

## Thermoregulation T-REG300 Proportional Integral



The thermoregulation control unit **T-REG300** is an electronic device which, based on many years of **BEINAT's** experience in the field of thermoregulation, allows to keep constant control of the heating temperature in the environments.

This unit acquires the temperature data derived from internal and external probes and adjusts the heating fluid to the desired climatic needs, allowing a high degree of comfort.

The settings of this control unit is very easy, just follow the instructions required by reading them directly from the display.

The **T-REG300** a versatile device that allows the user to choose his mode of operation connecting it to the mixing valve (proportional integral operation) and the burner (ON - OFF).

These technical features make it ideal to install the unit, especially for the control of heating of industries, condominiums, villas, and so on.

Installation and user guide

Firmware Versione 1.0

CONFORMITY

DM 01/02/1986

## Precautions

**CHECK** the integrity of the thermoregulation control unit after having removed it from the box. Check that the specifications on the box correspond to the type of power supply used. When doing the electrical connections, follow the drawing closely. Any use of the detector for purposes other than the intended one is considered improper, and as a result of which **BEINAT S.r.l.** therefore disclaims any responsibility for possible damages caused to people, animals or objects.

**TERMS and EXPECTATIONS:** The installation of the control unit, its ordinary and extraordinary maintenance, and its out of service removal at the end of the functional life guaranteed by the manufacturer, must be carried out by **authorized and/or specialized personnel**.

To serve you for a long time and to the satisfaction of your unit, use it keeping in mind the following precautions.

**Do not allow it to become wet.**

The unit can be seriously damaged when immersed in water. Remember that the probe has an IP20 protection degree.

**Do not drop it.**

Heavy knocks or falls during transportation or installation can damage the appliance.

**Avoid abrupt temperature fluctuations.**

Sudden temperature variations can cause condensation and the probe could work poorly.

**Cleaning**

Never clean the device with chemical products. If necessary, wash with a moist cloth.

## Main Features

Mixer valve control  
Proportional integral  
Burner control ON/OFF  
Daily clock included  
Weekly clock included  
Ability to enable 6 programs variable daily  
Operating mode automatic - manual  
Setting the curve (slope) of work  
Command and control ON / OFF of the heating pump  
Ability connection for the supplied safety probe; This is used in floor heating systems.  
Constant display of system temperatures  
Constant display of the settings you have enabled  
Navigation buttons incorporated  
Backlit display  
Storing the data set even in the absence of electrical voltage

## Technical Features

Power supply:..... 240 VAC  $\pm$ 10% 50Hz  
Consumption: ..... 3,6W @ 240VAC  
Capacity contacts on relay..... 6A 250V. resistive

**Voltage free contacts**

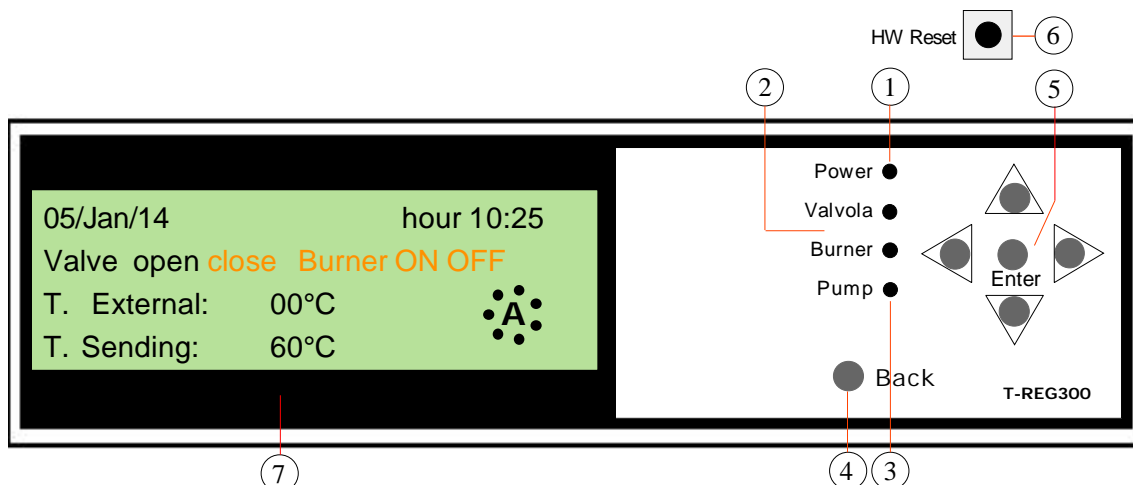
Type sensors: ..... NTC 47 kOhm  
Operating temperature of sensors:..... -20°C .. 120°C  
Read range of temperatures: ..... -20,0°C .. 120°C  
Precision: .....  $\pm$  1 °C  
Resolution: ..... 0,1 °C

