



PIR Ready VT7300F5X00B-2572
24 VAC Low Voltage ECM Fan Coil Terminal
Equipment Controller

Installation Guide

For Commercial and Lodging FCU
Applications

May 3rd, 2012 / 028-0381-R4

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INSTALLATION

Remove the security screw on the bottom of Terminal Equipment Controller cover.

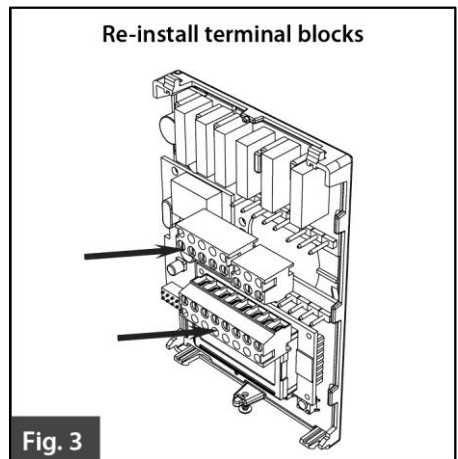
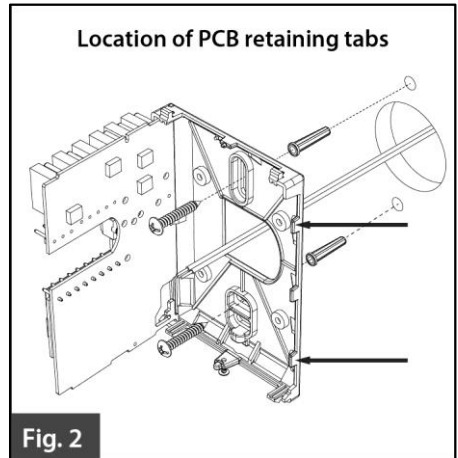
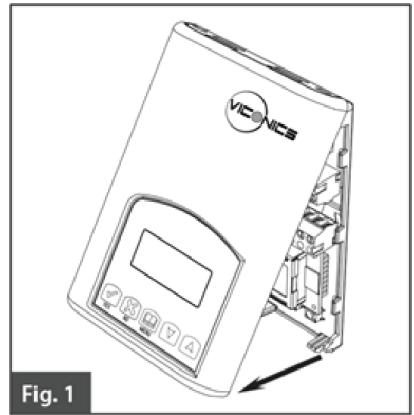
- Open unit by pulling on the bottom side of Terminal Equipment Controller (fig. 1).
- Remove wiring terminals from sticker.
- Please read the FCC ID and IC label installed in the cover upon removal of cover for the wireless products.

Location

1. Should not be installed on an outside wall.
2. Must be installed away from any direct heat source.
3. Should not be installed near an air discharge grill.
4. Should not be affected by direct sun radiation.
5. Nothing should restrict vertical air circulation to the Terminal Equipment Controller.

Installation

1. Swing open the Terminal Equipment Controller PCB to the left by pressing the PCB locking tabs (fig. 2).
2. Pull out cables 6" out from the wall.
3. Wall surface must be flat and clean.
4. Insert cable in the central hole of the base.
5. Align the base and mark the location of the two mounting holes on the wall. Install base in proper orientation. Arrow on base should be facing up.
6. Install anchors in the wall.
7. Insert screws in mounting holes on each side of the base (fig. 2).
8. Gently swing back the circuit board on the base and push on it until the tabs lock it.
9. Strip each wire 1/4 inch from end.



10. Insert each wire according to wiring diagram.
11. Gently push excess wiring back into hole (fig. 3).
12. Re-Install wiring terminals in their correct locations (fig. 3).
13. Re-install the cover (top side first) and gently push extra wire length back into the hole in the wall.
14. Install security screw.



- When replacing an existing Terminal Equipment Controller, label the wires before removal of the Terminal Equipment Controller.
- Electronic controls are static sensitive devices. Discharge yourself properly before manipulating and installing the Terminal Equipment Controller.
- A short circuit or wrong wiring may permanently damage the Terminal Equipment Controller or the equipment.
- All VT7000 series Terminal Equipment Controllers are designed for use as operating controls only and are not safety devices. These instruments have undergone rigorous tests and verification prior to shipping to ensure proper and reliable operation in the field. Whenever a control failure could lead to personal injury and or loss of property, it becomes the responsibility of the user / installer / electrical system designer to incorporate safety devices (such as relays, flow switch, thermal protections, etc...) and or an alarm system to protect the entire system against such catastrophic failures. Tampering with the devices or unintended application of the devices will result in a void of warranty.

Features overview

- System modes lock out.
- System efficiency feedback.
- Lockable keypads for tamper proofing. No need for Terminal Equipment Controller guards.
- PIR- ready.
- Advanced occupancy functions.
- Configurable fan functions.
- Auto fan speed mode.
- Auxiliary output.
- Unique configuration setup utility.
- Three configurable inputs.
- .

CONFIGURABLE BI/UI INPUTS OVERVIEW

Binary input #1 can be configured for the following functions:

1. **(None): No function will be associated with the input**
2. **(Rem NSB):** remote NSB timer clock input. The scheduling will now be set as per the binary input. It provides low cost setback operation via a dry contact
Contact opened = Occupied
Contact closed = Unoccupied
3. **(Motion NO) and (Motion NC):** Advanced PIR occupancy functions using a normally open (NO) or normally closed (NC) remote PIR motion sensor. Occupancy mode is now set as per applied PIR function and configuration. Application information and examples are available on document: *APP-PIR-Guide-Exx*. This document will provide the installers and system designers with detailed examples on applications, parameter configuration information, sequence of operation, troubleshooting and diagnostic help required for the proper usage of the PIR accessory covers
4. **(Window) EMS:** Forces the system to disable any current heating or cooling action by the Terminal Equipment Controller. The mode stays the same and the current setpoints are the same occupied setpoints. Only the outputs are disabled. There is a Door/Window alarm displayed on the Terminal Equipment Controller to indicate to the local tenant that the door/window needs to be closed for cooling or heating to resume. Use NC contact.
Contact opened = System disabled with local Window alarm
Contact closed = System enabled

Binary input #2 can be configured for the following functions:

1. **(None):** No function will be associated with the input
2. **(Door Dry) Door contact & Motion detector:** This configuration is only functional if binary input #1 is set to **Motion NO** or **Motion NC** or a **PIR accessory cover** is used. With this sequence enabled, the occupancy is now dictated through those 2 inputs. Any motion detected will set the zone to occupied status. The zone will remain permanently in occupied mode until the door contact switch opens momentarily. The Terminal Equipment Controller will then go in stand-by mode. If more movements are detected, the occupied mode will resume. While the door is opened, any movements detected by the remote PIR sensor or the PIR accessory cover will be ignored. Use a Normally Closed contact switching device.
Contact opened = Door opened
Contact closed = Door closed
3. **(RemOVR):** temporary occupancy remote override contact. This function disables the central button override function on the Terminal Equipment Controller. The override function is now controlled by a manual remote momentarily closed contact. When configured in this mode, the input operates in a toggle mode. It is now possible to toggle between unoccupied & occupied setpoints for the amount of time set by parameter (TOccTime) temporary occupancy time.
4. **(Filter):** a backlit flashing Filter alarm will be displayed on the Terminal Equipment Controller LCD screen when the input is energized. It can be tied to a differential pressure switch that monitor filters
Contact opened = No alarm

Contact closed = Alarm displayed

5. **(Service):** a backlit flashing Service alarm will be displayed on the Terminal Equipment Controller LCD screen when the input is energized. It can be tied in to the AC unit control card, which provides an alarm in case of malfunction.

Contact opened = No alarm

Contact closed = Alarm displayed

Universal input #3 can be configured for the following functions:

1. **(None):** No function will be associated with the input
2. **(COC/NH) Change over dry contact. Normally Heat:** Used for hot / cold air / water change over switching in 2 pipe systems.
Contact closed = Cold air / water present
Contact opened = Hot air / water present
Only used and valid if system is setup as 2.0. Parameter (Out1Conf) set as 2.0.
3. **(COC/NC) Change over dry contact. Normally Cool:** Used for hot / cold air / water change over switching in 2 pipe systems.
Contact closed = Hot air / water present
Contact opened = Cold air / water present
Only used and valid if system is setup as 2.0. Parameter (Out1Conf) set as 2.0.
4. **(COS) Change over analog sensor:** Used for hot / cold air / water change over switching in 2 pipe systems.
Only used and valid if system is setup as 2.0. Parameter (Out1Conf) set as 2.0.
If temperature is > 77 °F = Hot air / water present
If temperature is < 75 °F = Cold air / water present
5. **(SS) Supply air sensor monitoring:** Used for supply air temperature monitoring.
Only used for network reporting of the supply air temperature. Has no internal function in the Terminal Equipment Controller.

MODEL SELECTION

| Part number | Description | Communication Options |
|-------------------|---------------------------------------|-----------------------|
| VT7300F5X00-2572 | Commercial Applications with Override | Communication Ready |
| VT7300F5X00B-2572 | Commercial Applications with Override | BACnet MS/TP |
| VT7305F5X00-2572 | °C/°F Hotel/Lodging Applications | Communication Ready |
| VT7305F5X00B-2572 | °C/°F Hotel/Lodging Applications | BACnet MS/TP |

- Controllers can be ordered with a factory installed PIR cover. Please use (5500) extension instead of the (5000) only extension. Ex. VT7300F5500B-2572.
- Controllers ordered without a PIR cover can be retrofitted with a separate PIR accessory cover afterwards when required

TERMINAL, IDENTIFICATION AND FUNCTION

| |
|------------------------------|
| 1- Not used |
| 2- Not used |
| 3- Fan Enable/disable |
| 4- 24 V~ Hot |
| 5- 24 V~ Com |

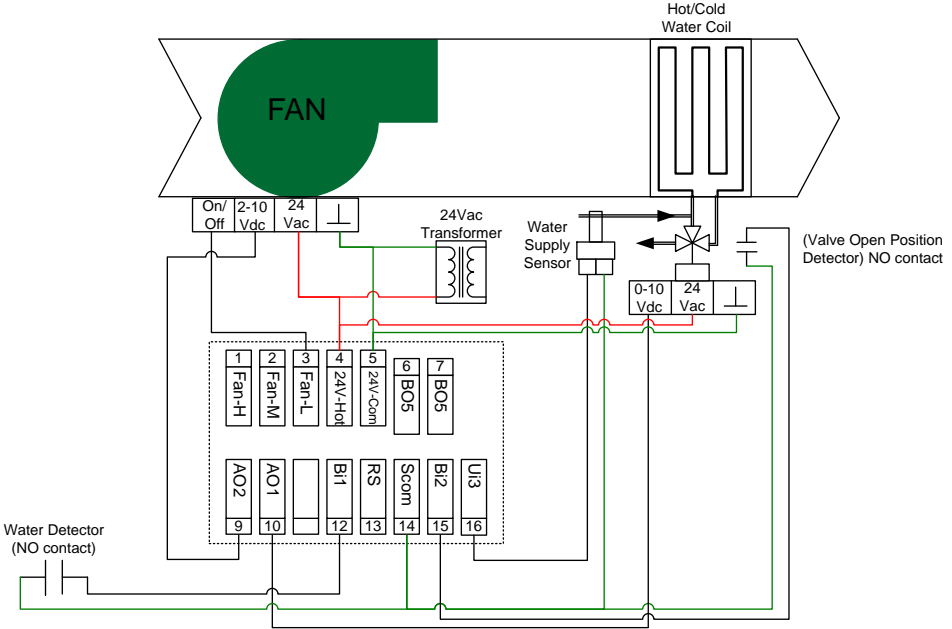
| |
|--------------------|
| 6- Aux BO 5 |
| 7- Aux BO 5 |
| 8- Blank |

| |
|--------------------------------|
| 9- ECM Output |
| 10-Valve Output |
| 11- Not used |
| 12- BI #1 |
| 13- RS |
| 14- Scom |
| 15- BI #2 |
| 16- UI #3 COS / COC /SS |

| |
|--------------|
| Fan H |
| Fan M |
| Fan L |
| 24 V~ Hot |
| 24 V~ Com |
| |
| BO 5-Aux |
| BO 5-Aux |
| Blank |

| |
|--------------|
| AO 2 |
| AO 1 |
| Blank |
| BI 1 |
| RS |
| Scom |
| BI 2 |
| UI 3 |

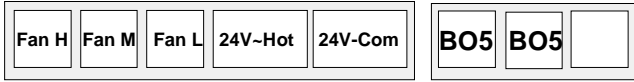
Wiring



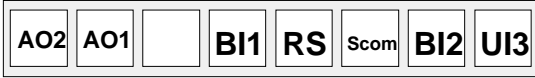
Screw terminal arrangement

5 pole left top connector

3 pole left top connector



8 pole bottom connector



Main outputs wiring

Wiring notes:

- Note 1: Electromechanical contacts are to be used with the digital inputs. Electronic triacs cannot be used as mean of switching for the input. The switched leg to the input for the input to activate is terminal C (common).
- Note 2: The transformer of the unit provides power to the t Terminal Equipment Controller and the additional loads that will be wired to the Terminal Equipment Controller.

