

CAUTION!

Before putting the boiler into operation read this manual carefully.

WARNING!

Improper installation, adjustment, alteration, service or maintenance can cause injury, loss of life or property damage. Refer to this manual. For assistance or additional information consult a qualified installer, service agency or the gas supplier.

CAUTION!

The operating manual is part of the documentation that is delivered to the installation's operator. Go through the information in this manual with the owner/operator and make sure that he or she is familiar with all the necessary operating instructions.

Logamax plus GB162

Buderus

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1 Reference Documents

The following table references all related documentation to the GB162 series boiler. To obtain copies of these documents, please go to our website at www.buderus.us.

Document Name	Document Part No.	Description Of Contents
Installation Instructions	7 746 800 103	• Safety and general instructions • Product specifications • Installation • Electrical connections • Operation (start-up and shut down procedure) • Inspection / Maintenance
Service Instructions	6 720 614 965	• Product description • Safety and general instructions • Operation • Symptoms • Diagnosis • Actions
User's Instructions	7 746 800 102	• Safety information • Lighting instructions • Operating the BC10 basic controller • Boiler start-up and shut down • Operating and error messages
Installation Instructions - Pump Group	7 746 800 104	• Safety and general information • Dimensions and connections • Items supplied with pump group • Installation
Installation Instructions - Cascade Frame	7 746 800 105	• General information • Items supplied with the unit • Cascade configurations • Dimensions • Installation
Record Book - Water Quality Requirements	6 720 641 552	• Requirements • Operator's log
Gas Valve Replacement Instructions	6 720 615 152	• Safety considerations • Parts list • Gas valve replacement • Operating instructions
Propane Conversion Kit Instructions	6720615152-001.1TD	• Safety considerations • Parts list • Liquid Propane conversion • Operating instructions
Technical Service Bulletin: TBG-07_Boiler Water Chemistry & Freeze Prevention Guidelines	BTC 430002101 B	• Recommended steps for commissioning boiler • Water chemistry guidelines • Dielectric isolation • Cleaning requirements • Fill water and chemistry • Eliminating system leaks • Aluminum safe anti-freeze guidelines • Buderus selected suppliers of water treatment products

2 Boiler / Control Applications

This chapter outlines the numerous applications available with the GB162 series boiler when used in conjunction with the following control options:

- AM10 Modulating Control
- MCM10 Multi Cascade Module
- RC35 Room Control Unit

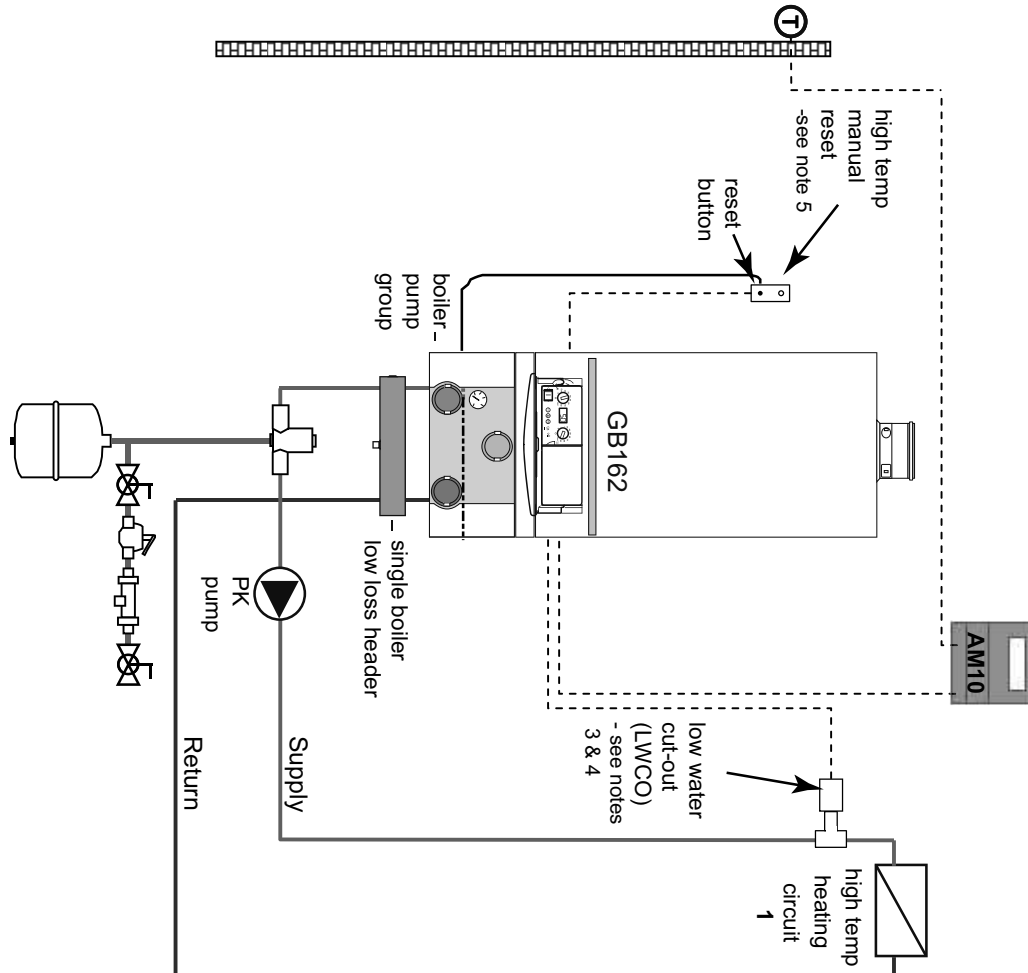
Each section covering these applications will display the available piping diagrams with the associated wiring diagram on the following page.

2.1 AM10 modulating control

2.1.1 AM10 Piping and wiring diagrams

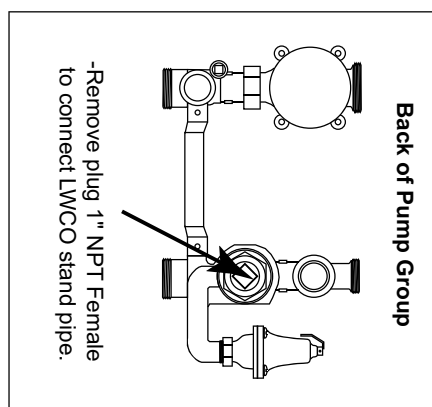
(LWCO low water cutout and high temp manual reset shown)

- AM10 with one heating circuit

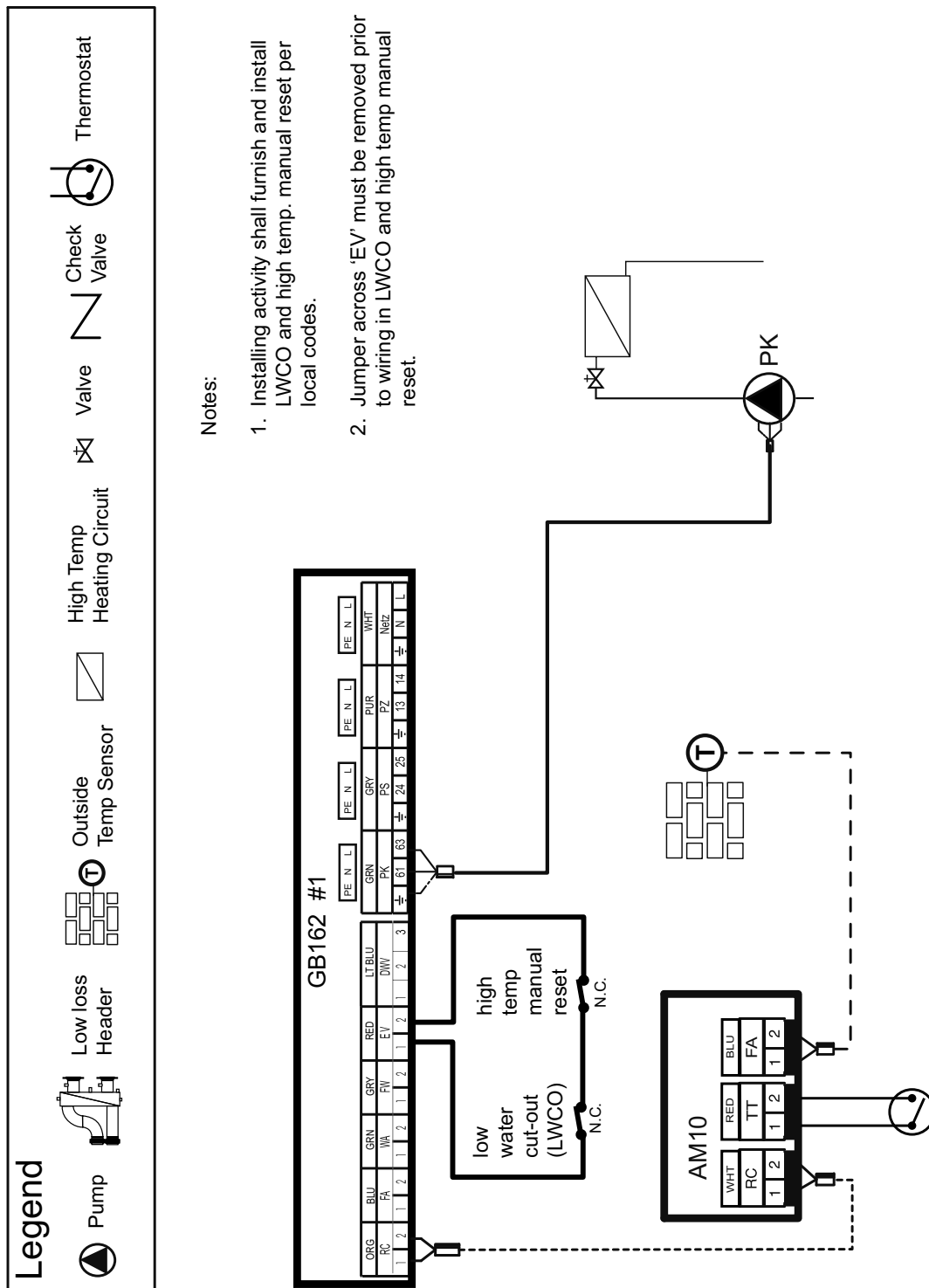


Notes:

1. Contractor to furnish and install LWCO and High Temp Manual Reset devices as required by local codes.
2. Do not install any type of valve or check valve in between LWCO and Boiler.
3. Refer to the manufacturer's instructions when installing the low water cut-out (LWCO).
4. LWCO must be located above the highest point of the boiler heat exchanger.
5. Hi Temp Manual Reset remote sensing bulb must be in the boiler supply.



- **Wiring schematic for AM10 with one heating circuit**



2.2 Multi Cascade Module (MCM10)

- The Multi Cascade Module (hereafter abbreviated) can be applied to control cascade systems. A cascade system is a heating system consisting out of several heating appliances, which are connected in parallel in order to create a better heating performance.
- The MCM10 can control a maximum of 4 heating appliances each. Expendable with up to 4 identical modules connected to another, forming a cascade of max. 16 heating appliances.
- The MCM10 can only be applied in combination with heating appliances that have the EMS-BUS (UBA3, UBA3.5).
- Heating appliances with any level of input/output can be connected in the cascade system as long as they are EMS-compatible.
- Room controller or outdoor reset module required.

2.2.1 System integration

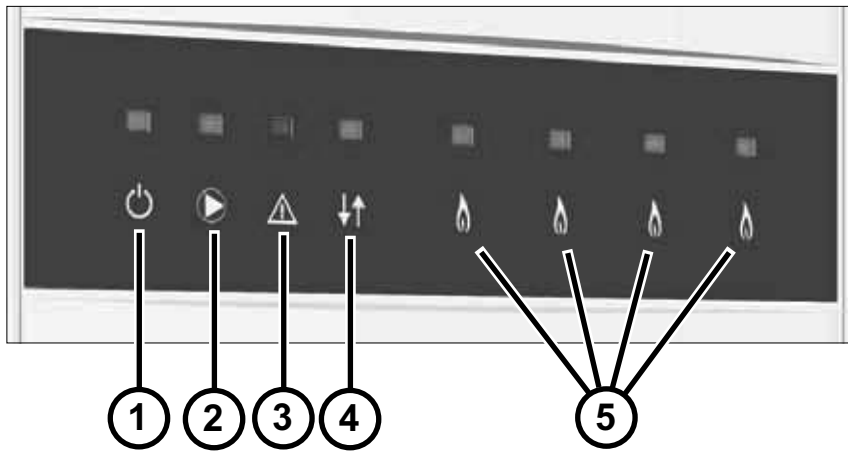
- The MCM10 controls the heating appliances within the cascade system based on a heating demand which is sent and calculated by a heating control. Therefore the MCM10 always needs to be connected to some kind of control.
- The MCM10 takes over the control of the system supply temperature. The System supply Temperature Sensors (FV) should be connected to the MCM10-Master.
- The System Temperature Sensor at the entrance of the open header functions as an internal flow temperature sensor like in a heating appliance.
- The outdoor temp sensor (FA) could either be connected to the MCM10 or first boiler in the cascade system.
- The MCM10 comes with a WM10 low loss header module to connect the supply sensor and run a system pump (if installed).

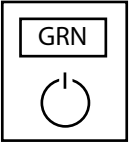
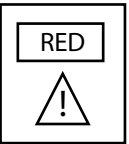
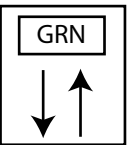


Figure 56 Multi Cascade Module (MCM10)

