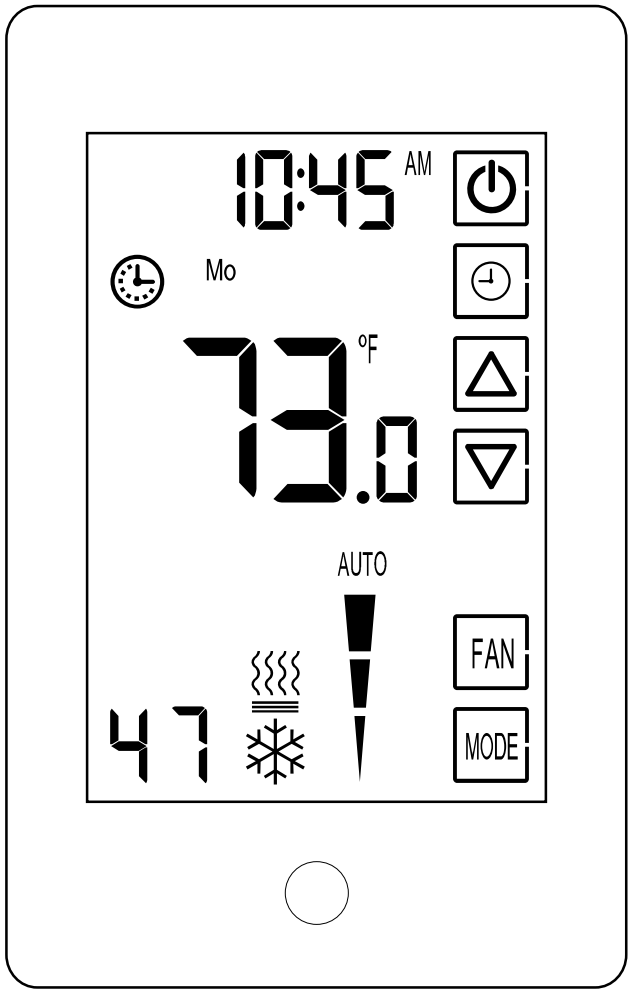


MTSCV/SUPER/PROG/HU/PIR

MTSCVW/SUPER/PROG/HU/PIR

Owner's manual & Technician Settings

meitav-tec

Rev.1.5.a

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Operating instructions

Quick guide

Temperature scale

Weekly program enabled

Ambient / Set-point temperature display

Modes / Economizer indication

Ambient Humidity

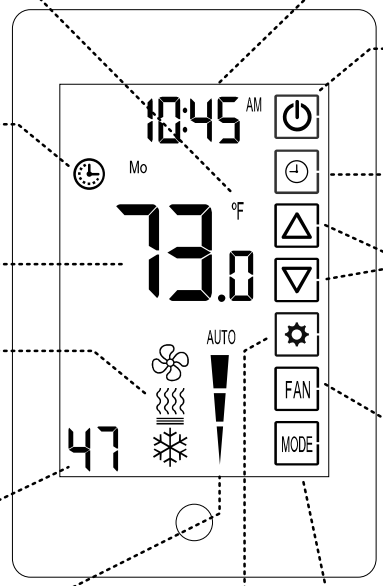
Fan speeds indication

Press and hold to switch between temperature scales (set-point **must be different than** 10,11ºC/50,51,52ºF)

Press and hold to enter technician settings (set-point **must** be equal to 10ºC/50ºF)

Press and hold to enter MAC address settings (set-point **must** be equal to 11ºC/52ºF)

System ON



System OFF



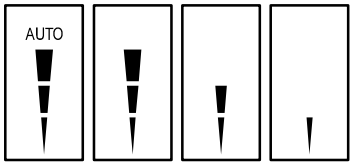
Clock/Weekdays

Press to turn system ON or OFF

Clock / Weekly program

Set-point adjustment

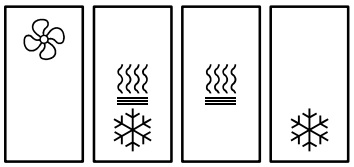
Press to switch between fan speeds:



*Auto speed High Med. Low

*In Auto speed, the active speed will appear

Press to switch between system modes:



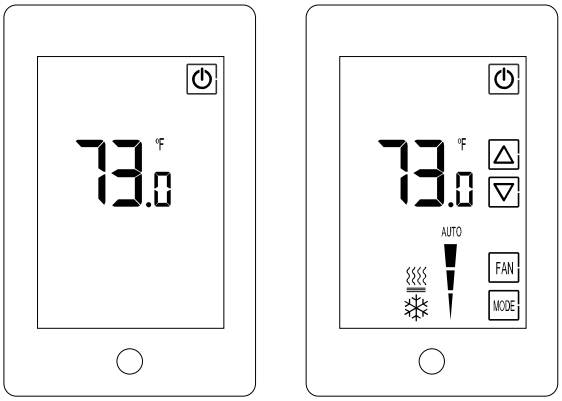
Fan only *Auto mode Heat Cool

*In Auto mode, the active mode will flash

Operating instructions

Turning the thermostat ON and 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

Selecting temperature scale

- Press and hold the ☼ button to switch between temperature scales. set-point **must be different than** 10,11ºC/50,51,52ºF



Celsius



Fahrenheit

Adjusting the Set point temperature

In <u>One</u> set point configuration:

- Press the ▲ or ▼ buttons once to view the set point temperature.
- Use the ▲ or ▼ buttons to adjust the set point.



Set point

In <u>Two</u> set points configuration:

- Press the ▲ or ▼ buttons once – "CL" and the set point temperature for cooling will appear on display.
- Use the ▲ or ▼ buttons to adjust the set point for cooling.
- Press the [Mode] button or wait 3 seconds – "Ht" and the set point temperature for heating will appear on display.
- Use the ▲ or ▼ buttons to adjust the set point for heating.



Set point For cooling



Set point For heating

Notes:

- The set point for cooling must be higher than the set point for heating.
- For humidity set-point please refer to technician settings – parameter P197.

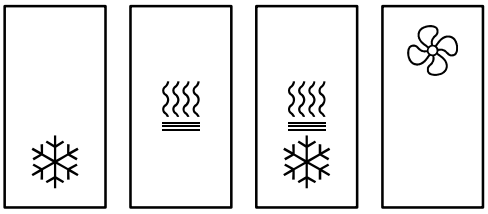
Operating instructions (Cont')

Selecting system mode

- Press the [Mode] button to switch between system modes.

  Notes:

  1. During demand for cooling or heating, the active mode will flash.
  2. In Auto mode, the active mode icon (Cool or Heat) will flash on display.
  3. Auto mode is not available in 2-Pipe system configuration.



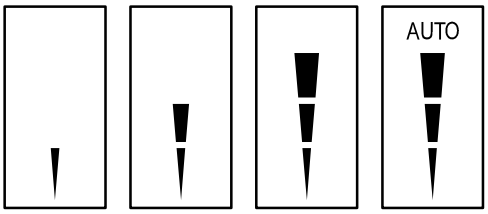
Cool **Heat** **Auto mode** **Fan only**

Selecting Fan speeds (for 2 and 3 fan speeds configuration)

- Press the [Fan] button to switch between fan speeds.

  Notes:

  1. In Auto speed, the active fan speed will appear on display.
  2. Medium speed available in 3 speeds configuration.



Low speed **Medium speed** **High speed** **Auto speed**

Turning Auto fan ON or OFF (fan on demand)

In 1 speed configuration:

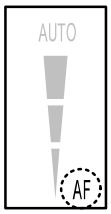
- Press the [Fan] button to turn Auto fan ON or OFF.

In 2 and 3 speeds configuration:

Press and hold the [Fan] button for 7 seconds to turn Auto fan ON or OFF.

- When ON, the fan will run on demand for cooling or heating,
- When OFF, the fan will run continuously.

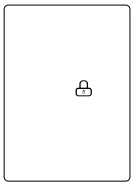
  Note: Auto fan cannot be selected in Fan only mode.



Auto fan ON

Locking the thermostat buttons

- Press and hold the [Mode] button for 7 seconds to lock or unlock the thermostat buttons.
- When locked, the lock ( ) icon will appear on display with any attempt to press the buttons.
- Enable or disable the option to lock different buttons using technician parameters P4-P7.



Lock indications

Operating instructions (Cont')

Economy mode

- Economy mode can be activated by triggering a window contact – Remote on/off switch, window contact - remote economy switch, door switch, key-tag, Built-in/External PIR sensor (passive infrared sensor) or through communication – binary value "UnoccupiedByNetwork".

E1

- **Economy by Window contact – Remote On/Off switch** - Turning unit off
- **Economy by Window contact – Remote economy switch -** Using economy set points

Please refer to technician parameters P25 and P26 for economy set points

---

E2

- **Economy by Built-in/External PIR**
- **Economy through Communication** (binary value "UnoccupiedByNetwork")

Please refer to technician parameter P15 "Occupancy sensor logic (PIR)"

E4

- **Economy triggered by Door switch**

Please refer to technician parameter P18 "Door switch or key tag configuration"

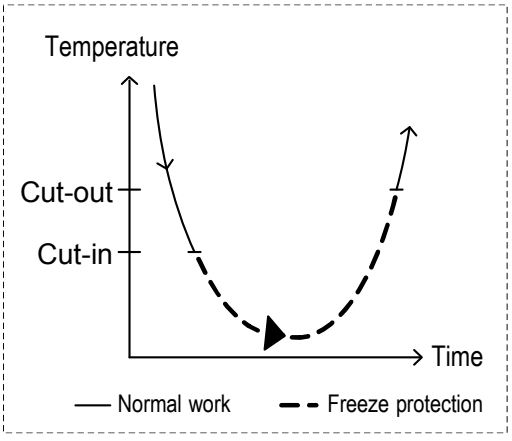
E5

- **Economy by Key-tag**

Please refer to technician parameter P18 "Door switch or key tag configuration"

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 (W/WO 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.



Economizer

Economizer is used to reduce the energy consumed by the cooling systems, by using low external air temperatures to assist in the chilling process. When outdoor temperatures are lower relative to indoor (room) temperatures, the system utilizes the cool outdoor air as a free cooling source.

The outdoor temperature (Teconomizer) triggering the activation of the economizer, can be measured by the temperature sensor connected to T1,0 terminals (technician parameter P08="05") or by setting a temperature value manually through communication - AV#129 "TEconomizerEffective".
When getting the temperature through communication, terminals T1,0 can be used for any other functionality like External sensor/Soft start in heat sensor/Deicing in cool/Door switch/Key tag.

Whenever there is demand for cooling and the outdoor temperature conditions allow the operation of the economizer, it will operate together with the regular cooling system and will not replace it.

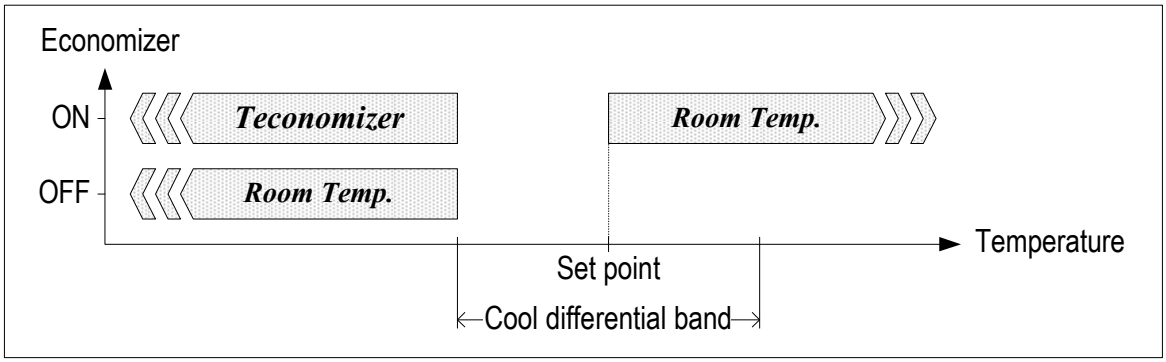
Economizer will start and run as long as both of the following conditions are satisfied:

1. $$Teconomizer\ temperature < Room\ temperature - \frac{Cool\ differential\ band}{2}$$

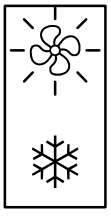
2. $$Room\ Temperature > Set\ point\ temperature$$

Economizer will stop when the following condition is satisfied:

1. $$Room\ Temperature < Set\ point\ temperature - \frac{Cool\ differential\ band}{2}$$



Indication for the Economizer operation:
When Economizer is active, the “Cool” symbol will appear (or flash when active) on display and the “Fan” symbol will flash.



Economizer active

Weekly program

General

Prior to programming, make sure that parameters P107, P108 and P109 in the technician settings are configured correctly.

Program types

- The thermostat can be configured to run four different types of weekly programs (set by technician parameter P107):
  1. Seven days program with same parameters for all days.
  2. Seven days program with different parameters for each day of the week.
  3. One schedule for the weekdays (Monday to Friday), one schedule for Saturday and another one for Sunday.
  4. One schedule for the weekdays (Monday to Friday) and another one for Saturday and Sunday.

Daily events

- Each daily program can use 2 or 4 schedule events per day (set by technician parameter P108).
- There are two options for settings the schedule events (set by technician parameter P109):
  1. **"EU Type"** - Start time and Stop time.
  2. **"US Type"** - Start time, set-point temperatures, system mode and fan speed.