Remote sensor accessories

| Model no. | Description |
|------------|---|
| S3010W1000 | Wall mounted temperature sensor |
| S3020W1000 | Wall mounted temperature sensor with override button and occupancy status LED |
| S2060A1000 | Averaging temperature sensor |
| S2000D1000 | Duct mounted temperature sensor |



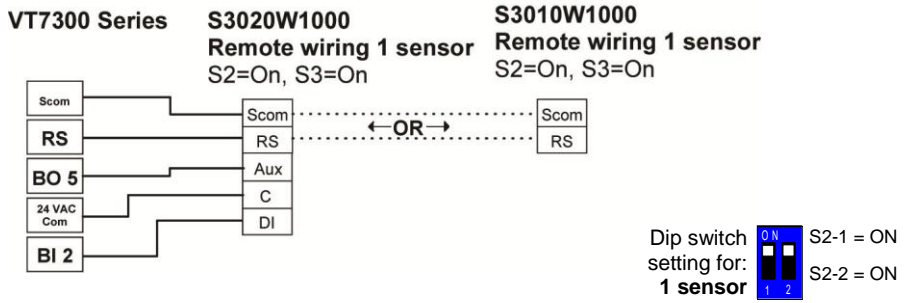
S3020W1000 WALL MOUNTED SENSOR

Remote mount temperature sensors use 10K type 2 NTC thermistors.

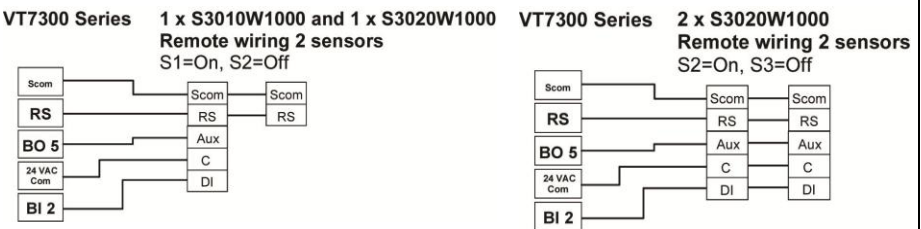
Features:

- Each sensor can be configured for various averaging combinations
- Optional occupancy led
- Optional override key

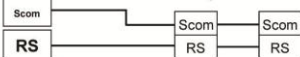
Wiring example of single remote room sensor:



Wiring examples of 2 remote room sensors for averaging applications:



VT7300 Series 2 x S3010W1000 Remote wiring 2 sensors
S2=On, S3=Off



Notes for averaging applications:

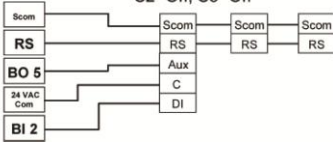
- S3010W1000 and S3020W1000 can be mixed matched.
- S3010W1000 and S3020W1000 are to be wired in parallel.
- Respect the dip switch setting in each remote sensor.

Dip switch setting for: **2 sensors**

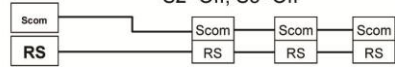
Dip switch 1: ON (top), OFF (bottom)
Dip switch 2: OFF (top), ON (bottom)



Wiring examples of 3 remote room sensors for averaging applications:

VT7300 Series 2x S3010W1000 and 1 x S3020W1000
Remote wiring 3 sensors
 S2=Off, S3=Off



VT7300 Series 3x S3010W1000
Remote wiring 3 sensors
 S2=Off, S3=Off



Dip switch  S2-1 = OFF
 setting for:  S2-2 = OFF
3 sensors

Temperature vs. resistance chart for 10 Kohm NTC thermistor

| °C | °F | Kohm |
|-----|-----|----------|
| -40 | -40 | 324.3197 |
| -39 | -38 | 303.6427 |
| -38 | -36 | 284.4189 |
| -37 | -35 | 266.5373 |
| -36 | -33 | 249.8958 |
| -35 | -31 | 234.4009 |
| -34 | -29 | 219.9666 |
| -33 | -27 | 206.5140 |
| -32 | -26 | 193.9703 |
| -31 | -24 | 182.2686 |
| -30 | -22 | 171.3474 |
| -29 | -20 | 161.1499 |
| -28 | -18 | 151.6239 |
| -27 | -17 | 142.7211 |
| -26 | -15 | 134.3971 |
| -25 | -13 | 126.6109 |
| -24 | -11 | 119.3244 |
| -23 | -9 | 112.5028 |
| -22 | -8 | 106.1135 |
| -21 | -6 | 100.1268 |

| °C | °F | Kohm |
|-----|----|---------|
| -20 | -4 | 94.5149 |
| -19 | -2 | 89.2521 |
| -18 | 0 | 84.3147 |
| -17 | 1 | 79.6808 |
| -16 | 3 | 75.3299 |
| -15 | 5 | 71.2430 |
| -14 | 7 | 67.4028 |
| -13 | 9 | 63.7928 |
| -12 | 10 | 60.3980 |
| -11 | 12 | 57.2044 |
| -10 | 14 | 54.1988 |
| -9 | 16 | 51.3692 |
| -8 | 18 | 48.7042 |
| -7 | 19 | 46.1933 |
| -6 | 21 | 43.8268 |
| -5 | 23 | 41.5956 |
| -4 | 25 | 39.4921 |
| -3 | 27 | 37.5056 |
| -2 | 28 | 35.6316 |
| -1 | 30 | 33.8622 |

| °C | °F | Kohm |
|----|----|---------|
| 0 | 32 | 32.1910 |
| 1 | 34 | 30.6120 |
| 2 | 36 | 29.1197 |
| 3 | 37 | 27.7088 |
| 4 | 39 | 26.3744 |
| 5 | 41 | 25.1119 |
| 6 | 43 | 23.9172 |
| 7 | 45 | 22.7861 |
| 8 | 46 | 21.7151 |
| 9 | 48 | 20.7004 |
| 10 | 50 | 19.7390 |
| 11 | 52 | 18.8277 |
| 12 | 54 | 17.9636 |
| 13 | 55 | 17.1440 |
| 14 | 57 | 16.3665 |
| 15 | 59 | 15.6286 |
| 16 | 61 | 14.9280 |
| 17 | 63 | 14.2629 |
| 18 | 64 | 13.6310 |
| 19 | 66 | 13.0307 |

