Installation

Measures for wall installation

90 mm / 72 mm / 45 mm / 65 mm

Wire entry

Set Analogic output

Switch B
A

Switch A
- 0-10V or 2-10V
- PWM

Switch B
- 2-10V
- 0-10V
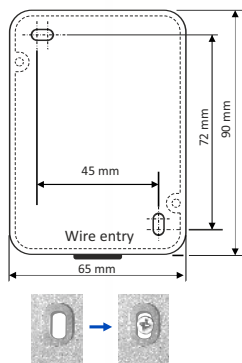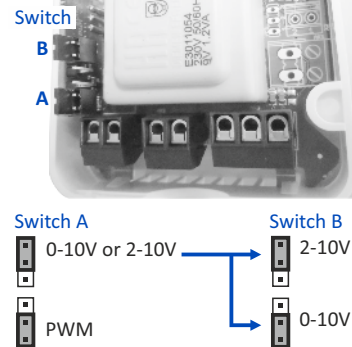
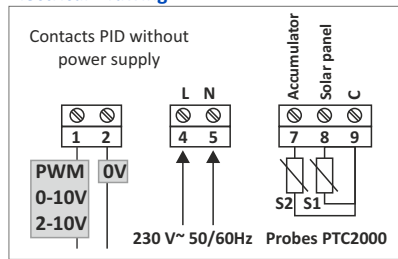### PLUG-IN Connector
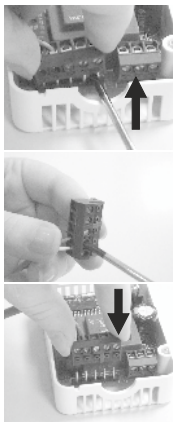
ASSEMBLY NOTE

Before making any electrical connections, ensure that the control is disconnected from the power supply.

Any manipulation of the control is to be performed only by qualified personnel.

Electrical Drawing

Contacts PID without power supply

1	2		4	5		7	8	9
PWM	0V		L	N		Accumulator	Solar panel	C
0-10V						S2	S1	
2-10V			230 V~ 50/60Hz			Probes PTC2000		

Guarantee Conditions

This appliance has a three-years guarantee limited to replacement of defective parts. Transports not included.

We will not accept any responsibility for damage caused to the appliance by poor handling.

The guarantee does not include:

Appliances with a damaged, effaced or altered series number.

Appliances which have not been connected or used following the instructions that accompany it.

Appliances which have been altered without the prior consent of the manufacturer.

Appliances damaged by blows of liquid spills or gaseous emissions.

For the rest of general conditions visit our web.

VERY IMPORTANT:

Before opening the box, to access the connection, make sure the voltage switch.

This controller is not a safety device, or can be used as such, it is the responsibility incorporate adequate protection to every type of installation (**homologated**) installer.

The probe cable must be as far away as possible from other electrical conductors. If need lengthen, it is to be done by welding and shrink to keep reading value and isolate from moisture.

Independent control device mounting, and connection via fixed pipeline.

Reserved the right of modify without prior notice.

Sonder Regulación, S.A.

Avda. La Llana, 93

08191 RUBÍ

(Barcelona) Spain

www.sonder.es

Cód: 7745V1 - ING - DIC17

CE

Description

Differential control that regulates an analog output (configurable in 0-10V, 2-10V, PWM) by means of a PID control to maintain constant the temperature difference between the probes. Example of operation for a solar panel installation:

The PID control calculates when to activate and deactivate the pump (based on: recorded, current, and temperature trend) to circulate the heat transfer liquid and maintain the differential set in **dFr**.

When the solar panel temperature is lower than the value set in **Ant**, activates PID to make the heat-transfer fluid circulate until the temperature set in **Ant** +2°C (fixed differential) is reached, regardless of the accumulator temperature.

When the temperature rises above the value set in **tAL** (temperature alarm) activates **Ar2** that has a three types of operating:

AAC - (**Accumulator Temperature Alarm – probe S2**), it turns on PID 1 connected to the pump when the acumulator temperature (S2) is greater than the set in parameter **tAL**, regardless of the value that has the dFA parameter.

APL - (**Solar Panel Temperature Alarm – probe S1**, mode used in **installations with a draining system**) it deactivates PID connected to pump when the solar panel temperature (S1) is greater than the set in **tAL**.

ArO - (**Accumulator Temperature Alarm – probe S2,** type used in **Zone Valves Control Installation**) it deactivates PID connected to valve when the accumulator temperature (S2) is greater than the set in **tAL**.

Operation

1. On powering up, the display shows "- - -", "**ALL**", "- - -" and the temperature selected in the **Pnt** parameter:

   tAC = Accumulator - Tank Temperature

   tPL = Solar panel - Collector Temperature (factory setting)

2. Pressing **OK** shows the second temperature of Pnt parameter.

3. Pressing [OK] for 5 seconds takes you into and out of forced operation of the PID. The screen displays relay symbol and **on1**. If not out of this mode, the control is fixed and does not regulate.

