WEATHER COMPENSATOR FOR CONTROL OF VALVE IN CENTRAL HEATING PLANTS

B 210
Eng. 10.90

DISCONTINUED PRODUCT

RTE 93

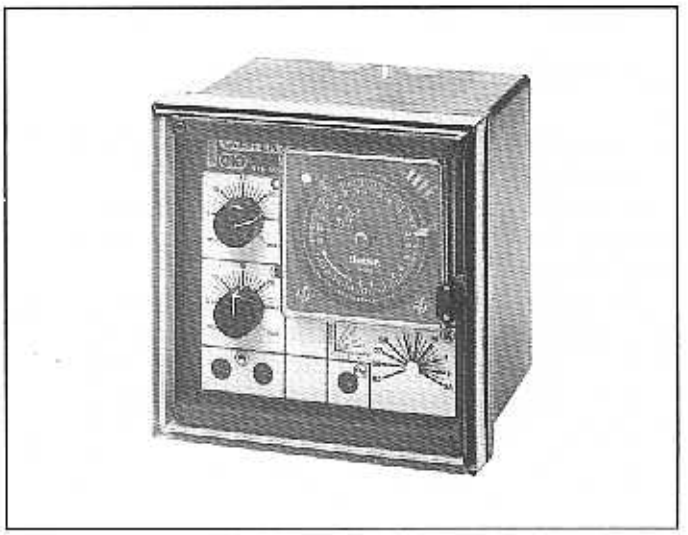
TO SEE A SUITABLE REPLACEMENT PRODUCT

- Power supply 220/240 V ac
- Control of flow temperature as a function of outside temperature
- One modulating output with PI control action
- Control of mixing or diverting valves with electric reversible actuators and 3-wire control
- Analogue time switch for selection of "Normal" and "Setback" room temperature

APPLICATION

RTE 93 has been designed for the control of central heating plants in small- and medium-sized buildings such as:
- Multi-family dwellings and appartment blocks
- Schools and public buildings

It is suitable for all climates and for all types of heating media: panels, radiators and convectors
Controls mixing and diverting valves operated by electric reversible actuators with 3-wire control.



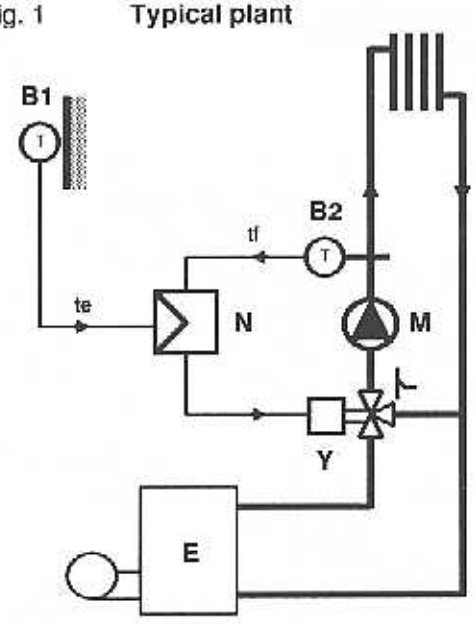
OPERATION

Detector B1 monitors the outside temperature te, and detector B2 monitors the flow temperature tf.
RTE 93 establishes the desired value of the flow temperature Tf as a function of the outside temperature te and of the heating curve set on the basis of the design criteria factor K (fig. 2.2).
In the event of a difference between the actual temperature tf and the desired temperature Tf, RTE 93 produces a modulating signal with PI action for the control of valve Y.
The control parameters, Proportional Band and Neutral Zone, are automatically set by the controller.

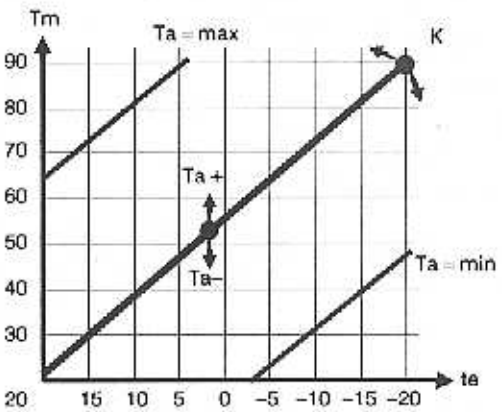
To adjust the desired room temperature Ta, parallel shifts of the selected heating curve can be made by means of the potentiometers "Sun" (fig. 2.4) and "Moon" (fig. 2.5). In this way it is possible to establish two different values for Ta: a "Normal" value for periods of occupation and a "Setback" value for unoccupied periods.