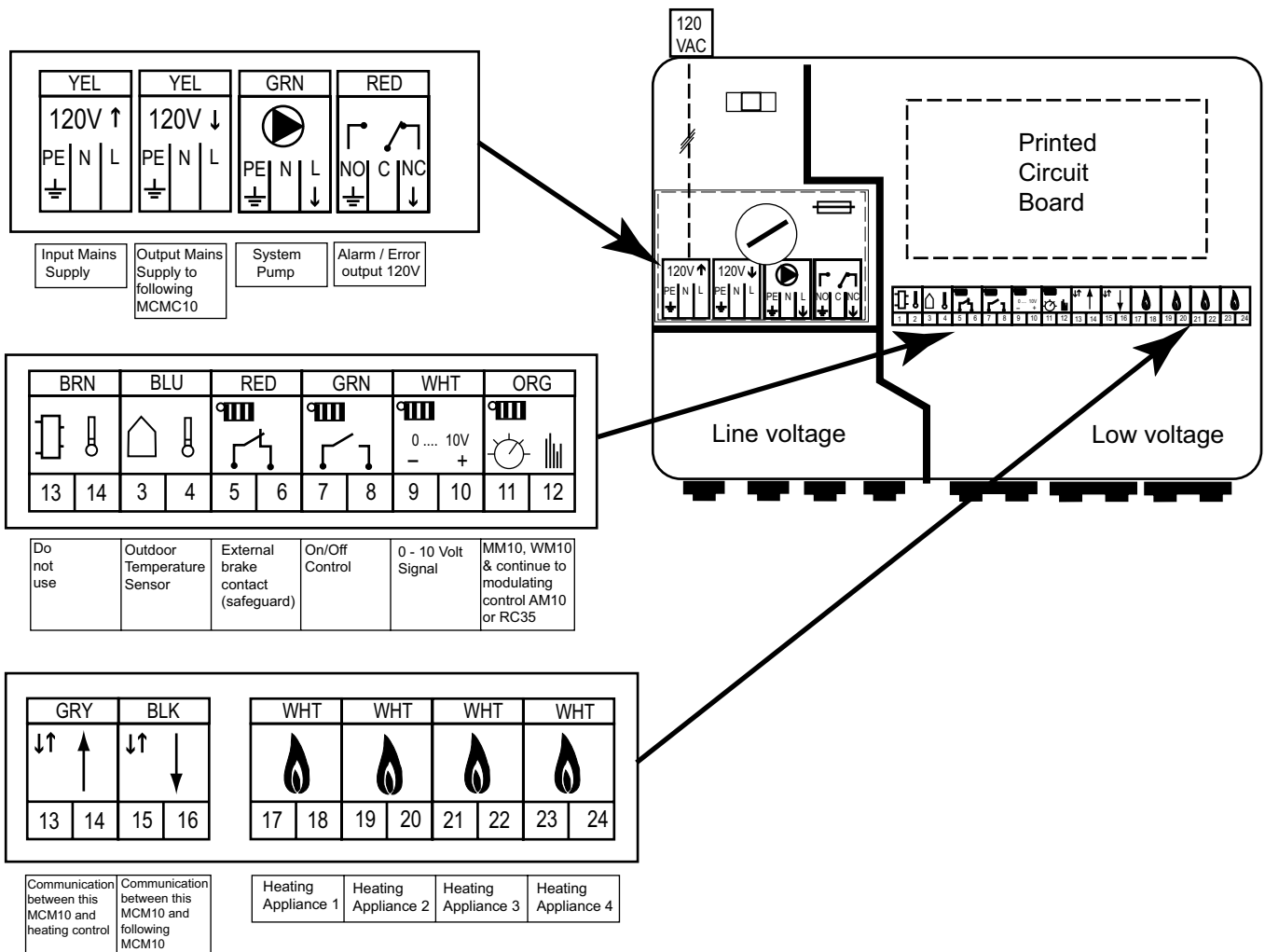
2.2.2 MCM10 LED functions

MCM10 Front Panel

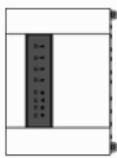
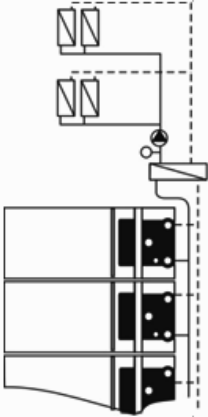
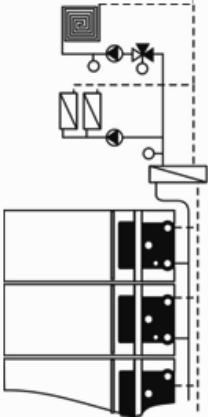
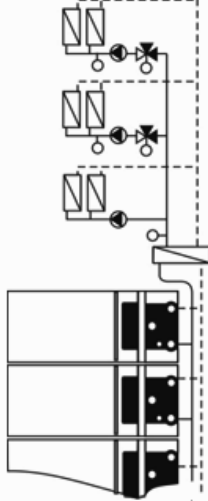
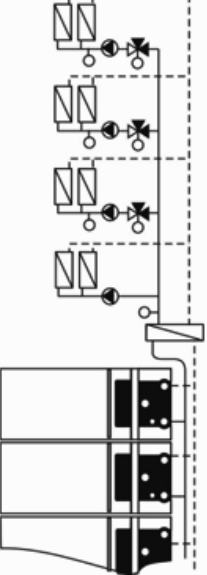


- ①  → Off: No power / internal error MCM10
→ On: Standard operation
- ②  → Off: Pump off
→ On: Pump on
- ③  → Off: Switching contact not activated
→ Blinking: System fault (example : system pressure too low or error in the heating appliance(s))
- ④  → Off: No communication
→ On: Communication between MCM10 and the previous MCM10.
Communication between MCM10 and a Heating Controller (e.g. RC35)
- ⑤  → Off: No heat demand, heating appliance stand by
→ On: Heat demand, heating appliance in operation

2.2.3 MCM10 Electrical connection diagram

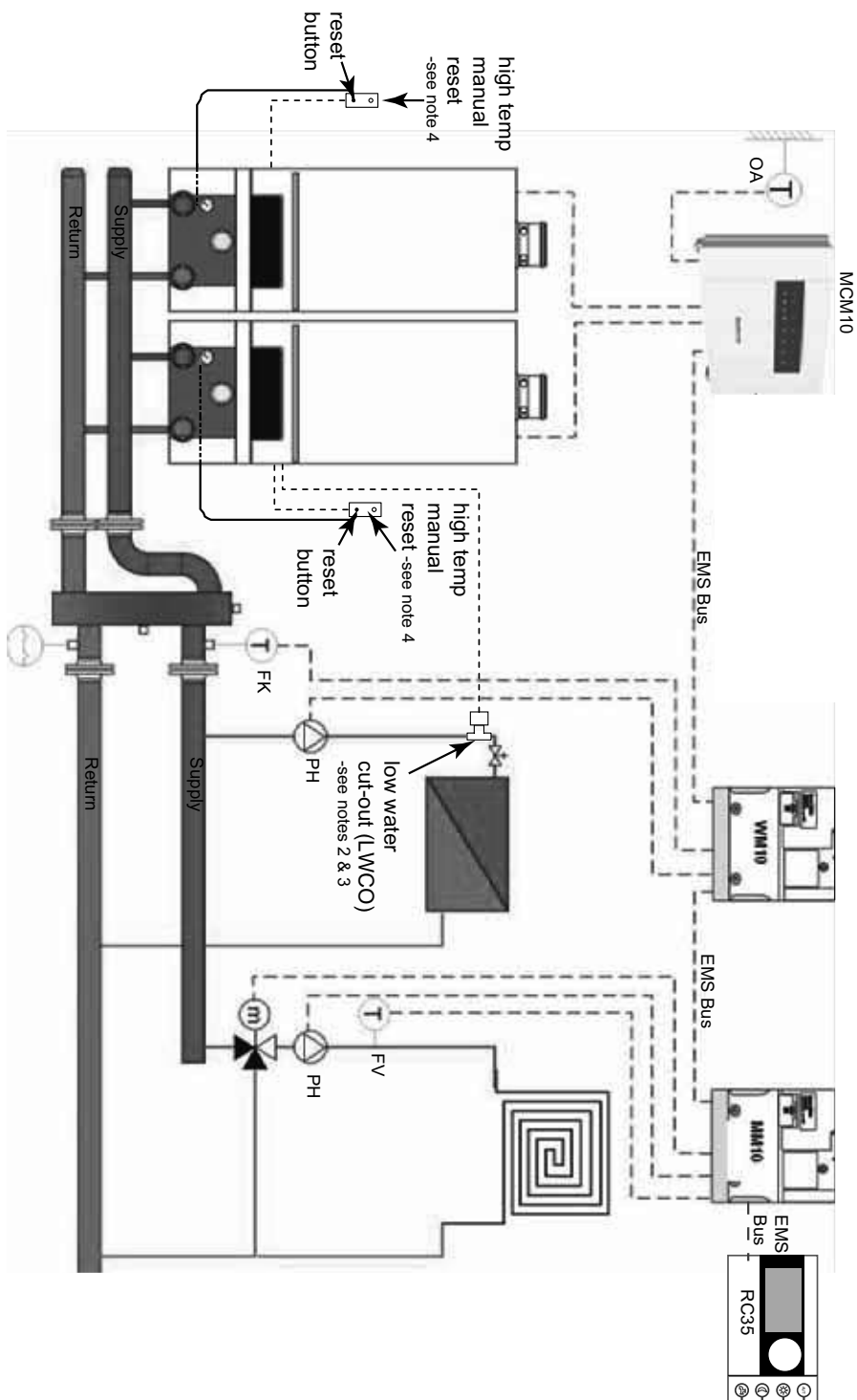


2.2.4 MCM10 Configuration possibilities

Configuration	Description	controls			
					
	<4x GB162-100 1 heat circuit	MCM10	RC35	VM10	
	<8x GB162-100 2 heat circuits	2x MCM10	RC35	VM10	MM10
	<12x GB162-100 3 heat circuits	3x MCM10	RC35	VM10	2x MM10
	<16x GB162-100 4 heat circuits	4x MCM10	RC35	VM10	3x MM10

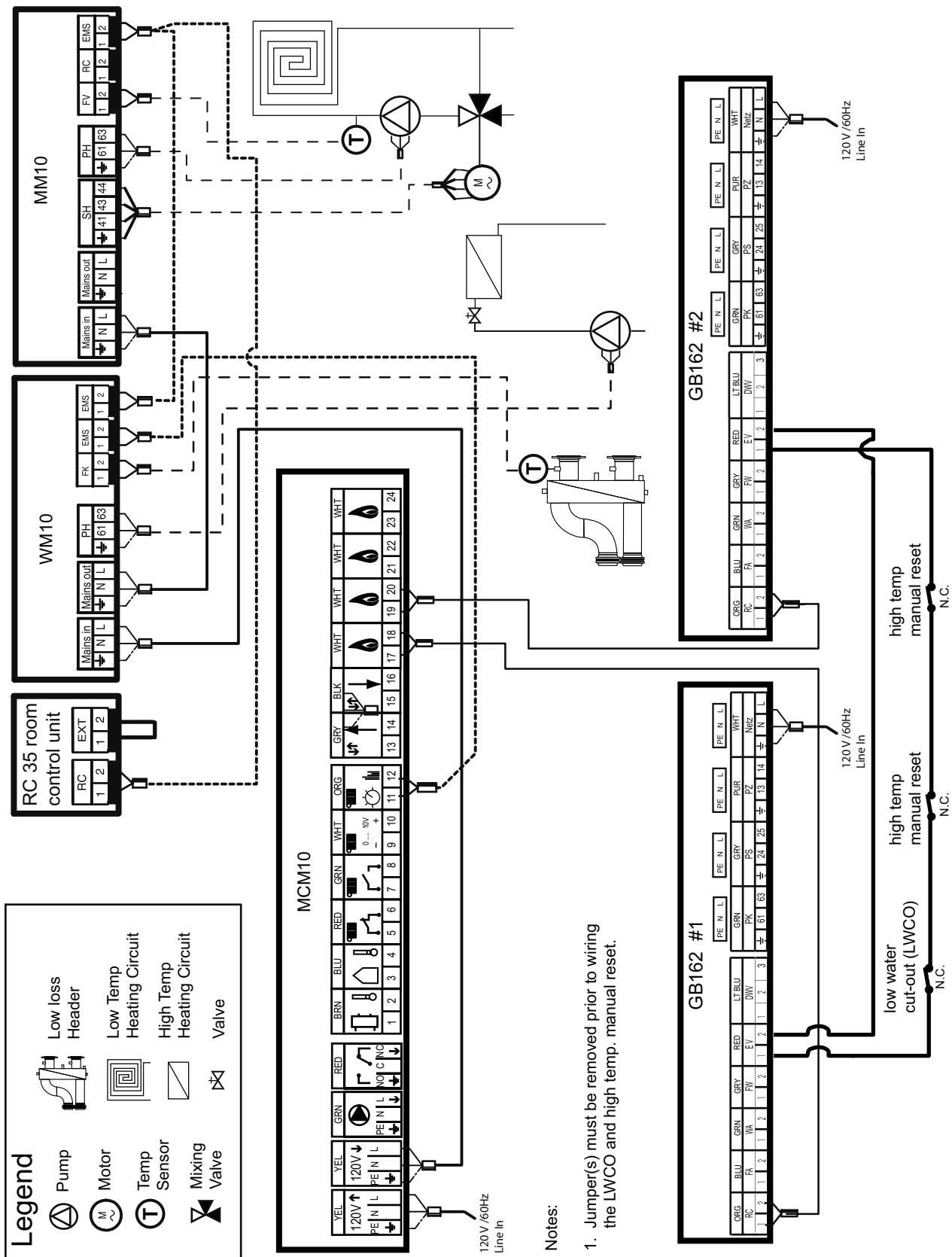
2.2.5 MCM10 Piping and wiring diagrams

- MCM10 with RC 35 and EMS modules:

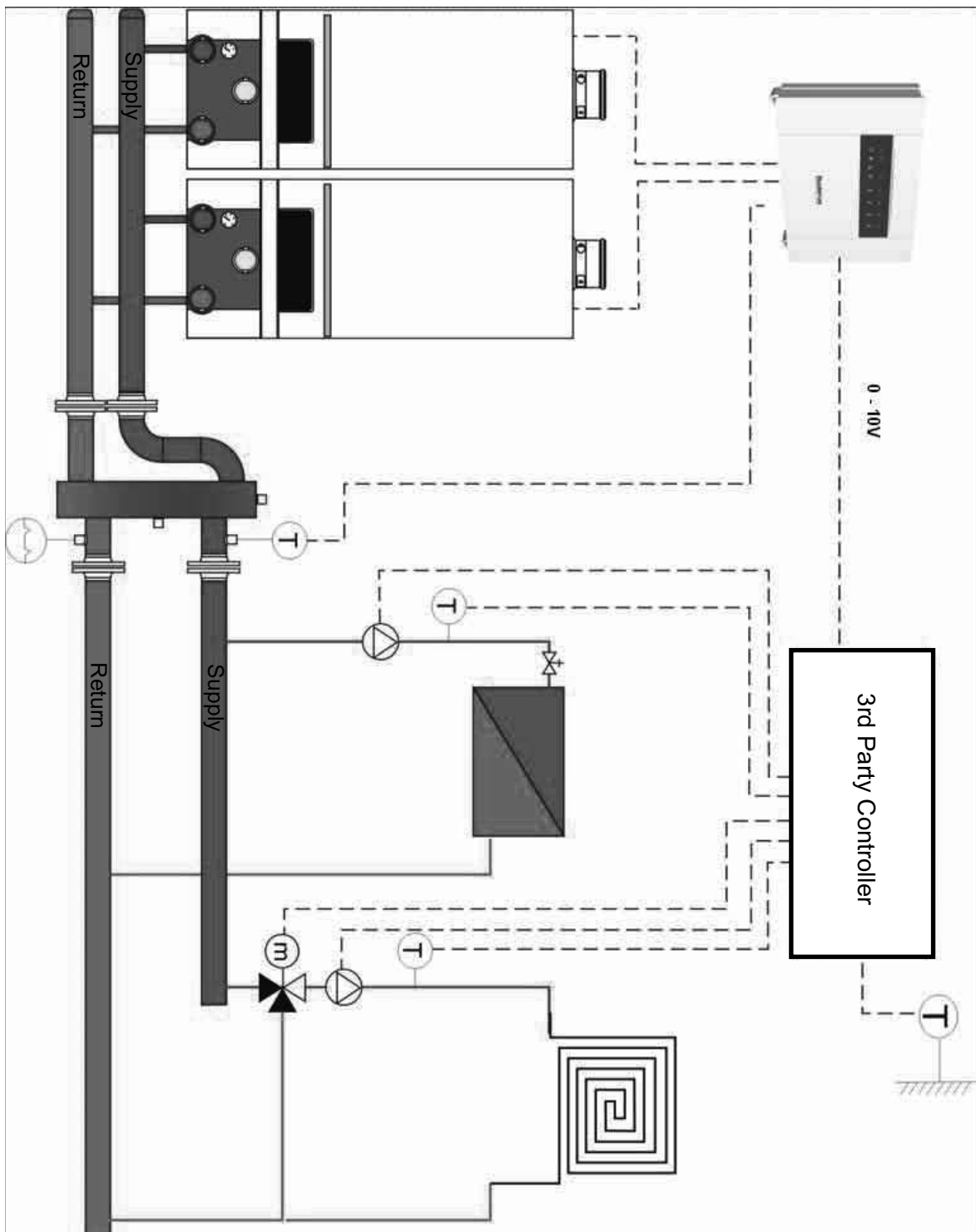


- see page 49 for matching wiring schematic

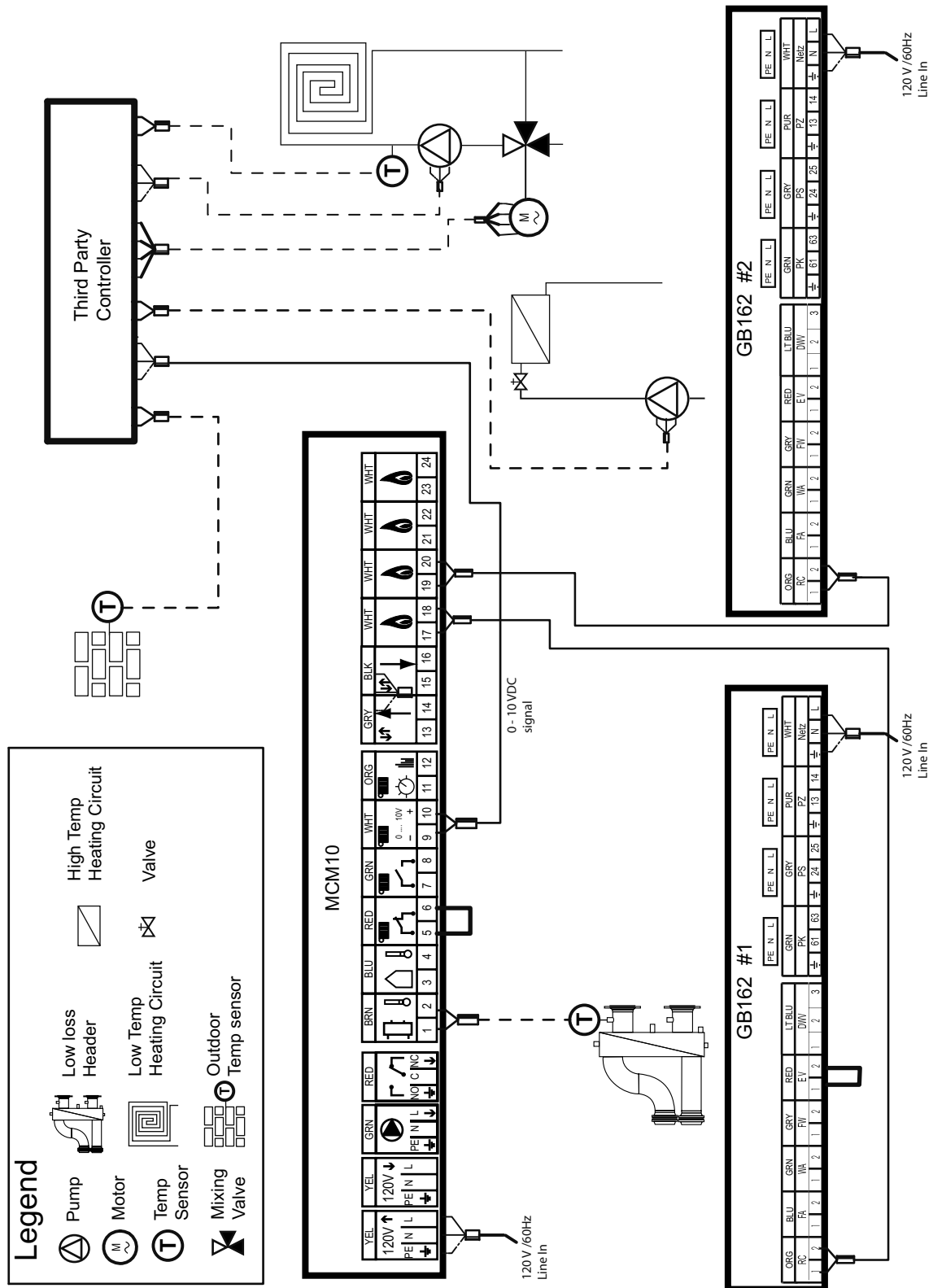
- wiring schematic for MCM10 with RC35 and EMS modules



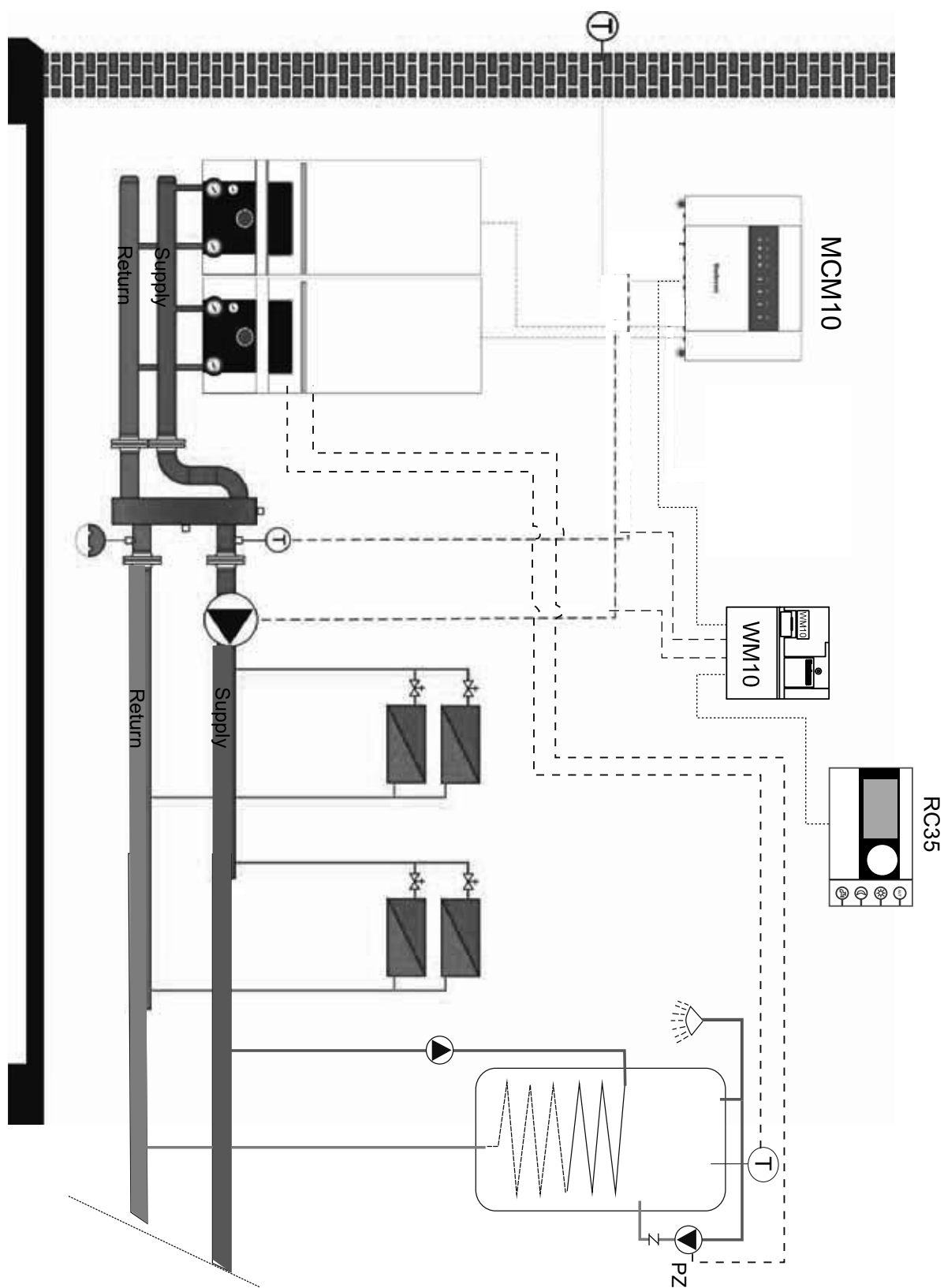
- MCM10 with third party controls:



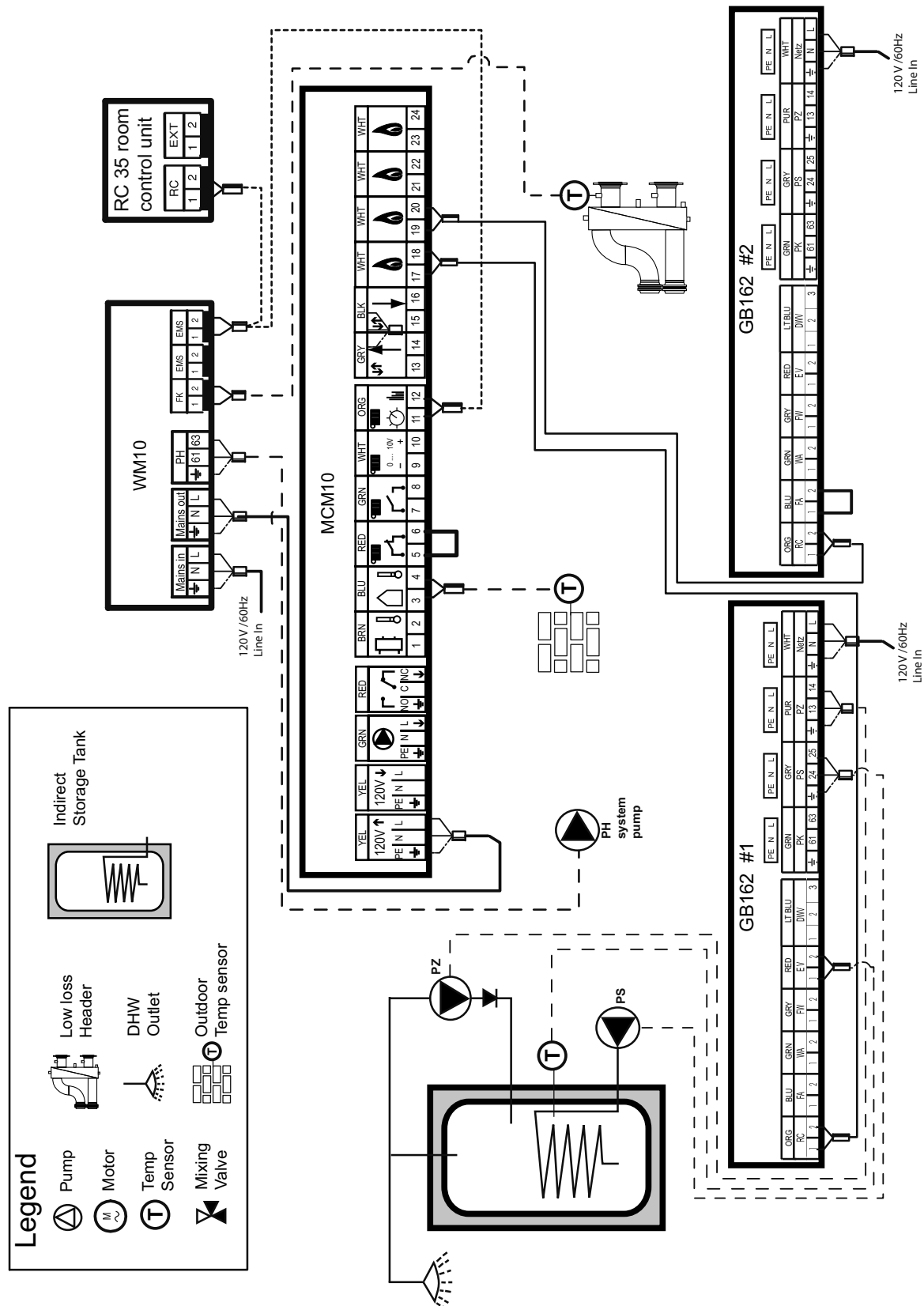
- Wiring schematic for MCM10 with third party controls:



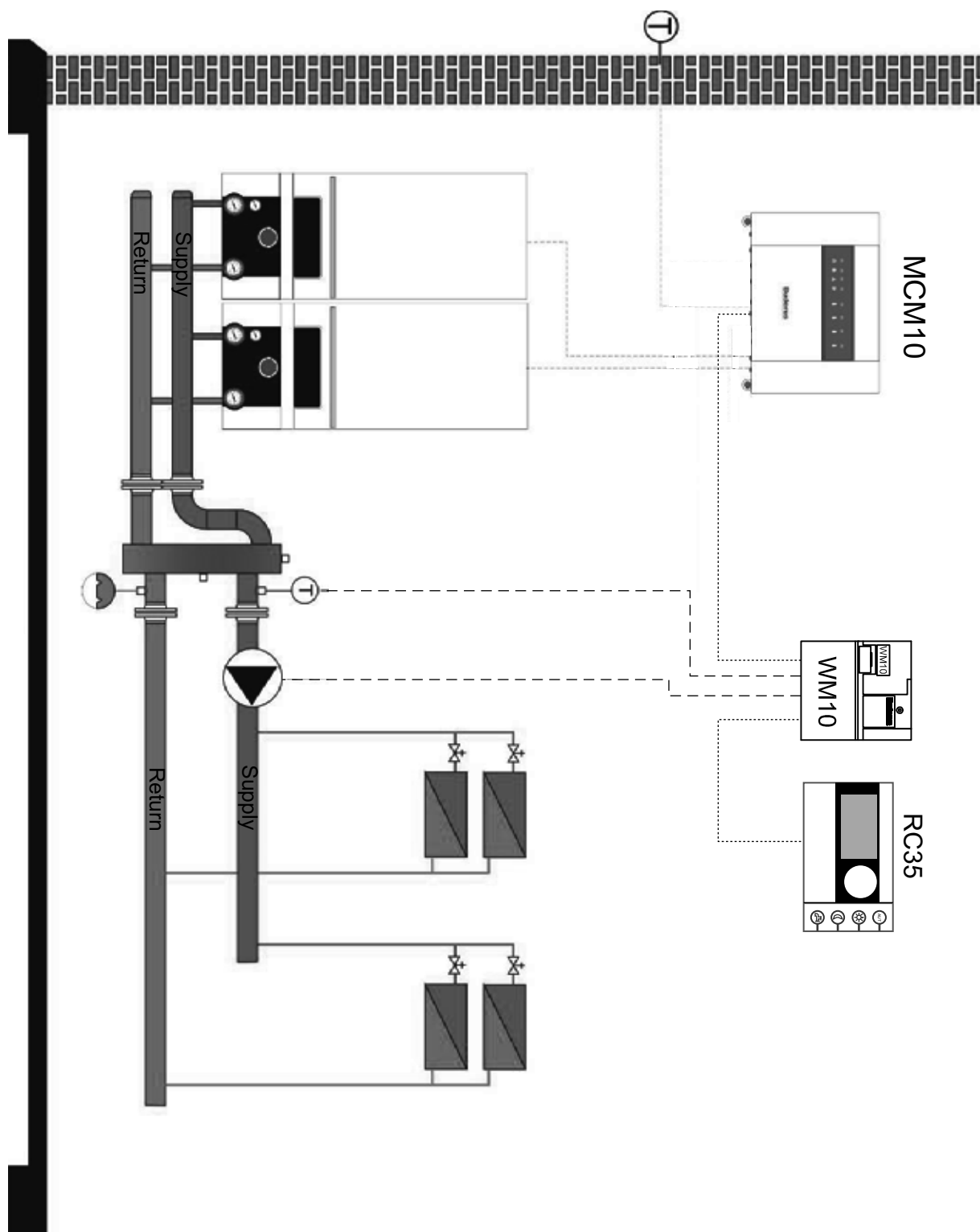
- MCM10 with domestic hot water:



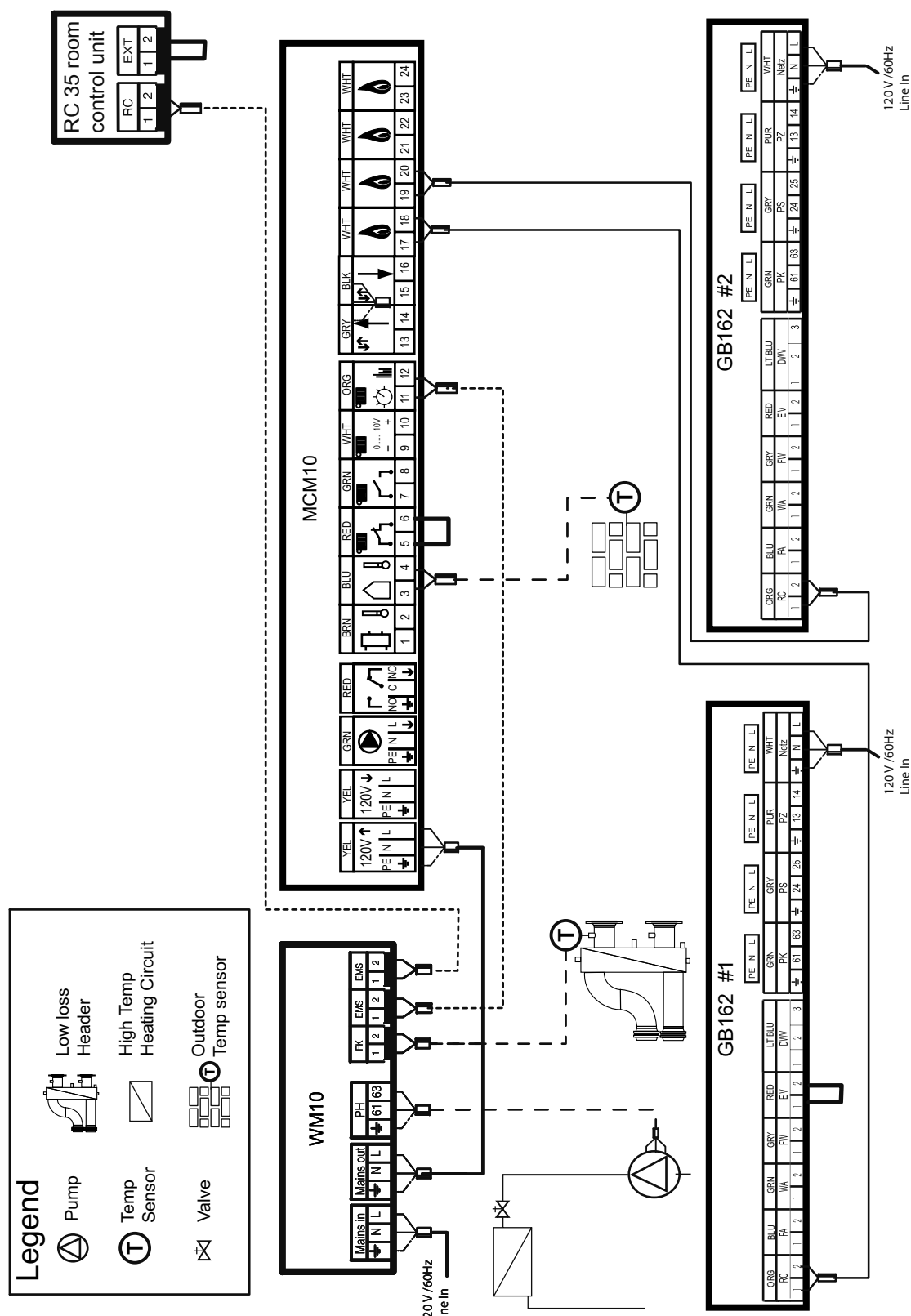
• Wiring schematic for MCM10 with domestic hot water:



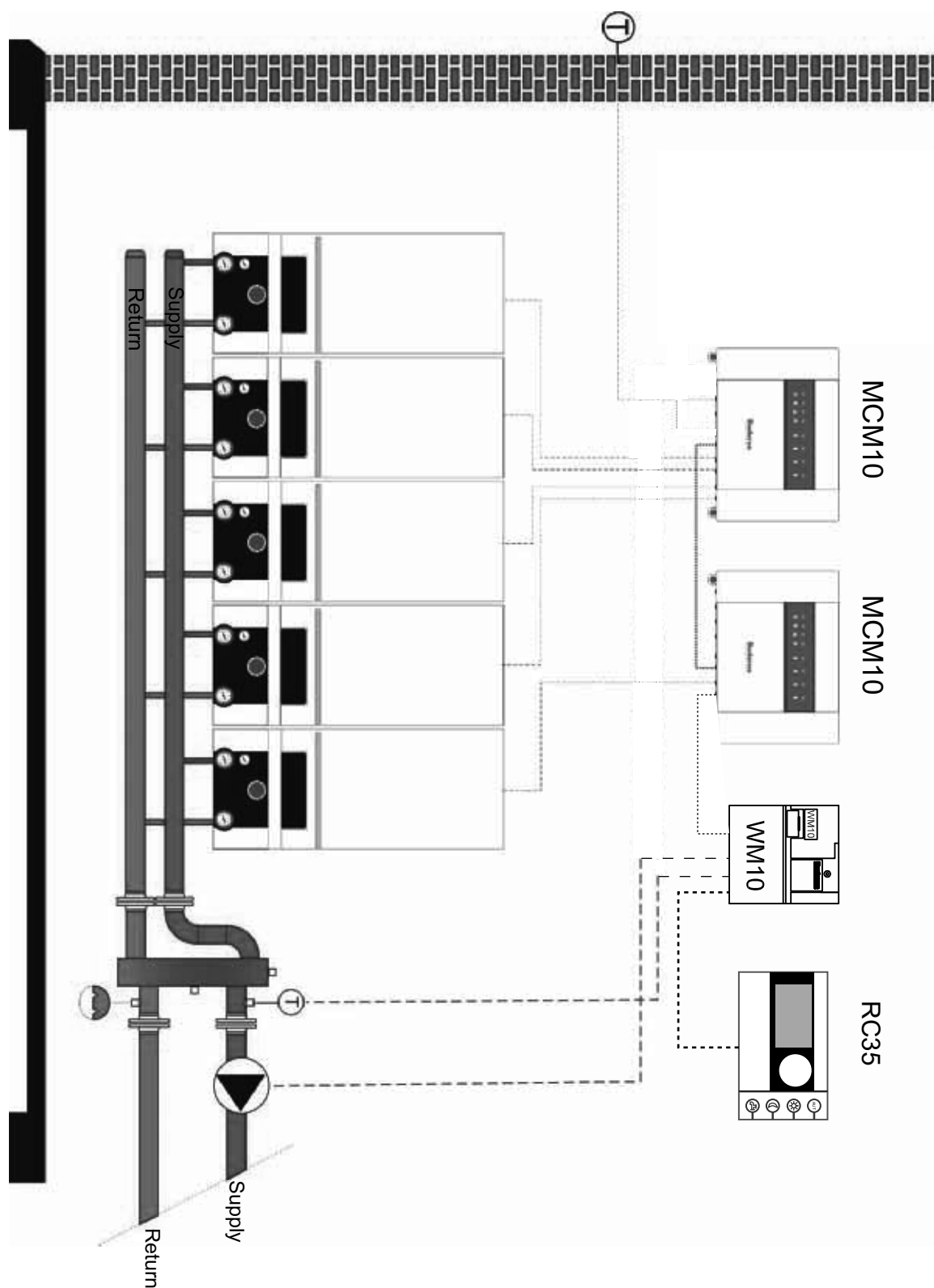
- MCM10 with RC35, one heating circuit and one system pump:



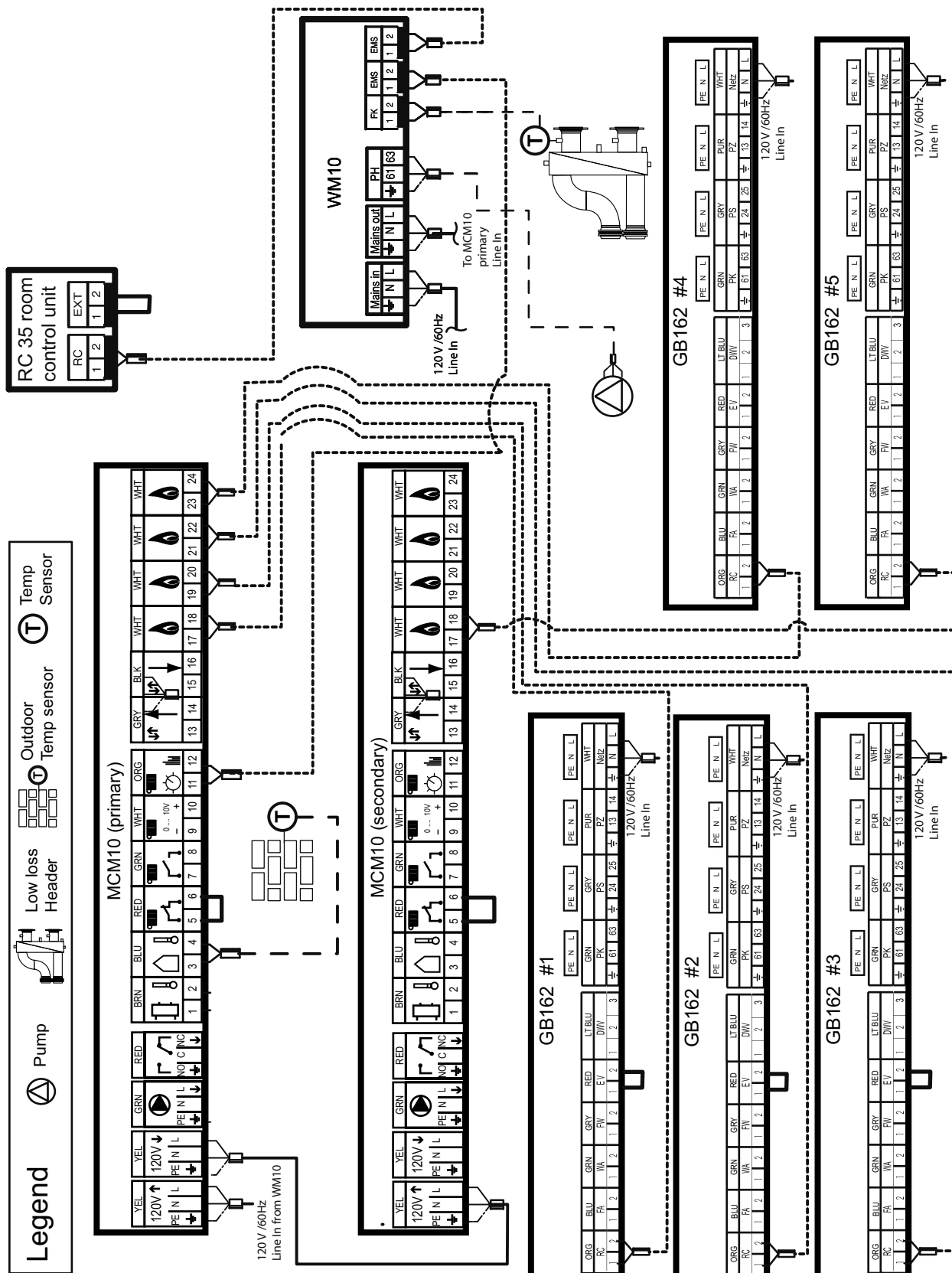
- Wiring schematic for MCM10 with RC35, one heating circuit and one system pump:



- Two MCM10's with RC35, one heating circuit and one system pump:



- Wiring Schematic for two MCM10's with RC35, one heating circuit and one system pump:



2.3 RC35 room control unit

2.3.1 Benefits of the RC35 room control unit

- **System benefits**

- uniform operation
- remote control at no additional charge
- time programs
- solar integration
- operating safety, emergency operation
- monitor
- maintenance message
- service information
- electronic STB

- **Innovations and benefits**

- more service and user friendly
 - text indicated guided operation
 - graphic supported display
 - initiation function test
 - contact data of the service provider can be entered for maintenance and error messages
- more efficiency
 - temporary temperature adjustment
 - up to 4 heating circuits (3 with mixer)
 - 2 proprietary programs
- more comfort
 - contact data of service provider
 - statistic function solar system and outdoor temperature

2.3.2 Description of the RC35 room control unit

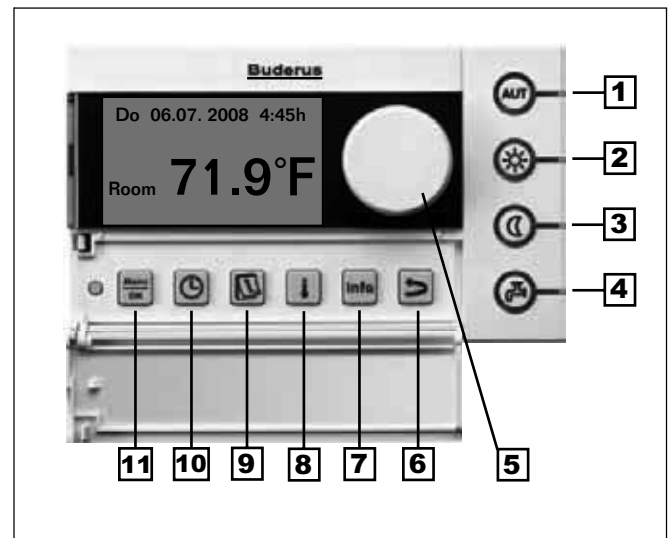
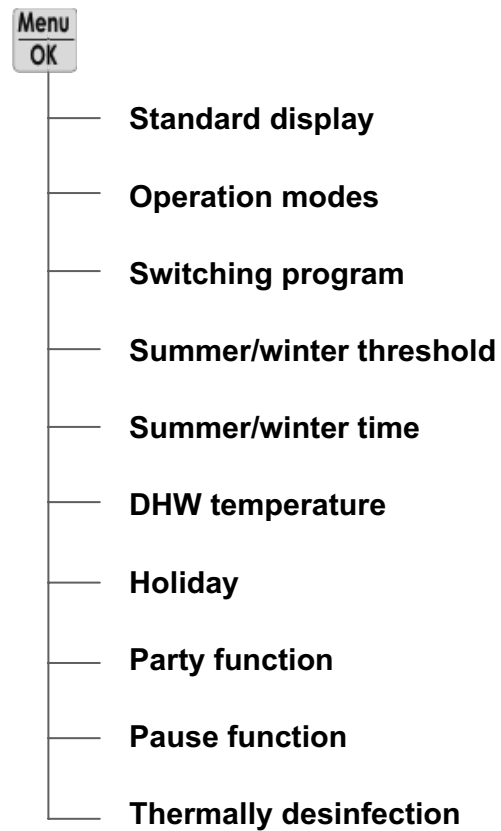
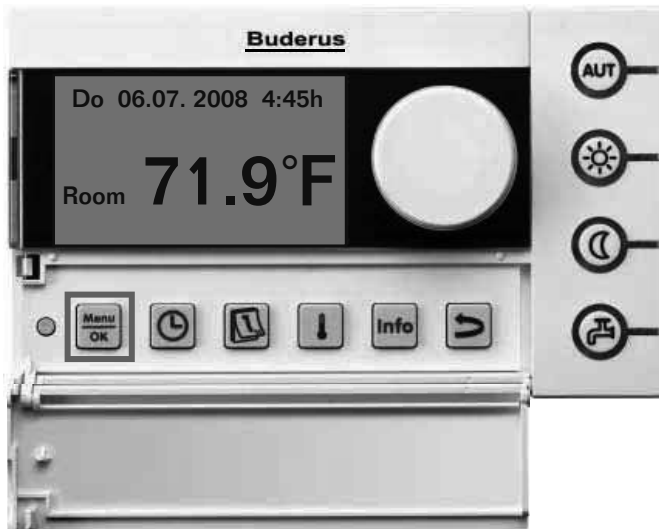


Figure 57 Description of the RC35 room control

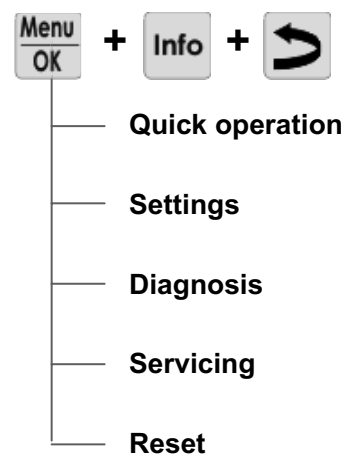
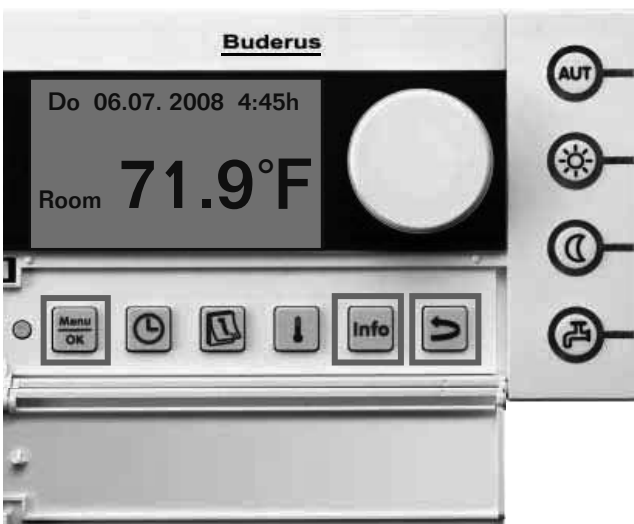
- 1: Automatic operation (switching program)
- 2: Continuous heating (day temp.)
- 3: Permanently reduced (night temp)
- 4: Heat up hot water once
- 5: Change temperature temporary
- 6: Back
- 7: Show data
- 8: Set day or night temperature
- 9: Set current date
- 10: Set current time
- 11: Open User menu

