



PIR Ready VT7200 Series 24 Vac Low Voltage Zoning Thermostats For Commercial HVAC Applications

September 1, 2010

Product overview

The VT7200 PIR Ready thermostat family is specifically designed for zoning applications. Typical applications include local hydronic reheat valve control and pressure dependent VAV with or without local reheat. The product features a backlit LCD display with dedicated function menu keys for simple operation. Accurate temperature control is achieved due to the product's PI proportional control algorithm, which virtually eliminates temperature offset associated with traditional, differential-based thermostats. Models are available for 3 point floating and analog 0 to 10 Vdc control. In addition remote room sensing is available.

They all contain an SPST auxiliary switch that can be used to control lighting or auxiliary reheat. 3 additional inputs are also provided for monitoring and / or various advanced functions.



The thermostats are also compatible with the new Vykon PIR cover accessories. Thermostats equipped with a PIR cover provide advanced active occupancy logic, which will automatically switch occupancy levels from Occupied to Stand-By and Unoccupied as required by local activity being present or not. This advanced occupancy functionality provides advantageous energy savings during occupied hours without sacrificing occupant comfort. All thermostats can be ordered with or without a factory installed PIR cover (see ordering notes below).

The additional following documents are available

- VYKONStat PIR Application Guide
- VYKONStat PIR Cover Assembly Installation Guide
- VYKONStat PIR Ready VT7200 and VT7300 Series Thermostat LonWorks Integration Guide
- VYKONStat PIR Ready VT7200 and VT7300 Series Thermostat BACnet Integration Guide
- VYKONStat Wireless Controller Application Guide

Models available

Vykon Part Numbers	VT7200C5028 VT7200C5028B (BACnet) VT7200C5028E (Echelon) VT7200C5028W (Wireless)	VT7200F5028 VT7200F5028B (BACnet) VT7200F5028E (Echelon) VT7200C5028W (Wireless)
Control Outputs	2 x Tri-state floating 1 x Auxiliary or reheat contact	2 x Analog 0 to 10 Vdc 1 x Auxiliary or reheat contact

Ordering Information Notes:

- Thermostats can be ordered with a factory installed PIR cover. Please use (5528) extension instead of the (5028) only extension.: Ex. VT7200C5528E.
- Thermostats ordered without a PIR cover can be retrofitted with a separate PIR accessory cover afterwards when required

Features and benefits

Features	Benefits
• Advanced occupancy functions	⇒ Through the network or smart local occupancy sensing
• Ready for PIR accessory cover	⇒ Fully integrated advanced occupancy functionality with a PIR accessory cover
• 3 configurable inputs	⇒ Adds functionality
• Pre-configured sequences of operation	⇒ One model meet more applications ⇒ Reduces project delivery cost
• Unique configuration setup utility	⇒ Minimizes parameter tampering
• Lockable keypad	⇒ Tamper proof, no need for thermostat guards
• Available for 24 Vac On/Off, Floating or Analog control	⇒ Meet advanced applications requirements
• Auxiliary output	⇒ Can be used for lighting or reheat
• Available with various open industry standards communication adapters	⇒ Adds network integration functionality for additional savings

Installation

- Remove security screw on the bottom of thermostat cover.
- Open up by pulling on the bottom side of thermostat.
- Remove Assembly and remove wiring terminals from sticker. **(Fig. 3)**

A) Location:

- 1- Should not be installed on an outside wall.
- 2- Must be installed away from any heat source.
- 3- Should not be installed near an air discharge grill.
- 4- Should not be affected by direct sun radiation.
- 5- Nothing must restrain vertical air circulation to the thermostat.

B) Installation:

- 1- Swing open the thermostat PCB to the left by pressing the PCB locking tabs. **(Fig. 4)**
- 2- Pull out cables 6" out of 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. 4)**
- 8- Gently swing back the circuit board on the base and push on it until the tabs lock it.
- 10- Strip each wire 1/4 inch.
- 11- Insert each wire according to wiring diagram.
- 13- Gently push back into hole excess wiring **(Fig. 5)**
- 14- Re-Install wiring terminals in correct location. **(Fig. 5)**
- 15- Reinstall the cover (top side first) and gently push back extra wire length into the hole in the wall.
- 16- Install security screw.



Fig.3

Location of PCB retaining tabs

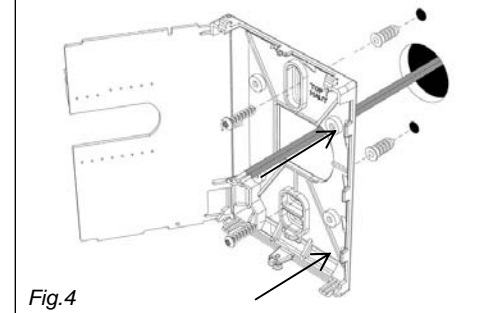


Fig.4

Re-install terminal blocks

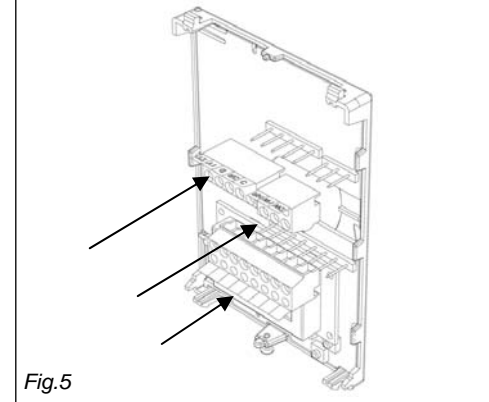


Fig.5

Thermostat assembly
(VT7300F5028B shown)



Fig.6



- If replacing an old thermostat, label the wires before removal of the old thermostat.
- Electronic controls are static sensitive devices. Discharge yourself properly before manipulation and installing the thermostat.
- Short circuit or wrong wiring may permanently damage the thermostat or the equipment.
- Anti-short cycling can be set to 0 minutes for equipment that posses their own anti cycling timer. Do not use that value unless the equipment is equipped with such internal timer. Failure to do so can damage the equipment.
- All VT7000 series thermostats are to be used only as operating controls. Whenever a control failure could lead to personal injury and/or loss of property, it becomes the responsibility of the user to add safety devices and/or alarm system to protect against such catastrophic failures.