**Information general**

Operating temperature ..... -10°C ÷ + 60°C  
Humidity limits: ..... 90% RH not condensed  
Maximum distance between probes and control unit ..... 100 m  
Section of the connection cables to the probes..... 1 mm<sup>2</sup>  
Connection: **The connection's cable of the probe must not be installed together with the power cables. Otherwise, make sure to use a shielded cable**

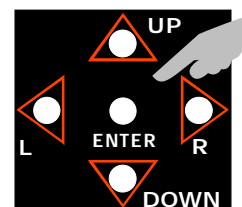
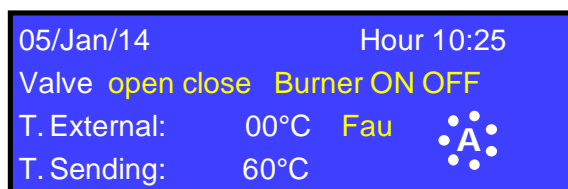
Omega-type size DIN EN 50092 9 modules ..... 158x90x58 mm  
Compatibilità Elettromagnetica CE ..... Standard of Reference  
Degree of protection ..... in the air IP20  
warranty ..... Years 3 from date of manufacture

## Components and commands



- 1) **POWER** Led. It lights up when you insert the voltage.
- 2) **Indication led of the type of the system.** When it lights up **"VALVE"** means that the heating is controlled by a mixer valve indifferently that the burner is switched on or off.  
When it lights up **"BURNER"** means that the plant is only controlled by the burner.
- 3) **Led of Heating pump.** This LED lights up when only the function is enabled (see control panel). The pump starts working together with the LED indicator when it has reached a set temperature.
- 4) The **"BACK"** button is used to move back a list or a page.  
**N.B.** Pressing the button for 3 seconds it returns to the home page.
- 5) Group of **navigation buttons.** These buttons are used to set the functioning of the control unit.
- 6) The **"FACTORY RESET"** button. This button is used to reset the control unit to the factory state.  
**N.B. Before you perform this command, make sure to avoid delete the data set**
- 7) **Display.** The display shows all the information necessary for the control and the functioning of the control unit. **N.B. When "Err. clock bat" flashes la buffer battery is to be replaced.**

## Home screen



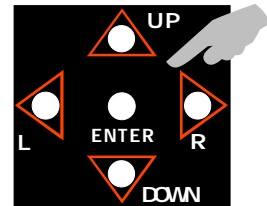
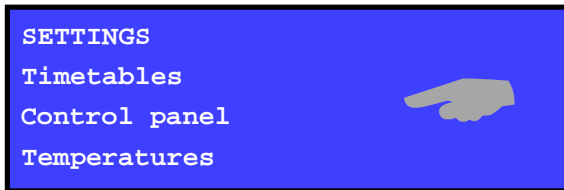
**BACK** to move back a page.  
**N.B.** Press for 3 seconds to return to the home page

In a state of normal functioning of the control unit, the display shows the following information:

- a) **1st line.** Date and Time
- c) **2nd line.** The type of system, indicates if the system is equipped with a mixer valve or if controls directly the burner, simultaneously the reference LED placed near to the button, lights up.
- d) **3rd and 4th line.** Display of the temperatures detected, these vary with the detection and the integrity status of the probe, in the event of a failure, lights up **Fau**.
- e) Enclosed into the circle it will read your setup if the control unit is:  
**A:** Automatic - **M:** Manual- **1:** Opened (heating) - **0:** Closed (heating)

## SETTINGS

To access the setup of the **T-REG300**, you have to press the **"ENTER"** button for 3 seconds. If it's left in standby mode after three minutes, it backs to the previous page.



**BACK** to move back a page.

**N.B.** Press for 3 seconds to return to the home page

### SETTINGS

Selecting by the UP and DOWN buttons the **"Time Setting"** and press **"ENTER"** you access to the date, time and the language setting.

- 1) **Date:** 05/Jan/14
- 2) **Hour:** 10:10
- 3) **Language** Italian - English - Spanish - French.

### SETTING TIMETABLES.

Selecting by the UP and DOWN buttons the **"Timetables"** and press **"ENTER"** you access to the timetables.