2.3.3 RC35 room control programming aspects

User menu:



Service menu:



2.3.4 RC35 room control settings

RC35 ways of controlling:

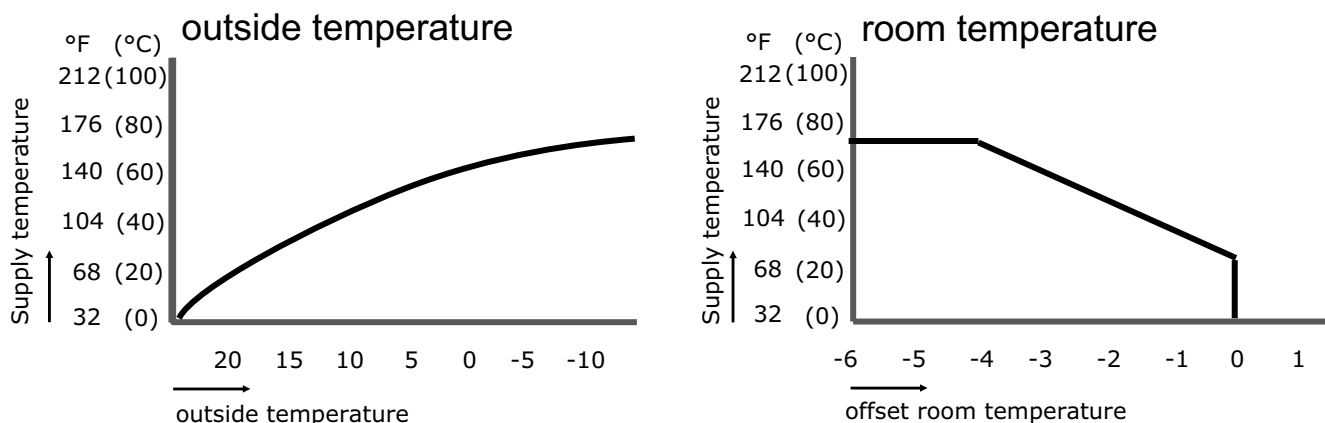


Figure 58 RC35 ways of controlling

RC35 Outside temperature damping

Outside temperature controlled

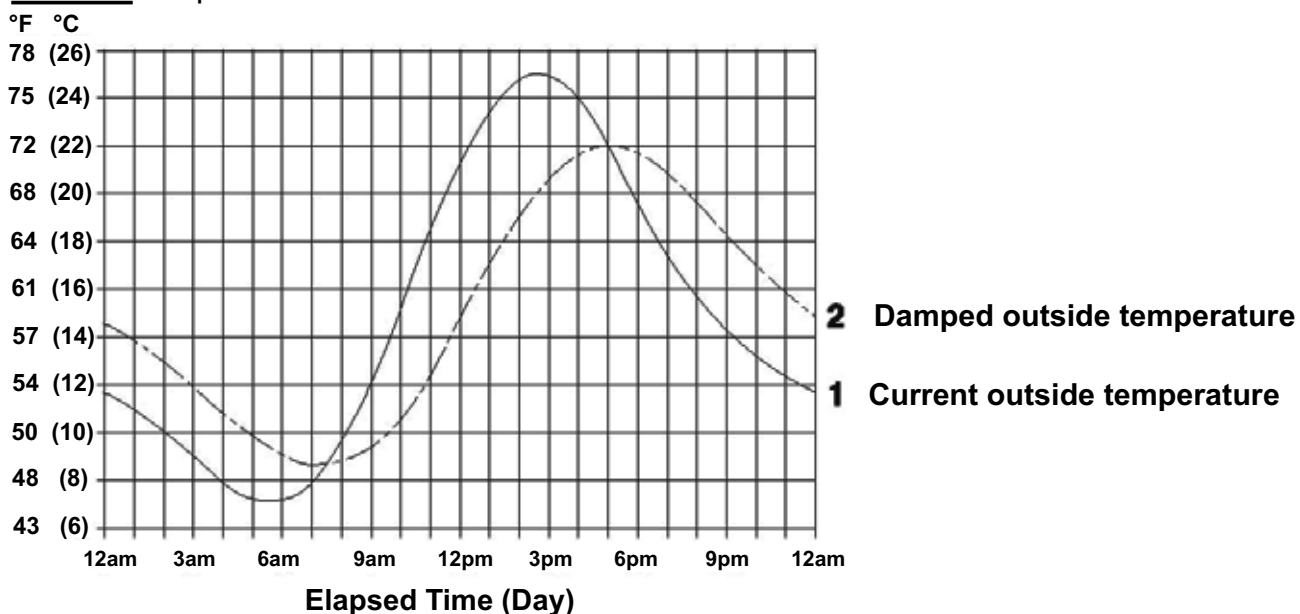


Figure 59 RC35 Outside temperature damping

RC35 Changing set point

Outside temperature controlled

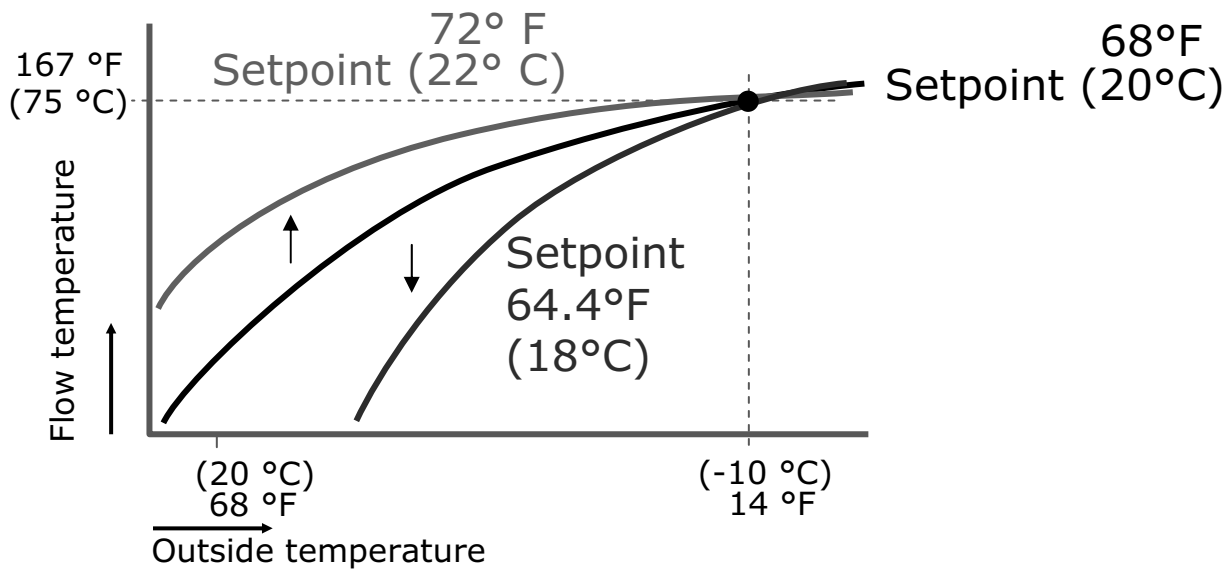


Figure 60

RC35 Changing set point

RC 35 Max. & min. flow temperature

Outside temperature controlled

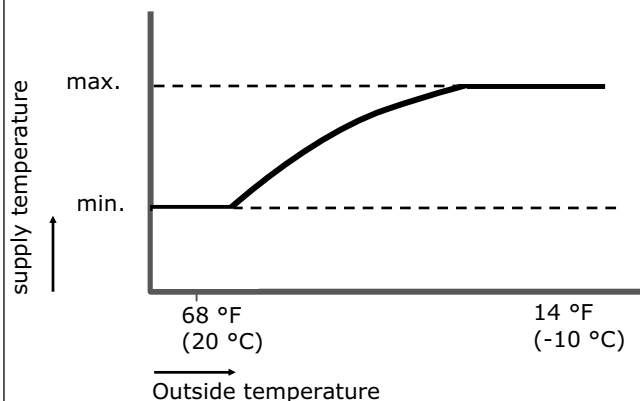


Figure 61 RC 35 Max and min flow temperature

RC 35 Max. & min. flow temperature

Room temperature controlled

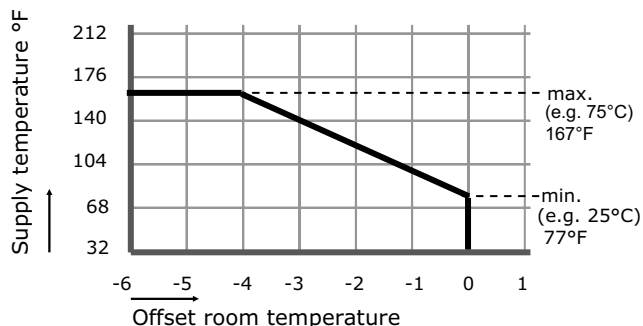


Figure 62 RC 35 Max and Min. flow temperature

RC 35 Room influence

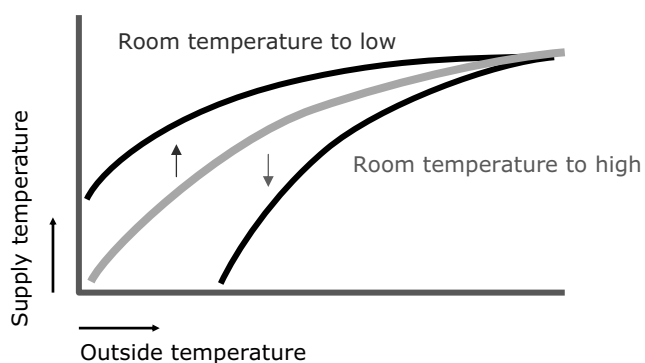


Figure 63 RC 35 Room influence

2.3.5 RC35 night set back and frost protection

Night Setback

The following are Night Setback possibilities:

Shutdown

- CH is switched off during the night. The (group) pump is switched off. Frost protection remains active.

Reduced

- CH operates during the night on a reduced night setpoint. The (group) pump is running continuous.

Room setback

- CH is switched off during the night. If the room temperature drops below the night setpoint, the CH is switched in reduced night setback operation.

Outdoor setback

- CH is switched off during the night. If the outside temperature drops below an adjustable value, the CH is switched in reduced night setback operation.

Frost protection

The following are Night Setback possibilities:

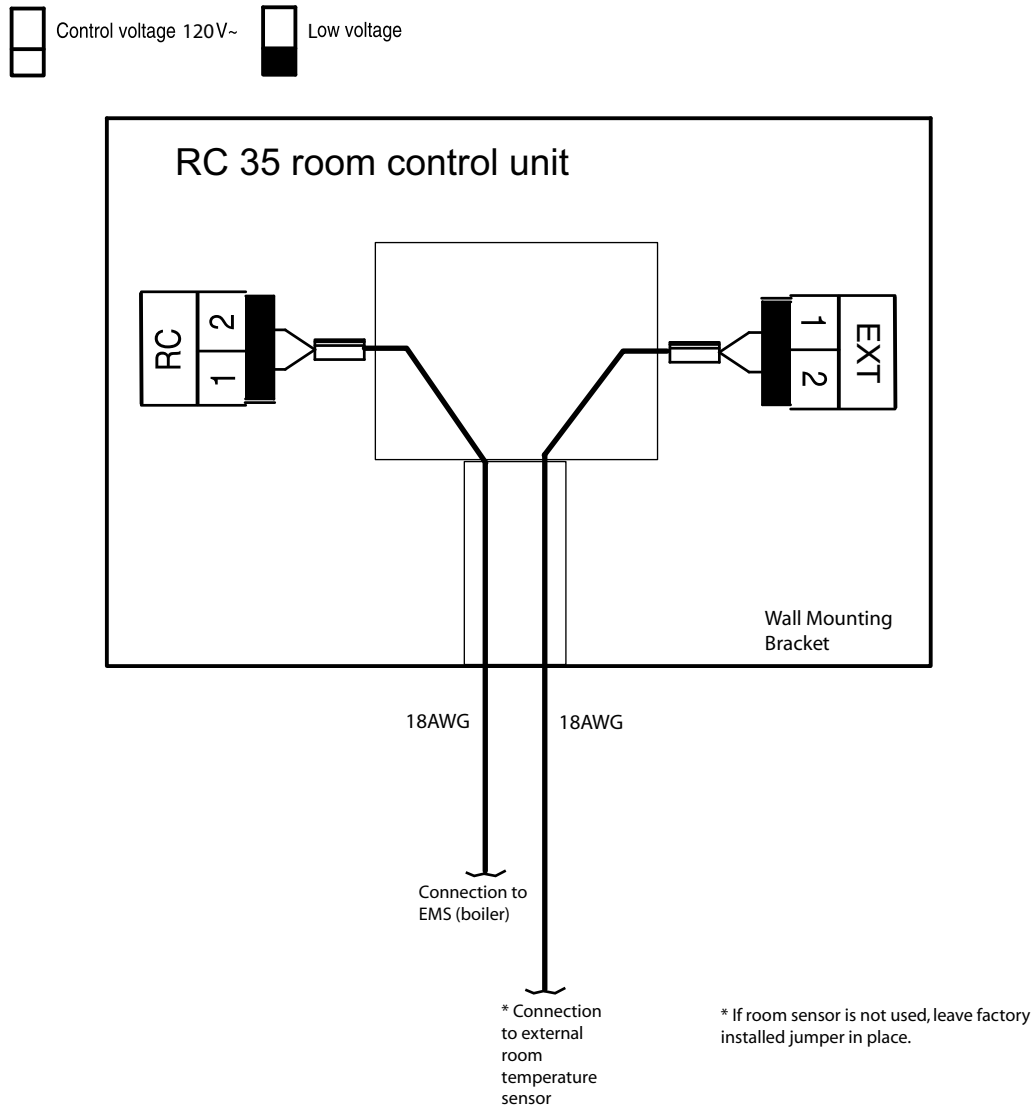
On outside temperature

- If the outside temperature drops below a programmable outside temperature, the (heating circuit) pump will go in operation.

On room temperature

- If the room temperature drops below 41°F (5°C), the (heating circuit) pump will go in operation till the room temperature rises above 44.6°F (7°C).

2.3.6 RC35 wiring diagram



Note
 Implement the installation, fuse protection, mains isolator, emergency stop switches and protective measures in accordance with local/national regulations.
 Warning! Ground yel/grn must not be used as a control line. Ensure phases are not interchanged.
 Never use shockproof plugs.

1) The total current must not exceed 5A.

2.3.7 EMS modules

- Mixing Module MM10

This module MM10 extends the heating system EMS over a mixed heating circuit.

Features of the MM10:

- There is the possibility to control the heating circuits by the room temperature as well as by the outdoor temperature.
- Keyed and color coded connecting plugs
- Communication with EMS -data bus.
- Assembly: In the control system or at the wall.
- Operation mode and failure signal via LED.
- Maximum 3 modules in a heating system.
- Requires RC35 user interface.



Figure 64 Mixer Module MM10

- Low loss header module WM10

The low loss header module WM10 regulates the hydraulic isolation between the boiler circuit and the heating circuit.

Features of the WM10:

- The function is accessible with a digital time switch in the RC35 for the unmixed heating circuit.
- Keyed and color coded connecting plugs
- Communication with EMS -data bus.
- Assembly: In the control system or at the wall.
- Operation mode and failure signal via LED.
- Maximum 1 module in a heating system.



Figure 65 Low loss header module WM10

- Solar module SM10

The solar module SM10 integrates a solar system into the heating system Logamatic EMS.

