



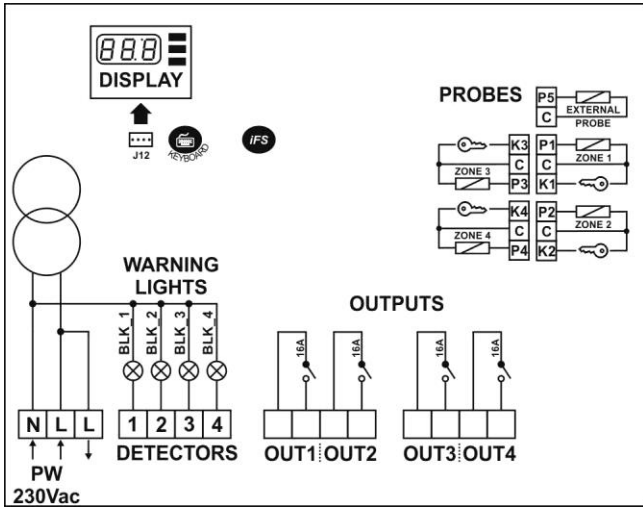
E1375B2

Thank you for choosing Space-Ray

**SCB30B-E1000**

**UK** Programmable chrono-thermostat, suitable to operate 1 / 2 / 3 / 4 heating zones, made of one single-stage radiant unit.

**WIRING DIAGRAM**



**POWER SUPPLY**

**N - L** Power supply 230Vac

**WARNING INDICATOR LIGHTS – BURNER LOCKOUT**

- 1** Warning light 1 - burner lockout (N) 230Vac
- 2** Warning light 2 - burner lockout (N) 230Vac
- 3** Warning light 3 - burner lockout (N) 230Vac
- 4** Warning light 4 - burner lockout (N) 230Vac

**OUTPUTS**

- OUT1** OUT1
- OUT2** OUT2
- OUT3** OUT3
- OUT4** OUT4

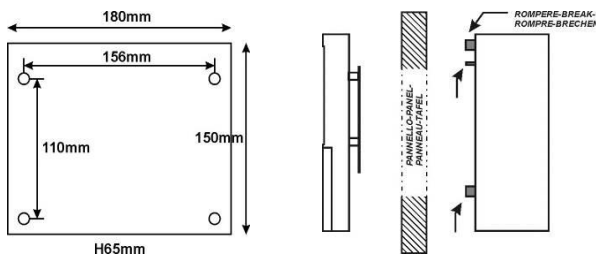
**OUTSIDE SENSOR**

**P5 C** (P5) Sensor of outside temperature.  
(C) Common of outside temperature sensor.

**ZONE SENSORS**

- P1 C K1** (P1) Zone 1 - sensor.  
(C) Zone 1 - common of sensor and BMS contact.  
(K1) Zone 1 – sensor key selector or BMS volt free contact.
- P2 C K2** (P2) Zone 2 - sensor.  
(C) Zone 2 - common of sensor and BMS contact.  
(K2) Zone 2 – sensor key selector or BMS volt free contact.
- P3 C K3** (P3) Zone 3 - sensor.  
(C) Zone 3 - common of sensor and BMS contact.  
(K3) Zone 3 – sensor key selector or BMS volt free contact.
- P4 C K4** (P4) Zone 4 - sensor.  
(C) Zone 4 - common of sensor and BMS contact.  
(K4) Zone 4 – sensor key selector or BMS volt free contact.

**MOUNTING**



**QUICK GUIDE**

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**INSTALLATION**

**1. WARNINGS**

**⚠ BEFORE OPERATING THE CONTROLLER, PLEASE READ CAREFULLY THE INSTRUCTIONS IN THIS MANUAL. KEEP THIS MANUAL IN A SAFE PLACE FOR FUTURE REFERENCE**

Use the controller only for its intended purpose as described in this manual. The Manufacturer declines all responsibility for inappropriate use or incorrect setting of the controls. To ensure safe operation:

- Controller must be properly installed and maintenance must be performed according to this manual;
- Supply voltage and environmental conditions fall within the values specified on the controller data plate.

