MODULATING ELECTRONIC CONTROLLER FOR ROOMS

B 330
April 1990

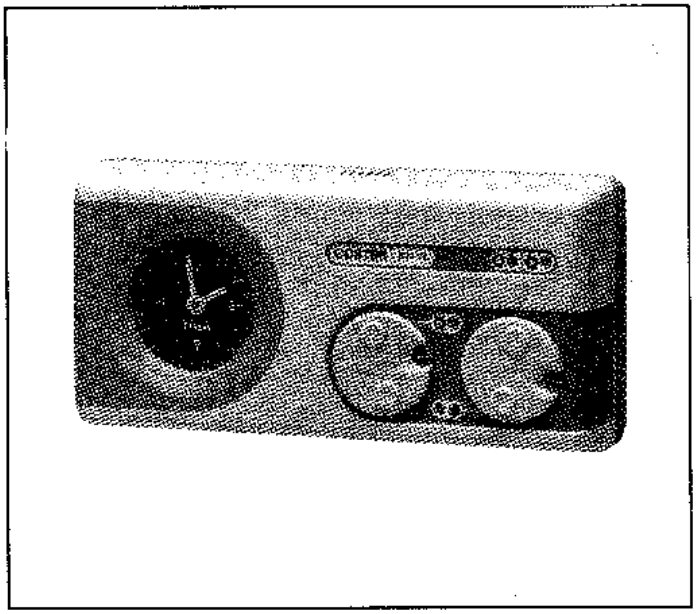
RTA 72

- Power supply 220/240 V AC
- PI control action
- One modulating output
- 24-hour or 7-day time switch

CE

APPLICATION

RTA 72 electronic controllers are designed for the control of mixing or diverting valves operated by reversible actuators (3-position control) for control of room temperature in small- or medium-size heating or air-conditioning systems in domestic and commercial premises and in single industrial units with zoned heating.:



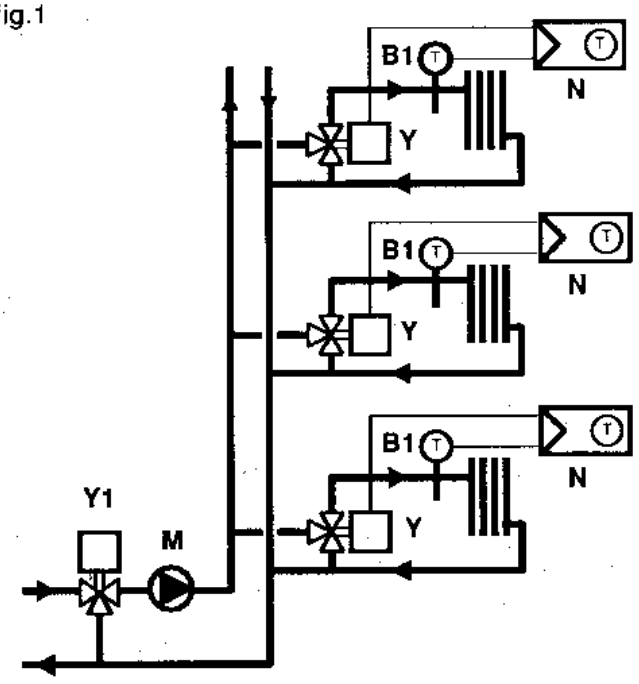
MODELS

RTA 725 - With quartz 24-hour time switch
RTA 725/D - With quartz 24-hour time switch for use with remote sensor
RTA 726 - With quartz 7-day time switch
RTA 726/D - With quartz 7-day time switch for use with remote sensor

TYPICAL SYSTEMS

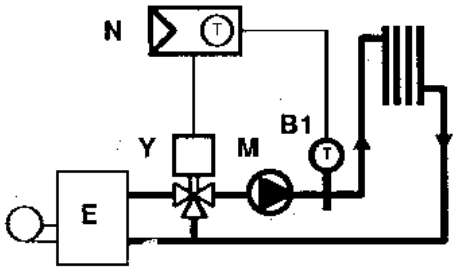
Independent zones

fig.1



Control heating system

fig. 2



B1 - Flow sensor
E - Boiler
M - Circulation pump
N - RTA 72
Y - Zone valve
Y1 - Valve controlled by external thermostat

