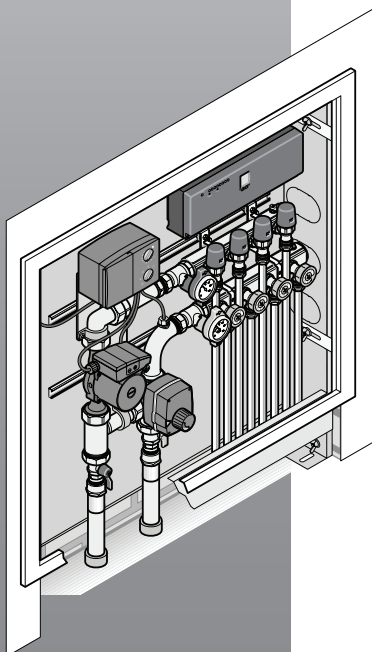


SYSTEM SOLUTIONS, WIRING AND LAYOUT GUIDE

UNDERFLOOR HEATING SYSTEM

GREENFLOOR HEATING



672080009-00.1W6



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1 KEY TO SYMBOLS AND SAFETY INSTRUCTIONS

1.1 EXPLANATION OF SYMBOLS

WARNING SYMBOLS



Safety instructions in this document are framed and identified by a warning triangle which is printed on a grey background.



Single words indicate the seriousness of the hazard in terms of the consequences of not following the safety instructions.

- **NOTE** indicates possible damage to property or equipment, but where there is no risk of injury.
- **CAUTION** indicates possible injury.
- **WARNING** indicates possible severe injury.
- **DANGER** indicates possible risk to life.

IMPORTANT INFORMATION



Notes contain important information in cases where there is no risk of personal injury or material losses and are identified by the symbol shown on the left. They are bordered by horizontal lines above and below the text.

The electrical diagrams show the Live, Neutral and Earth connections, between the equipment and the wiring centre as a plug  and socket  symbols. This is to keep the diagram clear.







 L	All of these points are wired to		this point
 N	All of these points are wired to		this point
 E	All of these points are wired to		this point

Table 1 Wiring symbols

SYMBOLS USED IN THIS MANUAL








Symbol	Description	Symbol	Description
	Underfloor heating loop		Underfloor manifold assembly
	Actuator		Outdoor sensor
	Wired control		Radio frequency (RF) control
	Wall		

Table 2



NOTE: The wiring diagrams and system layout drawings within this guide are for Worcester products. In the event of some of the system components being substituted for other manufacturers' equipment, the relevant manufacturers' instructions must be consulted.

2 ELECTRICAL



CAUTION: Isolate the mains electrical supply before starting any work and observe all relevant safety precautions.

Greenfloor Heating can be an addition to a heating system or as a stand alone heating system.

- If the mains electrical supply to Greenfloor Heating is supplied from the heat source equipment, then it must be wired to the heat source manufacturers instructions.
- If a separate mains electrical supply is used then it must be through either a fused double pole isolator or a fused three pin plug and unswitched socket situated, where practicable, adjacent to the wiring centre and pump & mixing station.
- The isolator must have a contact separation of 3mm minimum in both poles.
- External fuse rating 3A.

See individual products' Installation instructions for further details.

3 GENERAL INFORMATION

GENERAL GUIDANCE

This system solutions, wiring and layout guide is intended to provide an indication of the possible combinations of pump & mixing stations, controls and wiring centres available from the Greenfloor product range, but is not specific to a particular installation.

The details of an installations' specific products will be supplied within the package of information from the Worcester Design Service.

WIRELESS (RF) CONTROL WIRING CENTRE

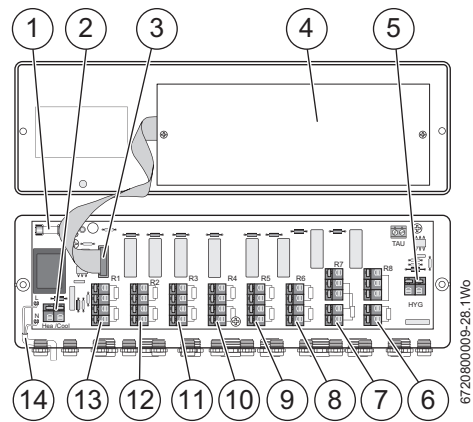


Fig. 1 Wireless (RF) wiring centre

1	Fuse - 4A
2	Heating/cooling change-over terminals
3	Cover mounted programmer connection
4	Cover mounted programmer
5	Dew-point/set-back terminals
6	Pumped mixing station terminals
7	Demand signal to heat source terminals
8	Zone six terminals (R6)
9	Zone five terminals (R5)
10	Zone four terminals (R4)
11	Zone three terminals (R3)
12	Zone two terminals (R2)
13	Zone one terminals (R1)
14	230V mains input (cable supplied)

Table 3

LOGIC TERMINAL STRIP WIRING CENTRE

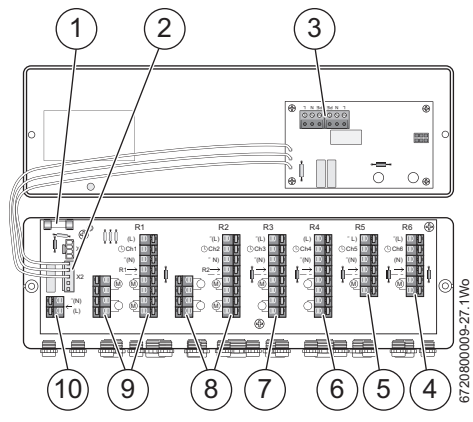


Fig. 2 Logic terminal strip wiring centre

1	Fuse - 4A
2	Volt free switch board link connection
3	Volt free switch terminals
4	Zone six terminals (R6)
5	Zone five terminals (R5)
6	Zone four terminals (R4)
7	Zone three terminals (R3)
8	Zone two terminals (R2)
9	Zone one terminals (R1)
10	230V mains input

Table 4

VRS/KMS PUMPED MIXING STATION CONTROL

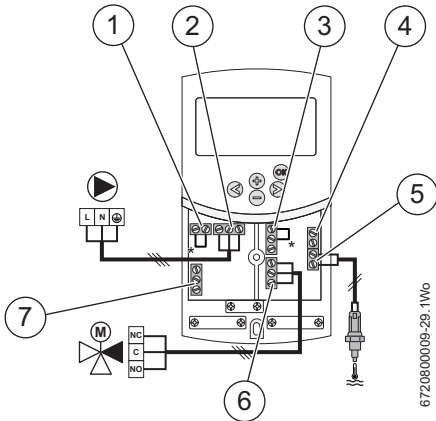


Fig. 3 VRS/KMS pumped mixing station

1	Demand signal to heat source terminals
2	Mixing station pump (pre-wired)
3	Not used
4	Outdoor temperature sensor terminals
5	Flow temperature sensor (pre-wired)
6	Mixing valve motor (pre-wired)
7	230V mains input (cable supplied)

Table 5

RECESSED 230V PROGRAMMABLE ROOM THERMOSTAT

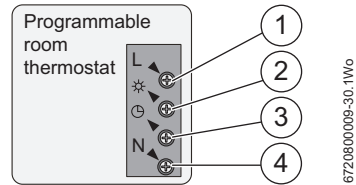


Fig. 4 Programmable room thermostat

1	Live supply
2	Heating demand signal
3	Setback signal
4	Neutral supply

Table 6

SURFACE MOUNTED 230V ROOM THERMOSTAT

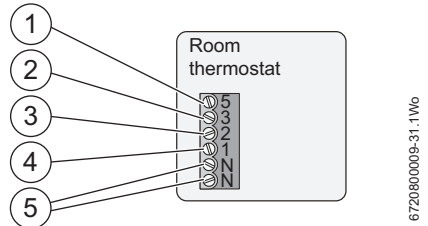


Fig. 5 Room thermostat

1	Setback signal input point
2	Not used
3	Heating demand signal
4	Live supply
5	Neutral supply

Table 7

4 INSTALLATION EXAMPLES

4.1 VRS OR KMS PUMP AND MIXING STATION, 230V LOGIC TERMINAL STRIP WIRING CENTRE - 2 ZONE INDEPENDENTLY CONTROLLED SINGLE LOOP EXAMPLE

