHOWS ' ABC ' FLASHING.

⮟

USING THE ' ▲ ' OR ' ▼ ' ARROWS IT IS POSSIBLE TO ENABLE OR DISABLE THE ABC:
0: DISABLED
1: ENABLED (THE DISPLAY SHOWS ☝ and TIMER)

⮟

PRESS THE ' ↵ ' KEY TO CONFIRM THE PROGRAMMING OR PRESS THE ' **esc** ' KEY TO QUIT USER PARAMETERS.

TROUBLESHOOTING

ANOMALY	POSSIBLE CAUSE
During normal operation the control unit displays the symbol ⚠ and emits an acoustic signal characterized by a series of 'beeps' together with the quick flashing of the red power supply led. The probe originating the problem is flashing on the display.	The control unit has revealed an anomaly on the probe. The display shows the number of the damaged probe and the type of anomaly present. **COL OPEn** **S_2 OPEn** **S_3 OPEn** = Probe missing, not properly wired or open (R = ∞) - Probe is detecting a temperature lower than -31°C. **COL HIGH** **S_2 HIGH** **S_3 HIGH** = Probe is short circuited (R = 0) or is detecting a temperature higher than 200°C. **---** = The probe has detected a temperature included between -30°C .. -20°C **EEE** = The probe has detected a temperature included between +180°C .. +199°C
In the selection of the installation to be realized (installer parameter P1) one or more probes flashing.	The probe is miswired or damaged.

WARRANTY

In the view of a constant development of their products, the manufacturer reserves the right for changing technical data and features without prior notice. The consumer is guaranteed against any lack of conformity according to the European Directive 1999/44/EC as well as to the manufacturer's document about the warranty policy. The full text of warranty is available on request from the seller.

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