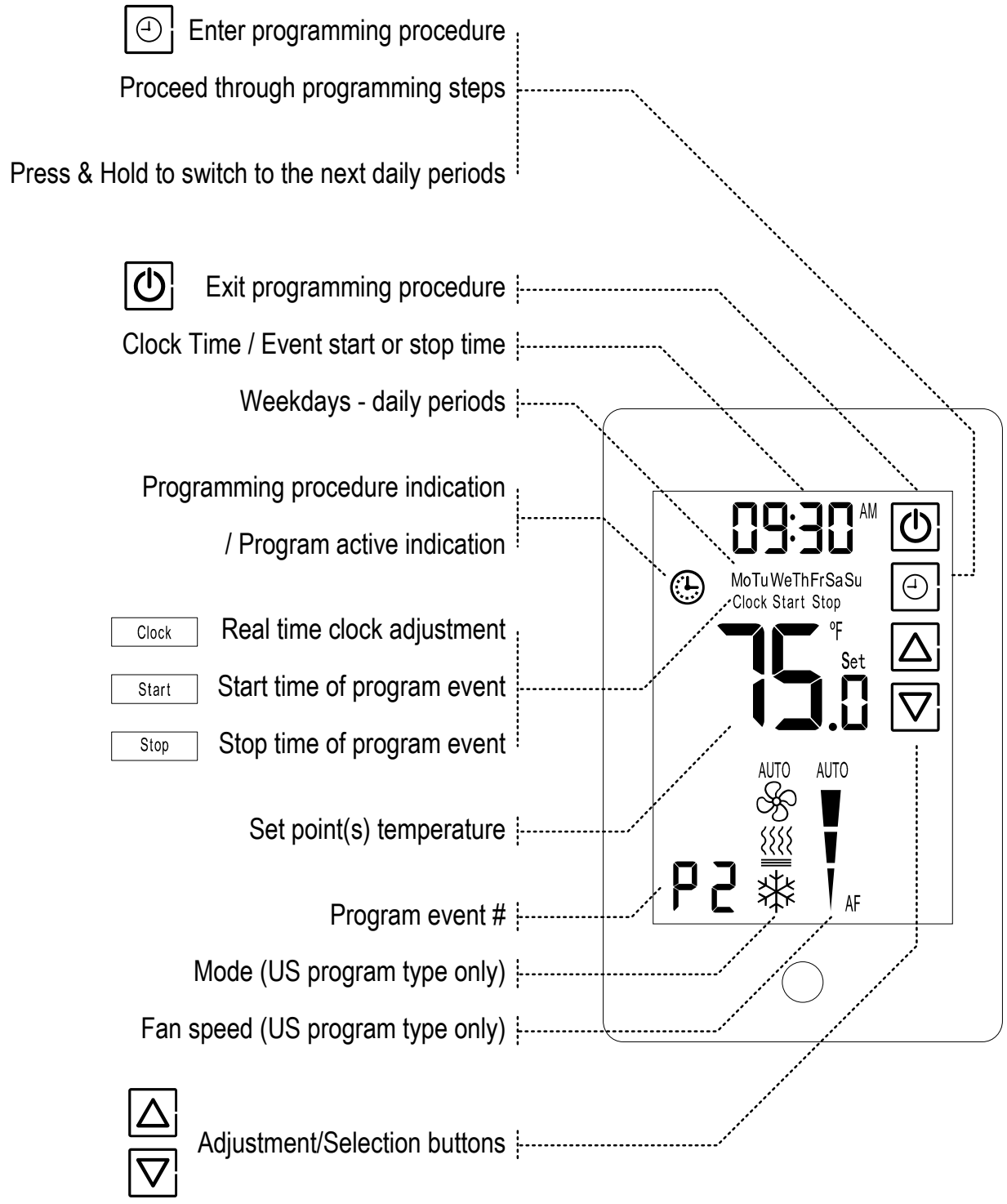
Important:
Parameter P107 must not be equal to "0" in order to enable weekly program capabilities.
Changing P107 to "0" will disable all program capabilities and reset programmed information.

Activate/Temporarily disable/Override the program

- **Activate the program**
  - When the program is activated, a clock icon is shown on display
  - If a clock icon is not shown on display, make sure that the set-point temperature is not 10/11ºC or 50/52ºF, press and hold the button to activate the program.
- **Temporarily disable the program** - without losing programmed information - e.g. when out of office or when leaving for vacation:
  - Make sure that the set-point temperature is not 10/11ºC or 50/52ºF.
  - Press and hold the button to temporarily disable the program.
  - Press and hold the button again to reactivate to the program.
- **Override the program** - the occupant can temporarily change the set point temperature to be different than the set point temperature specified by the program. Changes will be affective until the next program event begins.

Weekly program (Cont')

Program display



Weekly program (Cont')

Programming procedure

- The detailed programming procedure is described in the next sections. Make sure to follow the right programming procedure, suitable for the program type and features selected by technician settings.
- Press the button to enter and proceed through the steps of the real time clock and programming procedure.
- Use the ▲ or ▼ buttons to select or change value of a flashing icon.
- It is recommended to select programming values prior to the actual programming.

Exit the programming procedure

- At anytime during the programming procedure, Press the button to exit and return to normal display - any changed values will be saved.

Adjusting the time and day of the week

- Press and hold the button - the word "Clock" will appear on display.

Hours



- The HOURS will flash.
- Use the ▲ or ▼ buttons to adjust the hours.

Minutes



- Press the button again – the MINUTES will flash.
- Use the ▲ or ▼ buttons to adjust the hours.

Days



- Press the button again – the DAYS will flash.
- Use the ▲ or ▼ buttons buttons to select the day.
- If technician parameter P107 is not set to "00" (program is enabled), Press the button to enter programming procedure.
- Otherwise, press the button to return to normal display.

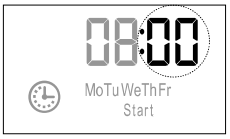
Weekly program (Cont')

Adjusting "EU type" daily programs

Start time

- Press the button – the programmed weekday(s), "P1" indicating the first program event of the day and the word "Start" will appear on display.
- The HOURS will flash.
- Use the ▲ or ▼ buttons to adjust the start time hours of the first event.
- Press the button again – the MINUTES will flash.
- Use the ▲ or ▼ buttons to adjust the start time minutes of the first event.





Stop time

- Press the button again – the word "Stop" will appear on display.
- The HOURS will flash.
- Use the ▲ or ▼ buttons to adjust the stop time hours of the first event.
- Press the button again – the MINUTES will flash.
- Use the ▲ or ▼ buttons to adjust the stop time minutes of the first event.
- **Follow the steps above for the other schedule events of the same daily period (P2 for 2 event per day, or P2, P3 and P4 for four events per day).**
- **Follow the steps above for all daily periods.**





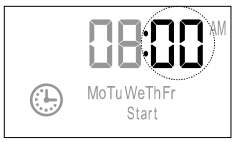
Weekly program (Cont')

Adjusting "US type" daily programs

Start time

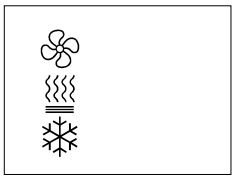
- Press the button – the programmed weekday(s), "P1" indicating the first program event of the day and the word "Start" will appear on display.
- The HOURS will flash.
- Use the ▲ or ▼ buttons to adjust the start time hours of the first event.
- Press the button again – the MINUTES will flash.
- Use the ▲ or ▼ buttons to adjust the start time minutes of the first event.





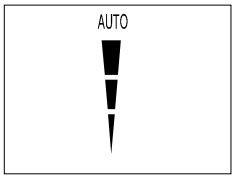
System mode

- Press the button again – the selected system mode for the current programmed event will appear on display.
- Use the ▲ or ▼ buttons to select the mode (default Auto mode).



Fan speed

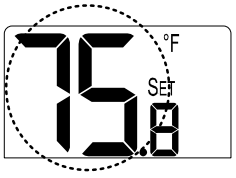
- Press the button again – the selected fan speed for the current programmed event will appear on display.
- Use the ▲ or ▼ buttons to select the fan speed (default Auto speed).



Set point

- Press the button again – the set point will flash.

  Note: If the thermostat is configured to have two set points, first adjusts the set point for cooling and then the set point for heating.
- Use the ▲ or ▼ buttons to select the set point of the first event



Follow the steps above for the other schedule events of the same daily period (P2 for 2 event per day, or P2, P3 and P4 for four events per day).

Follow the steps above for all daily periods.

Installation

The MTSCV/SUPER/PROG/HU/PIR is designed for wall mounting in the room to be controlled. It should be located where the occupant can easily read the LCD display and use the controls and where the built in PIR occupancy sensor can easily detect any movement in the room (consider PIR detection are below).

If the built in temperature sensor is being used to measure room temperature, the module should be placed where the temperature is representative of the general room conditions. Cold or warm air draughts; radiant heat and direct sunlight should be avoided.

General points to follow:

- Disconnect power to the main board before installing the unit.
- The standard height to install this unit 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:

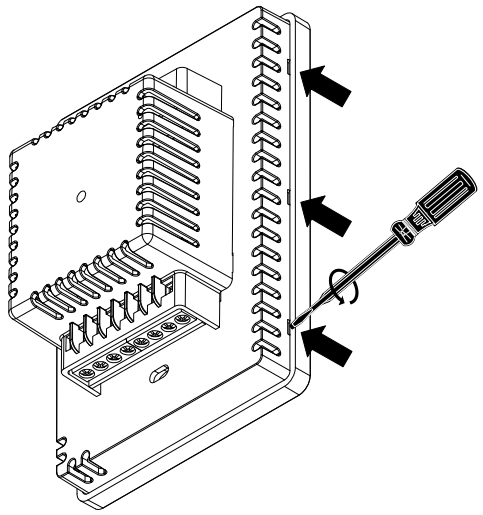
1. separate the front display from the back plastic cover by inserting a small flat screwdriver into each of the three slots as shown in the picture and rotating it gently.
2. Remove the front display and keep it in a safe place.
3. Connect the wires as shown in the enclosed wiring diagram. All terminals accept 1x0.5mm^2/24 AWG.
4. If necessary, make changes to the DIP switches position as explained in this manual.
5. Place the thermostat in the electrical box and tighten up the 2 screws

   Europe - Gewiss Box - GW 24 203 or similar

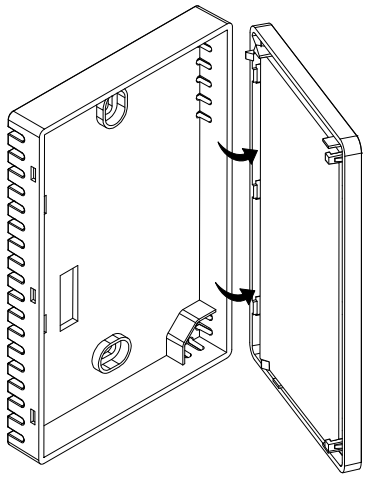
   US - Carlon – B114R or similar or similar
6. Adapt the front frame-panel into its place, by pushing it towards the wall.

Installation (Cont')

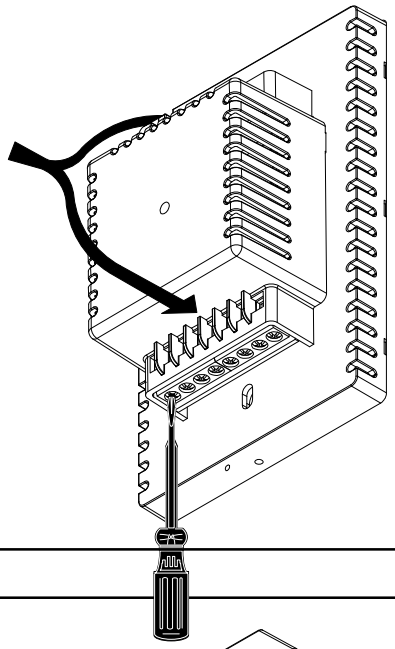
1



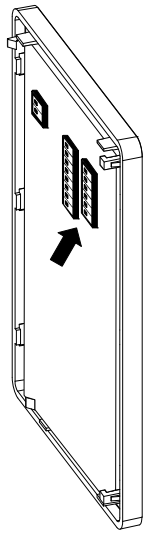
2



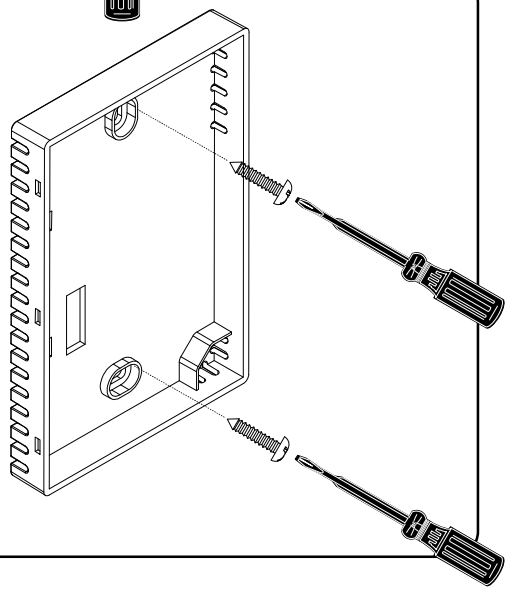
3



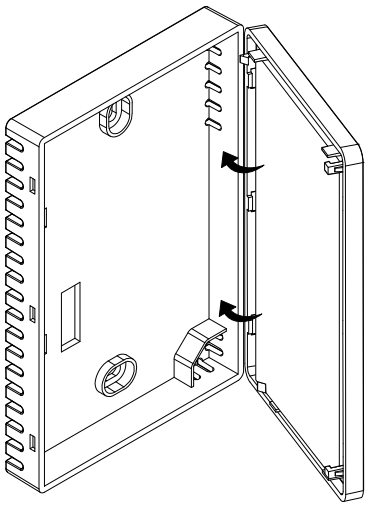
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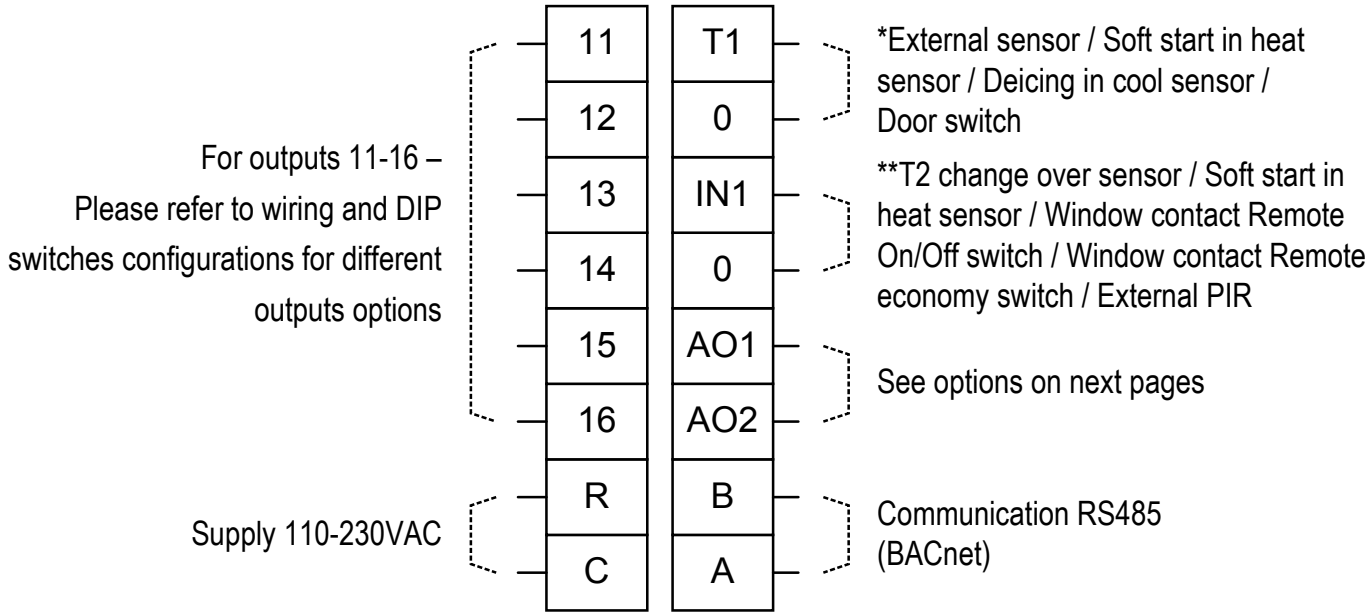
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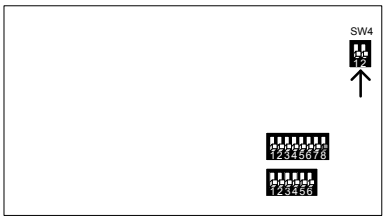
Wiring



* 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.

