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CI/SfB
(56.3)
June 2010
UF430

thermoboard

Underfloor heating & cooling solutions by Wavin

Control System

Installation and Operation Guide

FOR RESIDENTIAL AND LIGHT COMMERCIAL APPLICATIONS

wavin

About Your UFH Control System

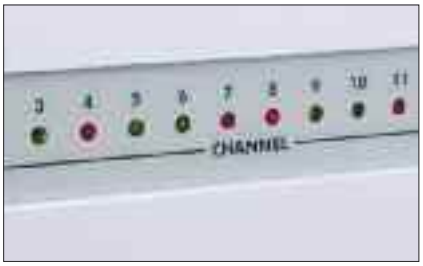
Introduction

Checking the controls

Thank you for your purchase of the Wavin control system. Please read through this installation and operation guide before beginning any works involving this control system.

Only competent persons with certification recognised under Building Regulations - Part P should carry out electrical installation or servicing work. Other persons are not permitted to open the control centre cover and/or make any modifications.

It is important that the controls are checked upon delivery, and that any damaged or missing items are reported immediately. Any claims registered more than 72 hours after delivery will not be accepted.



Each control centre box should contain the following items:

- 1 x 14 channel control centre
- 3 x 40mm screws
- 3 x 8mm x 40mm Rawlplugs
- 1 x spare fuse (T 400mA 250V)
- 1 x drilling pattern for mounting the control centre

Each thermostat box should contain the following items:

- 1 x thermostat
- 2 x 30mm screws
- 2 x 6mm x 30mm Rawlplugs

Installers: Please pass this guide to the end user or leave it with the UFH manifold after installation.

Thermoboard Project Reference Number: .....

Plumber

Name: .....

Company: .....

Address: .....

Postcode: .....

Tel: .....

.....

Electrician

Name: .....

Company: .....

Address: .....

Postcode: .....

Tel: .....

.....

SALES AND TECHNICAL ENQUIRIES
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Contents

Further Information, Sales and Technical Enquiries

Please contact:

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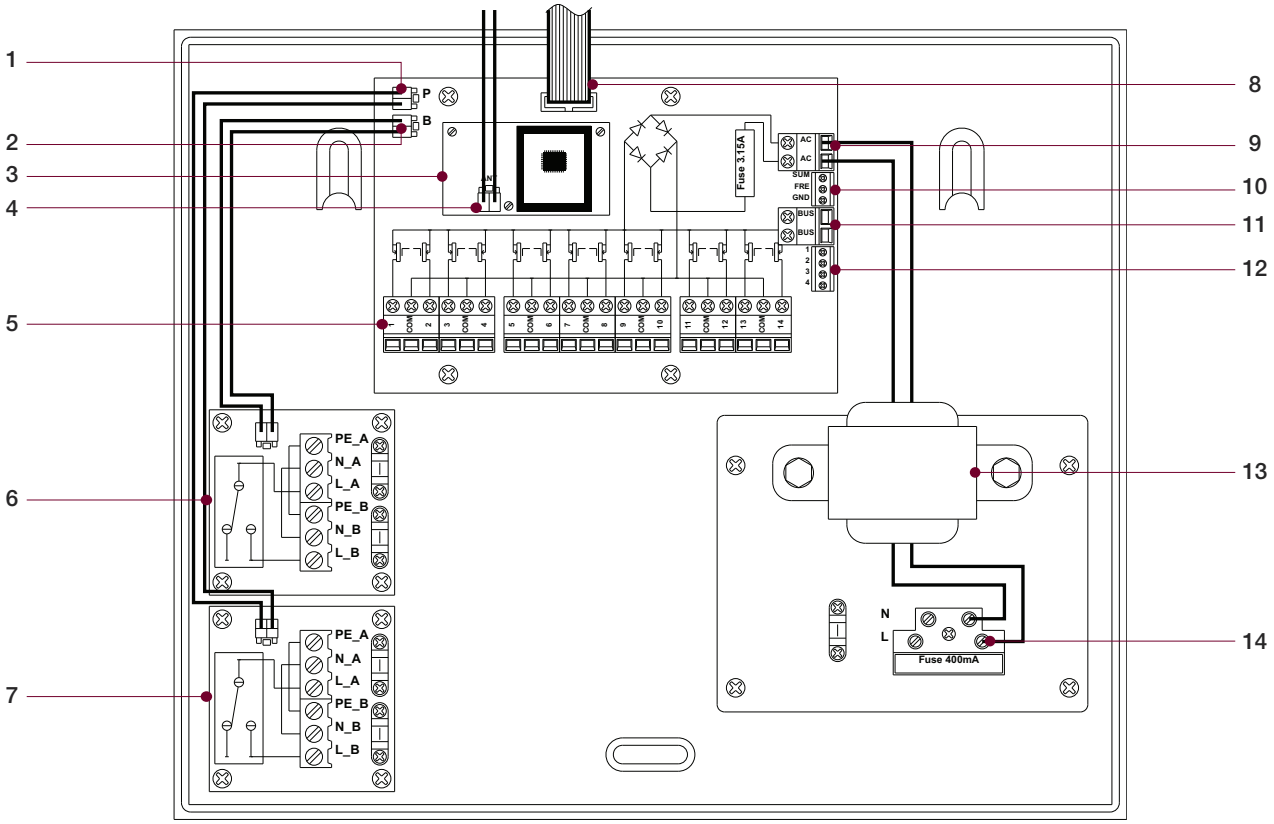
1 Control Centre Design