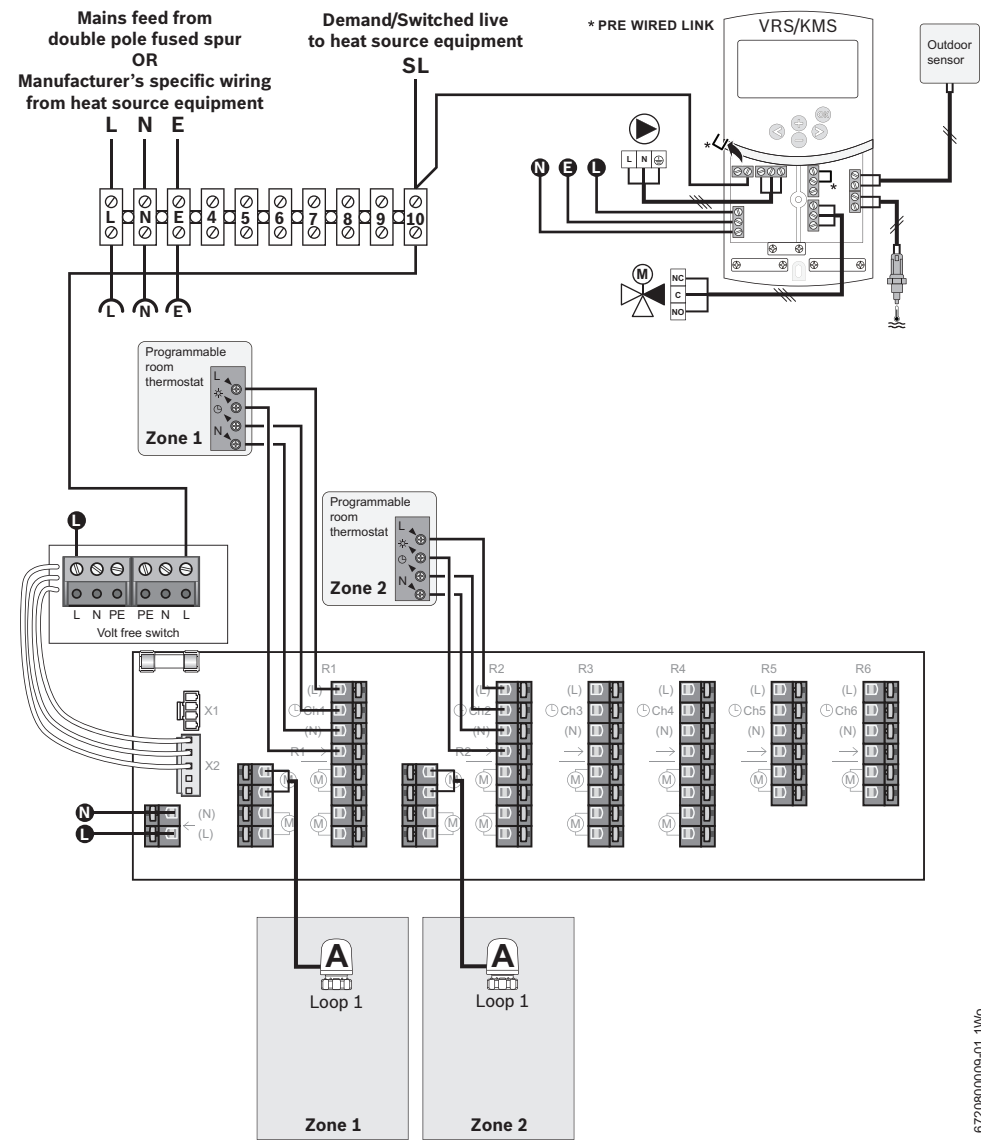
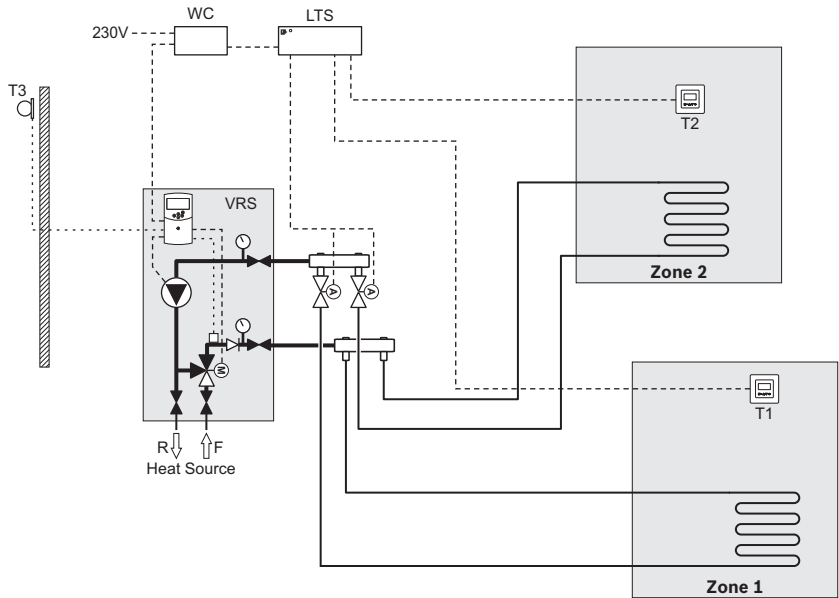


Fig. 6 Wiring diagram

VRS OR KMS PUMP AND MIXING STATION, 230V TERMINAL STRIP WIRING CENTRE - 2 ZONE INDEPENDENTLY CONTROLLED SINGLE LOOP EXAMPLE



672080009-02-1W6

Fig. 7 System layout (VRS example shown)

F	Flow	LTS	Logic terminal strip wiring centre
R	Return	T1	Zone 1 230V recessed programmable room thermostat
VRS	VRS pump and mixing station	T2	Zone 2 230V recessed programmable room thermostat
WC	Wiring centre	T3	Outdoor sensor

Table 8



Fig. 8 Wiring diagram

VRS OR KMS PUMP AND MIXING STATION, 230V LOGIC TERMINAL STRIP WIRING CENTRE - 2 ZONE INDEPENDENTLY CONTROLLED MULTI LOOP EXAMPLE

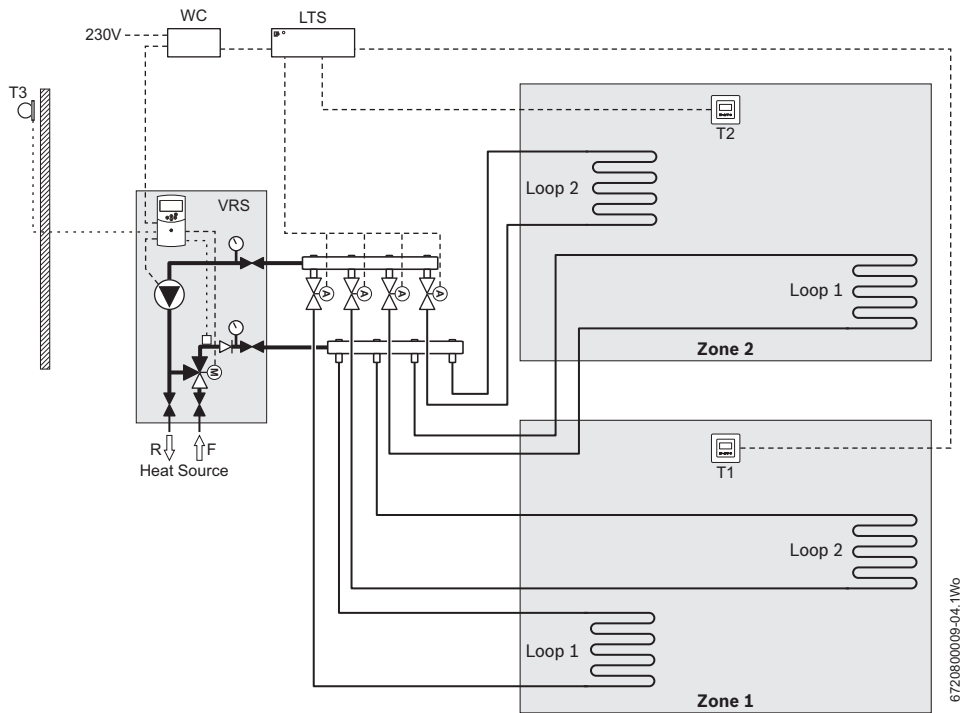


Fig. 9 System layout (VRS example shown)

F	Flow	LTS	Logic terminal strip wiring centre
R	Return	T1	Zone 1 230V recessed programmable room thermostat
VRS	VRS pump and mixing station	T2	Zone 2 230V recessed programmable room thermostat
WC	Wiring centre	T3	Outdoor sensor

Table 9

4.3 VRS OR KMS PUMP AND MIXING STATION, 230V LOGIC TERMINAL STRIP
WIRING CENTRE - 2 ZONE GENERAL TIME CONTROL SINGLE LOOP
EXAMPLE

