



VT7225 Series
Installation Guide
For Modulating Electric Heat Applications
October 2019

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NOTICE

IMPORTANT NOTICE RELATED TO PRODUCT PART NUMBERS

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

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

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

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

SAFETY INFORMATION

Important Information

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



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



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

DANGER

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

WARNING

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

CAUTION

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

NOTICE

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

Please Note

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

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

BEFORE YOU BEGIN

Loss of Control

WARNING

LOSS OF CONTROL

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

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

California Proposition 65

WARNING

CALIFORNIA PROPOSITION 65

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

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

Electrostatic Discharge

NOTICE

STATIC SENSITIVE COMPONENTS

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

Failure to follow these instructions can result in equipment damage.

Observe the following precautions for handling static-sensitive components:

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

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

Installation

NOTICE

INSTALLATION

- The system must be installed correctly by a qualified technician.
- If replacing an existing Room Controller, label wires before removal of Controller.
- Electronic controls are static sensitive devices. Discharge yourself correctly before manipulating and installing Room Controller.
- A short circuit or wrong wiring may permanently damage Room Controller or equipment.
- All Room Controllers are designed for use as operating controls only and are not safety devices. These instruments have undergone rigorous tests and verification prior to shipping to ensure proper and reliable operation in the field. Whenever a control failure could lead to personal injury and/or loss of property, it becomes the responsibility of the user/installer/electrical system designer to incorporate safety devices (such as relays, flow switch, thermal protections, etc.) and/or an alarm system to protect the entire system against such catastrophic failures. Tampering with the devices or unintended application of the devices will result in a void of warranty.
- This device must be installed to provide a separation distance of at least 8in (20cm) from all persons and must not be located or operating in conjunction with any other antenna or transmitter.
- Refer to the Room Controller User Interface Guide for information on how to configure the Room Controller.

Failure to follow these instructions can result in equipment damage.

Location

NOTICE

LOCATION

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

Failure to follow these instructions can result in equipment damage.

Cleaning the Room Controller

NOTICE

CLEANING THE ROOM CONTROLLER

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

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

FEATURES

- 0 to 10 VDC modulating output
- VDC pulsed modulating output
- VAC pulsed modulating output
- Night setback digital input
- Room or supply control applications

DESCRIPTION

The VT7225 series controllers are microcomputer-based, proportional and integral (PI) devices with one analog 0 to 10 Vdc output, one 8 Vdc and one 24 Vac proportioning pulsed output.

The analog 0 to 10 Vdc modulating output can control the room or supply temperature by modulating directly a 0 to 10 Vdc SCR power controller. The Vdc and Vac pulsed outputs can control the room or supply temperature by modulating directly 4-32 Vdc triggered solid state relays (SSR's) using a time proportioning control algorithm on a 1 second time cycle.

INSTALLATION

Remove security screw on bottom of Room Controller cover.

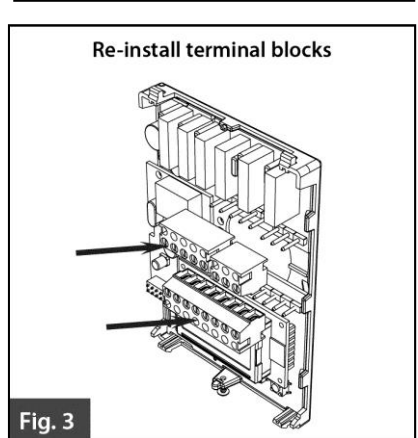
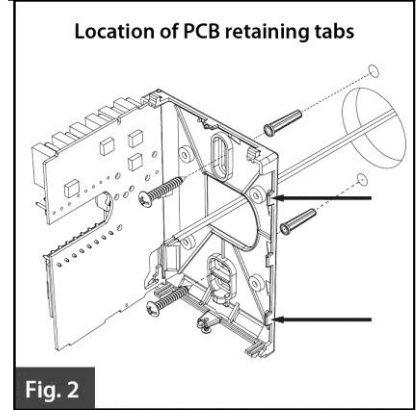
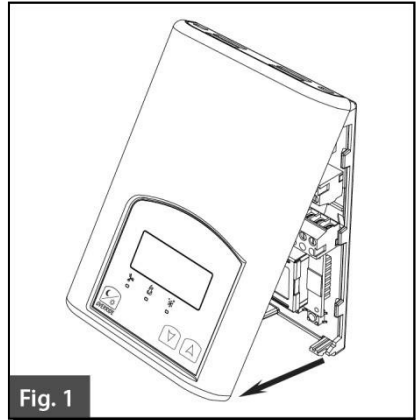
- Open unit by pulling on bottom side of Room Controller (fig. 1).
- Remove wiring terminals from sticker.
- Read FCC ID and IC label installed in the cover.

