

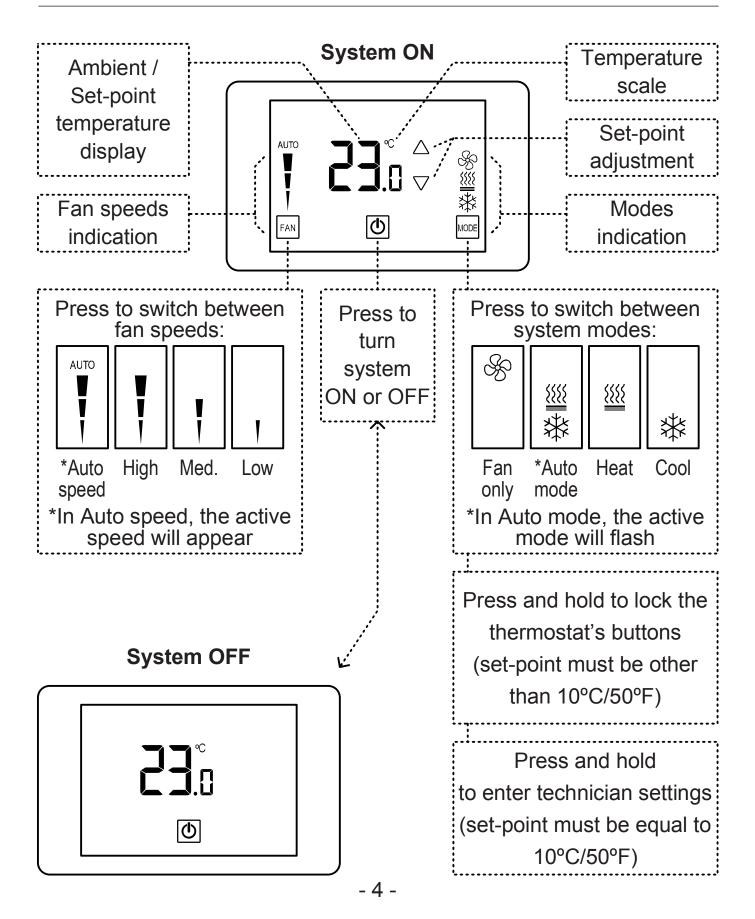
Touch Screen Thermostat MTSC/SUPER, MTSC24/SUPER Series MTS/SUPER, MTS24/SUPER Series

Owner's manual and technician settings



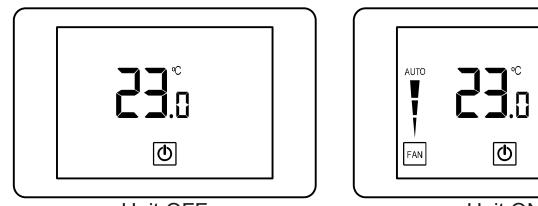
1.	Own	er's Manual	4
	1.1	Quick Guide	4
	1.2	Turning the unit ON or OFF	5
	1.3	Adjusting the set-point temperature	5
	1.4	Switch between temperature scales	5
	1.5	Switching between System modes	6
	1.6	Switching between Fan speeds	6
	1.7	Fan on demand (Auto fan)	7
	1.8	Lock the thermostat's buttons	7
	1.9	Timer for turning the thermostat off	7
	1.10	Economy mode indications E1 – E5	8
	1.11	Freeze protection	9
2.	Insta	allation Instructions	10
3.	Wiri	ng Configuration and DIP Switches	13
4.	Tech	nnician Settings	20
5.	MAC	Address (MTSC Series only)	36

1.1 Quick Guide



1.2 Turning the unit ON or OFF

- Press the button to turn the unit ON system mode and fan speed symbols will appear on display.
- Press again to turn the unit OFF the symbols will disappear.



Unit OFF

Unit ON

1.3 Adjusting the set-point temperature

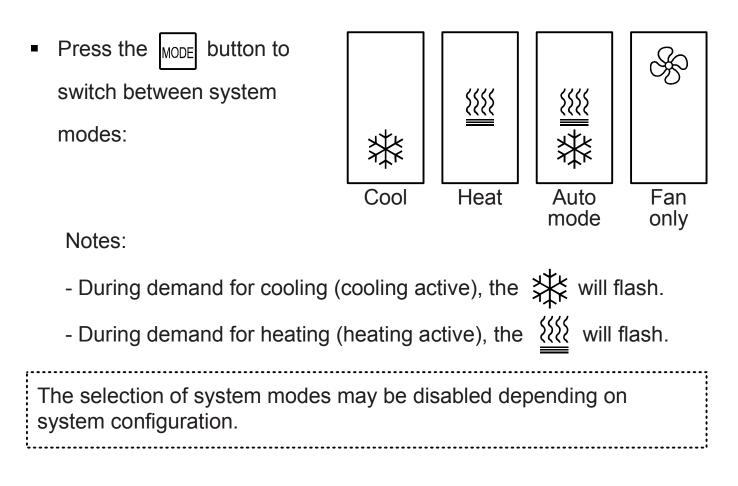
- While the thermostat is ON, press the ∇ or △ buttons the set-point temperature will flash.
- Press again to adjust the set point.