1. Manifold pump relay connection terminal

2. Boiler relay connection terminal

3. Wireless communication module

4. Antenna connection terminal

5. 24V actuator terminals (1-14)

6. Boiler relay

7. Manifold pump relay

8. Connector ribbon to front panel

9. Fused 24V AC power supply from transformer (Fuse 3.15A)

10. Auxiliary signal terminals

SUM: Summer – Input Terminal
When switched to ground (the GND terminal), the system will enter frost protection/holiday mode

FRE: Freeze – Output Terminal
If a connected thermostat records a temperature below its 'low temperature alarm' setting (AL Lo) the freeze terminal will energise for 10 seconds at 24V

11. Bus terminals for wired thermostats

12. Terminals for linking multiple control centres (not used)

13. Transformer

14. Fused 230V AC power supply to transformer (Fuse T 400mA)

Note:
The 24V actuator terminals are pulse switched and should therefore only operate thermoelectric actuators. They should not be used to power any motorised valves, relays or semiconductor switches etc.

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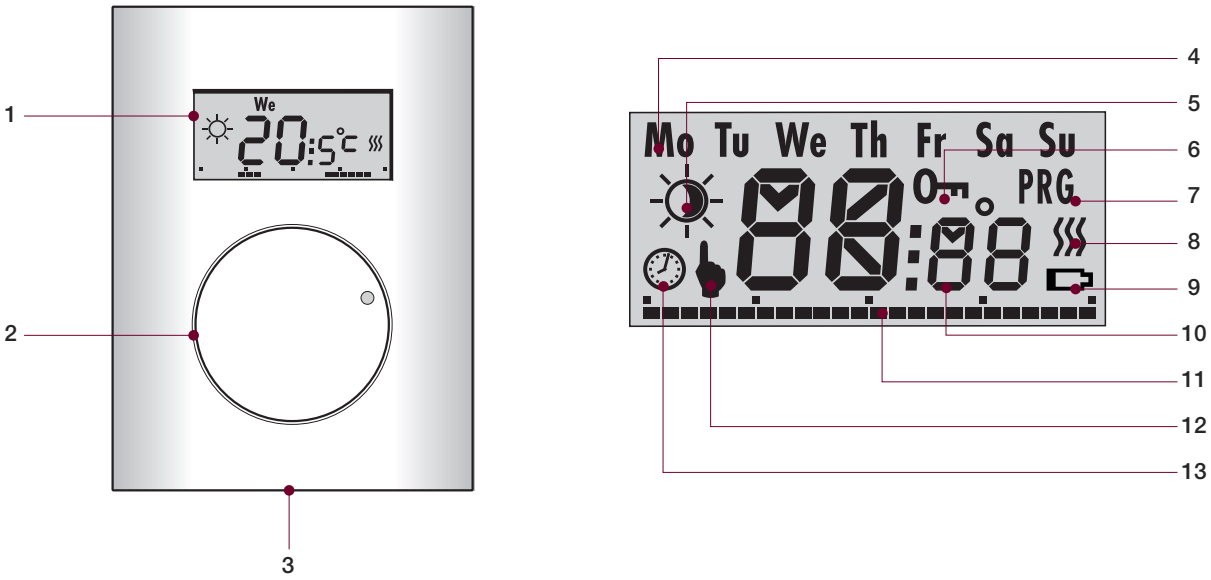
2 Thermostat Design