**⚠ ELECTRIC CONNECTIONS**

**THE CONTROLLER IS NOT PROTECTED AGAINST OVERLOADING: EQUIP POWER SUPPLY INPUT AND ALL OUTPUTS WITH NECESSARY SAFETY CONTROLLERS.**

- Avoid crossing cables by separating low voltage wires and connection from line voltage (230Vac).
- Protect the controller power supply and probe inputs from electric disturbances.
- Disconnect the controller from the power supply before carrying out any maintenance;
- Do not EVER open the controller plastic enclosure

**2. TECHNICAL FEATURES**

Power supply:	230Vac +/-10%, use a 315mA safety fuse
Operation field:	PTC : -50,0...110°C or -58,0...230°F.
Unit consumption:	8 VA
PTC 990Ω accuracy:	-2 °C in between -60T50 °C; -5 °C in between +50T160 °C;
Housing:	plastic board, 180 x 150 x 65mm
Fixing:	on wall
Data storage:	EEPROM memory
Front protection:	IP44
Employment conditions:	environment temperature -10/+50°C ; storage temperature -20/+70°C
Relative ambient humidity:	30 / 80%, without condensation
Connections:	Power supply: screw-terminals for cables section max 4mm <sup>2</sup> Lockout lights / relays: screw-terminals for cables section max 2,5mm <sup>2</sup> / min 1,5mm <sup>2</sup> Sensors: screw-terminals for cables section max 1,5mm <sup>2</sup> / min 0,5mm <sup>2</sup>
Display:	LCD
Inputs:	5 probe inputs PTC 990 Ω @25°C: P1, P2, P3, P4, P5; 4 lockout light inputs: 250vac opto-isolated
Outputs:	OUT1 - 4: SPST 16A 250Vac
Serial communication:	<b>iFS</b> serial interface TTL for : • Controller firmware upgrade; • Fast parameter setup (copy / paste);

**3. MAIN FEATURES**

**DISPLAY WITH 1 DECIMAL PLACE:** Temperature is displayed with 1 decimal place between -99,9 and 99,9;

**LCD DISPLAY:** A large LCD display helps to keep the thermostat always under control at a glance. Scrolling text messages and symbols describe the operations in progress.

**RESET OF A LOCKOUT BURNER:** To reset a lockout burner press the **RST** key;

**BURNER ENABLE / DISABLE:** It is possible to enable/disable one or more burners;

**SECURITY IN CASE OF FAULTY PROBE:** In the event of faulty probe or temperature beyond the item limits, outputs are automatically switched off;

**DATA STORAGE ON EEPROM MEMORY:** Programmed running periods are saved on EEPROM memory in order to ensure their permanence also in case of absence of supply;

**ON/OFF KEY:** It is possible to switch ON/OFF the controller from the on/off key.

**EXTERNAL PROBE:** Through the external probe is possible to enable/disable the timer program optimization function.

**4. CONTROLLER CONFIGURATION**

**⚠ WARNING! SETUP OF PARAMETERS rEU AND H5 MUST BE EXECUTED BY EXPERT PERSONNEL: A WRONG SETUP WILL COMPROMISE THE CORRECT FUNCTIONING OF THE MASTER AND OF SLAVE MODULES CONNECTED TO IT.**

**4.1 THERMOMETRIC SCALE**

Go to parameter **rEU** to select the thermometric scale:

- Set **rEU** = °C for Celsius
- Set **rEU** = °F for Fahrenheit.

To check it, press the display will show the thermometric scale (°C or °F) for 2 secs.

After every new setup of the thermometric scale, verify the following parameters: set-point, set-point differential, alarm thresholds, alarm differential.

#### 4.2 THERMOSTAT OPERATION MODE

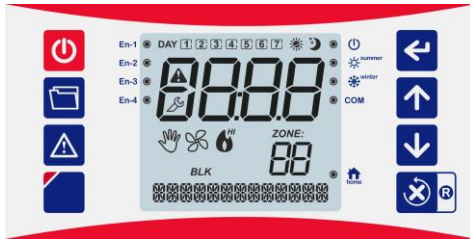
Go to parameter **H5** to set the SCB30 operation mode.

