



PIR Ready VT7200 Series 24 VAC Low Voltage Zoning Terminal Equipment Controller Installation Guide

For Commercial HVAC Applications
September 2019 / 028-0190-09

CONTENTS

Safety Information	2
Before You Begin	3
Installation	5
Configurable BI/UI Inputs Overview	6
Model Chart	8
Terminal, Identification and Function	9
Configuring and Status Display Instructions	16
User Interface	18
Installer Configuration Parameter Menu	19
Specifications	31
Drawing & Dimensions	32

NOTICE

IMPORTANT NOTICE RELATED TO PRODUCT PART NUMBERS

For the latest model and part numbers, please refer to "VT8000 and VT7000 Series Room Controllers Catalog, version 10" (028-6100-08), which can be found on <http://www.viconics.com/>.

This document contains information on active and retired products. The latter are no longer sold by Viconics Technologies or its partners.

For additional information on 7000 Series Room Controllers and a list of replacement part numbers, please visit <http://www.viconics.com/>.

Failure to follow these instructions can result in confusion or order delays.



SAFETY INFORMATION

Important Information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in death** or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in death** or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in minor or moderate injury**

NOTICE

NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this signal word.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

BEFORE YOU BEGIN

Loss of Control

WARNING

LOSS OF CONTROL

- Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop and over travel stop.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of anticipated transmission delays or failures of the link.¹
- Each implementation of equipment utilizing communication links must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

California Proposition 65

WARNING

CALIFORNIA PROPOSITION 65

This product can expose you to chemicals including Lead and Bisphenol A (BPA), which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

Failure to follow these instructions can result in birth defects or other reproductive harm.

Electrostatic Discharge

NOTICE

STATIC SENSITIVE COMPONENTS

Circuit boards and option cards can be damaged by static electricity. Observe the electrostatic precautions below when handling controller circuit boards or testing components.

Failure to follow these instructions can result in equipment damage.

Observe the following precautions for handling static-sensitive components:

- Keep static-producing material such as plastic, upholstery, and carpeting out of the immediate work area.
- Store static-sensitive components in protective packaging when they are not installed in the drive.
- When handling a static-sensitive component, wear a conductive wrist strap connected to the component or drive through a minimum of 1 megohm resistance.
- Avoid touching exposed conductors and components leads with skin or clothing.

¹ For additional information about anticipated transmission delays or failures of the link, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation and Maintenance of Solid State Control* or its equivalent.

Installation

NOTICE

INSTALLATION

- The system must be installed correctly by a qualified technician.
- If replacing an existing Room Controller, label wires before removal of Controller.
- Electronic controls are static sensitive devices. Discharge yourself correctly before manipulating and installing Room Controller.
- A short circuit or wrong wiring may permanently damage Room Controller or equipment.
- All Room 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.
- This device must be installed to provide a separation distance of at least 8in (20cm) from all persons and must not be located or operating in conjunction with any other antenna or transmitter.
- Refer to the Room Controller User Interface Guide for information on how to configure the Room Controller.

Failure to follow these instructions can result in equipment damage.

Location

NOTICE

LOCATION

- Do not install on an exterior wall.
- Do not install behind a door.
- Do not install in areas with direct heat source.
- Do not install near any air discharge grill.
- Do not install in areas exposed to direct sunlight.
- Ensure Room Controller has sufficient natural air circulation.
- Ensure wall surface is flat and clean.
- Ensure external thermal sensor wirings are away from noisy electrical sources.
- Install 1.3 to 1.5 meter (52 to 60 inches) above the floor.
- Perform preventive maintenance on the damper and Variable Air Volume (VAV) box, according to the supplier documentation.

Failure to follow these instructions can result in equipment damage.

Cleaning the Room Controller

NOTICE

CLEANING THE ROOM CONTROLLER

- Use a soft, pre-moistened lint-free cloth for cleaning.
- Avoid getting moisture in openings.
- Do not spray anything directly on the Room Controller or use compressed air.
- Do not use caustic/corrosive products, ammonia, solvents or any cleaning product containing alcohol or grit.
- Never use tools directly on the touchscreen.
- Never use paint on the Room Controller.
- Do not drop or crush the Room Controller, or allow it to come into contact with liquids.
- Do not use a damaged device (such as one with a cracked screen).

Failure to comply with these recommendations will result in damage to the unit and void the manufacturer's warranty.

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 proper side of base 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).