1.4 Switching between temperature scales

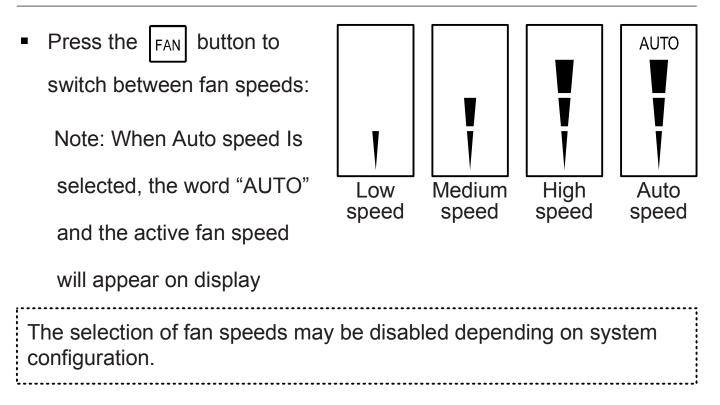
Press and hold the button to switch between temperature scales.

Note: set-point must be other than 10°C,11°C/50°F,51°F

1.5 Switching between system modes



1.6 Switching between fan speeds



1.7 Fan on demand (Auto fan)

Press and hold the FAN button to activate or deactivate
 fan on demand (Auto fan) function.

Notes:

- When activated, the fan will run with demand for cooling or heating.
- The fan on demand function cannot be activated with



"Fan only" mode.

This option may be disabled, depending on system configuration.

1.8 Lock the thermostat's buttons

Press and hold the MODE button to lock or unlock the thermostat's buttons. When locked, the A icon will appear on display.

1.9 Timer for turning the thermostat off

Press and hold the button – the hours for the off-timer will appear on display. Adjust the timer using the and buttos.
 Range: 0...10 Hours

Note: Set "0" to disable the timer.

- Economy mode can be activated by triggering a window contact, door switch, key-tag or PIR sensor.
- When Economy mode is active, the thermostat will either turn off or use special economy set points for cooling and heating set by technician.

Please refer to parameters P25 and P26 in the technician setting section of this manual.

- The following indications will appear on display:
 - E1 Economy mode triggered by window contact
 - **E2** Economy mode triggered by PIR (occupancy sensor)
 - **E4** Economy mode triggered by door switch or key-tag
 - E5 OFF state triggered by door switch or key-tag
 - E6 Valves OFF and Fan low triggered by door switch or key-tag

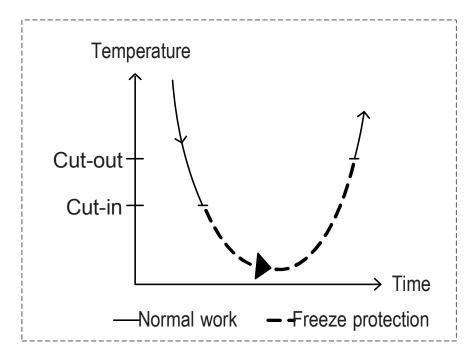
1.11 Freeze protection

The Freeze protection feature will not allow the room temperature to drop below predefined cut-in temperature. Depending on which configuration the system is operating under (with or without Heat pump) this feature will force the system to operate in heat mode and activate the fan.

This feature will take effect when the thermostat is either ON or OFF. When the room temperature rises above the predefined cut-out temperature, the thermostat will return to its previous state.

When freeze protection is activated, the display alternates between "AL" and room temperature.

For selection of cut-in and cut-out temperatures, please refer to technician settings parameters P36 and P37.



2. Installation Instructions

The MTS/SUPER Thermostat designed for flush mounting in the room to be controlled. It should be located where the occupant can easily read the display and use the controls.

If the built in temperature sensor is being used to measure room temperature, the panel should be placed where the temperature is representative of the general room conditions, away from cold or warm air draughts, radiant heat and direct sunlight.

