

POWRMATIC®

MC500 Multi

User, Installation & Servicing Manual

Issue 1.4 April 2026



Certificate Of Guarantee

POWRMATIC® **Certificate of Guarantee**

This is to certify that this controller is guaranteed for one year from the date of original installation.

To make a claim

In the first instance you must contact your appliance supplier, or installer and provide:-

1. The appliance type and serial number.
2. The original commissioning documentation plus as much detail as possible on the fault.
3. Your supplier, or installer, will then contact Powrmatic to make a guarantee claim on your behalf.

Conditions of Guarantee

1. The controller must have been installed by a competent recognised installer, and in accordance with the manufacturer's instructions, I.E.E. regulations and local regulations.
2. The controller has been used in accordance with the manufacturer's instructions.
3. No unauthorised repairs or modifications have been made. Powrmatic 'General Conditions of Sales' have been observed.
4. Except for the obligation of Powrmatic Ltd to perform warranty repairs during the guarantee period Powrmatic will not be liable in respect of any claim for direct or indirect consequential losses, including loss of profits or increased cost arising from loss of use of the heater, or any event arising there from.

Powrmatic Ltd, Hort Bridge, Ilminster, Somerset, TA19 9PS
Tel: 01460 53535 Fax: 01460 52341
Web: www.powrmatic.co.uk e-mail: warranty@powrmatic.co.uk

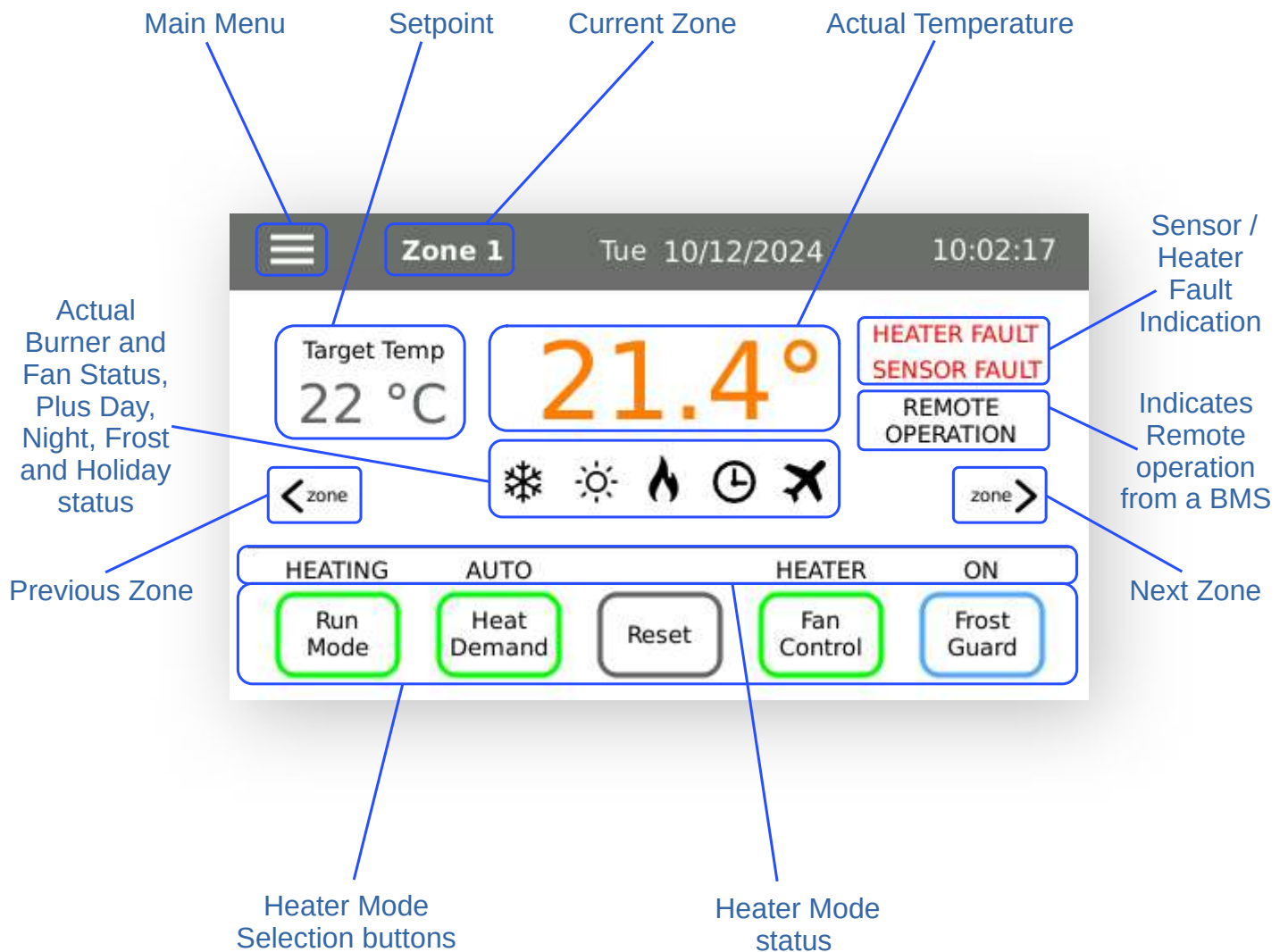
**Important: This certificate
must be kept with the appliance**

Users, Installation and Servicing Instructions

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Screen Layout



Touch screen buttons and indicators



Main menu



Home

21.4°

Actual temperature

22°C

Setpoint



Frost guard



Day time



Night time



Heat Demand



Heat Demand outside of Programme



Holiday mode



Scroll to next Zone



Scroll to previous Zone

Zone 1

Current Zone displayed

HEATER FAULT

Heater Fault

SENSOR FAULT

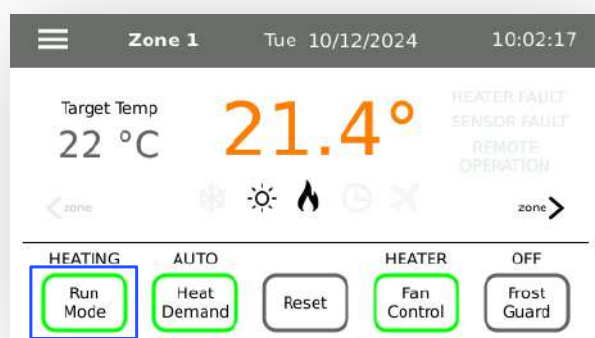
Sensor Fault

**REMOTE
OPERATION**

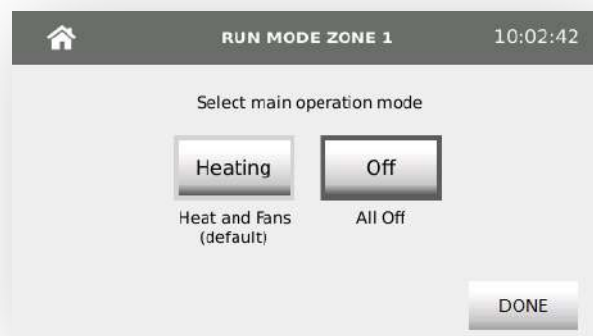
Remote Operation active

Overview of quick access touch screen options

Run Mode button



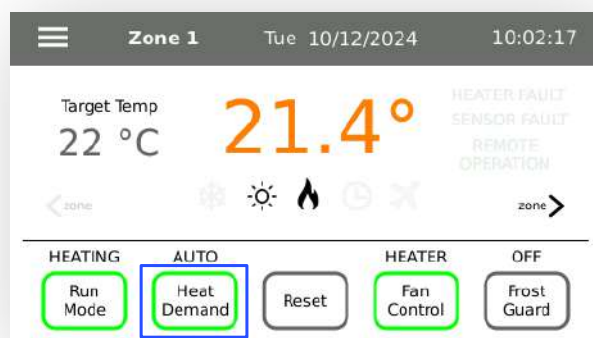
Normal Heating mode (default)



All Off (only Frost Guard available)

Overview of quick access touch screen options

Heat Demand button – in Heating mode



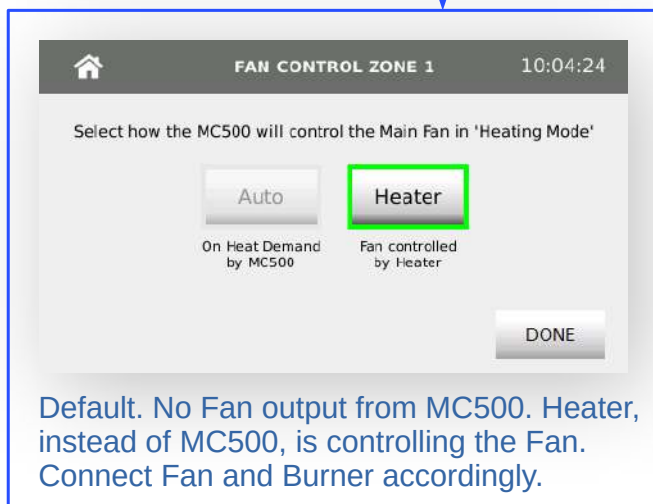
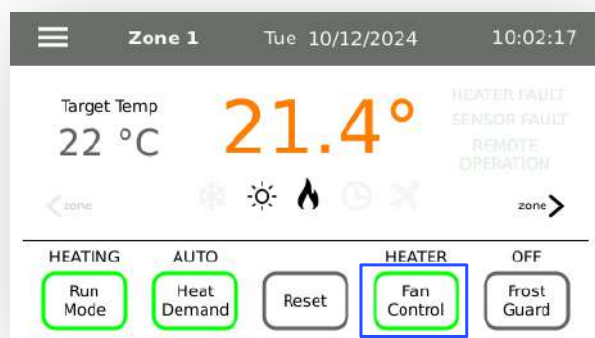
Heating follows Programme (default)



Heating overrides Programme

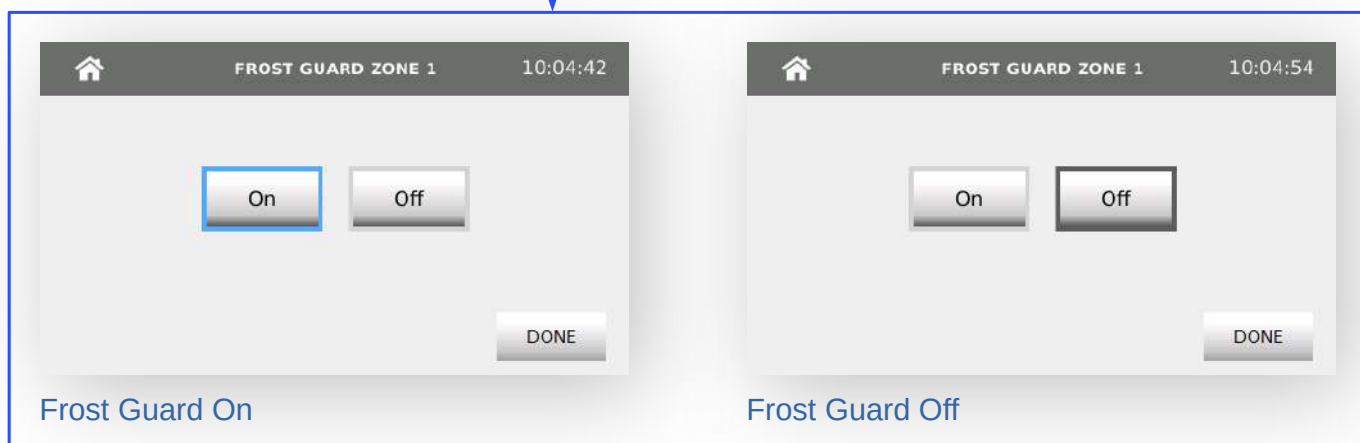
Overview of quick access touch screen options