### SETTING CONTROL PANEL.

Selecting by the UP and DOWN buttons the **"Control panel"** and press **"ENTER"** you access to the following programs:

- 1) Selection the operating mode: Valve or Burner
- 2) Selection functioning automatic/manual/OFF
- 3) Control heating pump
- 4) Displays or sets the curve slope

### SETTING TEMPERATURES.

Selecting by the UP and DOWN buttons the **"Temperatures"** and press **"ENTER"** you access to the following programs:

- 1) Selection temperature comfort from 15°C to 24°C
- 2) Selection temperature saving from 3°C to 19°C
- 3) Selection temperature heating pump from 20°C to 45°C
- 4) Selection temperature safety from 20°C to 45°C

## Setting Date and Time



To set the date, follow these steps:

- 1) Move with the buttons **R** and **L** on the: day, month, year and hour
- 2) Select with the **ENTER** button until you find the day, month or year of calendar.

**Date:** 05/Jan/2014

To set the time, follow these steps:

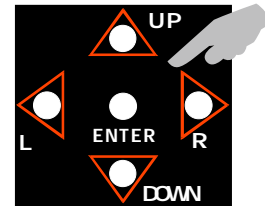
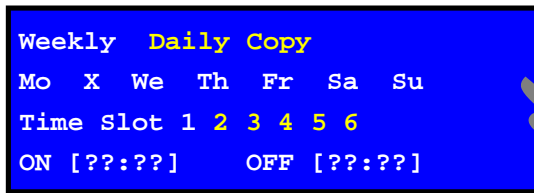
- 1) Move with the **DOWN** button on the hour and minutes
- 2) Select with the **ENTER** button until you find hour and minutes.

**Hour:** 10:10

**N.B.** In case of lack of electric current the control unit does not lose the data storage.

**END:** to exit, select **"the back arrow"**.

## Setting Timetables



**BACK** to move back a page.

**N.B.** Press for 3 seconds to return to the home page

### SELECTION OF TIMETABLES

Selection of the time "DAILY" or "WEEKLY". Each time you press daily or weekly you select the type of clock.

#### Setting - Weekly clock

**NOTE.** Time slot means for the 1st start and 1st stop for a total of:  
**6 starts and 6 shutdowns.**

#### START and SHUTDOWN time slot 1

- 1) Select with the **UP**, **DOWN**, **L** and **R** button the day, example "**Mo**" (Monday)
- 2) Select with the **UP**, **DOWN**, **L** and **R** button the **time slot**, example **1** (first start) and press **ENTER**

#### START TIME

1) Move with the **UP**, **DOWN**, **L** and **R** button on **ON** (start) [?:?] the ?? (hour) flashes. Each time you press "**ENTER**" you change hour, example **00:00 - 01:00 - 02:00** etc

2)...Select the minutes with the **L** and **R** button. Each time you press "**ENTER**" you change minutes of 15 minutes in 15, example: **01:00 - 01:15 - 01:30-01:45** etc

#### SHUTDOWN TIME

1) Move with the **UP**, **DOWN**, **L** and **R** button on **OFF** [?:?] the first ?? (hour) flashes. Each time you press "**ENTER**" you change hour, example **02:00 - 03:00 - 4:00** etc

2)...Select the minutes with the **L** and **R** button. Each time you press "**ENTER**" you change minutes of 15 minutes in 15. Example: **03:00 - 03:15 - 03:30 - 03:45** etc

Repeat these steps for all times slots

To delete a time slot select with the **UP**, **DOWN**, **L** and **R** button:

- 1) The time slot to be deleted.
- 2) ON (start) [05:00].
- 3) Press the **DOWN** button.

#### Daily clock

If you initially chose a daily clock, follow the same procedure described above but keeping in mind that they are not selected the days of the week.

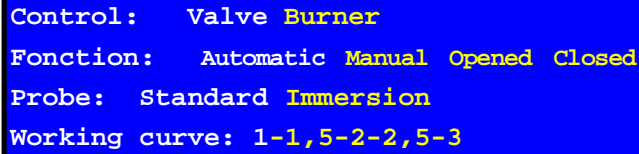
#### NOTE

If you enter a wrong start and shutdown time the control unit don't leave the setting until you correct the parameter. The program will automatically search the error and positions above flashing, ... correct the error.

#### Copy function

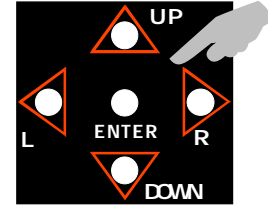
- 1) Select with the **UP**, **DOWN**, **L** and **R** button, the day to be copied.
- 2) Move with the **UP**, **DOWN**, **L** and **R** button on **Copy** and press "**ENTER**": **the day is copied.!**
- 3) Select with the **UP**, **DOWN**, **L** and **R** button, the day on which you want to paste the copied program. Press "**ENTER**" for 3 seconds, the display lights up "**OK**" the program is copied. Repeat for each day you want.