The panel should not be installed on an outside wall.

- The standard installation height is 1.5 meter (5 feet) from the floor.



WARNING: Risk of Electric Shock and Property Damage. Disconnect power supply before making electrical connections. The installation is to be performed by a qualified electrician.

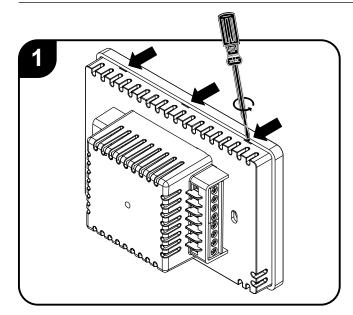


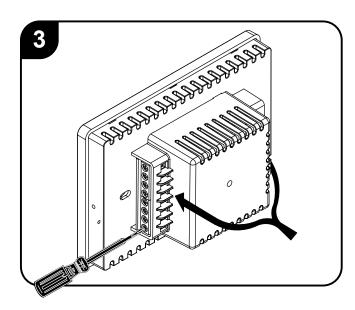
WARNING: The integrated circuits in the controller are sensitive to static currents. Take suitable precautions.

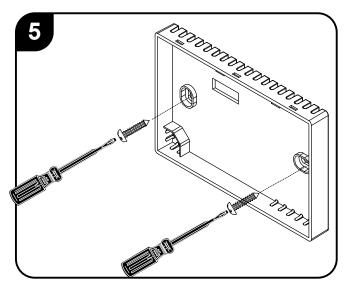
Installation procedure:

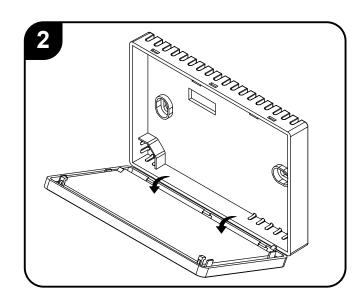
- separate the front display from the back plastic cover by inserting a a small flat screwdriver into each of the three slots as shown in the picture and rotating it gently.
- 2. Remove the front display and keep it in a safe place.
- Connect the wires as shown in the enclosed wiring diagram. All terminals accept 1x0.5mm²/24 AWG.
- 4. If necessary, make changes to the DIP switches position as explained in this manual.
- Place the thermostat in the electrical box and tighten up the 2 screws Europe - Gewiss Box - GW 24 203 or similar
 US - Carlon – B114R or similar or similar
- 6. Adapt the front frame-panel into its place, by pushing it towards the wall.

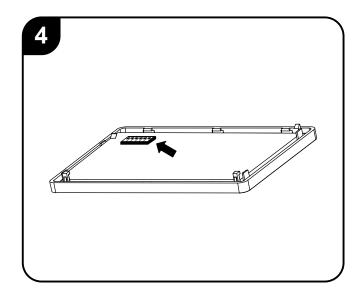
2. Installation Instructions (cont')

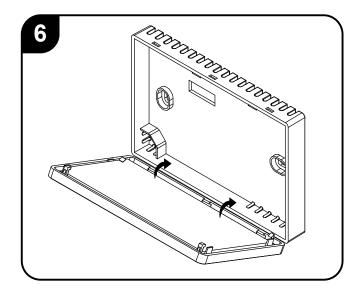




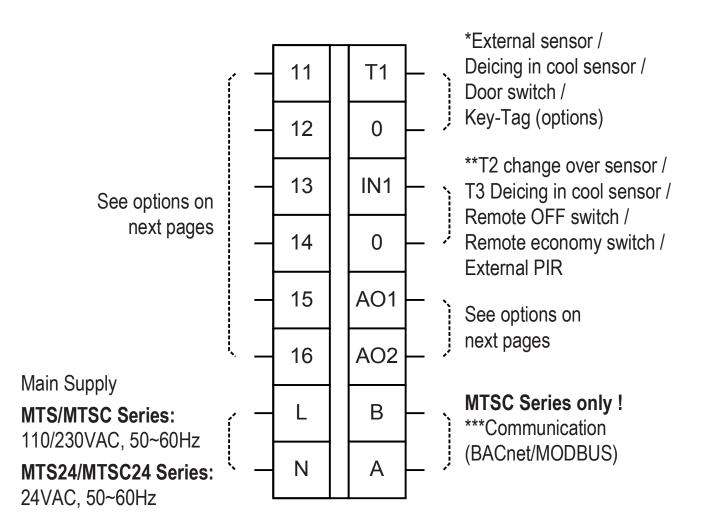








3. Wiring configuration and DIP Switches



* For T1,0 functionality – refer to parameter P8 in the technician settings section.

