Product overview

The VTR73XX Series Fan Coil Terminal Equipment Controller used in conjunction with the VC3000 Series Line Voltage Switching Relay Packs is specifically designed for fan coil control applications. They can be used both for new or retrofit applications. In retrofit applications, they can re-use the existing wires between the old line voltage switching thermostat and the fan coil thus saving on the installation of any new wires. Stand-alone and network operation are available.

The VTR73XX Series Fan Coil Terminal Equipment Controller features a backlit LCD display with dedicated function menu buttons 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 Terminal Equipment Controllers. All models feature configurable System and Fan button functions to meet all possible applications The VTR73XX Terminal Equipment Controllers are powered and communicate with the associated VC3000 Series Transformer Relay Pack(s) using only 3 wires.

VTR73x5X Lodging   *VTR73x0X Commercial*

2 types of interfaces for the user can be ordered. The VC73x5 models are typically used for hotel and lodging applications where the middle button of the interface is for the user to select the local displayed scale in ºF or ºC. The VC73x0 models are typically used for commercial and institution applications where the middle button of the interface is defined for the local unoccupied override function.

The VTR73XX Terminal Equipment Controllers are also compatible with the new Viconics PIR cover accessories. Terminal Equipment Controllers 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 Terminal Equipment Controllers can be ordered with or without a factory installed PIR cover (see ordering notes below).

The compatible VC3000 Series Line Voltage Switching Transformer Relay Pack(s) operate as slave unit(s) under the control of a single master VTR73XX Terminal Equipment Controller. A single VTR73XX Terminal Equipment Controller can control up to 10 VC3000 Series Relay Pack. The VC3000 Series Relay Packs are line-powered units. They locally contain all the relay outputs for fan switching and valve control. Models are also available for extra monitoring / control inputs of the Fan Coil Units.

The additional following documents are available at: www.viconics.com

- PIR Hospitality application information and examples, are available on document: *APP-HOSPITALITY-PIR-VTR73-Guide-Exx*
- HVAC Fan Coil application information and examples, are available on document: *APP-VTR7300-PIR-Exx*
- Information on installation of the Transformer Relay Pack (VC3000E), is available on document *LIT-VC3000-Exx*
- PIR cover installation information is available on document: *PIR Cover Installation-Exx*
- Information on the BACnet models (VTR73xxX5x00B), is available on document *ITG-VTR73-PIR-BAC-Exx*
- Information on the Wireless models (VTR3xxX5x00W), is available on documents: I*TG-VWG-40-BAC-Exx* and *MAN Wireless Stat Driver Guide-Exx*

VTR73XXA models available

Viconics part number	VTR7300A5x00(x)	VTR7350A5x00(x)	VTR7305A5x00(x)	VTR7355A5x00(x)
Primary market User interface definition	Commercial and institution applications		Hotels and lodging applications	
On board %RH sensor For dehumidification strategy	None	Yes	None	Yes

Ordering Information Notes:

The **(X)** at the end of the model number represents available communication options:

• **X = none** for Stand-alone	• **X = B** for BACnet MS-TP	• **X = W** for Wireless

The Terminal Equipment Controllers can be ordered with a factory installed PIR cover. Please use (5500) extension instead of the (5000) only extension. The Terminal Equipment Controllers ordered without a PIR cover can be retrofitted with a separate PIR accessory cover afterwards if required.

Ordering examples:

- A VTR7305AW5500B is for a wall mounted Terminal Equipment Controller with a hotel / lodging interface with a factory mounted PIR cover and an MS-TP BACnet communication interface.
- A VTR7350A5000W is for a wall mounted Terminal Equipment Controller with a commercial / institution interface and a wireless communication interface. The Terminal Equipment Controller can be retrofitted with a separate PIR accessory cover afterwards if required.

Operation overview

The VC3xxxX Series Line Voltage Switching Transformer Relay Pack(s) operate as slave unit(s) under the control of a single master VTR73xxA Terminal Equipment Controller.

Fan operation can be configured and wired for the following:
- o 3 Speed configuration using 3 fan relays (Low – Med - High)
- o 2 Speed configuration using 2 fan relays (Low - High)
- o 3 Speed configuration with Auto fan speed mode using 3 fan relays (Low – Med - High)
- o 2 Speed configuration with Auto fan speed mode using 2 fan relays (Low - High)
- o Single fan speed configuration.

The VTR7300 Controller can be configured for typical 2 or 4 pipe heating / cooling FCU applications.

