

WEATHER COMPENSATOR FOR CONTROL OF VALVE OR BURNER IN CENTRAL HEATING PLANTS

RTE 94

- Power supply 220/240 V ac
- Control of average temperature of water in plant as a function of outside temperature
- One modulating-type output with PI or On-Off control action
- Control of mixing or diverting valves with reversible actuators or direct control of burner
- Analogue time switch for selecting "Normal" or "Setback" temperature
- Facility for adjusting value of desired room temperature with remote control

APPLICATION

RTE 94 is designed for weather compensation in central heating plants in medium- and large- size buildings such as:

- Multifamily dwellings and apartment blocks
- Schools and public buildings
- Commercial and administrative complexes
- Industrial complexes and workshops

It is suitable for all climates and for any type of heating media: panels, radiators and convectors.

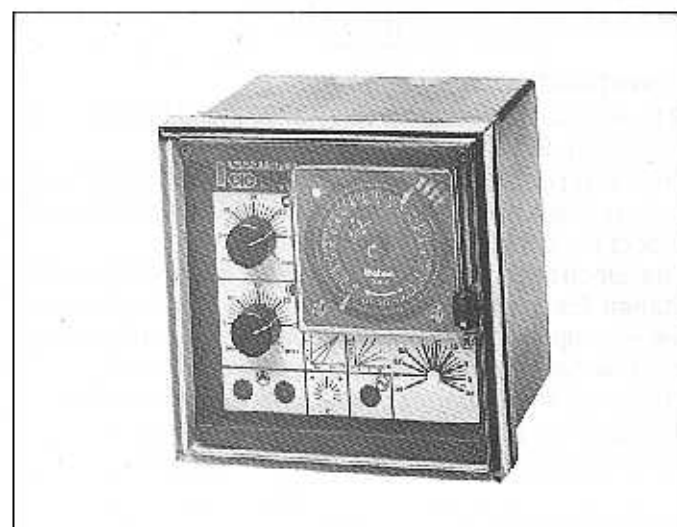
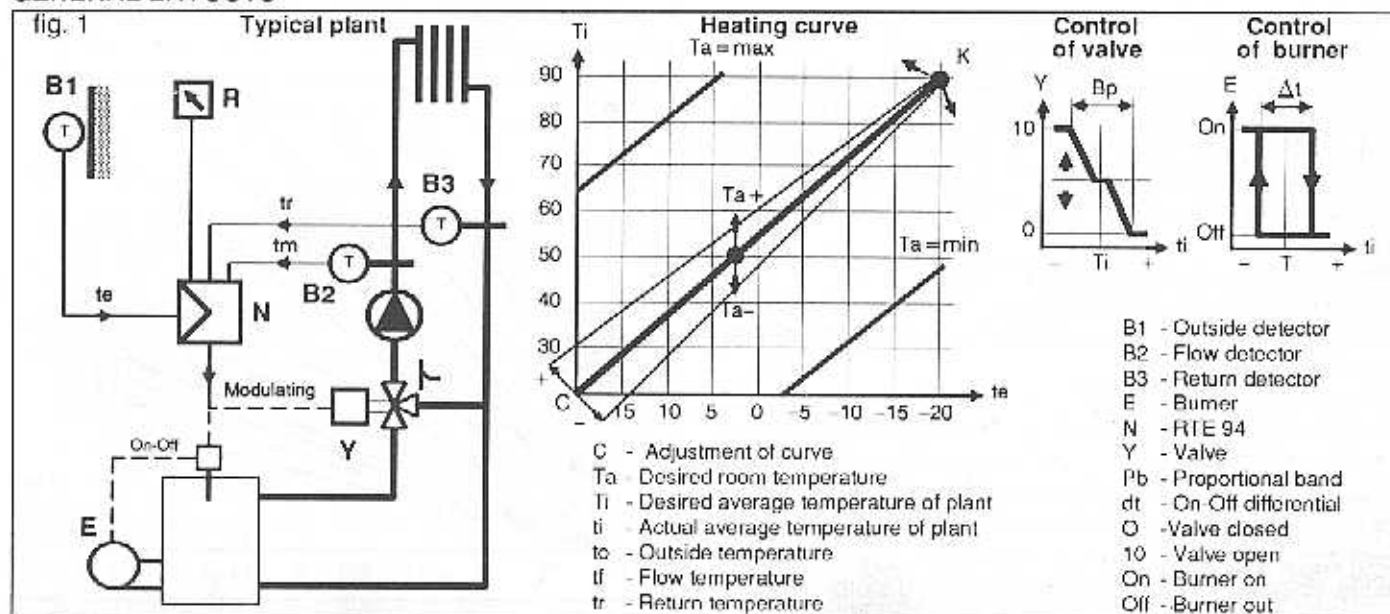
RTE 94 controls mixing and diverting valves operated by electric reversible actuators with 3-wire control, or the burner directly.