** For IN1,0 functionality – refer to parameter P9 in the technician settings section.

***Communication protocol (MTSC Series only) is set by DIP Switch S1.8 as follows:

S1.8 ON – BACnet

S1.8 OFF - MODBUS

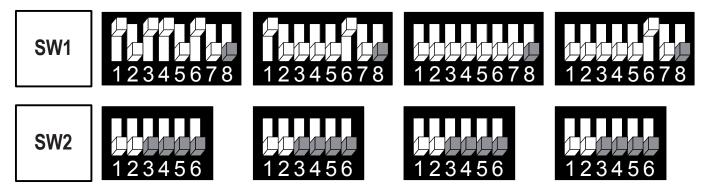
Current ratings:

Outputs 11-16	24/110/230VAC - depending on supply voltage,		
	3A maximum each	5A total	
Outputs AO1, AO2	0-10VDC, 5mA		

	HC32 1 Speed fan	HP42 1 Speed fan	HP22 3 Speed fan	HP21 3 Speed fan
11	Heat element 3	Heat element 2	Fan high	Fan high
12	Heat element 2	Heat element 1	Fan medium	Fan medium
13	Fan (1 speed)	Fan (1 speed)	Fan low	Fan low
14	Compressor 2	Compressor 2	Compressor 2	Heat element
15	Compressor 1	Compressor 1	Compressor 1	Compressor 1
16	Heat element 1 (see SW1.4 HC)	Heat pump (see SW1.4 HP)	Heat pump (see SW1.4 HP)	Heat pump (see SW1.4 HP)
A01	Х	Х	Х	Х
AO2	Х	Х	Х	Х

Fan on/off: 24/110/230VAC, 3A max.

Control - Heat elements, Heat pump, Compressors: 24/110/230VAC, 0.3A max.



MTSC Series: SW1.8 = Communication Protocol: ON – BACnet, OFF – MODBUS

SW1.4 = HP: ON – Heat pump active in cool, OFF – Heat pump active in heat HC: ON – Electrical heater, OFF – Oil/Gas heater (no fan)
SW1.5 = ON: Disable compressor delay, OFF – Enable compressor delay

S2.3 - S2.6 - Not in use

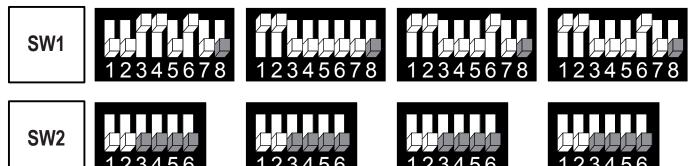
HP - Heat pump system **HC** - Non heat pump system **##** - Heating/Cooling stages

	HC21 3 Speeds fan	HP22 Fan VFS	HP21 Fan VFS	HC21 Fan VFS
11	Fan high	Fan high	Fan high	Fan high
12	Fan medium	Fan medium	Fan medium	Fan medium
13	Fan low	Fan low	Fan low	Fan low
14	Heat element 2	Compressor 2	Heat element	Heat element 2
15	Compressor 1	Compressor 1	Compressor	Compressor 1
16	Heat element 1 (see SW1.4 HC)	Heat pump (see SW1.4 HP)	Heat pump (see SW1.4 HP)	Heat element 1 (see SW1.4 HC)
A01	Х	Х	Х	Х
AO2	Х	Fan VFS	Fan VFS	Fan VFS

Fan on/off: 24/110/230VAC, 3A max.

Fan VFS: 0-10VDC. 5mA Not isolated

Control - Heat elements, Heat pump, Compressors: 24/110/230VAC, 0.3A max.



SW1.8 = Protocol: ON – BACnet, OFF – MODBUS

SW1.4 = HP: ON – Heat pump active in cool, OFF – Heat pump active in heat HC: ON – Electrical heater, OFF – Oil/Gas heater (no fan)

SW1.5 = ON: Disable compressor delay, OFF – Enable compressor delay S2.3 – S2.6 – Not in use

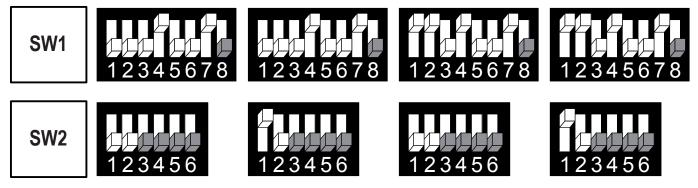
HP - Heat pump system **HC** - Non heat pump system **##** - Heating/Cooling stages