**NOTE: AFTER A NEW SETUP OF PARAMETER H5, RESTART THE CONTROLLER.**

- **H5 = 1:** the SCB30 controls 1 heating zone. Connect:
  - the heater to OUT1 and the sensor to P1 C K1;
- **H5 = 2:** the SCB30 controls 2 zones. Connect:
  - the heater of zone 1 to OUT1 and the sensor of zone 1 to P1 C K1;
  - the heater of zone 2 to OUT2 and the sensor of zone 2 to P2 C K2;
- **H5 = 3:** the SCB30 controls 3 zones. Connect:
  - the heater of zone 1 to OUT1 and the sensor of zone 1 to P1 C K1;
  - the heater of zone 2 to OUT2 and the sensor of zone 2 to P2 C K2;
  - the heater of zone 3 to OUT3 and the sensor of zone 3 to P3 C K3;
- **H5 = 4:** the SCB30 controls 4 zones. Connect:
  - the heater of zone 1 to OUT1 and the sensor of zone 1 to P1 C K1;
  - the heater of zone 2 to OUT2 and the sensor of zone 2 to P2 C K2;
  - the heater of zone 3 to OUT3 and the sensor of zone 3 to P3 C K3;
  - the heater of zone 4 to OUT4 and the sensor of zone 4 to P4 C K4;

### USE

#### 5. FRONT PANEL



#### KEYBOARD

- ON / OFF:** to switch ON the controller or to put it in stand by mode. (ONLY IF **Hb=YES**)
- MENU:** push briefly for menus: tIME / SET / inFo / PAr / Fnc.
- ALARM:** push for alarm menu / to silence the alarm buzzer if ON. You can only access the ALARM MENU during an alarm condition
- DISPLAY LCD:** display parameter list: language, backlight, buzzer, speed text.
- ENTER:** During setup it works like "ENTER" button.
  - To enter the displayed menu/parameters;
  - To confirm/start the displayed functions.
 During the normal activity, press it briefly to see the thermometric scale
- UP:** During setup to scroll the menu and parameter lists, to increase the displayed values. During the normal activity, it scrolls the available heating zones.
- DOWN:** During setup to scroll the menu and parameter lists, to decrease displayed values. During the normal activity, it scrolls the available heating zones.
- ESC / RST:** During setup it works like "Esc" button. During the normal activity hold it to reset lockout burners of the displayed zone.

#### DISPLAY:

- ALARM:** alarm in progress.
- Configuration LED:** The light is on when the display shows the parameter/menu label. The light blinks when the display shows the parameter value
- ZONE:** Zone: it is the heating zone to which data on display are referred (i.e.: =zone 2)
- DAY**
  - Day of the week:** ( = Monday... , = Sunday )
  - ON/OFF:** chrono-thermostat status
    - : chrono-thermostat ON.
    - : chrono-thermostat OFF mode: it is not a power cut off, it is rather a STAND BY mode. The controller keeps powered at 230Vac. In OFF mode:
      - it does not maintain the reduced set-point, rt;
      - the display shows the message CONTROLLER OFF
  - Summer:**
    - : chrono-thermostat in summer/cool mode. (direct action)
  - Winter:**
    - : chrono-thermostat in winter/heat mode. (reverse action)
  - HOME:** chrono-thermostat home page
    - : the display shows the temperature of the displayed zone.

**En-1** **Burner 1: Enable / Disable**  
En-1 : burner 1 enabled

**En-2** **Burner 2: Enable / Disable**  
En-2 : burner 2 enabled

**En-3** **Burner 3: Enable / Disable**  
En-3 : burner 3 enabled

**En-4** **Burner 4: Enable / Disable**  
En-4 : burner 4 enabled

**Manual / automatic mode:**

- ON: the displayed zone is in manual ON or OFF mode by parameter **A-M**;
- blinking: the displayed zone is in manual ON or OFF mode by key selector;
- OFF: the displayed zone is in automatic mode;

**BLK** **Burner lockout:**

**BLK** ON: the controller detects a flame failure in the zone

**Burner output(s):**

ON: burner or 1° flame ON.



**Timer program ON - SP:**

Timer program of burner ON with set-point temperature SP (SP1/SP2/SP3/SP4)



**Timer program off - rt:**

Timer program of burner OFF, burner maintains just the frost protection setpoint. **rt=0** no frost protection setpoint, burner outputs OFF

### 6. MENU / FUNCTION / PARAMETER SETUP

#### 6.1 MENU - PARAMETER SETUP

To access to menus and parameters, proceed as follows:

- Make sure you are in the thermostat home page, ;
- Press the symbol switches off and the display shows the menu: **tIME**;
- Press or to scroll the menu:
  - **SET**: set-point menu;
  - **inFo**: info menu;
  - **Fnc**: function menu;
  - **PAr**: parameters menu, to enter PAr insert the correct password, para. n°17;
  - **tIME**: clock menu;



A short description will be shown at the bottom of the display, i.e.: "tIME - clock menu".