2 or 4 pipe only operation can be configured and wired for the following:
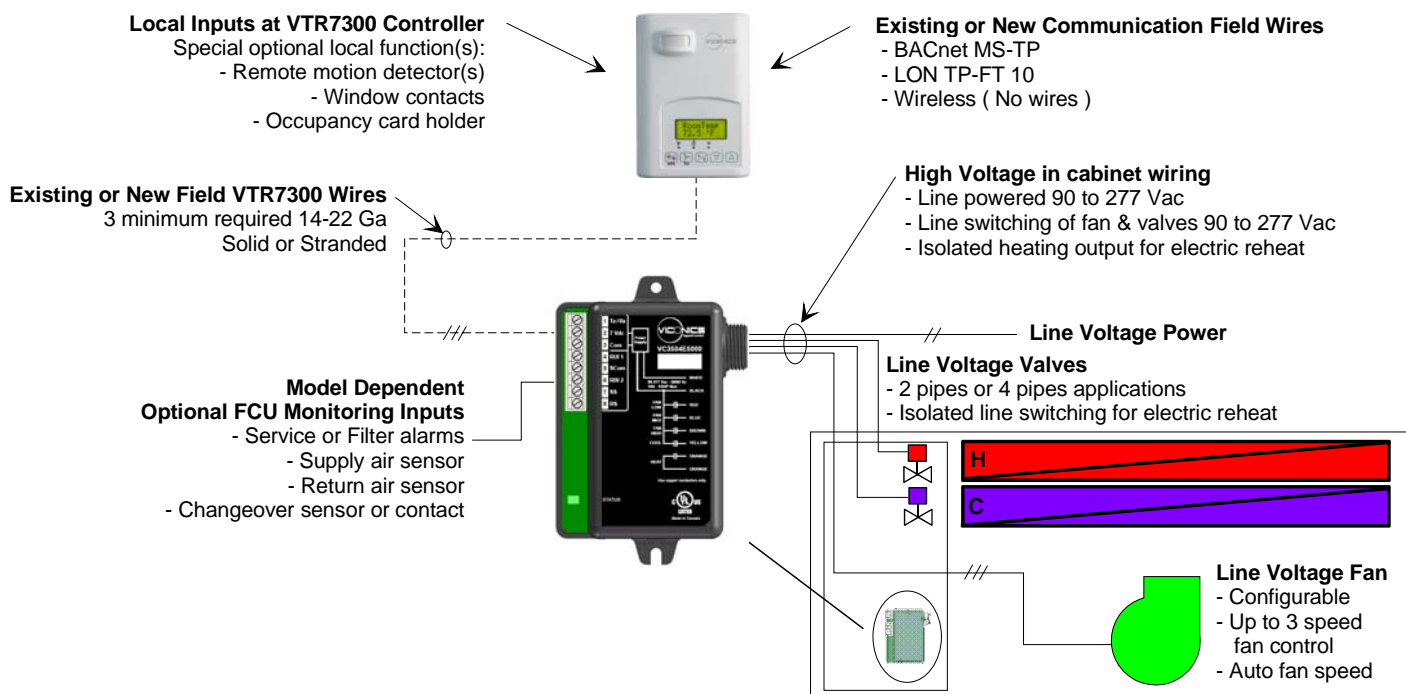- o Cooling only
- o Heating only
- o Cooling / Heating with network or local auto changeover

2 or 4 pipe only with electric reheat can be configured and wired for the following:
- o Cooling only
- o Heating only
- o Cooling / Heating with network or local auto changeover
- o On-Off electric reheat only
- o Cooling with On-Off or modulating Vdc pulsed electric reheat (model dependent)
- o Heating with On-Off or modulating Vdc pulsed electric reheat (model dependent)
- o Cooling / Heating with network or local changeover with On-Off or modulating Vdc pulsed electric reheat (model dependent)

- The VC3xxxX Relay Pack supplies power to the wall VTR73xxA Terminal Equipment Controller.

- The VTR73xxA Controller operates the VC3xxxX Relay Pack(s) via a simple communication bus.

- A maximum of 10 VC3xxxX Relay Pack can be used under a single VTR73xxA Terminal Equipment Controller.

- 3 wires minimum are required between the VTR73xxA Controller and *the first* VR7300 Relay Pack.