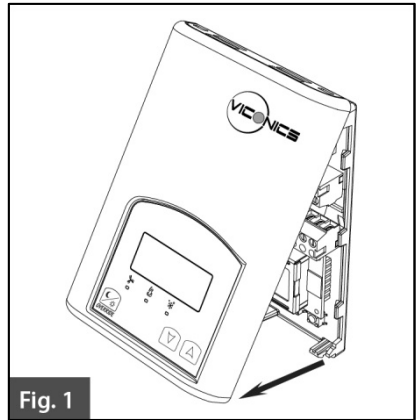


Fig. 1

Location of PCB retaining tabs

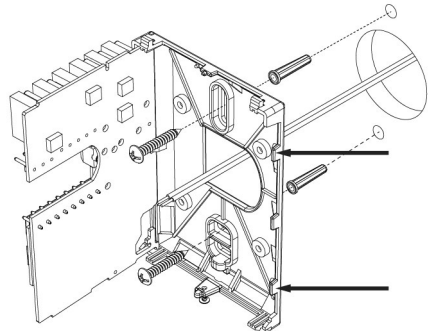


Fig. 2

Re-install terminal blocks

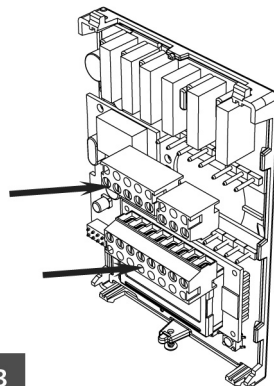


Fig. 3

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.

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

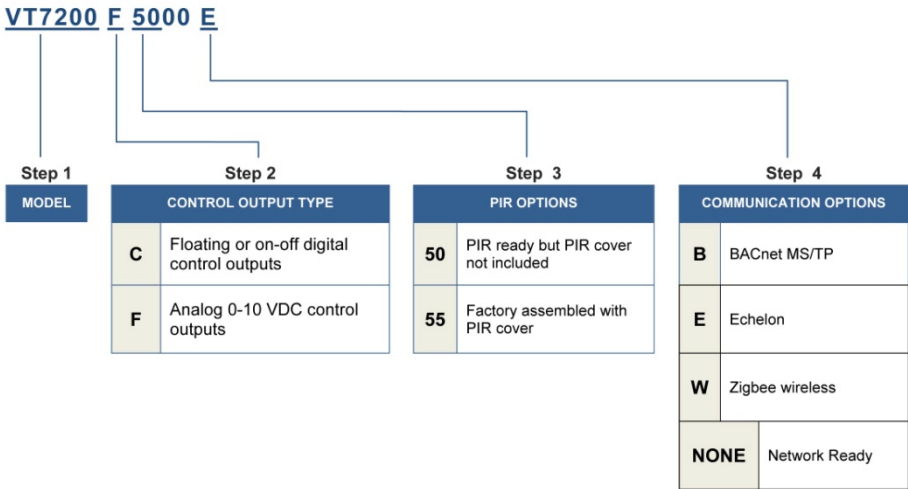
Universal input #3 can be configured for the following functions:

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.

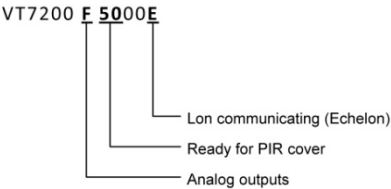
MODEL CHART

Product Matrix Selector For The VT7200 Series Zone Controllers

Please refer to the following matrix when ordering controllers:



EXAMPLE:



Network ready

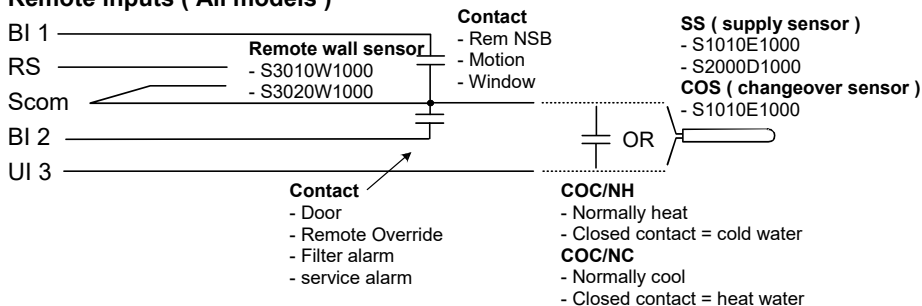
- All Viconics VT7200 series Terminal Equipment Controllers are designed for stand-alone (Network Ready) operation.
- They can be fully integrated into your choice of automation systems using the available communication adapter options.
- If required, stand-alone (Network Ready) Terminal Equipment Controllers can be field retrofitted with the following communication adapters:
 - VCM7300V5000B, Terminal Equipment Controller BACnet™ MS-TP communication adapter
 - VCM7300V5000E, Terminal Equipment Controller Echelon™ Lontalk™ communication adapter
 - VCM7000V5000W Terminal Equipment Controller wireless communication adapter

TERMINAL, IDENTIFICATION AND FUNCTION

Viconics Part Numbers	VT7200C5x00(x)	Viconics number	VT7200F5x00(x)
Description / Application	1 or 2 Floating outputs 1 or 2 On/Off outputs	Description / application	1 or 2 Analog outputs
4- 24 V~ Hot	24 V~ Hot	4- 24 V~ Hot	24 V~ Hot
5- 0 V~ Com	24 V~ Com	5- 0 V~ Com	24 V~ Com
6- Aux BO 5	BO 5-Aux	6- Aux BO 5	BO 5-Aux
7- Aux BO 5	BO 5-Aux	7- Aux BO 5	BO 5-Aux
8- BO 3 Open Heat	BO 3		
9- BO 4 Close Heat	BO 4	9- AO 2 Heat	AO 2
10- BO 1 Open Cool	BO 1	10- AO 1 Cool	AO 1
11- BO 2 Close Cool	BO 2	Not used Blank	Blank
12- BI 1	BI 1	12- BI 1	BI 1
13- RS	RS	13- RS	RS
14- Scom	Scom	14- Scom	Scom
15- BI 2	BI 2	15- BI 2	BI 2
16- UI 3 COS / COC /SS	UI 3	16- UI 3 COS / COC /SS	UI 3

