

Unit Ventilator Controller Installation Instructions

Regulatory Compliance

Safety

This device has been tested and found to be in compliance with the requirements set forth in UL 916, Energy Management Equipment, and is listed by Underwriters Laboratories, Inc., for installations in the United States.

This device has been tested and found to be in compliance with the requirements set forth in C22.2, No. 205-M1983, Signal Equipment, and is Certified by Underwriters Laboratories, Inc., for installations in Canada.

Electromagnetic Compatibility (EMC)

Federal Communications Commission (FCC)

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.

NOTE! This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

CAUTION! Any changes or modifications not expressly approved by Novar Controls Corporation could void your authority to operate this equipment.

Industry Canada

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled *Digital Apparatus*, ICES-003, of Industry Canada.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouiller: *Appareils Numériques*, NMB-003, édictée par l'Industrie Canada.

Waste Electrical & Electronic Equipment (WEEE)

Customers are advised to dispose of this product at the end of its useful life according to applicable local laws, regulations, and procedures.

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Description

The Novar Controls Unit Ventilator Controller (UVC) is a dedicated, direct digital control module that provides precise and integrated control of unit ventilator equipment. This Logic One[®] module efficiently controls heating and cooling stages, the fan, and damper operation. The UVC also provides positioning and on/off control signals for a fully integrated temperature control system.

This document provides instructions for mounting the UVC, connecting power, making the appropriate wiring connections, setting the module address, and checking installation.

Specifications

Agency Approvals

Listed device:	CUL/UL E90949
Standards used:	UL 916, Energy Management Equipment CSA C22.2, No. 205-M1983, Signal Equipment

Power Requirements

Voltage:	24 VAC, Class 2
Consumption:	8 VA

Operating Environment

Temperature:	Maximum available temperature 100 F (38 C) Room Temperature (Not intended for outdoor installation)
Humidity:	0 to 99% Relative, noncondensing

Physical Dimensions

Height:	5.5 inches
Width:	8 inches
Depth:	1.875 inches
Weight:	1.75 lb

Precautions

Take the following precautions during installation.

- Observe national and local electrical codes.
 - Observe voltage and current limits marked on the module.
 - Do *not* connect 115 volts to any terminal of the UVC. It is a Class 2 (low voltage) control device.
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Mounting the Unit Ventilator Controller

The UVC is designed to be mounted in the control compartment of the unit ventilator equipment. It must be mounted so that the unit and the mounting hardware do not interfere with proper operation of the unit ventilator.

Use the following procedure and refer to Figure 1, as necessary, to mount the UVC.

Step	Procedure
1	Turn off all power to the unit ventilator before installing the unit.
2	Position the module against the mounting surface of the control compartment and mark the surface to show the location of the four mounting holes.
3	Drill holes for the mounting screws where the mounting surface was marked.
4	Insert and tighten metal screws (not included) to secure the module to the mounting surface.