Location

1. Do not install on outside wall.
2. Do not install in areas exposed to direct heat source.
3. Do not install near an air discharge grill.
4. Do not install in areas exposed to direct sunlight
5. Do not install in areas that restrict vertical air circulation to Room Controller.

Installation

1. Swing open Room Controller PCB to left by pressing PCB locking tabs (fig. 2).
2. Pull out cables 6" out from the wall. Ensure wall surface is flat and clean.
3. Insert cable in central hole of base.
4. Align base and mark location of two mounting holes on wall. Install proper side of base up.
5. Install anchors in wall.
6. Insert screws in mounting holes on each side of base (fig. 2).
7. Gently swing back circuit board on base and push until the tabs lock.
8. Strip each wire 1/4 inch from end.
9. Insert each wire according to wiring diagram.
10. Gently push excess wiring back into hole (fig. 3).
11. Re-Install wiring terminals in their correct locations (fig. 3).
12. Re-install cover (top side first) and gently push extra wire length back into hole in wall.
13. Install security screw.



BI 1

Binary input #1 function:

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

UI 3

Supply air sensor: Used for supply air temperature control.

TERMINAL IDENTIFICATION AND FUNCTION

Pin Number	Pin Identification	Description
4	24 V ~ HOT	Power 24 Vac
5	24 V ~ COM	Common
6		Do not use
7	AUX	24 Vac pulsed output
9	AO 2	0 to 10 Vdc analog output
10	AO 1	8 Vdc pulsed output
12	BI 1	Night setback input
13	RS	Remote sensor
14	S COM	Sensor common
16	UI 3	Supply sensor

OUTPUT TYPES

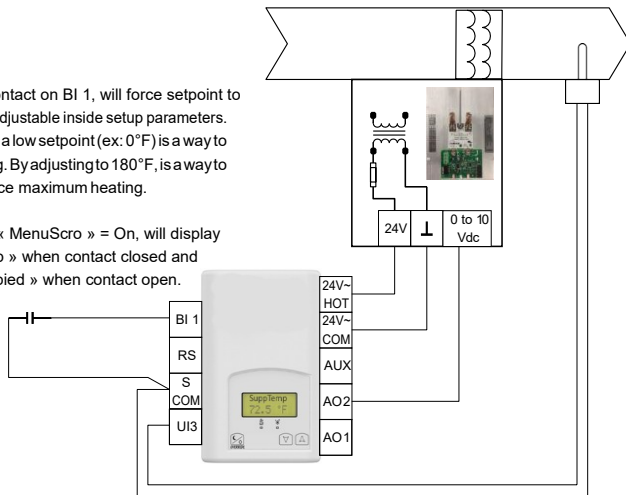
Type of Output	Controlled Device
Modulating analog 0 to 10 Vdc output	SCR's power controls
Vdc pulsed output	4-32 Vdc triggered SSR's
Vac pulsed output	24 Vac triggered SSR's