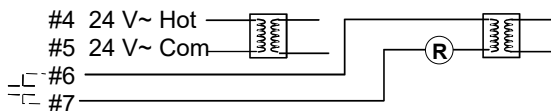
Wiring

Remote inputs (All models)

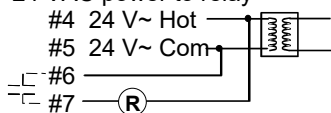


Auxiliary output(All models)

- Dry contact to end device 24 V~ maximum

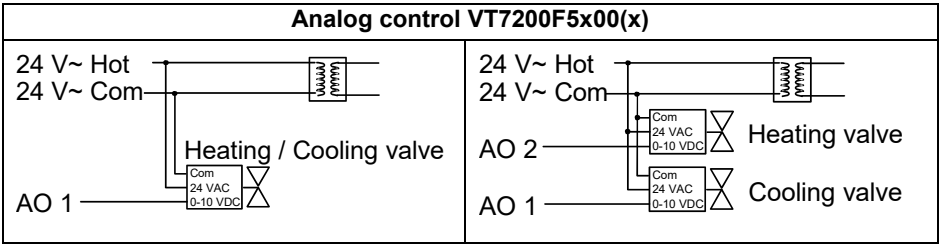


- 24 VAC power to relay



Main outputs wiring

Single output applications	Dual output applications
On-Off control VT7200C5x00(x)	
<p>24 V~ Hot 24 V~ Com</p> <p>Heating / Cooling valve</p> <p>BO1 if N.O. BO2 if N.C. OR</p> <p>24 VAC Com</p>	<p>24 V~ Hot 24 V~ Com</p> <p>Heating valve</p> <p>BO3 if N.O. BO4 if N.C. OR</p> <p>24 VAC Com</p> <p>Cooling valve</p> <p>BO1 if N.O. BO2 if N.C. OR</p> <p>24 VAC Com</p>
Floating control VT7200C5x00(x)	
<p>24 V~ Hot 24 V~ Com</p> <p>Heating / Cooling valve</p> <p>BO1 BO2</p> <p>Open Com Close</p>	<p>24 V~ Hot 24 V~ Com</p> <p>Heating valve</p> <p>BO3 BO4</p> <p>Open Com Close</p> <p>Cooling valve</p> <p>BO1 BO2</p> <p>Open Com Close</p>

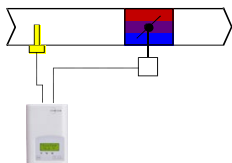


Typical applications

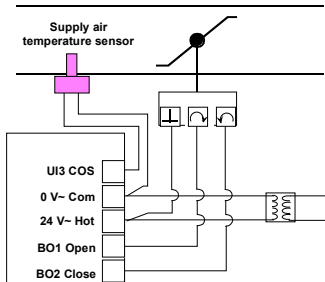
Schematic	Wiring	Settings
Pressure dependent VAV cooling only:VT7200C5x00(x) Floating actuator		
<p>Modulating Floating VAV Actuator</p> <p>Room Temperature Control Minimum & Maximum Position Adjusted on the actuator</p>	<p>UI3 COS</p> <p>0 V~ Com</p> <p>24 V~ Hot</p> <p>BO1 Open</p> <p>BO2 Close</p>	<p>Mandatory</p> <ul style="list-style-type: none"> • Out1Conf = 2.0 • CntrlTyp = Floating • FL time = <i>as per actuator</i> • SeqOpera = 0 <p>Cooling only</p>
Pressure dependent VAV cooling only: VT7200F5x00(x) Analog actuator		
<p>Analog VAV Actuator</p> <p>Room Temperature Control Minimum & Maximum Position Adjusted on the actuator</p>	<p>UI3 COS</p> <p>0 V~ Com</p> <p>24 V~ Hot</p> <p>AO1</p>	<p>Mandatory</p> <ul style="list-style-type: none"> • Out1Conf = 2.0 • RA/DA = <i>as per actuator</i> • SeqOpera = 0 <p>Cooling only</p>

Pressure dependent VAV cooling / heating with changeover: VT7200C5x00(x) Floating actuator

Changeover Sensor Modulating Floating VAV Actuator



Room Temperature Control
Minimum & Maximum Position
Adjusted on the actuator



Mandatory

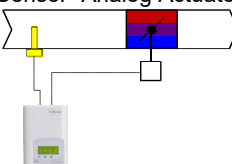
- Out1Conf = 2.0
- CntrlTyp = Floating
- FL time = as per actuator

If heat / cool auto-changeover with a local discharge air temperature sensor set:

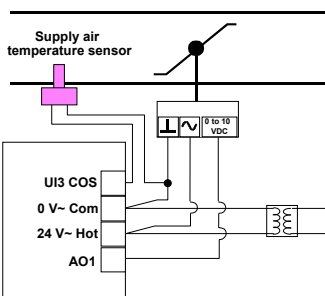
- SeqOpera = 0
Cooling only
- UI3 = COS

Pressure dependent VAV cooling / heating with changeover: VT7200F5x00(x) Analog actuator

Changeover 0 to 10 VDC Sensor Analog Actuator



Room Temperature Control
Minimum & Maximum Position
Adjusted on the actuator



Mandatory

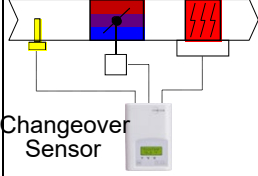
- Out1Conf = 2.0
- RA/DA = as per actuator

If heat / cool auto-changeover with a local discharge air temperature sensor set:

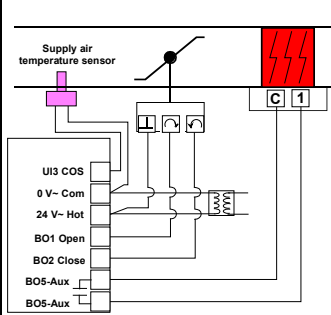
- SeqOpera = 0
Cooling only
- UI3 = COS

**Pressure dependent VAV cooling / heating with changeover and reheat:
VT7200C5x00(x) Floating actuator**

Modulating Floating
VAV Actuator
Heating and/or Cooling
& On/Off Duct Heater



Room Temperature Control
Minimum & Maximum Position
Adjusted on the actuator



Mandatory

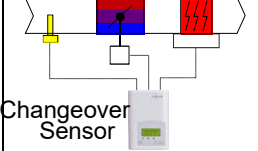
- Out1Conf = 2.0
- CntrlTyp = Floating
- FL time = as per actuator

If heat / cool auto-
changeover with a local
discharge air
temperature sensor set:

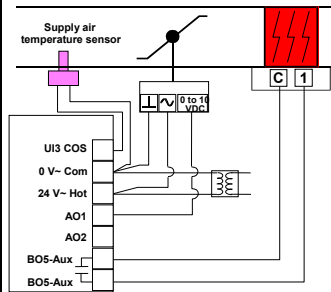
- SeqOpera = 2
Cooling with Reheat
- UI3 = COS

**Pressure dependent VAV cooling / heating with changeover and reheat:
VT7200F5x00(x) Analog actuator**

Analog VAV Actuator
Heating and/or Cooling
& On/Off Duct Heater



Room Temperature Control
Minimum & Maximum Position
Adjusted on the actuator

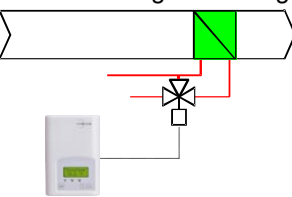
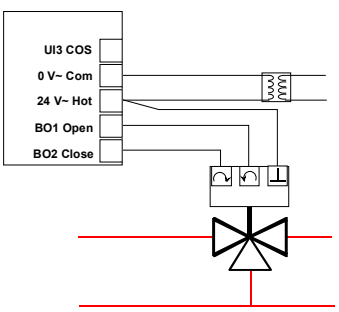
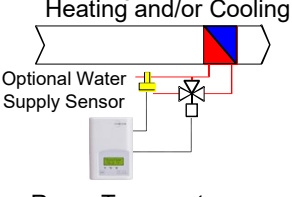
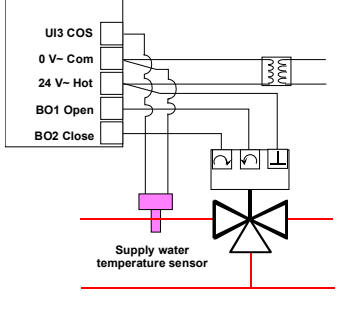




Mandatory

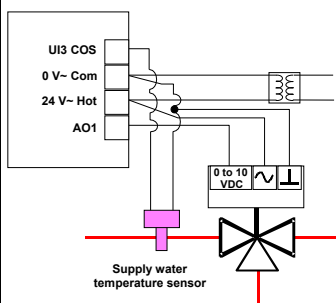
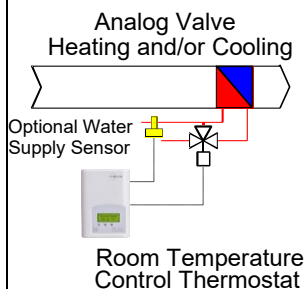
- Out1Conf = 2.0
- RA/DA = as per actuator

If heat / cool auto-
changeover with a local
discharge air
temperature sensor set:

- SeqOpera = 2
Cooling with Reheat
- UI3 = COS

Schematic	Wiring	Settings
Heating or cooling hydronic valve control: VT7200C5x00(x) Floating actuator		
<p>Modulating Floating Valve Cooling or Heating</p>  <p>Room Temperature Control Thermostat</p>		<p>Mandatory</p> <ul style="list-style-type: none"> • Out1Conf = 2.0 • CntrlTyp = Floating • FL time = <i>as per actuator</i> <p>If cooling only set::</p> <ul style="list-style-type: none"> • SeqOpera = 0 Cooling only <p>If heating only set::</p> <ul style="list-style-type: none"> • SeqOpera = 1 Heating only
Heating or cooling hydronic valve control: VT7200F5x00(x) Analog actuator		
<p>Analog Valve Cooling or Heating</p>  <p>Room Temperature Control Thermostat</p>		<p>Mandatory</p> <ul style="list-style-type: none"> • Out1Conf = 2.0 • RA/DA = <i>as per actuator</i> <p>If cooling only set::</p> <ul style="list-style-type: none"> • SeqOpera = 0 Cooling only <p>If heating only set::</p> <ul style="list-style-type: none"> • SeqOpera = 1 Heating only
Cooling / heating with changeover hydronic valve control: VT7200C5x00(x) Floating actuator		
<p>Modulating Floating Valve Heating and/or Cooling</p>  <p>Optional Water Supply Sensor</p> <p>Room Temperature Control Thermostat</p>	 <p>Supply water temperature sensor</p>	<p>Mandatory</p> <ul style="list-style-type: none"> • Out1Conf = 2.0 • CntrlTyp = Floating • FL time = <i>as per actuator</i> <p>If heat / cool auto-changeover with a local water temperature sensor set:</p> <ul style="list-style-type: none"> • SeqOpera = 0 Cooling only • UI3 = COS

Cooling / heating with changeover hydronic valve control: VT7200F5x00(x) Analog actuator



Mandatory

- Out1Conf = 2.0
- RA/DA = as per actuator

If heat / cool auto-changeover with a local water temperature sensor set:

- SeqOpera = 0
Cooling only
- UI3 = COS

Remote sensor accessories

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

Remote mount temperature sensors use 10K NTC thermistor.

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



S3020W1000

Wall mounted sensor

Wiring example of single remote room sensor:

VT7200 Series

S3020W1000

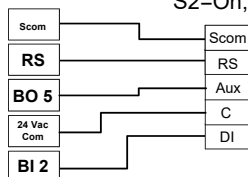
Remote wiring 1 sensor

S2=On, S3=On

S3010W1000

Remote wiring 1 sensor

S2=On, S3=On

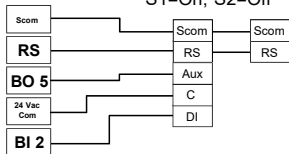


Dip switch setting for:
1 sensor

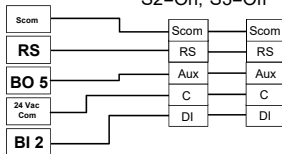
ON S2-1 = ON
OFF S2-2 = ON

Wiring examples of 2 remote room sensors for averaging applications:

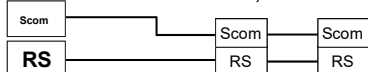
VT7200 Series 1 x S3010W1000 and 1 x S3020W1000
Remote wiring 2 sensors
S1=On, S2=Off



VT7200 Series 2 x S3020W1000
Remote wiring 2 sensors
S2=On, S3=Off



VT7200 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.

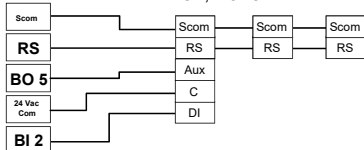
Dip switch setting for:
2 sensors



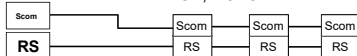
S2-1 = OFF
S2-2 = ON

Wiring examples of 3 remote room sensors for averaging applications:

VT7200 Series 2x S3010W1000 and 1 x S3020W1000
Remote wiring 3 sensors
S2=Off, S3=Off



VT7200 Series 3x S3010W1000
Remote wiring 3 sensors
S2=Off, S3=Off



Dip switch setting for:
3 sensors



S2-1 = OFF
S2-2 = OFF

Temperature vs. resistance chart for 10 Kohm NTC thermistor ($R_{25^{\circ}\text{C}} = 10\text{K}\Omega \pm 3\%$, $B_{25/85^{\circ}\text{C}} = 3975\text{K} \pm 1.5\%$)

°C	°F	Kohm	°C	°F	Kohm	°C	°F	Kohm	°C	°F	Kohm	°C	°F	Kohm
-40	-40	324.3197	-20	-4	94.5149	0	32	32.1910	20	68	12.4601	40	104	5.3467
-35	-31	234.4009	-15	5	71.2430	5	41	25.1119	25	77	10.0000	45	113	4.3881
-30	-22	171.3474	-10	14	54.1988	10	50	19.7390	30	86	8.0694	50	122	3.6202
-25	-13	126.6109	-5	23	41.5956	15	59	15.6286	35	95	6.5499	55	131	3.0016

CONFIGURING AND STATUS DISPLAY INSTRUCTIONS

Status display

The Terminal Equipment Controller features a two-line, eight-character display. There is a low level backlight level 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 actual status of the system. There is an option in the configuration menu to lockout the scrolling display and to only present the room temperature and conditional outdoor temperature to the user. With this option enabled, no local status is given of mode, occupancy and relative humidity.