- press to open the selected menu; the display shows the first parameter and the setup light is on.
  - press or to scroll the parameter list. A short description will be shown at the bottom of the display;
  - press : the display shows for 3s the parameter value and the light blinks;
  - press or to change the value;
  - press to confirm the value and go back to the parameter list;
  - to exit and save changes either press or wait for 15s.
- NO** access to the menus when the keypad is locked or thermostat in stand-by.

#### 6.2 LANGUAGE, DISPLAY BACKLIGHT

Hold ~3s. the button to go to the list of the keyboard functions:

- **LANGUAGE:**
    - IT = Italian; UK = English;
  - **BACKLIGHT:**
    - NO = backlight OFF;
    - YES = backlight ON for 30s. after keypress;
    - ALWAYS = backlight always ON;
  - **BIP:**
    - YES = Buzzer ON; NO = Buzzer OFF;
  - **SCROLL SPEED:**
    - MEDIUM = medium speed; FAST = fast speed;
  - **NEW PARAGRAPH:**
    - NO = new paragraph disabled, scrolling text active;
    - YES = new paragraph active; long texts will not scroll, but display in two shots.
  - Press or to scroll the parameter list
  - Press to display the parameter's value;
  - Press or to modify the displayed value;
  - Press to confirm the entered value.
- Press or wait for 30s. to go back to the normal functioning.

### 7. CHRONO-THERMOSTAT ON / OFF - STAND-BY

To switch the controller ON / OFF, hold the key for about 2 seconds. When the controller is in OFF mode, it shows the message "CONTROLLER OFF" and the light is ON.

THE CONTROLLER KEEPS POWERED EVEN WHEN IN OFF / STAND-BY MODE. In stand by mode it is possible:

- to enable/disable the key from parameter **Hb**;

### 8. KEYPAD LOCK

To lock the keypad, set **HL=YES**.

With the keypad locked, the following operations are NOT allowed:

- Switching ON/OFF the controller from keypad;
- Checking the thermometric scale;
- Access to all parameters: **tIME: SET, inFo**,
- Selecting the heating zone to display.
- Resetting burners

When the keypad is locked, the message **LOC** will be displayed anytime a key is pressed.

To temporarily unlock the keypad hold and for at least 3 secs until the message **UnL** is displayed. The keypad re-locks automatically after 15 secs of inactivity.

## 9. DISPLAY OF THE HEATING ZONE

The SCB30 can be programmed to control up to 4 heating zones (see point 4, par. H5).

To scroll the different heating zones press or during the normal functioning, i.e.:

ZONE 1 shows: ZONE 2 shows: ZONE 3 shows:

Should the controller be programmed to control just 1 zone, the display shows just:

## 10. MENU Fnc: FUNCTIONS

The menu *Fnc* includes the following parameters:

- *A-n* / *A-n2* / *A-n3* / *A-n4*: automatic or manual ON or OFF function for the enabled zone 1-4, according to the chrono-thermostat setting;
- *H-C*: summer / winter mode selection.
- *En-1* / *En-2* / ... / *En-4*: enable / disable the available burners 1-4, according to network configuration;
- *En-E*: hour meter zeroing;

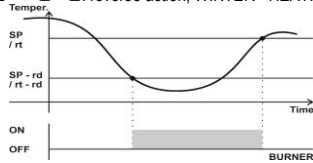
Follow point n°7.1 to access the *Fnc* menu.

### 10.1 WINTER / SUMMER MODE

The *H-C* parameter sets the WINTER / SUMMER mode:

- *H-C = Cool*: direct action, SUMMER mode. Burner outputs (OUT1-4) will be always OFF.

- *H-C = HEAT*: reverse action, WINTER - HEATING.



OUT 1 = burner 1 or 1st stage activates for temperature  $t \leq SP - rd$  and turns off when it reaches the set-point temperature  $SP = SP1/ SP2/ SP3/ SP4$  or  $rt$  (if  $rt \neq 0$ ).

### 10.2 HEATING ZONE: AUTOMATIC / MANUAL MODE

Parameters *A-n1* / *A-n2* / *A-n3* / *A-n4* set the operation mode of the specific heating zones.