Fan Control button



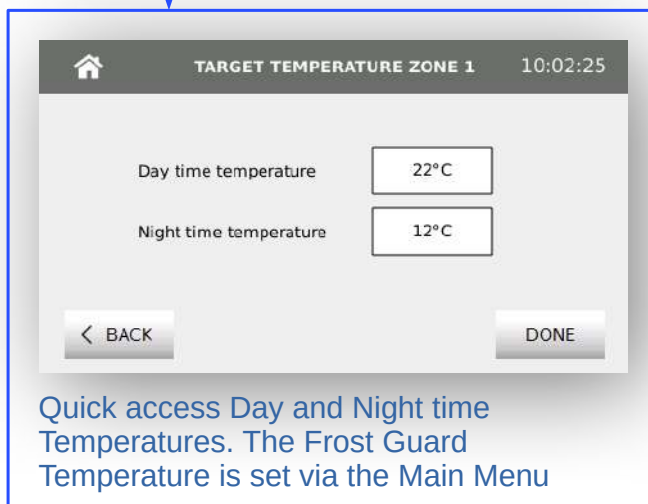
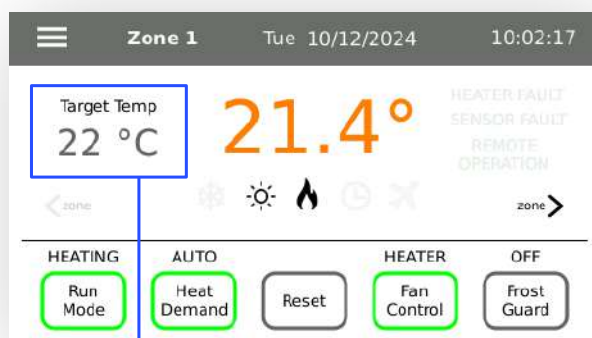
Overview of quick access touch screen options

Frost Guard button



Overview of quick access touch screen options

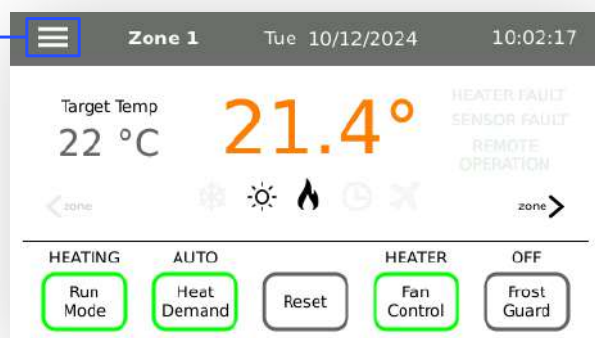
Target Temp button



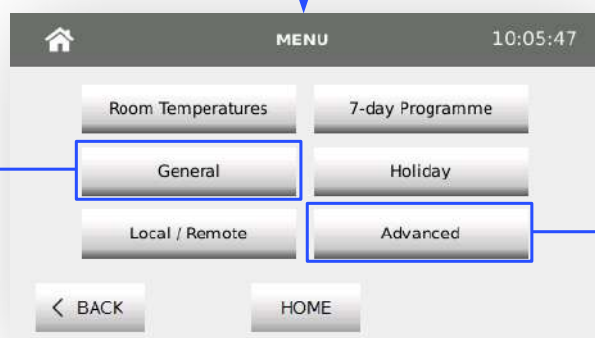
Menu Structure

The Advanced menus are enabled by entering an engineer's passcode when requested.

Press the Menu button:



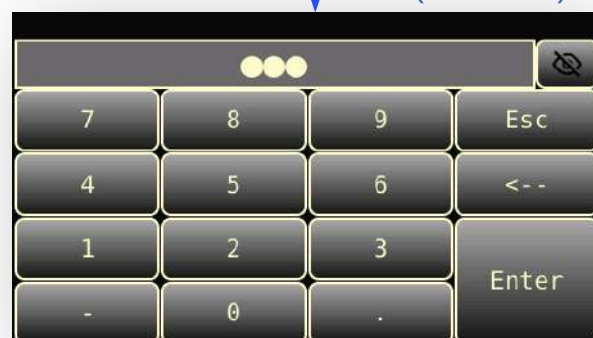
Main Menu:



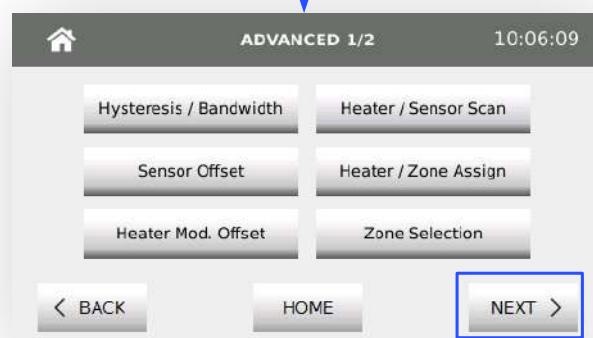
General:



Password Advanced Menu (default '0'):



Advanced Menu 1:



Advanced Menu 2:



Operation

Heating Mode - Normal operation (Default)

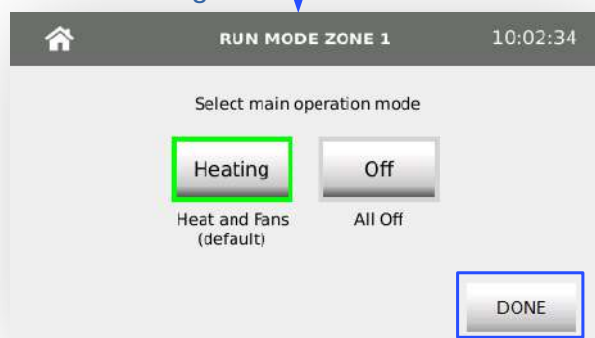
Normal heating operation, maintaining set temperatures, following the set programme, day and Night.

In this mode, the Heat demand override can be selected and Fan control can be set to the required mode.

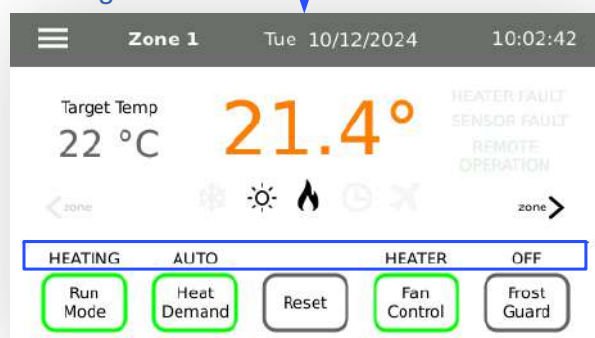
Press 'Run Mode':



Press 'Heating' and 'Done':



Heating Mode:



Heat Demand option available (page 13):



Frost Guard option available (page 18):



Operation

Heating Mode - Override outside of Day time hours

A user can extend the heating to operate outside of Day time hours by pressing the Heat Demand button and pressing 'On'.

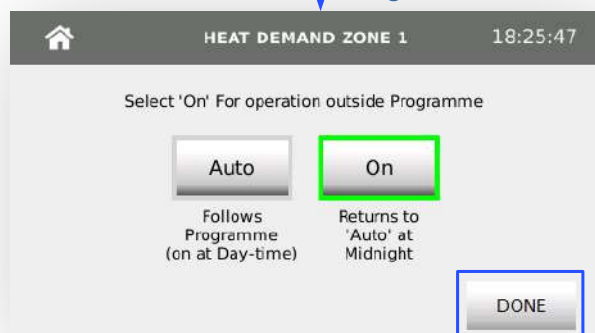
The Heat Demand goes back to Auto - and thus following the programme again, when:

- the user presses 'Auto', or
 - it's Midnight,
- whichever comes earlier.

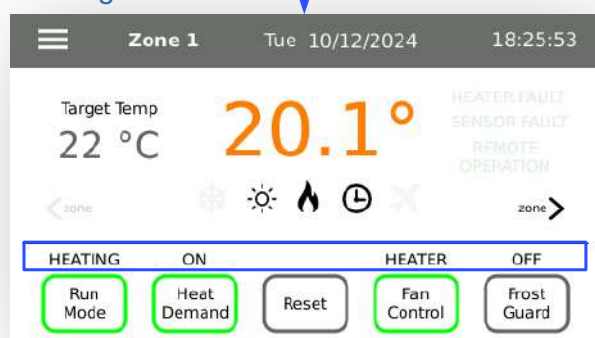
Press the 'Heat Demand' button:



Press 'On' to override Programme:



Heating Mode:

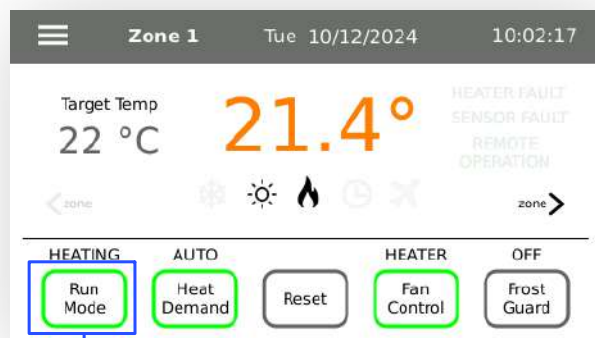


Operation

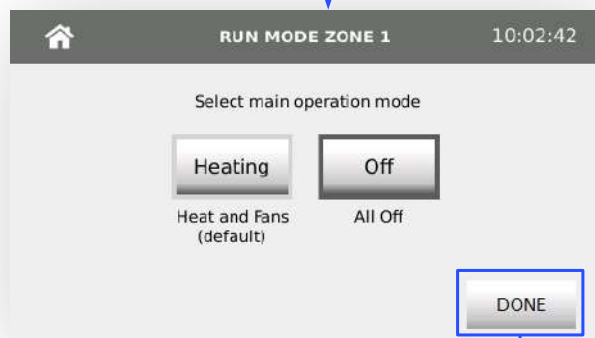
All Off Mode

Switching Off all functions apart from the Frost Guard option. This can still be switched on.

Press 'Run Mode'



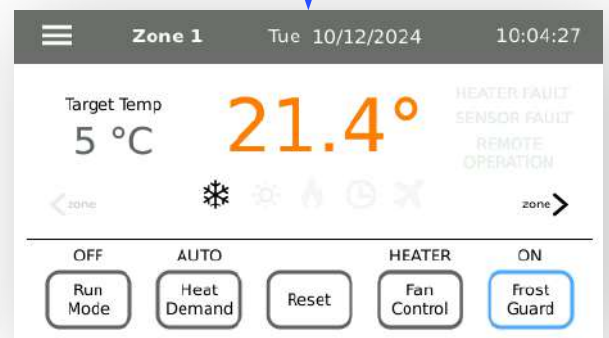
Press 'Off' and 'Done':



Off Mode:



The Frost Guard option is still available:



Operation

Frost Guard Mode

Available in all modes (Off Mode, Vent Mode and even Heating Mode), thus can always be left on and left alone, for safety. Switching modes doesn't affect its status.

In Vent and Off mode, the heater will still be on standby for Frost Protection, hence Heat Demand and Fan control are in 'Auto' mode. In the background, the fan setting will still be as you selected it, e.g. 'Burner' mode.