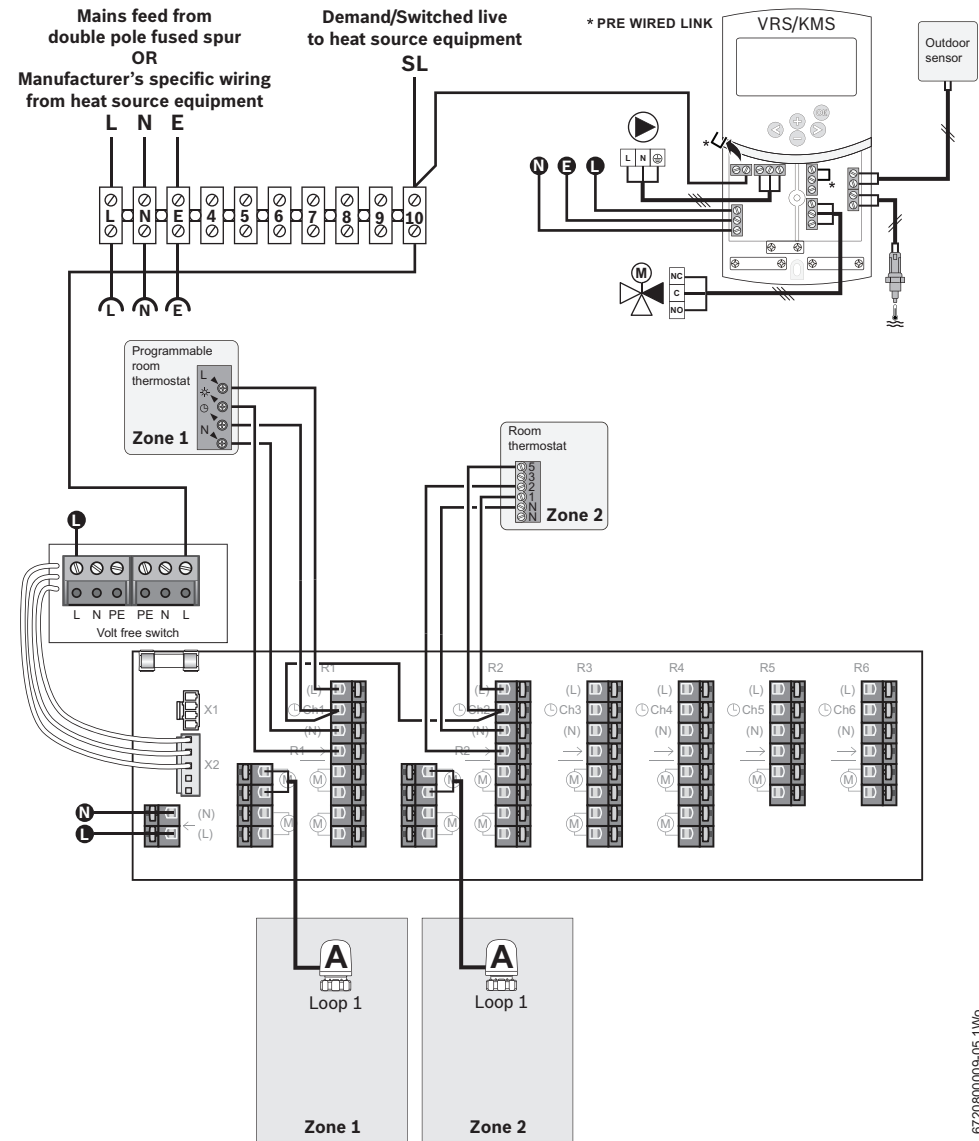
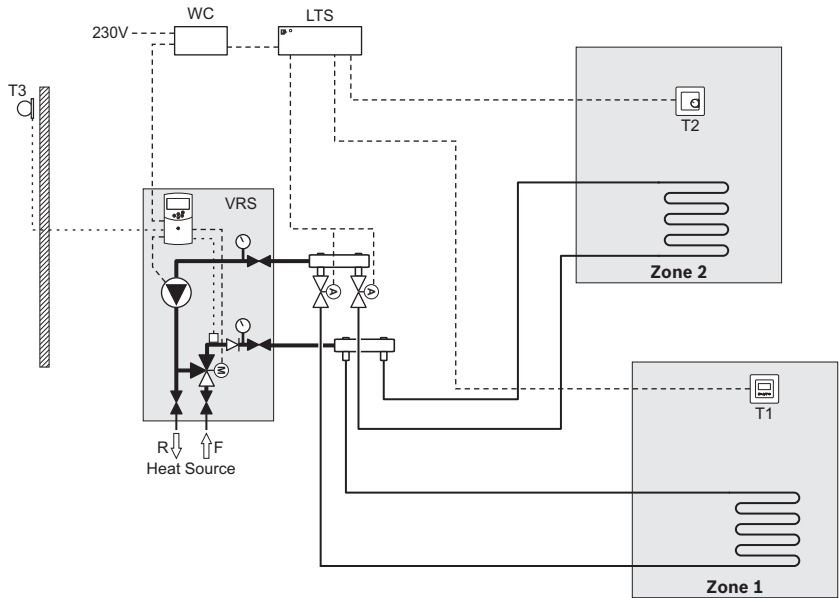


Fig. 10 Wiring diagram

VRS OR KMS PUMP AND MIXING STATION, 230V LOGIC TERMINAL STRIP WIRING CENTRE - 2 ZONE GENERAL TIME CONTROL SINGLE LOOP EXAMPLE



672080009-06-1W6

Fig. 11 System layout (VRS example shown)

F	Flow	LTS	Logic terminal strip wiring centre
R	Return	T1	Zone 1 230V recessed programmable room thermostat
VRS	VRS pump and mixing station	T2	Zone 2 230V surface mounted room thermostat
WC	Wiring centre	T3	Outdoor sensor

Table 10





Fig. 13 System layout (VRS example shown)

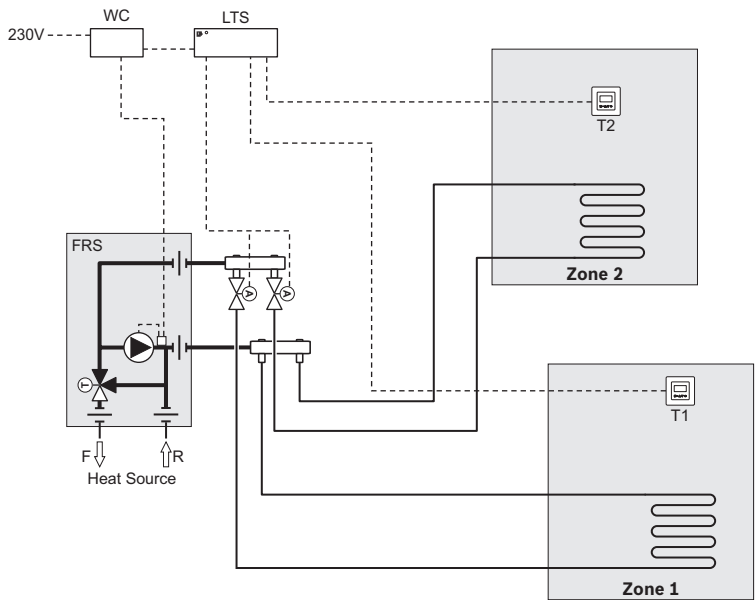
F	Flow	T2	Zone 2 230V recessed programmable room thermostat
R	Return	T3	Zone 3 230V recessed programmable room thermostat
VRS	VRS pump and mixing station	T4	Zone 4 230V recessed programmable room thermostat
WC	Wiring centre	T5	Zone 5 230V recessed programmable room thermostat
LTS	Logic terminal strip wiring centre	T6	Zone 6 230V recessed programmable room thermostat
T1	Zone 1 230V recessed programmable room thermostat	T7	Outdoor sensor

Table 11



Fig. 14 Wiring diagram

FRS PUMP AND MIXING STATION, 230V LOGIC TERMINAL STRIP WIRING CENTRE - 2 ZONE
INDEPENDENTLY CONTROLLED SINGLE LOOP EXAMPLE



6720800009-10-1W6

Fig. 15 System layout

F	Flow	LTS	Logic terminal strip wiring centre
R	Return	T1	Zone 1 230V recessed programmable room thermostat
FRS	FRS standard pump and mixing station	T2	Zone 2 230V recessed programmable room thermostat
WC	Wiring centre		

Table 12

4.6 FRS PUMP AND MIXING STATION, 230V LOGIC TERMINAL STRIP WIRING
CENTRE - 2 ZONE INDEPENDENTLY CONTROLLED MULTI LOOP
EXAMPLE