Each item is scrolled one by one with the back lighting in low level mode. Pressing any key will cause the back light to come on to high level. When left unattended for 10

seconds after changes are made, the display will resume automatic status display scrolling.

To turn on the back light to high level, press any key on the front panel. The back lit display will return to low level when the Terminal Equipment Controller is left unattended for 45 seconds

Sequence of auto-scroll status display:

ROOM & HUMIDITY	SYSTEM MODE	SCHEDULE STATUS	OUTDOOR TEMPERATURE	ALARMS
x.x °C or °F XX % RH	Sys mode	Occupied	Outdoor	Service
	Auto		x.x °C or °F	Filter
	Sys mode Cool	Stand-By		Window
	Sys mode heat	Unoccup		

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 status display scroll.
- During an alarm message display, the back lit screen will light up at the same time as the message and shut off during the rest of the status display.
- Two alarms maximum can appear at any given time. The priority for the alarms is as follows:

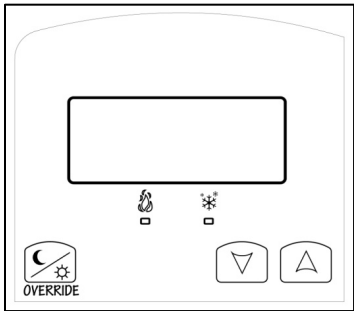
Service	Indicates that there is a service alarm as per one of the configured binary inputs (B12)
Filter	Indicates that the filters are dirty as per one of the configured binary inputs (B12)
Window	Indicates that the outside window or door is opened and that the Terminal Equipment Controller has cancelled any cooling or heating action (B11)

Two status LED's on the Terminal Equipment Control cover are used to indicate a call for heat or a call for cooling.

Zoning Models

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 during an unoccupied period. If the Override option is enabled in the lockout configuration pressing the Override button will resume occupied setpoints for a time specified by parameter ToccTime

Local keypad interface

	<ul style="list-style-type: none">▪ An Override can be made during an unoccupied period. If the Override option is enabled in the lockout configuration pressing the override key will resume occupied setpoints for a time specified by parameter ToccTime
	<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)

Occupied setpoints adjustments

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
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

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.

System mode function

PLEASE NOTE THAT: Default system mode of operation is dependent on sequence of operation selected

Default mode is 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 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
4 = Cooling and Heating (2 modulating outputs)	Off – Auto – Heat – Cool
5 = Cooling / Heating (2 modulating outputs) with reheat	Off – Auto – Heat – Cool




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 (°C/°F or Override) for 8 seconds.
- If a password lockout is active, “Password” is prompted. Enter password value using the “up” and “down” arrows and press the middle button again to gain access to all configuration properties of the Terminal Equipment Controller. Entering a wrong password will prevent local access to the configuration menu.

- Press the same middle button repetitively to scroll between all the available parameters.
- Use the up and down key to change the parameter to the desired value.
- To acknowledge and save the new value, press the middle button again.
- The next parameter will now be displayed.

Configuration interface

	Pressing repetitively will individually scroll all the available parameters
	Adjust / rotate parameter value down
	Adjust / rotate parameter value up












CONFIGURATION PARAMETERS DEFAULT VALUE	SIGNIFICANCE AND ADJUSTMENTS
PswrdSet Configuration parameters menu access password Default value = 0 Range is: 0 to 1000	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
Com Addr Terminal Equipment Terminal Equipment Controller networking address Default value = 254 Range is: 0 to 254	Conditional parameter to BACnet™ MS-TP models VT7200X5x00B Conditional parameter to Wireless models VT7200X5x00W <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>PAN ID Personal Area Network Identification Default value = 0 Range is: 0 to 500</p>	<p>Conditional parameter to Wireless models VT7200X5x00W</p> <p>This parameter will only appear when a wireless network adapter is present. If the Terminal Equipment Controller is installed as a stand-alone (Network Ready) unit or with a BACnet™ or Echelon™ adapter, this parameter will not be used or displayed.</p> <p>This parameter (Personal Area Network Identification) is used to link specific Terminal Equipment Controllers to a single specific Viconics wireless gateway (VWG). For every Terminal Equipment Controller reporting to a gateway (maximum of 30 Terminal Equipment Controllers per gateway), be sure you set the <i>SAME</i> PAN ID value both on the gateway and the Terminal Equipment Controller(s).</p> <p>The default value of 0 is <i>NOT</i> a valid PAN ID. The valid range of available PAN ID is from 1 to 500.</p> <p>Range 1 to 250 for centralized networked applications using a VWG or a Jace with the wireless stat driver</p> <p>Range 251 to 500 is for stand-alone (Network Ready) applications where no VWG or Jace with the wireless stat driver is used.</p>
<p>Channel Channel selection Default value = 10 Range is: 10 to 26</p>	<p>Conditional parameter to Wireless models VT7200X5x00W</p> <p>This parameter will only appear when a wireless network adapter is present. If the Terminal Equipment Controller is installed as a stand-alone (Network Ready) unit or with a BACnet™ or Echelon™ adapter, this parameter will not be used or displayed.</p> <p>This parameter (Channel) is used to link specific Terminal Equipment Controllers to specific Viconics wireless gateway(s) (VWG). For every Terminal Equipment Controller reporting to a gateway (maximum of 30 Terminal Equipment Controllers per gateway), be sure you set the <i>SAME</i> channel value both on the gateway and the Terminal Equipment Controller(s).</p> <p><i>Viconics recommends using only the usage of channels 15 and 25 only.</i></p> <p>The default value of 10 is <i>NOT</i> a valid channel. The valid range of available channel is from 11 to 26</p>