WIRING

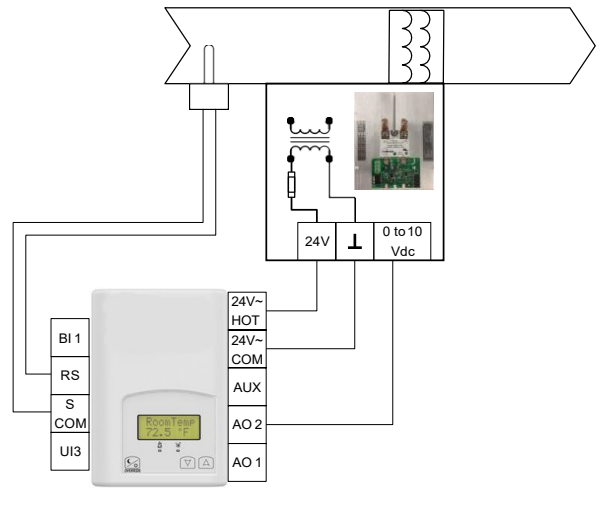
Supply temperature control with 0 to 10Vdc SCR and override input

By closing contact on BI 1, will force setpoint to « Unocc HT » adjustable inside setup parameters.
By adjusting to a low setpoint (ex: 0°F) is a way to disable heating. By adjusting to 180°F, is a way to force maximum heating.

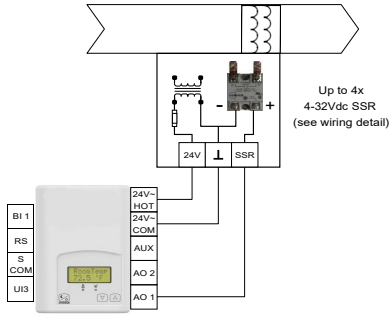
If parameter « MenuScro » = On, will display « Unoccup » when contact closed and « Occupied » when contact open.



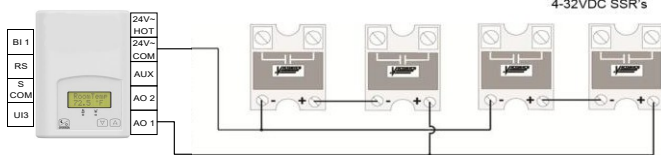
Return temperature control with 0 to 10Vdc SCR



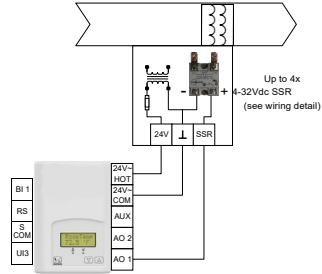
Room temperature control with 4-32Vdc SSR



