

# ETM-3010 Installation Instructions



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Novar Controls Corporation  
6060 Rockside Woods Blvd., Cleveland, OH 44131  
Tel: 800.348.1235 [www.novarcontrols.com](http://www.novarcontrols.com)

## Description

The ETM-3010 is a direct digital controller that provides multistage HVAC control and uses a remote temperature sensor. It is designed to be used with one of the following Novar Controls Logic One<sup>®</sup> sensors:

- Wall-mount Temperature Sensor (WTS-VAV) designed for use with Novar Controls' ETM-3010 or VAV-4020
- Futura Temperature Sensor (FTS-2 or FTS-2A) with temperature setpoint adjustment).

This document provides instructions for mounting and wiring the module, setting the module address, and checking the installation.

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## Specifications

### Power Requirements

|              |                 |
|--------------|-----------------|
| Voltage:     | 24 VAC, Class 2 |
| Consumption: | 6 VA            |

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### Operating Environment

|              |                                  |
|--------------|----------------------------------|
| Temperature: | 32° to 158° F (0° to 70° C)      |
| Humidity:    | 0 to 99% Relative, noncondensing |

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### Physical Dimensions

|         |             |
|---------|-------------|
| Height: | 6 inches    |
| Width:  | 8.25 inches |
| Depth:  | 2.00 inches |
| Weight: | 1 lb 8 oz   |

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## Precautions

Take the following precautions during installation:

- Observe all national and local electrical codes.
  - Observe voltage and current limits marked on the module.
  - Do *not* exceed 24-VAC at 1 ampere. ETM-3010 outputs are controlled by low voltage triacs (AC switches).
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# ETM-3010 Installation Instructions

## Mounting the ETM-3010

The ETM-3010 can be installed remotely from the space being controlled, but it must be installed in a suitable location. It is *not* intended for outdoor use.

Four screws and, if necessary, four hollow-wall anchors will be needed to mount the module. These are not included with the ETM-3010.

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

| Step | Procedure   |
|------|---|
| 1    | Turn off all power to the HVAC equipment before proceeding with installation.   |
| 2    | Position the module's baseplate against the mounting surface and mark the location of the four mounting holes.  |
| 3    | Drill holes in the locations marked in Step 2 and, if necessary, install hollow-wall anchors.   |
| 4    | Insert a screw in each hole and turn until the screw heads are approximately 1/4 inch from the wall.  |
| 5    | Position the baseplate over the screws, slide it down until the screws slide into the mounting hole slots, and tighten the screws to secure the module. |

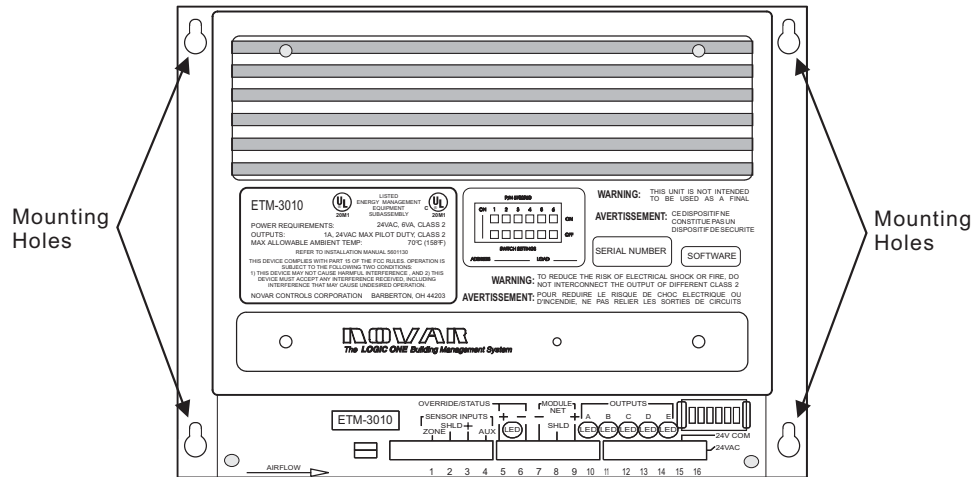
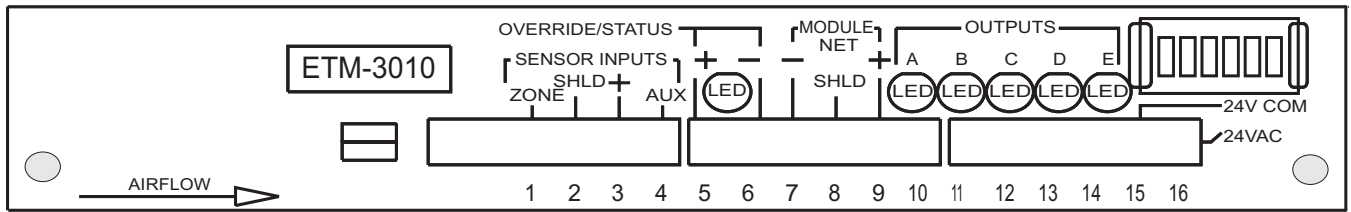


Figure 1. Mounting holes for the ETM-3010

## Wiring the ETM-3010

The ETM-3010 has a terminal strip that uses screw connections. Follow the instructions provided below and refer to Figure 2, as necessary, to make the wiring connections.