| °C | °F | Kohm |
|----|-----|---------|
| 20 | 68 | 12.4601 |
| 21 | 70 | 11.9177 |
| 22 | 72 | 11.4018 |
| 23 | 73 | 10.9112 |
| 24 | 75 | 10.4443 |
| 25 | 77 | 10.0000 |
| 26 | 79 | 9.5754 |
| 27 | 81 | 9.1711 |
| 28 | 82 | 8.7860 |
| 29 | 84 | 8.4190 |
| 30 | 86 | 8.0694 |
| 31 | 88 | 7.7360 |
| 32 | 90 | 7.4182 |
| 33 | 91 | 7.1150 |
| 34 | 93 | 6.8259 |
| 35 | 95 | 6.5499 |
| 36 | 97 | 6.2866 |
| 37 | 99 | 6.0351 |
| 38 | 100 | 5.7950 |
| 39 | 102 | 5.5657 |

| °C | °F | Kohm |
|----|-----|--------|
| 40 | 104 | 5.3467 |
| 41 | 106 | 5.1373 |
| 42 | 108 | 4.9373 |
| 43 | 109 | 4.7460 |
| 44 | 111 | 4.5631 |
| 45 | 113 | 4.3881 |
| 46 | 115 | 4.2208 |
| 47 | 117 | 4.0607 |
| 48 | 118 | 3.9074 |
| 49 | 120 | 3.7607 |
| 50 | 122 | 3.6202 |
| 51 | 124 | 3.4857 |
| 52 | 126 | 3.3568 |
| 53 | 127 | 3.2333 |
| 54 | 129 | 3.1150 |
| 55 | 131 | 3.0016 |
| 56 | 133 | 2.8928 |
| 57 | 135 | 2.7886 |
| 58 | 136 | 2.6886 |
| 59 | 138 | 2.5926 |

CONFIGURING AND STATUS DISPLAY INSTRUCTIONS

Status display

The Terminal Equipment Controller features a two-line, eight-character display. There is a low level backlight that is always active and can only be seen at night.

When left unattended, the Terminal Equipment Controller has an auto scrolling display that shows the current status of the system.

Each item is scrolled sequentially with the back lighting in low level mode. Pressing any key will cause the back light to come on to high level.

Manual scrolling of each menu item is achieved by pressing the Yes (scroll) key repetitively. The last item viewed will be shown on the display for 30 seconds before returning to automatic scrolling. Temperature is automatically updated when scrolling is held.

Sequence of auto-scroll status display:

| ROOM & HUMIDITY | SYSTEM MODE | SCHEDULE STATUS | OUTDOOR TEMPERATURE | ALARMS |
|--------------------------|------------------|-----------------|-------------------------|---------|
| RoomTemp x.x °C or °F | Sys mode auto | Occupied | Outdoor x.x °C or °F | Service |
| | Sys mode cool | Stand-By | Network value only | Filter |
| | Sys mode heat | Unoccup | | Window |
| | Sys mode off | Override | | |

Outdoor air temperature

- Display is only enabled when outdoor air temperature network variable is received.

Occupancy status

- Occupied, Stand-By, Unoccupied and Override status are displayed on the scrolling display.




Alarms

- If alarms are detected, they will automatically be displayed at the end of the scrolling status display.
- When an alarm message is displayed, the backlit screen will illuminate at the same time as the message and shut off during the rest of the status display.
- A maximum of two alarms can appear at any given time. The priority for the alarms are as follows:

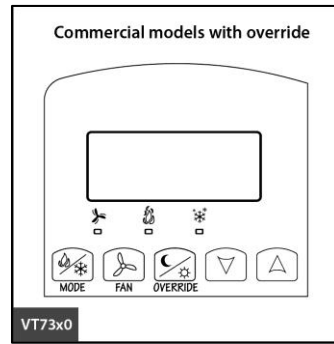
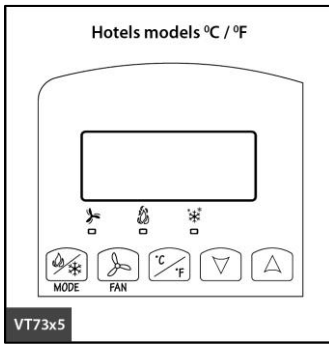
| | |
|---------|---|
| Service | Indicates that there is a service alarm as per one of the configurable digital input. |
| Filter | Indicates that the filters are dirty as per one of the configurable digital input. |
| Window | Indicates that the outside window or door is opened and that the terminal equipment controller has cancelled any cooling or heating action. |

Three status LED's on the Terminal Equipment Controller cover are used to indicate the status of the fan (any speed), a call for heat, or a call for cooling.

Fan coil models

| | |
|---|---|
| When the fan is ON , the FAN LED will illuminate |  |
| When heating & reheat is ON , the HEAT LED will illuminate |  |
| When cooling is ON , the COOL LED will illuminate |  |

USER INTERFACE









Unoccupied mode override

An Override can be made on commercial models during an unoccupied period. If the Override option is enabled in the lockout configuration, pressing the middle override button will resume occupied setpoints for a time specified by the parameter "ToccTime".

Local keypad interface

Each of the sections in the menu is accessed and configured using 5 keys on the Terminal Equipment Controller cover.

| | |
|--|--|
|  <p>MODE</p> | <ul style="list-style-type: none"> Is used to toggle between the different system modes available as per sequence and menu selected. Repetitively pressing the button will toggle between all the available modes. Available menus are dependent on selected sequence of operation. |
|  <p>FAN</p> | <ul style="list-style-type: none"> Is used to toggle between the different fan modes available as per the sequence and menu selected Repetitively pressing the button will toggle between all the available modes Available menus are dependent on selected sequence of operation and menu selected for Fan |
|  | <ul style="list-style-type: none"> Hotel and lodging applications. Toggles the local user temperature scale between °F and °C |
|  <p>OVERRIDE</p> | <ul style="list-style-type: none"> Commercial and institutional applications. Set a local unoccupied timed override to occupied mode |
|  | <ul style="list-style-type: none"> In cooling mode only the cooling setpoint is displayed, In heating mode only the heating setpoint is displayed In auto mode, (See below) |
|  | <ul style="list-style-type: none"> In cooling mode only the cooling setpoint is displayed, In heating mode only the heating setpoint is displayed In auto mode, (See below) |

- Any setpoint change can be permanent or temporary based on configuration parameter (Setpoint Type)
- Any setpoint written through the network, will be permanent and cancel any active temporary setpoints
- Lockouts of access to certain functions is made with configuration parameter (lockout)

Dual occupied setpoints adjustment

(Local occupied setpoint adjustment when “Stp Func” = *Dual Stp*)

| COOLING MODE | HEATING MODE | OFF MODE | AUTO MODE <ul style="list-style-type: none"> Setpoint presented to user is the setpoint from the last action taken by the Terminal Equipment Controller or the one currently in use. If the other setpoint is the one desired, then the MODE button is used to toggle between the current displayed one and the other. |
|-----------------------|-----------------------|-----------------------|---|
| Cool XX.X °F or °C | Heat XX.X °F or °C | No access to setpoint | Cool XX.X °F or °C or Heat XX.X °F or °C Toggle to (Heat or Cool)with MODE button |

- Heat/Cool setpoint toggle with MODE button to be active only in AUTO mode.
- If cooling, heating or off mode is active, function is disabled.