	2-Pipe 3 Speed	2-Pipe, 3 Speed Cool/Heat PID	2-Pipe Fan VFS	2-Pipe, Fan VFS Cool/Heat PID
11	Fan high	Fan high	Fan high	Fan high
12	Fan medium	Fan medium	Fan medium	Fan medium
13	Fan low	Fan low	Fan low	Fan low
14	Heat element (2 nd stage heat)			
15	Cool/Heat valve	Х	Cool/Heat valve	Х
16	Х	Х	Х	Х
A01	Х	Cooll/Heat valve PID	Х	Cooll/Heat valve PID
AO2	Х	Х	Fan VFS	Fan VFS

Fan on/off: 24/110/230VAC, 3A max.

Fan VFS, PID valves: 0-10VDC. 5mA Not isolated

Control - Heat elements, Cool/Heat valves, Compressors: 24/110/230VAC, 0.3A max.



MTSC Series: SW1.8 = Communication Protocol: ON – BACnet, OFF – MODBUS

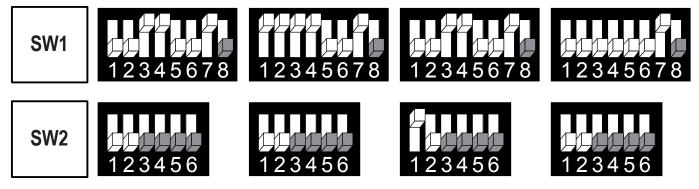
SW1.4 = Enable/Disable 2nd heating stage: ON – Enable, OFF – Disable SW1.5 = Chilled beam option (fan will not run with 1st stage cooling) – SW1.5 ON S2.3 – S2.6 – Not in use

	4-Pipe 3 Speed fan	4-Pipe, 3 Speed Fan VFS	4-Pipe, 3 Speed Cool-PID	2-Pipe, 3 Speed Cool only**
11	Fan high	Fan high	Fan high	Fan high
12	Fan medium	Fan medium	Fan medium	Fan medium
13	Fan low	Fan low	Fan low	Fan low
14	Heat element (2 nd stage heat)	Heat element (2 nd stage heat)	Heat element (2 nd stage heat)	Х
15	Cool valve	Cool valve	Х	Cool valve
16	Heat valve (1 st stage heat)	Heat valve (1 st stage heat)	Heat valve (1 st stage heat)	Х
A01	Х	Х	Cool valve PID	Х
AO2	Х	Fan VFS	Х	Х

Fan on/off: 21/110/230VAC, 3A max.

Fan VFS, PID valves: 0-10VDC. 5mA Not isolated

Control - Heat elements, Cool/Heat valves, Compressors: 24/110/230VAC, 0.3A max.



MTSC Series: SW1.8 = Communication Protocol: ON – BACnet, OFF – MODBUS

SW1.4 = Enable/Disable 2nd heating stage: ON – Enable, OFF – Disable SW1.5 = Chilled beam option (fan will not run with 1st stage cooling) – SW1.5 ON S2.3 – S2.6 – Not in use

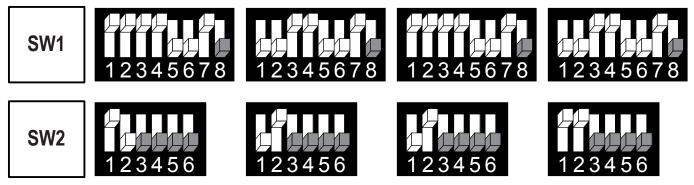
**For <u>Cool only</u> configuration, change technician parameter P9 to "01" (change over sensor) and leave contact IN,0 open.

	4-Pipe, Fan VFS Cool PID	4-Pipe, 3 Speed Heat PID	4-Pipe, Fan VFS Heat PID	4-Pipe, 3 Speed Heat PID, Cool PID
11	Fan high	Fan high	Fan high	Fan high
12	Fan medium	Fan medium	Fan medium	Fan medium
13	Fan low	Fan low	Fan low	Fan low
14	Heat element (2 nd stage heat)	Heat element (2 nd stage heat)	Heat element (2 nd stage heat)	Heat element (2 nd stage heat)
15	Х	Cool valve	Cool valve	Х
16	Heat valve (1 st stage heat)	Х	Х	Х
A01	Cool valve PID	Heat valve PID (1 st stage heat)	Heat valve PID (1 st stage heat)	Cool valve PID
AO2	Fan VFS	Х	Fan VFS	Heat valve PID (1 st stage heat)

Fan on/off: 24/110/230VAC, 3A max.