## Control Panel



Control: Valve Burner  
Fonction: Automatic Manual Opened Closed  
Probe: Standard Immersion  
Working curve: 1-1,5-2-2,5-3

A hand icon points to the 'Working curve' line.



**BACK** to move back a page.

**N.B.** Press for 3 seconds to return to the home page

### CONTROL PANEL

From the control panel you access to enable and to disable the equipments connected to the **Jolliter**, the setting of the curve slope and the selection of control automatic and manual.

#### SELECTION OF OPERATING MODE, VALVE OR BURNER

1) Select with the **UP**, **DOWN**, **L** and **R** button **Valve**, each time you press **ENTER** it changes to **Burner**. Leave the power on the desired value.

#### SELECTION OF OPERATING MODE,

2) Select with the **UP**, **DOWN**, **L** and **R** button **Automatic**, each time you press **ENTER** it changes to **Manual**, **Opened heating**, **Closed heating**.  
Leave the power on the desired value.

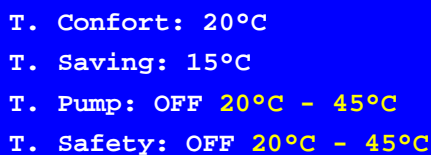
#### SELECTION OF THE TYPE OF SENDING PROBE

3) Select with the **UP**, **DOWN**, **L** and **R** button **Control pump**, each time you press **ENTER** it changes to **Standard** or **Immersion**.  
Leave the power on the desired value.

4) Select with the **UP**, **DOWN**, **L** and **R** button **Working curve**, each time you press **ENTER** the control scale will be replaced by: **1 -1,5 - 2 - 2,5 - 3**.  
Leave the power on the desired value.

**N.B.** See the graphic and explanation on the next page.

## Setting Temperatures



T. Confort: 20°C  
T. Saving: 15°C  
T. Pump: OFF 20°C - 45°C  
T. Safety: OFF 20°C - 45°C

A hand icon points to the 'T. Safety' line.

### SETTING TEMPERATURES

From the panel setting temperatures they are set all necessary temperatures for the functioning of the control unit.

Resolution of the temperatures 1°C.

1) **TEMPERATURE COMFORT** daily from 15° to 24°C.

Select with the **UP**, **DOWN**, **L** and **R** button **Temperature Comfort**, each time you press **ENTER** the temperature scale will be replaced. Leave the power on the desired value.

2) **TEMPERATURE SAVING** night and day from 3° to 19°C.

Select with the **UP**, **DOWN**, **L** and **R** button **Temperature Saving**, each time you press **ENTER** the temperature scale will be replaced. Leave the power on the desired value.

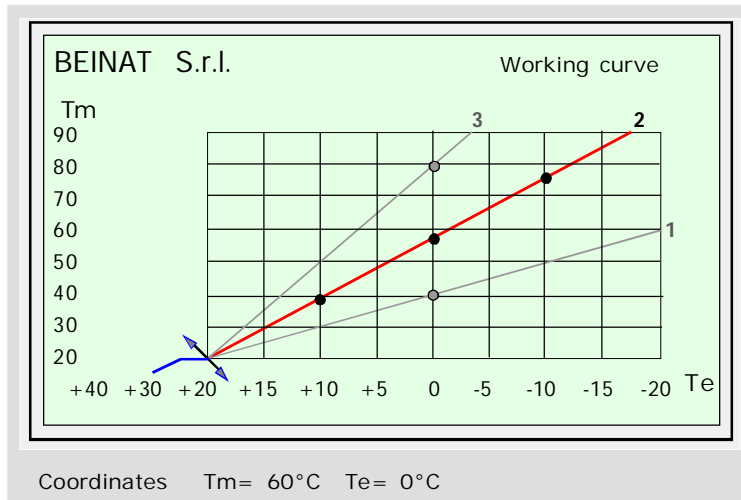
2) **TEMPERATURE HEATING PUMP** night and day from 20° to 45°C.

Select with the **UP**, **DOWN**, **L** and **R** button **Temperature Pump**, each time you press **ENTER** the temperature scale will be replaced. Leave the power on the desired value.

2) **TEMPERATURE SAFETY** from 20° to 45°C. **Note: it serves only for floor heating systems**

Select with the **UP**, **DOWN**, **L** and **R** button **Temperature Safety**, each time you press **ENTER** the temperature scale will be replaced. Leave the power on the desired value.