Press 'Run Mode':



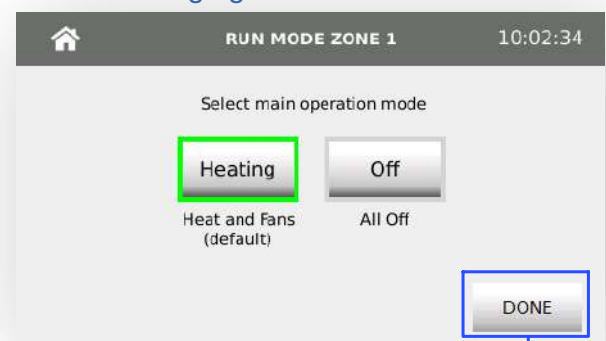
Press 'On' and 'Done':



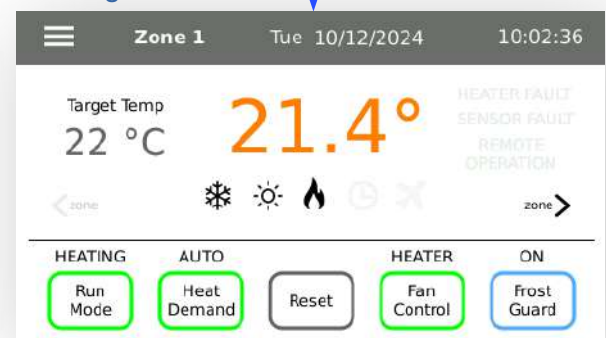
Frost Mode:



Other Run Modes are available if required, without changing the Frost Guard status:



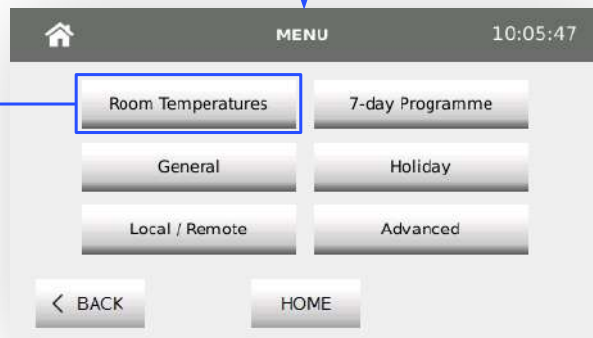
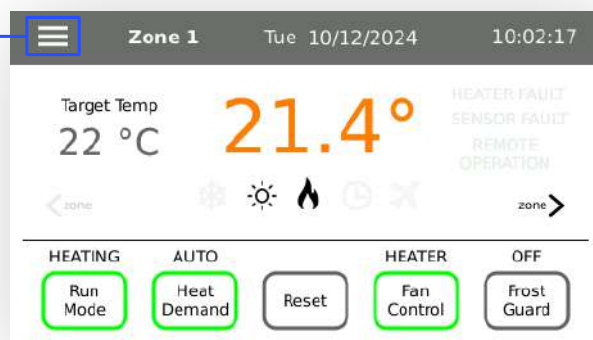
Heating Mode:



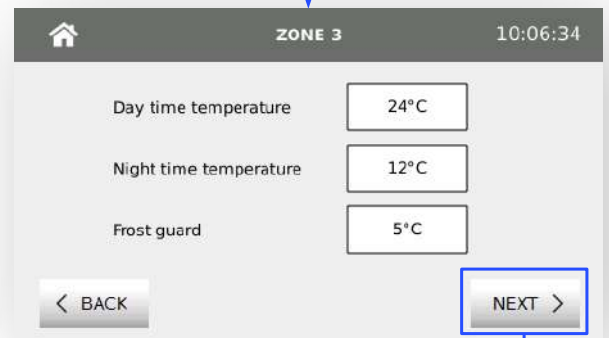
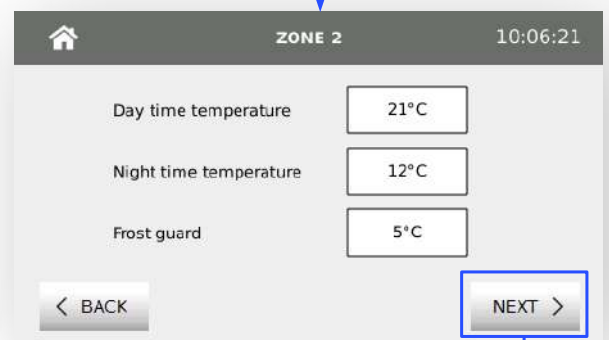
Set Temperature

Set Day and Night setpoint, as well as the Frost Guard setpoint.

Press the Menu button:



Set the desired target temperature:

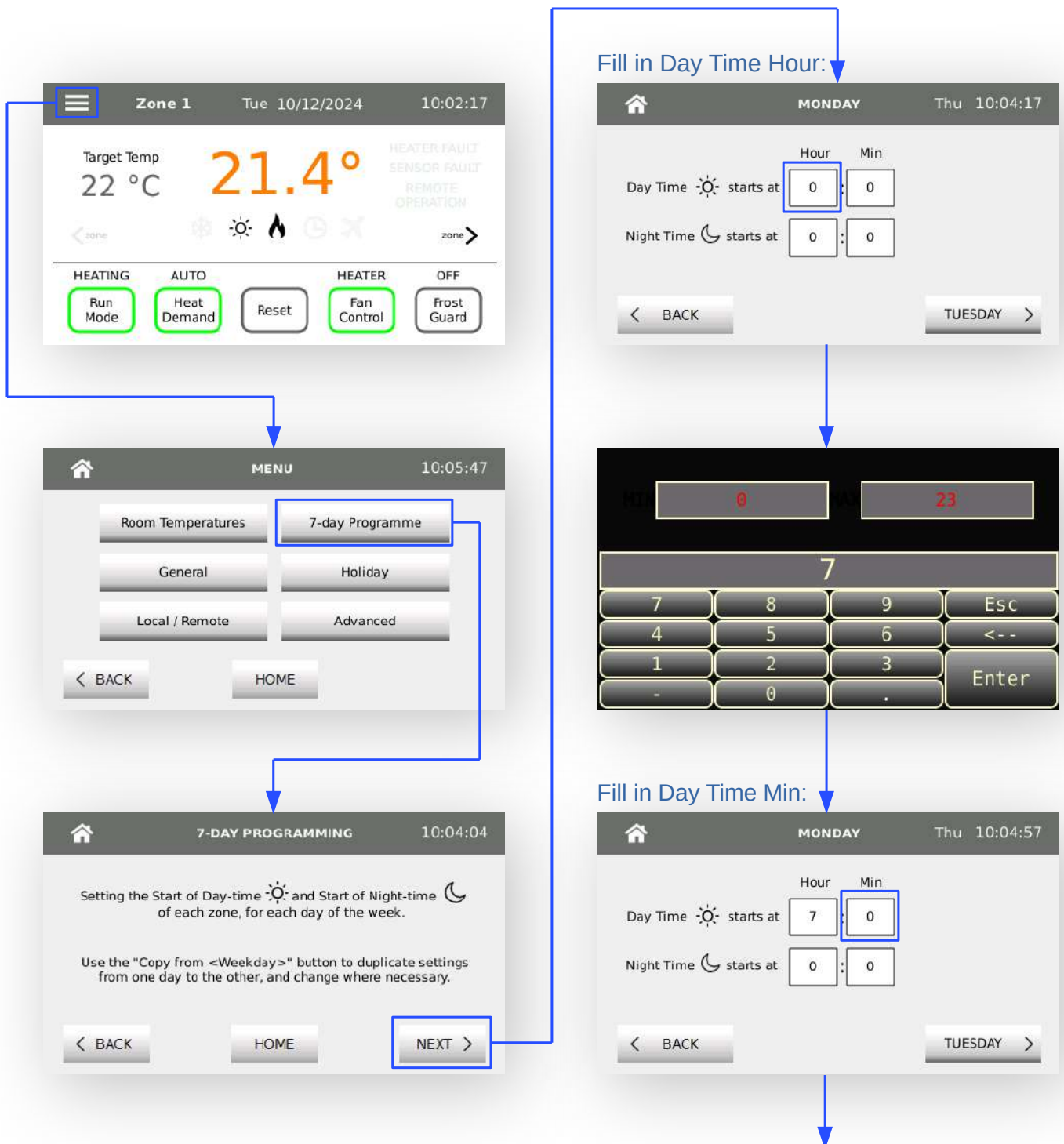


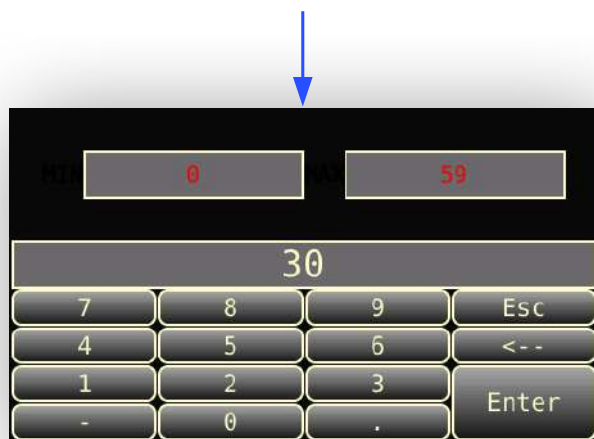
7-day programming

With the flexible 7-day programming option, 2 different temperatures (a Day and a Night temperature) can be achieved every day. With 14 timers provided in the software, each day of the week can have its Day and Night-time individually set, allowing flexible heating control for day groupings such as weekdays & weekends, a weekday that is shorter, or half a day on Saturday for instance. A copy function is also available for ease of use, for days that are the same.

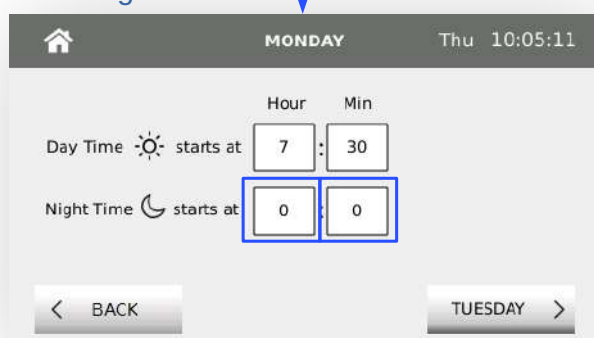
An **example** is shown on the following three pages where:

- Mon-Thu are normal office times,
- Friday is half a day, and
- Saturday & Sunday are unoccupied:

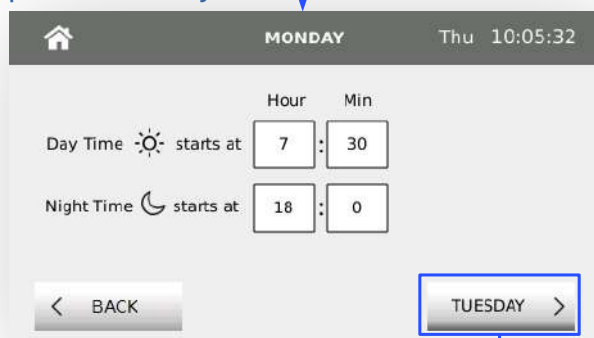




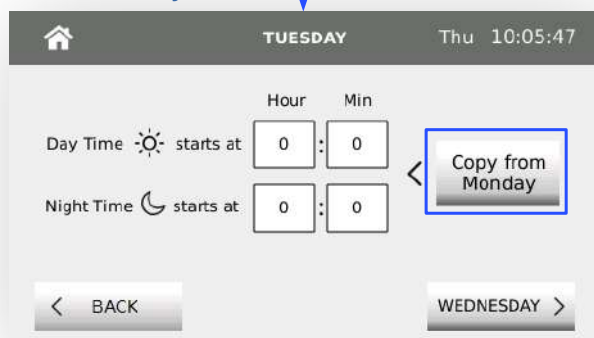
Fill in Night Time:



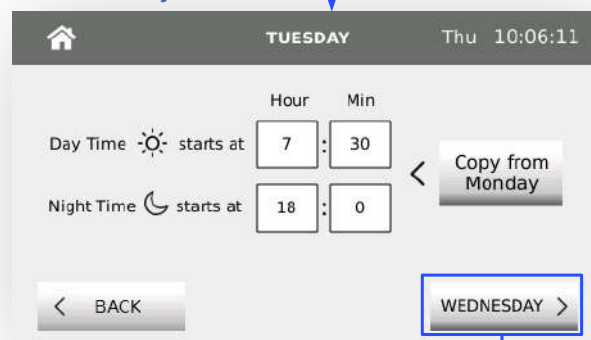
When finished,
press 'Tuesday':