<p>Get From Terminal Equipment Controller Get From another device configuration utility Default value = 0 Range is: 0 to 254</p>	<p>Conditional parameter to Wireless models (VT7200X5x00W)</p> <p>Entering a MAC address enables an automatic routine that automatically fetches all the required configuration properties of the current device from another already configured device and copies the same required configured property values. If a value other than the default value of 255 is entered, user will then be prompted to exit the Configuration Menu thus leaving all other parameter configuration to be copied from the referenced Terminal Equipment Controller MAC address.</p> <p>Ex.: If you are currently configuring MAC12 and the settings <u>matches exactly</u> the settings of ZN MAC5, then enter 5 as the current parameter value.</p> <ul style="list-style-type: none"> ▪ If the process is successful and all required configuration properties have been copied, the value will revert back to 255 ▪ If the process is <i>NOT</i> successful and all required configuration properties have NOT been copied (either the reference device is <i>NOT</i> the same model number or is offline or does not exists) the value will revert back to 254 to indicate the failure of the process <p>Leaving the Get From parameter to 255 means that every configuration parameters will be set manually.</p>
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<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> <p>* These settings will disable the local override function on the Terminal Equipment Controller.</p>
<p>BI 2 Binary input no.2 configuration Default value = None</p>	<ul style="list-style-type: 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.

	<ul style="list-style-type: none"> ▪ (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
UI3 Universal input no.3 configuration Default value = None	<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.</p> <p>Only used for network reporting of the supply air temperature. Has no internal function in the Terminal Equipment Controller.</p>
MenuScro Menu scroll Default value = On = Scroll active	<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
C or F Sets scale of the Terminal Equipment Controller Default value = °F	<ul style="list-style-type: none"> ▪ °F for Fahrenheit scale ▪ °C for Celsius scale

Lockout Keypad lockout levels Default value = 0 No lock		
USER KEY FUNCTIONS		
LEVEL		 
0		
1		
2	NOT USED	
3		
4		
5		
Out1Conf Output # 1 configuration Default is: 4.0 (2 control outputs, no changeover)		
Defines the type of operation needed for Output #1 (BO1 & BO2) 2.0 , will limit the number of sequences of operation available from 0 to 3 Will enable heat/cool operation from the same output (refer to wiring diagram) 4.0 , can access all the sequences of operation from 0 to 5 Will enable heat/cool operation from different output (refer to wiring diagram)		
CntrlTyp Control type for Triac models Default is: Floating		
Defines the type of control output for the type of valves installed VT7200C10xx only On/Off is for normally opened or normally closed 24 VAC 2 position valves Floating is for modulating 3 wires control of 24 VAC floating valves		
SeqOpera Sequence of operation Default is: Sequence #1	Single output application (Out1Conf) = 2.0	Dual output application (Out1Conf) = 4.0
0 = Cooling Only	Yes access	Yes access
1 = Heating only	Yes access	Yes access
2 = Cooling with Reheat	Yes access	Yes access
3 = Heating with Reheat	Yes access	Yes access
4 = Cool and Heat, 2 outputs	No access	Yes access
5 = Cool and Heat, 2 outputs with Reheat	No access	Yes access
For single output applications, the system access is also limited if UI3 is configured for local changeover COS, COC/NC or COC/NC.		

St-By TM Stand-by Timer value Default 0.5 hours	Time delay between the moment where the PIR cover detected the last movement in the area and the time which the Terminal Equipment Controller stand-by mode and setpoints become active. Range is: 0.5 to 24.0 hours in 0.5hr increments
Unocc TM Unoccupied Timer value Default 0.0 hours	Time delay between the moment where the Terminal Equipment Controller toggles to stand-by mode and the time which 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
St-By HT Stand-by heating setpoint Default value = 69 °F	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)
St-By CL Stand-by cooling setpoint limit Default value = 78 °F	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)
Unocc HT Unoccupied heating setpoint Default value = 62 °F	Heating setpoint range is: 40 to 90 °F (4.5 to 32.0 °C)
Unocc CL Unoccupied cooling setpoint limit Default value = 80 °F	Cooling setpoint range is: 54 to 100 °F (12.0 to 37.5 °C)
heat max Maximum heating setpoint limit Default value = 90 °F (32 °C)	Maximum occupied & unoccupied heating setpoint adjustment. Heating setpoint range is: 40 to 90 °F (4.5 to 32.0 °C)
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 is : **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

