

RADA 32RMX ELECTRONIC 'TEMPERATURE CONTROLLER'

- Group application electronic temperature control
- Suitable for multiple shower and washing applications
- Electronic LED temperature display
- Low voltage (12 V AC via transformer)
- 1 ¼" BSP female inlet/outlet connections
- Approved to BS 3456
- Rada accessories available to complement control
- Accurate temperature control for recirculating hot water systems
- Used for Legionella/disinfection control in conjunction with Rada Pulse
- Circuit temperature control with $\pm 1.5^{\circ}\text{C}$ of set temperature



Specify as: Rada 32rmx (1.0.035.13.3)

Electronic recirculating valve, incorporating a digital temperature display. Transformer and thermometer available separately.

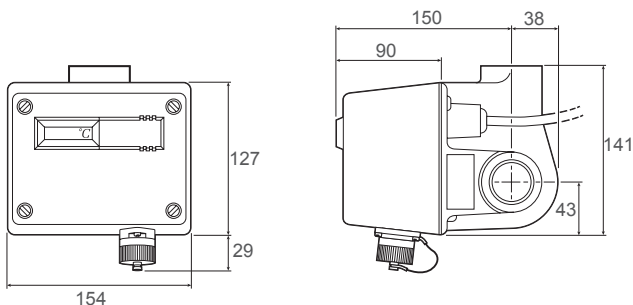
Specify as: Rada PT220 Transformer (2.1.093.53.3)

Rada PT220 transformer assembly.

Specify as: Rada Thermometer (3.1.128.09.1)

Rada dial-type thermometer.

Dimensions (mm)



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TECHNICAL SPECIFICATION

Installation and Maintenance

Please refer to the appropriate Product Manual.

Connections

Inlet and Outlet: 1 1/4" BSP standard.

Standard: Hot inlet on right, cold on left, top outlet.

Approvals

Approved to ASSE1017/CSA B125

WRAS approved (Water Regulations Advisory Scheme).

Designed, manufactured and supported in accordance with accredited BS EN ISO 9001:2000 Quality Management Systems and BS EN ISO 14001:2004 Environmental Management Systems

Operation

In precisely controlling the temperature of circulating mixed water the Rada 32rmx performs two functions:

Mixes hot water with cold and re-circulating water to a safe pre-determined outlet temperature when any shower and washing points are in use.

Maintains this temperature in the circuit when no draw-off is taking place.

Materials

Base: Gunmetal, nickel plated.

Cover assembly: Aluminium.

Thermister cap: Phosphor Bronze

Environmental Conditions

Ambient temperature range: 0 - 60°C.

Ambient humidity range: 0 - 100% R.H.

Pressures

Maximum static pressure: 10 bar.

Maximum maintained pressure: 7 bar pressure loss.

Performance

Circuit temperature control: within $\pm 1.5^\circ\text{C}$ of set temperature.

Digital temperature display accuracy: $\pm 1^\circ\text{C}$ within the range 30°C - 60°C.

Electrical

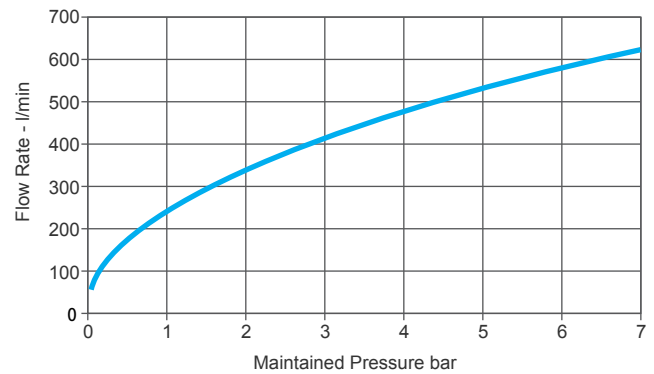
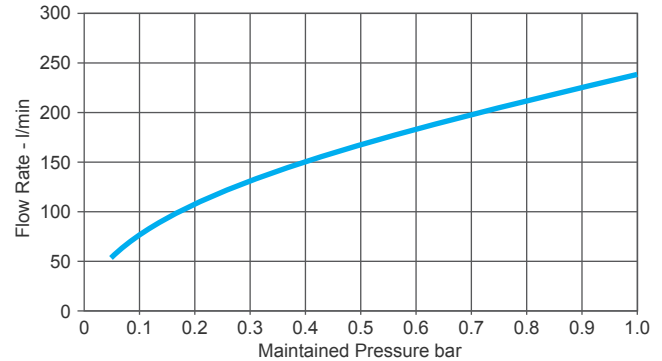
Supply voltage: 12 V AC via separate transformer PT100 (100/110 V) or PT220 (220/240 V).

Power consumption: 6 VA.

Electronic circuitry protection: 500 mA quick-blow fuse (fitted).

Cable entry: Base threaded to accept 20 mm conduit (not supplied).