Programmable 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 thermostat. 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 thermostat 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 thermostat 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 thermostat. 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 thermostat 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 thermostat 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:

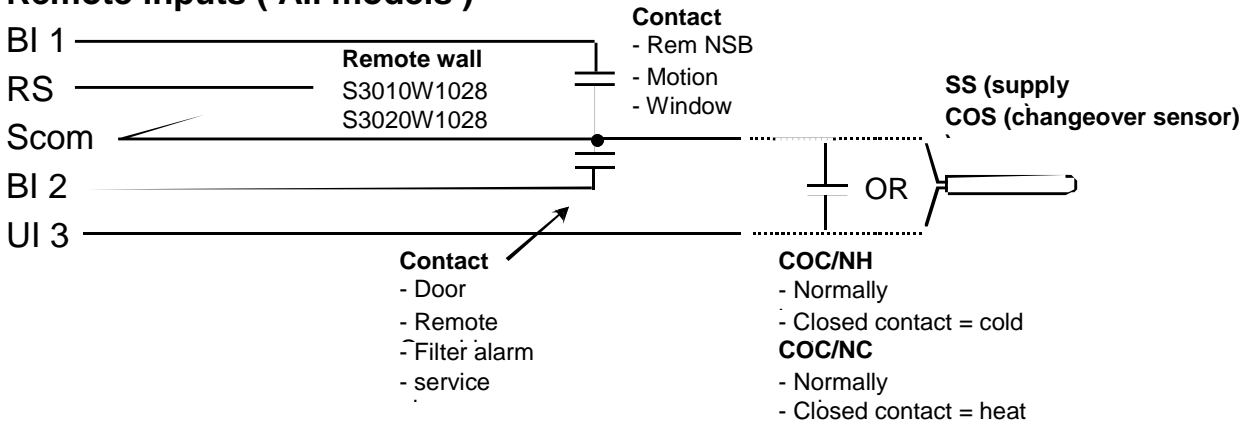
1. **(None):** No function will be associated with the input
2. **(COC/NH) Change over dry contact. Normally Heat:** Used for hot / cold air / water change over switching in 2 pipe systems.
 - Contact closed = Cold air / water present
 - Contact opened = Hot air / water presentOnly used and valid if 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 presentOnly 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 thermostat.

Terminal identification

Vykon Part Numbers	VT7200C5x28(x)	Vykon number	VT7200F5x28(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

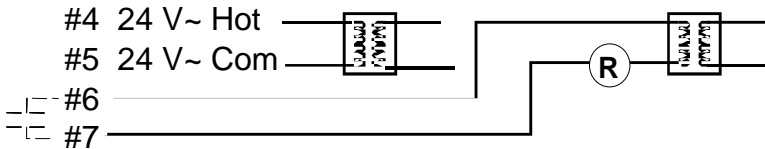
Generic wiring

Remote inputs (All models)

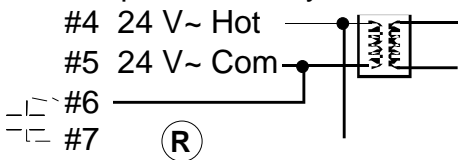


Auxiliary output (All models)