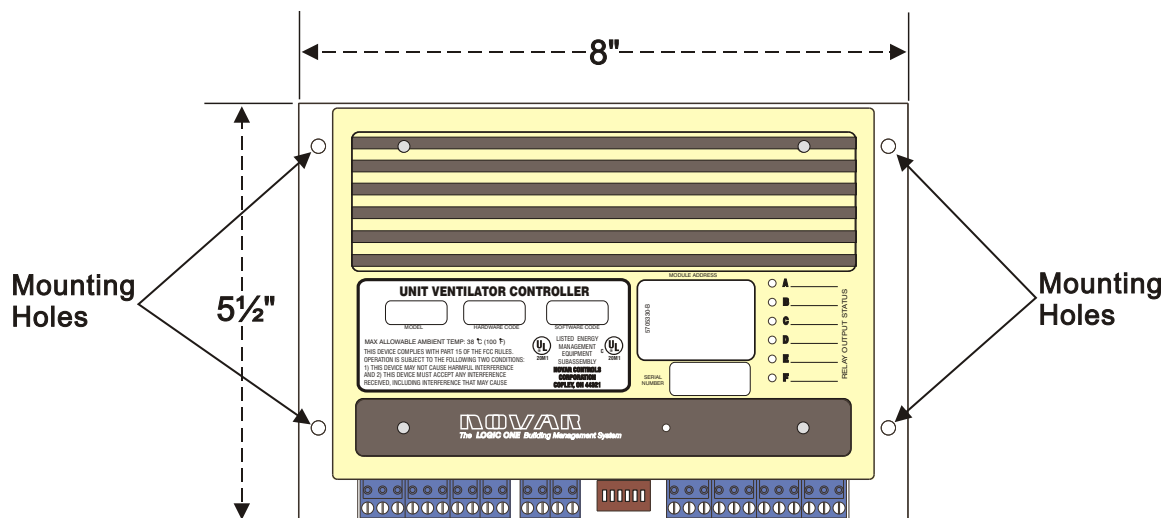


Figure 1. UVC mounting holes

Supplying the UVC with Power

The UVC is powered by 24-VAC and rated at 8 VA. Connect the 24 volts to Terminals 15 and 16 by the label marked Power 24 VAC 8 VA.

NOTE! The 24-VAC power connection is isolated. One transformer can be used to power multiple modules within the restrictions of an 8 VA consumption.

Wiring the UVC's Inputs

The UVC has a removable terminal strip that uses screw connections. The inputs are Terminals 1–10 located at the left side of the terminal strip (see Figure 2).

Auxiliary Potentiometer

Use the following procedure to connect an auxiliary potentiometer to the UVC at the terminals labeled Aux Pot.

Step	Procedure
1	Connect the wiper wire to Terminal 1.
2	Connect the clockwise wire to Terminal 2.
3	Connect the counter-clockwise wire to Terminal 4 labeled Temp Sensor Input. <ul style="list-style-type: none"> ■ This connection allows adjustments to the zone setpoint.

The Novar Controls Futura Temperature Sensor (Model FTS-3A) can be used with the UVC to provide temperature setpoint adjustment.

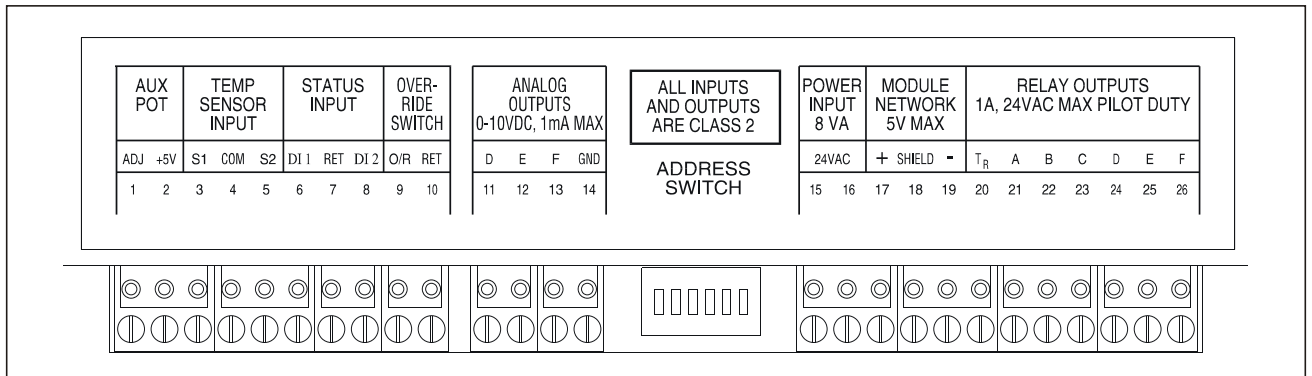


Figure 2. UVC terminal strip

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Temperature Sensor Inputs

Temperature Sensor Input terminals are located at the Temp Sensor Input label. Each UVC must use the Remote Temperature Sensor (RTS-UVC) for discharge air *in addition to* one of the following sensors:

- UVC Wall-Mount Indoor Temperature Sensor (WTS-UVC)
- Futura Temperature Sensor (FTS-3 or FTS-3A) with temperature setpoint adjustment

Installation instructions are provided with the sensors.

Use the following procedure to connect the sensors.

Step	Procedure
1	Connect the Wall Temperature Sensor's plus (+) wire to Terminal 3.
2	Connect the Remote Temperature Sensor's red wire to Terminal 5.
3	Connect the black (–) wire from both sensors to Terminal 4.

NOTE! Maximum recommended sensor wire length for connecting the temperature sensors to the UVC is 100 feet using 22-gage wire (Belden 8761, Novar Controls WIR-1010, or equivalent).