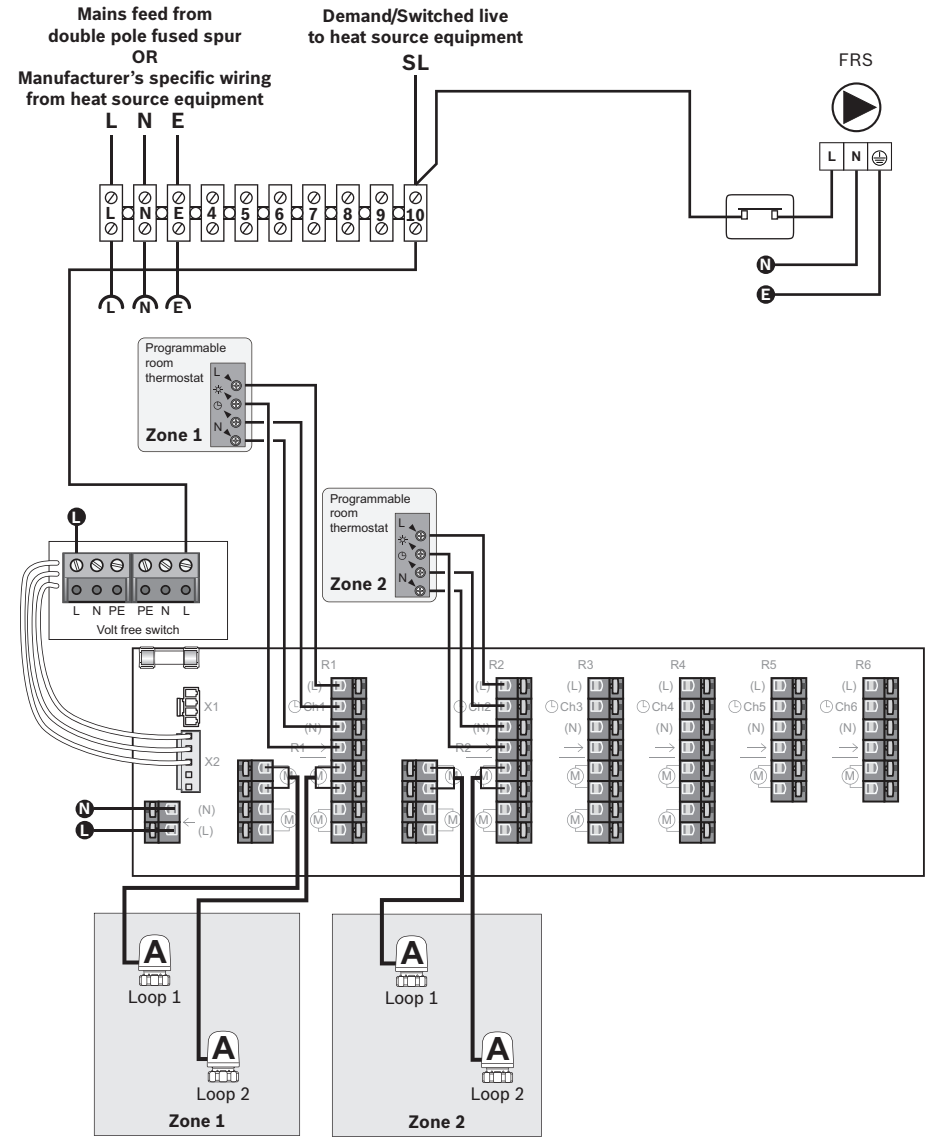


Fig. 16 Wiring diagram

FRS PUMP AND MIXING STATION, 230V LOGIC TERMINAL STRIP WIRING CENTRE - 2 ZONE INDEPENDENTLY CONTROLLED MULTI LOOP EXAMPLE

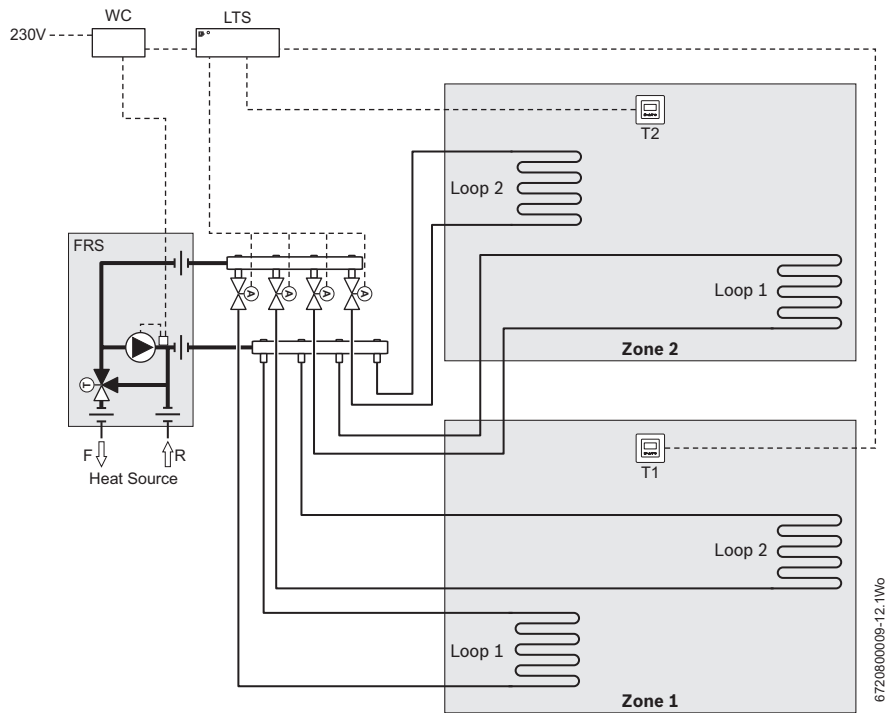


Fig. 17 System layout

F	Flow	LTS	Logic terminal strip wiring centre
R	Return	T1	Zone 1 230V recessed programmable room thermostat
FRS	FRS standard pump and mixing station	T2	Zone 2 230V recessed programmable room thermostat
WC	Wiring centre		

Table 13

4.7 FRS PUMP AND MIXING STATION, 230V LOGIC TERMINAL STRIP WIRING
CENTRE - 2 ZONE GENERAL TIME CONTROL SINGLE LOOP EXAMPLE

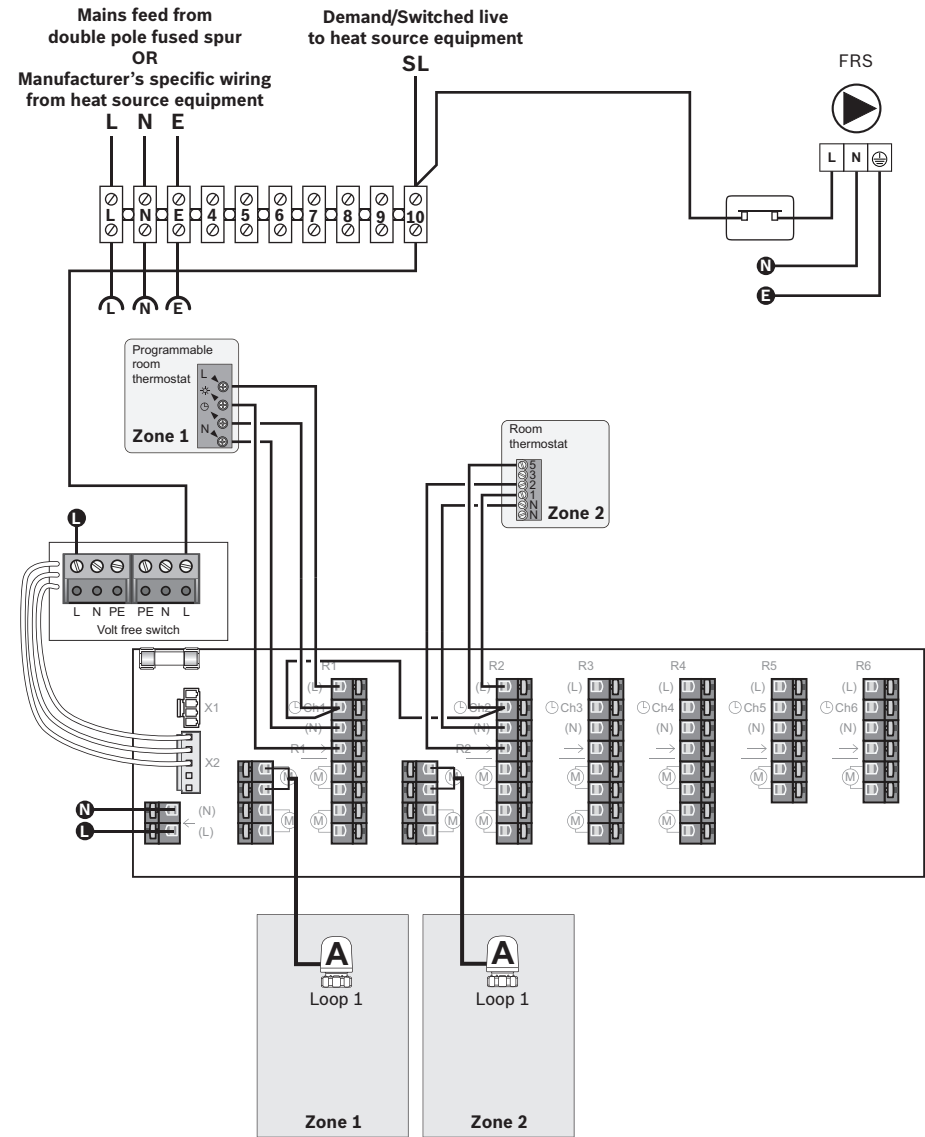
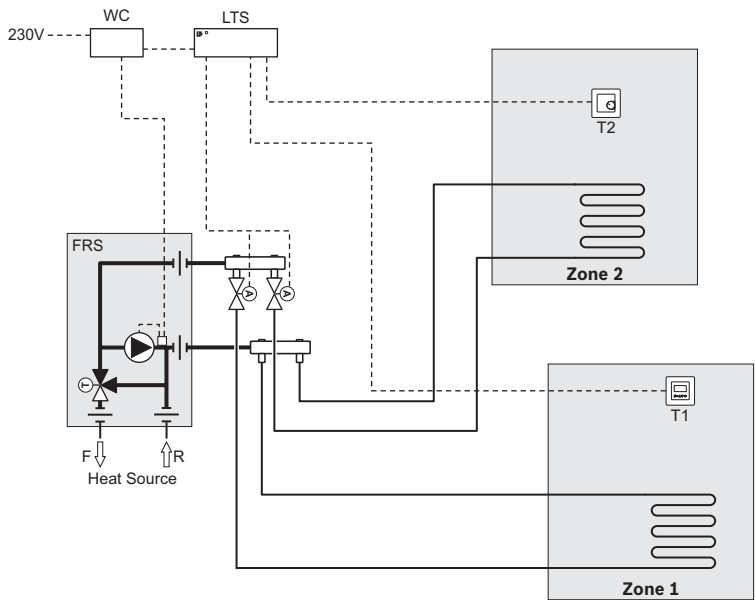


