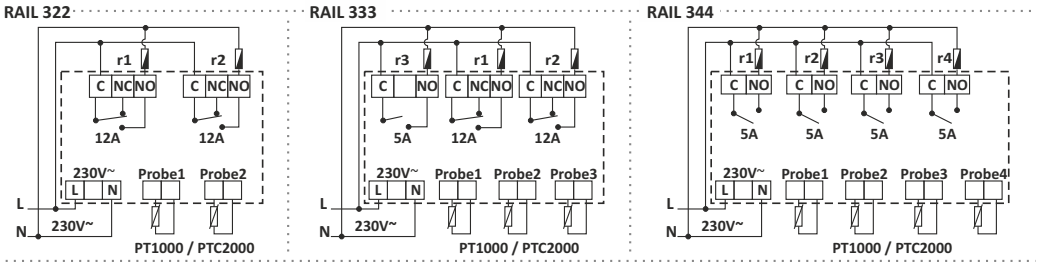
RAIL 322 Code: 26.205, RAIL 333 Code: 26.202, RAIL 344 Code: 26.203

Electronic Thermostats

Manual Instructions for Installation & Use

Electrical Drawing



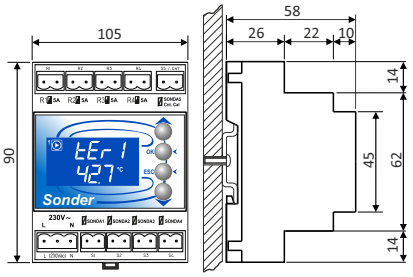
Technical Specifications

Power supply	230Vac +10% -15% 50/60Hz max. 2VA
Outputs	**322** - 2 relays max. 250V~12A. Potential free contacts **333** - 3 relays max. 250V~, 2 (12A) + 1 (5A). Potential free contacts **344** - 4 relays max. 250V~, 5A. Potential free contacts
Inputs	Probe PTC2000 (-40°C to +140°C) / Probe PT1000 (-50°C to +200°C)

Verification Scale	°C	-20	0	+20	+40	+60	+80	+100	+120
PTC2000	Ω	1323	1579	1865	2180	2525	2911	3326	3754
PT1000	Ω	921	1000	1078	1155	1232	1309	1385	1461

Wiring H05v-k	Section: Min. Power=0,75 mm² • Relays=1,5 mm² / Max.=2,5 mm²
Environment	Temperature = 0 to 40°C / Humidity = 20 to 85% / Pollution = 2
Operation	Software classe A; Action Type1.B According EN 60730
Tests	Impulse voltage of 2500 V Ball Pressure Temp: 100°C (gripper parts voltage conductor) 75°C (plastic parts accessible)

Measures mm - Rail-DIN installation



Operation

RAIL 322, 333 & **344** are electronic thermostats with probes & relays freely assignable. You can assign a different probe for each relay & can working as functions of independent thermostats, or multiple relays to a single probe thus creating a neutral zone. Probes & relays that are not assigned to the functions are outside the operating device shall be operable only in manual mode.

- Before setting values and parameters menu, it is advisable to perform the probe and relay test to verify the correct operation of the installation.

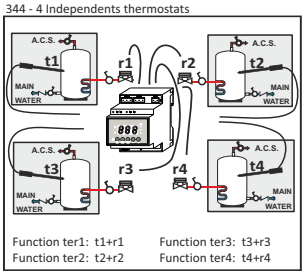
- All parameters are factory set with default values, to fit into installation menu. Inside you can activate the functions of independent thermostats, choose the probes type to connect (PT1000/PTC2000), calibrate the probes, assign a password or set the type of lighting. To change the set point of the thermostat function displayed on the screen, press ▼ for 2 seconds, with ▲▼ change value and press **OK** to confirm.

- Once all the connections and powered, the unit displays the screen in normal operating mode with the factory settings.

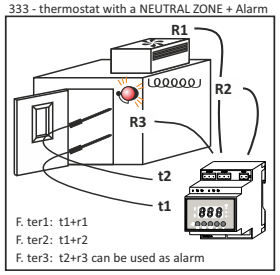
- If the electrical network failure control saves its settings in memory.