## Working curve



### GRAPHIC and NOTES

From previous experiences always helpful, the lines drawn and identified from No. 1 to No. 3 must be interpreted as follows:

**Straight line 1** referred to the plant floor

**Straight line 2** referred to traditional plant, thermosiphon.

**Straight line 3** referred to the system of thermoventilation.

### SETTING WORKING CURVE

The experience from many years of work and the data collected from the old stokers is known that to have 20 ° C in an environment with a external temperature of 0 ° C, the boiler must send to the system a temperature of 60 ° C. approx.

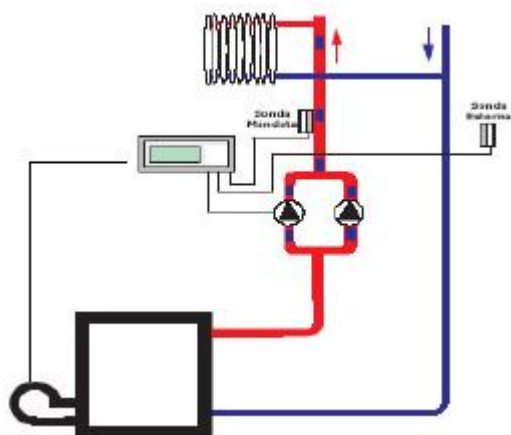
For each degree Celsius that varies in external, they must vary of two to the system. it is also known that to determine the value of the flow temperature as a function of external temperature depends essentially on the thermal characteristics of the building and the type of heating elements located in the apartments.

Not knowing how it has been calculated the calories and dispersions, to find a comfort as well as to use the technique, you have to use the experience and a few days of testing.

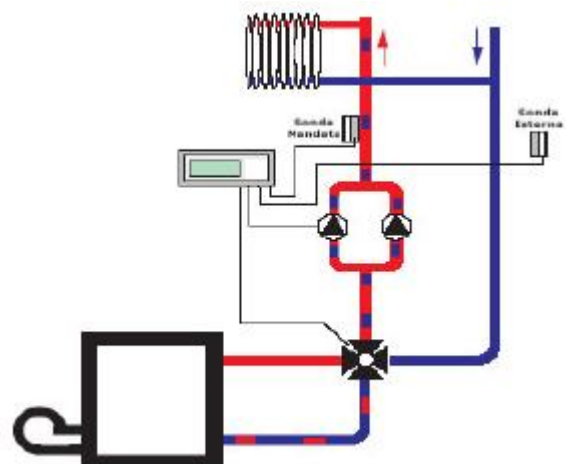
During and after every setting is right to wait at least 24 hours order to enable the system to adapt to the new settings.

To correct the daytime temperature or to select a different ambient temperature, for example: Saving, Night, use the setup menu " **SETTINGS TEMPERATURES**"