DIP Switch SW4.1 – End of line resistor (120Ω)

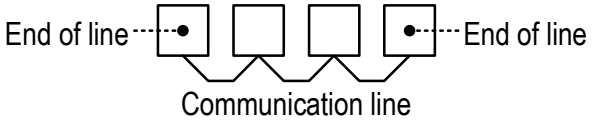


First and last units in communication line must be configured with 120Ω End of line resistor.

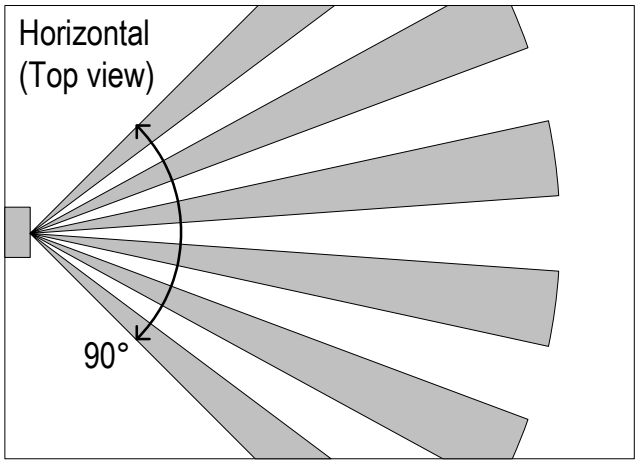
Use DIP switch SW4.1 as follows:

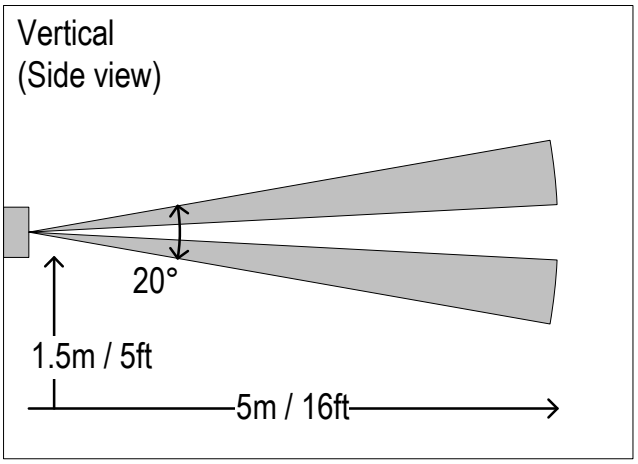
OFF - Not End of line 

ON - End of line 



PIR detection area





AC Configurations index

AC Configurations without humidification/dehumidification

Outputs / Configuration:	1	2	3	4	5	6	7	8	9	10
Heat elements (max.)	3	2		1	2	1		2	2	1
Compressors (max.)	2	2	2	1	1	1	2	1	2	2
Heat pump		●	●	●		●	●			●
Fan VFS						●	●	●		
Fan speeds	1	1	2 or 3	2 or 3	2 or 3				1	1
Economizer			○	○	○	○	○	○	●	●

AC Configurations with humidification/dehumidification

Outputs / Configuration:	11	12	13	14	15	16	17	18	19	20	21
Heat elements (max.)	3	2	2	1	2	1		1		1	2
Compressors (max.)	2	2	1	1	2	2	2	1	2	1	1
Heat pump		●		●		●	●	●	●	●	
Fan VFS									●	●	●
Fan speeds	1	1	2 or 3	2 or 3	1	1	2 or 3	2 or 3			
Economizer			○	○	●	●	○	○	○	○	○
Humidifier	●	●	●	●	●	●	●	●	●	●	●
Dehumidifier	● or	● or	● or	● or	● or	● or	●				
Reheat (Dehumidify)	●	●	●	●	●	●		●	●	●	●

● **Yes** ○ **Option**

FC Configurations for 2-Pipe systems

FC Configurations for 2-Pipe systems without humidification/dehumidification

Outputs / Configuration:	22	23	24	25
Cool/Heat valve	●		●	
Cool/Heat valve PID		●		●
Heat element (2nd stage)	○	○	○	○
Fan VFS			●	●
Fan speeds	1 2 3	1 2 3		
Economizer	○ ○	○ ○	○	○

FC Configurations for 2-Pipe systems with humidification/dehumidification

Outputs / Configuration:		26	27	28	29
Cool/Heat valve		●	●	●	
Cool/Heat valve PID					●
Heat element (2nd stage)		○	○	○	○
Fan VFS				●	
Fan speeds		1 2 3	1 2 3		1 2 3
Economizer		○ ○	○ ○	○	○ ○
Humidifier		●	●	●	●
Dehumidify	Dehumidifier	●			
		or			
	Reheat	●	●	●	●

● **Yes** ○ **Option**

FC Configurations for 4-Pipe systems / Floor heating

FC Configurations for 4-Pipe systems without humidification/dehumidification

Outputs / Configuration:	30	31	32	33	34	35	36	37	38	39
Cool valve	●	●				●	●	●		
Heat valve	●	●	●	●	●			●		●
Cool valve PID			PID	PID	PID				PID	PID
Heat valve PID						PID	PID		PID	
Heat element (2nd stage)	○		○		○	○	○	○	○	
Fan VFS					●		●	●		●
Fan speeds	1 2 3	1 2 3	1 2 3	1 2 3		1 2 3			1 2 3	
Economizer	○ ○	○ ○	○ ○	○ ○	○	○ ○	○	○	○ ○	○
Floor heating		●		●						●

FC Configurations for 4-Pipe systems with humidification/dehumidification

Outputs / Configuration:		40	41	42	43
Cool valve		●	●		●
Heat valve		●	●	●	
Cool valve PID				●	
Heat valve PID					●
Heat element (2nd stage)		○	○	○	○
Fan VFS			●		
Fan speeds		1 2 3		1 2 3	1 2 3
Economizer		○ ○	○	○ ○	○ ○
Humidifier		●	●	●	●
Dehumidify	Dehumidifier	● or			
	Reheat	●	●	●	●

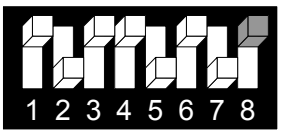
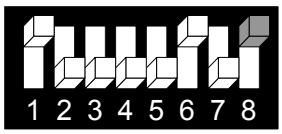
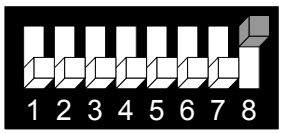
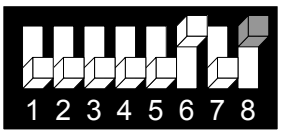
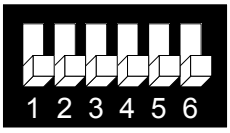
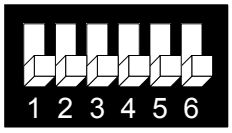
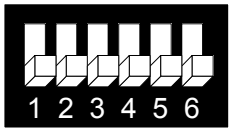
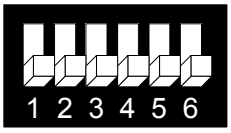
● **Yes** ○ **Option**

Wiring and DIP Switches – AC systems

	1 HC32 1 Speed fan	2 HP42 1 Speed fan	3 HP22 2/3 Speeds fan(1)	4 HP21 2/3 Speeds fan(1)
11	Heat element 3 (3rd stage heat)	Heat element 2 (4th stage heat)	Fan high	Fan high
12	Heat element 2 (2nd stage heat)	Heat element 1 (3rd stage heat)	Fan medium (or Economizer(5))	Fan medium (or Economizer(5))
13	Fan (1 speed)	Fan (1 speed)	Fan low	Fan low
14	Compressor 2(3)	Compressor 2(3)	Compressor 2(3)	Heat element (2nd stage heat)
15	Compressor 1(3)	Compressor 1(3)	Compressor 1(3)	Compressor(3)
16	Heat element 1(2) (1st stage heat)	Heat pump(2)	Heat pump(2)	Heat pump(2)
AO1	x	x	x	x
AO2	x	x	x	x

Fan on/off: 110-230VAC, 2.5A max.

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

SW1				
SW2				

(1) SW1.1, SW1.2 = Fan speeds: 2 Speeds (Low and High): SW1.1 OFF, SW1.2 ON
3 Speeds (Low, Med. and High): SW1.1 OFF, SW1.2 OFF

(2) SW1.4 = HP (Heat pump): ON – Heat pump active in cool, OFF – Heat pump active in heat
HC (Not Heat pump): ON – Electrical heater, OFF – Oil/Gas heater (no fan)

(3) SW1.5 = Compressor delay: ON – Disable compressor delay, OFF – Enable compressor delay

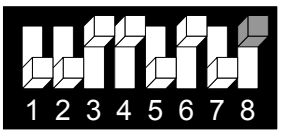
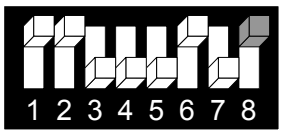
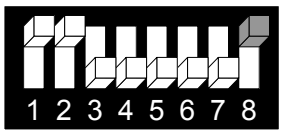
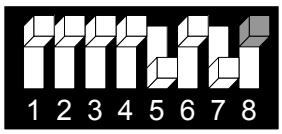
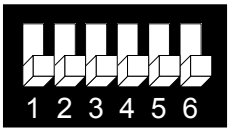
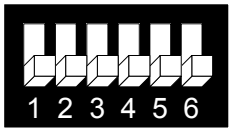
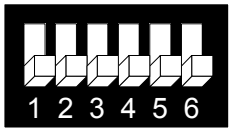
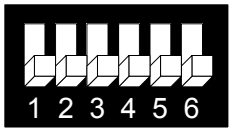
(5) SW2.6 = Terminal 12: ON – Economizer
OFF – Fan Med. (3 Speeds) / Terminal not in use (2 Speeds/VFS)
Important: Economizer will not work in 3 fan speeds configuration

Wiring and DIP Switches – AC systems

	5 HC21 2/3 Speeds fan(1)	6 HP21 Fan VFS	7 HP22 Fan VFS	8 HC21 Fan VFS
11	Fan high	x	x	x
12	Fan medium (or Economizer(5))	Economizer(5) (option - SW2.6 ON)	Economizer(5) (option - SW2.6 ON)	Economizer(5) (option - SW2.6 ON)
13	Fan low	x	x	x
14	Heat element 2 (2nd stage heat)	Heat element (2nd stage heat)	Compressor 2(3)	Heat element 2 (2nd stage heat)
15	Compressor(3)	Compressor(3)	Compressor 1(3)	Compressor(3)
16	Heat element 1(2) (1st stage heat)	Heat pump(2)	Heat pump(2)	Heat element 1(2) (1st stage heat)
AO1	x	x	x	x
AO2	x	Fan VFS	Fan VFS	Fan VFS

Fan on/off: 110-230VAC, 2.5A max., Fan VFS: 0-10VDC. 0.5mA Not isolated

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

SW1				
SW2				

(1) SW1.1, SW1.2 = Fan speeds: 2 Speeds (Low and High): SW1.1 OFF, SW1.2 ON
3 Speeds (Low, Med. and High): SW1.1 OFF, SW1.2 OFF

(2) SW1.4 = HP (Heat pump): ON – Heat pump active in cool, OFF – Heat pump active in heat
HC (Not Heat pump): ON – Electrical heater, OFF – Oil/Gas heater (no fan)

(3) SW1.5 = Compressor delay: ON – Disable compressor delay, OFF – Enable compressor delay

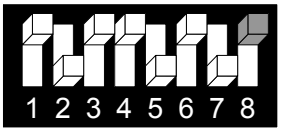
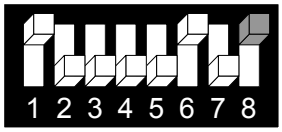
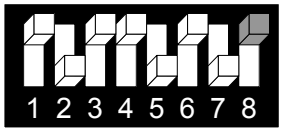
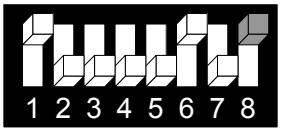
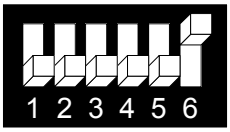
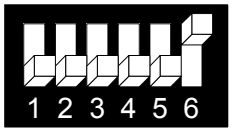
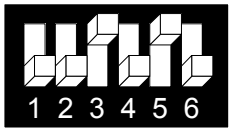
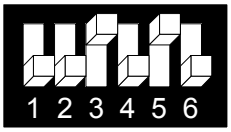
(5) SW2.6 = Terminal 12: ON – Economizer
OFF – Fan Med. (3 Speeds) / Terminal not in use (2 Speeds/VFS)
Important: Economizer will not work in 3 fan speeds configuration

Wiring and DIP Switches – AC systems

	9 HC22 1 Speed fan, Economizer	10 HP32 1 Speed fan, Economizer	11 HC32 1 Speed fan, Humidifier, Dehum/Reheat for Dehumidification	12 HP42 1 Speed fan, Humidifier, Dehum/Reheat for Dehumidification
11	Heat element 2 (2nd stage heat)	Heat element (3rd stage heat)	Heat element 3 (3rd stage heat)	Heat element 2 (4th stage heat)
12	Economizer	Economizer	Heat element 2 (2nd stage heat)	Heat element 1 (3rd stage heat)
13	Fan (1 speed)	Fan (1 speed)	Fan (1 speed)	Fan (1 speed)
14	Compressor 2(3)	Compressor 2(3)	Compressor 2(3)	Compressor 2(3)
15	Compressor 1(3)	Compressor 1(3)	Compressor 1(3)	Compressor 1(3)
16	Heat element 1(2) (1st stage heat)	Heat pump(2)	Heat element 1(2) (1st stage heat)	Heat pump(2)
AO1	x	x	Humidifier	Humidifier
AO2	x	x	Dehumidifier(4) (option - See SW2.3)	Dehumidifier(4) (option - See SW2.3)

Fan on/off: 110-230VAC, 2.5A max., Hummidifier, Dehumidifier: 0-10VDC. 0.5mA Not isolated

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

SW1				
SW2				

(2) SW1.4 = HP (Heat pump): ON – Heat pump active in cool, OFF – Heat pump active in heat

HC (Not Heat pump): ON – Electrical heater, OFF – Oil/Gas heater (no fan)

(3) SW1.5 = Compressor delay: ON – Disable compressor delay, OFF – Enable compressor delay

(4) SW2.3 = Dehumidification: ON – Use dehumidifier, OFF – Use reheat for dehum.