Examples of installations

344 - 4 Independents thermostats



333 - thermostat with a NEUTRAL ZONE + Alarm

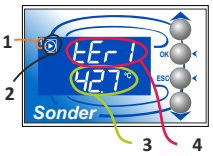


Display

The display shows cyclically (8 seconds each screen) enabled thermostat functions, if all are off then shows the reading of the probes.

The display mode is configurable:

- Pressing **OK** sets the current screen
- Pressing ▲ looks screens cyclically



1- Relay assigned to tEr1
2- Relay function enabled
3- Temperature probe
4- Thermostat Function 1

Password On: After 15 minutes without touching any key the systems exits into normal operation and the relays go back to the status required by the system at that moment.

Password OFF: Until the key **ESC** is not pressed you have not exited test menu or forced manual mode.

Programmation

Setpoint F. thermostat

Press ▼ 2 seconds

Set point setting for the thermostat function currently displayed.
Keys ▼▲ changes the value assigned and **OK** confirmed.

Scale: **LSPo ... HSPo**
Factory set: **4°C**

Statistics

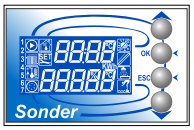
Press **OK** 5 seconds

▲ **EtMA**- Probes Maximum Temperature 1, 2, 3, 4
▼ **EtMi** - Probes Minimum Temperature 1, 2, 3, 4
EtAG - Probes Average Temperature 1, 2, 3, 4
EHor - Partial Operating Hours 1, 2, 3, 4
EHot - Total Operating Hours 1, 2, 3, 4

- Maximums, minimums & averages temperatures recorded by probes.
- Totals and partials operating hours for relays.

Reset of values

Press **ESC** 15 seconds



Deletes all adjustments to parameters, functions, and statistics (except total relay operating hours), sets back to factory default values.
With password only come into test probes and relays. Leaving the test relays return to their original state.

Test & Manual mode

Press **ESC** 5 seconds

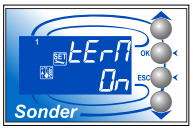
▲ Temperatures t1 a t4
▼ Relays r1-r4 /r1-r3

- See current temperature of each probe, its assignation and operation performance. If this reading is erroneous you should check that it is properly connected and that its cables are not severed.
  Press ▲ to move onto the next probe.
- Connect and disconnect the relays manually to check the correct operation of your installation.
  Pressing **OK** switches relay **R1** on/off.
  Pressing ▲▼ move onto the next relay.

- Press **ESC** to exit the manual mode when done since while inside, has disabled the regulation and its operation is limited to manual fixed orders. Exiting **TEST** the relays update your status to the system regulation.

Menu

Press both keys for 5 seconds



Sets the function of thermostats, set values, define what type of probes, calibrate probes, configure the type of display lighting and set a password. **The Screen shows the SET icon**

- Independent Thermostat 1, 2, 3, 4
- Type of probe 1, 2, 3, 4
- Calibration probes 1, 2, 3, 4
- LiGT
- PASS

On / Off → C-H | diFt | Sond | HSPo | LSPo | rELE | ICon | doFF | dit | dEt

OK – Goes to the next parameter saving changes
▲▼ – Change parameter value
ESC – Returns to the previous menu without saving changes

Very Important

- It is recommended to use original probes only, If need lengthen probes, the connection is to be done by welding to keep the reading and shrink-wrapping to keep isolate from moisture.
- The probe cables should never be embedded in the same channel as the electrical wires.
- The relays enabling your installation devices are potential-free contact and work as switches only, which means that they only open/close contacts, & that they feed the devices connected to the relay corresponding to each device.
- Make sure to have properly made the electrical connections from the devices to the relay contacts before feeding the control.