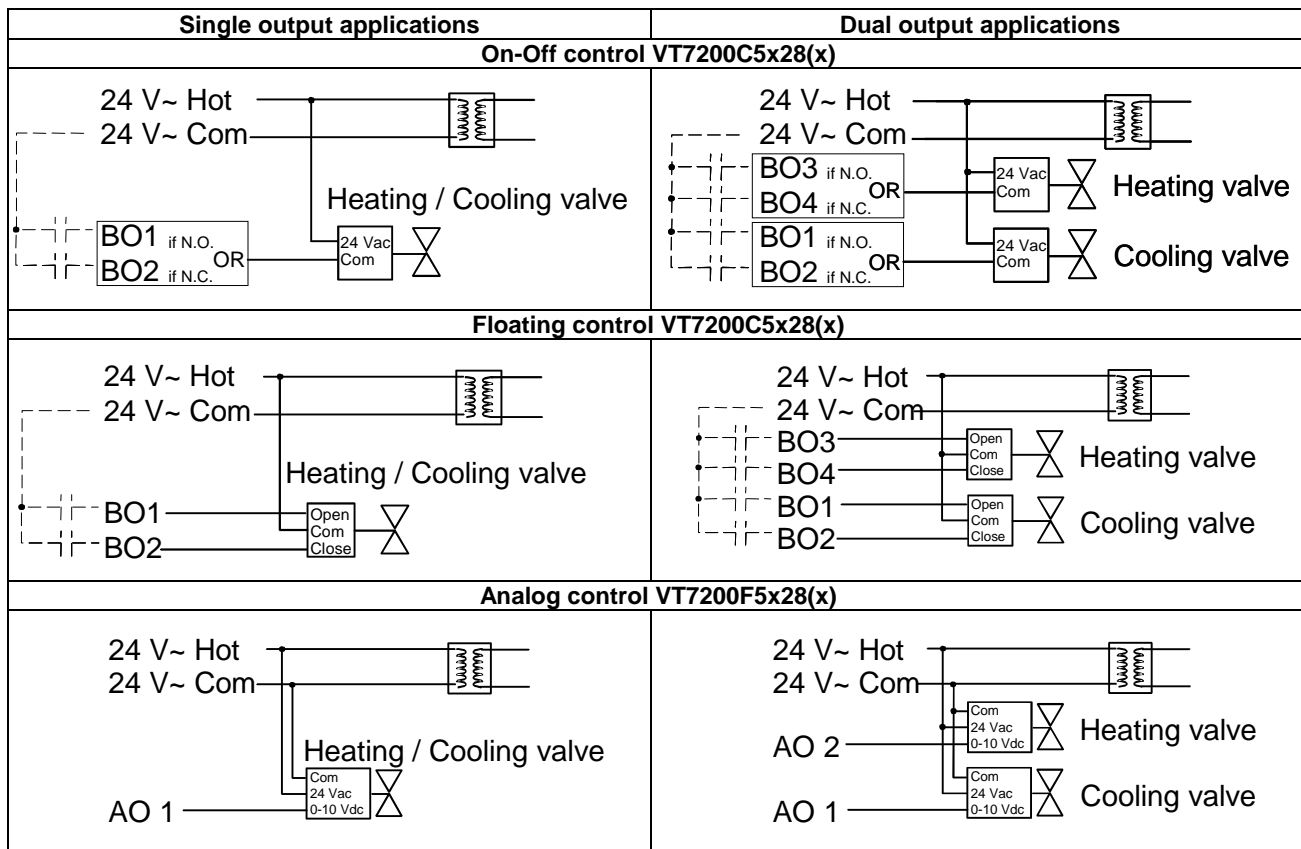
- Dry contact to end device 24 V~



- 24 Vac power to relay

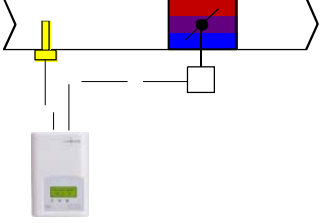
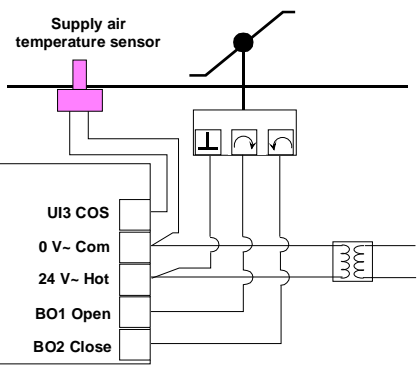
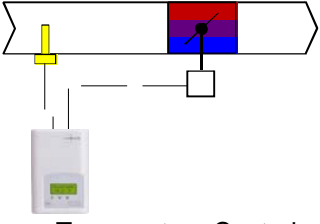
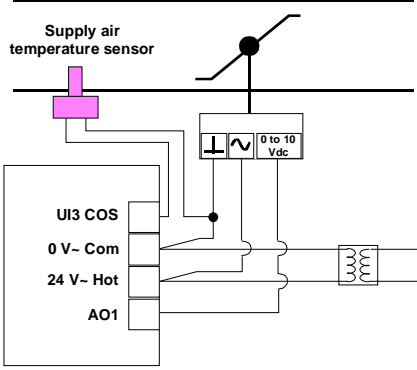
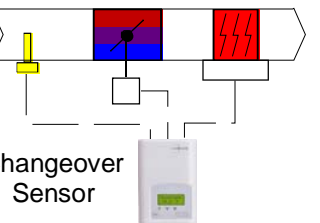
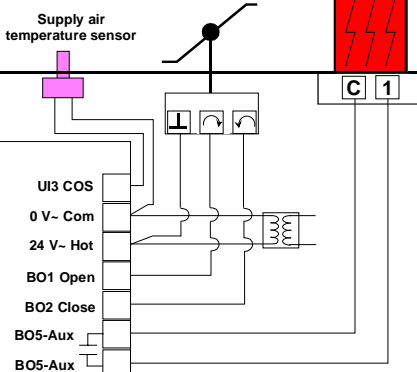
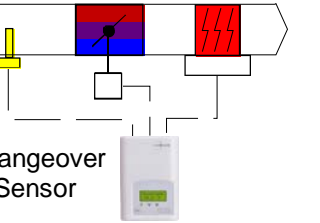
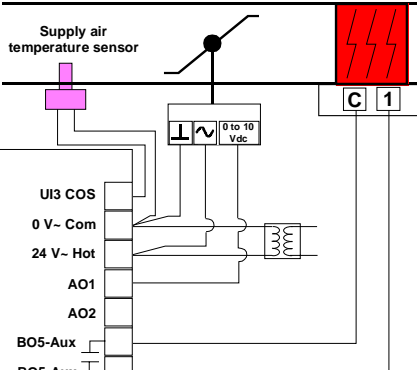