(5) SW2.6 = Terminal 12: ON – Economizer

OFF – Terminal not in use (1 Speed)

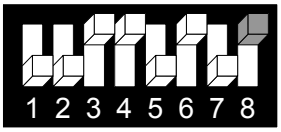
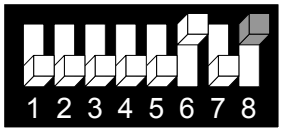
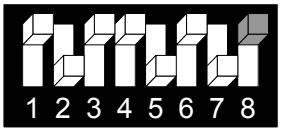
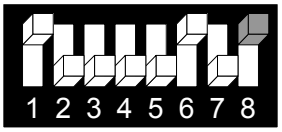
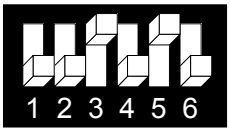
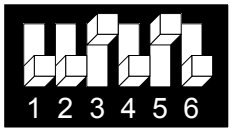
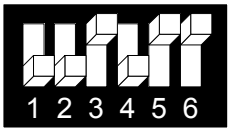
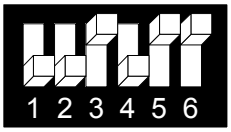
Important: Economizer will not work in 3 fan speeds configuration

Wiring and DIP Switches – AC systems

	13 HC21 2/3 Speeds fan(1), Humidifier, Dehum/Reheat for Dehumidification	14 HP21 2/3 Speeds fan(1), Humidifier, Dehum/Reheat for Dehumidification	15 HC22 1 Speed fan, Economizer, Humidifier, Dehum/Reheat for Dehumidification	16 HP32 1 Speed fan, Economizer, Humidifier, Dehum/Reheat for Dehumidification
11	Fan high	Fan high	Heat element 2 (2nd stage heat)	Heat element (3rd stage heat)
12	Fan medium (or Economizer(5))	Fan medium (or Economizer(5))	Economizer	Economizer
13	Fan low	Fan low	Fan (1 speed)	Fan (1 speed)
14	Heat element 2 (2nd stage heat)	Heat element (2nd stage heat)	Compressor 2(3)	Compressor 2(3)
15	Compressor(3)	Compressor(3)	Compressor 1(3)	Compressor 1(3)
16	Heat element 1(2) (1st stage heat)	Heat pump(2)	Heat element 1(2) (1st stage heat)	Heat pump(2)
AO1	Humidifier	Humidifier	Humidifier	Humidifier
AO2	Dehumidifier(4) (option - See SW2.3)	Dehumidifier(4) (option - See SW2.3)	Dehumidifier(4) (option - See SW2.3)	Dehumidifier(4) (option - See SW2.3)

Fan on/off: 110-230VAC, 2.5A max., Humidifier, Dehumidifier: 0-10VDC. 0.5mA Not isolated

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

SW1				
SW2				

(1) SW1.1, SW1.2 = Fan speeds: **2 Speeds (Low and High):** **SW1.1 OFF, SW1.2 ON**
3 Speeds (Low, Med. and High): **SW1.1 OFF, SW1.2 OFF**

(2) SW1.4 = HP (Heat pump): **ON – Heat pump active in cool,** **OFF – Heat pump active in heat**
HC (Not Heat pump): **ON – Electrical heater,** **OFF – Oil/Gas heater (no fan)**

(3) SW1.5 = Compressor delay: **ON – Disable compressor delay,** **OFF – Enable compressor delay**

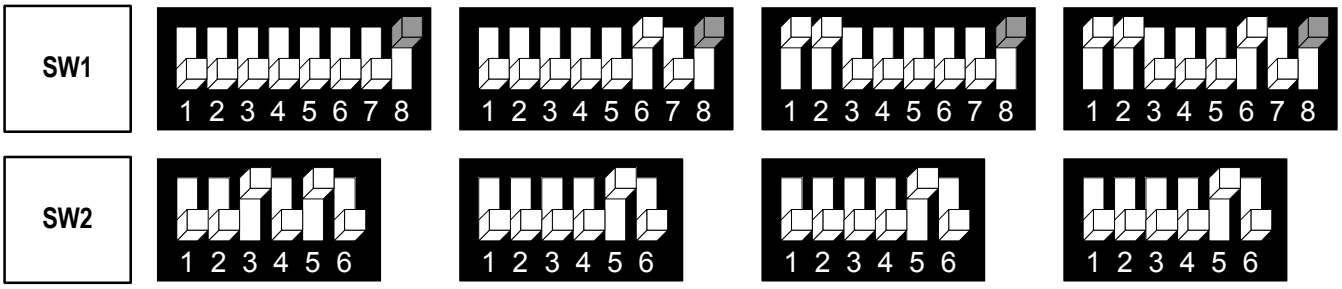
(4) SW2.3 = Dehumidification: **ON – Use dehumidifier,** **OFF – Use reheat for dehum.**

(5) SW2.6 = Terminal 12: **ON – Economizer**
OFF – Fan Medium (3 Speeds) / Terminal not in use (1/2 Speeds)
Important: Economizer will not work in 3 fan speeds configuration

Wiring and DIP Switches – AC systems

	17 HP22 2/3 Speeds fan(1), Humidifier, Dehumidifier	18 HP21 2/3 Speed fan(1), Humidifier, Reheat for Dehumidification	19 HP22 Fan VFS, Humidifier	20 HP21 Fan VFS, Humidifier, Reheat for Dehumidification
11	Fan high	Fan high	x	x
12	Fan medium (or Economizer(5))	Fan medium (or Economizer(5))	Economizer(5) (option - SW2.6 ON)	Economizer(5) (option - SW2.6 ON)
13	Fan low	Fan low	x	x
14	Compressor 2(3)	Heat element (2nd stage heat)	Compressor 2(3)	Heat element (2nd stage heat)
15	Compressor 1(3)	Compressor(3)	Compressor 1(3)	Compressor(3)
16	Heat pump(2)	Heat pump(2)	Heat pump(2)	Heat pump(2)
AO1	Humidifier	Humidifier	Humidifier	Humidifier
AO2	Dehumidifier	x	Fan VFS	Fan VFS

Fan on/off: 110-230VAC, 2.5A max., Fan VFS, Humidifier, Dehumidifier: 0-10VDC. 0.5mA Not isolated
Control - Heat elements, Heat pump, Compressors, Economizer: 110-230VAC, 0.3A max.



(1) SW1.1, SW1.2 = Fan speeds: **2 Speeds (Low and High): SW1.1 OFF, SW1.2 ON**
3 Speeds (Low, Med. and High): SW1.1 OFF, SW1.2 OFF

(2) SW1.4 = HP (Heat pump): ON – Heat pump active in cool, OFF – Heat pump active in heat
HC (Not Heat pump): ON – Electrical heater, OFF – Oil/Gas heater (no fan)

(3) SW1.5 = Compressor delay: ON – Disable compressor delay, OFF – Enable compressor delay

(5) SW2.6 = Terminal 12: ON – Economizer
OFF – Fan Med. (3 Speeds) / Terminal not in use (1/2 Speeds/VFS)
Important: Economizer will not work in 3 fan speeds configuration

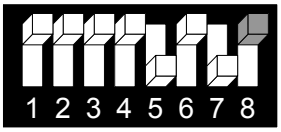
21 HC21 Fan VFS, Humidifier, Reheat for Dehumidification

11	x
12	Economizer[5] (option - SW2.6 ON)
13	x
14	Heat element 2 (2nd stage heat)
15	Compressor[3]
16	Heat element 1[2] (1st stage heat)
AO1	Humidifier
AO2	Fan VFS

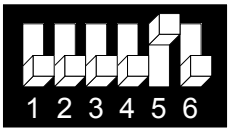
Fan on/off: 110-230VAC, 2.5A max., Fan VFS, Humidifier: 0-10VDC. 0.5mA Not isolated

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

SW1



SW2



[2] SW1.4 = HC (Not Heat pump): ON – Electrical heater, OFF – Oil/Gas heater (no fan)

[3] SW1.5 = Compressor delay: ON – Disable compressor delay, OFF – Enable compressor delay

[5] SW2.6 = Terminal 12: ON – Economizer

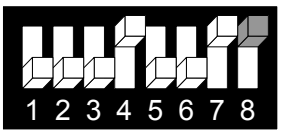
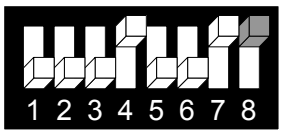
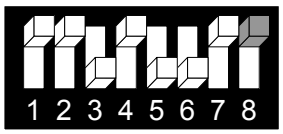
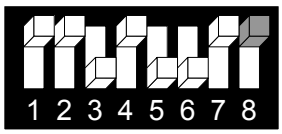
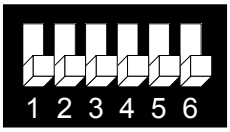
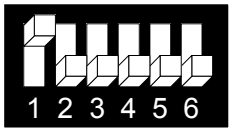
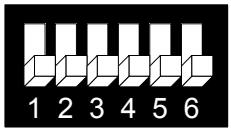
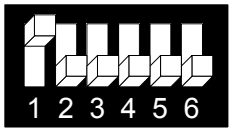
OFF – Terminal not in use

Wiring and DIP Switches – FC systems – 2-Pipe

	22 2-Pipe, 1/2/3 Speeds fan(1)	23 2-Pipe, 1/2/3 Speeds fan(1), Cool/Heat PID	24 2-Pipe, Fan VFS	25 2-Pipe, Fan VFS, Cool/Heat PID
11	Fan high	Fan high	x	x
12	Fan medium (or Economizer(5))	Fan medium (or Economizer(5))	Economizer(5) (option - SW2.6 ON)	Economizer(5) (option - SW2.6 ON)
13	Fan low	Fan low	x	x
14	Heat element(2) (2nd stage heat)	Heat element(2) (2nd stage heat)	Heat element(2) (2nd stage heat)	Heat element(2) (2nd stage heat)
15	Cool/Heat valve(3) (1st stage heat)	X	Cool/Heat valve(3) (1st stage heat)	X
16	X	X	X	X
AO1	X	Cooll/Heat valve PID(3) (1st stage heat)	X	Cooll/Heat valve PID(3) (1st stage heat)
AO2	X	X	Fan VFS	Fan VFS

Fan on/off: 110-230VAC, 2.5A max., Fan VFS, PID valves: 0-10VDC. 0.5mA Not isolated

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

SW1				
SW2				

(1) SW1.1, SW1.2 = Fan speeds: **1 Speed (Low): SW1.1 ON, SW1.2 OFF**
2 Speeds (Low and High): SW1.1 OFF, SW1.2 ON
3 Speeds (Low, Medium and High): SW1.1 OFF, SW1.2 OFF

(2) SW1.4 = 2nd heating stage: **ON – Enable, OFF – Disable**

(3) SW1.5 = Chilled beam option **ON – Enable chilled beam (fan will not run with cooling)**

(4) SW2.3 = Dehumidification: **ON – Use dehumidifier, OFF – Use reheat for dehumidification**

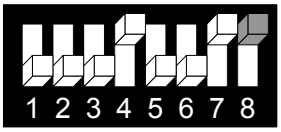
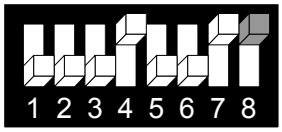
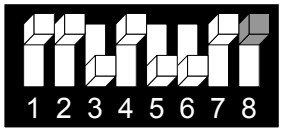
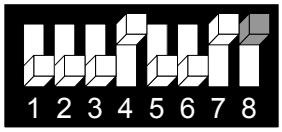
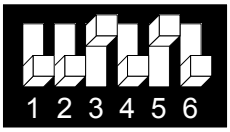
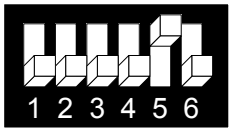
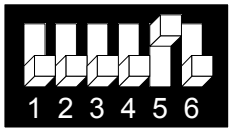
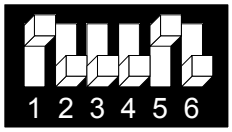
(5) SW2.6 = Terminal 12: **ON – Economizer**
OFF – Fan Med. (3 Speeds) / Terminal not in use (1/2 Speeds/VFS)
Important: Economizer will not work in 3 fan speeds configuration