OPERATION

Detectors B1, B2 and B3 monitor respectively: outside temperature t_e , flow temperature t_f and temperature of return t_r .

RTE 94 establishes the value required by the average temperature T_i of the water in circulation as a function of the outside temperature t_e and of the heating curve set on the basis of the plant design factor K (fig. 2.2). In the event of a difference between the average actual temperature t_i and that desired T_i , RTE 94 produces a modulating signal with PI control action to control valve Y , or an On-Off signal to control the burner E .

GENERAL LAYOUTS



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

The slope of the curve can be adjusted by means of the potentiometer C (fig. 2.6) to correct the variations in room temperature in spring and autumn.

D 33029 C/S

ACCESSORIES

No.	Description	Type	Sens.	Elem. Code	Data sheet
Supplied :					
1	Outside temperature detector	SAE 100	Ni 100Ω	B1	N 120
1	Surface flow temperature detector	SCH 100	Ni 100 Ω	B2	N 130
1	Surface return temperature detector	SCH 100	Ni 100 Ω	B3N	130
Optional :					
2	Immersion detectors (substitutes for SCH detectors)	SIH 100	Ni 100 Ω	B2-B3	N 140
1	Remote control	CAD 340		R	N 710

MODELS

RTE 942 : with 24-hour time switch

RTE 943 : with 7-day time switch

CONSTRUCTION

RTE 94 is constructed in a DIN 43700 standard 144 X 144 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 94 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.

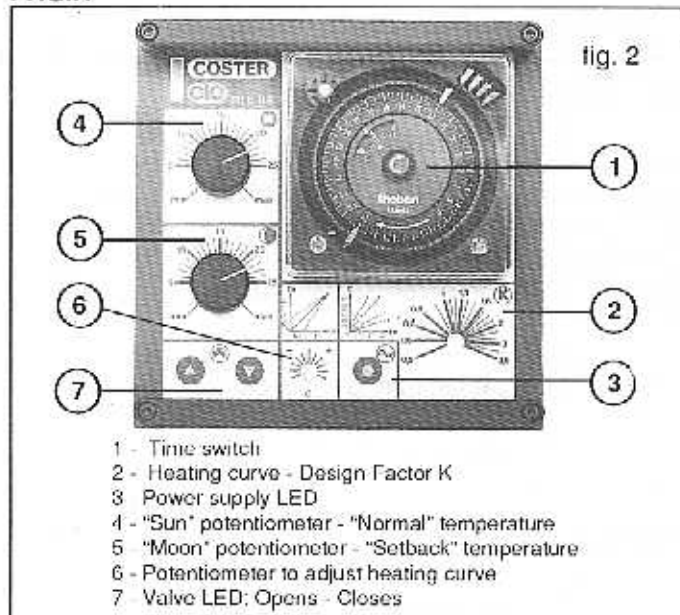
Return detector SCH 100 or SIH 100

Must be mounted on the return pipe at a minimum distance of 1.5 metres from the by-pass of the valve to avoid indirect thermal effects.

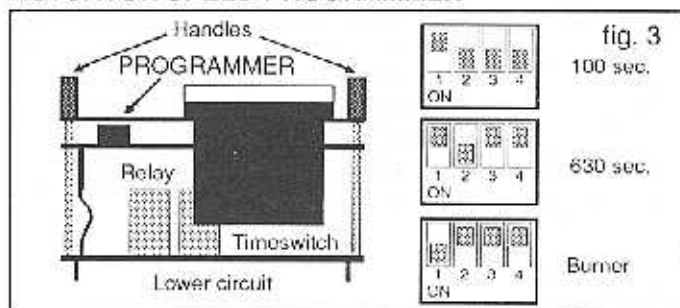
Outside detector SAE 100

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.