- The 3 wire functions are as follow:
    - o 1 Tx / Rx Communication
    - o 2 Power Hot 7.0 Vdc 4 Watts maximum (required for the VTR73xxA Controller power)
    - o 3 Power common

- Commands for fan speed and valve operation are issued from the VTR73xxA Terminal Equipment Controller to the VC3xxxX Relay Pack(s)

Typical one to one set-up

Local Inputs at VTR7300 Controller
Special optional local function(s):
- Remote motion detector(s)
- Window contacts
- Occupancy card holder

Existing or New Communication Field Wires
- BACnet MS-TP
- LON TP-FT 10
- Wireless (No wires)

Existing or New Field VTR7300 Wires
3 minimum required 14-22 Ga
Solid or Stranded

High Voltage in cabinet wiring
- Line powered 90 to 277 Vac
- Line switching of fan & valves 90 to 277 Vac
- Isolated heating output for electric reheat

Model Dependent Optional FCU Monitoring Inputs
- Service or Filter alarms
- Supply air sensor
- Return air sensor
- Changeover sensor or contact

Line Voltage Power

Line Voltage Valves
- 2 pipes or 4 pipes applications
- Isolated line switching for electric reheat

Line Voltage Fan
- Configurable
- Up to 3 speed fan control
- Auto fan speed

H

C

Configurable BI, RBI, UI, RUI inputs overview ————

BI1, 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

BI2, 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

RUI1, Remote universal input #1 on VC3xxxX can be configured for the following functions:

3. **(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

4. **(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

3. **(COC/NH) Change over dry contact. Normally Heat:** Used for hot / cold water change over switching in 2 pipe systems.
   - Contact closed = Cold water present
   - Contact opened = Hot water present

   Only used and valid if system is setup as 2 pipes. Parameter (Pipe No) set as 2 pipes.

4. **(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.

5. **(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 temperature is > 77 °F = Hot water present
   - If temperature is < 75 °F = Cold water present

RBI2, Remote binary input #2 on VC3xxxX can be configured for the following functions:

1. **(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

2. **(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

VTR73xxA Terminal Equipment Controller Installation

Remove security screw on the bottom of Terminal Equipment Controller cover.
- Open up by pulling on the bottom side of Terminal Equipment Controller.
- Remove Assembly and remove wiring terminals from sticker. **(Fig. 3)**
- Please note the FCC ID and IC label installed in the cover upon removal of cover for the wireless products.

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 Terminal Equipment Controller.

B)   **Installation:**
1. Swing open the Terminal Equipment Controller 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.
9. 1Strip each wire 1/4 inch.
10. Insert each wire according to wiring diagram.
11. Gently push back into hole excess wring **(Fig. 5)**
12. Re-Install wiring terminals in correct location. **(Fig. 5)**
13. Reinstall the cover (top side first) and gently push back extra wire length into the hole in the wall.
14. Install security screw.

- ⚠️ ʝ an old Terminal Equipment Controller, label the wires before removal of the old Terminal Equipment Controller.
- Electronic controls are static sensitive devices. Discharge yourself properly before manipulation and installing the Terminal Equipment Controller.
- Short circuit or wrong wiring may permanently damage the Terminal Equipment Controller or the equipment.
- All VTR73xxA series Terminal Equipment Controllers 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.
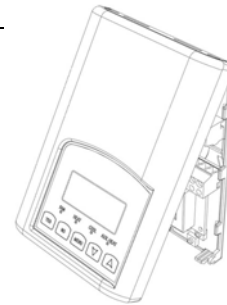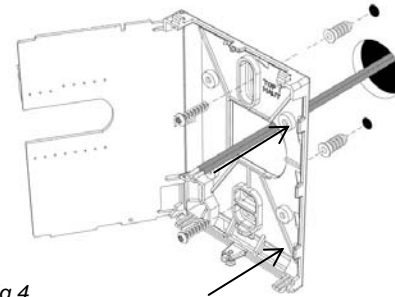

Fig.3

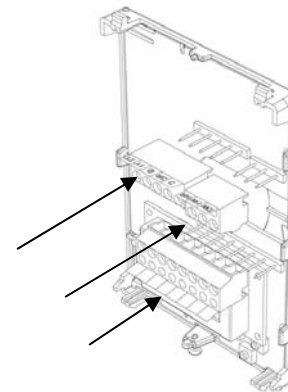Location of PCB retaining tabs

Fig.4

Re-install terminal blocks

Fig.5

Thermostat assembly
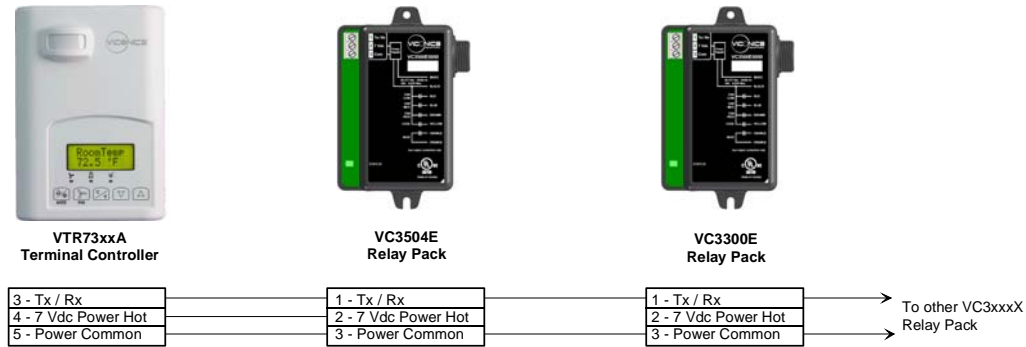(VTR7350F5000W shown)