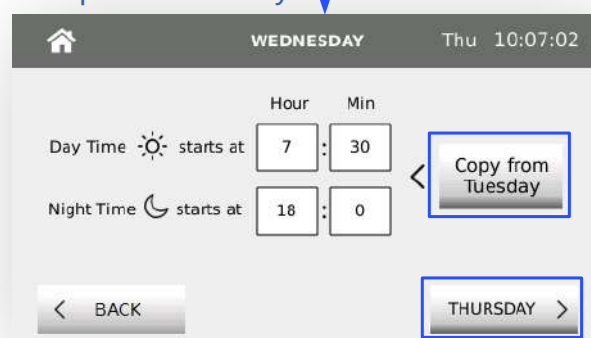
Press 'Copy
from Monday':



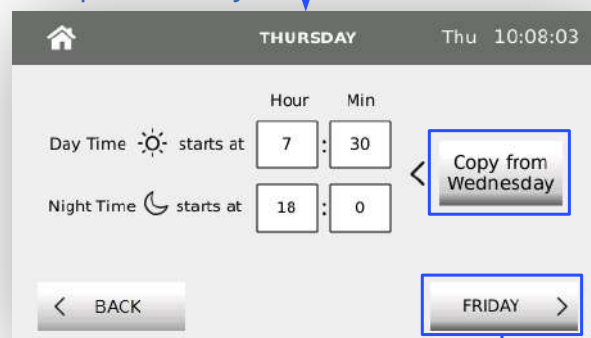
Then press
'Wednesday'



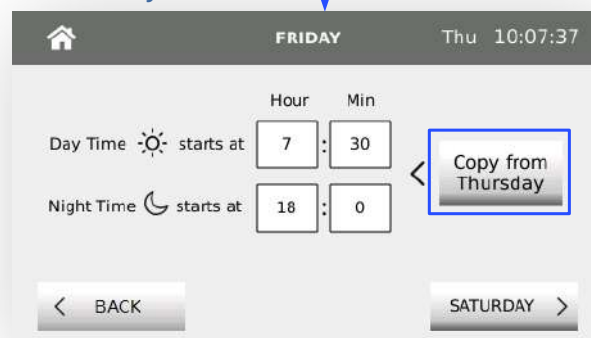
Press Copy button,
then press Thursday:



Press Copy button,
then press Friday:



Press the Copy
button only:



Amend Friday (for this example):

FRIDAY Thu 10:07:37

Day Time ☀ starts at Hour: 7 Min: 30

Night Time 🌙 starts at Hour: 18 Min: 0

Copy from Thursday

BACK SATURDAY

Fill in Night Time:

0 23

12

7 8 9 Esc

4 5 6 <--

1 2 3 Enter

- 0 .

Friday is amended.
Press Saturday:

FRIDAY Thu 10:08:55

Day Time ☀ starts at Hour: 7 Min: 30

Night Time 🌙 starts at Hour: 12 Min: 0

Copy from Thursday

BACK SATURDAY

Leave all on '0', or change to '0' (for this example).
Press Sunday:

SATURDAY Thu 10:09:32

Day Time ☀ starts at Hour: 0 Min: 0

Night Time 🌙 starts at Hour: 0 Min: 0

Copy from Friday

BACK SUNDAY

Leaving all on zero keeps the whole 24hr day at constant night-time temperature.

Leave also on '0', or change to '0', for this example. Press Done:

SUNDAY Thu 10:09:50

Day Time ☀ starts at Hour: 0 Min: 0

Night Time 🌙 starts at Hour: 0 Min: 0

Copy from Saturday

BACK DONE

The MC500 has been programmed

Zone 1 Tue 10/12/2024 10:02:17

Target Temp 22 °C 21.4°

HEATER FAULT
SENSOR FAULT
REMOTE OPERATION

HEATING AUTO HEATER OFF

Run Mode Heat Demand Reset Fan Control Frost Guard

General

Time & Date, and Display settings

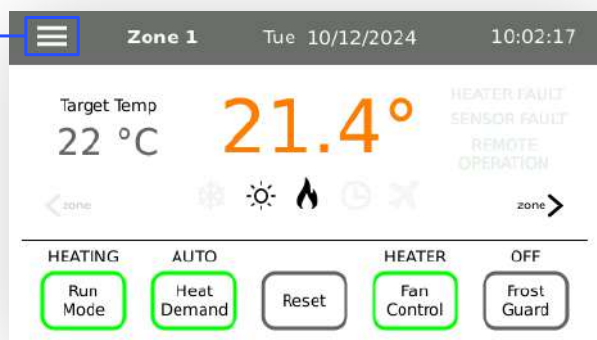
Setting the time & date, and display settings. A screen saver can also be activated.



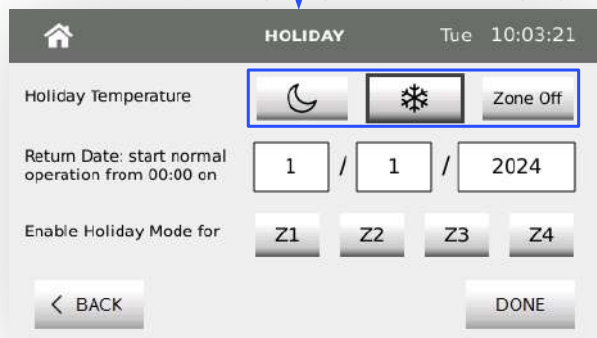
Holiday

Set Holiday period and Mode

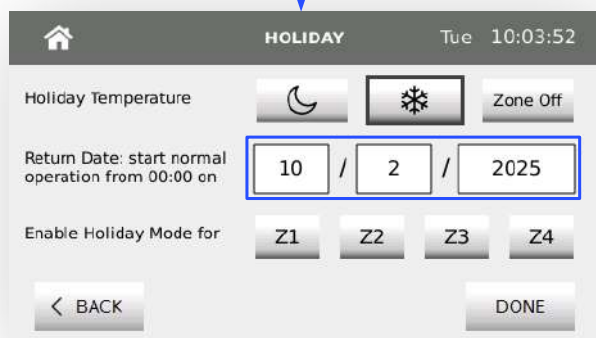
With Holiday mode, you can choose which Zones are going into Holiday mode, and what mode they will be in (Night Time temperature, Frost Guard Temperature or Off).



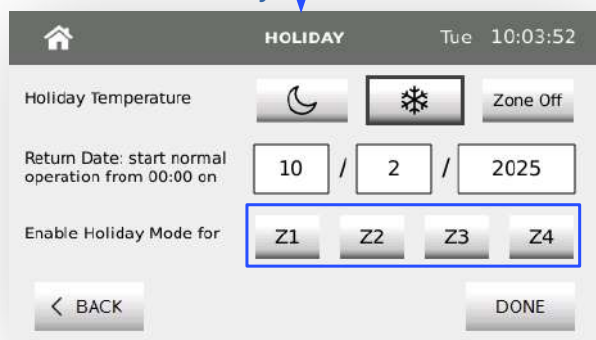
Select Holiday Temp (Frost for example):



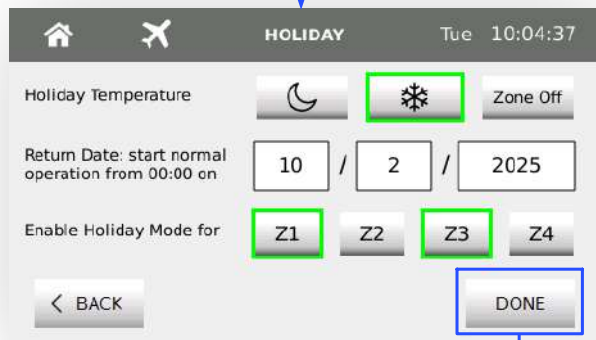
Enter Return Date:



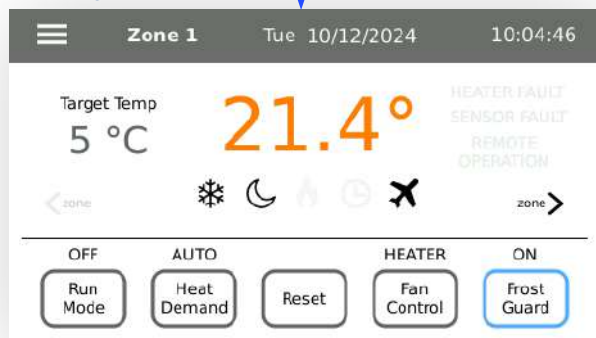
Turn on when ready:



Holiday Enabled:



Holiday Enabled:



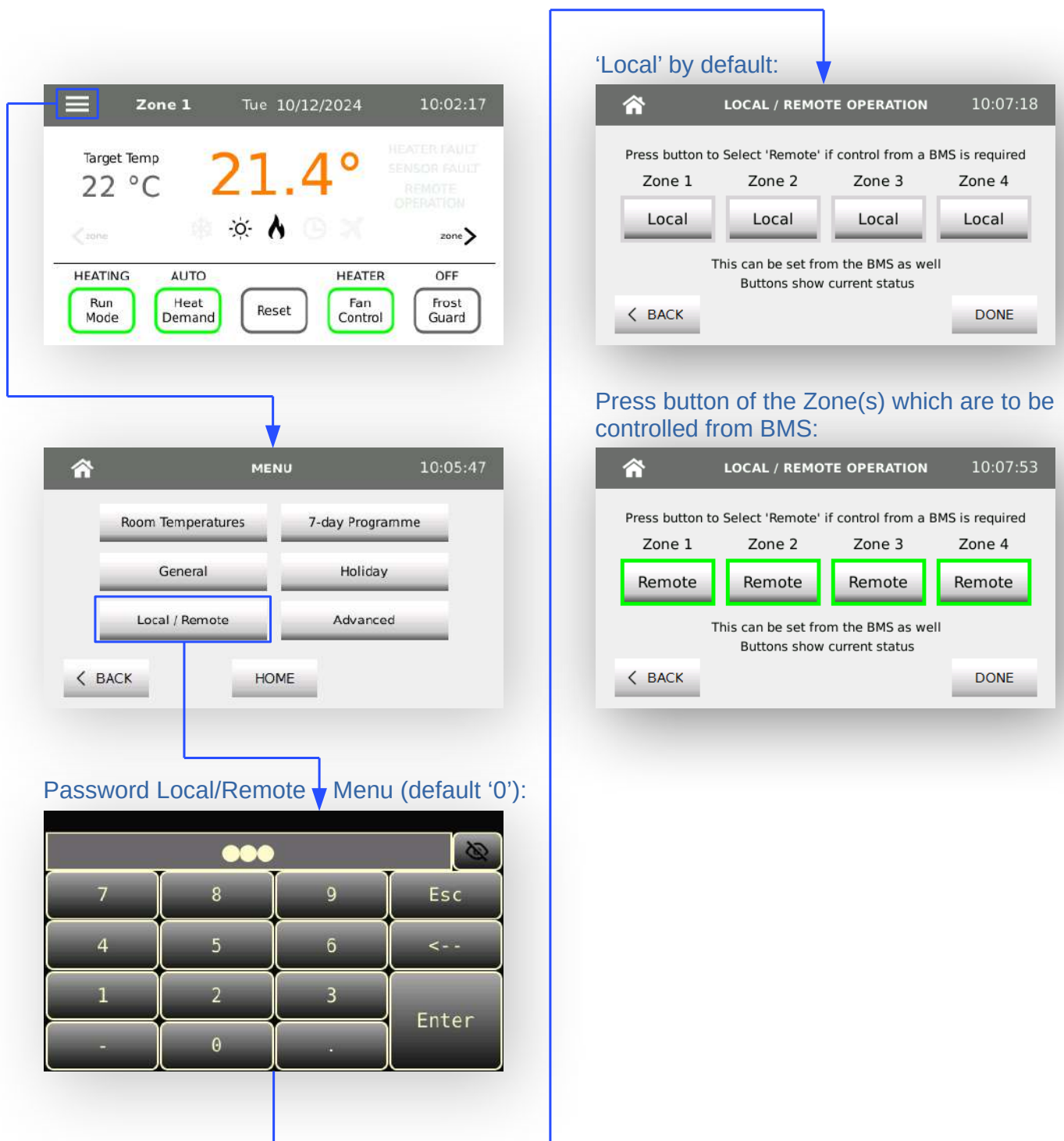
Local / Remote Operation

In 'Local' operation, all functionality is controlled on the MC500 controller itself.