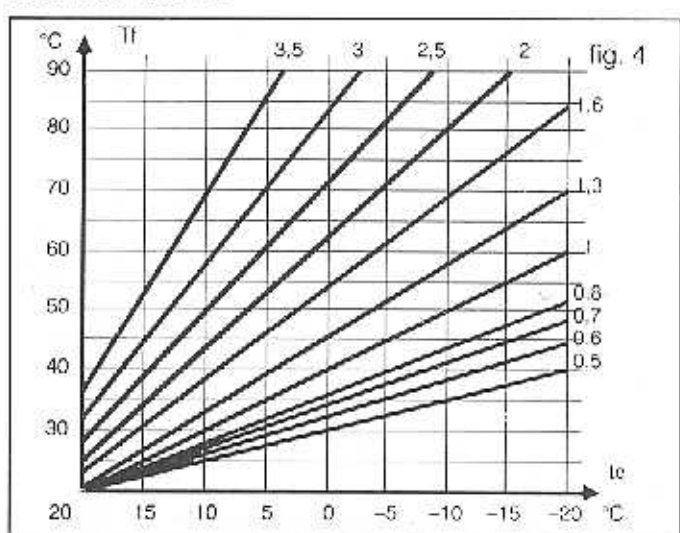
FACIA



ACTUATOR SPEED PROGRAMMER



HEATING CURVE



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 temperature	0 to 30 °C
- K factor	0.5 to 3.5
- adjustment curve C	+/- 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

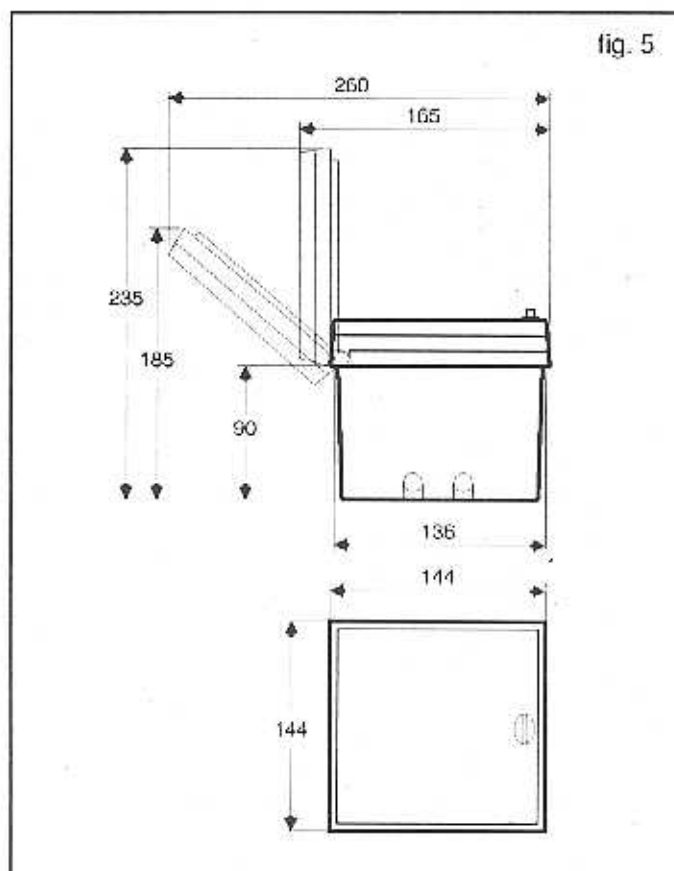
TESTING

- 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 two 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,
 - 15-16 (return detector): 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 and Cl.