Wiring and DIP Switches – FC systems – 2-Pipe

	26 2-Pipe, 1/2/3 Speeds fan(1), Cool/Heat valve, Humidifier, Dehum/Reheat for Dehumidification	27 2-Pipe, 1/2/3 Speeds fan(1), Cool/Heat valve, Humidifier, Reheat for Dehumidification	28 2-Pipe, Fan VFS, Humidifier Reheat for Dehumidification	29 2-Pipe, 1/2/3 Speeds fan(1), Cool/Heat PID, Humidifier, Reheat for Dehumidification
11	Fan high	Fan high	x	Fan high
12	Fan medium (or Economizer(5))	Fan medium (or Economizer(5))	Economizer(5) (option - SW2.6 ON)	Fan medium (or Economizer(5))
13	Fan low	Fan low	x	Fan low
14	Heat element(2) (2nd stage heat)	Heat element(2) (2nd stage heat)	Heat element(2) (2nd stage heat)	Heat element(2) (2nd stage heat)
15	Cool/Heat valve(3) (1st stage heat)	Cool/Heat valve(3) (1st stage heat)	Cool/Heat valve(3) (1st stage heat)	x
16	X	X	X	x
AO1	Humidifier	Humidifier	Humidifier	Cooll/Heat valve PID(3) (1st stage heat)
AO2	Dehumidifier(4) (option - See SW2.3)	X	Fan VFS	Humidifier

Fan on/off: 110-230VAC, 2.5A max., Fan VFS, PID valves, Hum., Dehum.: 0-10VDC. 0.5mA Not isolated

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

SW1				
SW2				

(1) SW1.1, SW1.2 = Fan speeds: **1 Speed (Low): SW1.1 ON, SW1.2 OFF**
2 Speeds (Low and High): SW1.1 OFF, SW1.2 ON
3 Speeds (Low, Medium and High): SW1.1 OFF, SW1.2 OFF

(2) SW1.4 = 2nd heating stage: **ON – Enable, OFF – Disable**

(3) SW1.5 = Chilled beam option **ON – Enable chilled beam (fan will not run with cooling)**

(4) SW2.3 = Dehumidification: **ON – Use dehumidifier, OFF – Use reheat for dehumidification**

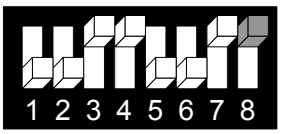
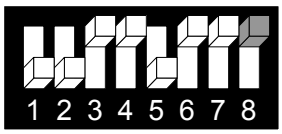
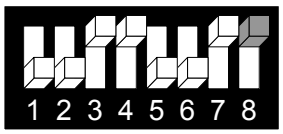
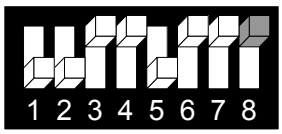
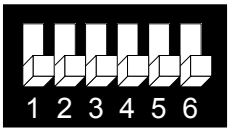
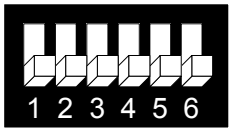
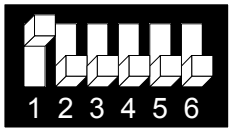
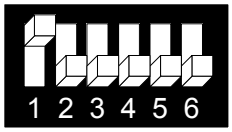
(5) SW2.6 = Terminal 12: **ON – Economizer**
OFF – Fan Med. (3 Speeds) / Terminal not in use (1/2 Speeds/VFS)
Important: Economizer will not work in 3 fan speeds configuration

Wiring and DIP Switches – FC systems – 4-Pipe

	30 4-Pipe, 1/2/3 Speeds fan(1)	31 4-Pipe, 1/2/3 Speeds fan(1), Floor heating	32 4-Pipe, 1/2/3 Speeds fan(1), Cool valve PID	33 4-Pipe, 1/2/3 Speeds fan(1), Cool valve PID, Floor heating
11	Fan high	Fan high	Fan high	Fan high
12	Fan medium (or Economizer(5))	Fan medium (or Economizer(5))	Fan medium (or Economizer(5))	Fan medium (or Economizer(5))
13	Fan low	Fan low	Fan low	Fan low
14	Heat element(2) (2nd stage heat)	Floor heating (1st stage heat – no fan)	Heat element(2) (2nd stage heat)	Floor heating (1st stage heat – no fan)
15	Cool valve(3)	Cool valve(3)	x	x
16	Heat valve (1st stage heat)	Heat valve (2nd stage heat)	Heat valve (1st stage heat)	Heat valve (2nd stage heat)
AO1	x	x	Cool valve PID(3)	Cool valve PID(3)
AO2	x	x	x	x

Fan on/off: 110-230VAC, 2.5A max., PID valves: 0-10VDC. 5mA Not isolated

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

SW1				
SW2				

(1) SW1.1, SW1.2 = Fan speeds: **1 Speed (Low): SW1.1 ON, SW1.2 OFF**
2 Speeds (Low and High): SW1.1 OFF, SW1.2 ON
3 Speeds (Low, Medium and High): SW1.1 OFF, SW1.2 OFF

(2) SW1.4 = 2nd heating stage: **ON – Enable, OFF – Disable**

(3) SW1.5 = Chilled beam option **ON – Enable chilled beam (fan will not run with cooling)**

(4) SW2.3 = Dehumidification: **ON – Use dehumidifier, OFF – Use reheat for dehumidification**

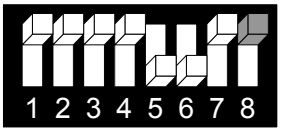
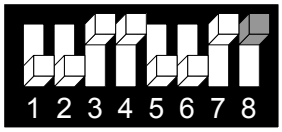
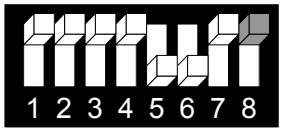
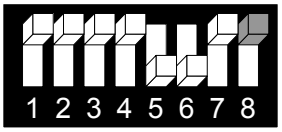
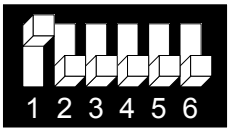
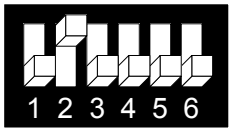
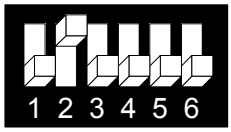
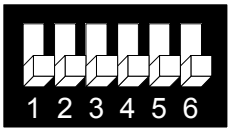
(5) SW2.6 = Terminal 12: **ON – Economizer**
OFF – Fan Medium (3 Speeds) / Terminal not in use (1/2 Speeds)
Important: Economizer will not work in 3 fan speeds configuration

Wiring and DIP Switches – FC systems – 4-Pipe

	34 4-Pipe, Fan VFS, Cool valve PID	35 4-Pipe, 1/2/3 Speeds fan(1), Heat valve PID	36 4-Pipe, Fan VFS, Heat valve PID	37 4-Pipe, Fan VFS
11	x	Fan high	x	x
12	Economizer(5) (option - SW2.6 ON)	Fan medium (or Economizer(5))	Economizer(5) (option - SW2.6 ON)	Economizer(5) (option - SW2.6 ON)
13	x	Fan low	x	x
14	Heat element(2) (2nd stage heat)	Heat element(2) (2nd stage heat)	Heat element(2) (2nd stage heat)	Heat element(2) (2nd stage heat)
15	x	Cool valve(3)	Cool valve(3)	Cool valve(3)
16	Heat valve (1st stage heat)	x	x	Heat valve (1st stage heat)
AO1	Cool valve PID(3)	Heat valve PID (1st stage heat)	Heat valve PID (1st stage heat)	x
AO2	Fan VFS	x	Fan VFS	Fan VFS

Fan on/off: 110-230VAC, 2.5A max., Fan VFS, PID valves: 0-10VDC. 0.5mA Not isolated

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

SW1				
SW2				

(1) SW1.1, SW1.2 = Fan speeds: 1 Speed (Low): SW1.1 ON, SW1.2 OFF
2 Speeds (Low and High): SW1.1 OFF, SW1.2 ON
3 Speeds (Low, Medium and High): SW1.1 OFF, SW1.2 OFF

(2) SW1.4 = 2nd heating stage: ON – Enable, OFF – Disable

(3) SW1.5 = Chilled beam option ON – Enable chilled beam (fan will not run with cooling)

(4) SW2.3 = Dehumidification: ON – Use dehumidifier, OFF – Use reheat for dehumidification

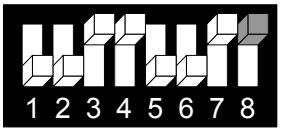
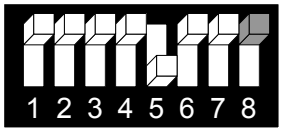
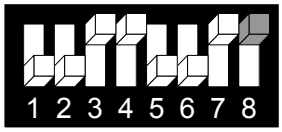
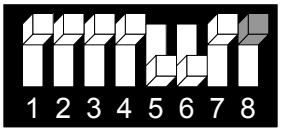
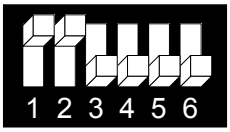
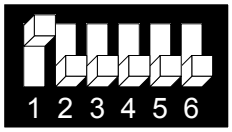
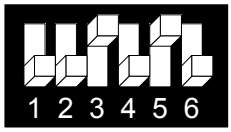
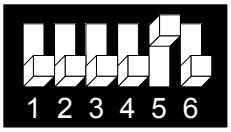
(5) SW2.6 = Terminal 12: ON – Economizer
OFF – Fan Med. (3 Speeds) / Terminal not in use (1/2 Speeds/VFS)
Important: Economizer will not work in 3 fan speeds configuration

Wiring and DIP Switches – FC systems – 4-Pipe

	38 4-Pipe, 1/2/3 Speeds fan(1), Heat valve PID, Cool valve PID	39 4-Pipe, VFS Fan, Cool valve PID, Floor heating	40 4-Pipe, 1/2/3 Speeds fan(1), Humidifier, Dehum/Reheat for Dehumidification	41 4-Pipe, Fan VFS, Humidifier, Reheat for Dehumidification
11	Fan high	x	Fan high	x
12	Fan medium (or Economizer(5))	Economizer(5) (option - SW2.6 ON)	Fan medium (or Economizer(5))	Economizer(5) (option - SW2.6 ON)
13	Fan low	x	Fan low	x
14	Heat element(2) (2nd stage heat)	Floor heating (1st stage heat – no fan)	Heat element(2) (2nd stage heat)	Heat element(2) (2nd stage heat)
15	x	x	Cool valve(3)	Cool valve(3)
16	x	Heat valve (2nd stage heat)	Heat valve (1st stage heat)	Heat valve (1st stage heat)
AO1	Cool valve PID(3)	Cool valve PID(3)	Humidifier	Humidifier
AO2	Heat valve PID (1st stage heat)	Fan VFS	Dehumidifier(4) (option - See SW2.3)	Fan VFS

Fan on/off: 110-230VAC, 2.5A max., PID valves, Humidifier, Dehumidifier: 0-10VDC. 5mA Not isolated

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

SW1				
SW2				

(1) SW1.1, SW1.2 = Fan speeds: **1 Speed (Low): SW1.1 ON, SW1.2 OFF**
2 Speeds (Low and High): SW1.1 OFF, SW1.2 ON
3 Speeds (Low, Medium and High): SW1.1 OFF, SW1.2 OFF

(2) SW1.4 = 2nd heating stage: **ON – Enable, OFF – Disable**

(3) SW1.5 = Chilled beam option **ON – Enable chilled beam (fan will not run with cooling)**

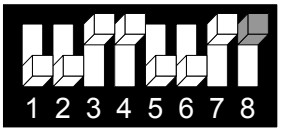
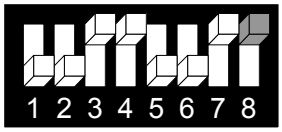
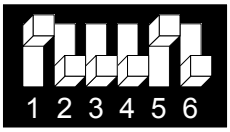
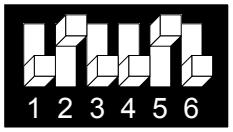
(4) SW2.3 = Dehumidification: **ON – Use dehumidifier, OFF – Use reheat for dehumidification**

(5) SW2.6 = Terminal 12: **ON – Economizer**
OFF – Fan Med. (3 Speeds) / Terminal not in use (1/2 Speeds/VFS)
Important: Economizer will not work in 3 fan speeds configuration

Wiring and DIP Switches – FC systems – 4-Pipe

	42 4-Pipe, 1/2/3 Speeds fan(1), Cool valve PID Humidifier, Reheat for Dehumidification	43 4-Pipe, 1/2/3 Speeds fan(1), Heat valve PID Humidifier, Reheat for Dehumidification
11	Fan high	Fan high
12	Fan medium (or Economizer(5))	Fan medium (or Economizer(5))
13	Fan low	Fan low
14	Heat element(2) (2nd stage heat)	Heat element(2) (2nd stage heat)
15	x	Cool valve(3)
16	Heat valve (1st stage heat)	x
AO1	Cool valve PID(3)	Heat valve PID (1st stage heat)
AO2	Humidifier	Humidifier

Fan on/off: 110-230VAC, 2.5A max., Fan VFS, Humidifier, PID valves: 0-10VDC. 0.5mA Not isolated
Control - Heat elements, Cool/Heat valves, Economizer: 110-230VAC, 0.3A max.

SW1		
SW2		

(1) SW1.1, SW1.2 = Fan speeds: **1 Speed (Low): SW1.1 ON, SW1.2 OFF**
2 Speeds (Low and High): SW1.1 OFF, SW1.2 ON
3 Speeds (Low, Medium and High): SW1.1 OFF, SW1.2 OFF

(2) SW1.4 = 2nd heating stage: **ON – Enable, OFF – Disable**

(3) SW1.5 = Chilled beam option **ON – Enable chilled beam (fan will not run with cooling)**

(4) SW2.3 = Dehumidification: **ON – Use dehumidifier, OFF – Use reheat for dehumidification**

(5) SW2.6 = Terminal 12: **ON – Economizer**
OFF – Fan Med. (3 Speeds) / Terminal not in use (1/2 Speeds/VFS)
Important: Economizer will not work in 3 fan speeds configuration

Technician Settings

Enter technician settings mode:

- Adjust the set point temperature to 10ºC or 50ºF.
- Press and hold the ⚙ button for 10 seconds to enter technician settings mode.
- "P01" will appear on display.