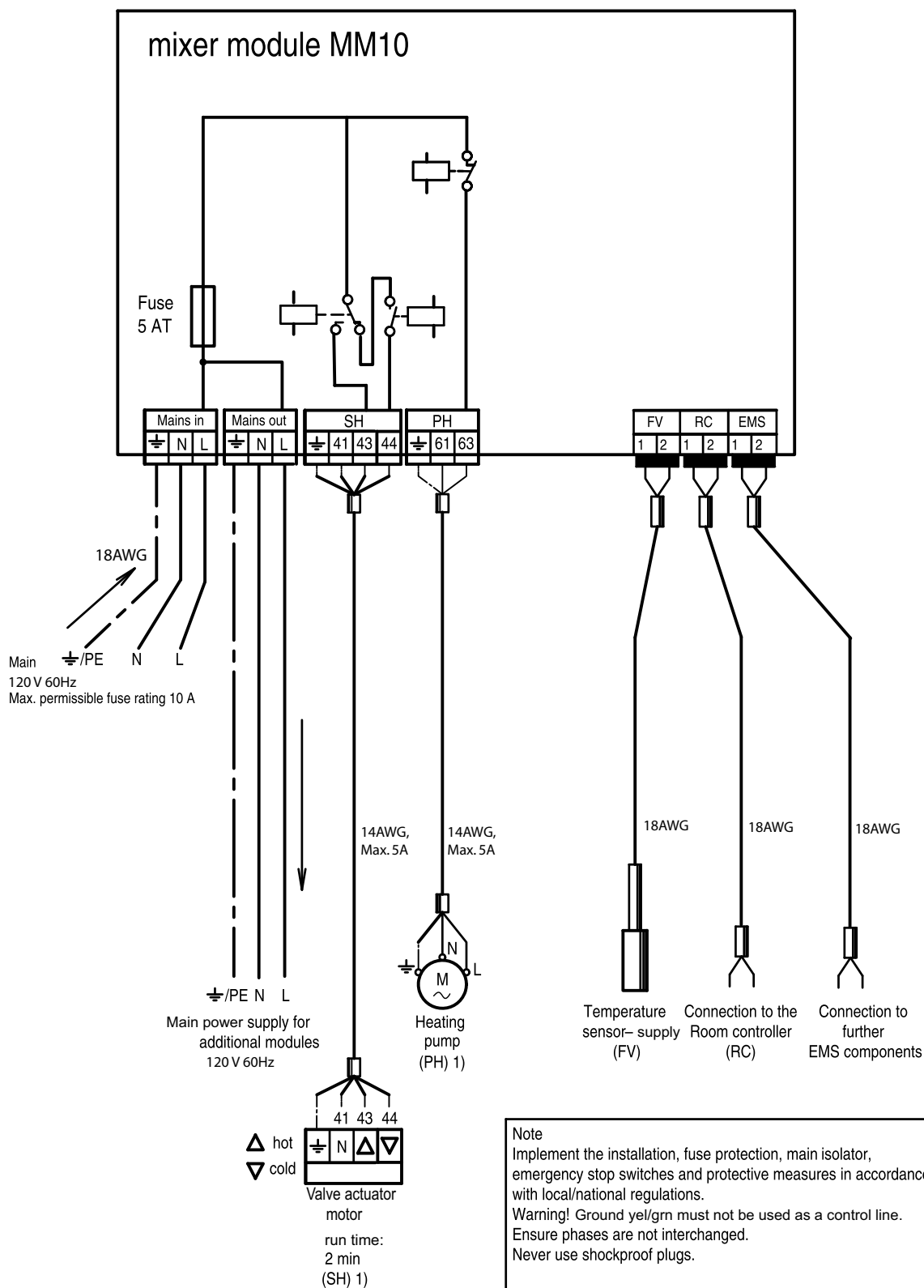
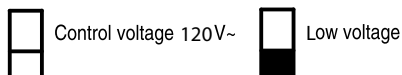
Features of the SM10:

- Optimized the hot water function
- Keyed and in color coded connecting plugs
- Communication with EMS -data bus
- Installation: In the control system or at the wall
- Operation mode and failure signal about LED
- Maximum 1 module in a heating system

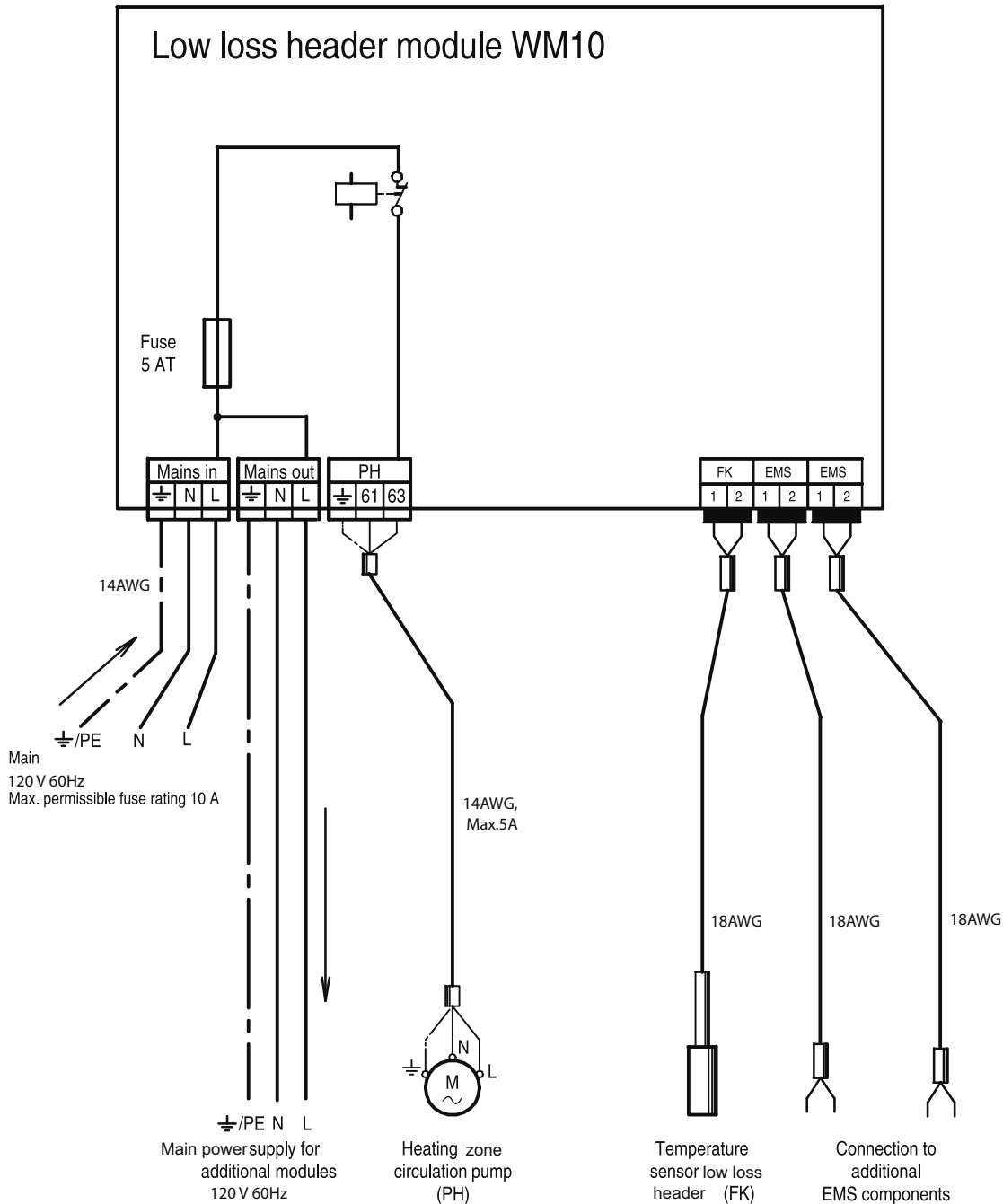
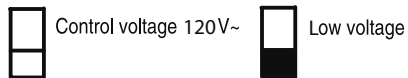


Figure 66 Solar module SM10

2.3.8 Mixer module MM10 wiring diagram

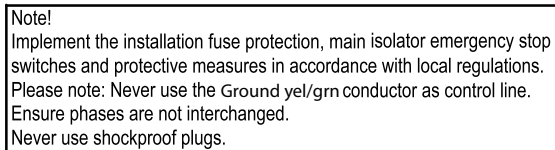


2.3.9 Low loss header module WM10 wiring diagram



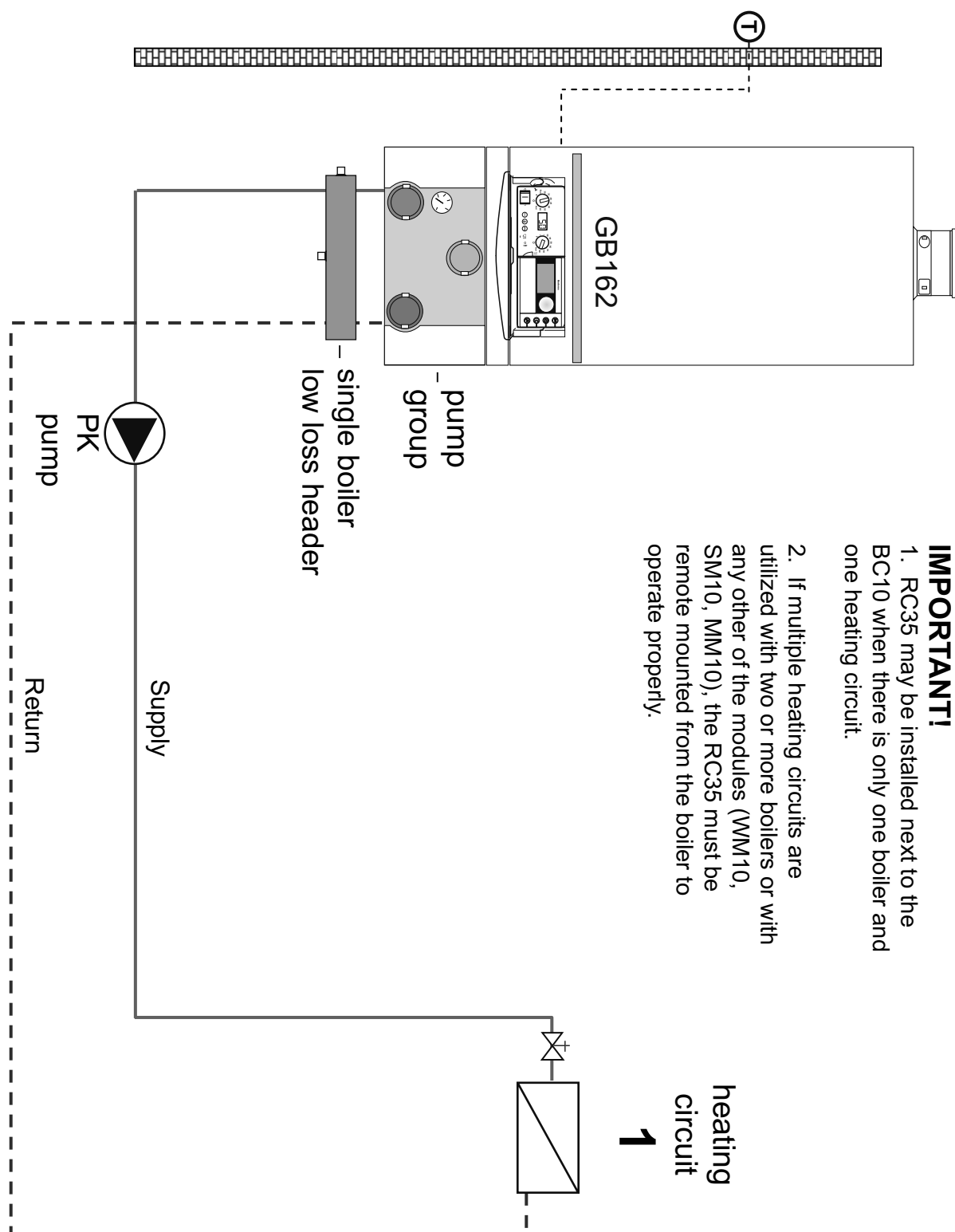
Note
Implement the installation, fuse protection, main isolator, emergency stop switches and safety measures in accordance with local/national regulations.
Warning! Ground yel/grn must not be used as a control line.
Ensure phases are connected correctly.
Never use shockproof plugs.

2.3.10 Solar module SM10 wiring diagram



2.3.11 RC35 piping and wiring diagrams

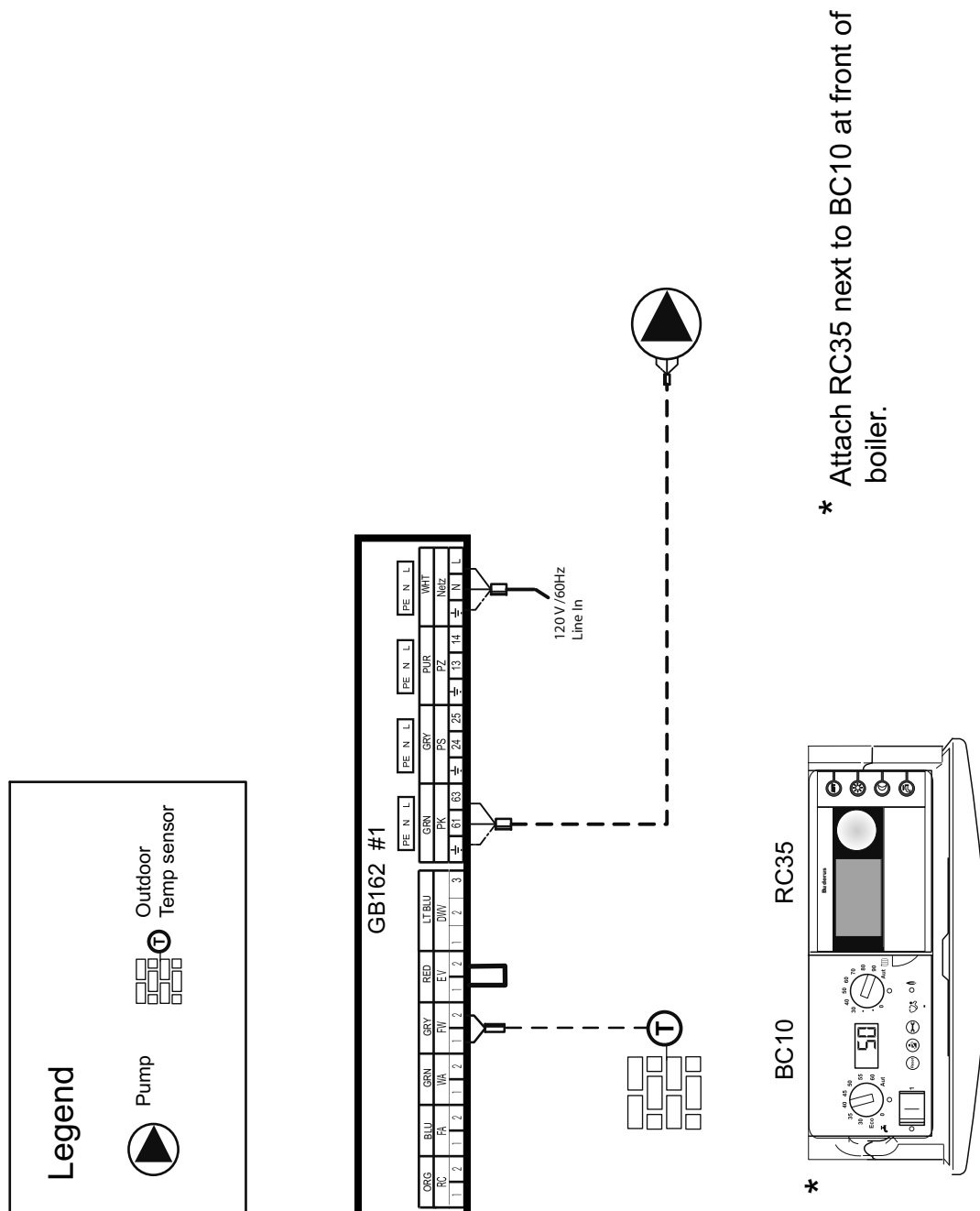
- RC 35 with one heating circuit:



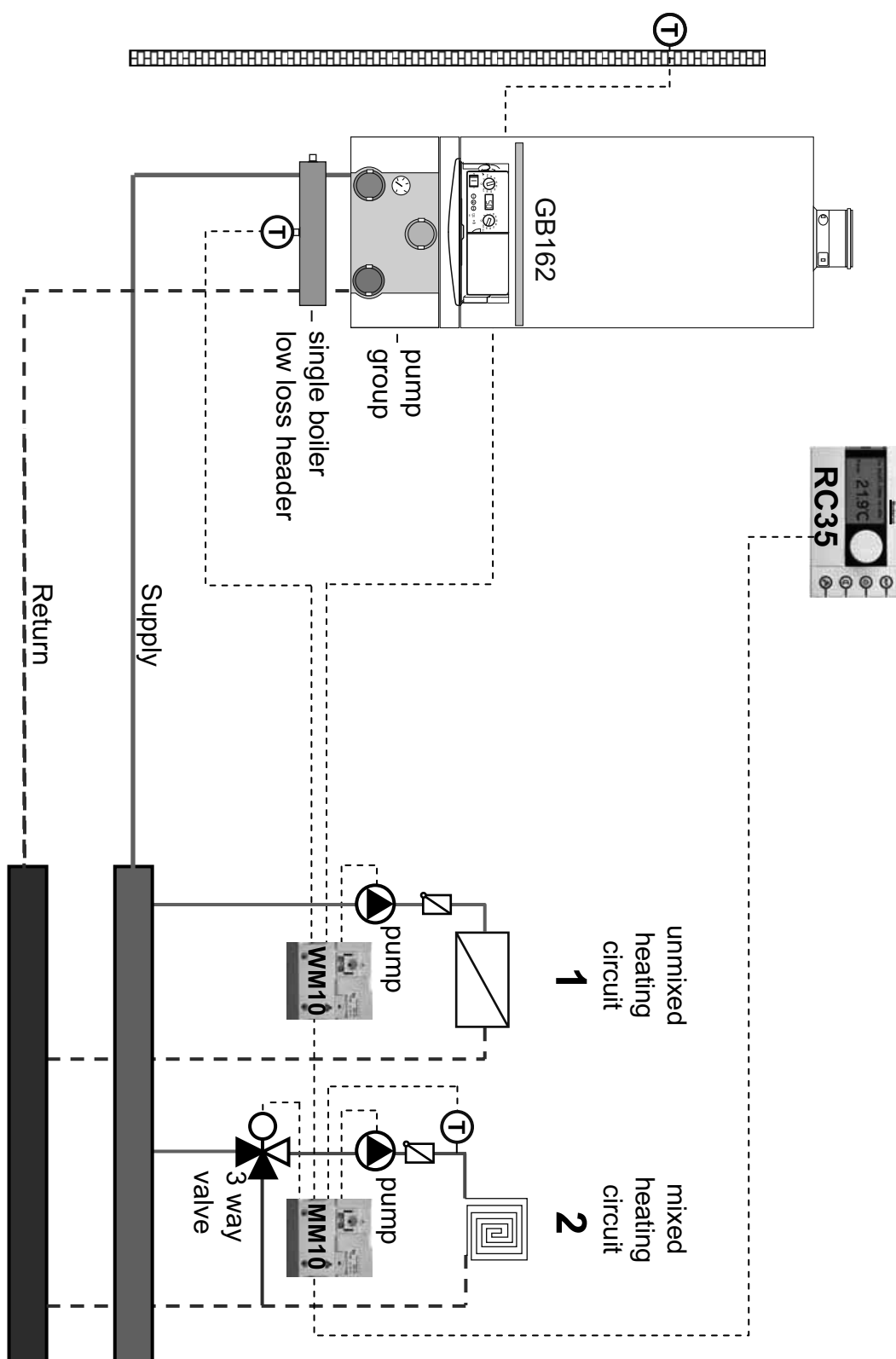
IMPORTANT!

1. RC35 may be installed next to the BC10 when there is only one boiler and one heating circuit.
2. If multiple heating circuits are utilized with two or more boilers or with any other of the modules (WM10, SM10, MM10), the RC35 must be remote mounted from the boiler to operate properly.

- **Wiring schematic for RC 35 with one heating circuit:**

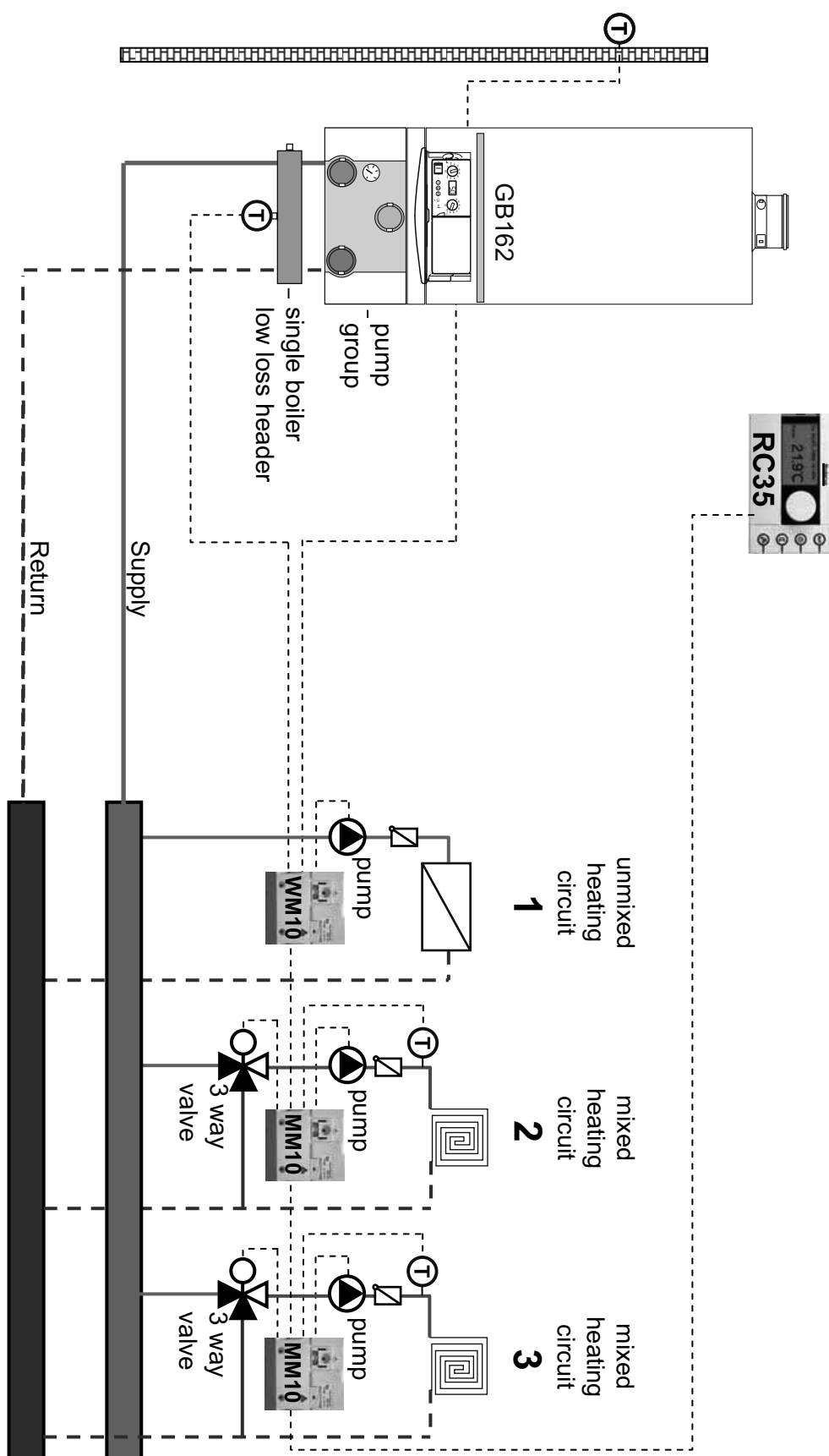


- RC 35 with two heating circuits:

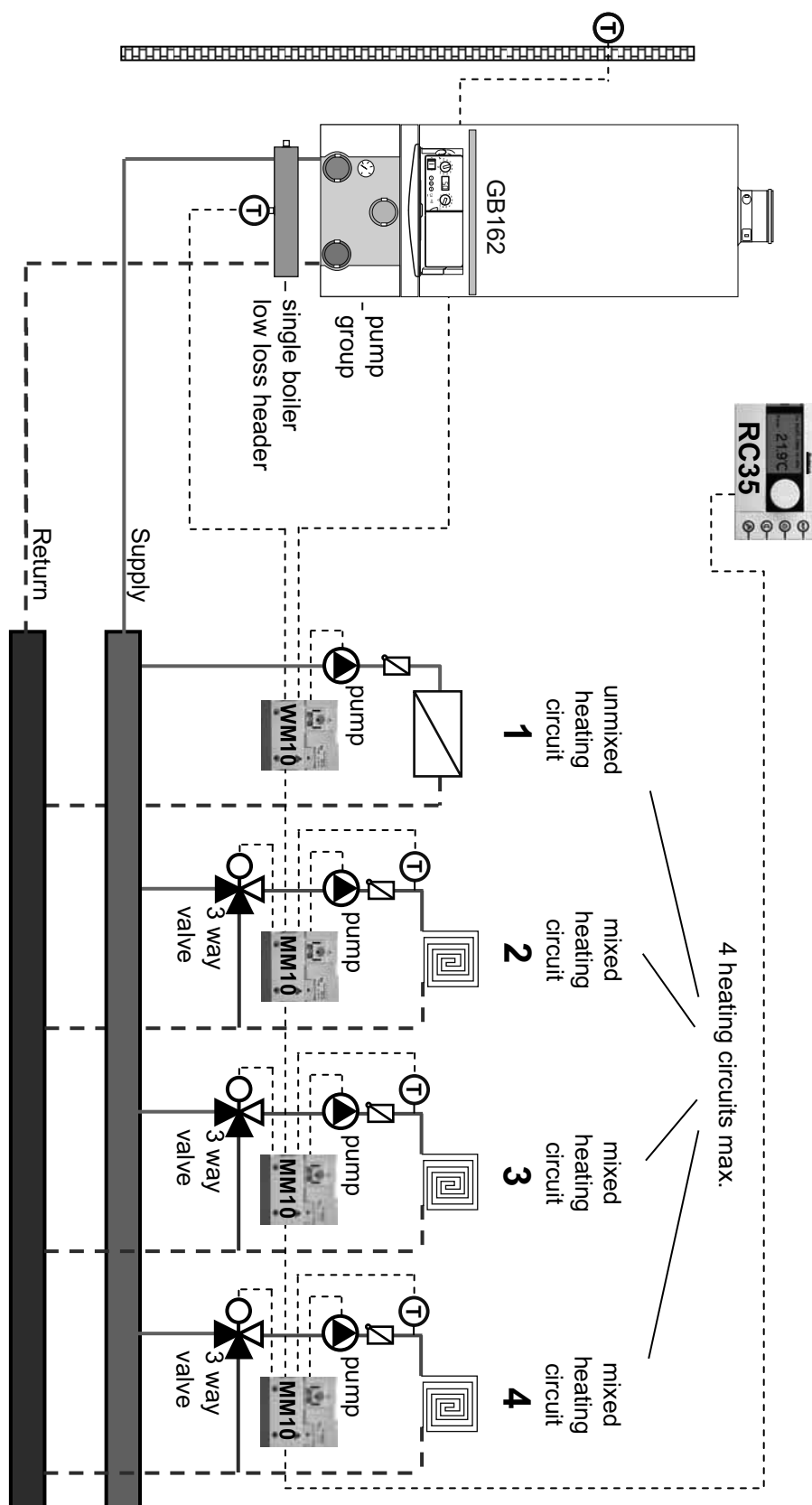


-
- Legend**
- Pump
 - Motor
 - Temp Sensor
 - Mixing Valve
 - Low loss Header
 - Low Temp Heating Circuit
 - High Temp Heating Circuit
 - Outside Temp Sensor
 - RC 35 room control unit
- GB162 #1**
- | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|--------|-----|-----|--------|--------|--------|--------|
| ORG | BLU | GRN | GRY | RED | LT BLU | GRN | GRY | PE N L | PE N L | PE N L | PE N L |
| RC | FA | I/A | PI | EV | DW | PK | PS | GRN | GRY | PUR | WHT |
| 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
- 120 V / 60 Hz
- MM10**
- | | | | | | | |
|----------|-----------|----|----|----|----|-----|
| Mains in | Mains out | SH | PH | FV | RC | EWS |
| N | N | 41 | 43 | 44 | 61 | 63 |
| 1 | 2 | 1 | 2 | 1 | 2 | 1 |
| 1 | 2 | 1 | 2 | 1 | 2 | 1 |
- WM10**
- | | | | | | |
|----------|-----------|----|----|-----|-----|
| Mains in | Mains out | PH | FK | EWS | EWS |
| N | N | 61 | 63 | 1 | 2 |
| 1 | 2 | 1 | 2 | 1 | 2 |
| 1 | 2 | 1 | 2 | 1 | 2 |
- RC 35 room control unit**
- | | |
|----|-----|
| RC | EXT |
| 1 | 2 |
| 1 | 2 |

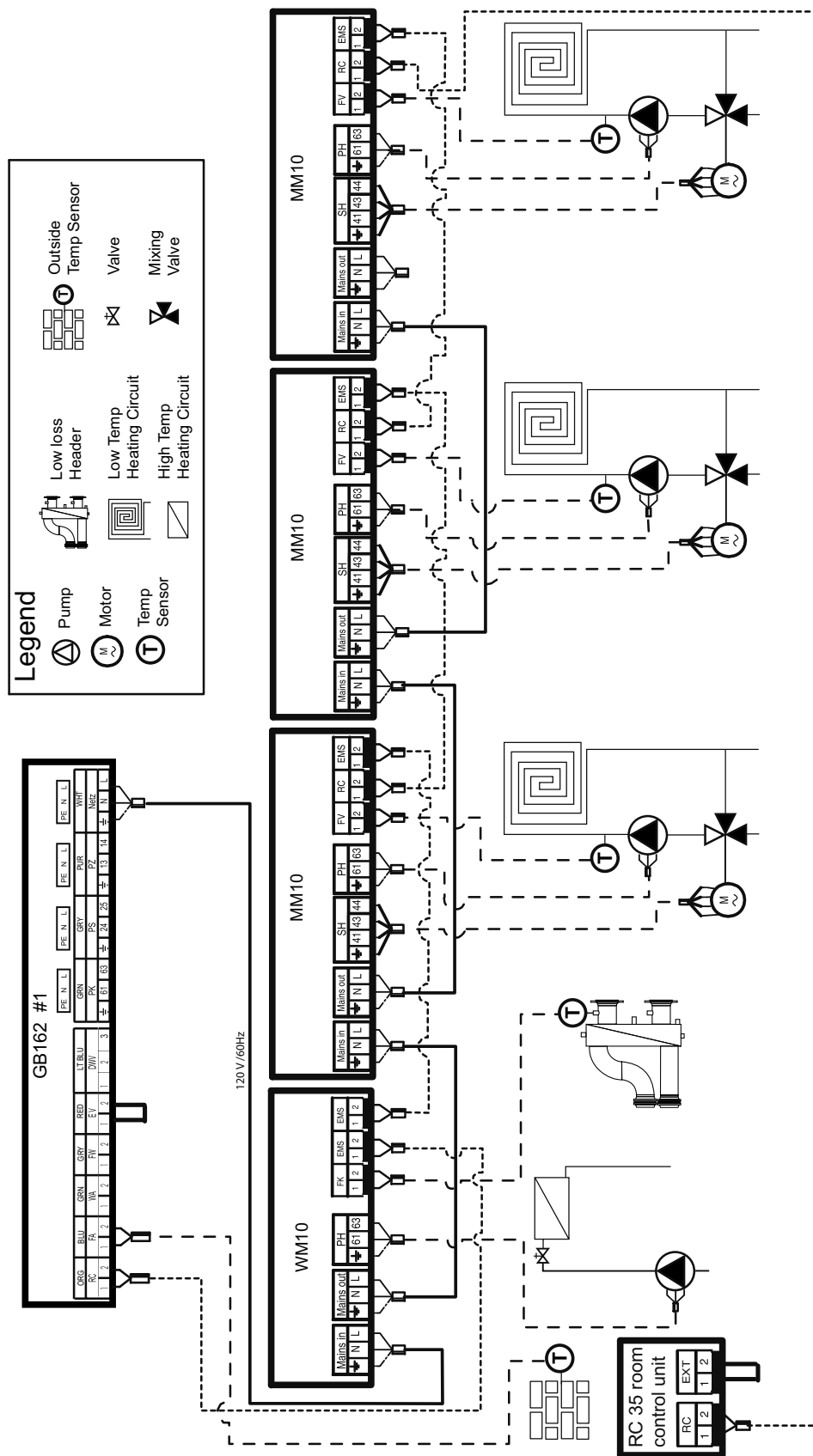
- RC 35 with three heating circuits:



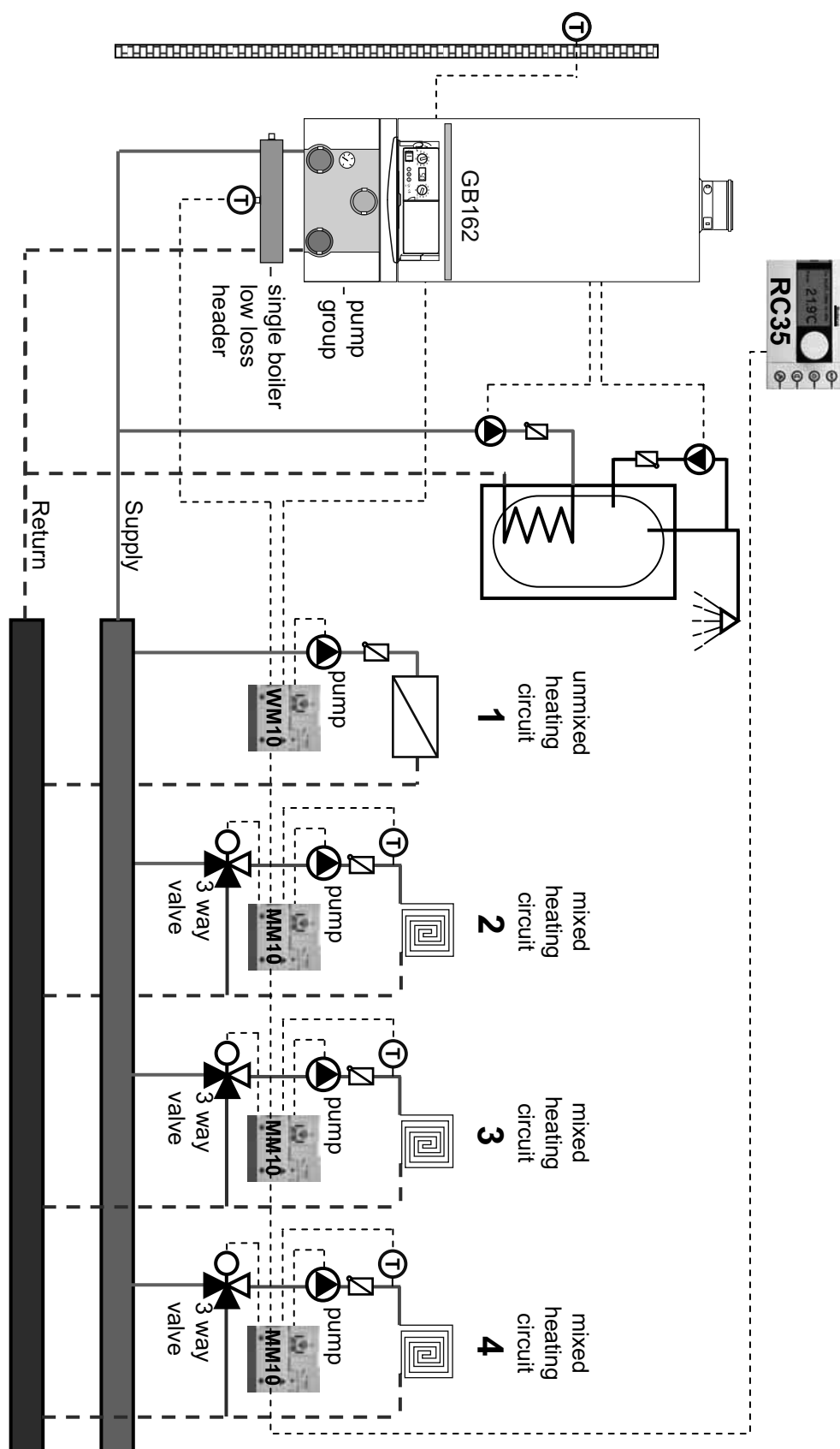
- RC 35 with four heating circuits:



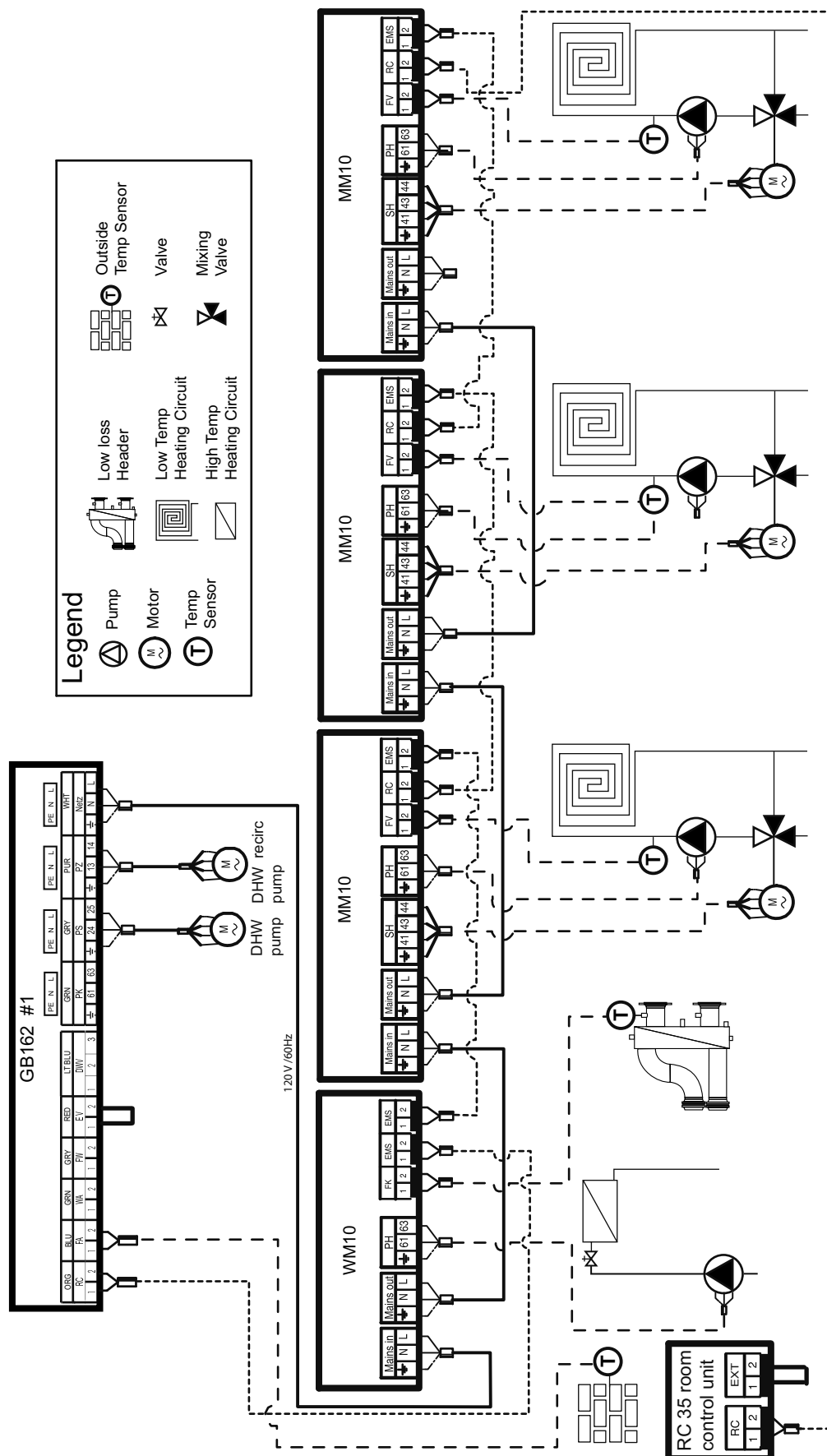
- **Wiring schematic for RC 35 with four heating circuits:**



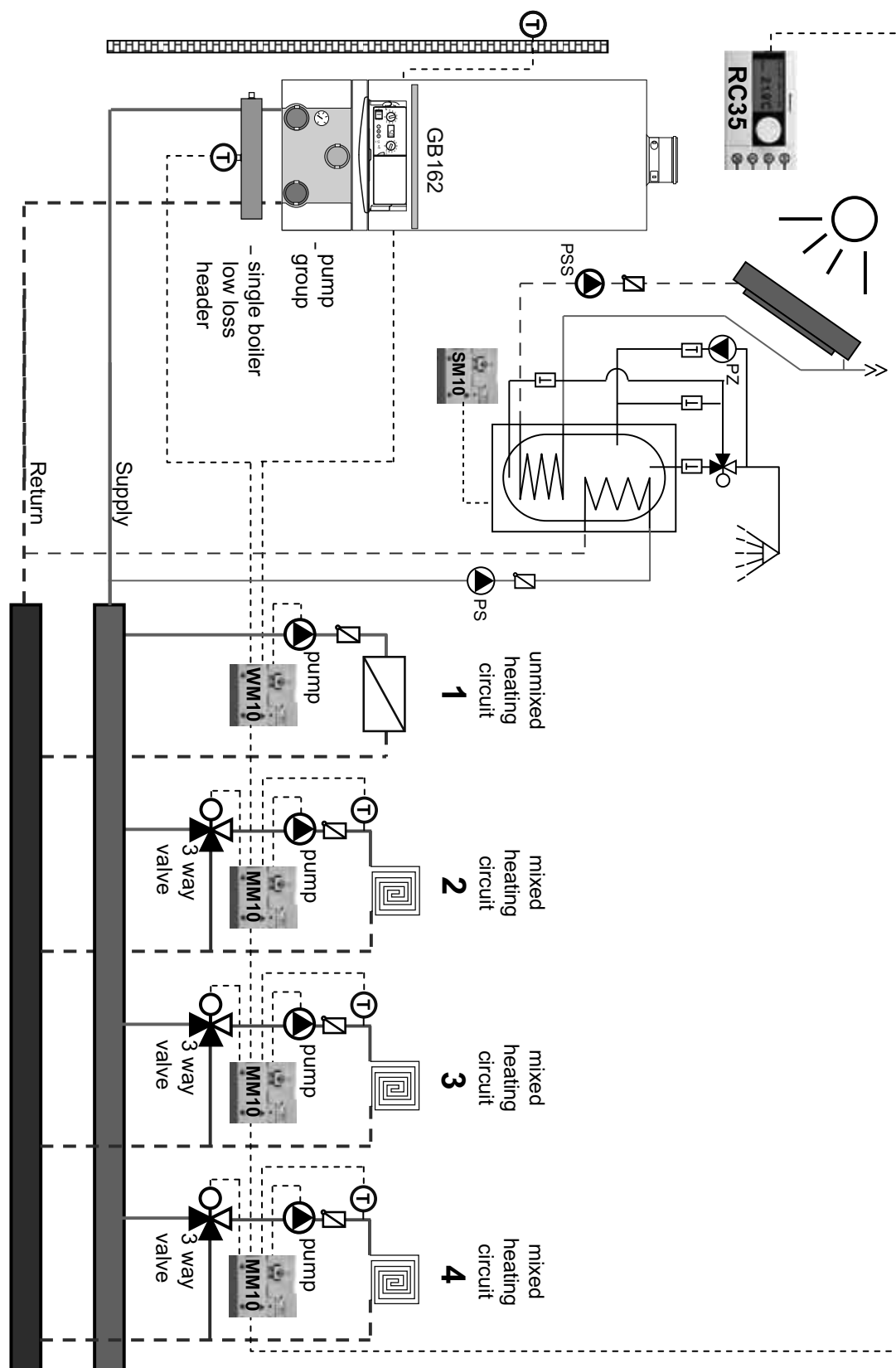
- RC 35 - 4 heating circuits with DHW loop:



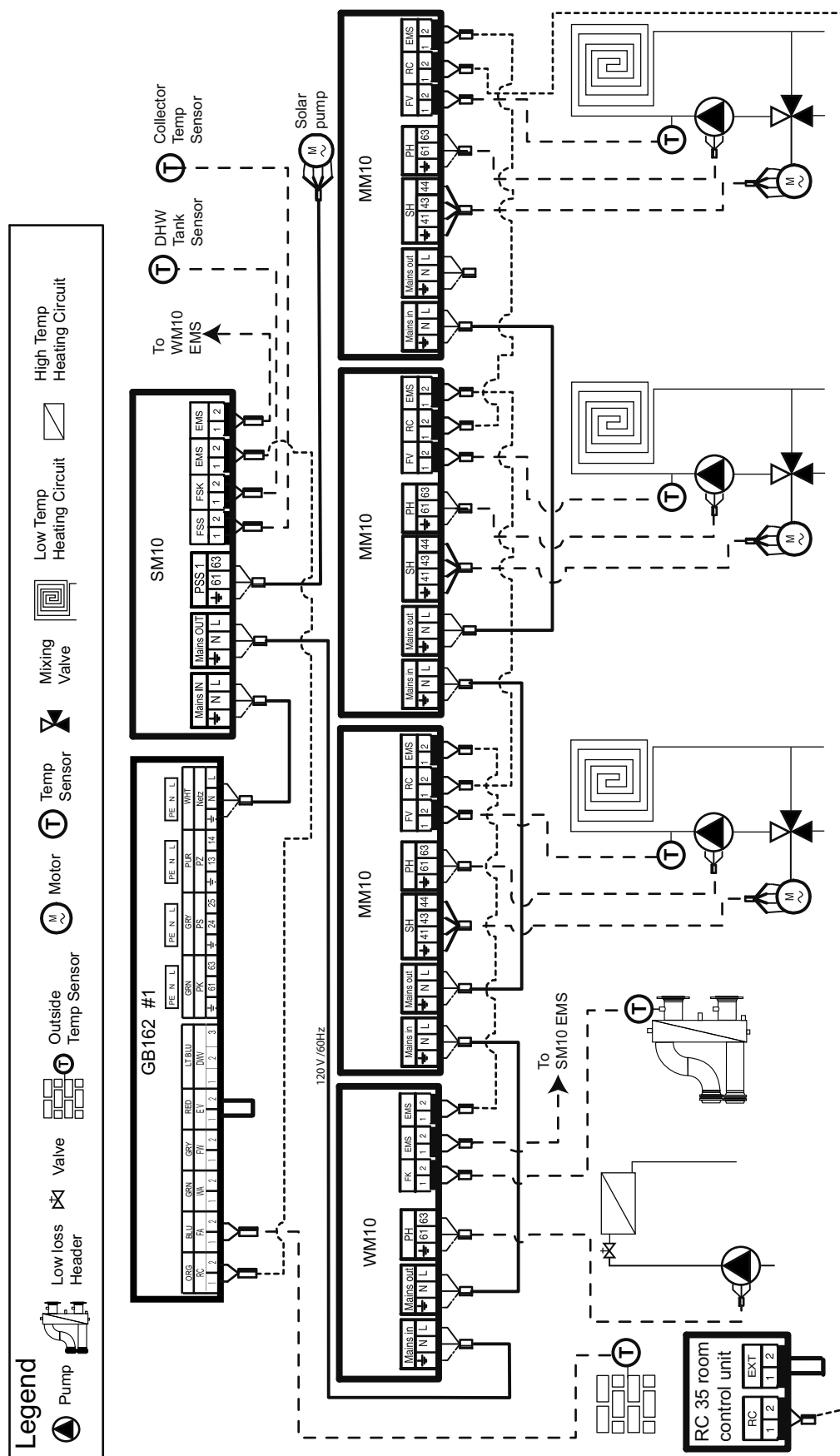
- Wiring schematic for RC 35 - 4 heating circuits with DHW loop:



- RC 35 - 4 heating circuits, DHW and solar loop:



- Wiring schematic for RC 35 - 4 heating circuits, DHW and solar loop:



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