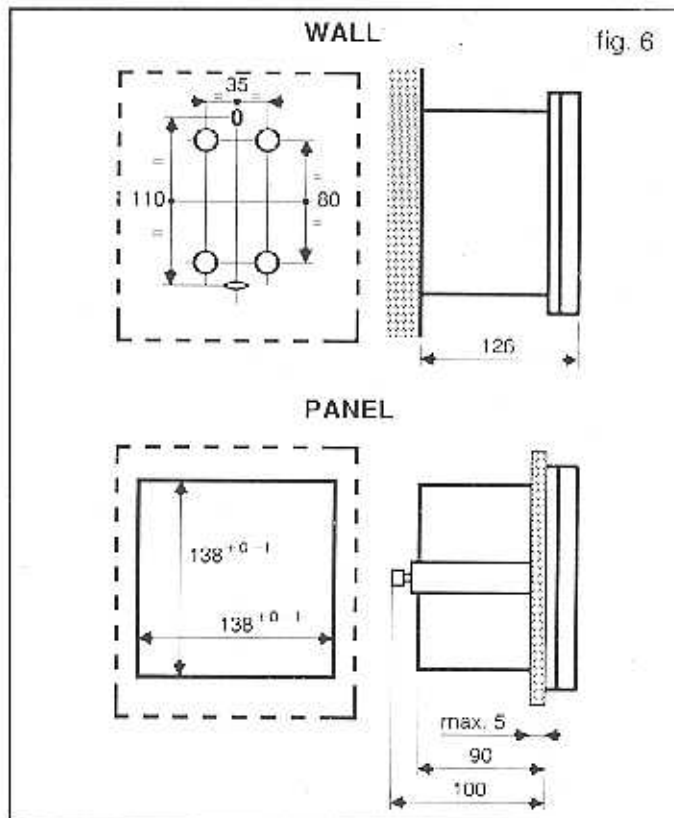
SETTING

- 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 according to the climatic area or select the heating curve (fig. 4) according to the design temperature.
- Set the "Normal" and "Setback" temperatures with the "Sun" (fig. 2.4) and "Moon" (fig. 2.5) 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.

OVERALL DIMENSIONS



MOUNTING



- 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.
- Adjust, if necessary, the slope of the heating curve with potentiometer C (fig. 2.6).

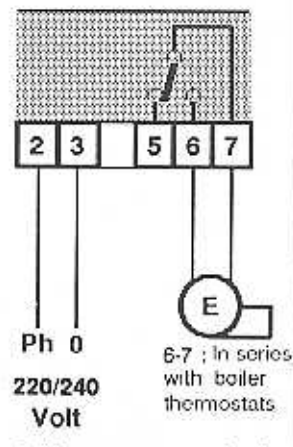
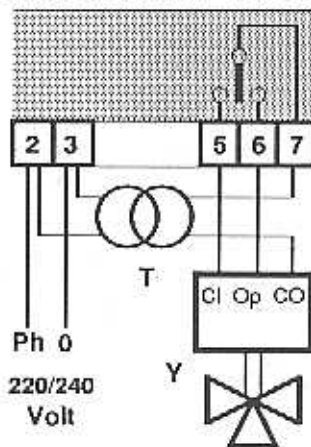
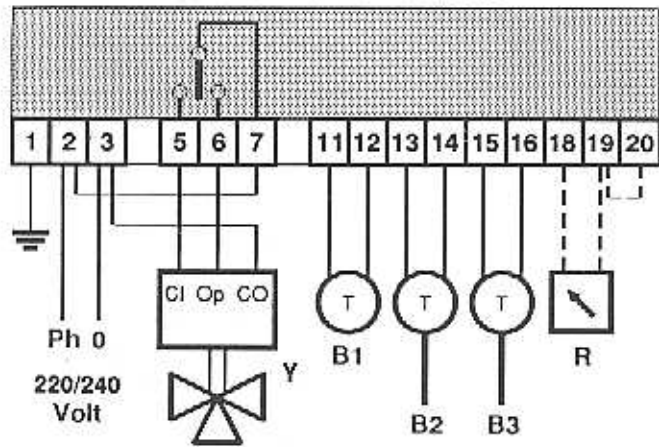
WIRING DIAGRAMS

fig. 7

General layout with control of 220/240 V actuator

Control of actuator with voltage other than 220/240 V

Control of burner



Ph - Line
O - Neutral
Y - Valve

B1 - Outside detector
B2 - Plant flow detector
B3 - Plant return detector

E - Burner
R - Remote control
T - Transformer

Cable core cross-section for detector connections:
up to 40 meters - 1.5 mm²
up to 80 meters - 2.5 mm²