VICONICS
Beyond Comfort

NETWORK READY

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

Installation Guide

For Commercial HVAC Applications
May 3rd, 2012 / 028-0190-R8

CONTENTS

BACnet International

LONMARK®

ZigBee™Alliance
Wireless Control That Simply Works

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).
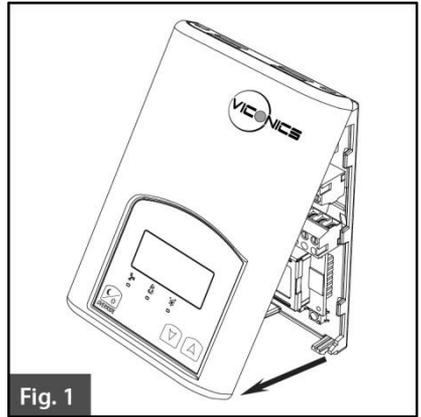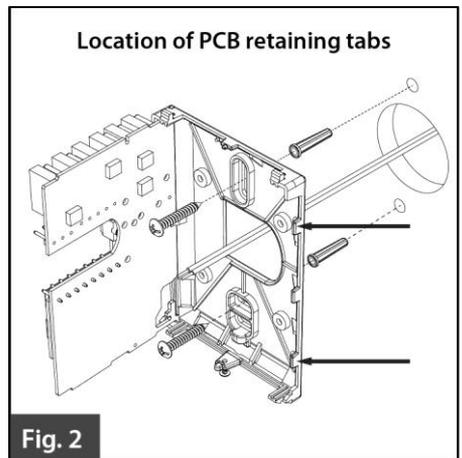12. Re-Install wiring terminals in their correct locations (fig. 3).

Fig. 1

Location of PCB retaining tabs

Fig. 2

Re-install terminal blocks
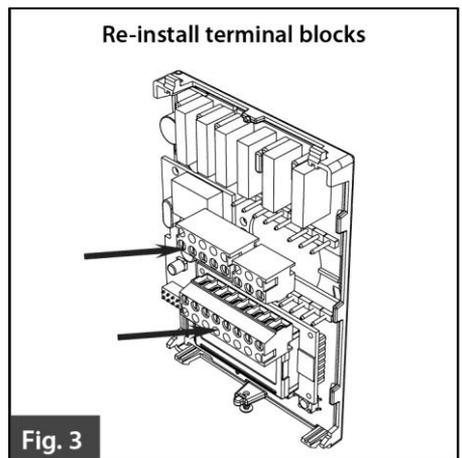
Fig. 3

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.

>
>
> - If 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.

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

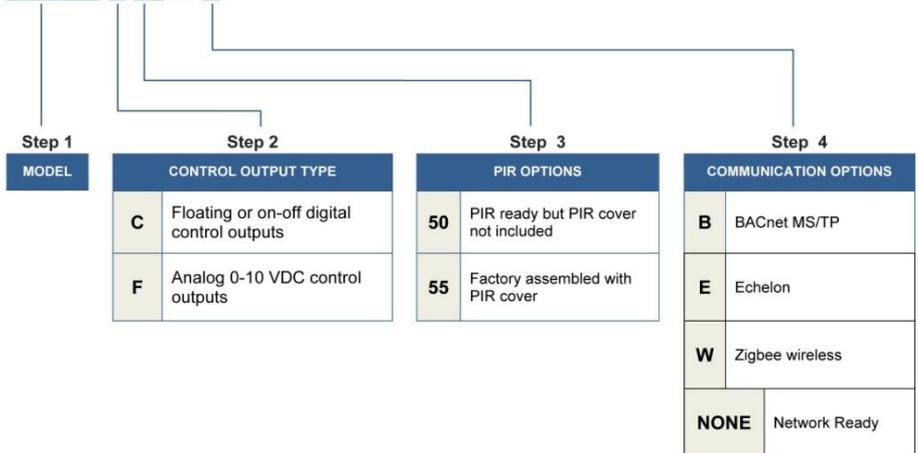5. **(SS) Supply air sensor monitoring:** Used for supply air temperature monitoring.

   Only used for network reporting of the supply air temperature. Has no internal function in the Terminal Equipment Controller.