OVERALL DIMENSIONS

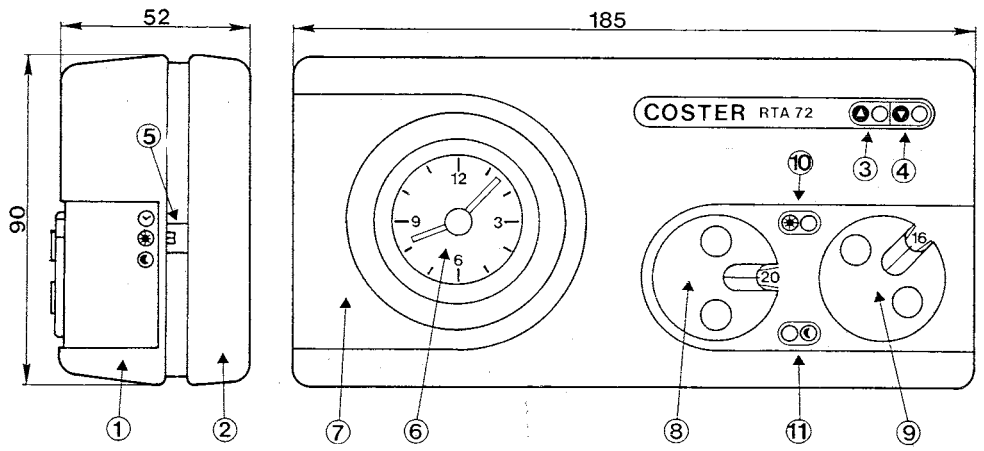


fig.3

1 - Control module
2 - Base
3 - Valve "opening" LED
4 - Valve "closing" LED
5 - Operation mode switch:
  • Time switch
  • Constant "Normal"
  • Constant "Setback"
6 - Time switch
7 - Time switch cover
8 - Desired "Normal" temperature
9 - Desired "Setback" temperature
10 - "Normal" LED
11 - "Setback" LED

OPERATION

The room temperature is monitored by a NTC sensitive element inside the controller (fig. 6, B), or, in the models specifically requested, by a remote room sensor (fig. 7). The controller compares the real value of the room temperature with the desired "Normal" and "Setback" temperatures set by means of the two potentiometers situated on the facia (fig. 3, 8) and (fig. 3, 9). In the event of a difference, the controller produces a modulating signal with PI control action, for the control of the valve Y, proportional to the difference itself and to the proportional band (+/- 1°C).
The time switch provides for the switching between the "Normal" and "Setback" modes.
The controller can be connected to a sensor which monitors the temperature of the flow water of the plant (fig. 6, B1); this input is utilized as compensation and ensures the perfect stability of the room temperature.

TECHNICAL DATA

Power supply:	220/240 V AC
Frequency:	50/60 Hz
Power consumption:	4 VA
Outputs:	
- rated voltage	250 V
- rated capacity	5(3) A
Temperature setting range:	5 - 30°C
Proportional band:	+/- 1°C
Time switch power reserve:	72 h
Minimum switching interval:	
- RTA 725 (24-hour)	20 min.
- RTA 726 (7-day)	2h
Room temperature:	
- operating	0 - 45°C
- storage	-20 to +60°C
Room humidity:	G (DIN 40040)
Protection:	IP 20
Dimensions:	185 x 90 x 52 mm
Weight:	0.45 kg

CONSTRUCTION

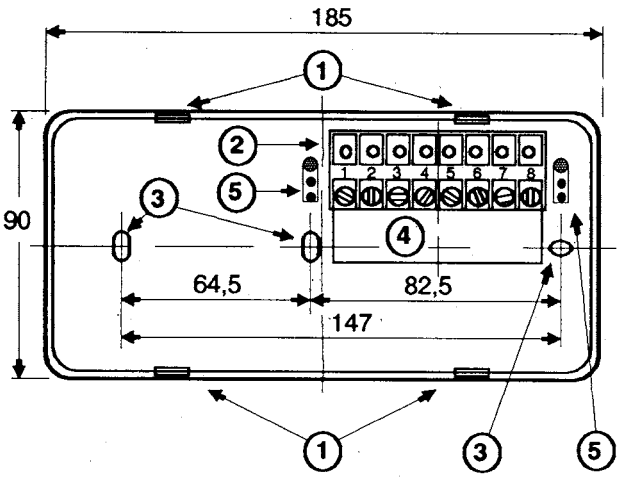
RTA 72 comprises two parts:
- Base (fig. 3, 2), in plastic, suitable for wall mounting, consisting of:
  - terminal block for the electrical connections, protected against accidental contacts (fig. 4, 2);
  - conduit entry for cables coming from rear (fig. 4, 4);
  - standard holes for panel mounting.
- Control module housing printed circuit and electronic components. On the facia are located the setting controls, the LED indicators and the time switch; on the right-hand side is the operating mode selection switch (fig. 3, 5).
  The control module is fixed to the base with four snap fasteners and the electrical contacts are made by means of pins which are pressed directly into the sockets on the terminal block.
  The electronic circuit is powered by 220/240 V AC through a transformer and is therefore insulated from the supply mains.
  The relay output changeover switch is voltage free so that it is possible to control actuators with power requirements other than 220/240 V.