Fig. 18 Wiring diagram

6720800009-13.1W6

FRS PUMP AND MIXING STATION, 230V LOGIC TERMINAL STRIP WIRING CENTRE - 2 ZONE
GENERAL TIME CONTROL SINGLE LOOP EXAMPLE



6720800009-14.1Wg

Fig. 19 System layout

F	Flow	LTS	Logic terminal strip wiring centre
R	Return	T1	Zone 1 230V recessed programmable room thermostat
FRS	FRS standard pump and mixing station	T2	Zone 2 230V surface mounted room thermostat
WC	Wiring centre		

Table 14

4.8 FRS PUMP AND MIXING STATION, 230V LOGIC TERMINAL STRIP WIRING
CENTRE - 6 ZONE INDEPENDENTLY CONTROLLED MULTI LOOP
EXAMPLE

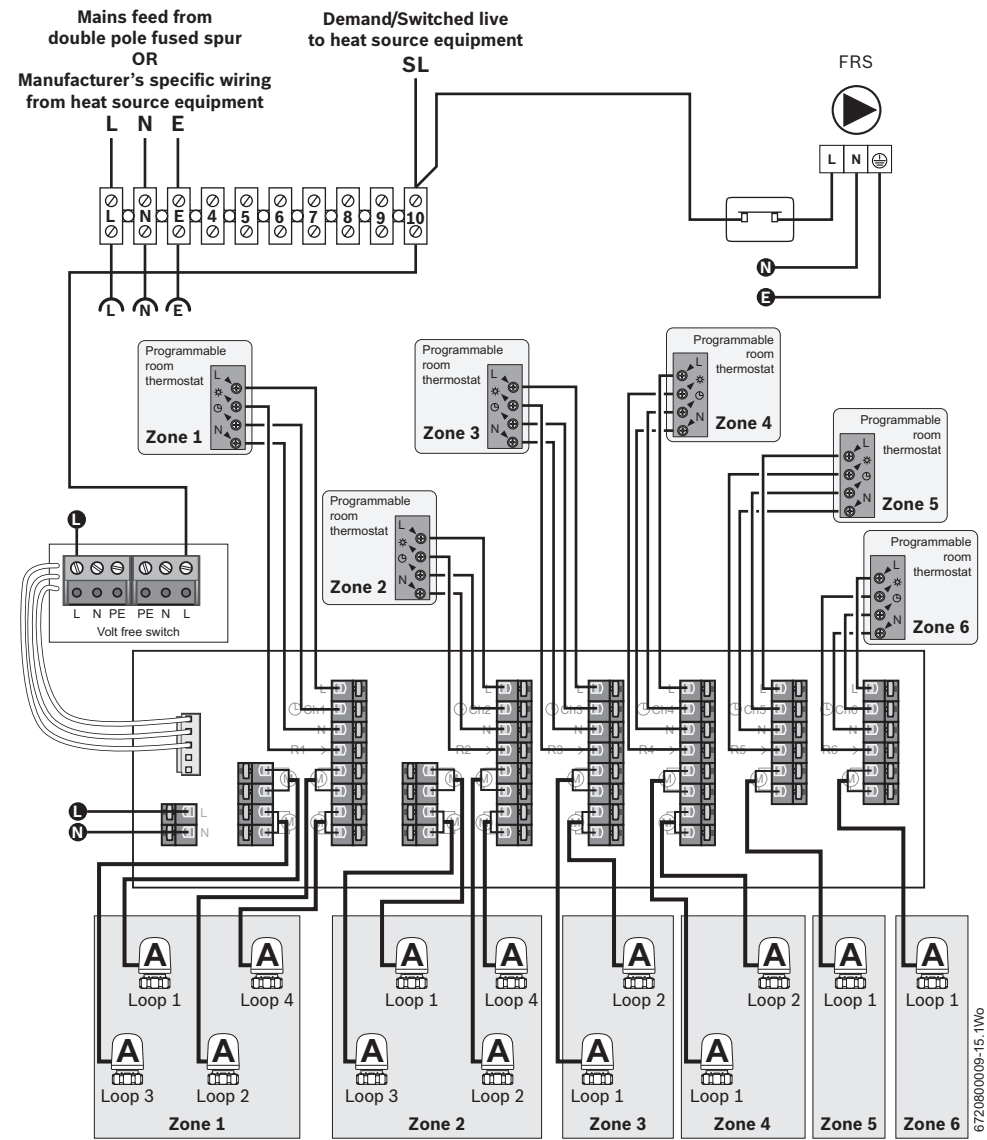


Fig. 20 Wiring diagram

FRS PUMP AND MIXING STATION, 230V LOGIC TERMINAL STRIP WIRING CENTRE - 6 ZONE
INDEPENDENTLY CONTROLLED MULTI LOOP EXAMPLE

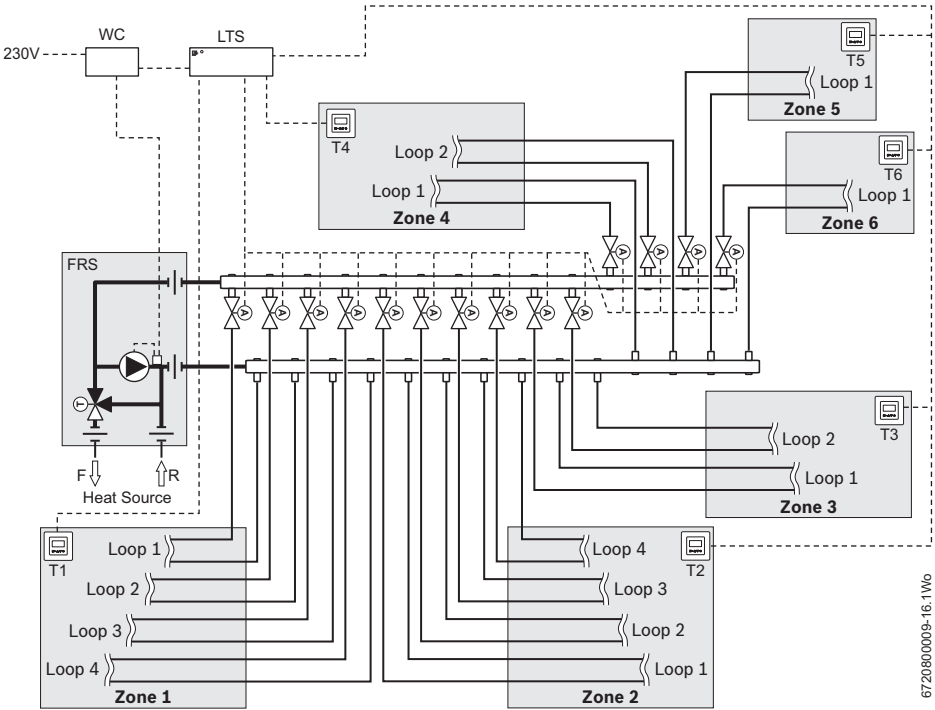


Fig. 21 System layout

F	Flow	T2	Zone 2 230V recessed programmable room thermostat
R	Return	T3	Zone 3 230V recessed programmable room thermostat
FRS	FRS standard pump and mixing station	T4	Zone 4 230V recessed programmable room thermostat
WC	Wiring centre	T5	Zone 5 230V recessed programmable room thermostat
LTS	Logic terminal strip wiring centre	T6	Zone 6 230V recessed programmable room thermostat
T1	Zone 1 230V recessed programmable room thermostat		

Table 15

4.9 VRS OR KMS PUMP AND MIXING STATION, WIRELESS (RF) CONTROL
WIRING CENTRE - 6 ZONE INDEPENDENTLY CONTROLLED MULTI LOOP
EXAMPLE