MODEL CHART

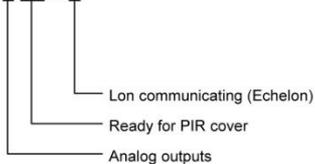**Product Matrix Selector For The VT7200 Series Zone Controllers**

Please refer to the following matrix when ordering controllers:

VT7200 F 5000 E

Step 1	Step 2		Step 3		Step 4	
MODEL	CONTROL OUTPUT TYPE		PIR OPTIONS		COMMUNICATION OPTIONS	
C	Floating or on-off digital control outputs	50	PIR ready but PIR cover not included	B	BACnet MS/TP	
F	Analog 0-10 VDC control outputs	55	Factory assembled with PIR cover	E	Echelon	
					W	Zigbee wireless
					NONE	Network Ready

EXAMPLE:

VT7200 F 5000E

- Lon communicating (Echelon)
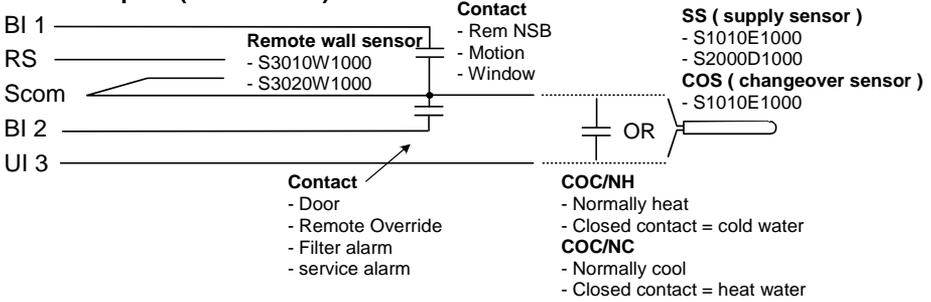- Ready for PIR cover
- Analog outputs

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:

    o VCM7300V5000B, Terminal Equipment Controller BACnet™ MS-TP communication adapter

    o VCM7300V5000E, Terminal Equipment Controller Echelon™ Lontalk™ communication adapter

    o 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)

BI 1
RS   **Remote wall sensor**
    - S3010W1000
Scom   - S3020W1000
BI 2
UI 3

Contact
- Rem NSB
- Motion
- Window

SS (supply sensor)
- S1010E1000
- S2000D1000

COS (changeover sensor)
- S1010E1000

OR

Contact
- Door
- Remote Override
- Filter alarm
- service alarm

COC/NH
- Normally heat
- Closed contact = cold water

COC/NC
- Normally cool
- Closed contact = heat water

Auxiliary output(All models)
- Dry contact to end device 24 V~ maximum

#4   24 V~ Hot
#5   24 V~ Com
#6
#7   R

- 24 VAC power to relay

#4   24 V~ Hot
#5   24 V~ Com
#6
#7   R

Main outputs wiring

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

Analog control VT7200F5x00(x)
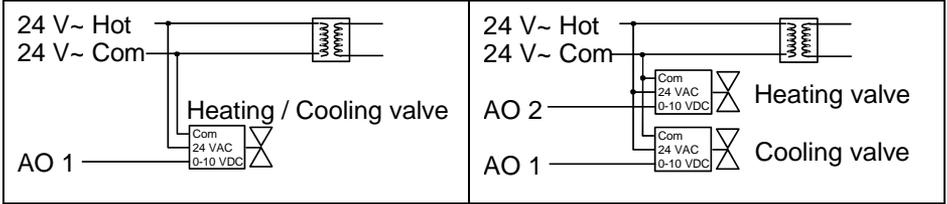
Typical applications

Schematic	Wiring	Settings
Pressure dependent VAV cooling only:VT7200C5x00(x) Floating actuator		
Modulating Floating VAV Actuator Room Temperature Control Minimum & Maximum Position Adjusted on the actuator	UI3 COS 0 V~ Com 24 V~ Hot BO1 Open BO2 Close	**Mandatory** • Out1Conf = 2.0 • CntrltTyp = Floating • FL time = *as per actuator* • SeqOpera = 0 Cooling only
Pressure dependent VAV cooling only: VT7200F5x00(x) Analog actuator		
Analog VAV Actuator Room Temperature Control Minimum & Maximum Position Adjusted on the actuator	0 to 10 VDC UI3 COS 0 V~ Com 24 V~ Hot AO1	**Mandatory** • Out1Conf = 2.0 • RA/DA = *as per actuator* • SeqOpera = 0 Cooling only