**Figure 2.** ETM-3010 terminal strip

**Supplying Power to the Module**

The ETM-3010 uses 24-volt AC power and is rated at 6 VA. Make sure the power source is appropriate before connecting power to the module.

Connect the power to Terminals 15 and 16. The power for the outputs enters the module on Terminal 15 (see Figure 2).

**Control Outputs**

Connect the control wires from the HVAC unit to the terminal strip’s heating, cooling, and fan outputs as indicated in Table 1. The output connections (Terminals 10–14) are labeled A, B, C, D, and E. The power for these circuits enters the module through Terminal 15 (labeled 24-V COM).

| <b>Table 1. ETM-3010 Output Connections</b> |                     |                                |
|---|---------------------|--------------------------------|
| <b>LABEL</b>                                | <b>TERMINAL NO.</b> | <b>DESCRIPTION</b>             |
| A   | 10                  | First Stage Cooling            |
| B   | 11                  | Second Stage Cooling           |
| C   | 12                  | First Stage Heating            |
| D   | 13                  | Second Stage Heating           |
| E   | 14                  | Fan                            |
| 24-V COM                                    | 15                  | Common (24-V power to outputs) |

**Sensor Inputs**

When the sensor inputs are connected to the ETM-3010, sensor polarity must be observed. Detailed sensor installation instructions are shipped with each sensor.

Use a two-conductor, shielded cable (Belden #8761, Novar Controls WIR-1010, or equivalent) to connect the sensors to the ETM-3010.

### Connecting the Wall-Mount Temperature Sensor (WTS-VAV)

Use the following procedure to connect the Wall-Mount Temperature Sensor (WTS-VAV) to the ETM-3010.

| Step | Procedure  |
|------|--|
| 1    | Connect the Zone wire from the ETM's Terminal 1 to the sensor's Zone connection.             |
| 2    | Connect the Shield wire from the ETM's Terminal 2 to the sensor's Shield connection.         |
| 3    | Connect the positive wire from the ETM's Terminal 3 to the sensor's positive (+) connection. |

### Connecting the Futura Temperature Sensor (FTS-2 or FTS-2A)

Use the following procedure to connect the Futura Temperature Sensor (FTS-2 or FTS-2A) to the ETM-3010.

| Step | Procedure  |
|------|--|
| 1    | Connect the ETM's Zone wire (Terminal 1) to the sensor at Terminal 4.            |
| 2    | Connect the ETM's Shield wire (Terminal 2) to the sensor at Terminal 3.          |
| 3    | Connect the ETM's positive (+) wire (Terminal 3) to the sensor at Terminal 8.    |
| 4    | (FTS-2A only) Connect the setpoint adjustment potentiometer to Terminal 4 (Aux). |

The FTS-2 and FTS-2A both feature a status light-emitting diode (LED) and a timed override button. The FTS-2A also offers an optional potentiometer that can be used to reset zone control setpoints  $\pm 3^{\circ}\text{F}$ .

- If neither of these sensors is used and a potentiometer is required, the three potentiometer leads must be wired to Terminals 2, 3, and 4.
- A remote timed override switch can be connected to Terminals 5 and 6.
- A status LED can be wired in parallel with the override switch to Terminals 5 and 6.

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### Network Communications Connections

Use a two-conductor, shielded cable (Belden #8761, Novar Controls WIR-1010, or equivalent) to make the communication connections between the ETM-3010 and the executive module. On the ETM-3010, the connections are made at Terminals 7, 8, and 9. Polarity must be consistent with other Logic One modules.

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**CAUTION!** Do not connect power to these three terminals.

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**Setting the Module Address**

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 configuration shows the address of the ETM-3010 being installed.

Set the switches to the correct address from 00 to 63 (see Figure 3) and record the address on the label provided on the front of the module.

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**NOTE!** The ETM-3010 cannot use address 00 when it operates on an EC. The IOM section of the EC uses address 00.