Single occupied setpoints adjustment

(Local occupied setpoint adjustment when “Stp Func” = Attch Stp)

| | | | |
|-----------------------|-----------------------|--------------------------|--|
| COOLING MODE | HEATING MODE | OFF MODE | AUTO MODE |
| | | | <ul style="list-style-type: none"> ▪ Setpoint presented to user is the setpoint from the last action taken by the Terminal Equipment Controller or the one currently in use. ▪ Both heating and cooling setpoints are changed simultaneously while respecting the minimum configured deadband ▪ If the other setpoint is the one desired, then the MODE button is used to toggle between the current displayed one and the other. |
| Cool XX.X °F or °C | Heat XX.X °F or °C | No access to setpoint | Cool XX.X °F or °C and Heat XX.X °F or °C Both heating & cooling setpoints change simultaneously Toggle from (Heat or Cool) using the system MODE button |

Unoccupied and stand-by setpoints adjustments

Setting of the stand-by and unoccupied setpoints is done through the network or through configuration setup only.

Mode button menu sequence

Modes presented to the user are dependent on the sequence of operation selected.

Default mode is shown in bold when sequence of operation parameter is changed.

The available mode can only be changed through the network since there is no local mode access

Sequence of operations

AutoMode set to **ON = Auto system mode active**

| SEQUENCE SELECTED | MODE MENU |
|----------------------------------|---------------------------------|
| 0 = Cooling Only | Off - Cool |
| 1 = Heating Only | Off - Heat |
| 2 = Cooling With Electric Reheat | Off – Auto – Heat – Cool |
| 3 = Heating With Electric Reheat | Off - Heat |

AutoMode set to **OFF = Auto system mode NOT active**

| SEQUENCE SELECTED | MODE MENU |
|----------------------------------|--------------------------|
| 0 = Cooling Only | Off - Cool |
| 1 = Heating Only | Off - Heat |
| 2 = Cooling With Electric Reheat | Off – Heat – Cool |
| 3 = Heating With Electric Reheat | Off - Heat |

Available fan button menu sequences

| Fan button menu configuration | Menu presented are dependent on model used and sequence of operation selected | Default value when sequence toggled |
|-------------------------------|--|-------------------------------------|
| 0 Low-Med-High | 3 Speed configuration (2.0Vdc, 6.0Vdc, 10.0Vdc) | High |
| 1 Low-High | 2 Speed configuration (2.0Vdc, 10.0Vdc) | High |
| 2 Low-Med-High-Auto | 3 Speed configuration with Auto fan speed mode (2.0Vdc, 6.0Vdc, 10.0Vdc or modulating 2.0 to High AO2 Parameter) | High |
| 3 Low-High-Auto | 2 Speed configuration with Auto fan speed mode (2.0Vdc,10.0Vdc or modulating 2.0 to High AO2 Parameter) | High |
| 4 Auto | Auto fan from 2.0Vdc to 10.0Vdc as a second stage | Auto |

Auto speed fan mode is also offered in heating mode applications; it will not have any effect on dehumidification. It will strictly be used for noise comfort issues.

Auto Speed Fan Mode operation for sequences 2 and 3 is dependent on Auto Fan parameter. When Auto Fan is set to:

- AS (Default) = Auto Speed during occupied periods. Fan is always on during occupied periods. Low, medium and high speeds operate on temperature offset from set point.
- AS AD = Auto Speed / Auto Demand during occupied periods.
 - Medium and high speeds operate on temperature offset from set point. Low speed operates on demand and will shut down when no demand is present.

INSTALLER CONFIGURATION PARAMETER MENU

- Configuration can be done through the network or locally at the Terminal Equipment Controller.
- To enter configuration, press and hold the middle button “Menu” for 8 seconds
- If a password lockout is active, “Password” is prompted. Enter password value using the “up” and “down” arrows and press “Yes” to gain access to all configuration properties of the Terminal Equipment Controller. A wrong password entered will prevent local access to the configuration menu.
- Once in the configuration menu, press the “No” button repetitively to scroll between all the available parameters.
- When the desired parameter is displayed, press “Yes” to adjust it to the desired value using “up” and “down” arrows. Once set, press “Yes” to scroll to the next parameter.

| CONFIGURATION PARAMETERS DEFAULT VALUE | SIGNIFICANCE AND ADJUSTMENTS |
|---|---|
| <p>PswrdSet Configuration parameters menu access password Default value = 0 Range is: 0 to 1000</p> | <p>This parameter sets a password access to prevent unauthorized access to the configuration menu parameters. A default value of "0" will not prompt a password or lock the access to the configuration menu. Range is: 0 to 1000</p> |
| <p>Com Addr Terminal Equipment Controller networking address Default value = 254 Range is: 0 to 254</p> | <ul style="list-style-type: none"> ▪ For BACnet™ MS-TP models, the valid range is from 1 to 127. Default value of 254 disables BACnet™ communication for the Terminal Equipment Controller. ▪ For wireless models, the valid range is 0 to 254 with a maximum of 30 Terminal Equipment Controller per VWG |
| <p>BI 1 Binary input no.1 configuration Default value = None</p> | <p>(None): No function will be associated with the input. Input can be used for remote network monitoring.</p> <p>(Rem NSB): remote NSB timer clock input. The scheduling will now be set as per the binary input. It provides low cost setback operation via a dry contact</p> <ul style="list-style-type: none"> ▪ Contact opened = Occupied ▪ Contact closed = Unoccupied <p>(Motion NO) or (Motion NC): Advanced PIR occupancy functions using a Normally Open (NO) or Normally Closed (NC) remote PIR motion sensor. Occupancy mode is now set as per applied PIR function and configuration. Application information and examples are available in document: <i>APP-PIR-Guide-Exx</i>. This document will provide the installers and system designers with detailed examples on applications, parameter configuration information, sequence of operation, troubleshooting and diagnostic help required for the proper usage of the PIR accessory covers</p> <p>(Window) EMS: Forces the system to disable any current heating or cooling action by the Terminal Equipment Controller. The mode stays the same and the current setpoints are the same Occupied setpoints. Only the outputs are disabled. There is a Door/Window alarm displayed on the Terminal Equipment Controller to indicate to the local tenant that the door/window needs to be closed for cooling or heating to resume.</p> <ul style="list-style-type: none"> ▪ Contact opened = Window Opened ▪ Contact closed = Window Closed <p>*These settings will disable the local override function on the Terminal Equipment Controller</p> |