View objects and make adjustments:

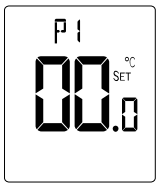
- Use the [Mode] button to step forward between different objects (parameters).
- Use the [Fan] button to step backward between different objects (parameters).
- Press the [On/Off] button to exit technician settings and return to normal display.
- If no button is pressed for 60 seconds, the thermostat will automatically exit technician settings and return to normal display.
- Use the ▲ or ▼ buttons to make adjustments when required.

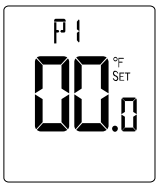
P1 – Offset for temperature readings calibration

Range: -6…+6°C / -9…+9°F.

Default: 0°C / 0°F.

Note: The offset will influence both internal or external sensors.





Offset for temperature calibration

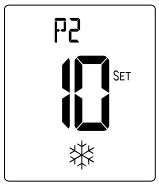
(°C) (°F)

P2 – Set point limit for cooling

Range: 5…35°C / 41…95°F.

Default: 10°C / 50°F.

Note: The thermostat will stop cooling regardless of the users set-point





Set point limit for cooling

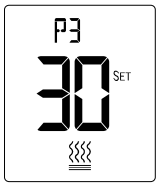
(°C) (°F)

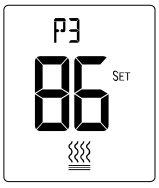
P3 – Set point limit for heating

Range: 5…35°C / 41…95°F.

Default: 30°C / 86°F.

Note: The thermostat will stop heating regardless of the users set-point





Set point limit for heating

(°C) (°F)

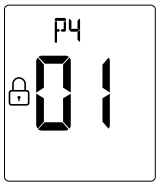
Technician Settings (Cont')

P4 – Enable/Disable the option to lock the [Fan] button

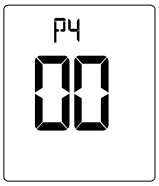
"01" [Fan] button can be locked

"00" [Fan] button cannot be locked

Note: When enabled, press and hold the [Mode] button for 7 seconds to actually lock the buttons.



[Fan] Can be locked



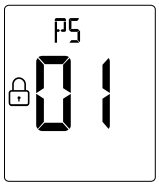
[Fan] Cannot be locked

P5 – Enable/Disable the option to lock the [Mode] button

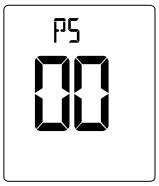
"01" [Mode] button can be locked

"00" [Mode] button cannot be locked

Note: When enabled, press and hold the [Mode] button for 7 seconds to actually lock the buttons.



[Mode] Can be locked



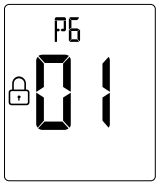
[Mode] Cannot be locked

P6 – Enable/Disable the option to lock the [On/Off] button

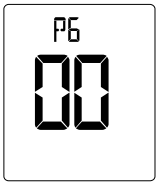
"01" [On/Off] button can be locked

"00" [On/Off] button cannot be locked

Note: When enabled, press and hold the [Mode] button for 7 seconds to actually lock the buttons.



[On/Off] Can be locked



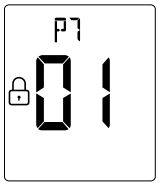
[On/Off] Cannot be locked

P7 – Enable/Disable the option to lock the ▲ or ▼ buttons (SET)

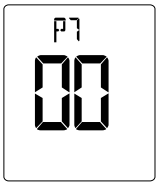
"01" ▲ or ▼ buttons can be locked

"00" ▲ or ▼ buttons cannot be locked

Note: When enabled, press and hold the [Mode] button for 7 seconds to actually lock the buttons.



▲ or ▼ Can be locked



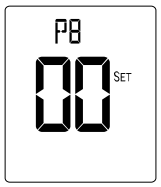
▲ or ▼ Cannot be locked

Technician Settings (Cont')

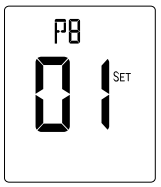
P8 – Functionality of T1 terminals

"00" - T1 terminals are not in use
"01" - External sensor
"02" - *T3 Soft start in heat sensor (FC) or **Deicing in cool (AC)
"03" - Door switch
"04" - Key tag
"05" - T Economizer (DIP switch SW2.6 must be ON)

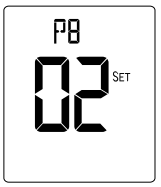
* In heating mode, the fan will not start before there is hot water in the coil.
** Allow deicing operation of indoor coil in cooling.



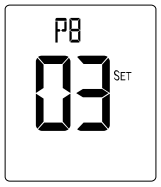
T1 terminals Not in use



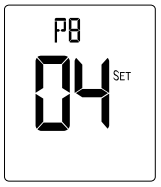
T1 sensor (External sensor)



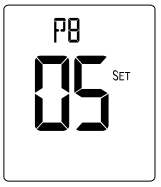
T3 Soft start in heat sensor (FC) or Deicing in cool sensor (AC)



Door switch



Key tag

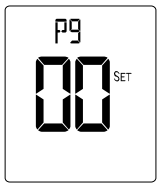


T Economizer

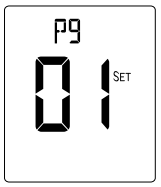
P9 – Functionality of IN1,0 terminals

"00" - IN1,0 terminals are not in use
"01" - *T2 Change over sensor (FC) or Deicing in heat (AC)
"02" - **T3 Soft start in heat sensor (FC) or Deicing in cool (AC)
"03" - Window contact Remote On/Off switch
"04" - Window contact Remote Economy switch
"05" - ***External Passive Infrared detector

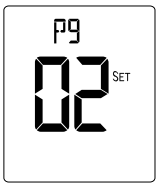
* In 2-Pipe system, T2 will sense the water temperature in the pipe in order to select/allow effective system mode.
** Where T1 terminals are used for external sensor, the IN1,0 terminals can be used for T3 sensor.
*** External PIR – only if internal PIR is disabled (SW4.2 ON).



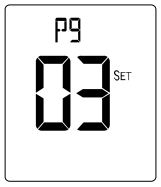
"IN1,0" terminals Not in use



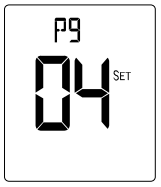
T2 change over sensor (FC) or Deicing in heat (AC)



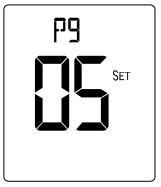
***T3 Soft start in heat sensor (FC) or Deicing in cool sensor (AC)**



Window contact Remote On/Off



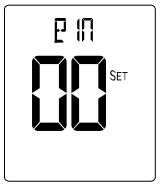
Window contact Remote Economy



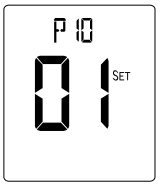
****External PIR sensor**

P10 – Window contact (terminals IN1,0) polarity

"01" - Normally open
"00" - Normally close



Window contact Normally close



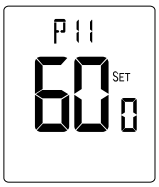
Window contact Normally open

Technician Settings (Cont')

P11 – Window contact delay time

Range: 0…999 seconds.

Default: 600 seconds.

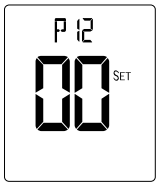


Window contact delay time (sec.)

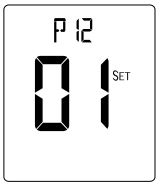
P12 – Door switch (terminals T1,0) polarity

"01" - Normally open

"00" - Normally close



Door switch Normally close

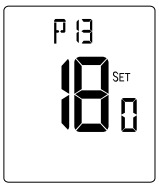


Door switch Normally open

P13 – Door switch delay time

Range: 0…999 seconds.

Default: 180 seconds.

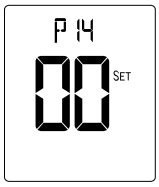


Door switch delay time (sec.)

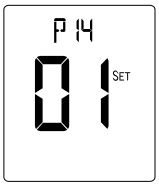
P14 – Enable/Disable Auto change over mode

"00" - Disable Auto change over mode

"01" - Enable Auto change over mode



Disable Auto mode



Enable Auto mode

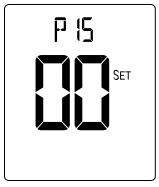
P15 – Occupancy sensor logic (PIR)

"00" - Thermostat turns off when unoccupied and back on when re-occupied.

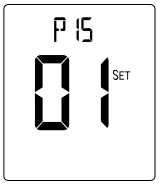
"01" - Thermostat turns off when unoccupied and remains off when re-occupied.

"02" - Thermostat uses economy set points when unoccupied.

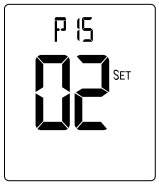
"03" - Un-occupancy – Dehumidification logic. (only available with dehumidification configuration – see DIP swich settings)



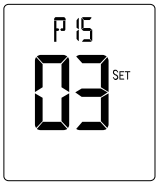
Unocc. – Off Re-occ. - On



Unocc. – Off Re-occ. - Off



Economy set points



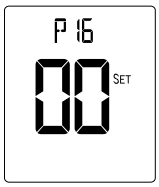
Dehumidification logic

Technician Settings (Cont')

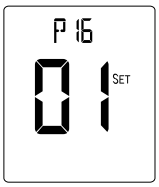
P16 – Enable/Disable Occupancy sensor

"00" - Disable

"01" - Enable



Disable occ. sensor



Enable occ. sensor

P17 – PIR (occupancy sensor) delay time before switching to unoccupied mode (ON delay)

Range: 0…900 minutes.

Default: 20 minutes.



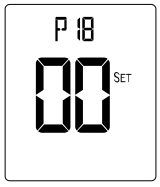
PIR ON delay (minutes)

P18 – Door switch or key tag configuration

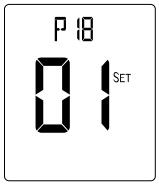
"00" - Switch On/Off by door switch or key tag

"01" - Changing the set point temperature

"02" - Switching fan speed to Low



Switch On or Off



Change set-points

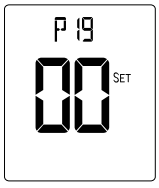


Switch to fan low

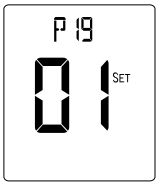
P19 – PIR (Occupancy sensor) polarity

"00" - Normally open

"01" - Normally close



PIR Normally open



PIR Normally close

P25 – Economy set point for cooling

Range: 5…35°C / 41…95°F.

Default: 30°C / 86°F.





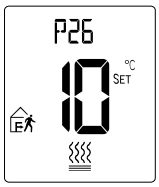
EC set point in cooling (°C) (°F)

Technician Settings (Cont')

P26 – Economy set point for heating

Range: 5…35°C / 41…95°F.

Default: 10°C / 50°F.





EC set point in heating

(°C) **(°F)**

P27 – On-delay time on-delay between heating stages

Range: 0….600 seconds

Default: 5 seconds



On delay heating stages

P28 – Off-delay time between heating stages

Range: 0….600 seconds

Default: 1 second

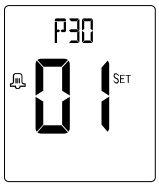


Off delay heating stages

P30 – Beeper ON or OFF

"01" - Beeper ON

"00" - Beeper OFF

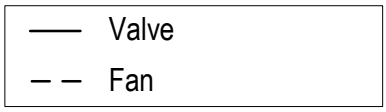


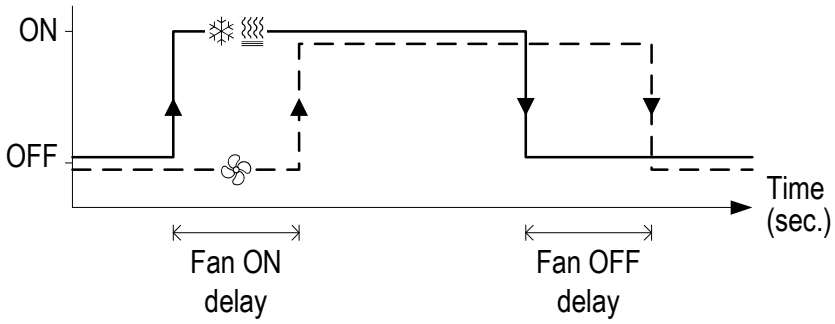
Beeper ON



Beeper OFF

P31 – P34
Fan on/off delay
with fan on demand (auto fan) active.





P31 – Fan ON delay in cooling (FC Only!)
Range: 0…120 seconds
Default: 0 seconds (no delay)



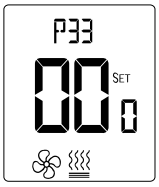
Fan ON delay in cooling (seconds)

P32 – Fan OFF delay in cooling
Range: 0…120 seconds
Default: 0 seconds (no delay)



Fan OFF delay in cooling (seconds)

P33 – Fan ON delay in heating (FC Only!)
Range: 0…120 seconds
Default: 0 seconds (no delay)



Fan ON delay in heating (seconds)

P34 – Fan OFF delay in heating
Range: 0…120 seconds
Default: 30 seconds



Fan OFF delay in heating (seconds)

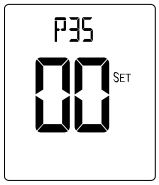
Technician Settings (Cont')

P35 – Enable/Disable Freeze protection

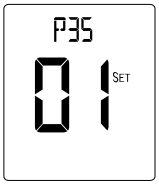
"00" - Disable Freeze protection

"01" - Enable Freeze protection

Note: If enabled, freeze protection will start when the thermostat is either ON or OFF and regardless of the current system mode.



Disable freeze protection



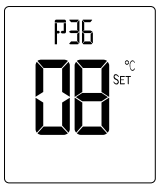
Enable freeze protection

P36 – Freeze protection cut-in set point

Range: 8...15°C / 46…59°F

Default: 8°C / 46°F

The room ambient temperature which will trigger Heating ON.