Fig.6

VTR73xxA Terminal Equipment Controller Terminal Identification and Function

Terminal Identification	All VTR73xxA5x00(X) Terminal Equipment Controller
Terminal 3	Tx – Rx Communication
Terminal 4	Power Hot 7.0 Vdc
Terminal 5	Power Common
Terminal 13	BI 1 (Configurable)
Terminal 14	Scom
Terminal 15	BI 2 (Configurable)

VTR73xxA Terminal Equipment Controller Power & Communication Wiring to VC3xxxX Relay Pack

| VTR73xxA Terminal Controller | VC3504E Relay Pack | VC3300E Relay Pack |

3 - Tx / Rx	1 - Tx / Rx	1 - Tx / Rx
4 - 7 Vdc Power Hot	2 - 7 Vdc Power Hot	2 - 7 Vdc Power Hot
5 - Power Common	3 - Power Common	3 - Power Common

To other VC3xxxX Relay Pack

Only **ONE** VC3xxxX Relay Pack with remote monitoring inputs can be used under a single VTR73xxA Controller. All other slave units must me either VC3xxxX Relay Pack(s) **WITHOUT** remote inputs. A maximum of **10** VC3xxxX Relay Packs can be used for a single VTR73xxA Terminal Equipment Controller.
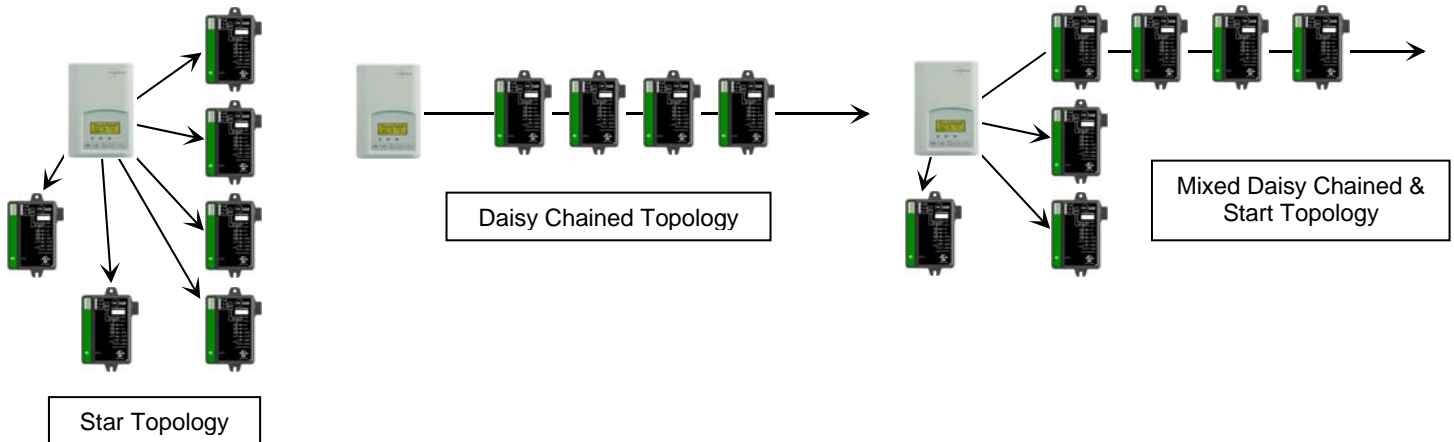
From the VTR73xxA Terminal Equipment Controller to the first VC3xxxX Relay Pack
  o Existing or new field wires
  o 3 minimum required 14-22 Ga Solid or Stranded. Shield not necessary.

From the first VC3xxxX Relay Pack connected to the controller to all other VC3xxxX Relay Pack(s)
  o Existing or new field wires
  o 2 minimum required 14-22 Ga Solid or Stranded. Shield not necessary.
  o Connect only 1 Power Common & 2 Tx-Rx Communication

The VTR7300 to VC3000 Transformer Relay Pack can use ANY network wiring topology as either required, being more practical or based on availability and topology of existing wires.