- *A-Mx = OFF*: The heating zone is in Manual OFF mode, disabled. Burners in that zone will be OFF, they will just maintain the frost protection setpoint if  $rt > 0$ ;
- *A-Mx = AUTO*: The heating zone is in Automatic mode. Burners activate according to the set timer programs;
- *A-Mx = ON*: The heating zone is in Manual ON mode. Burners just maintain the COMFORT set-point, *SP1/ SP2/ SP3/ SP4*.

Menu *Fnc*: Shows only the parameters *A-Mx* ( $x = 1, 2, 3, 4$  according to the heating zone) of the enabled heating zones, see parameter *H5*.

#### ON/OFF BY THE KEY SELECTOR OF THE SENSOR OR BY BMS CONTACT:

The *Pb* parameter sets the functioning of the K1-C / K2-C / K3-C / K4-C terminals:

**NOTE:** The key selectors / BMS will always have priority over parameter *AM-x*. ( $x = 1, 2, 3, 4$ )

If *Pb=1* connect the key selector of a probe to the contacts Kx-C (with  $x=1$  or 2 or 3 or 4).

The heating zone can be manually started by the key placed on the zone probe, set to:

- **AUTO**: The chrono-thermostat activates according to the timer programs set for the selected zone;
- **ON**: Timer is excluded in the selected zone, burner/s activate to maintain the comfort set-point *SP1*;
- **OFF**: Timer is excluded in the selected zone, burner/s activate to maintain the frost protection set-point *rt*;

If *Pb=2* connect a volt free contact of a BMS to the contacts Kx-C (with  $x=1, 2, 3, 4$ ).

The heating zone can be manually started by the BMS contact:

- if **close**: Burner/s activate to maintain the comfort set-point *SP1*;
- if **open**: Burner/s off, they activate only to maintain the frost protection set-point *rt*;

#### TIMER PROGRAMS:

A timer program is a command of burner "ON" / "OFF". The SCB30 sorts them by day and time and runs them cyclically.

Each heating zone has its specific timer programs, up to 16 different programs a zone.

**To access to the timer programs:**

- Select the parameter *A-Mx* of the desired zone.
- Press to confirm
- Set *A-Mx = AUTO* by using or and press to confirm. The display shows the first timer program set for the selected zone. The display shows the message "--:--" in case no timer programs are set.

**To scroll the set timer programs or locate the first free place of memory:**

- Press the button. The first free place of memory is signalled as "--:--".

**To set a timer program:**

- Hold until the digits of hours "--:--" of the new timer program blink.
- Press or to select the starting hour of the timer program.
- Press to confirm the value; the digits of minutes "--:--" blink.
- Press or to select the minutes, they move forward / backward by 10;
- Press to confirm the value; the signals 1 2 3 4 5 6 7 blink;
- Press or to select the day(s) when the timer program should be active, i.e.:  
 2 Only 2 = Tuesday      1 2 3 4 5 Weekdays: Monday to Friday
- Press to confirm the value. the timer program type will be displayed:
  - + **On** = comfort set-point, it is a timer program of outputs ON. If the SCB30 is in heating mode, reverse action: it is a program of burner ON with set-point. If the SCB30 is in summer-fan mode: it is a program of burner OFF.
  - + **OFF** = frost protection set point, it is a program of output OFF.

If the SCB30 is in heating mode, reverse action: it is a program of burner OFF with frost protection set point, only if  $rt \neq 0$ .

If the SCB30 is in summer-fan mode: it is a program of burner OFF.

- press or to set the desired timer program;
- Press to confirm and save the timer program just set;
- Press to go to the next space of memory;

**To delete ONE or ALL selected timer programs:**

Go to the timer program menu as described in the previous paragraph;

- To delete ONE program:
  - Press to select the scheduled timer program to be cancelled
  - Hold or for 3s until "--:--" will be displayed.
- To delete ALL the saved TIMER programs:
  - Hold or for 6s until "EALL" will be displayed.

To exit the timer program menu wait for 10s.

Timer is overridden:

- By ON / OFF manual function, parameter *A-n* menu *Fnc*:
  - *A-nx = OFF* function "manual OFF": burners activate to maintain the frost protection set-point *rt* in the  $x$  zone.
  - *A-nx = on* function "manual ON": burners activate to maintain the set-point *SP* in the  $x$  zone.
- Timer programs are overridden when the manual OFF or ON functions are active, LED is on.
- By switching OFF the SCB30 by pressing the button . If the SCB30 is in stand-by mode, the burners do NOT activate to maintain the frost protection set-point *rt*;
- By the zone probe key selector, if available;
- By the BMS contact if available, parameter *Pb=2*.