BI 2

Binary input no.2 configuration
Default value = **None**

(None): No function will be associated with the input
(Door Dry) Door contact & Motion detector: This configuration is only functional if binary input #1 is set to **Motion NO** or **Motion NC** or a **PIR accessory cover** is used.

With this sequence enabled, the occupancy is now dictated through those 2 inputs. Any motion detected will set the zone to occupied status. The zone will remain permanently in occupied mode until the door contact switch opens momentarily. The Terminal Equipment Controller will then go in stand-by mode. If more movements are detected, the occupied mode will resume. While the door is opened, any movements detected by the remote PIR sensor or the PIR accessory cover will be ignored. Use a Normally Closed contact switching device.

Contact opened = Door opened

Contact closed = Door closed

(RemOVR): temporary occupancy remote override contact. This function disables the central button override function on the Terminal Equipment Controller. The override function is now controlled by a manual remote momentarily closed contact. When configured in this mode, the input operates in a toggle mode.

It is now possible to toggle between unoccupied & occupied setpoints for the amount of time set by parameter (TOccTime) temporary occupancy time.

(Filter): a backlit flashing **Filter** alarm will be displayed on the Terminal Equipment Controller LCD screen when the input is energized. It can be tied to a differential pressure switch that monitor filters

Contact opened = No alarm

Contact closed = Alarm displayed

(Service): a backlit flashing **Service** alarm will be displayed on the Terminal Equipment Controller LCD screen when the input is energized. It can be tied in to the AC unit control card, which provides an alarm in case of malfunction.






- Contact opened = No alarm
- Contact closed = Alarm displayed

| | |
|--|---|
| <p>UI3 Universal input no.3 configuration Default value = None</p> | <p>(None): No function will be associated with the input</p> <p>(COC/NH) Change over dry contact. Normally Heat: Used for hot / cold water or air change over switching in 2 pipe systems. Contact closed = Cold water or air present Contact opened = Hot water or air present Only used and valid if system is setup as 2 pipes. Parameter (Pipe No) set as 2 pipes.</p> <p>(COC/NC) Change over dry contact. Normally Cool: Used for hot / cold water or air change over switching in 2 pipe systems. Contact closed = Hot water present Contact opened = Cold water present Only used and valid if system is setup as 2 pipes. Parameter (Pipe No) set as 2 pipes.</p> <p>(COS) Change over analog sensor: Used for hot / cold water or air change over switching in 2 pipe systems. Only used and valid if system is setup as 2 pipes. Parameter (Pipe No) set as 2 pipes. If water temperature is > 78 °F = Hot water present If water temperature is < 75 °F = Cold water present</p> <p>(SS) Supply air sensor monitoring: Used for supply air temperature monitoring. Only used for network reporting of the supply air temperature. Has no internal function in the Terminal Equipment Controller.</p> |
| <p>MenuScro Menu scroll Default value = On = Scroll active</p> | <p>Removes the scrolling display and displays the room temperature/humidity to the user. With this option enabled, no mode, schedule and outdoor temperature status is given.</p> <ul style="list-style-type: none"> ▪ On = Scroll active ▪ Off = Scroll not active |
| <p>AutoMode Enables Auto menu for Mode button Default value = On</p> | <p>Enables Auto function for the mode button For sequences 2, 4 & 5 only</p> <ul style="list-style-type: none"> ▪ On = Auto active (Off-Cool-Heat-Auto) ▪ Off = auto not active (Off-Cool-Heat) |
| <p>C or F Sets scale of the Terminal Equipment Controller Default value = °F</p> | <ul style="list-style-type: none"> ▪ °F for Fahrenheit scale ▪ °C for Celsius scale <p>On hotel models, this sets the default value when the Terminal Equipment Controller powers up</p> |

Lockout
Keypad lockout levels
Default value = **0 No lock**



USER KEY FUNCTIONS

| LEVEL |  MODE |  FAN |  OVERRIDE |   |
|-------|---|--|---|---|
| 0 | 🔒 | 🔒 | 🔒 | 🔒 |
| 1 | 🔒 | 🔒 | 🔒 | 🔒 |
| 2 | 🔒 | 🔒 | 🔒 | 🔒 |
| 3 | 🔒 | 🔒 | 🔒 | 🔒 |
| 4 | 🔒 | 🔒 | 🔒 | 🔒 |
| 5 | 🔒 | 🔒 | 🔒 | 🔒 |

SeqOpera Sequence of operation
Default is: Sequence #1

Selects the initial sequence of operation required by the installation type and the application

| | | |
|----------------------------------|--------------------------|----------------------------------|
| 0 = Cooling Only | Off - Cool | 0 = Cooling Only |
| 1 = Heating Only | Off - Heat | 1 = Heating Only |
| 2 = Cooling With Electric Reheat | Off – Auto – Heat – Cool | 2 = Cooling With Electric Reheat |
| 3 = Heating With Electric Reheat | Off - Heat | 3 = Heating With Electric Reheat |

Fan Menu
Mode button menu configuration
Default is: **Menu #4**

0 = Low-Med-High

1 = Low-High

2 = Low-Med-High-Auto

3 = Low-High-Auto

4 = Auto

Menu displayed are dependent on model used and sequence of operation selected.
Auto Mode operation for sequences 2 and 3 is dependent on Auto Fan parameter.