In 'Remote' operation, the unit can be controlled by external systems, such as a BMS, via the Modbus-TCP protocol.

Registers such as temperatures, burner demands and faults can be read, while registers such as Setpoints, Daytime Active and Heating modes can be written.

See the Modbus Client Settings list at the end of this manual for the complete list of registers and settings.



Hysteresis and Bandwidth

Settings for Room Sensor

Switching the differential band and hysteresis.



Sensor Offset

A temperature offset can be entered here to adjust the displayed temperature to agree with the sensor temperature.



Heater Modulation Offset

Set the minimum modulating voltage necessary for the Heater to operate.

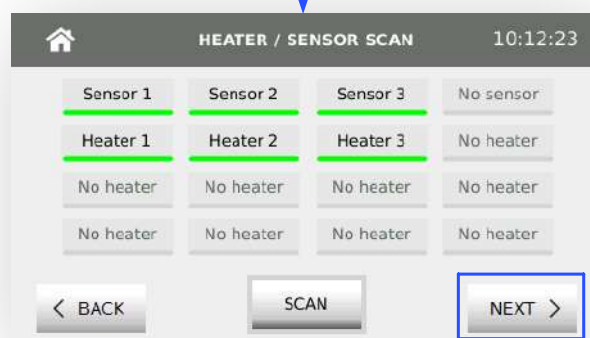
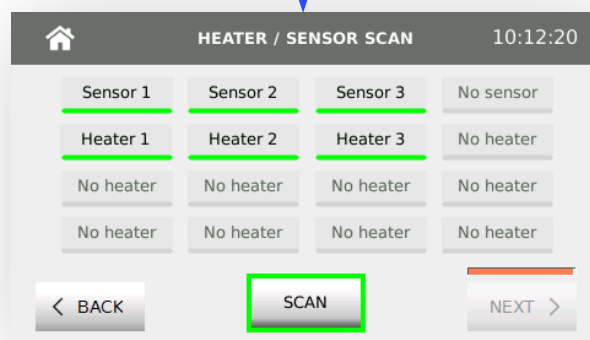
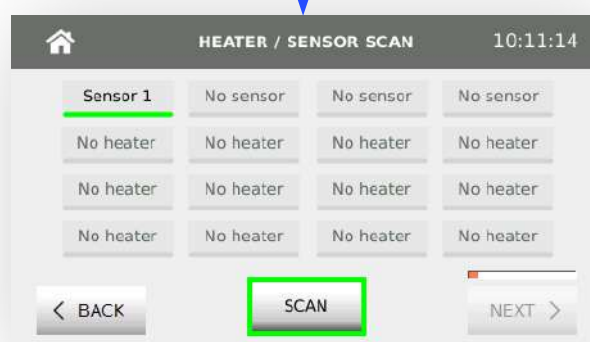
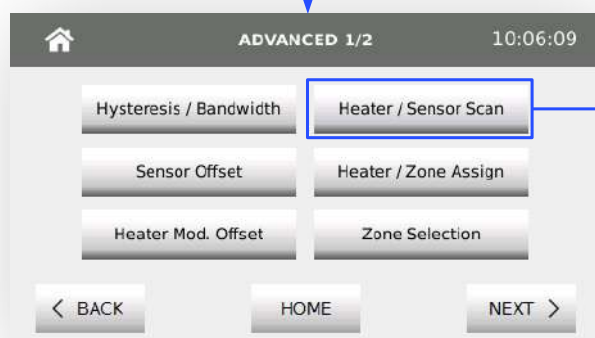
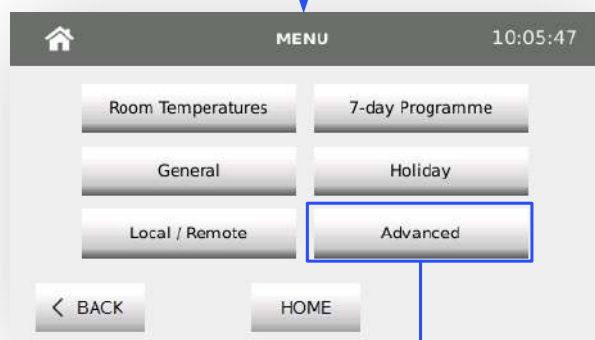
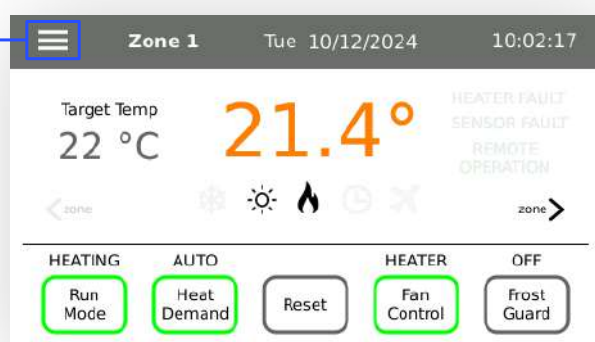


Heater / Sensor Scan

This will scan all available Modbus sensors and heaters.

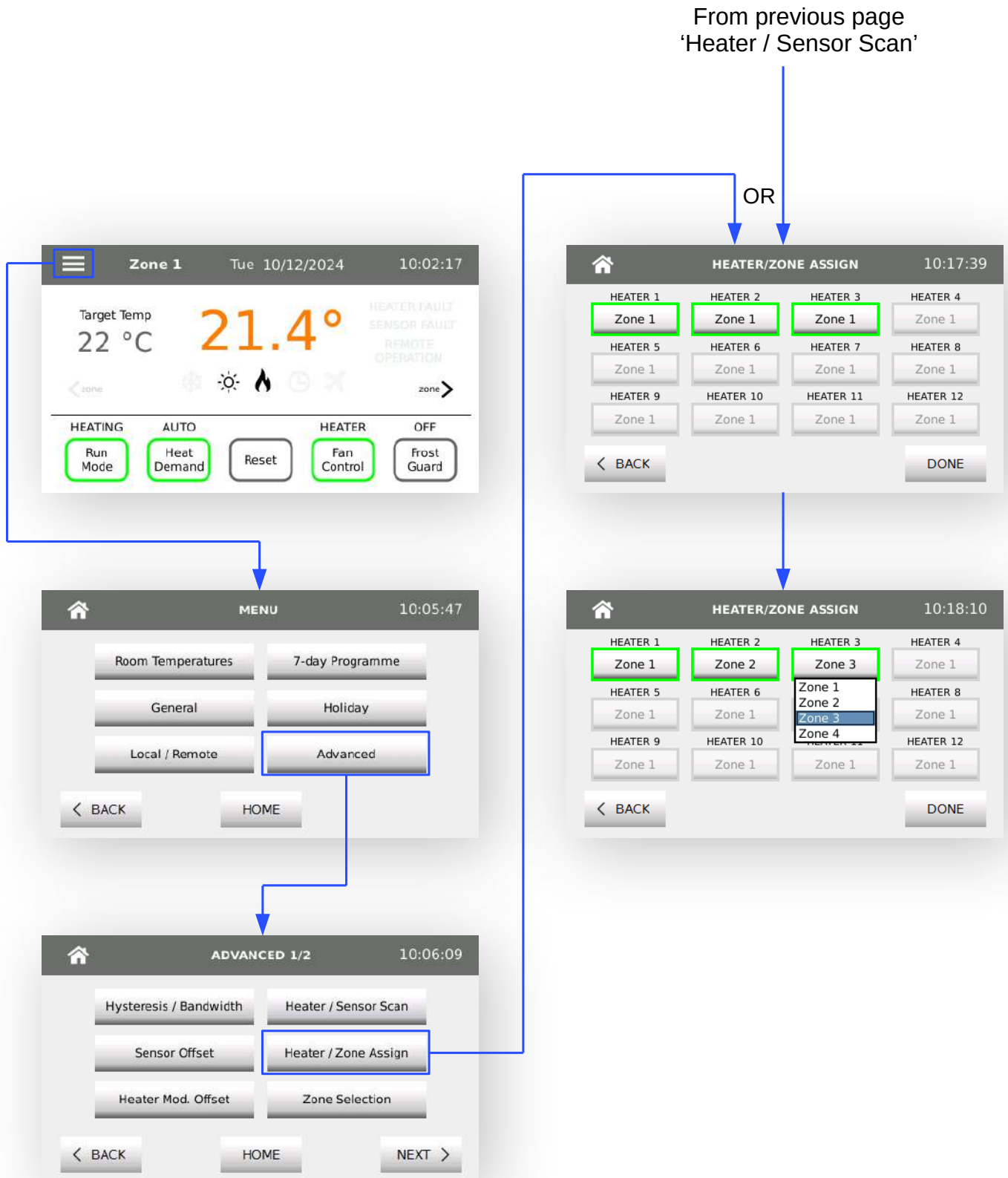
In this example we have 3 available heaters and 3 available sensors.

A max of 4 Modbus sensors and 12 Modbus heaters can be connected and scanned.



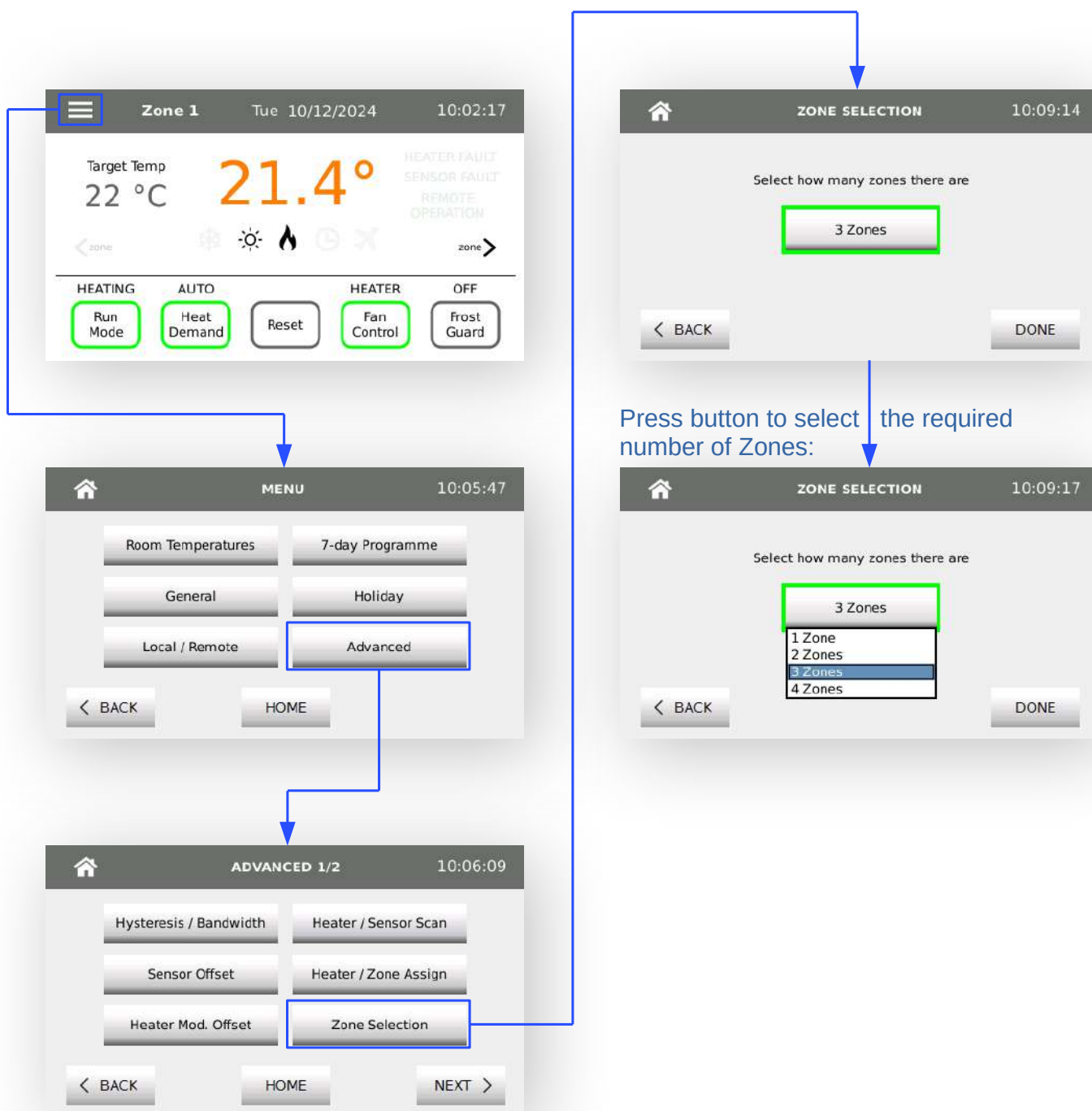
Heater / Zone Assign

Here, each recognised heater can be assigned to a Zone. Multiple heaters can be assigned to one Zone. This way, a maximum of 12 heaters can be spread over a maximum of 4 Zones as required.