Menu

In menu you can enable or disable the functions of thermostats, choose the probes type to connect (PT1000/PTC2000), calibrate the readings of the probes, define the backlight and set a password. Depending on the model will have 2, 3 or 4, independent thermostat functions with individual settings, identified by number and can assign different icons. By default only thermostat 1 is active with factory settings and the other thermostats are set in deactivated.

Thermostat 1

Enables or disables the function to regulate the temperature of a probe (heating, boiler, underfloor heating, ...) and allows setting their values.

Scale: **On / OFF** Factory set: **On**

Thermostat 2

Enables or disables the function to regulate the temperature of a probe (heating, boiler, underfloor heating, ...) and allows setting their values.

Scale: **On / OFF** Factory set: **OFF**

Thermostat 3

Enables or disables the function to regulate the temperature of a probe (heating, boiler, underfloor heating, ...) and allows setting their values.

Scale: **On / OFF** Factory set: **OFF**

Thermostat 4

Enables or disables the function to regulate the temperature of a probe (heating, boiler, underfloor heating, ...) and allows setting their values.

Scale: **On / OFF** Factory set: **OFF**

Type of Probes (t1 - t4)

Defines the type of probe connected for each input. Every time you change the type for the probe make that the settings for HSPo, LSPo and set point returns to factory settings if the new settings are out of range for the new type of probe. Once open selected the probe, set Pt1 for connect a PT1000 or PtC2 to connect PTC2000.

Scale: **Pt1(PT1000) / PtC2(PTC2000)** Factory set: **PtC2**

Probe Calibration (t1 - t4)

Allows adjusting reading to each probe. Check temperature with pattern precision thermometer and then adjust reading to this temperature.

Scale: **-10,0** to **+10,0°C** Factory set: **0,0°C**

Display Light

Defines the type of display illumination. On solid (parameter On) or time (parameter OFF). It turns off when 15 minutes of inactivity on the keyboard, pressing any key lights up again.

Scale: **On / OFF** Factory set: **OFF**

Password

Prevents access to configuration, allowing the user to see statistics, display light, and probe and relays test.

Scale: **On / OFF** Factory set: **OFF**

Individual settings for each thermostat function

Control type (C-H) refrigeration rE / heating cA

rE type: The relay disconnects when the temperature falls to the setpoint and will connect when it rises to the setpoint plus differential.

CA type: It disconnects when the setpoint is reached and will connect when the temperature falls to setpoint minus differential.

Scale: **rE / CA** Factory set: **rE**

Differential (**diFt**): Temperature values between connection & disconnection of the relay.

Scale: **0,3** to **25,0°C** Factory set: **1,0°C**

Reading Probe (Sond): Sets the probe reading to the thermostat. Control **322** (t1, t2) **333** (t1, t2, t3) and **344** (t1, t2, t3, t4)

Scale: **t1, t2, t3, t4** Factory set: **t1**

Maximum limit setpoint (**HSPo**)*: Maximum value that can set the setpoint.

Scale with PTC2000: **-40 a +140°C**
Scale with PT1000: **-50 a +200°C** Factory set: **100,0°C**

Minimum limit setpoint (**LSPo**)* : Minimum value that can set the setpoint.

Scale with PTC2000: **-40 a +140°C**
Scale with PT1000: **-50 a +200°C** Factory set: **-40,0°C**

* HSPo values and LSPo are interlinked, so that the limit can not be below the minimum limit value and the lower limit value can not rise above the maximum limit, this could block the regulation scale parameters. If HSPo and LSPo is set to the same value, the setpoint is locked, so the user can not change the password if enabled.

The relay is activated (rELE): Sets the relays that is activated. Control **322** (r1, r2), **333** (r1, r2, r3) y **344** (r1, r2, r3, r4)

Scale: **r1, r2, r3, r4** Factory set: **r1**

Icons relays (ICon): Assign a distinctive icon for each relay. The display will show the temperature, the icon assigned and the number of relay is activated.

Scale: Factory set:

Minimum off time (**doFF**): Delay time applied when the compressor stops and which prevents the compressor restarting even if conditions for this are met. This delay is also applied after switching on the thermostat to protect the compressor in the event of a power outage.