Fan VFS, PID valves: 0-10VDC. 5mA Not isolated

Control - Heat elements, Cool/Heat valves, Compressors: 24/110/230VAC, 0.3A max.



MTSC Series: SW1.8 = Communication Protocol: ON – BACnet, OFF – MODBUS

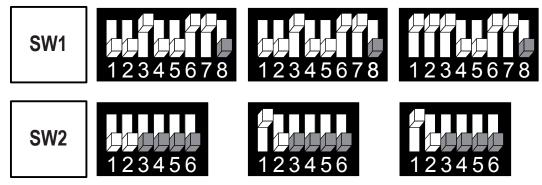
SW1.4 = Enable/Disable 2nd heating stage: ON – Enable, OFF – Disable SW1.5 = Chilled beam option (fan will not run with 1st stage cooling) – SW1.5 ON S2.3 – S2.6 – Not in use

	4P-3S Floor heating	4-Pipe 3S C-PID Floor heating	4-Pipe VFS C-PID Floor heating
11	Fan high	Fan high	Fan high
12	Fan medium	Fan medium	Fan medium
13	Fan Iow	Fan low	Fan low
14	Floor heating (1 st stage heat)	Floor heating (1 st stage heat)	Floor heating (1 st stage heat)
15	Cool	Х	Х
16	Heat (2 nd stage heat)	Heat (2 nd stage heat)	Heat (2 nd stage heat)
A01	Х	Cool valve PID	Cool valve PID
AO2	Х	Х	Fan VFS

Fan on/off: 24/110/230VAC, 3A max.

Fan VFS, PID valves: 0-10VDC. 5mA Not isolated

Control - Heat elements, Cool/Heat valves, Compressors: 24/110/230VAC, 0.3A max.



Floor heating – the fan will not run with 1st stage heat

MTSC Series: SW1.8 = Communication Protocol: ON – BACnet, OFF – MODBUS

SW1.4 = Enable/Disable 2^{nd} heating stage: ON – Enable, OFF – Disable SW1.5 = Chilled beam option (fan will not run with 1^{st} stage cooling) – SW1.5 ON S2.3 – S2.6 – Not in use

C-PID = Cool valve PID **H-PID** = Heat valve PID **VFS** = Fan VFS

4. Technician Settings

Enter technician settings

- Adjust the set-point temperature to 10°C.
- To enter technician settings, press and hold the button for 5 seconds.
- Use the MODE button to advance to the next parameter.
- Use the FAN button to return to return to the previous parameter.
- Press the button or wait 60 seconds to exit technician settings and return to normal display.

FAN (Press and hold) -----

Note: The displayed parameters may depend on system configuration

P1 –	Range:	or temperature readings calibration -6+6°C / -9+9°F. 0°C / 0°F.
P2 –	Set poin	t limit for cooling
	Range:	535°C / 4190°F.
	Default:	5°C / 35°F.
P3 –	Set poin	t limit for heating
	Range:	535°C / 4195°F.
	Default:	35°C / 95°F.
P4 –	Lock the	e [Fan] button
		[Fan] button Locked
	"01" -	
	"01" - "00" -	[Fan] button Locked
	"01" - "00" - Lock the	[Fan] button Locked [Fan] button unlocked
	"01" - "00" - Lock the "01" -	[Fan] button Locked [Fan] button unlocked [Mode] button
	"01" - "00" - Lock the "01" - "00" -	[Fan] button Locked [Fan] button unlocked [Mode] button [Mode] button Locked
P5 –	"01" - "00" - Lock the "01" - "00" - Lock the	 [Fan] button Locked [Fan] button unlocked [Mode] button [Mode] button Locked [Mode] button unlocked (default)
P5 –	"01" - "00" - Lock the "01" - "00" - Lock the "01" -	 [Fan] button Locked [Fan] button unlocked [Mode] button [Mode] button Locked [Mode] button unlocked (default) [On/Off] button

P7 – Lock the [+] and [-] buttons (Set buttons)

"01" - [+] and [-] buttons Locked

"00" - [+] and [-] buttons unlocked (default)

P8 – Functionality of T1 terminals

- "00" T1 terminals are not in use (default)
- "01" External sensor
- "02" T3 Deicing in cool (AC)
- "03" Door switch*
- "04" Key-tag*

*Voltage free contacts - for polarity and time delay – see technician parameters P12 and P13