Star Topology

Daisy Chained Topology

Mixed Daisy Chained & Start Topology

Wiring of Local Inputs to VTR73xxA Terminal Equipment Controller

VTR73xxA Terminal Controller

Local BI 1 Input by configuration:
- None (monitoring only
- Remote motion detector: Motion NO or Motion
- Remote Night Setback:
- Window contact: Window

Local BI 2 Input by configuration:
- None (monitoring only
- Door contact: DoorDry

| 13 - BI 1 |
| 14 - Scom |
| 15 - BI 2 |

Programming and status display instructions ─────────────────────

<u>**Status display**</u>

The VTR73xxA 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 *If humidity display enabled*	Sys mode Auto	Occupied	Outdoor x.x °C or°F	Service
	Sys mode Cool	Stand-By	Network value only	Filter
RoomTemp x.x °C or °F *If humidity display is not enabled*	Sys mode heat	Unoccup		Window
	Sys mode off	Override		Low Batt

% RH display is conditional to:
(Humidity display is model and configuration dependent)
- Model with RH sensor built in
- Display function can be enabled with RH display parameter. Displayed range is 10 to 90 % RH

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 backlit 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 Terminal Equipment Controller has cancelled any cooling or heating action (BI1)
Low Batt	Indicates that attached wireless switching devices (Door or window contact) have a low battery condition. Only functional when used with a wireless communication adapter

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

Fan coil models
- When any of the fan speeds are ON, the FAN LED will illuminate.

- When heating & reheat is ON, the HEAT LED will illuminate.

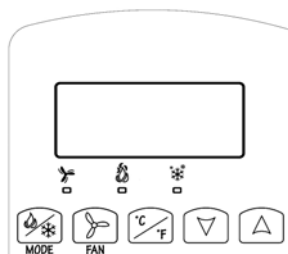- When cooling is ON, the COOL LED will illuminate.
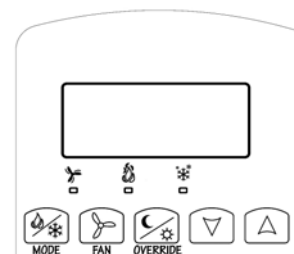
Fig.11 – Hotel models °C/°F   *Fig. 12 Commercial models with Override*

User interface

- **Unoccupied mode Override**

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

- **Local Keypad interface**

System	Is used to toggle between the different system mode available as per sequence and menu selected Pressing repetitively the button will toggle between all the available modes Available menus are dependent on selected sequence of operation
Fan	Is used to toggle between the different fan mode available as per sequence and menu selected Pressing repetitively the button will toggle between all the available modes Available menus are dependent on selected sequence of operation and menu selected for Fan
°C/°F Override	❖ Middle key is • °C / °F for Hotel models • Override for commercial models
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)

- 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)

- **Local Setpoint Adjustment** when "Stp Func" = *Dual Stp* (Dual Occupied Setpoints Adjustment)

Occupied setpoint 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. • If the other setpoint is the one desired, then the MODE button is used to toggle between the current displayed one and the other.
Cool XX.X °F or °C	Heat XX.X °F or °C	No access to setpoint	Cool XX.X °F or °C or Heat XX.X °F or °C **Toggle to (Heat or Cool)with MODE button**

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

- **Local Setpoint Adjustment** when "Stp Func" = *AttchStp* (Single Occupied SetpointAdjustment)

Occupied setpoint 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 setpoint are changed simultaneously while respecting the minimum configured deadband • If the other setpoint is the one desired, then the MODE button is used to toggle between the current displayed one and the other.
Cool XX.X °F or °C	Heat XX.X °F or °C	No access to setpoint	Cool XX.X °F or °C and Heat XX.X °F or °C **Both heating & cooling setpoints are change simultaneously** **Toggle to (Heat or Cool)with MODE button**

- **Unoccupied and Stand-By setpoints adjustments**

Setting 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 sequence of operation selected
  - **Default mode** is in **bold** when sequence of operation parameter is changed

AutoMode set to **On = Auto system mode active.**

Sequence selected	Mode Menu
0 = Cooling Only	Off - **Cool**
1 = Heating Only	Off - **Heat**
2 = Cooling / Heating Cooling With Electric Reheat	Off – **Auto** – Heat – Cool
3 = Heating With Electric Reheat	Off - Heat
4 = Electric Reheat Only	Off – Heat

AutoMode set to **Off = Auto system mode NOT active.**

Sequence selected	Mode Menu
0 = Cooling Only	Off - **Cool**
1 = Heating Only	Off - **Heat**
2 = Cooling / Heating Cooling With Electric Reheat	Off – **Heat** – Cool
3 = Heating With Electric Reheat	Off - **Heat**
4 = Electric Reheat Only	Off – **Heat**

- **Available fan button menu sequences.**

Fan button menu configuration	Menu presented are dependent on model used and sequence of operation selected	Default value when sequence toggled
0 Low-Med-High	**3** Speed configuration using 3 fan relays (L-M-H)	High
1 Low-High	**2** Speed configuration using 2 fan relays (L-H)	High
2 Low-Med-High-Auto	**3** Speed configuration with **Auto** fan speed mode using 3 fan relays (L-M-H)	High
3 Low-High-Auto	**2** Speed configuration with **Auto** fan speed mode using 2 fan relays (L-H)	High
4 On-Auto	**Single** Speed configuration. Auto is for Fan on demand / On is On all the time	Auto