Freeze protection cut-in set point

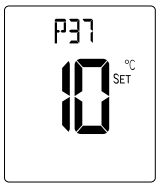
(°C) (°F)

P37 – Freeze protection cut-out set point

Range: 10...17°C / 50…63°F

Default: 10°C / 50°F

The room ambient temperature which will switch the Heating back OFF.





Freeze protection cut-out set point

(°C) (°F)

Technician Settings (Cont')

P40 – View filter counter (hours) – Read only

Range: 0…999 hours

The filter counter is related to Fan running time.

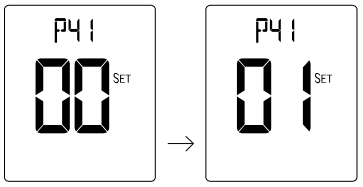


View filter Counter (hours)

P41 – Reset filter time

Press the [+] button to reset the filter counter.

The display will change from "00" to "01" and back to "00".



Reset filter counter

P42 – Adjust filter alarm delay time counter (hours)

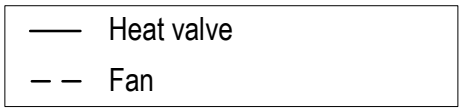
Range: 0…999 hours

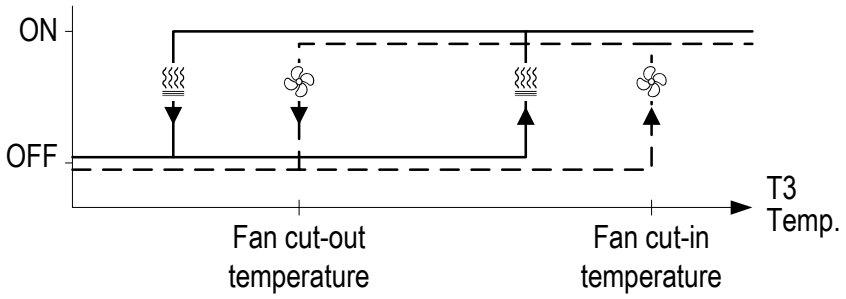
Default: 0 hours (0 = Disable)



Adjust filter alarm delay time (hours)

P43 – P44
Soft start in heat
with fan on demand
(auto fan) active.





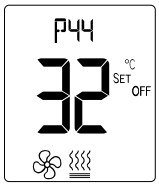
P43 – Soft start in heat – cut-in temperature (FC Only!)
The fan will not start before the temperature on T3 sensor reaches the cut-in temperature.
Please refer to technician parameters P08/P09.
Range: 14...37°C / 57…99°F
Default: 36°C / 97°F

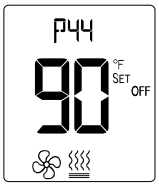




Soft start heat cut-in temperature
(°C) (°F)

P44 – Soft start in heat – cut-out temperature (FC Only!)
The fan will stop if the temperature on T3 sensor drops below the cut-out temperature.
Please refer to technician parameters P08/P09.
Range: 12...35°C / 54…95°F
Default: 32°C / 90°F



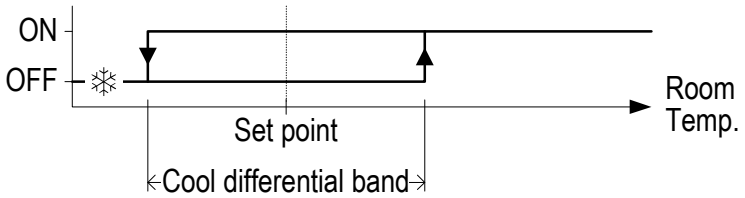


Soft start heat cut-out temperature
(°C) (°F)

Technician Settings (Cont')

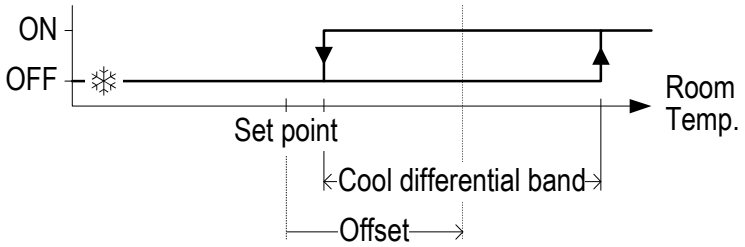
P45 – P46
Cool differential band / offset
(with cool differential band offset = 0)

—— Compressor / Valve

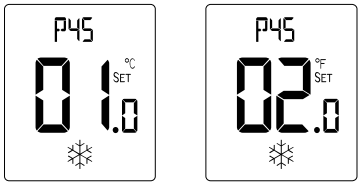


P45 – P46
Cool differential band / offset
(with cool differential band offset ≠ 0)

—— Compressor / Valve

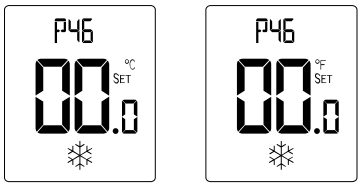


P45 – Cool differential band
Range: 0.5...5°C / 1…10°F
Default: 1°C / 2°F



Cool differential band
(°C) **(°F)**

P46 – Cool differential band offset
Range: -5…+5°C / -9…+9°F
Default: 0°C / 0°F

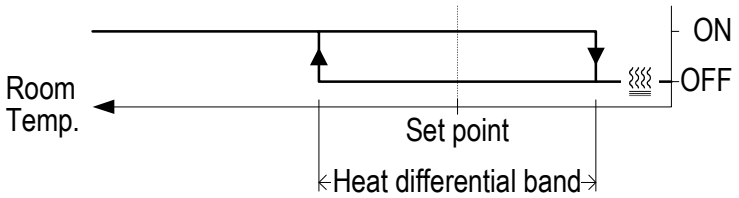


Cool differential band offset
(°C) **(°F)**

Technician Settings (Cont')

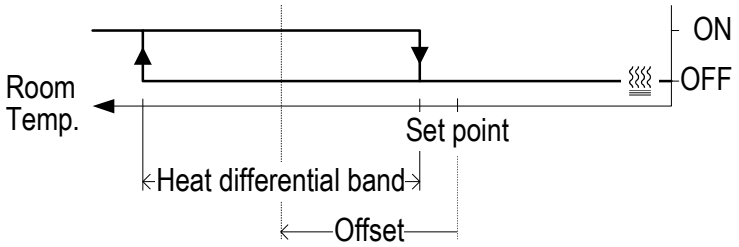
P47-48
Heat differential band / offset
(with heat differential band offset = 0)

—— Compressor / Valve



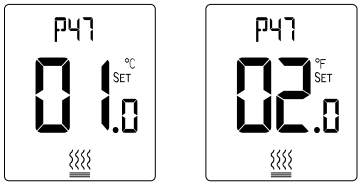
P47-48
Heat differential band / offset
(with heat differential band offset ≠ 0)

—— Compressor / Valve



P47 – Heat differential band

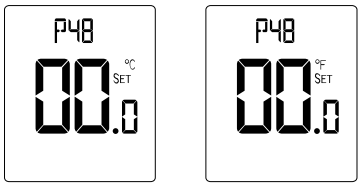
Range: 0.5...5°C / 1…10°F
Default: 1°C / 2°F



Heat differential band
(°C) (°F)

P48 – Heat differential band offset

Range: -5…+5°C / -9…+9°F
Default: 0°C / 0°F

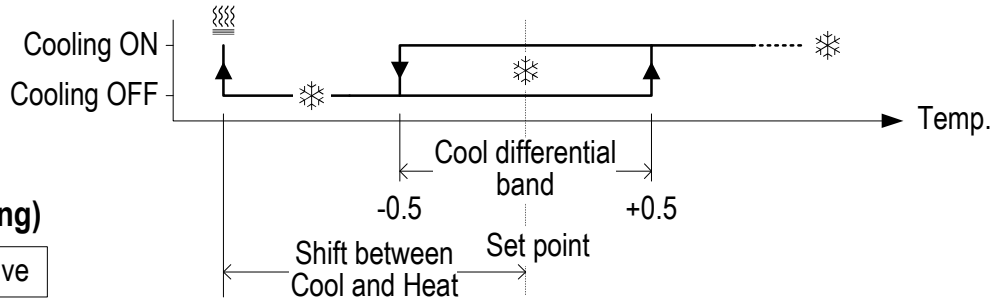


Heat differential band offset
(°C) (°F)

Technician Settings (Cont')

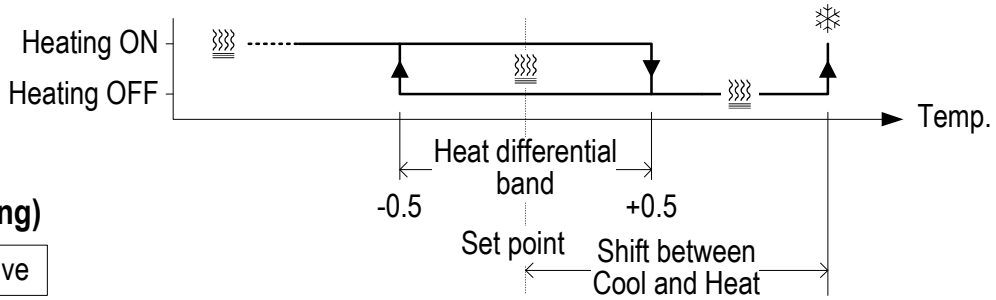
P49
Shift between
Cool and Heat
in Auto mode
(from cooling to heating)

—— Compressor / Valve



P49
Shift between
Cool and Heat
in Auto mode
(from heating to cooling)

—— Compressor / Valve



P49 – Shift between Cool and Heat in Auto change over mode

Range: 0...10°C / 0…20°F
Default: 2°C / 4°F





Shift between Cool & Heat in Auto mode
(°C) (°F)

P50 – Shift between Cooling stages (AC only!)

Range: 0...10°C / 0…20°F
Default: 2°C / 4°F





Shift between cooling stages
(°C) (°F)

P51 – Shift between Heating stages

Range: 0...49°C / 0…98°F
Default: 2°C / 4°F





Shift between heating stages
(°C) (°F)

Technician Settings (Cont')

P52 – Cool valve proportional band (FC Only!)

Range: 2...10°C / 4-20°F

Default: 2°C / 4°F

0-10V Valve opening from fully closed to fully open.





Cool valve proportional band (°C) **(°F)**

P53 – Cool proportional low limit (FC Only!)

Range: 0...100%

Default: 0%

Minimum valve opening.



Cool prop. low limit (%)

P54 – Cool proportional high limit (FC Only!)

Range: 0...100%

Default: 100%

Maximum valve opening.



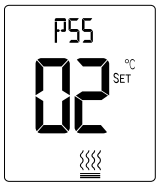
Cool prop. high limit (%)

P55 – Heat valve proportional band (FC Only!)

Range: 2...10°C / 4-20°F

Default: 2°C / 4°F

0-10V Valve opening from fully closed to fully open.





Cool valve proportional band (°C) **(°F)**

P56 – Heat proportional low limit (FC Only!)

Range: 0...100%

Default: 0%

Minimum valve opening.



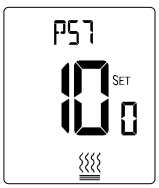
Heat prop. low limit (%)

P57 – Heat proportional high limit (FC Only!)

Range: 0...100%

Default: 100%

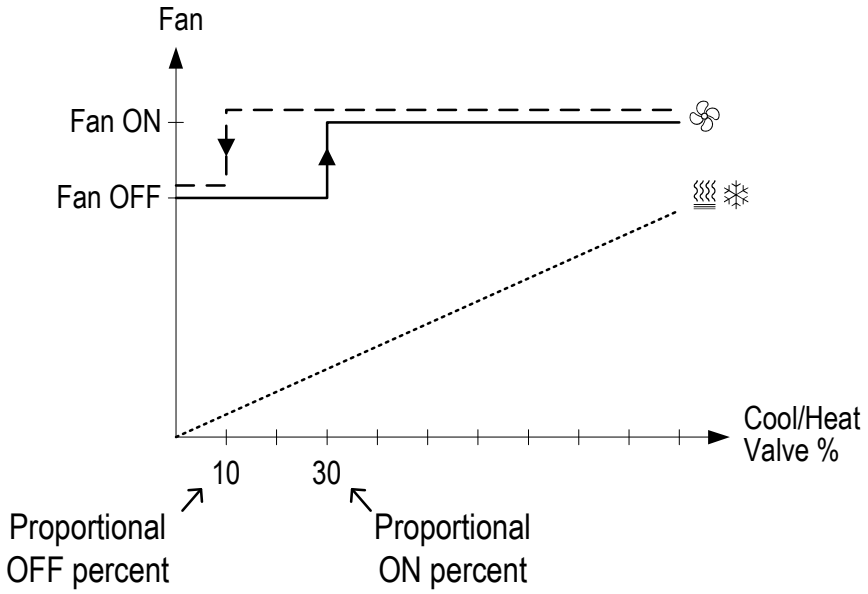
Maximum valve opening.



Heat prop. high limit (%)

P60
Fan turns ON when the Cool or Heat valve reaches the "Proportional ON percent"

P61
Fan turns OFF when the Cool or Heat valve drops below the "Proportional OFF percent"



P60 – Proportional ON percent (FC Only!)
Range: 0...30%
Default: 30%



Proportional ON percent (%)

P61 – Proportional OFF percent (FC Only!)
Range: 0...100%
Default: 100%



Proportional OFF percent (%)

P63 – Time on-delay between cooling stages (AC only!)
Range: 0…600 seconds
Default: 5 seconds



On Delay cooling stages

P64 – Time off-delay between cooling stages (AC only!)
Range: 0…600 seconds
Default: 1 seconds



Off Delay cooling stages

Technician Settings (Cont')

P65 – Fan VFS proportional band in cooling

Range: 2...10°C / 4…20°F

Default: 2°C / 4°F

0-10V fan speed from off closed to fully running.





VFS Proportional band in cooling

(°C) (°F)

P66 – Fan VFS proportional band in heating

Range: 2...10°C / 4…20°F

Default: 2°C / 4°F

0-10V fan speed from off closed to fully running.