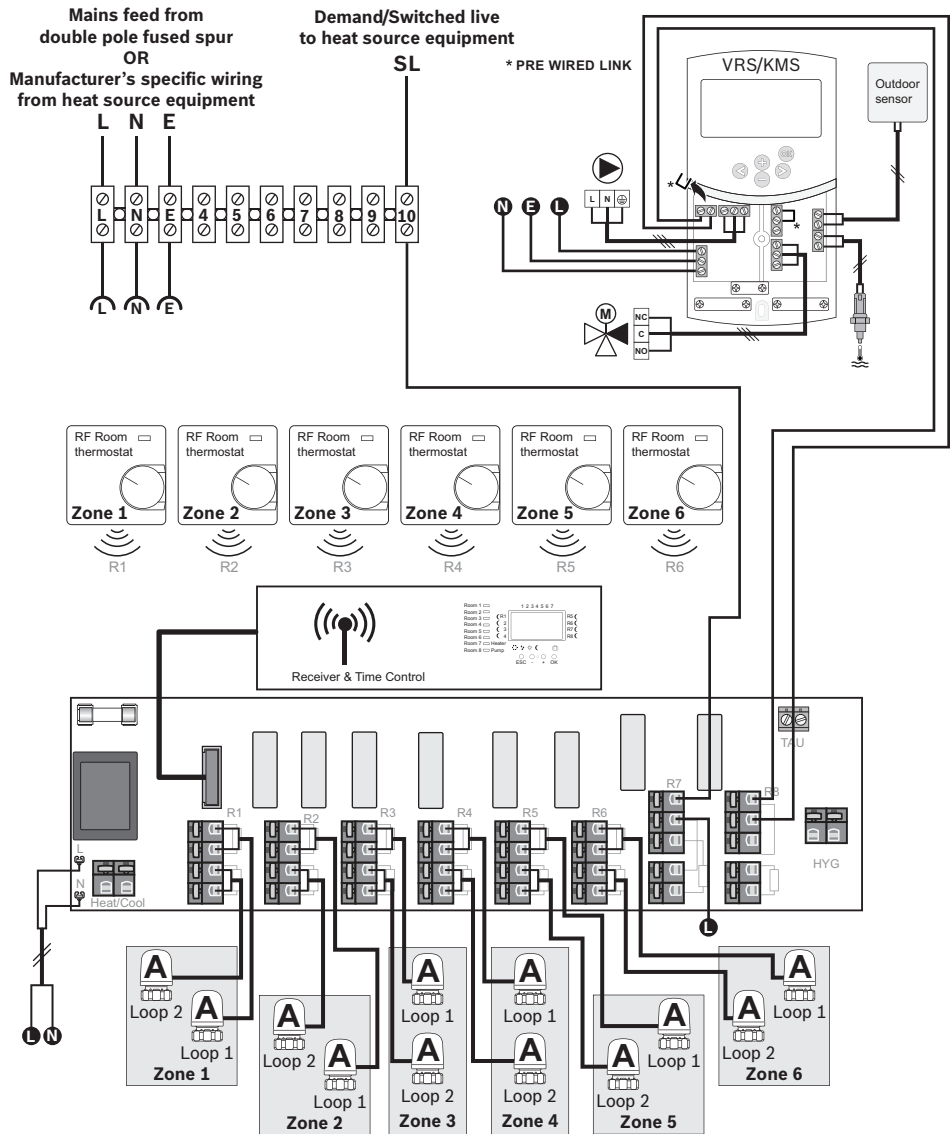


Fig. 22 Wiring diagram

VRS OR KMS PUMP AND MIXING STATION, WIRELESS (RF) CONTROL WIRING CENTRE - 6 ZONE INDEPENDENTLY CONTROLLED MULTI LOOP EXAMPLE

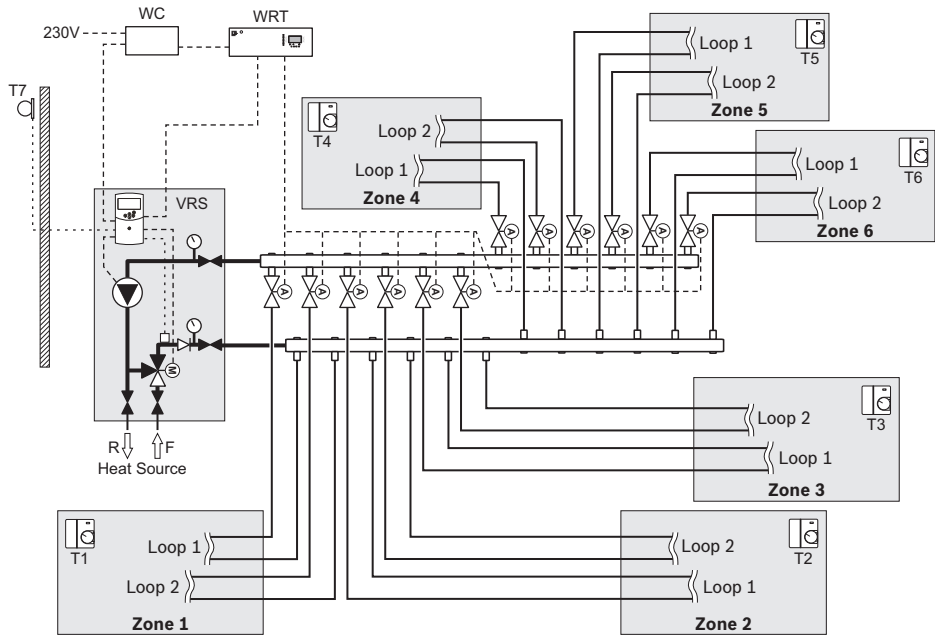


Fig. 23 System layout (VRS example shown)

F	Flow	T2	Zone 2 RF room thermostat
R	Return	T3	Zone 3 RF room thermostat
VRS	VRS pump and mixing station	T4	Zone 4 RF room thermostat
WC	Wiring centre	T5	Zone 5 RF room thermostat
WRT	Wireless (RF) control wiring centre	T6	Zone 6 RF room thermostat
T1	Zone 1 RF room thermostat	T7	Outdoor sensor

Table 16

4.10 VRS OR KMS PUMP AND MIXING STATION, WIRELESS (RF) CONTROL
WIRING CENTRE - 4 ZONE GROUPED AND INDEPENDENTLY
CONTROLLED MULTI LOOP EXAMPLE

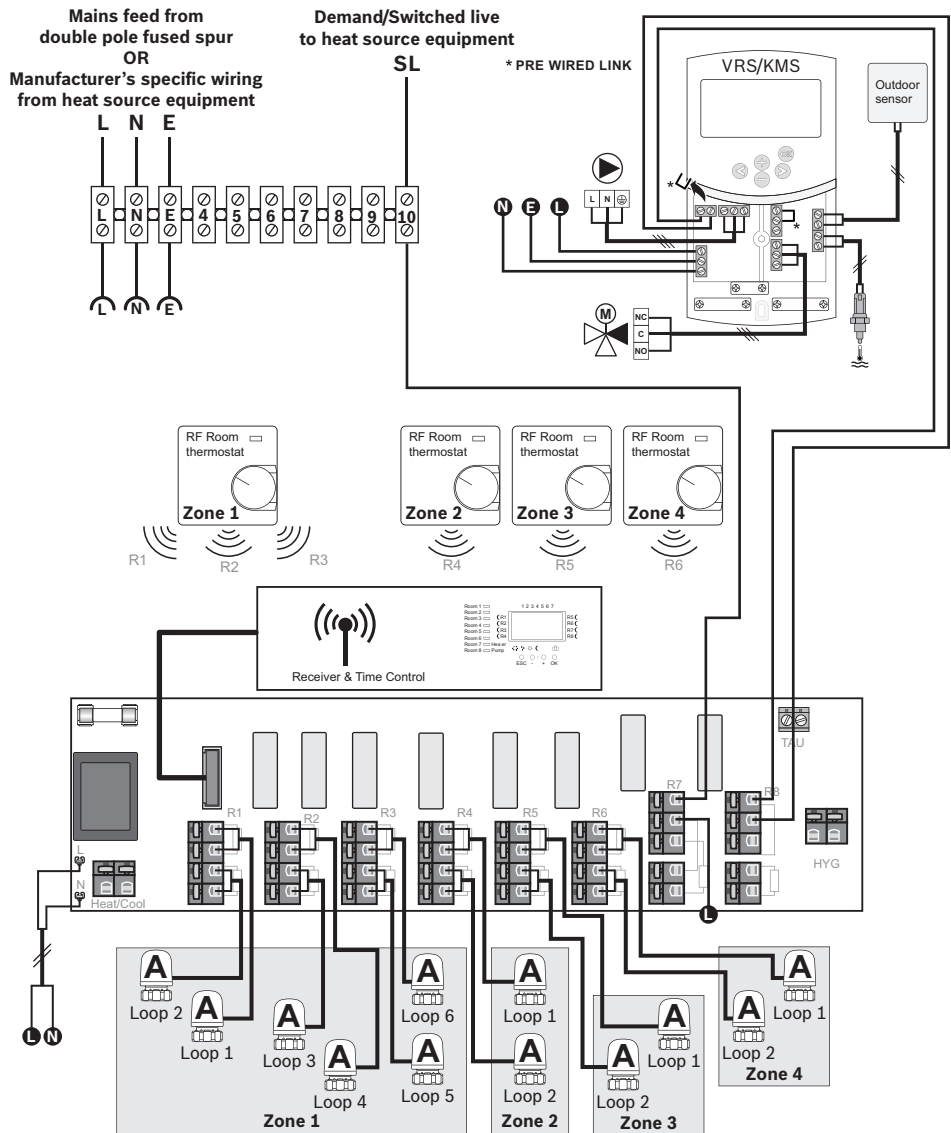


Fig. 24 Wiring diagram

VRS OR KMS PUMP AND MIXING STATION, WIRELESS (RF) CONTROL WIRING CENTRE - 4 ZONE GROUPED AND INDEPENDENTLY CONTROLLED MULTI LOOP EXAMPLE