Status Input

Terminals 6, 7, and 8 (Status Input) are for unit ventilator digital input connections. Terminals 6 and 7 are for the fan status and Terminals 7 and 8 are for the dirty filter status. These are dry contact closure, digital inputs and are connected as normally open. The fan status input will close when the fan is on, and the filter status input will close when the filter is dirty.

Override Switch Input

A momentary contact switch with a light-emitting diode (LED) can be connected to Terminals 9 and 10 (Override Switch) to be used as an override indicator. The length of time that the override remains in effect is defined in the software.

The Futura Temperature Sensor provides an override switch and status LED. Installation instructions included with the sensor outline the proper connections.

Wiring the UVC's Outputs

Although there are nine output connections on the terminal strip (three analog and six digital), only *six* can be used on each module. Different UVC models offer specific combinations of these digital and/or analog connections. Their use depends on the UVC model used and the configuration requirements. Table 1 shows the analog and digital output connections of the various UVC models. Figure 2 shows the location of these output terminals on the UVC.

Table 1. UVC Analog & Digital Output Connections					
OUTPUT	CONTROL OPERATION				
	UVC-1	UVC-3	UVC-10	UVC-11	UVC-13
ANALOG OUTPUTS					
Terminal 11 (D)	Damper	Damper		Damper	Damper
Terminal 12 (E)	Heating	Heating			
Terminal 13 (F)		Cooling	Heat/Cool	Heat/Cool	Cooling
DIGITAL (RELAY) OUTPUTS					
Terminal 21 (A)	Fan	Fan	Fan	Fan	Fan
Terminal 22 (B)					
Terminal 23 (C)	Relief Damper	Relief Damper			
Terminal 24 (D)			Damper		
Terminal 25 (E)					Heating
Terminal 26 (F)	Cooling				

Analog Outputs

The analog output terminals are listed under the label Analog Outputs, immediately to the right of the input connections. Terminals 11–13 (D–F) are 0–10 VDC, 1 mA maximum connections. The configuration of the particular UVC model used determines the wiring and operation of these outputs.

Terminal 14 is a ground connection.

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Relay Outputs

The digital relay output terminals are located at the far right side of the terminal strip under the label Relay Outputs. Terminals 21–26 (A–F) are the actual output connections. The wiring and operation of these outputs is determined by the configuration of the UVC model.

The digital relay outputs tie in directly to the six relay output status LEDs located on the case of the UVC. The relay output status LEDs match the status of the relay:

- If the contact is closed, the relay is energized and the LED is on.
- If the contact is open, the relay is de-energized and the LED is off.

Terminal 20 is for one side of a 24-volt source to be regulated (switched) through outputs A through F. The relay outputs are isolated from the other connections to permit the additional power source. The transformer powering the module can be used if it has enough capacity.

Network Communications

A suitable shielded cable (Belden 8761, Novar Controls WIR-1010, or equivalent) must be used to make the communication connections between the UVC and the module communications terminals of the executive module.

On the UVC, the connections are Terminals 17, 18, and 19, located under the label Module Network. Make certain that the plus (+) and minus (–) connections are made correctly.

CAUTION! The Shield connection (Terminal 18) is not a ground like the other common grounds on the terminal strip. It is dedicated for communications only. Do *not* connect any other grounds to Terminal 18.

Setting the Module Address Switches

Every Logic One module must have a unique address for the executive module to identify it. Addresses are assigned in the software during system programming. The system printout shows the address of the UVC being installed.

The address switch is located in the center of the terminal strip (see Figure 2). Set the switches with the correct address from 00 to 63 (see Figure 3).

NOTE! Address 00 may *not* be used by the UVC when operating on an EC. The IOM section of the EC uses address 00.

The Novar Controls Lingo[®] is designed to accept module addresses from 00 to 127 for any type of Logic One module. Address settings 64 through 127 duplicate the sequence of settings shown in Figure 3 (address setting 64 is the same as address setting 00, etc.).