Set Type Temporary setpoint enable Default is : Permnennt Enables temporary setpoints feature to any change of occupied or unoccupied setpoint.	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. 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. Permnennt: (permanent) Any change of occupied or unoccupied setpoints through the keypad by the user are permanent and saved to & EEPROM
ToccTime Temporary occupancy time Default value = 2 hours	Temporary occupancy time with occupied mode setpoints when override function is enabled. When the Terminal Equipment Controller is in unoccupied mode, function is enabled with either the menu or UI2 configured as remote override input. Range is: 0,1, 2, 3, 4, 5, 6, 7, 8, 9, 10, & up to 24 hours
Deadband Minimum deadband Default value = 2.0 °F (1.0 °C)	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. Range is: 2, 3, 4 or 5 °F, 1.0 °F increments (1.0 to 2.5 °C, 0.5 °C increments)
Cal RS Room temperature sensor calibration Default value = 0.0 °F or °C	Offset that can be added/subtracted to the actual displayed room temperature Range is: ± 5.0 °F, 1.0 °F increments (± 2.5 °C, 0.5 °C increments)

<p>aux cont Auxiliary contact function & configuration Default value = 0 Not Used</p>	<p>0 Aux contact function used for reheat <u><i>IF SEQUENCE IS SET TO REHEAT THROUGH NETWORK OR LOCAL.</i></u> 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>FL time Floating actuator timing VT7200C5x00(x) models only Default value: 1.5 minutes</p>	<p>Maximum stroke time of floating valve actuator. 0.5 to 9.0 in 0.5 minutes increment</p>
<p>cph On/Off devices cycles per hour VT7200C5x00(x) models only Default value = 4 C.P.H.</p>	<p>Will set the maximum number cycles per hour under normal control operation. It represents the maximum number of cycles that the equipment will turn ON and OFF in one hour. Note that a higher C.P.H will represent a higher accuracy of control at the expense of wearing mechanical components faster. 3, 4, 5, 6, 7 & 8 C.P.H.</p>

RA/DA Reverse acting or Direct acting signal for Analog output signals VT72xxF5x00(x) models only Default value: DA signal	Changes the action of the analog outputs on the analog models. DA = Direct acting 0 to 100 % = 0 to 10 VDC RA = Reverse acting 0 to 10 % - 10 to 0 VDC
Reheat Sets the time base for the reheat output if used Default value: 0 = 15 minute	Sets the reheat output time base Valid only if reheat sequences are enabled 0 = 15 minutes 1 = 10 seconds for Solid state relays
UI3 dis Display supply or changeover temperature	Used as diagnostic / service help to troubleshoot and diagnose sensor operation Only when UI 3 is configured as an analog input (SS or COS)

SPECIFICATIONS

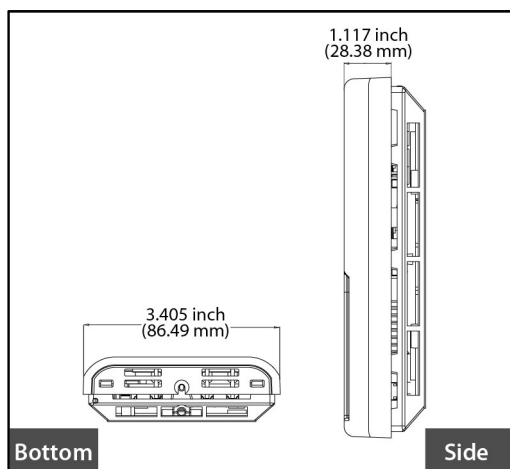
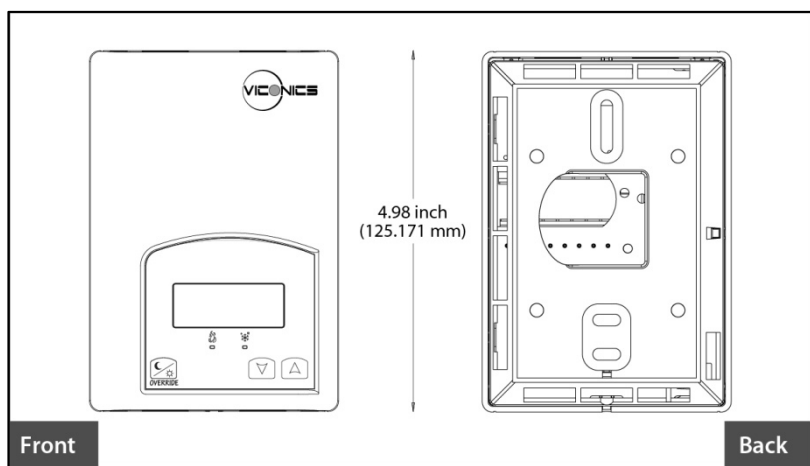
Terminal Equipment Controller power requirements:	19-30 VAC 50 or 60 Hz; 2 VA Class 2
Operating conditions:	0 °C to 50 °C (32 °F to 122 °F) 0% to 95% R.H. non-condensing
Storage conditions:	-30 °C to 50 °C (-22 °F to 122 °F) 0% to 95% R.H. non-condensing
Temperature sensor:	Local 10 K NTC thermistor
Temperate 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 to10VDC 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 BI1, BI2 & UI3 to Scom
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) 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 UNDESIRED OPERATION.



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

DRAWING & DIMENSIONS



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