Flow Diagram



The pressure loss/flow rate graphs are for the controller only at mid-blend and do not take account of pressure loss through check valves, in-line fittings, pipework or terminal fittings. When calculating the pump rate for the circuit allow 0.01bar for pressure loss through the Rada 32rmx at 10 l/min.

Applications

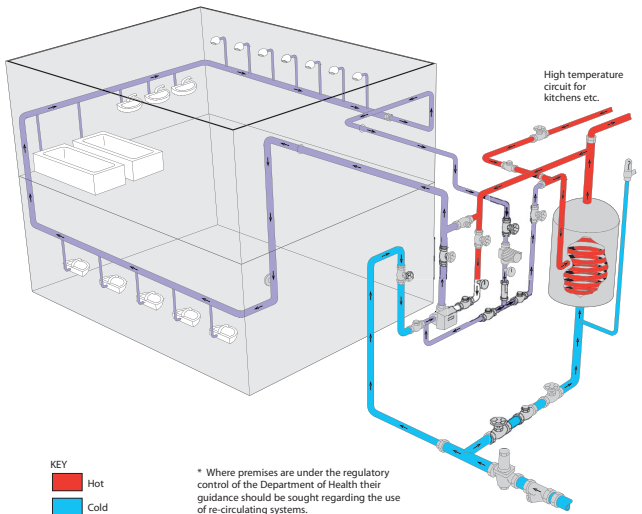
The Rada 32rmx is designed primarily as the central temperature controller in the circulating system providing pre-mixed water for multiple shower and washing facilities where the hot water is supplied from a calorifier or stored hot water system.

As can be seen from the schematic arrangement diagrams and the theoretical application diagram, this system can also allow both a high temperature circuit (for kitchens, laundries etc.), and a low temperature mixed water circuit for personal washing purposes to be supplied from the same low volume, high temperature type boiler thereby saving both space and energy.

The Rada 32rmx can be used in schools, hospitals, factories, hotels, sports and leisure complexes, prisons, military barracks, high rise buildings; in fact wherever water is required for showering or washing at safe, precise temperatures.

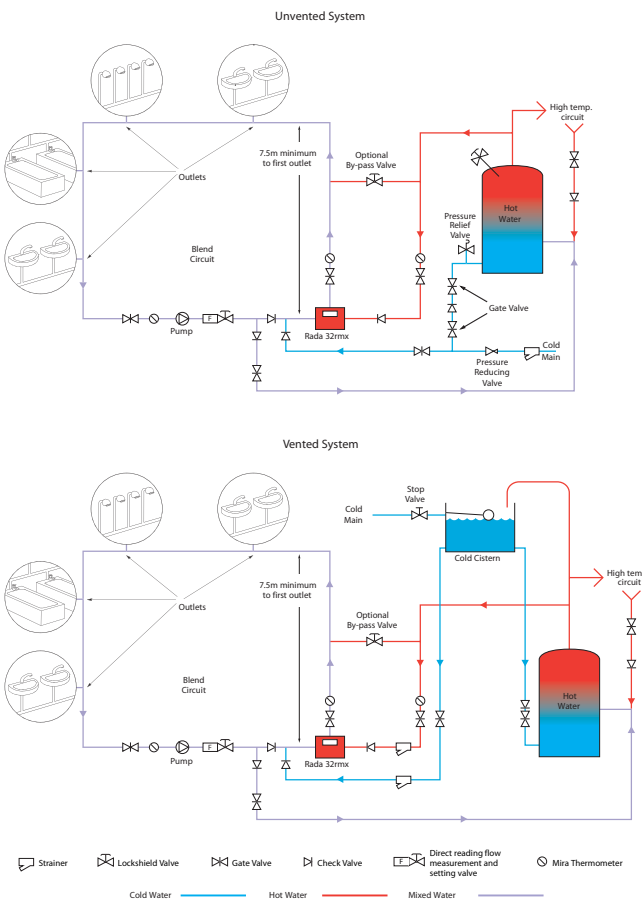
TECHNICAL SPECIFICATION

Theoretical Application Diagram



Key: See schematic diagrams opposite

Schematic Arrangement



Temperature Selection and Control

The improved accuracy possible with the Rada 32rmx control technology means that regardless of whether a circulating system is simply idling or maximum draw-off is taking place, blended water temperature drawn from the circuit will not vary by more than $\pm 1.5^\circ\text{C}$ of that set. The required temperature is set on site simply by adjusting an easily accessible setting screw on the controller body. It is maintained thereafter without the need for re-setting irrespective of changes in ambient temperature or in the temperature of hot and cold supplies. A 2 figure LED display on the controller housing gives a read-out of the mixed water temperature thereby providing an easy and positive means of setting the circuit. In addition, this digital read-out has an intermittently-flashing display condition to indicate that the output blend temperature from the unit is "out-of-range", i.e. that it is constantly outside $\pm 1^\circ\text{C}$ of the set temperature. This would normally advise of unsuitable supply conditions.