Pressure dependent VAV cooling / heating with changeover: VT7200C5x00(x) Floating actuator
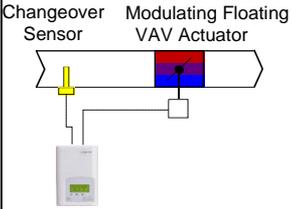
Changeover Sensor   Modulating Floating VAV Actuator

Room Temperature Control
Minimum & Maximum Position
Adjusted on the actuator

Supply air temperature sensor
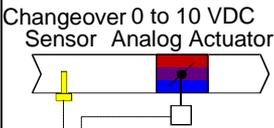
UI3 COS
0 V~ Com
24 V~ Hot
BO1 Open
BO2 Close
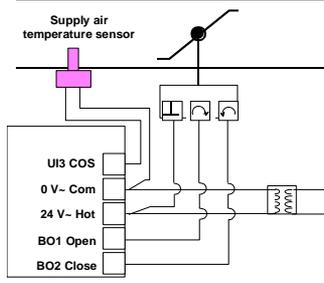
Mandatory
- Out1Conf = 2.0
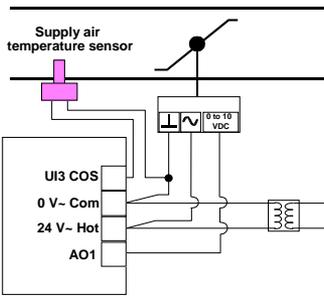- CntrltTyp = Floating
- FL time = *as per actuator*

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

Supply air temperature sensor

0 to 10 VDC

UI3 COS
0 V~ Com
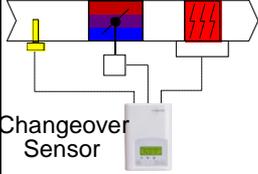24 V~ Hot
AO1

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

If **heat / cool auto-changeover** with a local discharge air temperature sensor set:
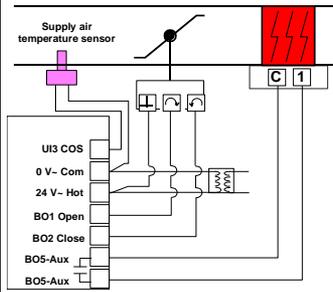- SeqOpera = 0 Cooling only
- UI3 = COS

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

Changeover
Sensor

Room Temperature Control
Minimum& MaximumPosition
Adjusted on the actuator

Mandatory
- Out1Conf = 2.0
- CntrltTyp = 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

AnalogVAV Actuator
Heating and/or Cooling
& On/Off Duct Heater

Changeover
Sensor

Room Temperature Control
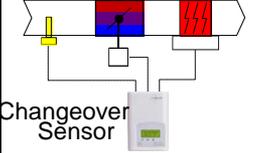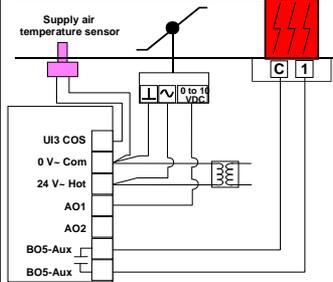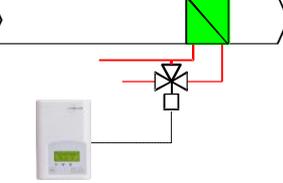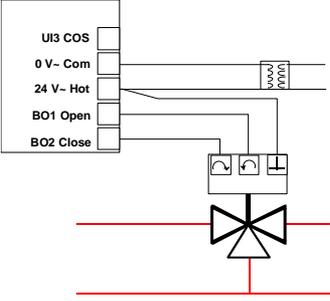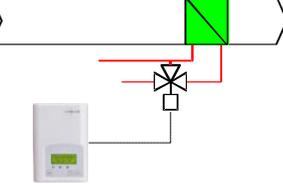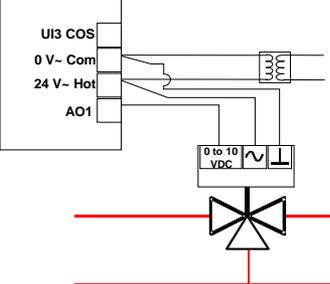Minimum& MaximumPosition
Adjusted on the actuator