VFS Proportional band in heating

(°C) (°F)

P67 – Fan VFS Low speed percent in cooling

Range: 0...30%

Default: 20%



VFS Low %
in cooling

P68 – Fan VFS Medium speed percent in cooling

Range: 30...60%

Default: 50%



VFS Med %
in cooling

P69 – Fan VFS High speed percent in cooling

Range: 60...100%

Default: 90%



VFS High %
in cooling

P70 – Fan VFS Low speed percent in heating

Range: 0...30%

Default: 30%

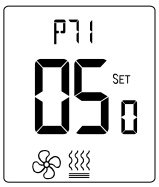


VFS Low %
in heating

P71 – Fan VFS Medium speed percent in heating

Range: 30...60%

Default: 50%



VFS Med % in heating

P72 – Fan VFS High speed percent in heating

Range: 60...100%

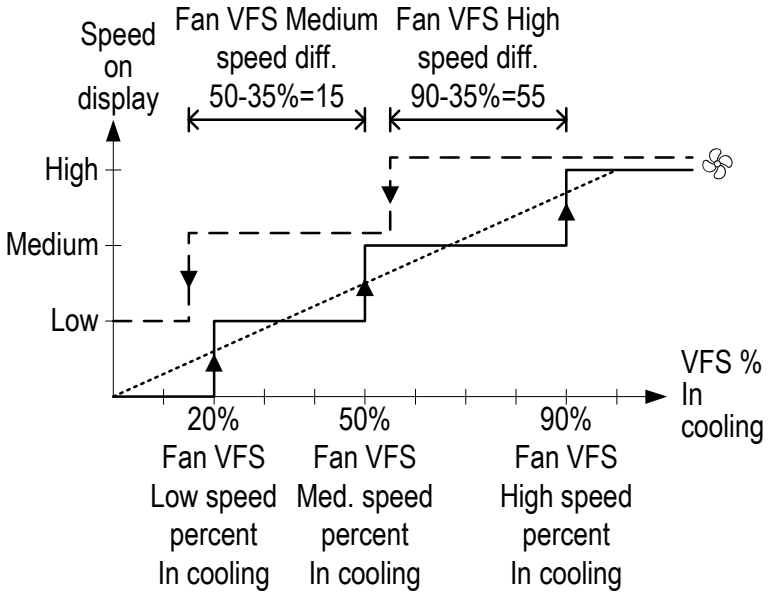
Default: 80%



VFS High % in heating

P74
VFS Medium speed differential
(display from medium to low)

P75
VFS High speed differential
(display from high to medium)



P74 – VFS Medium speed differential

Range: 10...50%

Default: 35

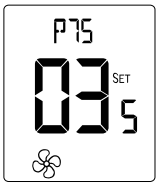


VFS Med speed differential

P75 – VFS High speed differential

Range: 10...50%

Default: 35



VFS High speed differential

Technician Settings (Cont')

P76 – Fan VFS Low limit in cooling

Range: 0...100%

Default: 0%

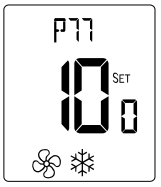


VFS low limit in cooling

P77 – Fan VFS High limit in cooling

Range: 0...100%

Default: 100%



VFS high limit in cooling

P78 – Fan VFS Low limit in heating

Range: 0...100%

Default: 0%

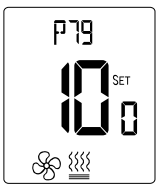


VFS low limit in heating

P79 – Fan VFS High limit in heating

Range: 0...100%

Default: 100%



VFS high limit in heating

Technician Settings (Cont')

P83 – View T2 temperature sensor readings

Note: If T2 is not connected, -9.9 will appear on display



T2 Sensor Not connected



T2 Sensor readings (°C)

P84 – View T3 temperature sensor readings

Note: If T3 is not connected, -9.9 will appear on display



T3 Sensor Not connected



T3 Sensor readings (°C/°F)

P85 – Deice in cool – cut-in temperature (AC only!)

Range: -9.5…+8°C / 15...46°F

Default: 0°C / 32°F

The indoor unit coil temperature in which deicing will start.





Deice in cool cut-in temperature (°C) (°F)

P86 – Deice in cool – cut-out temperature (AC only!)

Range: 2...20°C / 36...68°F

Default: 8°C / 46°F

The indoor unit coil temperature in which deicing will stop.





Deice in cool cut-out temperature (°C) (°F)

P87 – Deice in heat time (AC only!)

Range: 2...7 Minutes

Default: 5 Minutes

The length of deicing procedure.



Deice in heat time

P88 – Deice in heat break time (AC only!)

Range: 10...30 Minutes

Default: 25 Minutes

The time interval between deicing cycles.



Deice in heat break time

Technician Settings (Cont')

P89 – Deice in heat – cut-in temperature (AC only!)

Range: -9.5…+8°C / 15...46°F

Default: 0°C / 32°F

The outdoor unit coil temperature in which deicing will start.



Deice in heat cut-in temperature (°C)



Deice in heat cut-in temperature (°F)

P90 – Deice in heat – cut-out temperature (AC only!)

Range: 2...20°C / 35...68°F

Default: 16°C / 61°F

The outdoor unit coil temperature in which deicing will stop.



Deice in heat cut-out temperature (°C)



Deice in heat cut-out temperature (°F)

P91 – Compressor delay (AC only!)

Range: 0...360 Seconds

Default: 240 Seconds

DIP Switch SW1.5 must be in "OFF" position – compressor delay enabled!

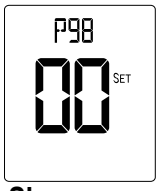


Compressor delay

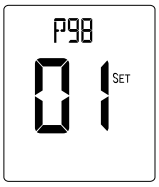
P98 – Display set point only (hide room temperature)

"00" - Display both set point and room temperatures

"01" - Display only the set point temperature



Show room temperature

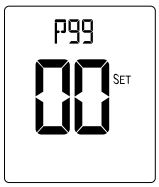


Hide room temperature

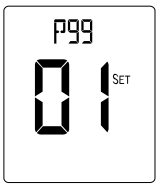
P99 – One or Two set points (for cool and for heat)

"00" - One set point for cooling and heating

"01" - two set points – one for cool and one for heat



One set point

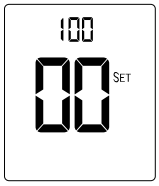


Two set points

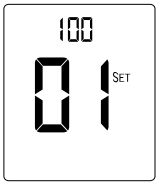
P100 – Enable screen dimming

"00" - Disable dimming

"01" - Enable dimming



Disable screen dimming



Enable screen dimming

Technician Settings (Cont')

P101 – Screen dimming delay

Range: 0...99 minutes

Default: 5 minutes



Screen dimming delay

P102 – Dimming brightness

Range: 1, 5, 10, 20, 30...90%

Default: 10%



Dimming brightness (%)

P105 – Screen brightness when ON

Range: 50...100%

Default: 100%



Screen brightness when ON (%)

P107 – Weekly program configuration

"00" - Disable weekly program (program parameters will be lost)

"01" - 7 days with the same program

"02" - One program for Monday to Friday
and another program for Saturday and Sunday

"03" - One program for Monday to Friday,
one for Saturday and another for Sunday

"04" - 7 days with the different program for each day

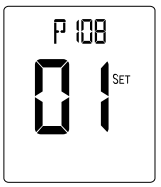


Weekly program configuration

P108 – Weekly program - events per day

"00" - Two different events per day

"01" - Four different events per day

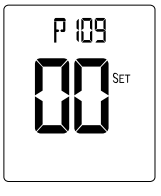


Weekly program events per day

P109 – Weekly program event configuration

"00" - US Program
Event start time, Mode, Fan speed, Set points (one or two)

"01" - Eu program
Event start time, Stop time



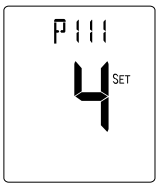
Weekly program event configuration

Technician Settings (Cont')

P111 – PIR Sensitivity

Range: 1...5 (1 – Less sensitive, 5 – More sensitive)

Default: 4



PIR Sensitivity

P114 – Cool PID Kp (FC Only!)

Range: 0...100%

Default: 100%

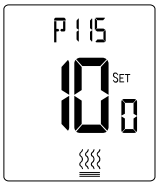


Cool PID Kp

P115 – Heat PID Kp (FC Only!)

Range: 0...100%

Default: 100%



Heat PID Kp

P116 – Cool PID Ki (FC Only!)

Range: 0...100%

Default: 0%

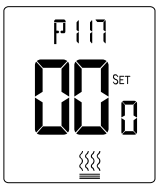


Cool PID Ki

P117 – Heat PID Ki (FC Only!)

Range: 0...100%

Default: 0%



Heat PID Ki

P118 – Cool PID Kd (FC Only!)

Range: 0...100%

Default: 1%



Cool PID Kd

P119 – Heat PID Kd (FC Only!)

Range: 0...100%

Default: 1%



Heat PID Kd

Technician Settings (Cont')

P122 – Cool Proportional output threshold time (FC Only!)

Range: 0...100 seconds

Default: 60 seconds



Cool proportional threshold time

P123 – Heat Proportional output threshold time (FC Only!)

Range: 0...100 seconds

Default: 60 seconds



Heat proportional Threshold time

P160 – Minimum compressor ON time (AC Only!)

Range: 0...20 minutes

Default: 2 minutes



Minimum compressor ON time

P161 – Minimum compressor OFF time (AC Only!)

Range: 0...20 minutes

Default: 13 minutes

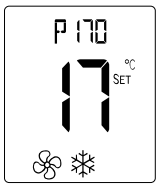


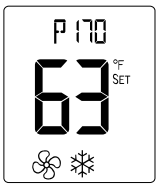
Minimum compressor OFF time

P170 – Economizer low limit temperature

Range: 9...27ºC / 48...80ºF

Default: 17ºC / 63ºF





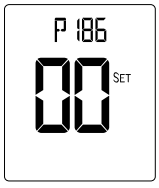
Economizer low limit temperature

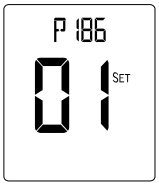
(°C) (°F)

P186 – Enable/Disable internal PIR

"00" - Disable internal PIR

"01" - Enable Internal PIR





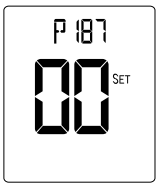
Disable internal PIR **Enable internal PIR**

Technician Settings (Cont')

P187 – Display or hide humidity reading

"00" - Do not display humidity reading

"01" - Display humidity reading

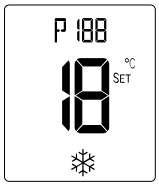


Display or hide humidity readings

P188 – Room temperature limit for disabling dehumidification in unoccupied mode

Range: 10...30ºC / 50...85ºF

Default: 18ºC / 64ºF





Temp. for disabling dehum. In unocc mode

(°C) (°F)

P189 – Dehumidification cycle in unoccupied mode

Range: 0...600 minutes

Default: 20 minutes



Dehumidification cycle in unocc. mode

P190 – Dehumidification break time in unoccupied mode

Range: 0...900 minutes

Default: 40 minutes



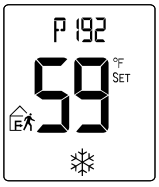
Dehumidification break in unocc. mode

P192 – Temperature set-point for re-heat in unoccupied mode

Range: 10...30ºC / 50...86ºF

Default: 15ºC / 59ºF





Set-point for reheat in unocc. mode

(°C) (°F)

P194 – Humidity differential band

Range: 0...10 %RH

Default: 5%RH



Humidity differential band

Technician Settings (Cont')

P195 – Humidity sensor reading offset

Range: -9…+9 %RH

Default: 0 %RH



Humidity offset

P196 – Dead zone between humidification and dehumidification

Range: 0...100 %RH

Default: 0 %RH



Dead zone Hum./Dehum.

P197 – Humidity set-point

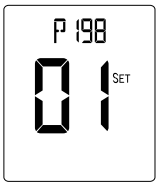
Range: 20...100 %RH

Default: 45 %RH



Humidity set-point

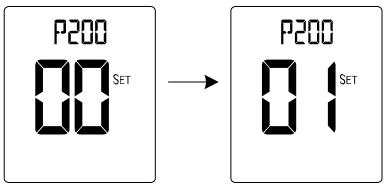
P198 – Not in use



Not in use

P200 – Restore defaults

- Press the [+] button – the display will change from "00" to "01".
- Press the [On/Off] button to restore default settings.
- The thermostat will turn Off.



Restore defaults

Press the [On/Off] button or wait 60 seconds to return to normal display.

Communication MAC Address

Defining the communication MAC Address

- Adjust the set-point temperature to 11ºC/52ºF – the ☼ button will appear on display.
- To enter MAC Address settings, press and hold the ☼ button for 5 seconds.
- Use the ▲ or ▼ buttons to change the MAC Address.

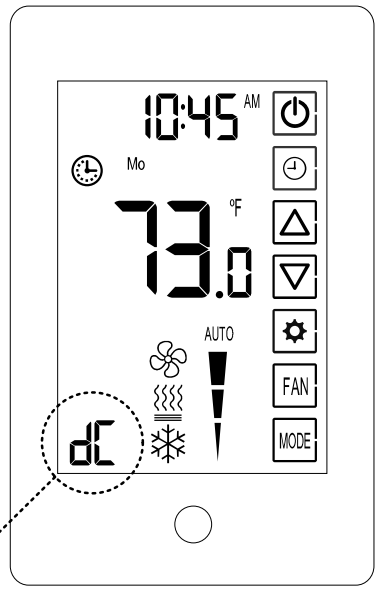
  Set “0” for no communication.

Warning: Do not use the same MAC address for two devices on the same communication line!

Important! In order for the MAC address changes to take effect, switch power supply off and on.

Alarms and Indications

F1	T1 Internal sensor or T1 External sensor fault
dC	Deicer in cool indication
dH	Deicer in heat indication
OH	Overheat in heat
OC	Overheat in cool
t2	Teconomizer sensor fault
E1	Economy by: - Window contact - Remote on/off switch - Window contact - Remote economy switch
E2	Economy by: - Built-in/External PIR - Communication
E4	Economy by door switch
E5	Economy by key-tag



Notes



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