GENERAL LAYOUTS

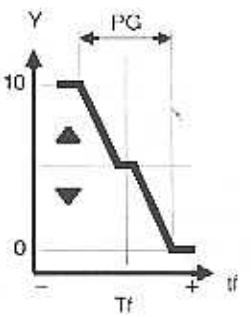
fig. 1 Typical plant



Heating curve



Control of valve



B1 - Outside detector
B2 - Flow detector
Pb - Proportional band
E - Boiler
M - Circulation pump
N - RTE 93

Y - Valve
Ta - Desired room temperature
tf - Actual flow temperature
Tf - Desired flow temperature
te - Outside temperature

ACCESSORIES

No.	Description	Type	Sens.	Elem. Code	Data sheet
	Supplied:				
1	Outside temperature detector	SAE 100	Ni 100 Ω	B1	N 120
1	Surface flow temperture detector	SCH 100	Ni 100 Ω	B2	N 130
	Optional:				
1	Immersion detector (as substitute for SCH 100)	SIH 100Ni	100 Ω	B2	N 140

MODELS

RTE 932 : with 24-hour time switch
RTE 933 : with 7-day time switch

CONSTRUCTION

RTE 93 is constructed in a 144 X 144 DIN 43700 standard casing (fig. 5).
The casing is made of shock-proof plastic and contains, on its base, the two terminal blocks into which the connecting tabs of the printed circuit are inserted.
The electronic part is constructed according to CEI (Italian Electrotechnical Committee) standards in one piece comprising the printed circuit and the controls facia; it is inserted into the casing using slight pressure.
The cover, in transparent plastic, is hinged on the left of the casing and is provided with a mechanical closure.
RTE 93 is suitable for wall or panel mounting (fig. 6).

INSTALLATION

RTE 93 controller

It must be installed in a dry location with a temperature not above 35 °C and as far as possible from any leakages or sprays of water.
If installed in locations classified as "dangerous" it must be mounted inside a cabinet for electrical appliances constructed according to the regulations in force for the type of danger concerned.
In any event, the electrical connections must be made strictly according to the wiring diagrams (fig. 7) and in observance of any safety regulations in force.

Flow detector SCH 100 or SIH 100

If the circulation pump is on the flow pipe, the detector must be mounted downstream of this. If the pump is on the return pipe, it must be mounted downstream of the control valve and at a minimum distance of 1.5 metres from it so that it does not suffer indirect thermal effects and because, before reaching that point, the water has not become properly mixed.

Outside detector SAE 100

This must be installed outside the building on the north or north-west side, at a height from the ground of not less than 3 metres to protect it from tampering and to allow better monitoring of the weather conditions.
It must be protected from direct sunlight and as far as possible from windows, doors, chimneys and other direct thermal disturbances.

FACIA

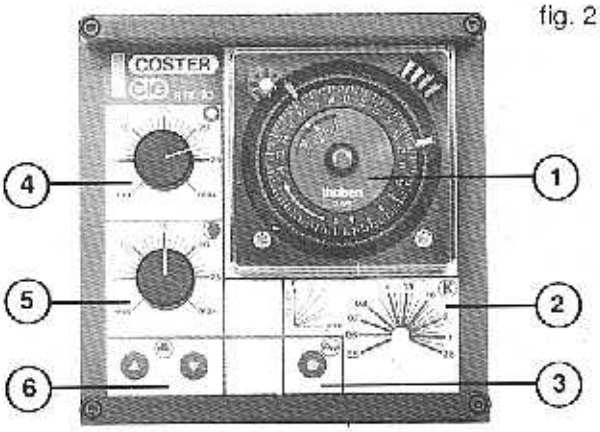


fig. 2

1 - Time switch
2 - Heating curve - Design Factor K
3 - Power supply LED
4 - "Sun" potentiometer - "Normal" temperature
5 - "Moon" potentiometer - "Setback" temperature
6 - Valve LED: Opening - Closing