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		
Modulating Floating Valve Cooling or Heating — Room Temperature Control Thermostat UI3 COS 0 V~ Com 24 V~ Hot BO1 Open BO2 Close		**Mandatory** • Out1Conf = 2.0 • CntrltTyp = Floating • FL time = *as per actuator* If **cooling only** set:: • SeqOpera = 0 Cooling only If **heating only** set:: • SeqOpera = 1 Heating only
Heating or cooling hydronic valve control: VT7200F5x00(x) Analog actuator		
Analog Valve Cooling or Heating — Room Temperature Control Thermostat UI3 COS 0 V~ Com 24 V~ Hot AO1 0 to 10 VDC		**Mandatory** • Out1Conf = 2.0 • RA/DA = *as per actuator* If **cooling only** set:: • SeqOpera = 0 Cooling only If **heating only** set:: • SeqOpera = 1 Heating only
Cooling / heating with changeover hydronic valve control: VT7200C5x00(x) Floating actuator		
Modulating Floating Valve Heating and/or Cooling Optional Water Supply Sensor Room Temperature Control Thermostat UI3 COS 0 V~ Com 24 V~ Hot BO1 Open BO2 Close Supply water temperature sensor		**Mandatory** • Out1Conf = 2.0 • CntrltTyp = Floating • FL time = *as per actuator* If **heat / cool auto-changeover** with a local water temperature sensor set: • SeqOpera = 0 Cooling only • UI3 = COS

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

		Mandatory

Analog Valve
Heating and/or Cooling

Optional Water
Supply Sensor

Room Temperature
Control Thermostat

UI3 COS
0 V~ Com
24 V~ Hot
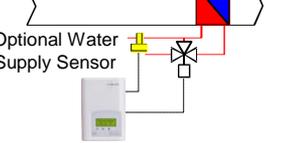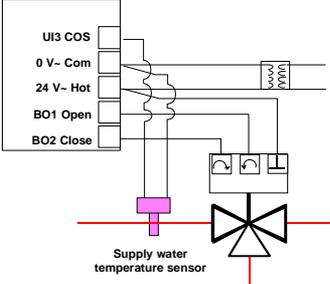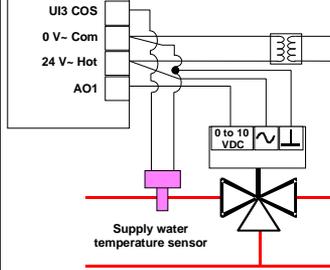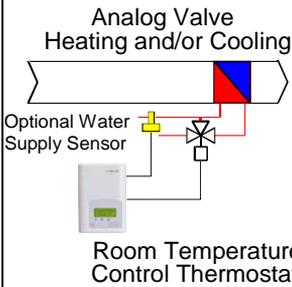AO1

0 to 10
VDC

**Supply water
temperature sensor**

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

Scom
RS
BO 5
24 Vac Com
BI 2

Scom
RS
Aux
C
DI

←**OR**→

Scom
RS

Dip switch setting for:
1 sensor
S2-1 = ON
S2-2 = ON
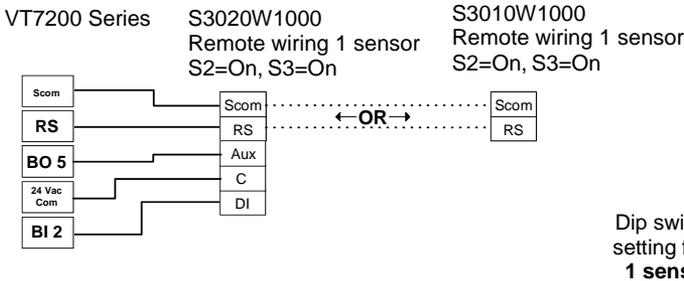
Wiring examples of 2 remote room sensors for averaging applications:

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

Scom
RS
BO 5
24 Vac Com
BI 2

Scom	Scom
RS	RS
Aux	
C	
DI	
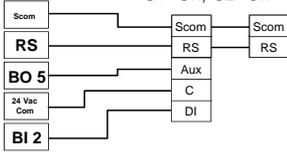
VT7200 Series — **2 x S3020W1000**
Remote wiring 2 sensors
S2=On, S3=Off

Scom
RS
BO 5
24 Vac Com
BI 2

Scom	Scom
RS	RS
Aux	Aux
C	C
DI	DI

VT7200 Series — **2 x S3010W1000**

Remote wiring 2 sensors

S2=On, S3=Off

Scom
RS

| Scom | Scom |
| RS | RS |
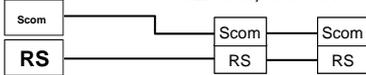
Notes for averaging applications:

- 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

Scom
RS
BO 5
24 Vac Com
BI 2

Scom	Scom	Scom
RS	RS	RS
Aux		
C		
DI		
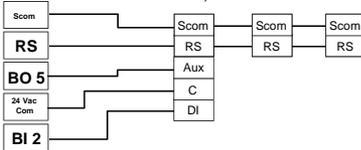
VT7200 Series — **3x S3010W1000**
Remote wiring 3 sensors
S2=Off, S3=Off

Scom
RS

| Scom | Scom | Scom |
| RS | RS | RS |
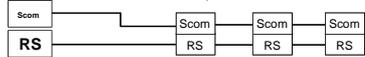
Dip switch setting for: **3 sensors**
S2-1 = OFF
S2-2 = OFF

Temperature vs. resistance chart for 10 Kohm NTC thermistor ($R_{25°C}$ = 10KΩ±3%, $B_{25/85°C}$ = 3975K±1.5%)

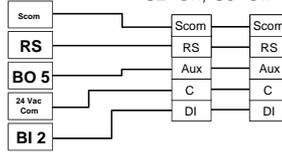| ºC	ºF	Kohm	ºC	ºF	Kohm	ºC	ºF	Kohm	ºC	ºF	Kohm	ºC	ºF	Kohm
-40	-40	324.3197	-20	-4	94.5149	0	32	32.1910	20	68	12.4601	40	104	5.3467
-35	-31	234.4009	-15	5	71.2430	5	41	25.1119	25	77	10.0000	45	113	4.3881
-30	-22	171.3474	-10	14	54.1988	10	50	19.7390	30	86	8.0694	50	122	3.6202
-25	-13	126.6109	-5	23	41.5956	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 (BI2)
Filter	Indicates that the filters are dirty as per one of the configured binary inputs (BI2)
Window	Indicates that the outside window or door is opened and that the Terminal Equipment Controller has cancelled any cooling or heating action (BI1)

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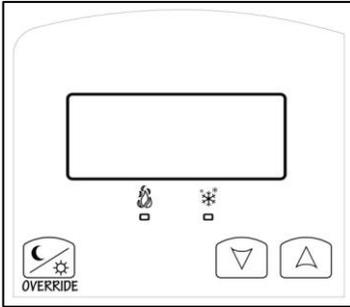
Unoccupied mode override
An Override can be made during an unoccupied period. If the Override option is enabled in the lockout configuration pressing the Override button will resume occupied setpoints for a time specified by parameter ToccTime

Local keypad interface

	▪ 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
	▪ In cooling mode only the cooling setpoint is displayed, ▪ In heating mode only the heating setpoint is displayed ▪ In auto mode, (See below)
	▪ 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 ▪ 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

OVERRIDE	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** - 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

PAN ID	Conditional parameter to Wireless models VT7200X5x00W
Personal Area Network Identification Default value = **0** Range is: 0 to 500	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.
	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 *SAME* PAN ID value both on the gateway and the Terminal Equipment Controller(s).
	The default value of 0 is *NOT* a valid PAN ID. The valid range of available PAN ID is from 1 to 500.
	Range 1 to 250 for centralized networked applications using a VWG or a Jace with the wireless stat driver
	Range 251 to 500 is for stand-alone (Network Ready) applications where no VWG or Jace with the wireless stat driver is used.
Channel	**Conditional parameter to Wireless models VT7200X5x00W**
Channel selection Default value = **10** Range is: 10 to 26	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.
	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 *SAME* channel value both on the gateway and the Terminal Equipment Controller(s).
	Viconics recommends using only the usage of channels 15 and 25 only.
	The default value of 10 is *NOT* a valid channel. The valid range of available channel is from 11 to 26

Get From Terminal Equipment Controller Get From another device configuration utility Default value = **0** Range is: 0 to 254	**Conditional parameter to Wireless models (VT7200X5x00W)** 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. Ex.: If you are currently configuring MAC12 and the settings matches exactly the settings of ZN MAC5, then enter 5 as the current parameter value. - If the process is successful and all required configuration properties have been copied, the value will revert back to 255 - If the process is *NOT* successful and all required configuration properties have NOT been copied (either the reference device is *NOT* 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 **Leaving the Get From parameter to 255 means that every configuration parameters will be set manually.**