3 Speed configuration (2.0Vdc, 6.0Vdc, 10.0Vdc)

2 Speed configuration (2.0Vdc, 10.0Vdc)

3 Speed configuration with **Auto** fan speed mode (2.0Vdc, 6.0Vdc, 10.0Vdc or modulating 2.0 to High AO2 Parameter)

2 Speed configuration with **Auto** fan speed mode (2.0Vdc,10.0Vdc or modulating 2.0 to High AO2 Parameter)

Fan modulating 2.0Vdc to 10.0Vdc

| | |
|--|--|
| <p>St-By TM Stand-by Timer value Default = 0.5 hours</p> | <p>Time delay between the moment when the PIR sensor detected the last movement in the area and the time when the Terminal Equipment Controller stand-by mode and setpoints become active. Range is: 0.5 to 24.0 hours in 0.5hr increments</p> |
| <p>Unocc TM Unoccupied Timer value Default = 0.0 hours</p> | <p>Time delay between the moment when the Terminal Equipment Controller toggles to stand-by mode and the time when the Terminal Equipment Controller unoccupied mode and setpoints become active. The factory value or 0.0 hours: Setting this parameter to its default value of 0.0 hours disables the unoccupied timer. This prevents the Terminal Equipment Controller to drift from stand-by mode to unoccupied mode when PIR functions are used Range is: 0.0 to 24.0 hours in 0.5hr increments</p> |
| <p>St-By HT Stand-by heating setpoint Default value = 69 °F</p> | <p>The value of this parameter should reside between the occupied and unoccupied heating setpoints and make sure that the difference between the stand-by and occupied value can be recovered in a timely fashion when movement is detected in the zone. Stand-by heating setpoint range is: 40 to 90 °F (4.5 to 32.0 °C)</p> |
| <p>St-By CL Stand-by cooling setpoint limit Default value = 78 °F</p> | <p>The value of this parameter should reside between the occupied and unoccupied cooling setpoints and make sure that the difference between the stand-by and occupied value can be recovered in a timely fashion when movement is detected in the zone. Stand-by cooling setpoint range is: 54 to 100 °F (12.0 to 37.5 °C)</p> |
| <p>Unocc HT Unoccupied heating setpoint Default value = 62 °F</p> | <p>Unoccupied heating setpoint range is: 40 to 90 °F (4.5 to 32.0 °C)</p> |
| <p>Unocc CL Unoccupied cooling setpoint limit Default value = 80 °F</p> | <p>Unoccupied cooling setpoint range is: 54 to 100 °F (12.0 to 37.5 °C)</p> |
| <p>Heat max Maximum heating setpoint limit Default value = 90 °F (32 °C)</p> | <p>Maximum occupied & unoccupied heating setpoint adjustment. Heating setpoint range is: 40 to 90 °F (4.5 to 32.0 °C)</p> |


Cool min
 Minimum cooling setpoint limit
 Default value =
54 °F (12 °C)

Minimum occupied & unoccupied cooling setpoint adjustment.

 Cooling setpoint range is: 54 to 100 °F (12.0 to 37.5 °C)

Pband
 Proportional band setting
 Default = **3**

Adjust the proportional band used by the Terminal Equipment Controller PI control loop.

 Note that the default value of 3.0 °F (1.2 °C) gives satisfactory operation in most normal installation cases. The use of a proportional band different than the factory one is normally warranted in applications where the Terminal Equipment Controller location is problematic and leads to unwanted cycling of the unit. A typical example is a wall mounted unit where the Terminal Equipment Controller is installed between the return and supply air feeds and is directly influenced by the supply air stream of the unit.

| VALUE | °F SCALE PBAND | °C SCALE PBAND |
|-----------|-------------------|-------------------|
| 3 | 3 F | 1.2 C |
| 4 | 4 F | 1.7 C |
| 5 | 5 F | 2.2 C |
| 6 | 6 F | 2.8 C |
| 7 | 7 F | 3.3 C |
| 8 | 8 F | 3.9 C |
| 9 | 9 F | 5.0 C |
| 10 | 10 F | 5.6 C |

| | |
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| <p>Set Type Temporary setpoint enable Default is : Permnet</p> <p>Enables temporary setpoints feature to any change of occupied or unoccupied setpoint.</p> | <p>Temporar: (temporary) Local changes to the heating or cooling setpoints by the user are temporary. They will remain effective for the duration specified by "ToccTime". Setpoints will then revert back to their default value after internal timer "ToccTime" expires.</p> <p>To change setpoints permanently, revert this variable to No or write setpoints through the network. Any setpoints written through the network will be permanent and saved to EEPROM.</p> <p>Permnet: (permanent) Any change of occupied or unoccupied setpoints through the keypad by the user are permanent and saved to & EEPROM</p> |
| <p>SptFunc Local setpoint settings Default value = Dual Stp</p> | <p>Set the local setpoint interface for the user</p> <ul style="list-style-type: none"> ▪ Dual Stp (Dual Occupied Setpoints Adjustment) ▪ AttchStp (Single Occupied Setpoint Adjustment) |
| <p>ToccTime Temporary occupancy time Default value = 2 hours</p> | <p>Temporary occupancy time with occupied mode setpoints when override function is enabled.</p> <p>When the Terminal Equipment Controller is in unoccupied mode, function is enabled with either the menu or UI2 configured as remote override input.</p> <p>Range is: 0,1, 2, 3, 4, 5, 6, 7, 8, 9, 10, & up to 24 hours</p> |
| <p>Deadband Minimum deadband Default value = 2.0 °F (1.0 °C)</p> | <p>The minimum deadband value between the heating and cooling setpoints. When modified, it will take effect only when any of the setpoints are modified again.</p> <p>Range is: 2, 3, 4 or 5 °F, 1.0 °F increments (1.0 to 2.5 °C, 0.5 °C increments)</p> |
| <p>Cal RS Room temperature sensor calibration Default value = 0.0 °F or °C</p> | <p>Offset that can be added/subtracted to the actual displayed room temperature</p> <p>Range is: ± 5.0 °F, 1.0 °F increments (± 2.5 °C, 0.5 °C increments)</p> |