#### TIMER PROGRAMS OPTIMIZATION – ONLY IF /P5 = YES:

When the chrono-thermostat is in **AUTO** mode it is possible to select the working period optimisation. Through this function, it is possible to reach the desired temperature at a fixed time. This will considerably reduce power wastages. This is the result of a constant control of the ambient temperature in every single zone, of the set point value, which is set by the user for that specific zone, of the system temperature increase in Grades/Hour and of the value of the outside temperature. In this way, the system is able to set out and if necessary to revise the pre-start period required to reach the desired temperature. The absence of any connections to external events in defining the starting period erases all possible interferences caused by internal or external climatic changes in the room. In the event of an unexpected increase of the system heating efficiency, due for instance to a different humidity value of the air, the electricity supply will immediately be interrupted until the next analysis of the variables.

The parameters for this function [*t0*, *tr*] are set by the manufacturer to standard levels. Please check them with regard to the specific controller.

### 10.3 BURNER ENABLE / DISABLE

Should there be some unused area inside a heating zone, you can disable a specific burner and get an impressive energetic saving.

To enable / disable a burner connected to the SCB30, proceed as follows:

- *En-1*: enable / disable burner 1:  
 no: burner 1 OFF, disabled; **YES**: burner 1 ON, enabled, *En-1*
- *En-4*: enable / disable burner 4:  
 no: burner 4 OFF, disabled; **YES**: burner 4 ON, enabled, *En-4*

IF THE BURNER IS DISABLED, NO FROST PROTECTION *SP rt* WILL BE MAINTAINED.

### 10.4 RESET THE HOUR METER TO ZERO

Parameter *En-E* resets the hour meter to zero.

To zero the hour meter, set *En-E* to **YES** and press .

## 11. info MENU

*info* menu includes the following info:

- *tPS* = temperature of outside sensor (if available)
- *En-1*, *En-2*, *En-3*, *En-4* = hour-meter of OUT1, OUT2, OUT3, OUT4;

#### LIMITS OF HOUR-METER:

- The hour-meter values are saved every 3 hours. Any interruption of power supply in the meanwhile causes the loss of any data partially saved;
- To assess the burner activity, control the status of the output relay;
- The assessment of burner activity stops after 9999 hours.

See point n°6.1 to locate the *info* menu.

## 12. SET MENU: SET-POINT

The *SET* menu includes the parameters *SP1*, *SP2*, *SP3*, *SP4* = comfort set-point of heating zone 1, 2, 3, 4 respectively;

Parameter *SPx* sets the comfort temperature set-point of the burners located in the  $x$  heating zone,  $x = 1, 2, 3, 4$  according to the heating zone. *SPx* allowed value range is in between [*L*, *rH*].

The *SET* menu shows only the *SP* of the available zones, parameter *H5*.

See point n°6.1 to locate and set the *SET* menu.

## 13. HEATING ZONE/BURNER RESET

To reset the burners connected to the SCB30:

- hold until the display shows *rst*, then press :  
 • the display shows **00**: set it to **01** then press or just wait 3s.;
- now the SCB30 executes the burner reset.

It is an electric reset: OUT1 / OUT2 / OUT3 / OUT4 deactivate for a time equal to *L2*.



#### 14. TIME MENU: CLOCK / CALENDAR

To *display* the set time, go to the **TIME** menu, see point n.6.1. Ex: Wednesday, 2:32pm: it displays...



To *adjust* the set time:

- go to the **TIME** menu: press **←**, the hour digits blink;
  - press **↑** or **↓** to set the current hour;
  - press **←** to confirm it; the minute digits blink;
  - press **↑** or **↓** to set the current hour;
  - press **←** to confirm it; the day set blinks, the other week days are off;
  - press **↑** or **↓** to set the current day, es :  
**DAY 1** **DAY 2** **DAY** **6** **DAY** **7**  
 1=Monday 2=Tuesday 6=Saturday 7=Sunday
  - press **←** to confirm it; the digits of the year "5400" blink;
  - press **↑** or **↓** to set the current year;
  - press **←** to confirm it; the digits of the month "110" blink;
  - press **↑** or **↓** to set the current month;
  - press **←** to confirm it; the digits of the day of month "11" blink;
  - press **↑** or **↓** to set the current day of month;
  - press **←** to confirm it;
- To exit either press the **⊗** button or wait for 30 s.