ACTUATOR SPEED PROGRAMMER

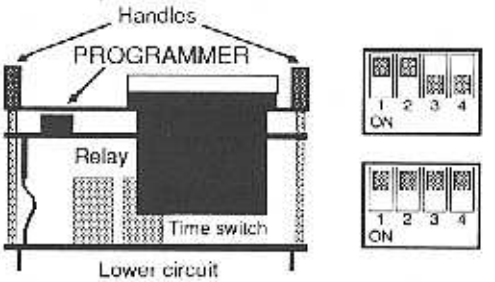


fig. 3

HEATING CURVE

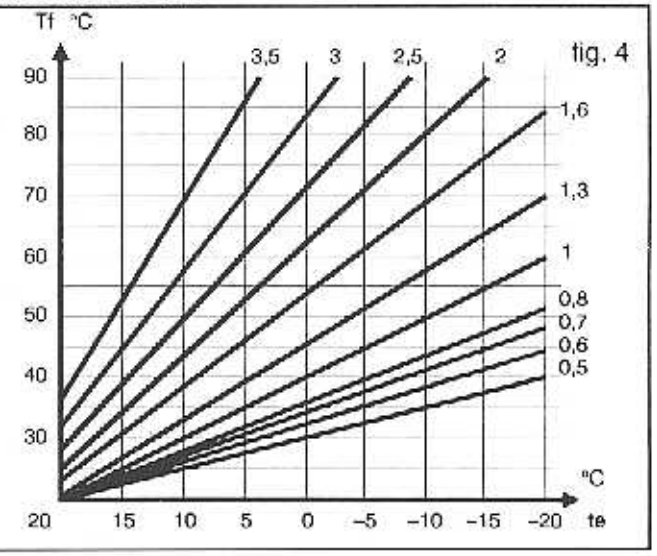


fig. 4

TECHNICAL DATA

Power supply	220/240 V ac
Frequency	50 to 60 Hz
Consumption	4 VA
Outputs:	
- rated voltage	250 V ac
- rated capacity	5 (1) A
Setting ranges:	
- "Normal" and "Setback" room temperatures	0 to 30 °C
- K factor	0.5 to 3.5
Time switch:	
- power reserve	100 h
- dial	24-hour or 7-day
- minimum daily interval	45 min
- minimum weekly interval	4 h
Suitable actuators:	
- slow	630 s
- fast	100 s
Room temperature:	
- operating	0 to + 45 °C
- storage	- 25 to + 60 °C
Room humidity	class F (DIN 40040)
Protection	IP 40
Weight	1.2 kg

TESTING

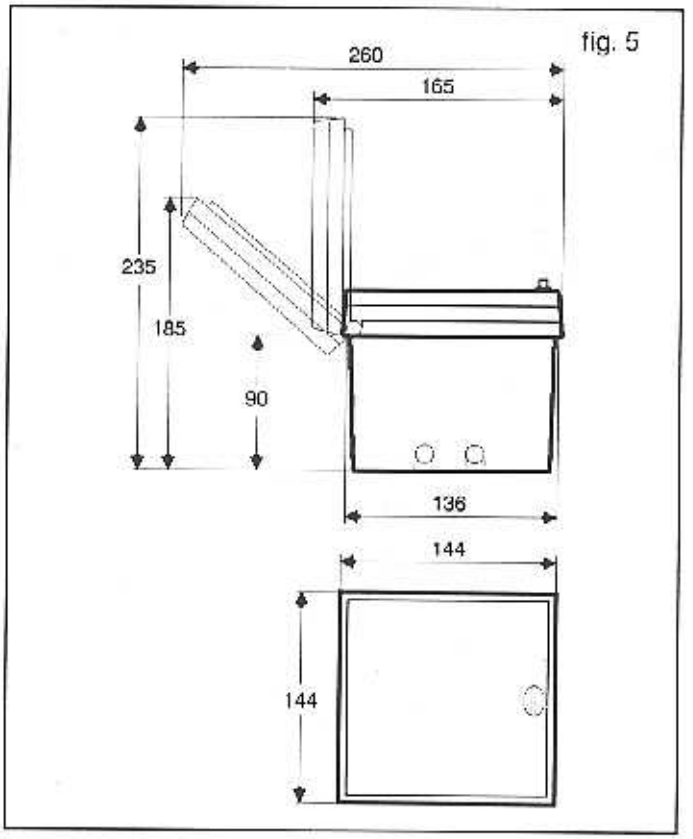
- Check the connections made with a multimeter:
  - Check power supply: with multimeter in Volts ac mode, measure voltage between terminals 2-3 and 3-7; the readings should always show 220/240 V.
  - Check the detectors: with multimeter in Ohms mode, measure between terminals:
    11-12 (outside detector B1): 90 to 120 Ω,
    13 -14 (flow detector B2): 100 to 150 Ω.
  - Check actuator: ensure connection Co is correct.
- Check direction of rotation of actuator:
  - Set the three potentiometers "Sun" (fig. 2.4), "Moon" (fig. 2.5) and K (fig. 2.2) at maximum: the actuator should open the valve.
  - Set the three potentiometers at minimum: the actuator should close the valve.
  - If the actuator moves in the opposite direction, reverse the connections Op andCl.