Zone Selection

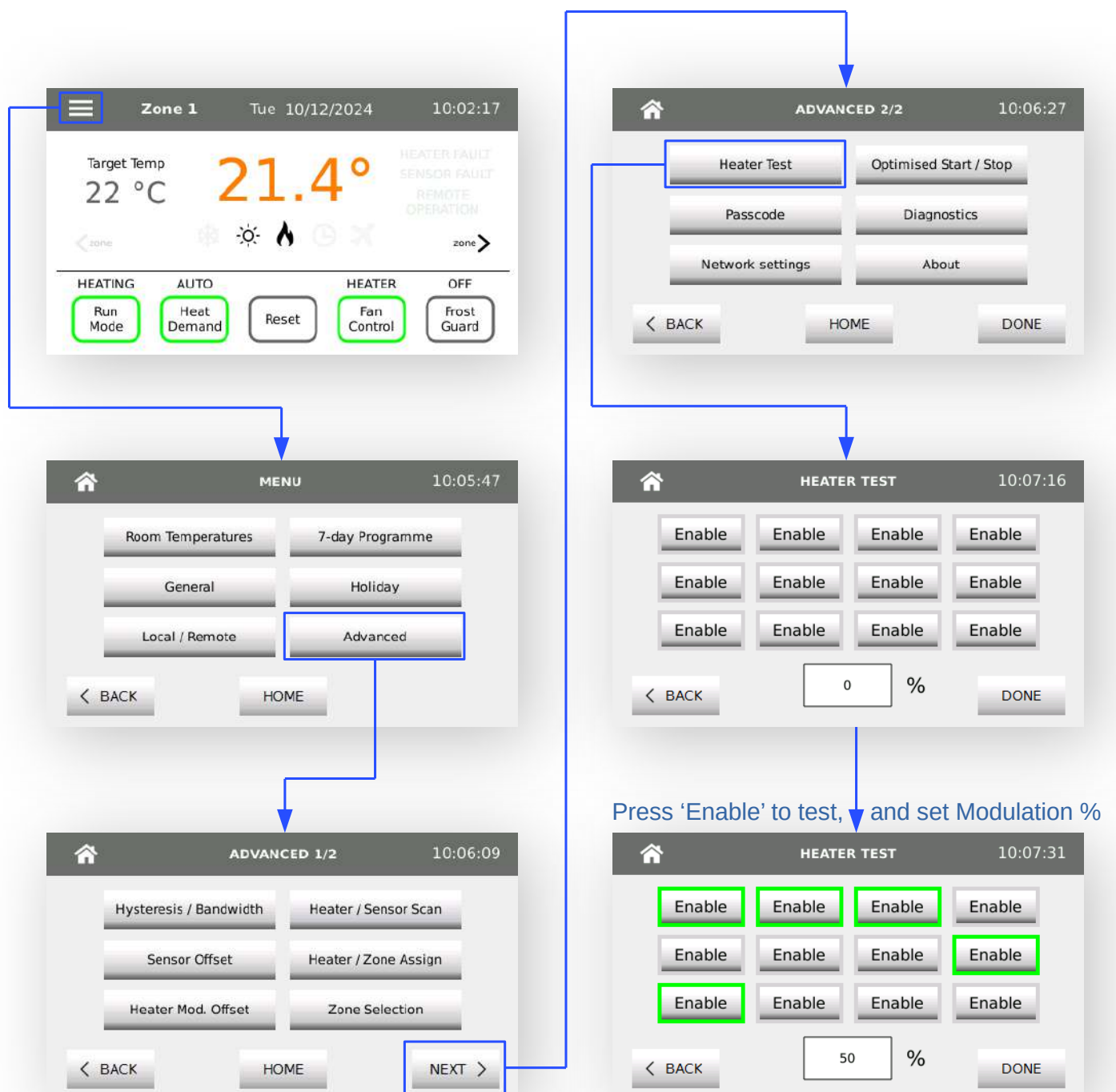
Select the number of Zones to control via the MC500.



Heater Test

Engineer's test for commissioning and fault finding.

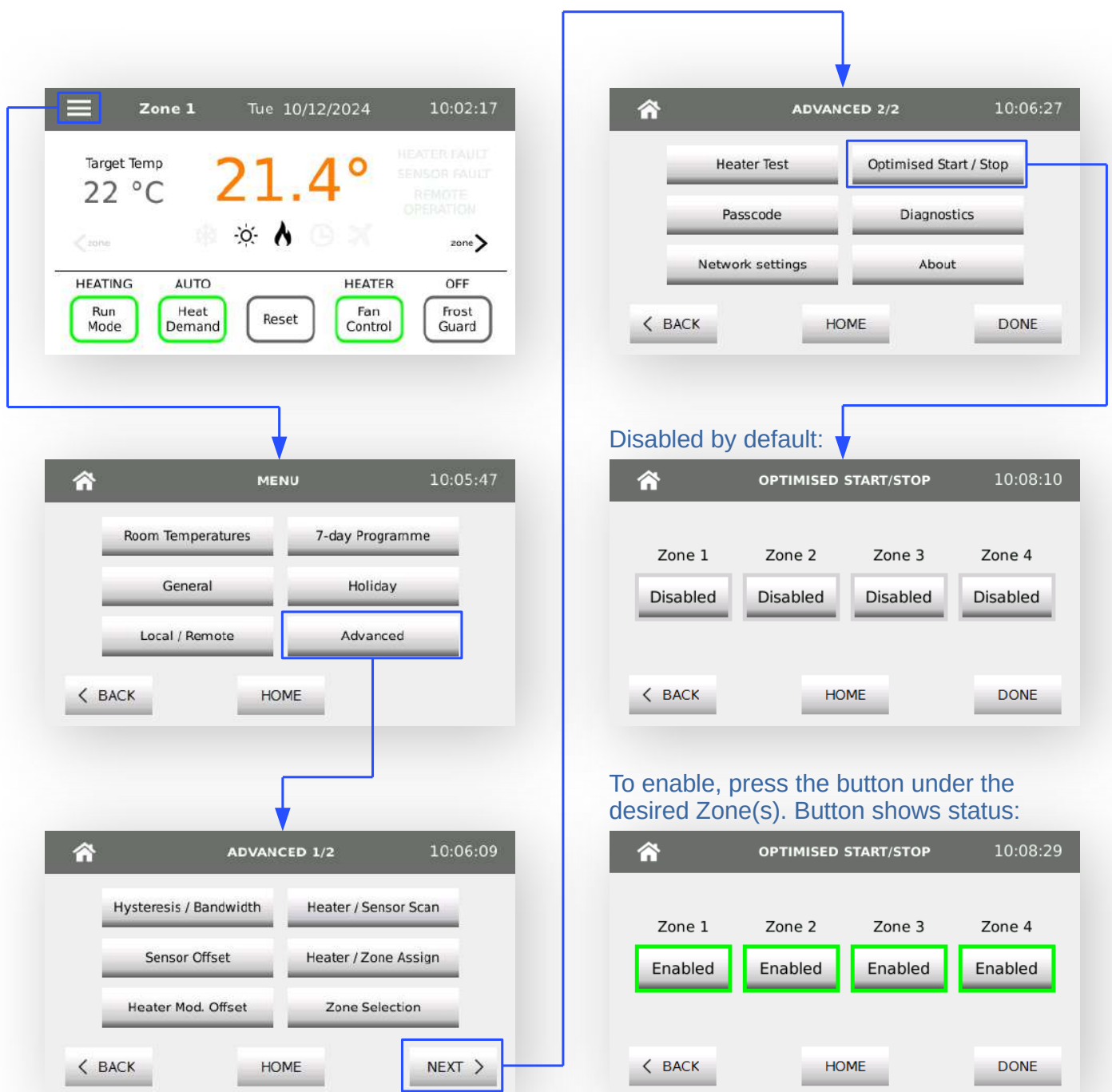
Facilitates direct testing of the controlled Burner, irrespective of current control settings, times, temperature or demand.



Optimised Start / Stop

Optimum Start: A control system which starts plant operation at the latest possible time such that internal conditions will be up to required limits at the start of the occupancy period. When Optimum Start is enabled, the switch-on time for the heater is then advanced accordingly to achieve the required temperature by the Heat On time i.e. the warmer the night time temperature the closer the switch on time will be to the Heat On time.

Optimum Stop: A control system which stops plant operation at the earliest possible time such that internal conditions will not deteriorate beyond preset limits by the end of the occupancy period.



Disabled by default:

To enable, press the button under the desired Zone(s). Button shows status:

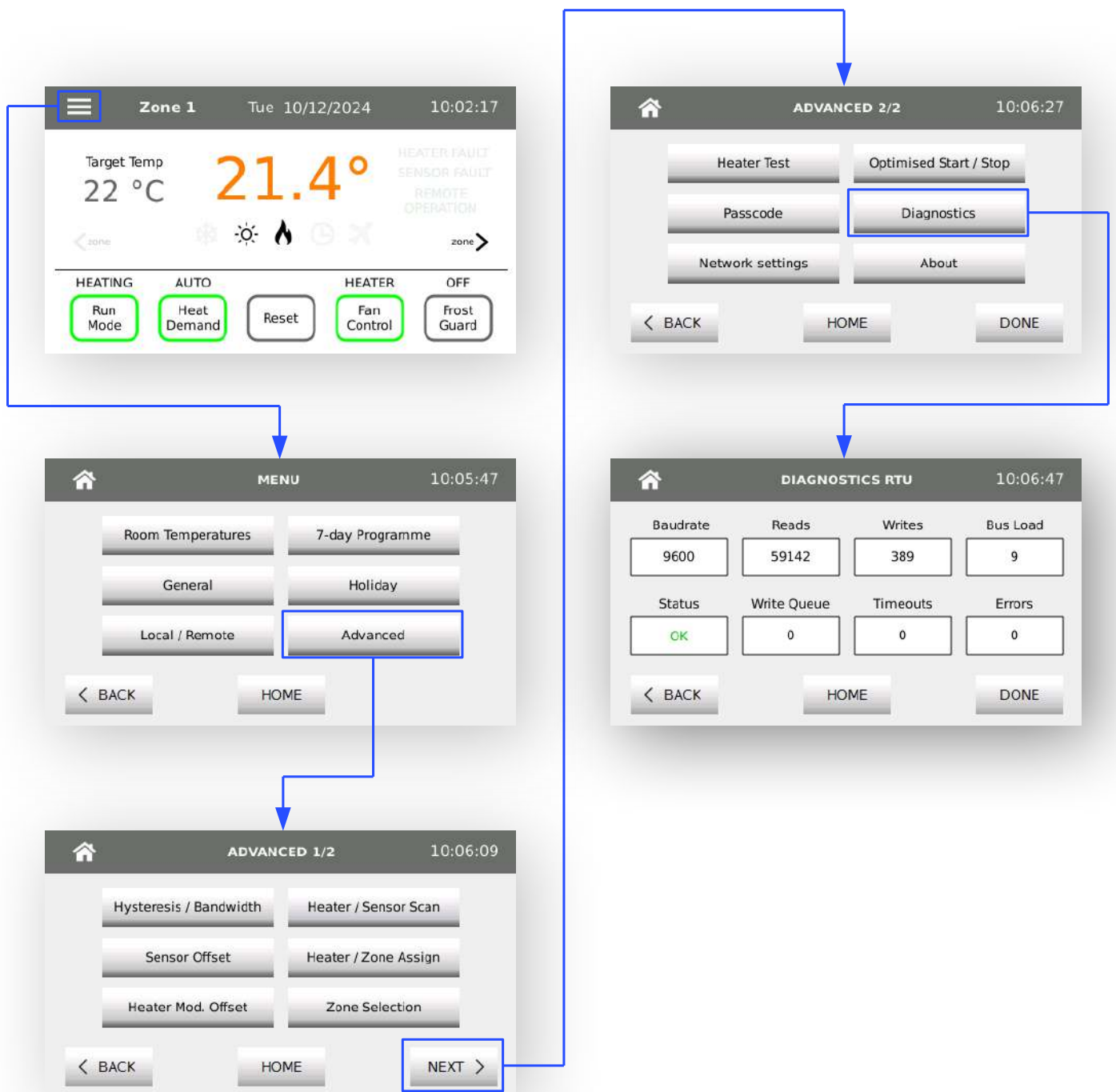
Passcode

Changing the passcode for the Advanced menu.
The default password the unit is shipped with is '0'.