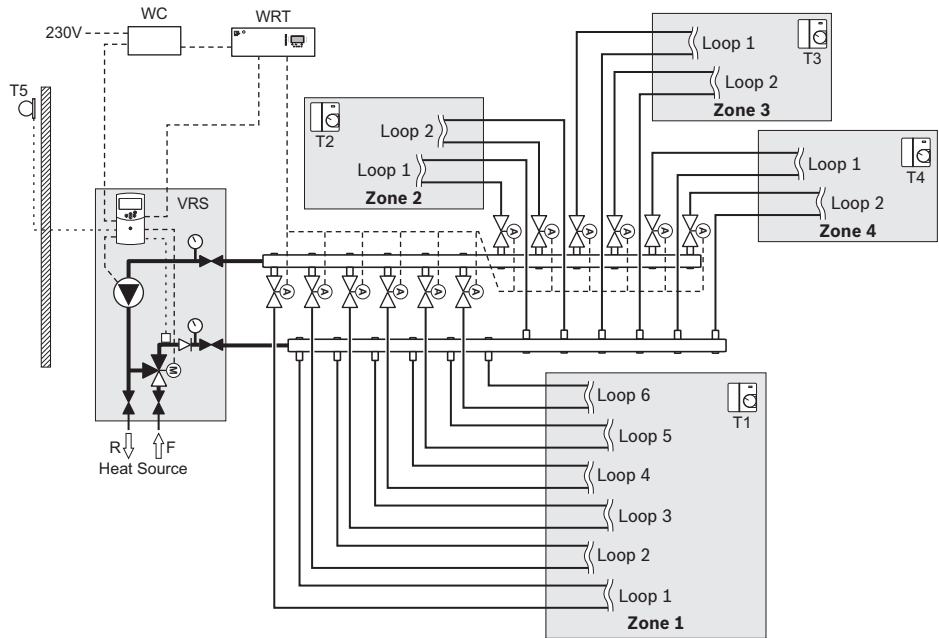


Fig. 25 System layout (VRS example shown)

F	Flow	T1	Zone 1 RF room thermostat
R	Return	T2	Zone 2 RF room thermostat
VRS	VRS pump and mixing station	T3	Zone 3 RF room thermostat
WC	Wiring centre	T4	Zone 4 RF room thermostat
WRT	Wireless (RF) control wiring centre	T5	Outdoor sensor

Table 17

6720800009-20.1Wo

4.11 FRS PUMP AND MIXING STATION, WIRELESS (RF) CONTROL WIRING
CENTRE - 6 ZONE INDEPENDENTLY CONTROLLED MULTI LOOP
EXAMPLE

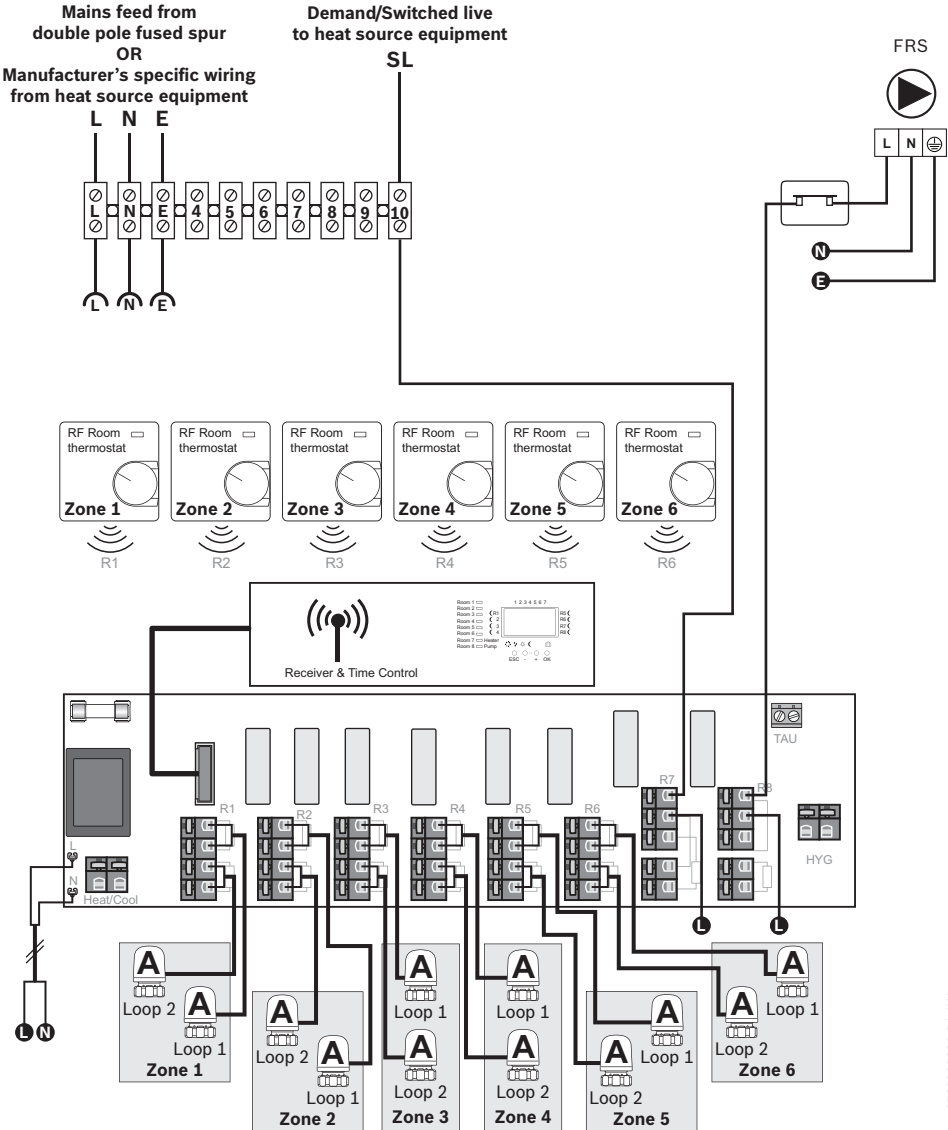
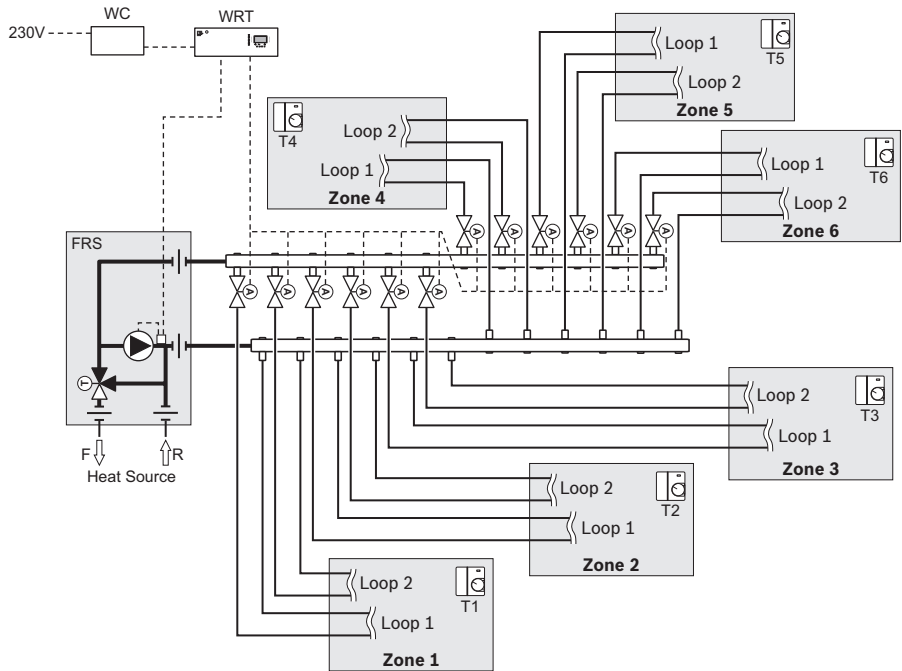


Fig. 26 Wiring diagram

FRS PUMP AND MIXING STATION, WIRELESS (RF) CONTROL WIRING CENTRE - 6 ZONE
INDEPENDENTLY CONTROLLED MULTI LOOP EXAMPLE



672080009-22.1Wo

Fig. 27 System layout

F	Flow	T2	Zone 2 RF room thermostat
R	Return	T3	Zone 3 RF room thermostat
FRS	FRS standard pump and mixing station	T4	Zone 4 RF room thermostat
WC	Wiring centre	T5	Zone 5 RF room thermostat
WRT	Wireless (RF) control wiring centre	T6	Zone 6 RF room thermostat
T1	Zone 1 RF room thermostat		

Table 18

4.12 FRS PUMP AND MIXING STATION, WIRELESS (RF) CONTROL WIRING
CENTRE - 4 ZONE GROUPED AND INDEPENDENTLY CONTROLLED MULTI
LOOP EXAMPLE