1. LCD Display

2. Jog Dial

3. Rear Cover Release Tab

4. Day Of Week[2]

5. Comfort/Economy Temperature[2]

6. Jog Dial Locked[1] / Service Menu[2]

7. Programming Menu[2]

8. Heating Active

9. Low Battery

10. Main Display (room temperature when idle)

11. Heating Schedule[2]

12. Party / Manual Mode[2]

13. Time Adjust Mode[2]

[1] Only applies to non-programmable thermostat models
[2] Only applies to programmable thermostat models

3 System Installation

A wiring diagram showing a typical installation is shown at the end of this guide. Please carry out all works in reference to it.

Please note that the instructions and diagrams within this guide are universal - they are not specific to any installation but their principles can be applied to all installations.

It is recommended that all necessary wiring should be completed before connecting a high voltage supply to the control centre, as this will minimise the risk of receiving an electrical shock.

WARNING!
When conducting any work on the control centre, it must be isolated from the mains before removing the front cover and kept isolated until all works have been completed with the cover replaced.

3.1 Thermostat Mounting

Thermostats should be mounted in a dry, indoor location. Choose a mounting location approximately 1.2m above the floor in an area with good air circulation. Avoid places with draughts, dead air spots and radiant heat from the sun or appliances.

- Release the rear cover by pressing the plastic tab on the bottom of the thermostat.
- Mount the back plate in the desired position.
- If mounting a hard wired thermostat, connect the digital bus wires to the BUS Terminals.
  The polarity is irrelevant and the thermostats can be connected in either a conventional star or parallel bus format.
- If a wired floor sensor is to be used, connect it to the SEN terminals.
- Clip the thermostat into position on the rear cover.

Where used, floor sensors should be installed:

- In an active area of the heated floor
- Equidistant between two heating pipes
- Recessed into the upper surface of the sub floor (so that they measure the temperature under the floor finish)

3.2 Control Centre Mounting

Identify a suitable location to mount the control centre. It is recommended that it is mounted above the manifold it will be controlling, ensuring the actuator cables reach the actuator terminals without requiring any extension.

- Remove the front cover from the control centre using a suitable screwdriver, carefully unplugging the wires connecting it to the main circuit board inside.
- Refer to the Wiring Diagram (pages 14 and 15) and remove the tabs from the bottom of the control centre to allow cable entry as required.
- Using the drilling pattern provided with the control centre, drill 3 holes and insert the Rawlplugs supplied.
- Insert the top two screws, leaving a 3-4mm space between the screw head and the wall.
- Hook the control centre in place, insert the third screw and tighten all three until the control centre is secure.

3.3 Control Centre Connections

- If hard wired thermostats are being used, connect them to the BUS terminals.
- Connect the 24V thermoelectric actuators to the actuator terminals, such that only one actuator is connected to each channel. Fasten the actuator
- Label the top of each actuator with its channel/port number. Should the actuators ever need to be unclipped from the manifold, this will prevent any confusion when reconnecting them.
- Connect the UFH manifold pump to the pump relay using suitable cable.
- Connect the heat sources demand switch to the boiler relay using suitable cable.
- When all electrical work has been completed and the control centre's cover replaced, connect the control centre to a 230V 50Hz power supply, taken from the heating system's fused spur.

Note:
Thermostats and actuators are not synchronised until Stage 5 (page 8) and thermostats can operate any combination of actuators to suit requirements.

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4 Control Centre LED Indicators

All enrolled thermostats transmit regular check signals. If the receiver does not receive a signal from an enrolled thermostat for a sustained period, it will indicate that communication with this item is down (See 4.1) and the corresponding output(s) will become active for 10 minutes at hourly intervals.