SETTING

- Adapt the controller to the speed of the actuator used by means of the programmer inserted in the upper printed circuit (fig. 3).
- With the potentiometer K (fig. 2.2) set the value of the plant design factor or select the heating curve (fig. 4) in relation to the minimum outside design temperature and to the relative maximum or minimum flow temperature.
- Set the "Normal" and "Setback" temperatures with the"Sun" and "Moon" potentiometers.
- Set the "Normal" and "Setback" programmes on the time switch (fig. 2.1):
  - Red riders: Start of "Normal" mode.
  - Green riders: Start of "Setback" mode.
- Set the correct time of day on the dial of the 24-hour time switch and the correct time and day on that of the 7-day one.

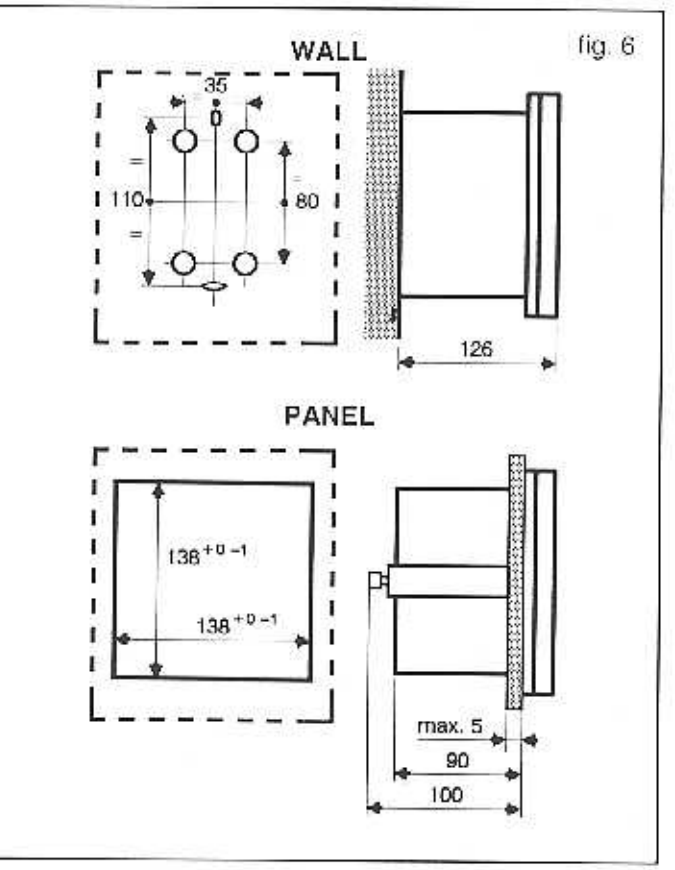
OVERALL DIMENSIONS

fig. 5



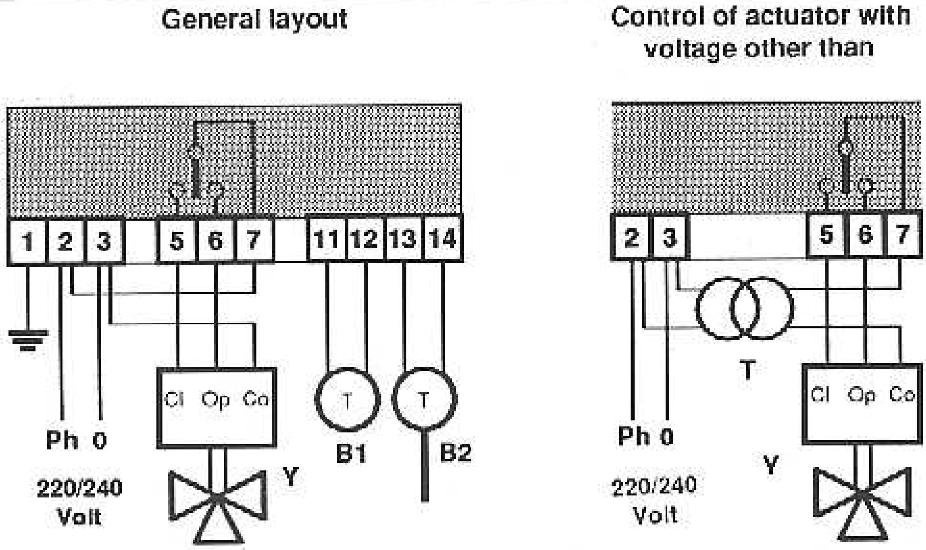
MOUNTING

fig. 6



WIRING DIAGRAMS

fig. 7



Ph - Line
0 - Neutral
B1 - Outside detector
B2 - Flow detector
Y - Valve
T - Transformer

Core cross-section for detector connections

up to 40 meters - 1.5 mm2
up to 80 meters - 2.5 mm2

COSTER
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