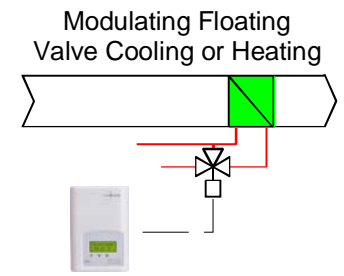
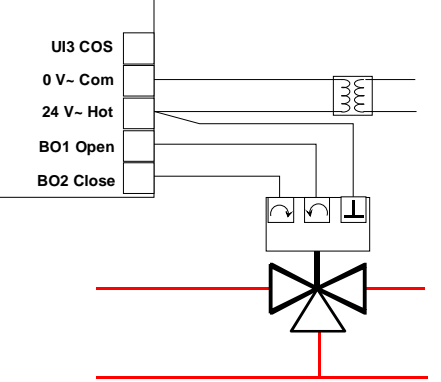
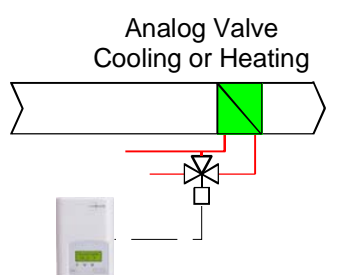
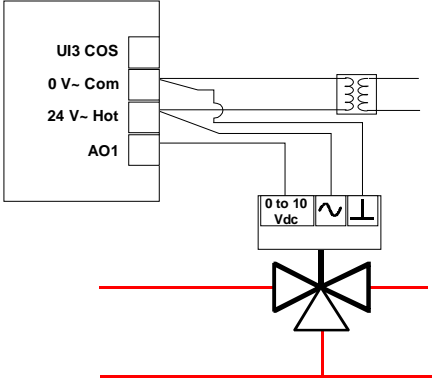
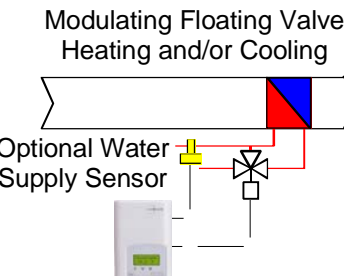
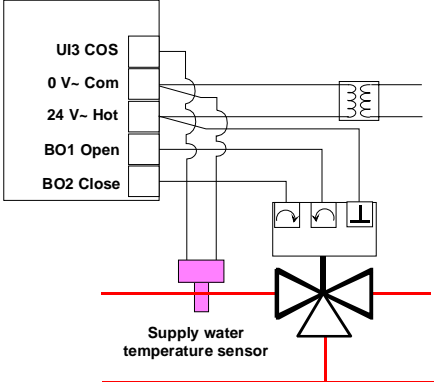
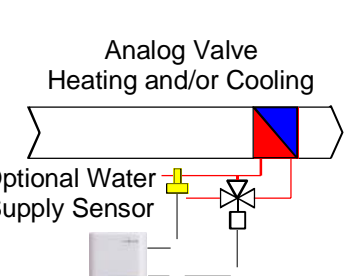
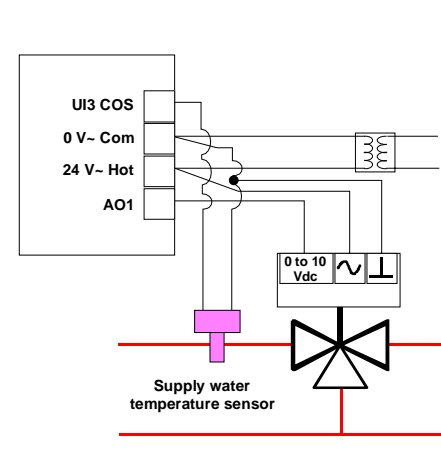
Main outputs wiring typical for valves



Typical applications

Schematic	Wiring	Settings
Pressure dependent VAV cooling only: VT7200C5x28(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 = as per actuator • SeqOpera = 0 Cooling only
Pressure dependent VAV cooling only: VT7200F5x28(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>0 to 10 Vdc</p>	<p>Mandatory</p> <ul style="list-style-type: none"> • Out1Conf = 2.0 • RA/DA = as per actuator • SeqOpera = 0 Cooling only

Schematic	Wiring	Settings
Pressure dependent VAV cooling / heating with changeover: VT7200C5x28(x) Floating actuator		
<p>Changeover Modulating Floating Sensor VAV Actuator</p>  <p>Room Temperature Control Minimum & Maximum Position Adjusted on the actuator</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 discharge air temperature sensor set:</p> <ul style="list-style-type: none"> • SeqOpera = 0 Cooling only • UI3 = COS
Pressure dependent VAV cooling / heating with changeover: VT7200F5x28(x) Analog actuator		
<p>Changeover 0 to 10 Vdc Sensor Analog Actuator</p>  <p>Room Temperature Control Minimum & Maximum Position Adjusted on the actuator</p>		<p>Mandatory</p> <ul style="list-style-type: none"> • Out1Conf = 2.0 • RA/DA = <i>as per actuator</i> <p>If heat / cool auto-changeover with a local discharge air temperature sensor set:</p> <ul style="list-style-type: none"> • SeqOpera = 0 Cooling only • UI3 = COS
Pressure dependent VAV cooling / heating with changeover and reheat: VT7200C5x28(x) Floating actuator		
<p>Modulating Floating VAV Actuator Heating and/or Cooling & On/Off Duct Heater</p>  <p>Changeover Sensor</p> <p>Room Temperature Control Minimum & Maximum Position Adjusted on the actuator</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 discharge air temperature sensor set:</p> <ul style="list-style-type: none"> • SeqOpera = 2 Cooling with Reheat • UI3 = COS
Pressure dependent VAV cooling / heating with changeover and reheat: VT7200F5x28(x) Analog actuator		
<p>Analog VAV Actuator Heating and/or Cooling & On/Off Duct Heater</p>  <p>Changeover Sensor</p> <p>Room Temperature Control Thermostat Minimum & Maximum Position Adjusted on the actuator</p>		<p>Mandatory</p> <ul style="list-style-type: none"> • Out1Conf = 2.0 • RA/DA = <i>as per actuator</i> <p>If heat / cool auto-changeover with a local discharge air temperature sensor set:</p> <ul style="list-style-type: none"> • SeqOpera = 2 Cooling with Reheat • UI3 = COS