How to get the best from the 32rmx

The Rada 32rmx offers the capability of attaining a high accuracy of temperature control, both when outlets in the circuit are in use and when no draw-off is taking place. To achieve such control it is essential that:

The circuit is designed and regulated in the manner prescribed
The Rada 32rmx is installed in accordance with the installation instructions supplied with the product.

Six Critical Requirements

Temperature Drop/Minimum Circuit Return Flow Rate

A temperature drop around the circuit of at least 2°C is essential to allow the controller to modulate. Monitor by checking the thermometer at the end of the circuit return with the thermometer at the first draw-off point (It is recommended that these two thermometers are calibrated against one another by first putting them in ablutionary temperature water to establish any variances).

A minimum circuit return flow rate of 10 l/min, set under idling conditions, is required to create the necessary mixing turbulence in the controller (Higher circuit return flow rates are permissible provided they do not prevent a 2°C temperature drop around the circuit). The use of a flow measuring and setting valve is recommended to ensure that this minimum circuit flow always exists.

Auxiliary Fittings

Other fittings required in the circuit, particularly check valves and gate valves, must be positioned as shown in the schematic diagrams. With the exception of 1 1/4 Rada check valves at the hot inlet of the Rada 32rmx and on the cold water supply, their size will depend on the pipe diameters necessary to meet the flow rate demands of the circuit.

High Temperature Circuit Return

If the hot water storage is also used to supply a high temperature circuit, as shown, this must return to storage after the check valve on the return from the mixed water circuit to prevent high temperature water entering the mixed water circuit. The high temperature circuit must be fitted with a check valve in the return to prevent mixed water entering this circuit.

Water Pressure

After allowing for frictional losses through check valves, in-line fittings, pipework and terminal fittings, the available remaining pressure should be sufficient to cater for the maximum draw-off rate allowing for diversity of use..

TECHNICAL SPECIFICATION

Note! The pressure loss/flow rate graphs shown overleaf refer only to the Rada 32rmx at mid-blend temperature.

The cold feed to and outlet pipework from the hot water storage should be sized to ensure that the inlet pressures to the Rada 32rmx remain nominally equal when there is a demand for hot water elsewhere in the building.

First Outlet

The first draw-off point on the circuit must be at least 7.5m minimum after the Rada 32rmx to ensure complete water mixing.

Electrical

The Rada 32rmx requires 12V AC. supply. A separate transformer is available for this purpose, reference Rada PT100 (100/110V) or PT220 (220/240V).

SAFETY FEATURES: Should the power supply to the valve be interrupted the proportioning mechanism automatically moves to the full cold position, thereby shutting down the hot supply to the circuit. On resumption of power supply the Rada 32rmx will resume normal operation.

The Rada 32rmx transformer and circulating pump should be wired into the boiler programme to ensure that the valve and pump are only operative when hot water is available.

Additional Considerations

Circuit By-Pass

It is good practice to make a by-pass connection between the hot water feed to, and the outlet side of, the Rada 32rmx. The opening of the lockshield gate valve in the be wired into the boiler programme circuit to ensure that by-pass permits the temporary use of the circuit during Rada 32rmx maintenance, albeit with uncontrolled temperature.

Safety Precautions

Under normal operating conditions, the Rada 32rmx automatically compensates for changes in the temperature and pressure of hot and cold supplies and is designed to shut down the hot water supply should either the cold water or power supply fail.

Where additional safety precautions are advisable such as in institutions for handicapped persons, it is recommended that a fail-safe device be installed as a further safeguard. A solenoid valve, which stays open when energised should be fitted on the hot supply to the Rada 32rmx and controlled by a thermal switch fitted immediately prior to the first draw-off point. The Rada 32rmx transformer should also be controlled by this switch, i.e. wired in parallel with the solenoid valve.

Rada Accessories

Transformer

The Rada PT220 is a transformer assembly designed to supply the Rada 32rmx. It comprises a thermally tripped mains isolating transformer housed in a waterproof plastics box and is supplied with 2 metres each of input and output cable. The PT220 must be connected to a fused supply as it has no internal fuse.

Electrical

Input Voltage: 230V 50/60Hz.

Output Voltage: 13.5V ± 5% at 440mA continuously rated.

Regulation: Better than 28%.

Protection: 130°C self-resetting thermal cut-out in primary winding.

Must fail safe in event of secondary short circuit.

Insulation Test: Primary-Secondary:

4 kV 1 minute type test

4.8 kV 2 second production test

Winding core:

2 kV 1 minute type test

2.4 kV 2 second production test

Maximum leakage 2 mA

Input/Output Cables: 2 metres of 2 core 0.75 mm² heat-resisting cable Ref.3092Y (HR) to BS6141, Table 15. Black input cable is marked with standard mains sticker, white output cable is marked with output sticker.

Enclosure: Plastics box providing protection to IP65.

Facility for wall mounting. Cables secured by cable glands to IP65 and providing strain relief.

Standards: Assembly to comply with BS60742 1996.

Transformer to comply with IEC 742 SELV.



Thermometer

Rada dial-type thermometers are recommended prior to the first outlet, at the end of the circuit return and on the hot water supply.



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