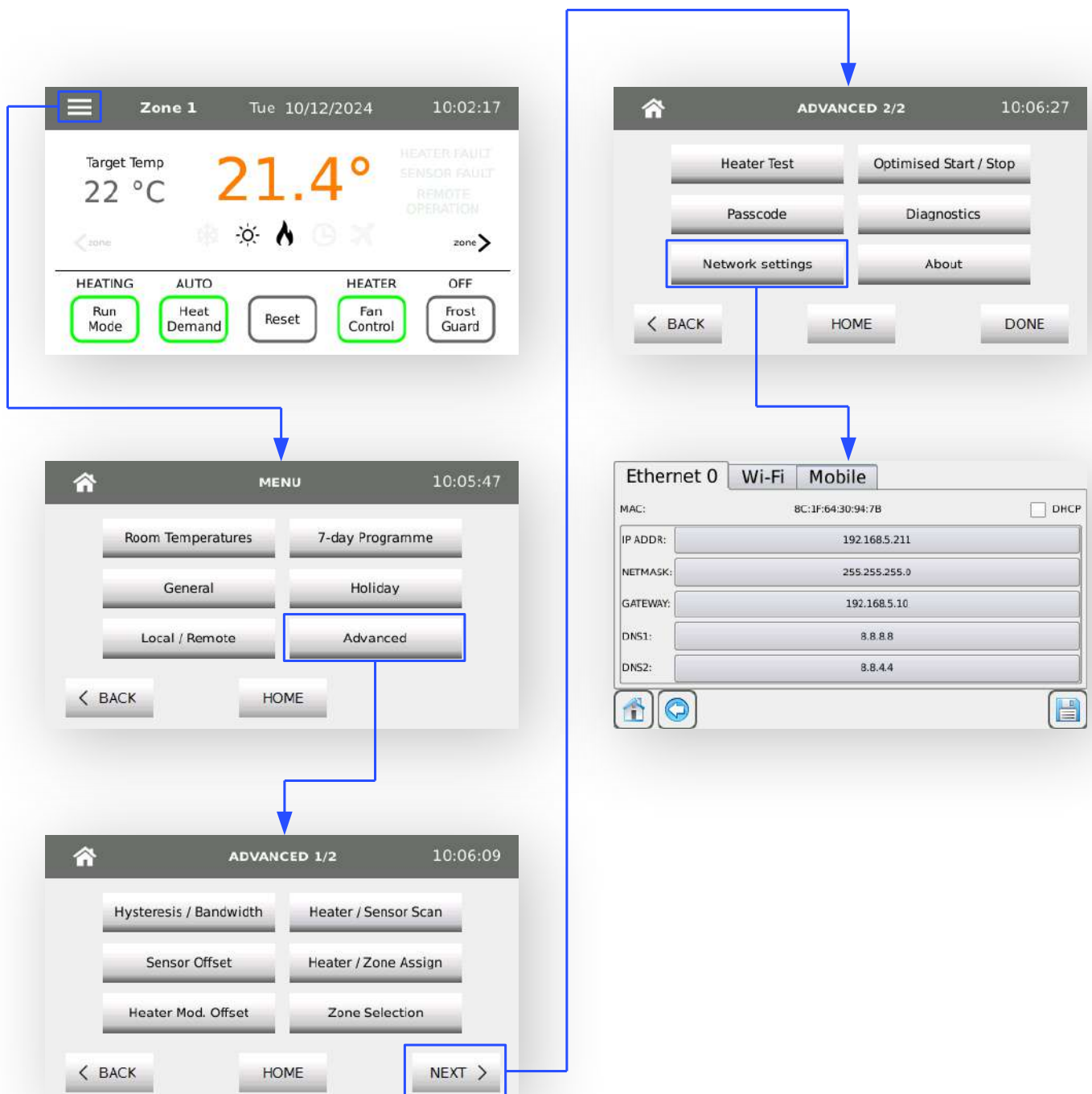
Diagnostics

Comms status and detail of Modbus connection to heaters.



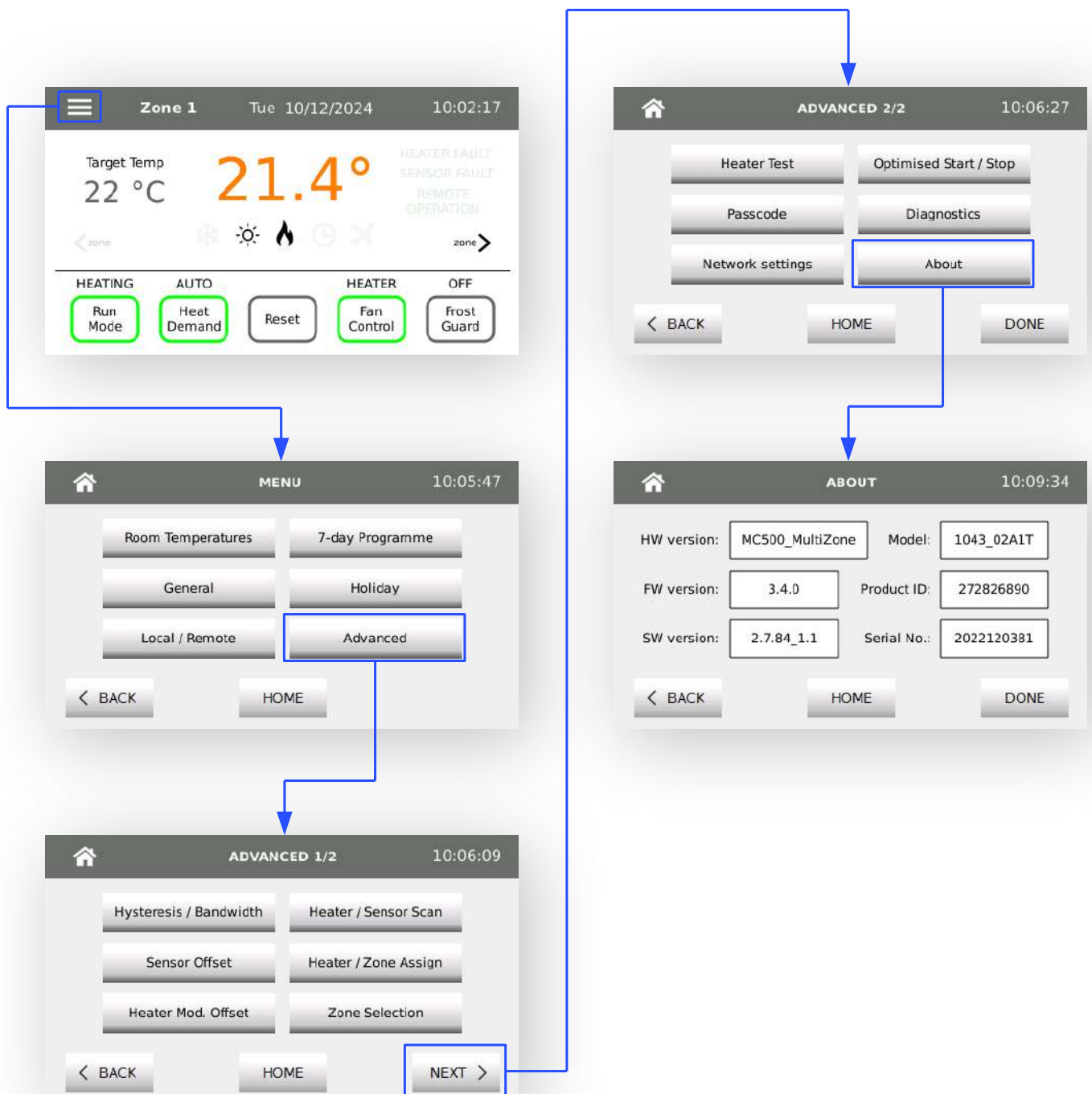
Network Settings

Here, the network settings - such as IP address, Subnet mask and Gateway - can be changed, to fit the BMS system it is connected to, if applicable.



About

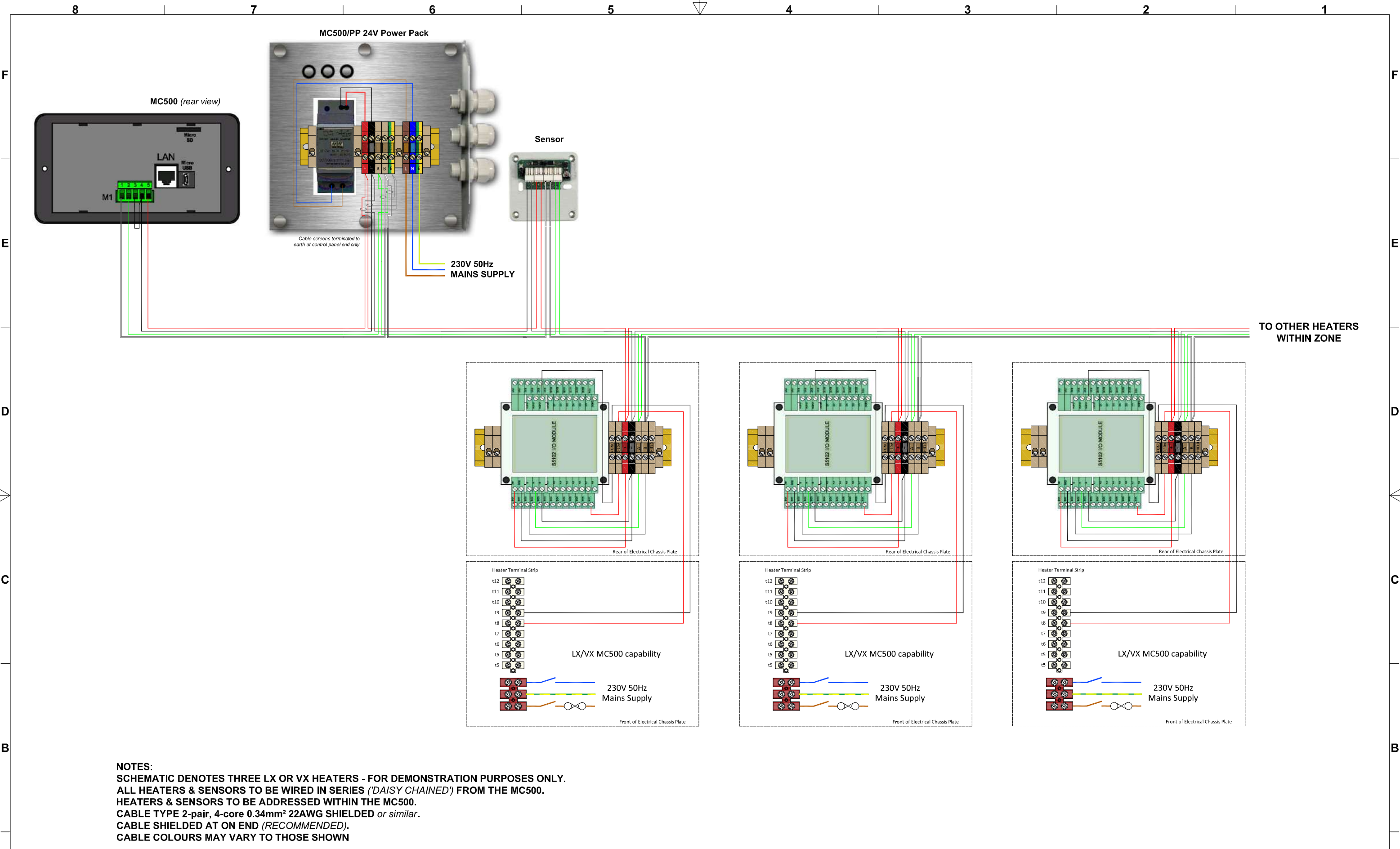
Product information and Controller and Software detail.