P9 – Functionality of IN1,0 terminals

- "00" IN1,0 terminals are not in use (default)
- "01" T2 (Change over sensor) in FC / De-Ice in Heat in A/C In Cool only configuration, select "01" and leave contact open.
- "02" T3 Deicing in cool (AC)
- "03" Voltage free contact Remote On/Off**
- "04" Voltage free contact Remote Economy**
- "05" External Passive Infrared detector (PIR)

**Voltage free contacts - for polarity and time delay – see technician parameters P10 and P11

P10 –	Polarity of remote switch contact on terminals IN,0 (P09 = "03" or "04") "00" - Normally close (default) "01" - Normally open
P11 –	Time delay of remote switch contact on terminals IN,0(P09 = "03" or "04")Range:0999 seconds.Default:600 seconds.
P12 –	Polarity of door switch/key-tag contact on terminals T1,0 (P08 = "03" or "04") "00" - Normally close (default) "01" - Normally open
P13 –	Door switch / Door key-tag delay time Range: 0999 seconds Default: 180 seconds
P14 –	Enable/Disable Auto change over mode "00" - Disable Auto change over mode "01" - Enable Auto change over mode (default)
P15 –	 Occupancy sensor logic (PIR) "00" - Thermostat turns off when unoccupied and back on when re-occupied "01" - Thermostat turns off when unoccupied and remains off when re-occupied "02" - Thermostat uses economy set points (default)

4. Tech	. Technician settings (cont')		
P16 –	Enable/Disable Occupancy sensor "00" - Disable "01" - Enable (default)		
P17 –	PIR (occupancy sensor) delay time before switching to unoccupied mode (ON delay) Range: 0250 minutes, Default: 20 minutes		
P18 –	 Door switch/key-tag logic "00" - Thermostat turns off when unoccupied and back on when re-occupied. "01" - Thermostat uses economy set points when unoccupied. "02" - Valves turn OFF and fan running on low speed when unoccupied. 		
P19 –	PIR (Occupancy sensor) polarity "00" - Normally open (default) "01" - Normally close		
P25 –	Economy set point for cooling Range: 535°C / 4190°F Default: 30°C / 86°F		
P26 –	Economy set point for heating Range: 535°C / 4190°F Default: 10°C / 50°F		

P27 –	Time on-delay between heating stagesRange:0600 secondsDefault:5 seconds
P28 –	Time off-delay between heating stages Range: 0600 seconds
	Default: 1 seconds
P30 –	Beeper ON or OFF "01" - Beeper ON (default) "00" - Beeper OFF
P31 –	Fan ON delay in cooling (seconds) (FC only!)Range:0120 secondsDefault:0 seconds (no delay)
P32 –	Fan OFF delay in cooling (seconds)Range:0120 secondsDefault:0 seconds (no delay)
P33 –	Fan ON delay in heating (seconds) (FC only!)
	Range: 0120 seconds Default: 0 seconds (no delay)
P34 –	Fan OFF delay in heating (seconds)Range:0120 secondsDefault:30 seconds

4. Technician settings (cont')		
P35 –	"01" -	Disable Freeze protection Enable freeze protection (default) Disable freeze protection
P36 –	Range: 8	protection cut-in set point 315°C / 4659°F 8°C / 46°F
P37 –	Range: 7	protection cut-out set point 1017°C / 5063°F 10°C / 50°F
P40 –		er counter (hours) – Read only 0…999 hours
P41 –	"00" -	I ter time No action - keep counting (default) Reset filter counter
P42 –	Range:	ilter alarm delay time counter (hours) 0999 hours 0 hours (0 = Disable)

4.	Technician	settings	(cont')
			(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,

P43 –	Not in use
P44 –	Not in use
P45 –	Cool differential band (On/Off) Range: 05°C / 010°F Default: 1°C / 2°F
P46 –	Cool differential band offset Range: 05°C / 010°F Default: 0°C / 0°F
P47 –	Heat differential band (On/Off) Range: 05°C / 010°F Default: 1°C / 2°F
P48 –	Heat differential band offset Range: -50°C / -100°F Default: 0°C / 0°F

P49 –	Shift between Cool and Heat in Auto change over mode Range: 010°C / 020°F Default: 2°C / 4°F
P50 –	Shift between Cooling stages (AC only!)
	Range: 010°C / 020°F
	Default: 2°C / 4°F
P51 –	Shift between Heating stages
	Range: 010°C / 020°F
	Default: 2°C / 4°F
P52 –	Cool proportional band (FC only!)
	Range: 210°C / 420°F
	Range: 210°C / 420°F
	Range: 210°C / 420°F Default: 2°C / 4°F
	Range: 210°C / 420°F Default: 2°C / 4°F Cool proportional low limit (FC only!)
	Range: 210°C / 420°F Default: 2°C / 4°F Cool proportional low limit (FC only!) Range: 0100%
P53 –	Range: 210°C / 420°F Default: 2°C / 4°F Cool proportional low limit (FC only!) Range: 0100% Default: 0%