BI 1 Binary input no.1 configuration Default value **= None**	**(None):** No function will be associated with the input. Input can be used for remote network monitoring. **(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 **(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: *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 (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. * These settings will disable the local override function on the Terminal Equipment Controller.
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
UI3 Universal input no.3 configuration Default value = **None**	**(None):** No function will be associated with the input **(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. **(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. **(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 **(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.
MenuScro Menu scroll Default value = **On** = **Scroll active**	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. ▪ **On = Scroll active** ▪ **Off = Scroll not active**
C or F Sets scale of the Terminal Equipment Controller Default value = **°F**	▪ °F for Fahrenheit scale ▪ °C for Celsius scale

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

USER KEY FUNCTIONS		
LEVEL	☾☼ OVERRIDE	▽ △
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	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.
Temporary setpoint enable	
Default is : **Permnent**	
	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.
Enables temporary setpoints feature to any change of occupied or unoccupied setpoint.	
	Permnent: (permanent) Any change of occupied or unoccupied setpoints through the keypad by the user are permanent and saved to & EEPROM
TOccTime	Temporary occupancy time with occupied mode setpoints when override function is enabled.
Temporary occupancy time	
Default value = **2 hours**	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	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.
Minimum deadband	
Default value = **2.0 °F** **(1.0 °C)**	Range is: **2, 3, 4 or 5 °F, 1.0 °F increments (1.0 to 2.5 °C, 0.5 °C increments)**
Cal RS	Offset that can be added/subtracted to the actual displayed room temperature
Room temperature sensor calibration	
Default value = **0.0 °F or °C**	Range is: **± 5.0 °F, 1.0 °F increments (± 2.5 °C, 0.5 °C increments)**

aux cont Auxiliary contact function & configuration Default value = **0 Not Used**	**0 Aux contact function used for reheat** *IF SEQUENCE IS SET TO REHEAT THROUGH NETWORK OR LOCAL*, Ignore this parameter **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 **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 **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.
FL time Floating actuator timing **VT7200C5x00(x) models only** Default value: **1.5 minutes**	Maximum stroke time of floating valve actuator. **0.5 to 9.0** in 0.5 minutes increment
cph On/Off devices cycles per hour **VT7200C5x00(x) models only** Default value = **4 C.P.H.**	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.**

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)

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 UNDESIRED OPERATION.

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

DRAWING & DIMENSIONS

Front — 4.98 inch (125.171 mm)

Back

1.117 inch (28.38 mm)

3.405 inch (86.49 mm)

Bottom

Side
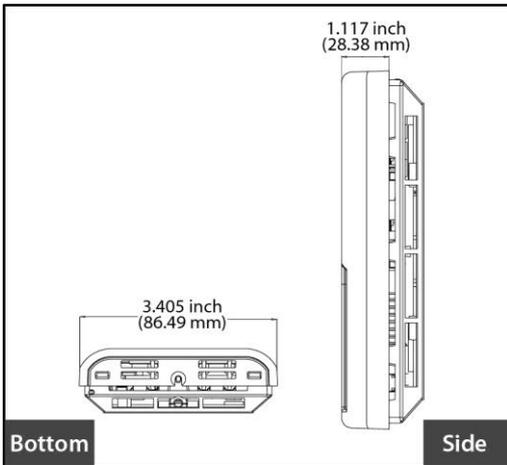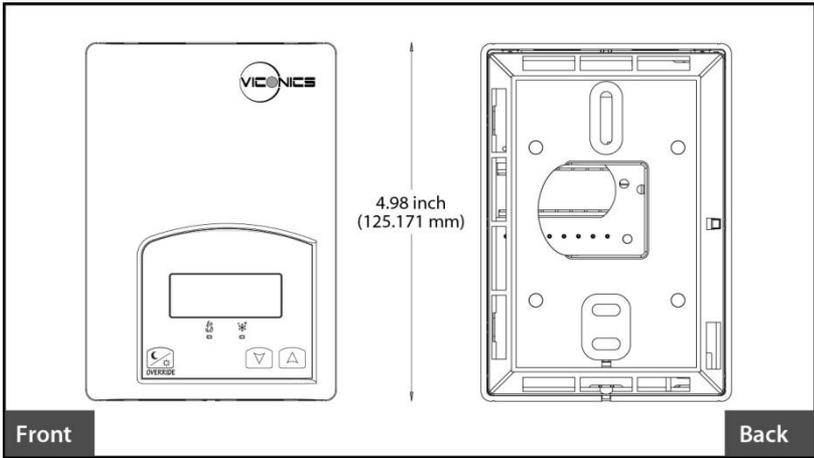
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