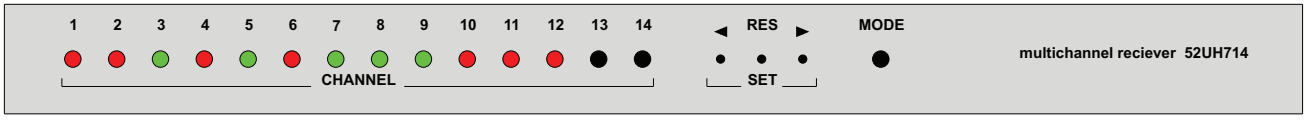
Typically this is symptomatic of drained batteries within wireless thermostats.

Another reason for possible connection failure can be radio signal interference, within the operational band of the receiver. In such a case the receiver will usually indicate loss of communication with a multiple number of thermostats. In this situation, check if there are any non-CE approved or faulty radio communication devices within the range of the receiver.

If outputs 1–14 have not been activated for 7 days they will switch on for 10 minutes to exercise the thermoelectric actuators and valves. The pump relay is also activated to provide protection against seizing but the heat source will not be.

The lifetime of a thermostat's battery depends on the capacity of the battery installed and operational demands.

- The operational life of the standard battery is approximately 1 year.
- Lithium batteries should have an operational life in the region of 5 years.



4.1 Channel Indicators 1-14

- **Off (no colour)**
  Channel is not used (no thermostat is enrolled)
- **Steady Green**
  Channel has a thermostat enrolled
  Heating is off
- **Steady Red**
  Channel has a thermostat enrolled
  Heating is on
- **Flashing Green**
  Channel has a thermostat enrolled
  Connection lost (low battery in thermostat, radio interference etc.)
- **Flashing Red**
  Enrolment mode (ready to enrol a thermostat)
- **Flashing Red (rapidly)**
  Output is overloaded or short-circuited

4.2 Mode Indicator (Holiday Mode)

Holiday mode is enabled by installing a Single Pole, Single Throw (SPST) switch across the SUM and GND terminals on the control centre. When running in holiday mode the room thermostats will maintain a lower room temperature, saving energy while preventing damp or even frost damage.

- **Off**
  The holiday mode is inactive or no switch is installed. Thermostats maintain rooms at their standard temperature setting.
- **Steady Green**
  The holiday mode is active. Thermostats maintain room temperatures at their T Lo setting.

5 Enrolling Thermostats

Only one thermostat can be enrolled to each channel however a thermostat can be enrolled to multiple channels or other receivers without restriction. If you try to enrol a new thermostat to an occupied channel, the new thermostat will be enrolled, replacing the existing one.

- Using the Tab provided press ◄ or ►on the control centre to select the desired channel
- Wireless Thermostats - Insert batteries into the thermostat. During its start up sequence, the thermostat generates an enrolment signal and its code is stored in the selected receiver channel's memory
- Wired Thermostats - Press and hold the thermostat dial from idle mode until the jog dial locked symbol appears and then disappears[1] or M1 appears on the thermostat display[2]
- Enrolment of the thermostat is confirmed by the channel LED illuminating according to demand
- To enrol a thermostat to multiple channels, repeat the above process

[1] Only applies to non-programmable thermostat models
[2] Only applies to programmable thermostat models

6 Deleting Thermostats

- Using the Tab provided press ◄ or ► to select the desired channel
- Press the RES button
- The corresponding LED will turn off and the thermostat is deleted

7 Operating Thermostats

All of the thermostat's settings are configured using its Jog Dial. The thermostat settings are divided into the following groups:

- M1 – Manual temperature adjustment mode
- M2[2] – Temperature and time settings
- M3[2] – Heating schedule
- M4 – Advanced settings

You can enter and scroll through the menus M1-M4 by pressing and holding the Jog Dial and releasing it when the desired menu is displayed.

Scrolling through the menus is conducted by rotating the Jog Dial. The currently displayed setting can be adjusted by pressing the Jog Dial, rotating it until the desired value is displayed and confirming the setting by re-pressing it.