#### 15. ALARM MENU: LIST OF ERRORS / ALARM MESSAGES

In case of alarm/ failure, the display shows the LED **▲** and the message "ALARM IN PROGRESS". The SCB30 signals up to 10 alarm events.

Alarm menu is only available and accessible in presence of alarm / error events.

To check the list of pending alarm / error events:

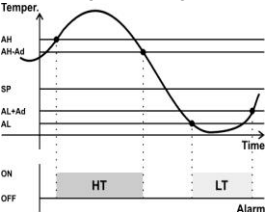
- press **▲**, the first alarm / error event will be displayed;
- press **↑** or **↓** to browse the list of pending alarm / error events.

#### ALARM SIGNALS

Display	LED	Description
A 10	▲	Eeprom fault, switch the thermostat off and on again
A 13	▲	Clock error. Check date and time.
A 60	▲	Burner lockout, warning light 1.
A 61	▲	Burner lockout, warning light 2.
A 62	▲	Burner lockout, warning light 3.
A 63	▲	Burner lockout, warning light 4.
A 20	▲	Probe P1 in short-circuit or not connected or temperature beyond limits. In case of faulty P1, all outputs related to zone 1 are OFF.
A 21	▲	(IF AVAIL.) Probe P2 in short-circuit or not connected or temperature beyond limits. In case of faulty P2, all outputs related to zone 2 are OFF.
A 22	▲	(IF AVAIL.) Probe P3 in short-circuit or not connected or temperature beyond limits. In case of faulty P3, all outputs related to zone 3 are OFF.
A 23	▲	(IF AVAIL.) Probe P4 in short-circuit or not connected or temperature beyond limits. In case of faulty P4, all outputs related to zone 4 are OFF.
A 30	▲	(IF AVAIL.) Outside probe in short-circuit or not connected or temperature beyond instrument limits. Check the cable to the probe. The alarm stops when the temperature goes back to normal values.
A 40	▲	Temperature alarm.
A 64	▲	ZONE 1: High temperature alarm.
A 65	▲	ZONE 1: Low temperature alarm.
A 66	▲	ZONE 2: High temperature alarm.
A 67	▲	ZONE 2: Low temperature alarm.
A 68	▲	ZONE 3: High temperature alarm.
A 69	▲	ZONE 3: Low temperature alarm.
A 70	▲	ZONE 4: High temperature alarm.
A 71	▲	ZONE 4: Low temperature alarm.

To mute the buzzer (if **Ab**= 1), press any key; the alarm condition keeps showing on display until removal of the alarm cause.

#### TEMPERATURE ALARMS



Parameter **AL** and **AH** values are the alarm absolute limits of low temperature, **Lt**, and high temperature, **Ht** of all zones. They are fixed and don't track the set-point value as it is changed.

**AL=LSL** (LSL=bottom end of scale): the low temperature alarm is equal to probe fault alarm, **E1**.

**AL=LSH** (LSH=top end of scale) the high temperature alarm is equal to probe fault alarm, **E1**

#### OTHER ALARM SIGNALS:

- LoC** keypad locked (see point n°9)
- OFF** controller in stand-by mode.  
WARNING: the controller keeps powered even when switched OFF (OFF mode)

#### 16. PAr MENU: PARAMETERS

THERE ARE 3 PARAMETER LISTS: "USER" / "INSTALLER" / "FACTORY". THE "USER" PARAMETERS CAN BE SET BY USER, PARAMETER **PA1**.

Go to the "**PAr**" menu, see point 6.1.

- The display shows "**PA**". Press **←**: the factory password value will be displayed, "00";
- Press **↑** or **↓** to set a new password (for different passwords see end of paragraph). The thermostat stays accessible and remembers the password for 4 minutes.

- Press **←**: the display shows the first parameter of the list enabled by the password.
  - To scroll and set the parameters proceed as described in point 6.1.
- When scrolling the parameter list, **⊗** is ON; when the display shows the parameter value, **⊗** flashes.