Schematic	Wiring	Settings
Heating or cooling hydronic valve control: VT7200C5x28(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: VT7200F5x28(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: VT7200C5x28(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: VT7200F5x28(x) Analog actuator		
<p>Analog 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 • RA/DA = <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

Remote sensor accessories

Model no.	Description
S3010W1028	Wall mounted temperature sensor
S3020W1028	Wall mounted temperature sensor with override key and occupancy status LED



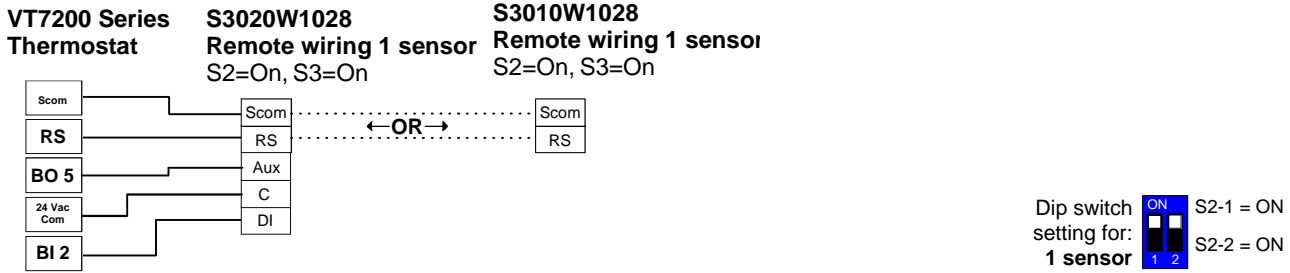
Remote mount temperature sensors use 10K NTC thermistor.

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

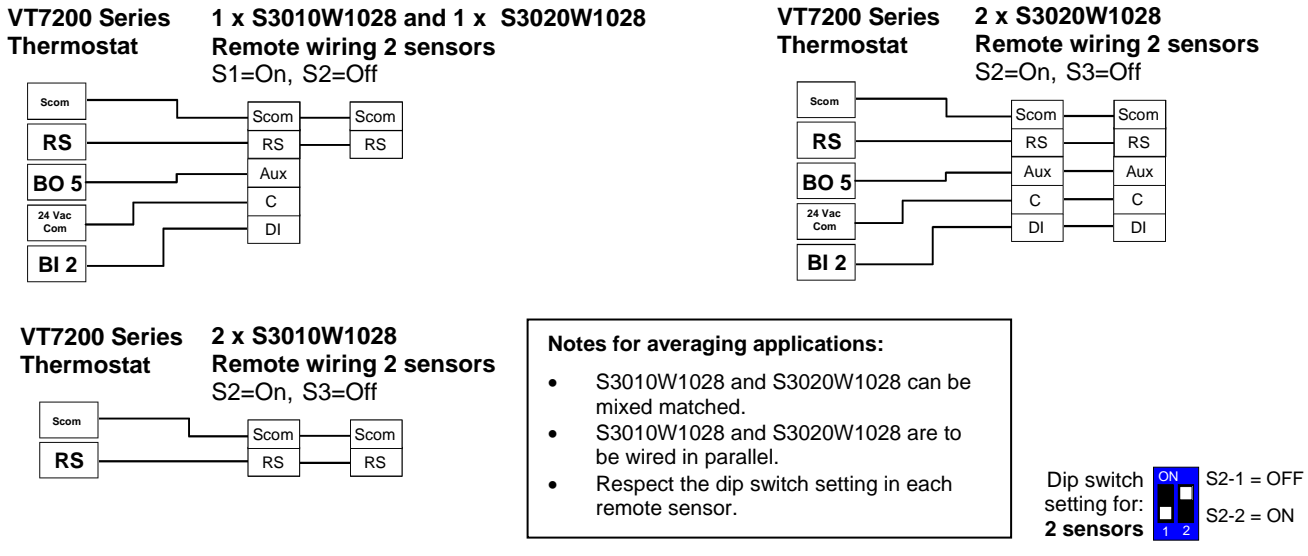
Fig.8 – S3020W1028

Wall mounted sensor

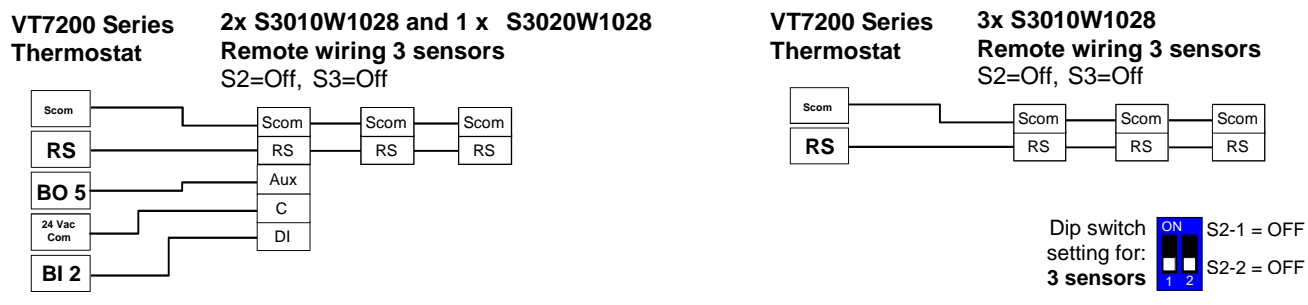
Wiring example of single remote room sensor:



Wiring examples of 2 remote room sensors for averaging applications:



Wiring examples of 3 remote room sensors for averaging applications:



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

Programming and status display instructions

Status display

The thermostat 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 thermostat 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 thermostat is left unattended for 45 seconds

Sequence of auto-scroll status display:

Room & Humidity	System Mode	Occupancy Status	Outdoor Temperature	Alarms
RoomTemp x.x °C or °F	Sys mode Auto	Occupied	Outdoor x.x °C or °F	Service
	Sys mode Cool	Stand-By	Network value only	Filter
	Sys mode heat	Unoccup		Window
	Sys mode off	Override		

Outdoor air temperature

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

Occupancy Status

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

Alarms

- If alarms are detected, they will automatically be displayed at the end of the 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 programmable binary input (BI2)
Filter	Indicates that the filters are dirty as per one of the programmable binary input (BI2)
Window	Indicates that the outside window or door is opened and that the thermostat has cancelled any cooling or heating action (BI1)

Two status LED's on the thermostat 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.



Fig.11 – Zoning models

Installer configuration parameter menu

Configuration can be done through the network or locally at the thermostat.

- To enter configuration, press and hold the Override button for 8 seconds
- Press again the Override 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 Override button again.
- The next listed parameter is now displayed

Configuration interface

Override	Enters the configuration mode. Press and hold for 8 seconds Pressing repetitively will scroll all available parameters one by one
Down	Adjust / rotate parameter value down
Up	Adjust / rotate parameter value up

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

• Keypad interface

Override	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
Down	Adjust the setpoints down ❖ In cooling mode only the cooling setpoint displayed, ❖ In heating mode only the heating setpoint displayed ❖ In auto mode, (See below)
Up	Adjust the setpoints up ❖ In cooling mode only the cooling setpoint displayed, ❖ In heating mode only the heating setpoint displayed ❖ In auto mode, (See below)

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

• Occupied setpoint adjustments

Cooling mode	Heating mode	Off mode	Auto Mode
Cool XX.X °F or °C	Heat XX.X °F or °C	No access to setpoint	<ul style="list-style-type: none"> • Setpoint presented to user is the setpoint from the last action taken by the thermostat or the one currently in use. • Both heating and cooling setpoint are changed simultaneously while respecting the minimum configured deadband
			Cool XX.X °F or °C and Heat XX.X °F or °C Both heating & cooling setpoints are change simultaneously

• Unoccupied setpoints adjustments

Setting the unoccupied setpoints is done through the network or through configuration setup only.

• 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 reheat	Off – Auto – Heat – Cool
3 = Heating with 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

Configuration parameters Default value	Significance and adjustments
<p>PswrdSet Configuration parameters menu access password Default value = 0 Range is: 0 to 1000</p>	<p>This parameter sets a protective access password 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.</p> <p>Range is: 0 to 1000</p>
<p>Com Addr Thermostat networking address Default value = 4 Range is: 0 to 254</p>	<p>Conditional parameter to BACnet MS-TP models (VT7200X1028B) Conditional parameter to Wireless models (VT7200X1028W) This parameter will only appear when a BACnet or wireless network adapter is present. If the thermostat is installed as a stand-alone unit or with an Echelon adapter, this parameter will not be used or displayed</p> <ul style="list-style-type: none"> • For BACnet MS-TP models valid range to use is from 1 to 127 • For wireless models valid range is 0 to 254 with a maximum of 30 thermostat per VGG
<p>PAN ID Personal Area Network Identification Default value = 0 Range is: 0 to 500</p>	<p>Conditional parameter to Wireless models (VT7200X1028W) This parameter will only appear when a wireless network adapter is present. If the thermostat is installed as a stand-alone 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 thermostats to a single specific Vykon JACE with wireless network adapter. For every thermostat reporting to a JACE (maximum of 30 wireless thermostats), be sure you set the SAME PAN ID value both at the JACE and the thermostat(s).</p> <p>The default value of 0 is NOT a valid PAN ID. The valid range of available PAN ID is from 1 to 500</p>
<p>Channel Channel selection Default value = 10 Range is: 10 to 26</p>	<p>Conditional parameter to Wireless models (VT720+0X1028W) This parameter will only appear when a wireless network adapter is present. If the thermostat is installed as a stand-alone 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 thermostats to a specific Vykon JACE with wireless network adapter. For every thermostat reporting to a JACE (maximum of 30 wireless thermostats), be sure you set the SAME channel value both at the JACE and the thermostat(s).</p> <p><i>Vykon recommends using only the 2 last channels (25-2575MHz and 26-2580MHz)</i></p> <p>The default value of 10 is NOT a valid channel. The valid range of available channel is from 11 to 26</p>
<p>Get From Thermostat Get From another device configuration utility Default value = 0 Range is: 0 to 254</p>	<p>Conditional parameter to Wireless models (VT7200X1028W) This parameter / function is not currently supported by the wireless thermostats.</p>
<p>B11 Binary input no.1 configuration Default value = None</p>	<p>(None): No function will be associated with the input (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 on 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 (Window) EMS: Forces the system to disable any current heating or cooling action by the thermostat. 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 thermostat 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 thermostat.</p>