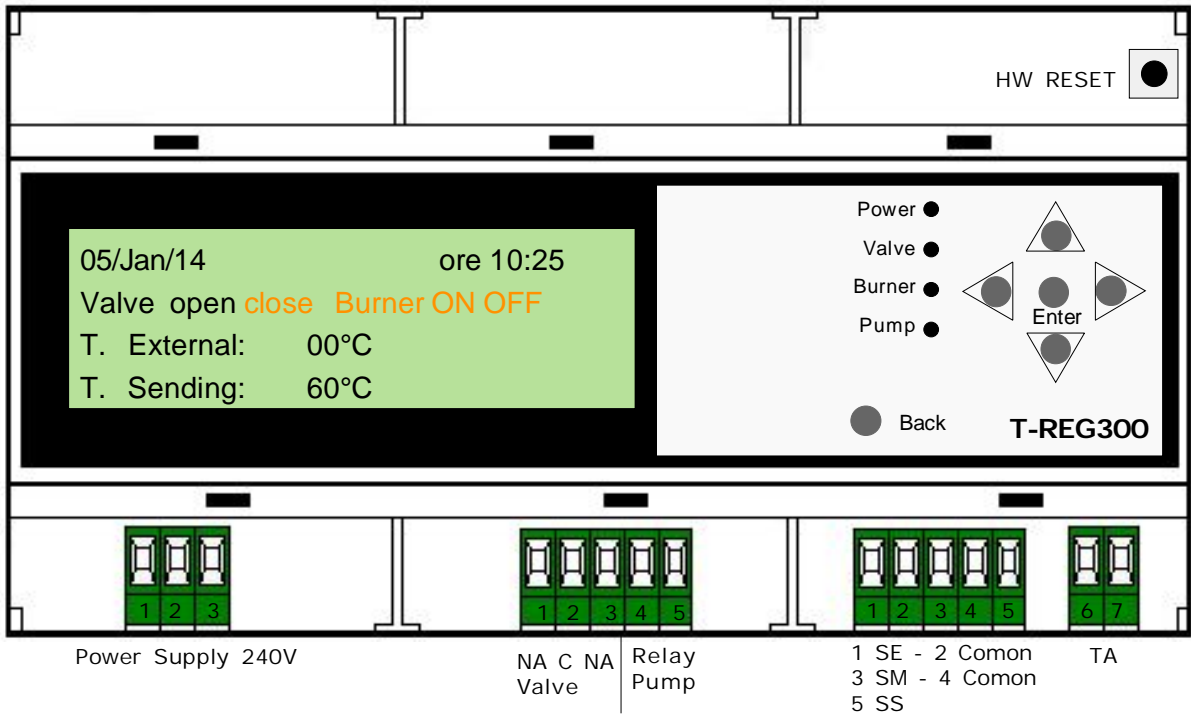
### Control Burner



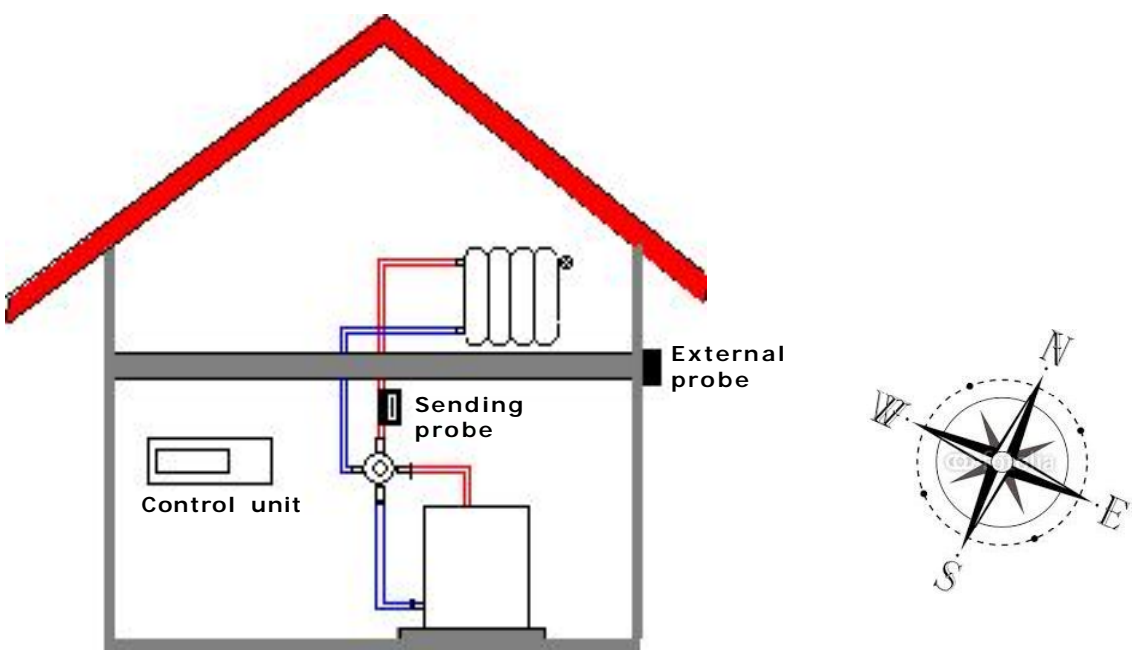
### Control Valve



# Layout connections



# Probe positioning

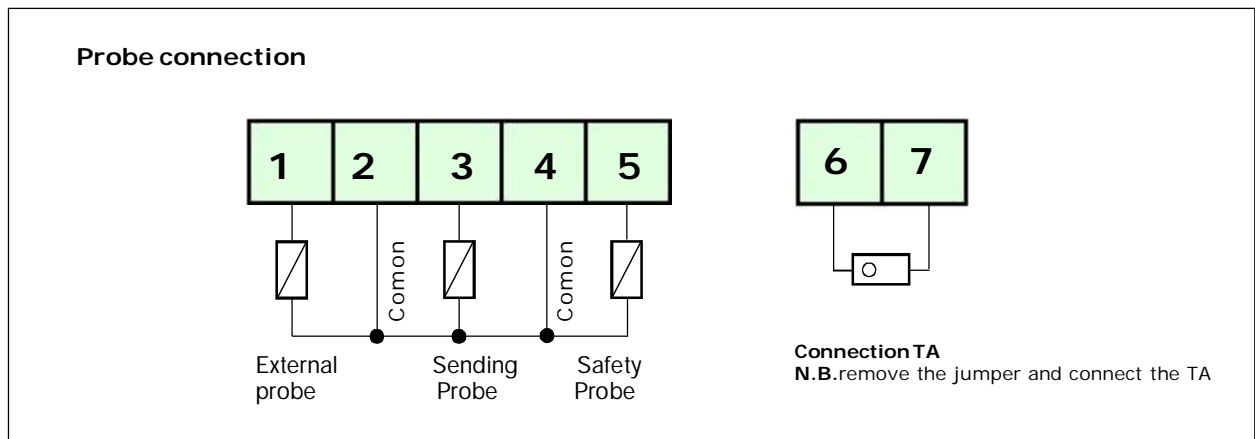
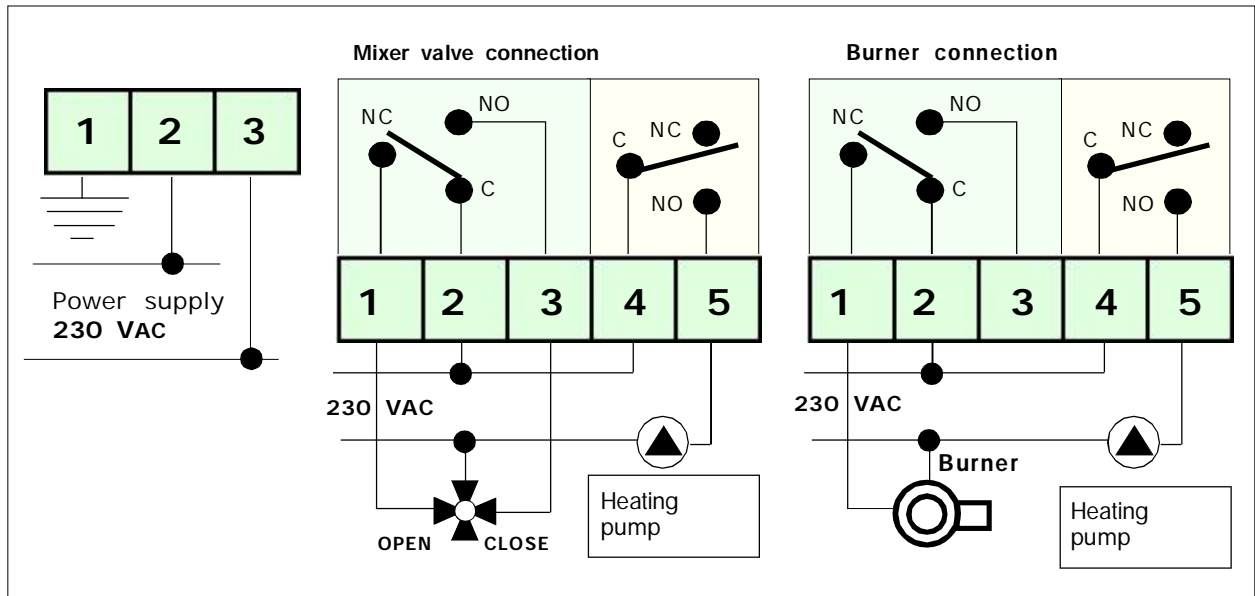




## Electrical connections

### WARNING

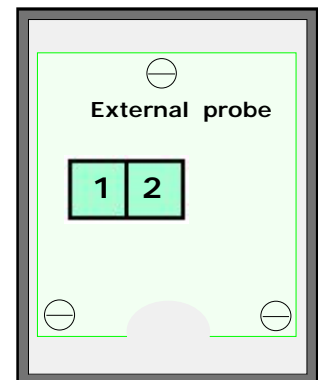
Before connecting to the mains power, ensure the voltage is correct. Carefully follow the instructions and the connections according to Regulations in force, keeping in mind that the signal cables should be laid separate from the power cables.