Scale: **0** to **15 minutes** Factory set: **2**

Defrost timer (dit): Interval between the start of two successive defrosts expressed in hours.

Scale: **1** to **168 hours** Factory set: **24**

Time-out defrost finish (dEt): After this time has elapsed (in minutes) defrost finishes. Zero indicates defrost disabled. "**dEF**" appears on the display during defrost.

Scale: **0** to **99 minutes** Factory set: **0**

Statistics

In this menu you will find all the data saved by conytrol from its initial functioning and with which you will be able to optimise your installation, as you will be given data regarding times of operation, maximum, minimum & average temperatures. All these data will allow you to assess your installation performance depending on meteorological conditions and your configuration.

To enter statistics menu press **OK** 5 seconds (screen lighted),screen shows the first statistic.

Those probes that are not connected do not give out any temperature reading and in statistics an error message is shown .

- Pressing **OK** values are initiated at zero.
- Pressing ▲▼ you move on to the next value.
- Pressing **ESC** you exit of statistics menu

Maximum Temperatures (t1, t2, t3, t4)

Shows the maximum temperature reading at each one of the probes identified by their number on the display.

Minimum Temperatures (t1, t2, t3, t4)

Shows the minimum temperature reading at each one of the probes identified by their number on the display.

Average Temperatures (t1, t2, t3, t4)

Reports the average temperature reading of each of the probes identified by their number on the screen.

Partial Operating Hours (r1, r2, r3, r4)

Shows the hours of operation of each relay since the last time it was reset. They are identified by their number on the screen.

Total Operating Hours (r1, r2, r3, r4)

Shows each relay's total operating hours since the installation was carried out. **This statistical information cannot be set at zero.**

Warnings & Warranty Conditions

Make sure that the environmental conditions are adequate before installing the regulator, as well as working temperature, humidity, pollution and gas emission, since any of these factors may affect the correct operation of the product. For any handling during either installation or repairing procedures the regulator should be disconnected from the electric grid.

RAIL 322/333/344 is an independent control device to mount on Rail-DIN inside an electrical panel to provide it of insulation and cables should be channelled in tubes or gutters to be properly installed. This regulator is not a safety device, neither can be used as such; it is the responsibility of the person in charge to include adequate protection for each type of installation (**complying with the standards, HOMOLOGATED**).

The electrical connections must be those indicated in this manual and the label in device. Assembly, electrical connection, set-up, and maintenance should be carried out only by qualified technicians. The connections referred to in this manual are those of the regulator; to connect the rest of the installation components, the user should check the technical instructions for each piece of equipment (collectors, tanks, valves, etc.). For a correct operation, make sure that the technical features of the elements & the installation are compatible and complies normative. If possible defects are detected that may jeopardise or lead to incorrect operation of your installation, it is recommended not to connect this device.

This device's warranty covers 3 years. This warranty is limited to replacement of the defective part, which will be delivered in the same material conditions as they were received, not responding for packaging, batteries, instructions, or any other accessory that this product includes, and that is not included in the delivery note.

We disclaim all responsibility for damaged devices as a result of improper handling, omission of warnings given in this manual, or lack of technical knowledge as to the needs of the installation.

For any repair covered by this warranty it is necessary to present the documentation proving the purchase of this product within the period of time covered by the warranty herein, together with a description made by the user as accurate as possible of the defect or anomalous operation of the product.

If repairs are out of warranty, the user will be inform of their feasibility & costs of those repairs. Assessment by our technical department might result in an additional cost for the user.

Out of warranty:

- Devices with serial number damaged, deleted or modified.
- Devices connected or used without complying with the instructions included in the device package.
- Devices modified without prior consent on the part of the manufacturer.
- Devices damaged either by impacts or liquid or gaseous spillage or emissions. Devices presenting natural wear-and-tear or because of improper use of the device.
- **Those costs resulting from delivery or reception of material.**
- Demands of compensation due to loss of profit, compensation for utilization as well as indirect damages, as long as these are not of obligatory liability in compliance with the law.