To exit the menu and return to the idle display, select OK from the end of the menu. Alternatively the thermostat will automatically return to idle if no input is made for 30 seconds.

Note:
Setting thermostats at a higher temperature will not make the room heat up faster. The heating response time depends on many factors including, but not limited to, the external temperature, the level of insulation, the floor covering and the water temperature within the underfloor heating system.

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7.1 M1 - Manual Adjustment Mode

While operating in manual mode, the thermostat performs fixed temperature regulation regardless of the programmed schedule. The desired temperature is set simply by rotating the Jog Dial. To revert back to programmable mode on programmable models simply press and hold the Jog Dial for 2 seconds.

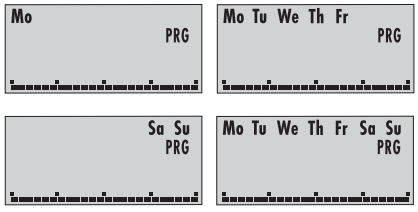
7.2 M2 - Temperature & Time Settings (programmable only)

While in menu M2, rotating the Jog Dial will scroll through the Economy Temperature (◑), Comfort Temperature (☼) and the Current Time (◴) settings.

Each setting can be altered by briefly pressing the Jog Dial. When ◑ or ☼ is entered the temperature setting flashes and can be adjusted by rotating the Jog Dial (re-pressing the Jog Dial confirms the setting). The Current Time setting adjustment is similar but requires three steps – for the day, hour and minute.

7.3 M3 - Heating Schedule (programmable only)

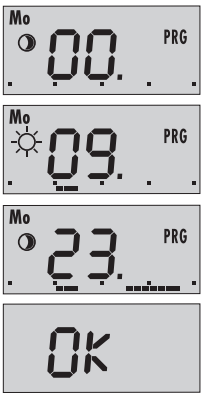
The M3 menu allows you to program when the thermostat should switch between the economy (◑) and comfort (☼) temperatures. The heating schedule can be programmed either for each day separately, for week and weekend days as groups, or for all days together.



After entering menu M3, scroll to the desired day or group of days to be programmed and select it (this erases the current schedule setting).

The heating schedule allows selection of the time periods during which the comfort temperature will be maintained by the thermostat. Other periods will be maintained at the economy temperature.

The heating schedule is shown along the bottom of the display, with the day broken down into hourly intervals. Operation at comfort/economy temperature is indicated by the ☼/◑ symbols, with the selected hour also shown on the main display (00 to 23).



Press the Jog Dial to toggle between the comfort and economy modes of operation.

By rotating the Jog Dial clockwise to progress through the day, the selected mode (comfort/economy) is applied to each hour you pass through.

By rotating the Jog Dial anticlockwise the economy mode is automatically selected, and the thermostat will erase any comfort periods that you pass back through.

Rotating the Jog Dial clockwise will display an OK option following hour 23. Pressing the Jog Dial will then save the heating schedule to the selected day(s).

Repeat this process until each day has been programmed according to requirements.

7.4 M4 - Advanced Settings

Within the M4 menu are the advanced settings that will not normally need to be changed, but can be if required. The parameters available depend on the thermostat model. Each setting can be changed in the usual way.

Optimised Start:
When enabled, the thermostat learns the heating response time and will operate the heating such that the room achieves its comfort temperature for the start of each comfort period.

Parameter	Adjustment Range	Factory Default	Description
	0.1°C, 0.2°C, 0.5°C	0.2°C	Accuracy to which the temperature is regulated
	6°C to 40°C*	6°C	Lowest selectable room temperature
	6°C to 40°C*	40°C	Highest selectable room temperature
	ON / OFF	OFF	Switches the floor sensor on / off (only applicable if floor sensor is installed)
	6°C to 40°C*	22°C	Lowest selectable floor temperature (only applicable if floor sensor is active)
	6°C to 40°C*	27°C	Highest selectable floor temperature (only applicable if floor sensor is active)
	N/A	N/A	Displays the current floor temperature (only applicable if floor sensor is active)
	-10°C to 10°C	3°C	Temperature at which the FRE alert signal is sent from the control centre
	50°C to 70°C	50°C	This item is reserved for future use
	±1.0°C	0.0°C	Manual calibration of air temperature sensor
	ON / OFF	ON	Turns optimised start on/off
	N/A	N/A	Resets the thermostat to factory defaults by pressing and holding the Jog Dial for 5 seconds
	N/A	N/A	Saves any changes and exits the Advanced Settings menu