4. Pressing [▼] for 5 seconds takes you into and out of forced stoppage. The screen displays **OFF**.

Note: go through steps 3 and 4 to check that your installation is properly set up, and make sure that control returns to normal mode.

Factory Settings

Function ... Description	Adjusted to	Scale
dEG... Temperature Reading Units	**CEL.**	CEL / FAH
CAd... Accumulator Probe Calibration	**0°C.**	-9 to +9°C
CAc... Solar Panel Probe Calibration	**0°C.**	-9 to +9°C
dFr... Activation Differential for regulation	**8°C.**	1 to 15°C
inr.... Inverted output signal	**OFF.**	On/OFF
MSr... Minimum Speed Running	**15%.**	0 to 50%
Ant... Anti-Frost Option (differential fix to2°C)	**5°C.**	-20 to +10°C
ALr... Alarm Mode	**AAC.**	AAC / APL / ArO
tAL... Alarm Temperature (differential fix to 1°C)	**60°C.**	15 to 110°C
Pnt... Temperature display on screen	**tPL.**	tPL or tAC
tPP... Time to acces programming Parameters	**5 seconds.**	3 to 40 seg.
PAS... Password (to access programming)	**0 deactivated.**	0 to 99

The factory settings are those considered to be the most common for normal use of installations. If they are right for your purposes, your thermostat is ready to control and regulate your installation. If you should need any other settings please read this manual carefully.

Reset settings to factory defaults

- Disconnect the control power and reconnect, wait until see on the screen the temperature reading.
- Press **OK** until see on the display "- - -" (aprox. 40 seconds).
- The settings return to the factory settings if you has the password disabled (**"0"**).

Description of Parameters

- **Temperature Reading Units(dEG)**: Define the units for temperature reading, Celsius or Farenheit.
- **Accumulator Probe Calibration S2(CAd)**: Adjust the temperature reading of the probe to the reading of a pattern precision thermometer.
- **Solar Panel Probe Calibration S1(CAc)**: Adjust the temperature reading of the probe to the reading of a pattern precision thermometer.
- **Activation Differential (dFr)**: Defines the difference in temperature between the accumulator and the collector which the control must maintain constantly regulating the analog output.
- **Inverted (inr)**: Inverts the signal value of the analog output.
- **Minimum speed running (MSr)**: Initial speed that pump need´s to run. It is calculated based on the characteristics of each pump. Example:

  Pump speed range 800 to 4800 rpm -> $MSr = 800 \times 100 / 4800 = 16\%$

- **Anti-Frost Option (Ant)**: When the solar panel probe goes below this, PID is activated and is disconnected with **Ant** + 2°C.
- **Type for Alarm PID (ALr)**: Operating mode for **tAL** depending if installation has panel-draining or Unit Heater.
- **Accumulator Alarm (tAL)**: When the temperature in the accumulator reaches the value indicated in **tAlr**, the PID will behave according to the setting of **Ar2**.
- **Temperature Display on Screen (Pnt)**: Select which temperature reading will display (**tPL** solar panel / **tAC** accumulator) .
- **Time of acces to programming of parameters (tPP)**: Time that should be pressing **PRG** to enter in the programming of parameters, either to modify them or to visualize their values. (Time expressed in seconds)
- **Password to acces parameters (PAS)**: Access code for programming parameters (default "0" off) Once activated, proceed as follows:
  1. **PAS** appears for an instant and then the message "**0**"; with arrows, up or down, select the access code previously programmed.
  2. Press **OK.** If the selected number is correct, appears **CAd**. If the number selected it is incorrect control does not allow access to programming, appearing **"- - -".**

Parameters Programming

1. Press **PRG** during the time settled down in the parameter **tPP** (of factory 5 seconds) and **dEG** appear in the screen. Release the key.
2. Pressing **OK** their current value will appear blinking.
3. While value is blinking, press [▲] or [▼] to change the desired value. Press **OK** to store it in memory. The designation of the parameter being programmed reappears.
4. Press [▲] to scroll forward to the next parameter. Repeat step 2 and 3.
5. Press **PRG** to exit the parameters "- - -" appears and then the current temperature detected by the probe. After 1 minute without pressing any key, the thermostat leaves programming of parameters.

Warning Indicators

1 [▬] -> Fixed in the display indicates that the PID is on.

ES -> Probe Error: Probe is disconnected or its wires are cut. PID to off.

AL -> Temperature Alarm. Operating according to the **ALr** setting .

ErP-> Programming Error: **dFA** should be higher than **dFd**. PID to off.

Technical Specifications

Power Supply:.. 230Vac +10%, -15% 50/60Hz.

Probes (without polarity):....................... **2, PTC2000 IP65 -40 to +140°C.**

Resolution:.. **0,1°C.**

Maximum cable section to connect:...................................... **1,5mm².**

PID - Breaking power (potentials free contacts):................. **10(4)A 250V~.**

Environment:........................ Tmin. **0°C**, Tmax. **45°C**, %H.R. **20 ... 85%.**

Storage temperature:... **maximmum 50°C.**

Protection degree:... **IP20.**

Pollution degree:... **2.**

Action type According EN 60730:... **1.B.**