| | |
|---|---|
| <p>aux cont Auxiliary contact function & configuration Default value = 0 Not Used</p> | <p>0 Aux contact function used for reheat <i><u>IF SEQUENCE IS SET TO REHEAT THROUGH NETWORK OR LOCAL</u></i>, Ignore this parameter.</p> <p>The output will directly follow the occupancy of the Terminal Equipment Controller 1 Auxiliary NO, Occ or St-By = Contact Closed / Unoccupied = Contact Opened 2 Auxiliary NC, Occ or St-By = Contact Opened / Unoccupied = Contact Closed</p> <p>Output to follow directly main occupancy and Fan on command Typically used for 2 position fresh air damper applications. 3 Auxiliary NO, Occ or St-By & Fan On = Contact Closed / Unoccupied & Fan On or Off = Contact Opened 4 Auxiliary NC, Occ or St-By & Fan On = Contact Opened / Unoccupied & Fan On or Off = Contact Closed</p> <p>Output to follow secondary network occupancy command 5 Auxiliary On/Off Control through auxiliary network command. The output can be commanded through the network for any required auxiliary functions through a separate & dedicated network variable.</p> |
| <p>Auto Fan Auto Fan Function Default value: AS</p> | <p>Auto Speed Fan Mode operation for Fan Sequences 2 and 3 AS = Auto Speed during occupied periods. Fan is always on during occupied periods.</p> <p>AS AD = Auto Speed / Auto Demand during occupied periods.</p> |
| <p>RA/DA For Analog models VT73xxF5x00(x) only Default value: DA signal</p> | <p>Reverse acting or Direct acting signal for Analog output signals DA = Direct acting, 0 to 100 % = 0 to 10 VDC RA = Reverse acting, 0 to 100 % = 10 to 0 VDC</p> |
| <p>Reheat Default value: 0 = 15 minute</p> | <p>Sets the reheat output time base Valid only if reheat sequences are enabled 0 = 15 minutes 1 = 10 seconds for Solid state relays</p> |
| <p>Low AO2 Default value: 2.2 V</p> | <p>The minimum AO2 fan output value when the fan is enabled.</p> <p>This value is used if the fan mode is set to Low and as a minimum output if the fan output is set to auto.</p> <p>2.0 to 4.0 V</p> |

| | |
|---|---|
| <p>Med AO2</p> <p>Default value: 6.0 V</p> | <p>The middle speed AO2 fan output value when the fan is enabled.</p> <p>This value is used only if the fan mode is set to Med.</p> <p>4.1 to 7.0 V</p> |
| <p>High AO2</p> <p>Default value: 8.6 V</p> | <p>The maximum AO2 fan output value when the fan is enabled.</p> <p>This value is used if the fan mode is set to High and as a maximum output if the fan output is set to auto.</p> <p>7.1 to 10.0 V</p> |
| <p>UI3 dis</p> <p>Display UI3 value.</p> | <p>Used as diagnostic / service help to troubleshoot and diagnose sensor operation</p> <p>Supply or change over temperature when UI3 is configured as an analog input</p> <p>(SS or COS)</p> |

SPECIFICATIONS

Terminal Equipment Controller power

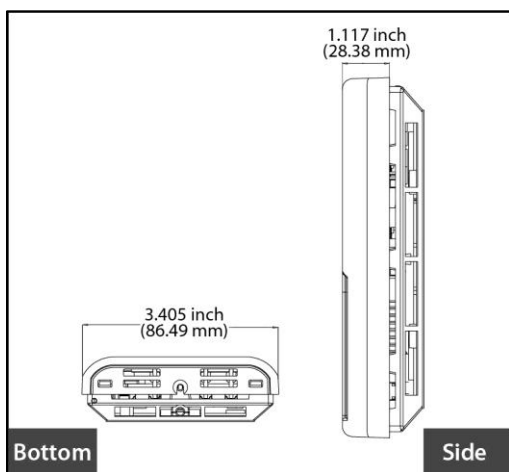
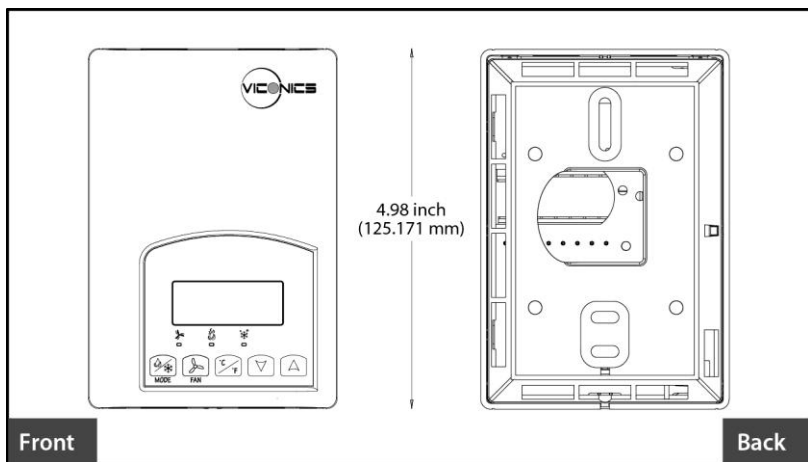
| | |
|--|--|
| requirements: | 19-30 VAC 50 or 60 Hz; 2 VA Class 2 |
| Operating conditions: | 0 °C to 50 °C (32 °F to 122 °F) 0% to 95% R.H. non-condensing |
| Storage conditions: | -30 °C to 50 °C (-22 °F to 122 °F) 0% to 95% R.H. non-condensing |
| Temperature sensor: | Local 10 K NTC thermistor |
| Temperature sensor resolution: | ± 0.1 °C (± 0.2 °F) |
| Temperature control accuracy: | ± 0.5 °C (± 0.9 °F) @ 21 °C (70 °F) typical calibrated |
| Contact output rating | Triac output: 30 VAC, 1 Amp. Maximum, 3 Amp. In-rush. Analog: 0 to 10 VDC into 2KΩ resistance min. |
| Occ, Stand-By and Unocc cooling setpoint range: | 12.0 to 37.5 °C (54 to 100 °F) |
| Occ, Stand-By and Unocc heating setpoint range: | 4.5 °C to 32 °C (40 °F to 90 °F) |
| Room and outdoor air temperature display range: | -40 °C to 50 °C (-40 °F to 122 °F) |
| Proportional band for room temperature control: | Cooling & Heating: Default: 1.8°C (3.2°F) |
| Binary inputs: | Dry contact across terminal B11, B12 & U13 to Scorn |
| Wire gauge: | 18 gauge maximum, 22 gauge |
| Approximate shipping weight: | 0.75 lb (0.34 kg) |
| Agency Approvals all models: | UL: UL 873 (US) and CSA C22.2 No. 24 (Canada), File E27734 with CCN XAPX (US) and XAPX7 (Canada) Industry Canada: ICES-003 (Canada) |
| Agency Approvals all models: | FCC: Compliant to CFR 47, Part 15, Subpart B, Class A (US) CE : EMC Directive 89/336/EEC (Europe Union) C-Tick: AS/NZS CISPR 22 Compliant (Australia / New Zealand) Supplier Code Number N10696 |
| Agency Approvals Wireless models: | FCC: Compliant to: Part 15, Subpart C |

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRABLE OPERATION



Please check with your local government for instruction on disposal of this product

DRAWING & DIMENSIONS



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