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7.5 Party Mode (programmable only)

By pressing the Jog Dial, programmable thermostats enter Party Mode (indicated by symbols and ☼ shown together). The thermostat will then maintain a temperature 2°C above the programmed comfort temperature until the start of the next economy temperature period or until the Jog Dial is pressed again.

8 Troubleshooting

Below is a table of symptoms and solutions should issues occur regarding the control system. This is not a definitive list and should therefore be read in conjunction with the manifold installation guide, which will contain a similar table regarding its operation.

Symptom	Problem	Solution
One or more channel indicators are flashing green and the heating comes on for 10 minutes every hour	Connection to an enrolled thermostat has been lost.	Check and replace faulty BUS cable[1] Replace battery in appropriate wireless thermostat[2] Remove any non-CE approved radio frequency devices[2]
One or more channel indicators are flashing red (rapidly)	Channel outputs have been overloaded	Ensure only 24V thermoelectric actuators are connected to outputs Ensure only one actuator is connected to each channel Check for faulty actuator by measuring its electrical resistance
Heating does not appear to be working and the Mode Indicator is green	Control system is in holiday mode	Switch off the holiday mode switch which has been connected Using ◄ or ► on the control centre select MODE and press RES
Heating does not appear to be working and there are no indicators illuminated	Thermostats have not been enrolled/there is no power	If indicators flash red after pressing ◄ or ►, enrol thermostats Ensure power supply is connected and turned on Wiring/Hardware fault has blown a fuse - check fuses and locate fault
Heating turns off moments after becoming active	Flow Watch thermostat on manifold is active	See manifold instructions
A floor area is not operating in time with the thermostat in that zone	Channel is enrolled to another thermostat	Determine which circuit is supplying the floor area and re enrol correctly

If any devices are suspected as faulty please contact Wavin using the contact details on the rear cover of this guide.

[1] *Only applies to wired thermostat models*
[2] *Only applies to wireless thermostat models*

9 Technical Specification

9.1 Control Centre

Dimensions:	258 x 214 x 77mm
Mass:	1.65kg
Power supply:	230V, 50Hz
Operating load:	0.2A max. (0.02A stand-by)
Voltage of COM outputs:	24V DC
Max. load on COM outputs:	0.4A (1.7A total for all outputs)
Max. load on relays:	10A / 230V
Operational temperature:	-10°C to 40°C
Operational humidity:	non-condensing
Communication range:	up to 200m[1] or 100m[2]
Radio frequency:	868.5MHz, Oasis protocol
Radio characteristics:	ETSI EN 300220
Electromagnetic compatibility:	EN 50130-4, EN 55022
Safety:	EN 60950-1
Enclosure:	IP30 (EN 60529)
Mechanical resistance:	IK08 according to EN 50102
Can be operated according to:	ERC REC 70-03

9.2 Thermostats

Dimensions:	65 x 88 x 20mm
Mass:	0.08kg
Power supply:	1No. 1.5V AA battery[1], 12V from digital BUS[2]
Temperature measurement:	6°C to 40°C
Temperature accuracy:	adjustable: 0.1°C, 0.2°C or 0.5°C
Operational temperature range:	-10°C to 70°C
Operational humidity:	non-condensing
Electromagnetic compatibility:	EN 50130-4, EN 55022
Can be operated according to:	VO-R/10/05.2006-22

[1] Only applies to wired thermostat models
[2] Only applies to wireless thermostat models