INSTALLATION

RTA 72 must be installed at a height of 1.5 to1.6 metres from the floor, at a point on an internal wall of the room which best represents the average temperature of the premises. It must be as far as possible from windows, doors and sources of heat, and corners, shelves and curtains must be avoided.
- Remove the base from the control module by pressing with the hands on the two longer sides of the container.
- Fix the base (fig. 4) to the wall using the holes provided (fig.4, 3) and taking care to pass the electric cables through the appropriate conduit entry (fig.4, 4).
- Make the connections in accordance with the wiring diagrams (fig.6) and observing any local safety regulations
- Replace control module on base.

BASE

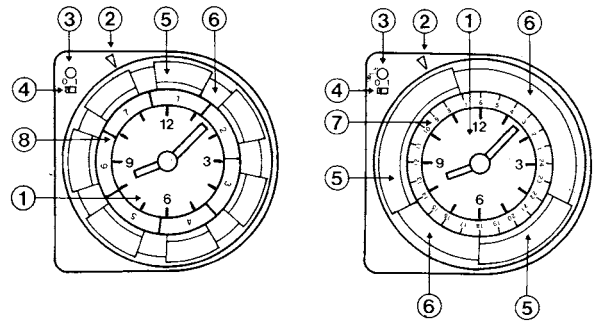
fig. 4



1 - Slots for snap fasteners
2 - Terminal block
3 - Fixing holes
4 - Conduit entry
5 - Pins for limiting adjustment range

TIME SWITCH

fig. 5



1 - 12-hour dial
2 - Index
3 - Manual switch
4 - Contact position index
5 - "Normal" period sectors
6 - "Setback" period sectors
7 - 24-hour dial
8 - 7-day dial

SETTING

TIME SWITCH

To see the time switch completely the protective cover must be opened by swinging it to the left.

- Setting the correct time of day.
  The dial can be rotated both clockwise and anticlockwise.

– 24-hour dial: rotate the minute hand by means of the glass cover (fig. 5, 1) until the correct time of day on the 24-hour dial (fig.5, 7) coincides with the index top left (fig.5, 2) and the correct time of day on the 12-hour dial (fig. 5, 1) with the hour and minutes hands.

– 7-day dial: rotate the minute hand by means of the glass cover (fig.5, 1) until sector corresponding to the actual day of the week (numbered 1 to 7) on the 7-day dial (fig.5, 8) coincides with the index (fig. 5, 2); continue rotating the minute hand until the correct time of day on the 7-day dial coincides with the index (fig. 5, 2) and the correct time of day on the 12-hour dial (fig.5, 1) with the hour and minute hands.

- Setting the programmes.

By means of the probe housed under the protective window, move outwards all the segments of the sector corresponding to the "Normal" operating mode periods (fig.5, 5); red zones are exposed in correspondence with the segments moved.
The 24-hour time switch has segments of 10 minutes each with a minimum interval between two successive switchings of 20 minutes.
The 7-day time switch has segments of one hour with a minimum interval of two hours.

SETTING DESIRED TEMPERATURE

Two values for the desired temperature can be set:

- "Normal" temperature, for periods when the premises are occupied, by means of the "Sun" potentiometer (fig. 3, 8).
- "Setback" temperature, for periods when the premises are unoccupied,and at night, by means of the "Moon" potentiometer (fig.3, 9).