P55 –	Heat proportional band (FC only!) Range: 210°C / 420°F Default: 2°C / 4°F
P56 –	Heat proportional low limit (FC only!) Range: 0100% Default: 0%
P57 –	Heat proportional high limit (FC only!) Range: 0100% Default: 100%
P60 –	Proportional ON percent (FC only!) Range: 030% Default: 30%
P61 –	Proportional OFF percent (FC only!) Range: 020% Default: 10%

P63 –	Range:	delay between cooling stages (AC only!) 0600 seconds 5 seconds
P64 –	Range:	delay between cooling stages (AC only!) 0600 seconds 1 seconds
P65 –		proportional band in cooling 10°C / 420°F .ºC / 4°F
P66 –		proportional band in heating 10°C / 420°F .°C / 4°F
P67 –	Fan VFS Range: 0. Default: 2	
P68 –	Fan VFS Range: 30 Default: 5	
P69 –	Fan VFS Range: 60 Default: 9	

P70 –	Fan VFS Low speed percent in heating Range: 030% Default: 30%
P71 –	Fan VFS Medium speed percent in heating Range: 3060% Default: 50%
P72 –	Fan VFS High speed percent in heating Range: 60100% Default: 80%
P74 –	VFS Medium speed differential Range: 1050% Default: 35
P75 –	VFS High speed differential Range: 1050% Default: 35

P76 –	Fan VFS Low limit in cooling
	Range: 0100%
	Default: 0%

P77 – Fan VFS High limit in cooling Range: 0...100% Default: 100%

P78 – Fan VFS Low limit in heating Range: 0...100% Default: 0%

P79 – Fan VFS High limit in heating Range: 0...100% Default: 100%

P83 – View T2 temperature sensor readings

Note: If T2 is not connected, -9.8°C / -9.8°F will appear on display

P84 – View T3 temperature sensor readings

Note: If T3 is not connected, -9.8°C / -9.8°F will appear on display

P85 –	Deice in cool – cut-in temperature (AC only!) Range: -2099°C Default: 0°C
P86 –	Deice in cool – cut-out temperature (AC only!) Range: -2099°C Default: 8°C
P87 –	Deice in heat time (AC only!) Range: 120420 Seconds Default: 300 Seconds
P88 –	Deice in heat break time (AC only!) Range: 6001800 Seconds Default: 1500 Seconds
P89 –	Deice in heat – cut-in temperature (AC only!) Range: -2099°C Default: 0°C
P90 –	Deice in heat – cut-out temperature (AC only!) Range: -2099°C Default: 16°C
P91 –	Compressor delay (AC only!) Range: 0360 Seconds Default: 10 Seconds

P99 –	One or Two set points (for cool and for heat) (FC only!) "00" - One set point for cooling and heating (default) "01" - two set points – one for cool and one for heat
P100 –	Enable/Disable Screen dimming "00" - Enable "01" Disable (default)
P101 -	"01" - Disable (default) Screen dimming delay
	Range: 099 minutes Default: 5 minutes
P102 –	Dimming percentage value Range: 1,5,1090% Default: 10%
P105 –	Display brightness Range: 50100% Default: 100%
P114 –	Cool PID Kp (FC only!) Range: 0100% Default: 100%
P115 –	Heat PID Kp (FC only!) Range: 0100% Default: 100%

4. Technician settings (cont')		
P116 – Cool PID Ki (FC only!) Range: 0100% Default: 0%		
P117 – Heat PID Ki (FC only!) Range: 0100% Default: 0%		
P118 – Cool PID Kd (FC only!) Range: 0100% Default: 1%		
P119 – Heat PID Kd (FC only!) Range: 0100% Default: 1%		
P198 – Protocol indication (read only!) 0 - MODBUS 1 - BACnet		
P200 – Restore defaults Press the △ button to restore defaults Press the ④ button twice to return to normal display		
Press the MODE button to return to parameter P1 or wait 60 seconds to exit technician settings and return to normal display.		

5. MAC Address (MTSC Series only)

Enter MAC Address settings

- Adjust the set-point temperature to 11°C the button will appear on display.
- To enter MAC Address settings, press and hold the button for 5 seconds.
- Press the button to return to normal display.

Comments

Comments

Comments