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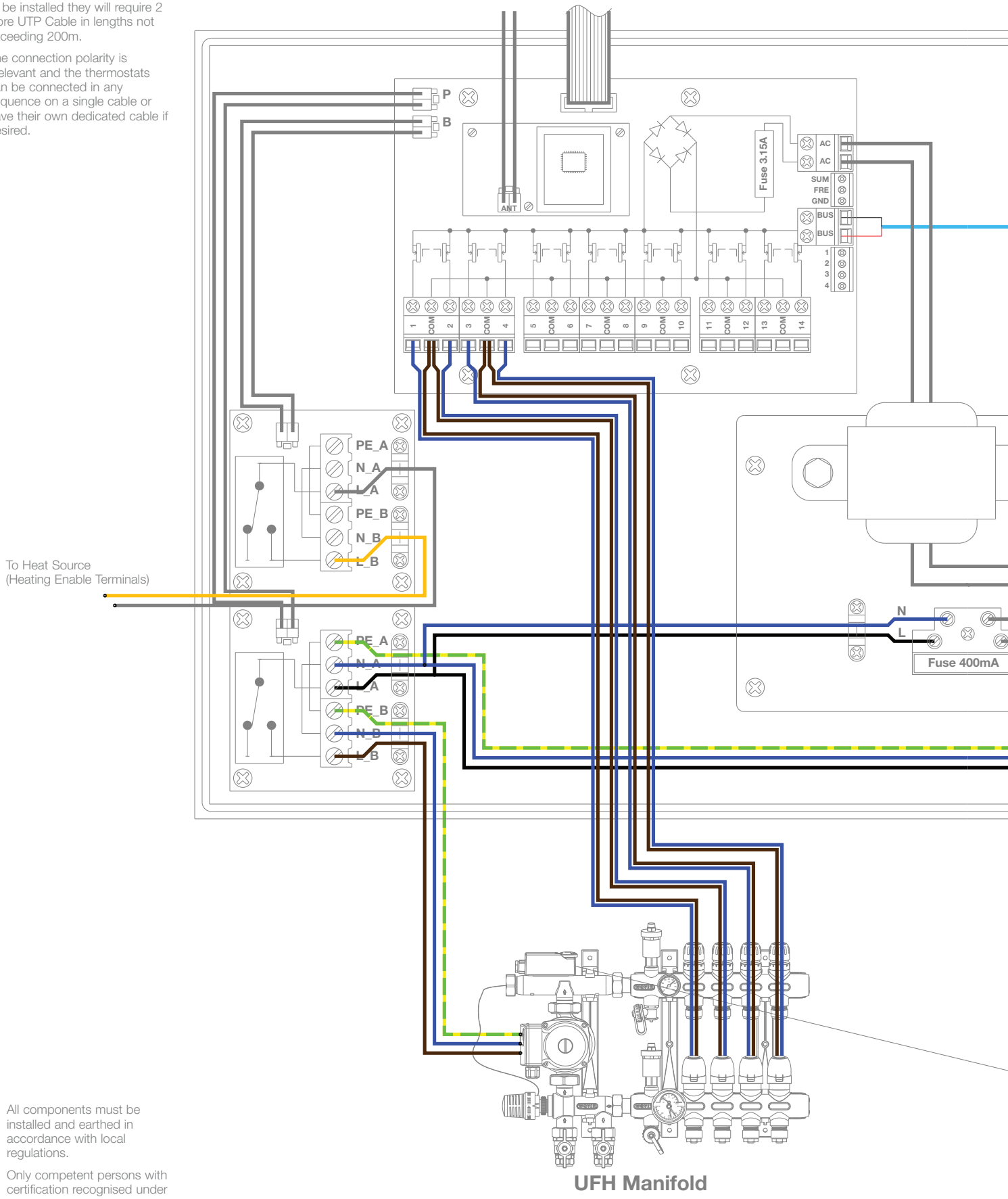
10 Notes

Where 24V Bus thermostats are to be installed they will require 2 Core UTP Cable in lengths not exceeding 200m.

The connection polarity is irrelevant and the thermostats can be connected in any sequence on a single cable or have their own dedicated cable if desired.