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

Auto Speed Fan Mode operation for sequences 2 and 3 is dependent on Auto Fan parameter. When **Auto Fan** is set to:
- AS (Default) = **Auto Speed** during occupied periods. Fan is always on during occupied periods. Low, medium and high speeds operate on temperature offset from setpoint.
- AS AD = **Auto Speed / Auto Demand** during occupied periods.
  - Medium and high speeds operate on temperature offset from setpoint.
  - Low speed operates on demand and will shut down when no demand is present

Installer configuration parameter menu
Configuration can be done through the network or locally at the Terminal Equipment Controller.
- To enter configuration, press and hold the middle button (°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. A wrong password entered 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 listed parameter is now displayed

Configuration interface

Fan	Re-starts the configuration parameter list at the beginning
°C/°F 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

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 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. Range is: 0 to 1000
Com Addr Terminal Equipment Controller networking address Default value = **254** **Range is:** 0 to 254	**Conditional parameter to BACnet MS-TP models VTR73xxX5x00B** **Conditional parameter to Wireless models VTR73xxX5x00W** • For BACnet MS-TP models valid range to use is from 1 to 127. Default value of 254 disables BACnet communication for the Terminal Equipment Controller. • For wireless models valid range is 0 to 254 with a maximum of 30 Terminal Equipment Controller per VWG
PAN ID Personal Area Network Identification Default value = 0 **Range is:** 0 to 1000	**Conditional parameter to Wireless models VTR73xxX5x00W** This parameter will only appear when a wireless network adapter is present. If the Terminal Equipment Controller is installed as a stand-alone 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 at 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: - PAN ID 1 in association with Channel 26 is reserved for remote wireless switching device configuration only - 2 to 500 for applications using the VWG or a Jace with the wireless stat driver - 501 to 1000 for stand-alone applications where no VWG or Jace with the wireless stat driver is used. Stand-Alone applications
Channel Channel selection Default value = 10 **Range is:** 10 to 26	**Conditional parameter to Wireless models VTR73xxX5x00W** This parameter will only appear when a wireless network adapter is present. If the Terminal Equipment Controller is installed as a stand-alone 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 at the gateway and the Terminal Equipment Controller(s). *Viconics recommends using only the 2 last channels (25-2575MHz and 26-2580MHz)* The default value of 10 is *NOT* a valid channel. The valid range of available channel is from 11 to 26 PAN ID 1 in association with Channel 26 is reserved for remote wireless switching device configuration only

Get From Terminal Equipment Controller Get From another device configuration utility Default value = **0** **Range is:** 0 to 254	**Conditional parameter to Wireless models VTR73xxX5x00W** Entering a MAC address enables an automatic routine that automatically fetches all the required configuration property of the current device from another one already configured to the same required property values. If another value 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 controller MAC address. Ex.: If you are currently configuring MAC12 and that the settings **match 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 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
	
	(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.
	    • Contact opened = Window Opened
	    • Contact closed = Window Closed

BI 2
Binary input no.2 configuration
Default value = **None**
	(None): No function will be associated with the input. Input can be used for remote network monitoring.
	
	(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

RUI 1 Remote Universal input no.1 configuration **Default value =** None	**(None):** No function will be associated with the input. Input can be used for remote network monitoring. **(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 **(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
RBI 2 Remote Binary input no.2 configuration Default value = **None**	**(None):** No function will be associated with the input. Input can be used for remote network monitoring. **(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
MenuScro **Menu scroll** Default value = **On =** Scroll active	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**
AutoMode Enables **Auto** menu for Mode button Default value = **On**	Enables Auto function for the mode button For sequences 2, 4 & 5 only • **On = Auto active** (Off-Cool-Heat-Auto) • **Off = auto not active** (Off-Cool-Heat)

C or F Sets scale of the Terminal Equipment Controller Default value = **°F**	• **°F** for Fahrenheit scale • **°C** for Celsius scale On hotel models, this sets the default value when the Terminal Equipment Controller powers up

%RH disp **Local %RH Display** Default value = **OFF** Models with Humidity sensor only	**Conditional parameter to Humidity models VTR735xX5x00(X)** Enables the display of humidity below the room temperature on the display • **ON** = Display %RH • **OFF** = No display of %RH