<p>BI2 Binary input no.2 configuration Default value = None</p>	<p>(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 thermostat 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 thermostat. 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 thermostat 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 thermostat LCD screen when the input is energized. It can be tied in to the AC unit control card, which provides an alarm in case of malfunction. Contact opened = No alarm Contact closed = Alarm displayed</p>																					
<p>UI3 Universal input no.3 configuration Default value = None</p>	<p>(None): No function will be associated with the input (COC/NH) Change over dry contact. Normally Heat: Used when both heating and cooling are controlled from the same thermostat output. Contact closes when cold air/water is present. Only used and valid if system parameter (Out1Conf) is set at 2.0 (COC/NC) Change over dry contact. Normally Cool: Used when both heating and cooling are controlled from the same thermostat output. Contact closes when hot air/water is present. Only used and valid if system parameter (Out1Conf) is set at 2.0 (COS) Change over analog sensor: Used where heating and cooling are controlled from the same output. Temperature in duct/pipe determines control mode (heat/cool) Only used and valid if system parameter (Out1Conf) is set at 2.0 (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 thermostat</p>																					
<p>MenuScro Menu scroll Default value = On = Scroll active</p>	<p>Removes the scrolling display and only present the room temperature/humidity to the user. With this option enabled, no status is given of mode, schedule and outdoor temperature. On = Scroll active Off = Scroll not active</p>																					
<p>C or F Sets the display scale f the thermostat Default value = °F</p>	<p>°F for Fahrenheit scale °C for Celsius scale</p>																					
<p>Lockout</p> <table border="1" data-bbox="110 1413 537 1648"> <thead> <tr> <th>Level</th> <th>Occupied temperature setpoints</th> <th>Unoccupied Override</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Yes access</td> <td>Yes access</td> </tr> <tr> <td>1</td> <td>Yes access</td> <td>No access</td> </tr> <tr> <td>2</td> <td colspan="2"><i>Level not used</i></td> </tr> <tr> <td>3</td> <td colspan="2"><i>Level not used</i></td> </tr> <tr> <td>4</td> <td>No access</td> <td>Yes access</td> </tr> <tr> <td>5</td> <td>No access</td> <td>No access</td> </tr> </tbody> </table>	Level	Occupied temperature setpoints	Unoccupied Override	0	Yes access	Yes access	1	Yes access	No access	2	<i>Level not used</i>		3	<i>Level not used</i>		4	No access	Yes access	5	No access	No access	<p>Keypad lockout levels. Default value = 0 No lock</p>
Level	Occupied temperature setpoints	Unoccupied Override																				
0	Yes access	Yes access																				
1	Yes access	No access																				
2	<i>Level not used</i>																					
3	<i>Level not used</i>																					
4	No access	Yes access																				
5	No access	No access																				
<p>Out1Conf Output # 1 configuration Default is: 4.0 (2 control outputs, no changeover)</p>	<p>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)</p>																					
<p>CntrlTyp Control type for Triac models Default is: Floating</p>	<p>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</p>																					

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 thermostat 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 thermostat toggles to stand-by mode and the time which the thermostat 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 thermostat 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 Proportionnal band setting Default is : 3	Adjust the proportional band used by the thermostat PI control loop. Warning. Note that the default value of 3.0 °F (1.2 °C) gives satisfactory operation in most normal installation cases. The use of a superior proportional band different than the factory one is normally warranted in applications where the thermostat location is problematic and leads to unwanted cycling of the unit. A typical example is a wall mounted unit where the thermostat is installed between the return and supply air feeds and is directly influenced by the supply air stream of the unit. <table border="1" data-bbox="618 1640 1008 1955"> <thead> <tr> <th>Val ue</th> <th>F scale Pband</th> <th>C scale Pband</th> </tr> </thead> <tbody> <tr><td>2</td><td>2 F</td><td>0.6 C</td></tr> <tr><td>3</td><td>3 F</td><td>1.2 C</td></tr> <tr><td>4</td><td>4 F</td><td>1.7 C</td></tr> <tr><td>5</td><td>5 F</td><td>2.2 C</td></tr> <tr><td>6</td><td>6 F</td><td>2.8 C</td></tr> <tr><td>7</td><td>7 F</td><td>3.3 C</td></tr> <tr><td>8</td><td>8 F</td><td>3.9 C</td></tr> <tr><td>9</td><td>9 F</td><td>5.0 C</td></tr> <tr><td>10</td><td>10 F</td><td>5.6 C</td></tr> </tbody> </table>		Val ue	F scale Pband	C scale Pband	2	2 F	0.6 C	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
Val ue	F scale Pband	C scale Pband																														
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10	10 F	5.6 C																														