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| ADDRESS | SWITCH SETTINGS  | ADDRESS | SWITCH SETTINGS  | ADDRESS | SWITCH SETTINGS  | ADDRESS | SWITCH SETTINGS  |
|---------|------------------|---------|------------------|---------|------------------|---------|------------------|
| 00      | ON ↑ 1 2 3 4 5 6 | 16      | ON ↑ 1 2 3 4 5 6 | 32      | ON ↑ 1 2 3 4 5 6 | 48      | ON ↑ 1 2 3 4 5 6 |
| 01      | ↓ 1 2 3 4 5 6    | 17      | ↓ 1 2 3 4 5 6    | 33      | ↓ 1 2 3 4 5 6    | 49      | ↓ 1 2 3 4 5 6    |
| 02      | ↑ 1 2 3 4 5 6    | 18      | ↑ 1 2 3 4 5 6    | 34      | ↑ 1 2 3 4 5 6    | 50      | ↑ 1 2 3 4 5 6    |
| 03      | ↓ 1 2 3 4 5 6    | 19      | ↓ 1 2 3 4 5 6    | 35      | ↓ 1 2 3 4 5 6    | 51      | ↓ 1 2 3 4 5 6    |
| 04      | ↑ 1 2 3 4 5 6    | 20      | ↑ 1 2 3 4 5 6    | 36      | ↑ 1 2 3 4 5 6    | 52      | ↑ 1 2 3 4 5 6    |
| 05      | ↓ 1 2 3 4 5 6    | 21      | ↓ 1 2 3 4 5 6    | 37      | ↓ 1 2 3 4 5 6    | 53      | ↓ 1 2 3 4 5 6    |
| 06      | ↑ 1 2 3 4 5 6    | 22      | ↑ 1 2 3 4 5 6    | 38      | ↑ 1 2 3 4 5 6    | 54      | ↑ 1 2 3 4 5 6    |
| 07      | ↓ 1 2 3 4 5 6    | 23      | ↓ 1 2 3 4 5 6    | 39      | ↓ 1 2 3 4 5 6    | 55      | ↓ 1 2 3 4 5 6    |
| 08      | ↑ 1 2 3 4 5 6    | 24      | ↑ 1 2 3 4 5 6    | 40      | ↑ 1 2 3 4 5 6    | 56      | ↑ 1 2 3 4 5 6    |
| 09      | ↓ 1 2 3 4 5 6    | 25      | ↓ 1 2 3 4 5 6    | 41      | ↓ 1 2 3 4 5 6    | 57      | ↓ 1 2 3 4 5 6    |
| 10      | ↑ 1 2 3 4 5 6    | 26      | ↑ 1 2 3 4 5 6    | 42      | ↑ 1 2 3 4 5 6    | 58      | ↑ 1 2 3 4 5 6    |
| 11      | ↓ 1 2 3 4 5 6    | 27      | ↓ 1 2 3 4 5 6    | 43      | ↓ 1 2 3 4 5 6    | 59      | ↓ 1 2 3 4 5 6    |
| 12      | ↑ 1 2 3 4 5 6    | 28      | ↑ 1 2 3 4 5 6    | 44      | ↑ 1 2 3 4 5 6    | 60      | ↑ 1 2 3 4 5 6    |
| 13      | ↓ 1 2 3 4 5 6    | 29      | ↓ 1 2 3 4 5 6    | 45      | ↓ 1 2 3 4 5 6    | 61      | ↓ 1 2 3 4 5 6    |
| 14      | ↑ 1 2 3 4 5 6    | 30      | ↑ 1 2 3 4 5 6    | 46      | ↑ 1 2 3 4 5 6    | 62      | ↑ 1 2 3 4 5 6    |
| 15      | OFF ↓            | 31      | OFF ↓            | 47      | OFF ↓            | 63      | OFF ↓            |

Figure 3. Setting the ETM-3010 module address

The EP/2 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.). The EP/2 requires a Network Expander to communicate with addresses 64 through 127.

More information about setting addresses 64 through 127 can be found in Novar Controls' *Network Expander Module Installation Instructions* (Doc. No. 560092000). When connecting additional modules to the EP/2, remember not to exceed the 128-input or 128-output limit.

### Checking the Installation

After the ETM-3010 has been mounted and the wiring connections have been completed, the following items should be checked to ensure proper operation.

- Check the wiring connections to make sure they are correct and secure. Make sure polarity has been maintained.
- Turn on the power to the ETM-3010 and to the HVAC system and its control circuitry. The ETM will perform a self-diagnostic check and establish communications with the executive module. If the executive module is operating properly, the ETM-3010 should begin to control the HVAC unit in about 1 minute.
- Make sure the schedule status indicator is flashing to indicate proper communications.
- Check the five output status LEDs. When an output is on, the corresponding indicator is lit.
- If a remote override switch has been installed, press it when the schedule status LED is off. The LED should flash steadily until the override period ends.
- Check the executive module for alarm messages indicating faults or malfunctions.

Use the executive module's keypad to change the ETM's setpoints and monitor the display to determine if the equipment is responding properly.

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### Model Numbers

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

| <b>Table 1. Novar Controls Part Numbers</b>            |                  |                 |
|--|------------------|-----------------|
| <b>PRODUCT</b>   | <b>MODEL NO.</b> | <b>PART NO.</b> |
| Electronic Thermostat Module (ETM-3010)                | ETM-3010         | 732031000       |
| Wall-Mount Temperature Sensor                          | WTS-VAV          | 732019000       |
| Futura Temperature Sensor                              | FTS-2            | 732303000       |
| Futura Temperature Sensor with setpoint adjustment     | FTS-2A           | 732301000       |
| Two-conductor shielded cable (Belden #8761 equivalent) | WIR-1010         | 709001000       |

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