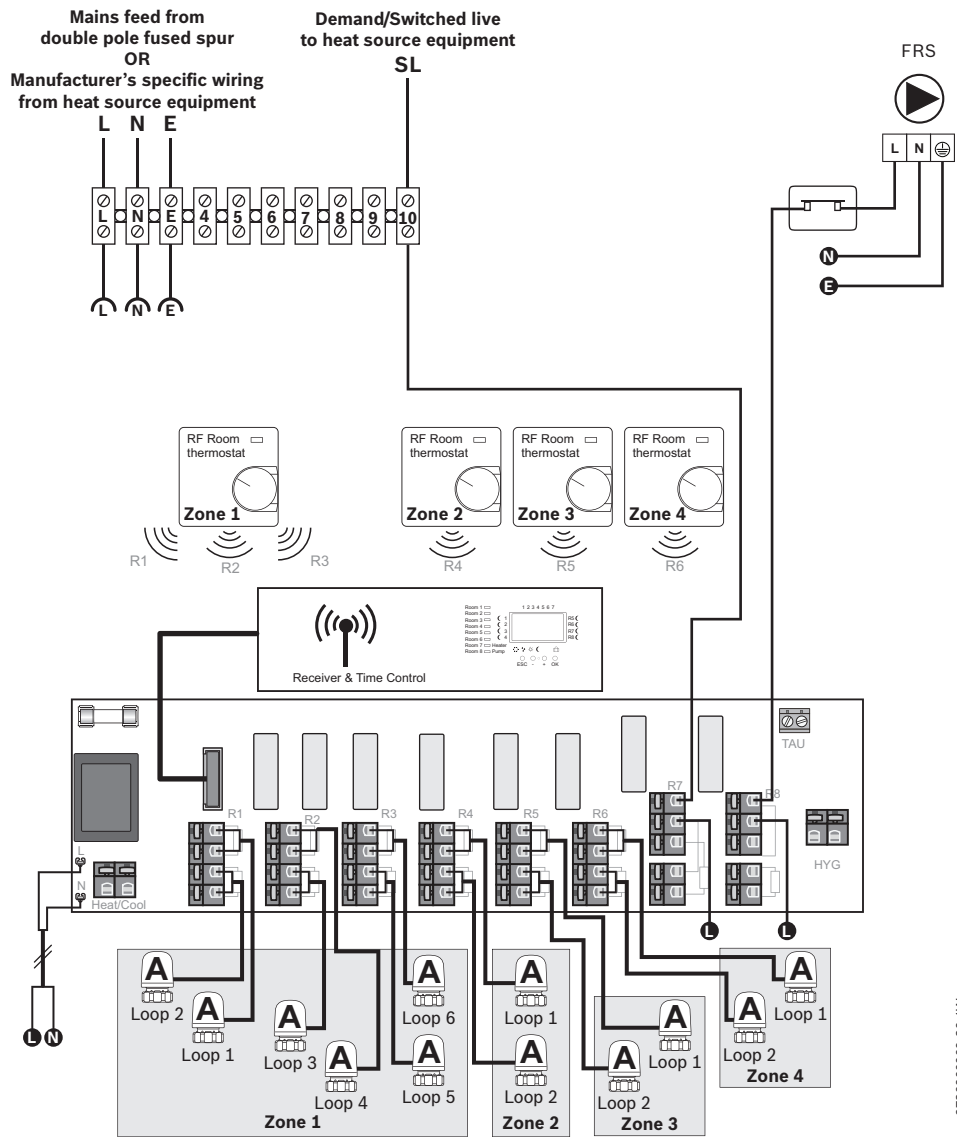
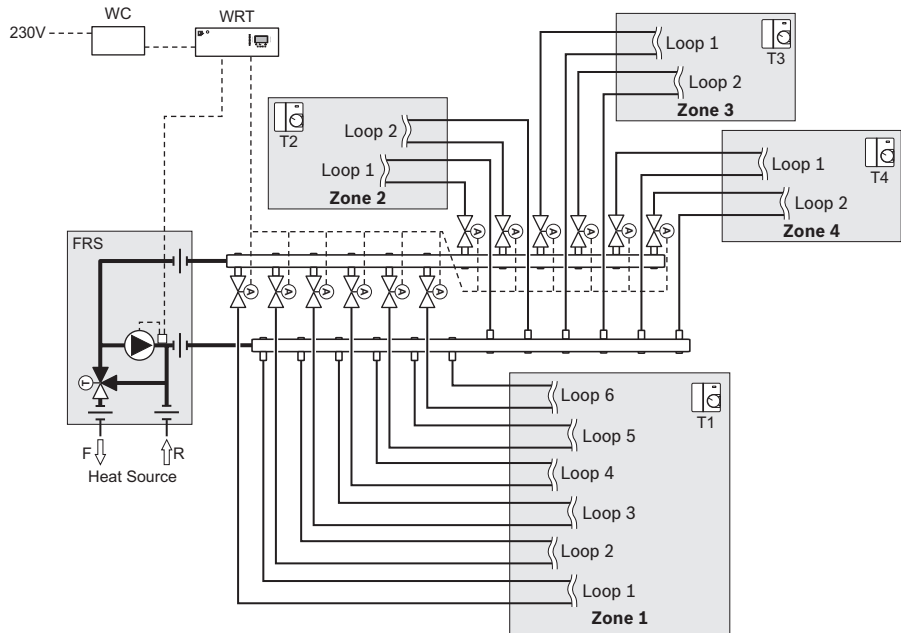


Fig. 28 Wiring diagram

FRS PUMP AND MIXING STATION, WIRELESS (RF) CONTROL WIRING CENTRE - 4 ZONE GROUPED AND INDEPENDENTLY CONTROLLED MULTI LOOP EXAMPLE



672080009-24-1W6

Fig. 29 System layout

F	Flow	T1	Zone 1 RF room thermostat
R	Return	T2	Zone 2 RF room thermostat
FRS	FRS standard pump and mixing station	T3	Zone 3 RF room thermostat
WC	Wiring centre	T4	Zone 4 RF room thermostat
WRT	Wireless (RF) control wiring centre		

Table 19

4.13 RMS PUMP AND MIXING STATION AND PROGRAMMABLE ROOM THERMOSTAT EXAMPLE

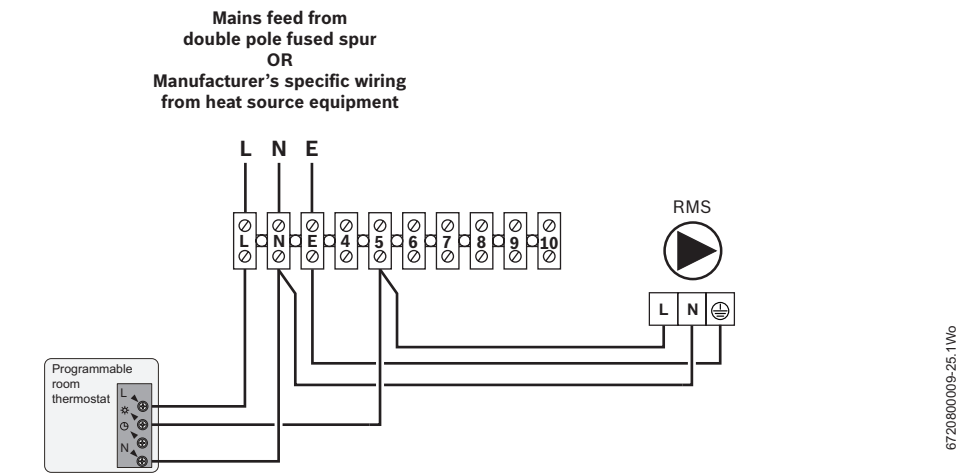


Fig. 30 Wiring diagram

RMS PUMP AND MIXING STATION AND PROGRAMMABLE ROOM THERMOSTAT EXAMPLE

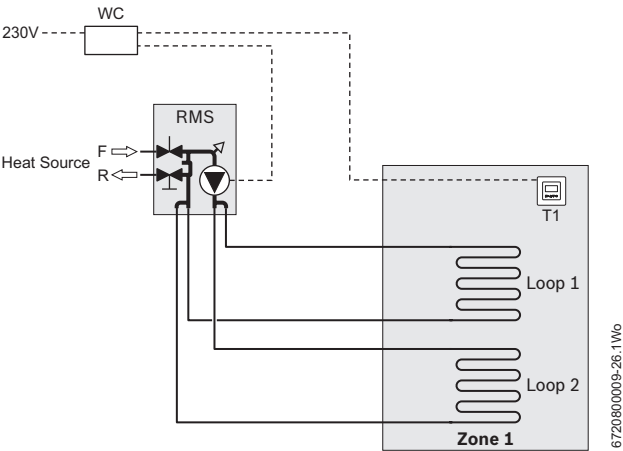


Fig. 31 System layout

F	Flow	WC	Wiring centre
R	Return	T1	Zone 1 230V recessed programmable room thermostat
RMS	RMS pump and mixing station		

Table 20

NOTES

WORCESTER, BOSCH GROUP:

TECHNICAL SUPPORT: 0844 892 4010

APPOINTMENTS: 0844 892 3000

SPARES: 01905 752571

LITERATURE: 0844 892 9800

TRAINING: 01905 752526

SALES: 01905 752640

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Worcester, Bosch Group is a brand name of
Bosch Thermotechnology Ltd.

worcester-bosch.co.uk

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