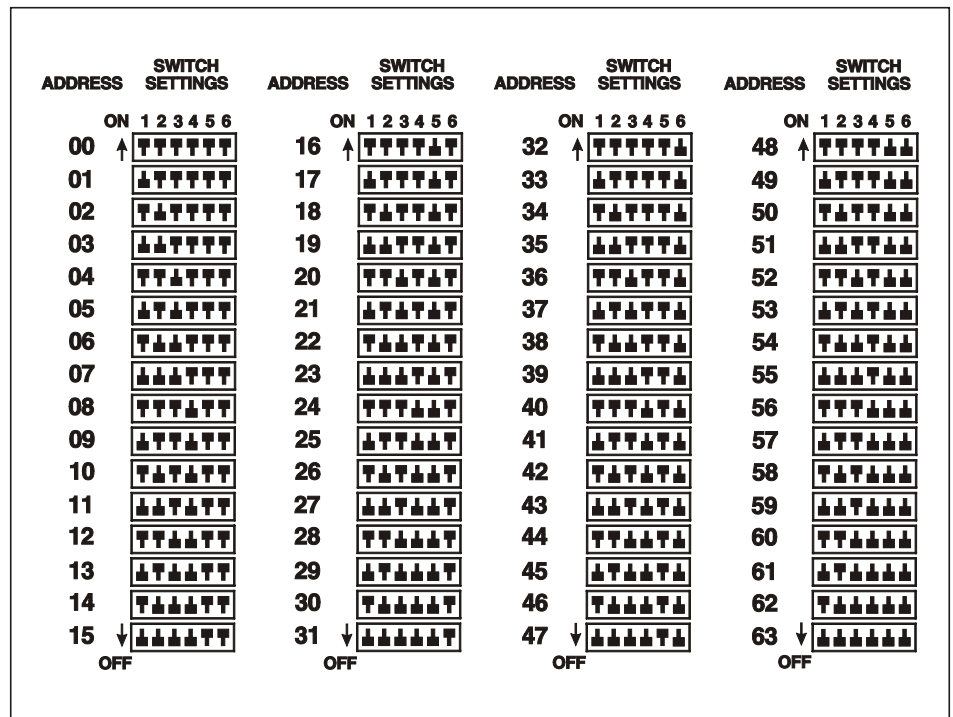


Figure 3. UVC address settings

Checking Installation

When the installation has been completed, check each of the following items to ensure proper operation.

- Turn on the power to the UVC and make sure that power to the unit ventilator and its control circuitry is turned on. If the executive module is operating properly, the UVC begins to control the unit ventilator in about 3 minutes (after performing a self-diagnostic check and establishing communications with the executive module).
 - Check the schedule status indicator LED located on the module's case above the terminal strip. If the module is communicating properly, this LED should be flashing according to the schedule mode.
 - When the UVC is in scheduled off mode, the LED is off and flashes on briefly when communicating.
 - When the UVC is in scheduled on mode, the LED is on and flashes off briefly when communicating.
 - Check the timed override switch if one has been installed and programmed. Press it during a scheduled off mode to check for proper operation. The LED should flash rapidly until the override period ends.
 - Check the six relay output status LEDs. They indicate the status of each active digital output (depending on the UVC model configuration). Verify that the LEDs are lit when the corresponding digital output is on.
 - Monitor the executive module's display during the test procedures. If any faults or malfunctions still exist, they are picked up by the executive module and announced by alarm messages. Change the UVC's setpoints from the executive module's keypad and monitor the status display for proper equipment response.
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Model and Part Numbers

Use the part numbers provided in Table 2 to order the necessary Novar Controls parts.

Table 2. Novar Controls Part Numbers		
PRODUCT	MODEL NO.	PART NO.
<ul style="list-style-type: none"> ■ Unit Ventilator Controller (5 outputs, 6 inputs, digital cooling) 	UVC-1	738001000
<ul style="list-style-type: none"> ■ Unit Ventilator Controller (5 outputs, 6 inputs, modulating cooling) 	UVC-3	738004000
<ul style="list-style-type: none"> ■ Unit Ventilator Controller (2-pipe heating/cooling with digital damper)* 	UVC-10	738010000
<ul style="list-style-type: none"> ■ Unit Ventilator Controller (2-pipe heating/cooling with modulating damper)* 	UVC-11	738011000
<ul style="list-style-type: none"> ■ Unit Ventilator Controller (6 inputs, 4 outputs) 	UVC-13	738012000
Futura Wall-Mount Temperature Sensor, adjustable setpoint	FTS-3A	732401000
Remote Temperature Sensor	RTS-UVC	736003000
Wall-Mount Temperature Sensor	WTS-UVC	736002000
Two-conductor cable (Belden #8761 equivalent)	WIR-1010	709001000
* Requires EP/2 or Savvy® with NCL.		

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