#### PARAMETR LIST

Cod	Parameters	Type	Range	UM	Def
<b>/ Regulating probe parameters</b>					
/C1	Probe P1 calibration	⊙	LLD...LHD	°C/°F	0,0
/C2	Probe P2 calibration	⊙	LLD...LHD	°C/°F	0,0
/C3	Probe P3 calibration	⊙	LLD...LHD	°C/°F	0,0
/C4	Probe P4 calibration	⊙	LLD...LHD	°C/°F	0,0
/C5	Probe P5 calibration – external probe	⊙	LLD...LHD	°C/°F	0,0
/P5	Presence of external probe. NO / YES	C	no...YES	-	no
/Pb	K-C input/s for probe with key selector or for BMS. 1= key selector of the probe; 2= BMS contact;	I	1...2	-	1
/S	Inputs reading stability	I	0...5	-	2
<b>r Regulator parameters</b>					
rd	Set-point differential	⊙	0,1...LHD	°C/°F	0,5
rEU	Thermometric scale: °C= Celsius; °F= Fahrenheit	I	°C...°F	-	°C
rt	Safety set-point. 0=outputs off	⊙	0...LHD	°C/°F	6
rL	Low temperature limit <b>SPx</b> (x=1,2,3,4)	I	LLD...rH	°C/°F	10
rH	High temperature limit <b>SPx</b> (x=1,2,3,4)	I	rL...LHD	°C/°F	30
<b>L Output parameters</b>					
L0	Output time delay at power on	C	15...250	Sec	15
L2	Reset pulse duration.	C	1...59	Sec	3
<b>A Alarm parameters</b>					
Ab	Activate and mute buzzer: 0= no buzzer, when an alarm occurs. 1= buzzer will activate when an alarm occurs. Press a key to mute the buzzer alarm.	I	0...1	-	1
Ad	Alarm differential	I	0,1...LHD	°C/°F	5
AL	Low temperature alarm. It shows the value beyond which an alarm condition is activated	⊙	LLD...AH	°C/°F	-50
AH	High temperature alarm. It shows the value beyond which an alarm condition is activated	⊙	AL...LHD	°C/°F	99,9
A3	Alarm delay at SCB30 power on	⊙	0...250	Min.	0
<b>t Timer parameters</b>					
t0	Maximal pre-start time of programs. 0=function of pre-start excluded	⊙	0...6	Hours	0
tr	Efficiency of heating system	I	0,1...12 0,1...24,8	°C*Hr °F*Hr	3,0
<b>H Other parameters</b>					
Hb	Enable/disable ON/OFF key. 0 = ON/OFF key disabled; 1 = ON/OFF key enabled;	I	no...YES	-	YES
HH	<b>READ ONLY:</b> Firmware release	⊙	-	-	-
H5	Working mode of SCB30: (*): 1= 1 zone of 1 burner. Connect only probe P1; 2= 2 zones of 1 burner a zone. Connect probes P1 and P2; 3= 3 zones of 1 burner a zone. Connect probes P1, P2, P3; 4= 4 zones of 1 burner a zone. Connect probes P1 P2 P3 P4	C	1...4	-	1
HL	Keyboard lock: no; YES;	⊙	no...YES	-	no
PA1	User parameter password	⊙	0...250	-	0

**NOTE:** **LLD** and **LHD** are the bottom and top ends of scale. They vary according to the thermometric scale °C/°F, see parameter **rEU**. With PTC sensor, they are.

**LLD**= -99.9°C / -178°F **LHD**= 99.9°C / 178°F

(\*): At any new setup of **H5**, we recommend to restart the SCB30.

#### TYPE OF PARAMETERS AND RELATED PASSWORD:

Type	Description	PA
⊙	<b>USER</b> parameters	<b>PA1</b>
I	<b>INSTALLER</b> parameters. Before changing them, carefully read the instructions.	<b>95</b>
C	<b>FACTORY</b> parameters. These parameters are factory set, default values can be different from suggested ones. Modifying these parameters can cause a thermostat malfunction. <b>FACTORY</b> parameters include <b>INSTALLER</b> and <b>USER</b> parameters.	<b>59</b>

#### 17. GUARANTEE

Warranty on materials: 1 year (from production date, excluding consumables).

The Company shall only repair or replace products, which are found to be defective after inspection by Space-Ray's technical service. The Company shall not be under any liability and gives no warranty in the event of defects due to exceptional conditions of use, misuse or tampering. All warranty claims returned to Space-Ray must have prior return authorization. Customer will be responsible for all return shipping charges and fees.

#### 18. DISPOSAL

The controller must be disposed of in compliance with local standards regarding the collection of electric and electronic equipment.

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