Modbus Client settings for use with an MC500 Multi Zone Controller

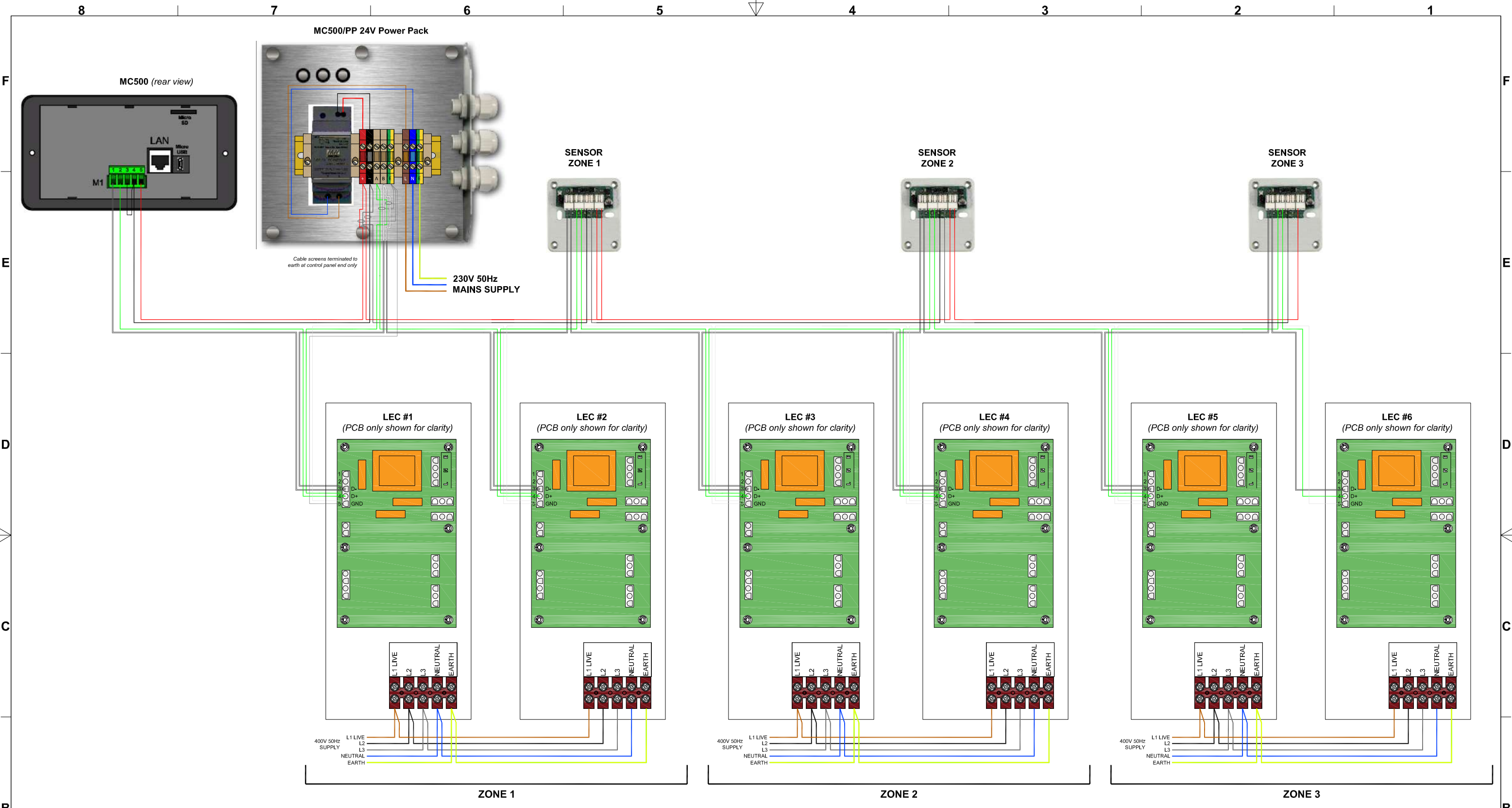
Protocol: Modbus TCP
 Address IP_V4: 192.168.5.211
 Remote Port: 502
 Device Address / Node ID: 1
 Modbus Address info: Holding register; Offset has already been implemented in the table below

ADDRESS	DATA TYPE	DESCRIPTION	PROPERTY	MODE	NOTES
40101	Word	Read current Temperature Zone 1 from MC500	Read	0	Divide value by 10 in BMS-logic, to get temperature with one decimal
40102	Word	Read current Temperature Zone 2 from MC500	Read	0	
40103	Word	Read current Temperature Zone 3 from MC500	Read	0	
40104	Word	Read current Temperature Zone 4 from MC500	Read	0	
40105	Word	Read Current Setpoint Zone 1 from MC500	Read	0	
40106	Word	Read Current Setpoint Zone 2 from MC500	Read	0	
40107	Word	Read Current Setpoint Zone 3 from MC500	Read	0	
40108	Word	Read Current Setpoint Zone 4 from MC500	Read	0	
40109	Word	Write Daytime Setpoint Zone 1 to MC500	Read/Write	1	When the MC500 is set to <u>Remote Operation</u>
40110	Word	Write Daytime Setpoint Zone 2 to MC500	Read/Write	1	
40111	Word	Write Daytime Setpoint Zone 3 to MC500	Read/Write	1	
40112	Word	Write Daytime Setpoint Zone 4 to MC500	Read/Write	1	
40113	Word	Write Nighttime Setpoint Zone 1 to MC500	Read/Write	1	
40114	Word	Write Nighttime Setpoint Zone 2 to MC500	Read/Write	1	
40115	Word	Write Nighttime Setpoint Zone 3 to MC500	Read/Write	1	
40116	Word	Write Nighttime Setpoint Zone 4 to MC500	Read/Write	1	
40121	Bit 0 of Word	Status 'Run Mode' Zone 1 MC500	Read	0	1 = Heating 0 = Off
	Bit 1 of Word	Status 'Run Mode' Zone 2 MC500			
	Bit 2 of Word	Status 'Run Mode' Zone 3 MC500			
	Bit 3 of Word	Status 'Run Mode' Zone 4 MC500			
	Bit 4 of Word	Status Daytime Active Zone 1 MC500			
	Bit 5 of Word	Status Daytime Active Zone 2 MC500			1 = Daytime 0 = Nighttime
	Bit 6 of Word	Status Daytime Active Zone 3 MC500			
	Bit 7 of Word	Status Daytime Active Zone 4 MC500			
	Bit 8 of Word	Status Heat Demand Zone 1 MC500			
	Bit 9 of Word	Status Heat Demand Zone 2 MC500			1 = Heat Demand 0 = No Heat Demand
	Bit 10 of Word	Status Heat Demand Zone 3 MC500			
	Bit 11 of Word	Status Heat Demand Zone 4 MC500			
	Bit 12 of Word	Status Fault Sensor Zone 1 MC500			
	Bit 13 of Word	Status Fault Sensor Zone 2 MC500			1 = Fault 0 = No Fault
	Bit 14 of Word	Status Fault Sensor Zone 3 MC500			
	Bit 15 of Word	Status Fault Sensor Zone 4 MC500			
40122	Bit 0 of Word	Enable Remote Operation of Zone 1	Read/Write	1	Remotely 'Enable' or 'Disable' Remote Operation 1 = Enabled 0 = Disabled
	Bit 1 of Word	Enable Remote Operation of Zone 2			
	Bit 2 of Word	Enable Remote Operation of Zone 3			
	Bit 3 of Word	Enable Remote Operation of Zone 4			
	Bit 4 of Word	Control 'Run Mode' Zone 1			
	Bit 5 of Word	Control 'Run Mode' Zone 2			Remotely Select 'Heating' or 'Off' (When MC500 is set to <u>Remote Operation</u>) 1 = Heating 0 = Off
	Bit 6 of Word	Control 'Run Mode' Zone 3			
	Bit 7 of Word	Control 'Run Mode' Zone 4			
	Bit 8 of Word	Control Daytime and Nighttime Zone 1			
	Bit 9 of Word	Control Daytime and Nighttime Zone 2			Remotely Select 'Daytime' or 'Nighttime' (When MC500 is set to <u>Remote Operation</u>) 1 = Daytime 0 = Nighttime
	Bit 10 of Word	Control Daytime and Nighttime Zone 3			
	Bit 11 of Word	Control Daytime and Nighttime Zone 4			



NOTES:
SCHEMATIC DENOTES THREE LX OR VX HEATERS - FOR DEMONSTRATION PURPOSES ONLY.
ALL HEATERS & SENSORS TO BE WIRED IN SERIES ('DAISY CHAINED') FROM THE MC500.
HEATERS & SENSORS TO BE ADDRESSED WITHIN THE MC500.
CABLE TYPE 2-pair, 4-core 0.34mm² 22AWG SHIELDED or similar.
CABLE SHIELDED AT ON END (RECOMMENDED).
CABLE COLOURS MAY VARY TO THOSE SHOWN

				POWRMATIC LTD				APPROVED BY:		TITLE:	
				Powrmatic Ltd. Hortbridge, Ilminster, Somerset. TA19 9PS. Tel: 01460 53535 Fax: 01460 52341 Web: www.powrmatic.co.uk E mail: r&d@powrmatic.co.uk				mm		Typical MC500 Interface to LX Heaters - site wiring detail	
				This drawing is copyright and the property of POWRMATIC LIMITED. It must not be used without their knowledge, nor communicated to any other person or company.				UNSPEC. TOLS. Hole centers ±0.1mm General ±0.1mm Finished sizes ±0.1mm		DRG NO:	
								DO NOT SCALE		C00GBE0557_LX_SITE	
ITEM	PART NUMBER	DESCRIPTION	QTY	DRN	I/A No	DCR	DATE	MODIFICATIONS	ISSUE		
				DG	-	-	21/01/26	RD/BLK CABLES SWAPPED ON PSU. NEUTRAL TERM NOW BLUE. SCREEN EARTH ADDED	3		
				DG	-	-	05/06/25	SECONDARY RAIL REVAMPED	2		
				DG	-	-	08/04/25	NEW DRAWING	1		



NOTES:
SCHEMATIC DENOTES THREE ZONES, TWO HEATERS IN EACH ZONE - FOR DEMONSTRATION PURPOSES ONLY.
ALL LEC HEATERS & SENSORS TO BE WIRED IN SERIES ('DAISY CHAINED') FROM THE MC500.
LEC HEATERS & SENSORS TO BE ADDRESSED WITHIN THE MC500.
LEC HEATERS DO NOT REQUIRE A 24V CONNECTION
CABLE TYPE 2-pair, 4-core 0.34mm² 22AWG SHIELDED or similar.
CABLE SHIELDED AT ON END (RECOMMENDED).
CABLE COLOURS MAY VARY TO THOSE SHOWN

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