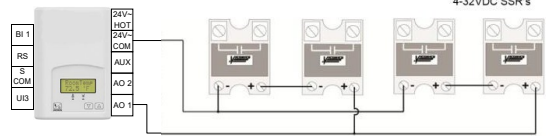
Wiring detail for 4x 4-32 Vdc SSR



Room temperature control with 4-32Vdc SSR

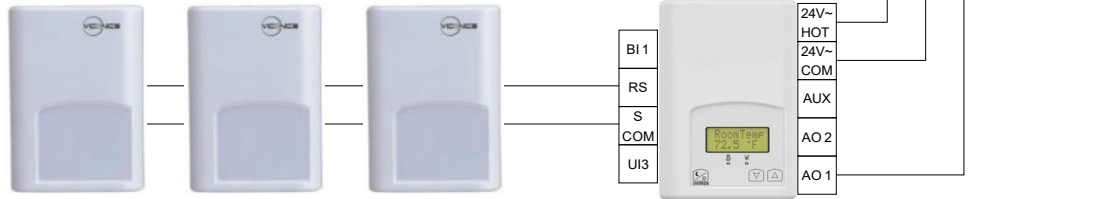


Wiring detail for 4x 4-32 Vdc SSR

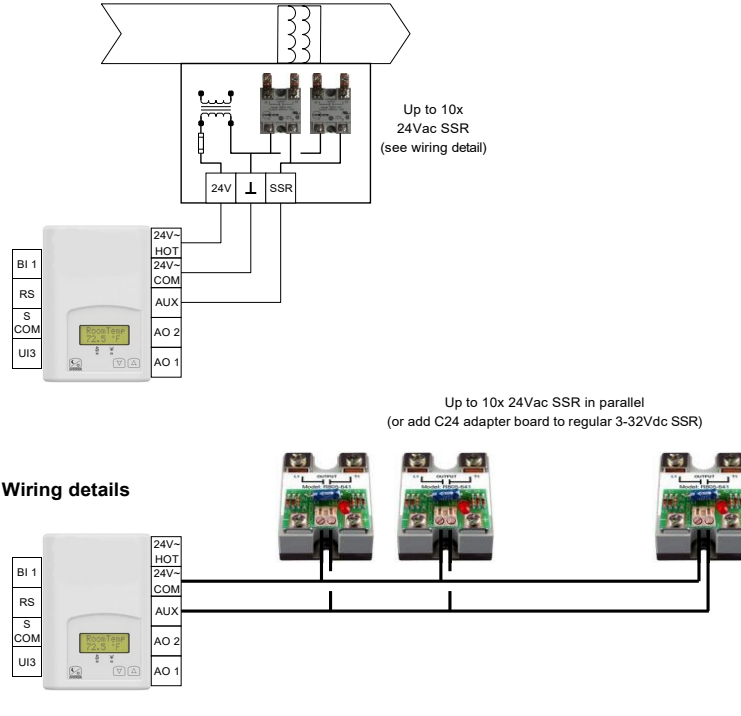


Room remote temperature control with 4-32Vdc SSR





1x, 2x or 3x remote sensors for averaging room temperature reading (see S3010W1000 manual for proper settings)



Room temperature control with 24 Vac SSR



REMOTE SENSOR ACCESSORIES

Model	Description	Application	Picture
S1010E1000	Capsule type sensor for multipurpose use, 1/4" dia. capsule with 65 inch leads	<ul style="list-style-type: none"> • Remote sensing easy to dissimulate for indoor and outdoor use • Water temperature sensing strapped on pipe or in an immersion well 	
S3010W1000	Room sensor	<ul style="list-style-type: none"> • Remote room sensing • 3 thermistors with 2 dip switches are provided with each sensor for various averaging combinations 	
S2000D1000	Duct sensor with junction box	<ul style="list-style-type: none"> • Remote return air temperature sensing with the sensor mounted on the return air duct. • Outside air temperature sensing with the sensor installed in the fresh air plenum. • Supply air temperature sensor 	
S1010D1000	Duct Mounted Change Over Sensor	<ul style="list-style-type: none"> • Supply duct temperature sensor • Return duct temperature sensor • Mounting: Through hole in duct, with eyelet 	

Wall mounted sensor

Temperature vs. resistance chart for 10 Kohm Type II 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	2	68	12.4601	4	104	5.3467
-35	-31	234.4009	-15	5	71.2430	5	41	25.1119	2	77	10.0000	4	113	4.3881
-30	-22	171.3474	-10	14	54.1988	10	50	19.7390	5	86	8.0694	5	122	3.6202
-25	-13	126.6109	-5	23	41.5956	15	59	15.6286	0	95	6.5499	0	131	3.0016
									3			5		
									5			5		

SPECIFICATIONS

Operating Conditions	<ul style="list-style-type: none"> 0°C to 50°C (32°F to 122°F) 0% to 95% R.H. non-condensing
Sensor	Local on board NTC Thermistor
Resolution	± 0.1°C (± 0.2°F)
Control Accuracy	± 0.2°C (± 0.4°F) calibrated
Control Ranges	-17°C to 82°C (0°F to 180°F)
Proportional band for room temperature control	1.8°C (3.2°F)
Proportional band for supply temperature control	28°C (50°F)
Analog 0 to 10 Vdc output	<ul style="list-style-type: none"> 0 to 10 Vdc into 2Kohm resistance min. 5 mA max at 10 Vdc
Vdc pulsed output	20 mA max at 8 Vdc
Power	24 Vac -15%, +10% 50/60 Hz; 2 Va



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