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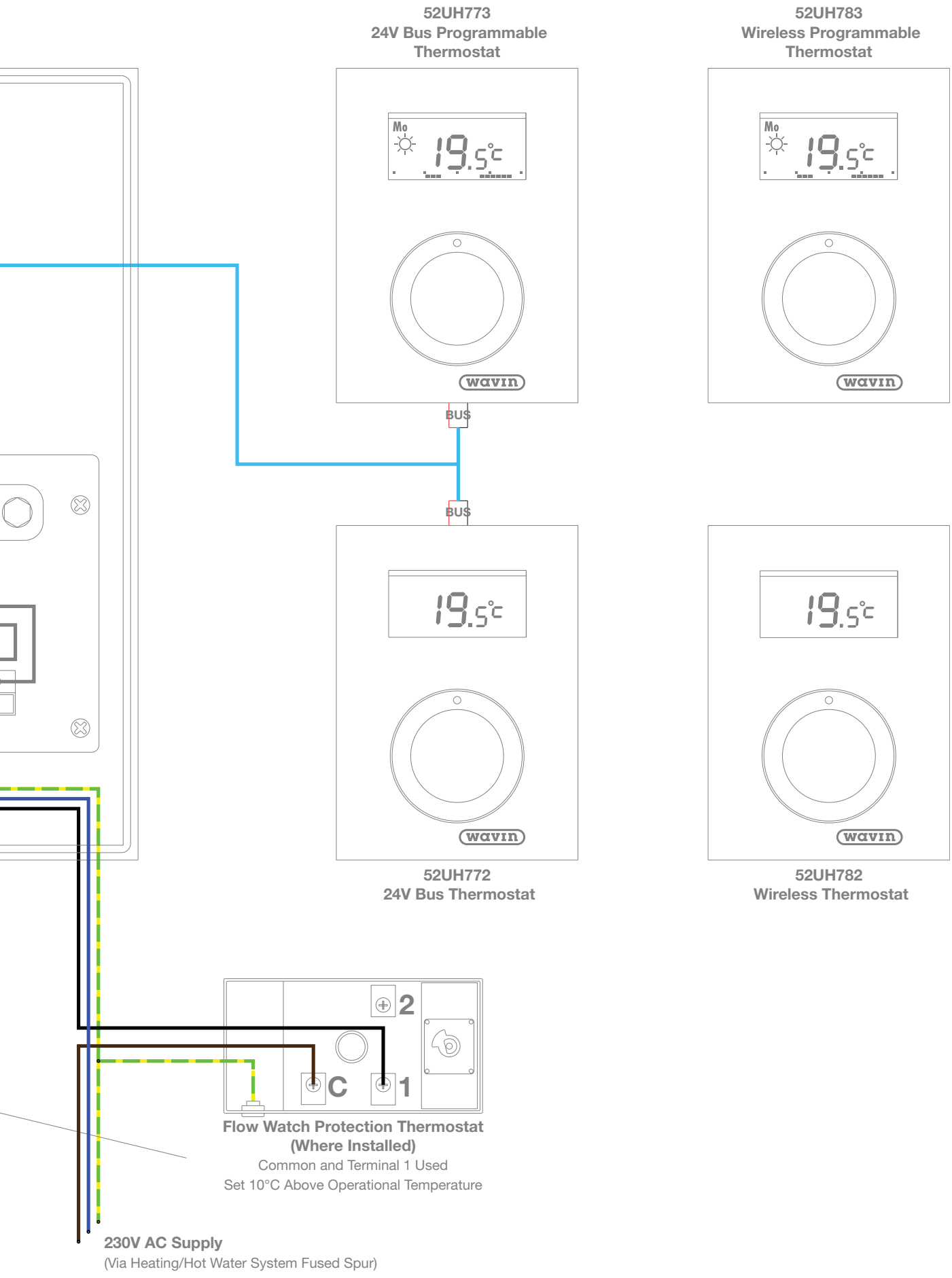
52UH773
24V Bus Programmable
Thermostat
52UH783
Wireless Programmable
Thermostat
Mo
19.5°C
wavin
BUS
BUS
52UH772
24V Bus Thermostat
52UH782
Wireless Thermostat
2
C
1
Flow Watch Protection Thermostat
(Where Installed)
Common and Terminal 1 Used
Set 10°C Above Operational Temperature
230V AC Supply
(Via Heating/Hot Water System Fused Spur)

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Underfloor heating & cooling solutions by Wavin

Control System

Installation and Operation Guide

ISO 9001:2000

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