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

Level	Occupied temperature setpoints	System mode setting	Fan mode setting	Unoccupied Override
0	Yes access	Yes access	Yes access	Yes access
1	Yes access	Yes access	Yes access	No access
2	Yes access	No access	No access	Yes access
3	Yes access	No access	No access	No access
4	No access	No access	No access	Yes access
5	No access	No access	No access	No access

PulsedHt Enable pulsed electric heat Default Value = **Off**	Enables Vdc modulating pulsed electric reheat applications used with SSR's. Only used with VC340xX Relay Pack models • **Off** = Regular On-Off control for VC350xE models Can be used with 2 pipes & 4 pipes applications • **On** = 10 second pulsed time base modulation for VC340xE models Can only be used with 2 pipes The VC3400E & VC3404E cannot be used for 4 pipes applications

Pipe No System type installation Number of pipes Default is: **4.0** Pipes	Defines the type of system installed **2.0** Pipes**,** will limit the number of sequences of operation available from 0 to 2 Will enable heat/cool operation from the same output **4.0** Pipes, can access all the sequences of operation from 0 to 4 Will enable heat/cool operation from different output

SeqOpera Sequence of operation Default is: **Sequence #1**	Selects the initial sequence of operation required by the installation type and the application

	System = 2 Pipes VR7300A, B C & E Models	**System = 4 Pipes** VR7300A & C Models only
0 = Cooling Only	Yes access	Yes access
1 = Heating Only	Yes access	Yes access
2 = Cooling / Heating *or* Cooling With Electric Reheat	Yes access Cooling With Electric Reheat	Yes access Cooling / Heating
3 = Heating With Electric Reheat	Yes access	No access
4 = Electric Reheat Only	Yes access	No access
	For 2 Pipe output applications, the system access is also limited if RUI 1 is configured for local changeover COS, COC/NC or COC/NC. The current water temperature detected by the RUI 1 then limits the system mode available for the local configuration or network write. For sequence 2 & 3, set PulsedHt to On to enable pulsed electric reheat applications with VR7300B & E	

Fan Menu Mode button menu configuration Default is: **Menu #4**	Menu presented are dependent on model used and sequence of operation selected Auto Mode operation for sequences 2 and 3 is dependent on Auto Fan parameter
0 = Low-Med-High	**3** Speed configuration using 3 fan relays (L-M-H)
1 = Low-High	**2** Speed configuration using 2 fan relays (L-H)
2 = Low-Med-High-Auto	**3** Speed configuration with Auto fan speed mode using 3 fan relays (L-M-H)
3 = Low-High-Auto	**2** Speed configuration with Auto fan speed mode using 2 fan relays (L-H)
4 = On-Auto	**Single** Speed configuration. Auto is for Fan on demand / On is On all the time

DHumiLCK Dehumidification lockout Default value: **On = Authorized**	**Conditional parameter to Humidity models VTR735xX5x00(X)** Typically toggled through the network. This variable enables or disables dehumidification based on central network requirements from the BAS front end • **On =** Dehumidification Authorized • **Off =** Dehumidification Not Authorized
%RH set Dehumidification setpoint Default is **50 % RH**	**Conditional parameter to Humidity models VTR735xX5x00(X)** Used only if dehumidification sequence is enabled: Range is: **30-95% RH**
DehuHyst Dehumidification Hysterisys Default is **5 % RH**	**Conditional parameter to Humidity models VTR735xX5x00(X)** Humidity control hysterisys. Used only if dehumidification sequence is enabled: Range is: **2 to 20% RH**
DehuCool Maximum Dehumidification Cooling output Default is **100 %**	**Conditional parameter to Humidity models VTR735xX5x00(X)** Maximum cooling valve position when dehumidification is enabled. This can be used to balance smaller reheat loads installed in regards to the capacity of the cooling coil. Range is: **20 to 100 %**
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**	Unoccupied heating setpoint range is: **40 to 90 °F (4.5 to 32.0 °C)**
Unocc CL Unoccupied cooling setpoint limit Default value = **80 °F**	Unoccupied 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. **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 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.<table><tr><th>Value</th><th>F scale Pband</th><th>C scale Pband</th></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></table>
Set Type Temporary setpoint enable Default is : **Permnent** Enables temporary setpoints feature to any change of occupied or unoccupied setpoint.	**Temporar**: (temporary) Local changes to the heating or cooling setpoints by the user are temporary. They will remain effective for the duration specified by ToccTime. Setpoints will 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. **Permnent**: (permanent) Any change of occupied or unoccupied setpoints through the keypad by the user are permanent and saved to & EEPROM
SptFunc Local setpoint settings Default value = **Dual Stp**	Set the local setpoint interface for the user • **Dual Stp** (Dual Occupied Setpoints Adjustment) • **AttchStp** (Single Occupied Setpoint Adjustment)
TOccTime Temporary occupancy time Default value = **2 hours**	Temporary occupancy time with occupied mode setpoints when override function is enabled When the Terminal Equipment Controller is in unoccupied mode, function is enabled with either the menu or UI2 configured as remote override input. Range is: **0,1, 2, 3, 4, 5, 6, 7, 8, 9, 10, & up to 24 hours**
deadband Minimum deadband Default value = **2.0 °F (1.0 °C)**	Minimum deadband value between the heating and cooling setpoints. If modified, it will be applied only when any of the setpoints are modified. Range is: **2, 3, 4 or 5 °F, 1.0 °F increments (1.0 to 2.5 °C, 0.5 °C increments)**
cal RS Room temperature sensor calibration Default value = **0.0 °F or °C**	Offset that can be added/subtracted to actual displayed room temperature Range is: **± 5.0 °F, 1.0 °F increments (± 2.5 °C, 0.5 °C increments)**
cal RH Humidity sensor calibration Default value = **0 %RH**	Offset that can be added/subtracted to actual displayed humidity by ± 15.0 %RH. Range is : **± 15.0 %RH**
Auto Fan Auto Fan Function Default value: **AS**	Auto Speed Fan Mode operation for Fan Sequences 2 and 3 **AS** = **Auto Speed** during occupied periods. Fan is always on during occupied periods. **AS AD = Auto Speed / Auto Demand** during occupied periods.