<p>Set Type Temporary setpoint enable Default is : Permnet Enables temporary setpoints feature to any change of occupied or unoccupied setpoint.</p>	<p>Temporar: (temporary) Local changes to the heating or cooling setpoints by the user are temporary. They will remain effective for the duration specified by ToccTime. Setpoints will revert back to their default value after internal timer ToccTime expires. To change setpoints permanently, revert to No this variable or write setpoints through the network. Any setpoints written through the network will be permanent ones and saved to EEPROM. Permnet: (permanent) Any change of occupied or unoccupied setpoints through the keypad by the user are permanent and saved to & EEPROM</p>
<p>TOccTime Temporary occupancy time Default value = 2 hours</p>	<p>Temporary occupancy time with occupied mode setpoints when override function is enabled When the thermostat is in unoccupied mode, function is enabled with either the menu or BI1 or BI2 configured as remote override input. 0,1, 2, 3, 4, 5, 6, 7, 8, 9, 10, & up to 24 hours</p>
<p>deadband Minimum deadband Default value = 2.0 °F (1.0 °C)</p>	<p>Minimum deadband value between the heating and cooling setpoints. If modified, it will be applied only when any of the setpoints are modified. 2, 3, 4 or 5 °F, 1.0 °F increments (1.0 to 2.5 °C, 0.5 °C increments)</p>
<p>cal RS Room air temperature sensor calibration Default value = 0.0 °F or °C</p>	<p>Offset that can be added/subtracted to actual displayed room temperature ± 5.0 °F, 1.0 °F increments (± 2.5 °C, 0.5 °C increments)</p>
<p>aux cont Auxiliary contact function & configuration Default value = 0 Not Used</p>	<p>0 Aux contact function used for reheat <i>IF SEQUENCE IS SET TO REHEAT THROUGH NETWORK OR LOCAL</i>, Ignore this parameter</p> <p>The output will directly follow the occupancy of the thermostat 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 VT7200C5x28(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 VT7200C5x28(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>
<p>RA/DA Reverse acting or Direct acting signal for Analog output signals VT72xxF5x28(x) models only Default value: DA signal</p>	<p>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</p>
<p>Reheat Sets the time base for the reheat output if used Default value: 0= 15 minute</p>	<p>Sets the reheat output time base Valid only if reheat sequences are enabled 0 = 15 minutes 1 = 10 seconds for Solid state relays</p>
<p>UI3 dis Display supply or changeover temperature when UI 3 is configured</p>	<p>Used as diagnostic / service help to troubleshoot and diagnose sensor operation</p>

as an analog input (SS or COS)	
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Specifications

Thermostat power requirements:	19-30 Vac 50 or 60 Hz; 2 VA Class 2
Operating conditions:	0 °C to 50 °C (32 °F to 122 °F) 0% to 95% R.H. non-condensing
Storage conditions:	-30 °C to 50 °C (-22 °F to 122 °F) 0% to 95% R.H. non-condensing
Temperature sensor:	Local 10 K NTC thermistor
Temperature sensor resolution:	± 0.1 °C (± 0.2 °F)
Temperature control accuracy:	± 0.5 °C (± 0.9 °F) @ 21 °C (70 °F) typical calibrated
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: 1.8°C (3.2°F)
Binary inputs:	Dry contact across terminal BI1, BI2 & UI3 to Scsm
Contact output rating:	Triac output: 30 Vac, 1 Amp. Maximum, 3 Amp. in-rush Analog: 0 to 10 Vdc into 2KΩ resistance min.
Wire gauge	18 gauge maximum, 22 gauge recommended
Dimensions:	4.94" x 3.38" x 1.13"
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 Stand-Alone, BACnet & LON models	FCC: Compliant to Part 15, Subpart C
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 UNDESIRE OPERATION.

Drawing & Dimensions

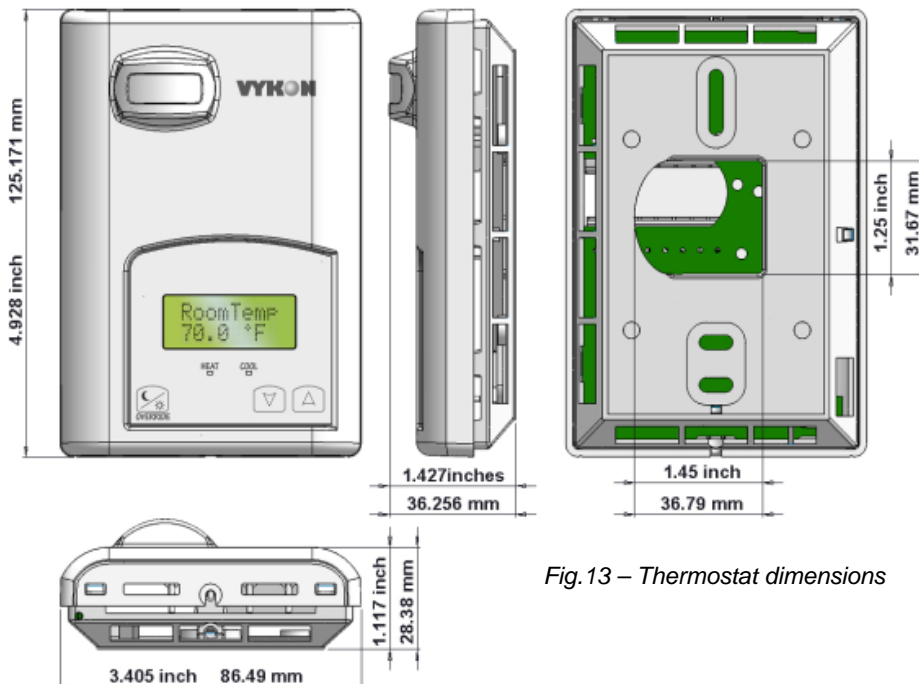


Fig. 13 – Thermostat dimensions

Important Notice



All VT7200 series controls are for use as operating

controls only and are not safety devices. These instruments have undergone rigorous tests and verifications prior to shipment 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 alarm system to protect the entire system against such catastrophic failures. Tampering of the devices or miss application of the device will void warranty.

Vykon and WEEE

The Waste Electrical and Electronic Equipment (WEEE) mark applies only to countries within the European Union (EU) and Norway. Electric/Electronic devices are labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used Electric/Electronic devices at the end of life within and throughout the European Union (EU). This label is applied to various products to indicate the product is not to be thrown away, but rather be reclaimed upon the end of the products useful life per this directive.

Users of electric and electronic equipment with the WEEE marking per annex IV of the WEEE Directive must not dispose of end of life Electric/Electronic waste as unsorted municipal waste, but rather use the collection framework available to them for the return, recycle and recovery of WEEE and minimize the environmental impact of Electric/Electronic waste due to the presence of hazardous substance.