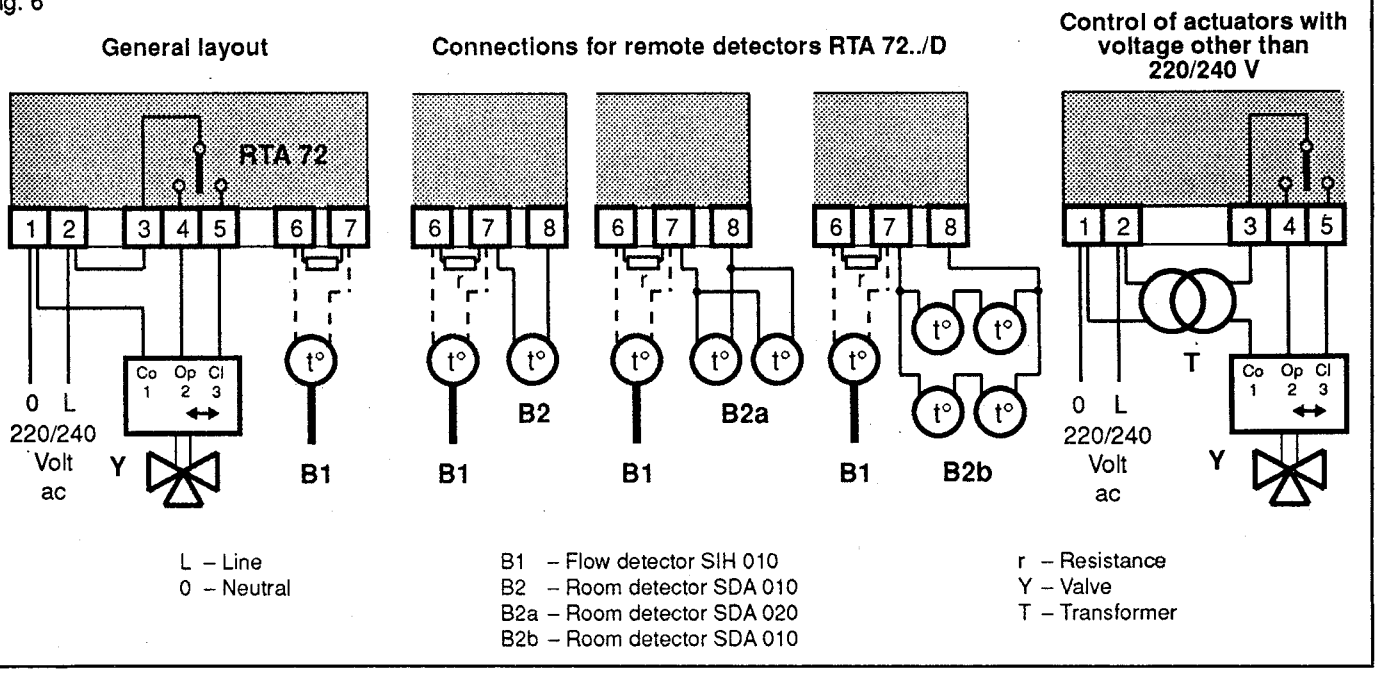
The adjustment range of the desired temperature can be limited by means of the two pins (fig.4, 5) housed in the base at the side of the terminal block.
Pull out the potentiometer knobs (fig.3, 8) and (fig.3, 9) and, using the probe, insert the pins in the holes corresponding to the temperature limits (maximum and minimum).

TESTING

- Set the operating times of the plant on the time switch and position the operation mode switch (fig.3, 5) on "Time switch".
- Set the "Normal" temperature potentiometer (fig.3, 8) on maximum and the "Setback" temperature potentiometer (fig.3, 9) on minimum.
- Position the time switch dial on the "Normal" operating mode.
  The result should be: valve opening and LEDs (fig.3, 3) and (fig.3, 10) lit.
- Position the time switch dial on the "Setback" operating mode.
  The result should be: valve closing and LEDs (fig.3, 4) and (fig.3, 11) lit.
- Position the switch (fig.3, 5) on "Sun". The LED (fig.3, 10) should be lit.
  With the potentiometer (fig.3, 8) at maximum the result should be: valve opening and LED (fig.3, 3) lit.
  With the potentiometer at minimum: valve closing and LED (fig.3, 4) lit.
- Position the switch (fig.3, 5) on "Moon". The LED (fig.3, 11) should be lit.
  With the potentiometer (fig.3, 9) at maximum, the result should be: valve opening and LED (fig.3, 3) lit.
  With the potentiometer at minimum: valve closing and LED (fig.3, 4) lit.

WIRING DIAGRAMS

fig. 6



REMOTE SENSOR

RTA 725/D and RTA 726/D can be installed anywhere since they are supplied without the internal sensitive element and with terminal 8 for the electrical connection with the sensor (fig.7);
To install the sensor the same criteria described under INSTALLATION for selecting the location must be followed.
In especially large spaces it is advisable to use two SDA 020 sensors connected in parallel or four SDA 010 sensors connected in series-parallel, located so as to monitor the average temperature of the premises.

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