|	
Cool cph Cooling output cycles per hour 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. Range is: **3, 4, 5, 6,7 & 8 C.P.H.**
Heat cph Heating output cycles per hour 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. Range is: **3, 4, 5, 6,7 & 8 C.P.H.**
CoolNoNc Normally open or close device Default value = **NC**	Set's the type of valve used for heating • **NC** = Valve is normally closed when no power is present • **NO** = Valve is normally opened when no power is present
HeatNoNc Normally open or close device Default value = **NC**	Set's the type of valve used for heating • **NC** = Valve is normally closed when no power is present • **NO** = Valve is normally opened when no power is present

VTR73xxA Terminal Equipment Controller Specifications

Terminal Equipment Controller power requirements:	7.0 Vdc +/- 10% 2.4 watts minimum
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
Humidity sensor and calibration:	Single point calibrated bulk polymer type sensor
Humidity sensor precision:	Reading range from 10-90 % R.H. non-condensing 10 to 20% precision is 10% 20% to 80% precision is 5% 80% to 90% precision is 10%
Humidity sensor stability	Less than 1.0 % yearly (typical drift)
Dehumidification setpoint range:	30% to 95% R.H.
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	14 gauge maximum, 22 gauge recommended
Dimensions:	4.94" x 3.38" x 1.13"
Approximate shipping weight:	0.75 lb (0.34 kg)
(PENDING) 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)
(PENDING) 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
(PENDING) 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.

Drawing & Dimensions
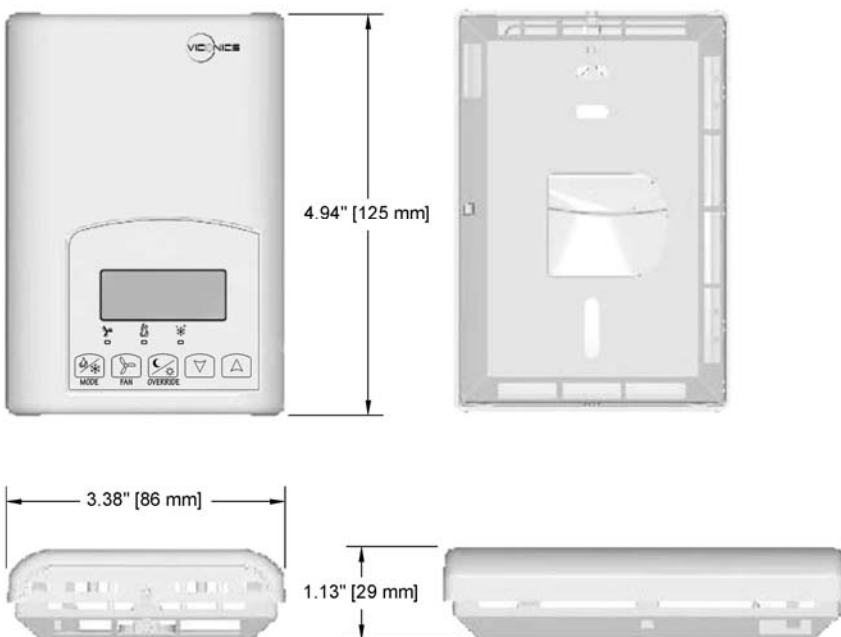
Important Notice

All VTR7300 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.

Fig.13 – Terminal Equipment Controller dimensions