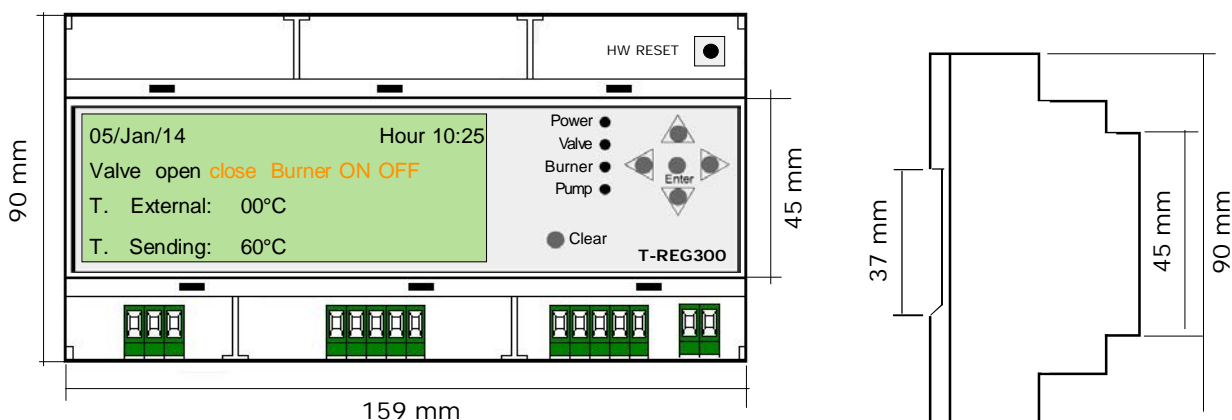
### EXAMPLE: connection of the temperature probes



N.B.  
The **safety probe** is usually connected only when it use a floor heating system.



## Dimensions of the control unit in bar Omega 9 modules



## Before calling a technician, check ...

**If the device does not turn on:** Check that the cables voltage 240 VAC are connected to pins 2 and 3 of terminal, check that the mains voltage is present.

**The control unit runs but can not control the devices connected:** check that all connections are correct, that to the common of the relay is brought neutral wire (remember that the relays are voltage-free).

**The control unit does not open or close:** Check that all sensors are functioning correctly. In the case of Open or short circuit is indicated by FAULT provide.

Check that the resistive values are correct, see table on the right

**The display darkened and you can not read it:** Cool it bringing to below 45 ° C.

**Detections resistive derived from the probes according to the temperature detected**

Temperatura	Valori resistivi
+80 °C	5575 Ohm
+70 °C	7867 Ohm
+60 °C	11298 Ohm
+50 °C	16636 Ohm
+40 °C	24698 Ohm
+30 °C	37707 Ohm
+20 °C	58994 Ohm
+10 °C	94523 Ohm
+5 °C	120925 Ohm
<b>0 °C</b>	<b>155816 Ohm</b>
-5 °C	202274 Ohm
-10 °C	264629 Ohm
-20 °C	464173 Ohm
-25 °C	622750 Ohm

If other problems arise, a specialised and/or authorised technician and/or the Distributor of BEINAT S.r.l. should be contacted directly.



**INSURANCE.** This device is insured by the SOCIETÀ REALE MUTUA for the PRODUCT'S GENERAL LIABILITY up to a maximum of 1,500,000.00 EURO against damages caused by the device in case of failures in functioning.

**WARRANTY.** The warranty term is 3 years from manufacturing date, in agreement with the following conditions. The components acknowledged as faulty will be replaced free of charge, excluding the replacement of plastic or aluminium cases, bags, packing, batteries and technical reports.

The device must arrive free of shipment charges to **BEINAT S.r.l.**

Defects caused by unauthorized personnel tampering, incorrect installation and negligence resulting from phenomena outside normal functioning shall be excluded from the warranty.

**BEINAT S.r.l.** is not liable for possible damage, direct or indirect, to people, animals, or things; from product faults and from its enforced suspension of use.



**DISPOSAL OF OLD ELECTRICAL & ELECTRONIC EQUIPMENT.**

This symbol on the product or its packaging indicates that this product shall not be treated as household waste. Instead, it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment, such as for example:

- sales points, in case you buy a new and similar product
- local collection points (waste collection center, local recycling center, etc...).

By ensuring this product is disposed of correctly, you will help prevent potential negative consequence for the environment and human health, which could otherwise be caused by inappropriate waste handing of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

**Attention:** in some countries of the European Union, the product is not included in the field of application of the National Law that applies the European Directive 2002/96/EC and therefore these countries have no obligation to carry out a separate collection at the "end of life" of the product.



<b>Control unit T-REG300</b>		<i>Lo styling è della b &amp; b design</i>
Purchase date	Stamp and signature of the dealee	
Serial Number		

In agreement with its continuous development policy, it reserves the right to modify its products without notice.

**BEINAT S.r.l.** Via Fatebenefratelli 122/C  
10077, S. Maurizio C/se (TO) - ITALY  
Tel. 011.921.04.84 - Fax 011.921.14.77  
[http:// www.beinat.com](http://www.beinat.com)



**Business** - [info@beinat.com](mailto:info@beinat.com)  
**Help Desk** - [laboratorio@beinat.com](mailto:laboratorio@beinat.com)