

Fact Sheet

EMR Control Set

The Unipipe Control Set is designed to provide water temperature control of underfloor heating (UFH) systems where it is not possible to provide the design water temperature directly from the boiler. It is ideal for larger UFH systems where other water control units, e.g. Compact Control Pack, are too small. There are 5 sizes of 4-port mixing valves available; the valve size should be carefully selected to provide good control of the mixed water temperature.

The Unipipe Control Set comprises of the following components delivered together in one box:

- EMR water temperature controller with cover
- 4-port valve
- 24 volt actuator with 0-10V signal
- Strap-on pipe sensor

The 4-port valve is installed to supply individual UFH manifold, or multi-manifold sets, with a constant water temperature. The EMR controller, which measures the mixed water temperature via the strap-on pipe sensor fitted downstream of the control valve, positions the valve to maintain the desired water temperature by mixing boiler water with water returning from the UFH system. The 4-port valve actuator is 24V with 0-10V DC control signal.

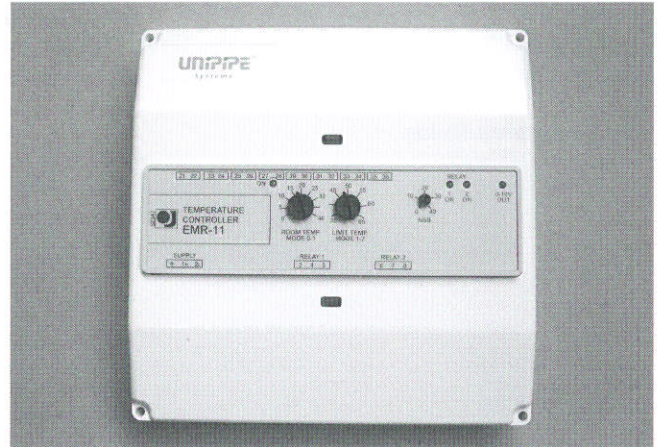
A circulating pump must be included within the control set assembly. Unipipe do not normally supply the circulator, but will provide data on the required flow rate and pump head required. The circulating pump is for the underfloor heating system only and must be used in addition to the boiler primary pump.

Room Temperature Control

Unipipe individual room controls are ideal for optimum comfort conditions. The EMR is compatible with the Microcenter (4 and 8 zone units) or the Unipipe Radio Control System. Alternatively the EMR Control Set can be equipped with a single room sensor (tamperproof or adjustable) to control the air temperature in a single large area.

EMR Controller

When a demand signal is present from the room temperature controls, the EMR controller will monitor the water temperature entering the system and modulate the 4-port valve to prevent the water exceeding the temperature set-point. The EMR will also energise the boiler and UFH circulator relays if the control valve is open. When the room temperature is satisfied, the control valve will close and the boiler and circulator relays will switch off. The EMR requires a 230V AC supply.



Boiler Relay

The EMR controller has a dedicated boiler relay, which is enabled on a demand for heat. The relay will be 'ON' once the control valve has reached 20% open, and will remain 'ON' until the control valve is 90% closed. The EMR has a 30 second built-in delay action to prevent boiler short-cycling. The volt-free relay is 5 amp rated.

Circulating Pump Relay

The EMR controller has a dedicated UFH circulating pump relay, which runs the UFH circulator when there is a demand for heat. When the demand signal is switched off, there is a delay of 2 minutes to allow the circulator to run and dissipate residual heat. The volt-free relay is 5 amp rated.

Single Zone (WH2 & WH3 sets)

Where the UFH system is installed in one heating zone, a single room sensor can be used. Either a non-adjustable (ETF-999), or adjustable (EMRF-99), room sensor can be connected to the EMR controller. The 6 dip switches on the EMR unit should be set for mode 1 operation.

Individual Room Control (WH8 set)

The WH8 set can be used together with the Unipipe individual room control (IRC) systems which can be connected to the EMR. The volt-free relay output from the Microcenter or Radio Base Unit is connected across terminals 35 & 36 on the EMR unit. The 6 dip switches on the EMR unit should be set for mode 2 operation.

Water Temperature Limit Sensor

The sensor element is inserted into the black block provided, and is strapped to the pipe downstream of the mixing valve. Ensure that the metal element touches the pipe surface. A secondary mechanical water temperature limit can also be installed and connected to the EMR controller.

Night Set-Back (NSB)

A) Room temperature

Where a single room sensor (WH2 or WH3 set) is installed, a time switch can be connected to the EMR controller to provide automatic room temperature set-back. The EMR will reduce the room temperature according to the setting on the NSB dial. Where IRC is installed, there are two options for set-back control. (1) Wire individual set-back thermostats to the Microcenter unit, and use a suitable time switch to provide the set-back signal. Note that the set-back thermostat will require 4 core cable. (2) Where the Unipipe Radio Control System is installed, use the Timer Module or other suitable time switch.

B) Water temperature

Wire individual room thermostats to the Microcenter unit and wire a suitable time switch to the EMR controller. During set-back periods the EMR controller will reduce the water temperature according to the setting on the NSB dial.

Frost Protection

The EMR will provide automatic frost protection in modes 1 & 2. In mode 1, if either the room sensor or water flow temperature falls below 10°C, the control valve will motor open, UFH circulator will run and the boiler will be energised. In mode 2, frost protection is activated if the water temperature drops below 10°C.

Valve Selection Guide

WH8 Control Set for IRC	WH2 Control Set for adjustable room sensor	WH2 Control Set for non-adjustable room sensor	Valve Size	Kvs Value	Max Floor Area (100 W/m ²)
Item No.	Item No.	Item No.			
OJ 820r	OJ 220r	OJ 320r	¾"r	4	90
OJ 820s	OJ 220s	OJ 320s	¾"s	6.3	140
OJ 825r	OJ 225r	OJ 325r	1"r	8	180
OJ 825s	OJ 225s	OJ 325s	1" s	12	270
OJ 832s	OJ 232s	OJ 332s	1½"s	18	400

Notes:

- 1) Maximum floor area is given for guidance only.
- 2) Calculated for 16x2mm UNIPIPE laid at c/c 200mm with dT = 7.5°C.
- 3) Total pressure loss over all components of the UFH system should not exceed 40 kPa.

Assembly and Wiring Schematic: EMR Control Set (Mode 2) with IRC Controller

