



SuperBus® 2000 Energy Saver Module Installation Instructions

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Product Summary

The SuperBus 2000 Energy Saver Module (ESM) monitors and controls temperatures. By overriding an existing HVAC thermostat, the ESM uses low- and high-temperature limits to save on energy use. With the ESM on, temperature limits determine when heating or air conditioning units are on. When the ESM is off, the HVAC thermostat controls heating and air conditioning units.

For example, if the HVAC thermostat is set at 68°F and the ESM high limit is set to 80°F, the ESM prevents the air conditioner from turning on until the temperature reaches 80°F. ESM limits can be set from 40°F to 90°F.

If temperatures drop below a set freeze temperature (default = 42°F), a temperature sensor monitors and reports a freeze alarm to the panel. If the temperature drops to 45°F (± 6°F), a backup freeze thermostat provides additional protection by activating the furnace.

Note: Depending on the location of the ESM, additional freeze sensors may be required to provide adequate freeze protection.

This device is compatible with GE Security Concord™ and UltraGard™ panels.

SuperBus 2000 vs. SuperBus

SuperBus 2000 panels auto-address module unit numbers. When the panel is powered, a unique device ID number (pre-programmed at factory) is automatically learned by the panel. Potential identical unit number conflicts and the need to manually set DIP switches are eliminated.

Older SuperBus panels can communicate with the ESM by manually setting the module's DIP switches.

SuperBus 2000 Panels

Concord (v2.0-later)

Concord 4

Concord Express (v4)

SuperBus Panels

UltraGard

Concord (v1.0-1.6)

Table 1. ESM Component Descriptions

ESM Component	Function
Backup Freeze Thermostat	Activates furnace when temperatures drop below 45°F (±6°F).
SuperBus 2000 Device ID Number Label	Identifies device ID numbers.
ESM Software Version Label	Identifies installed software versions.
Terminal Strip	Panel and HVAC thermostat connections.
Temperature Sensor	Monitors temperature.
Bus LED	Indicates panel bus communications.
Unit Number DIP Switches	Used to manually set SuperBus unit numbers.

Installation Guidelines

When installing the ESM, consider the following guidelines:

- For Concord and Concord Express (v4) systems, connect up to 16 bus devices to the panel (alphanumeric touchpad, HIM, ESM). For UltraGard systems, connect up to eight bus devices to the panel.
- Assign each bus device a different unit number.
- For Concord systems, use one ESM for each partition; for UltraGard systems, the panel can accommodate one ESM.
- Maximum current draw for the ESM is 30 mA.
- When using panel power to supply bus or hardwired devices, **do not** exceed the panel's total power output. Refer to specific panel *Installation Instructions* for further detail.
- Use four-conductor, 22-gauge or larger diameter stranded wire to connect the ESM to the panel.
- Use two-conductor, 22-gauge or larger diameter stranded wire to connect the ESM to the thermostat.
- Install the ESM on an inside wall next to or as close as possible to the existing thermostat. This helps maintain a minimal temperature difference between the ESM and the thermostat.
- When the ESM is turned on, programmable thermostats that use batteries may lose their programmed settings. Because the ESM relay can interrupt the thermostat's main power, the thermostat may rely on battery power to maintain programmed settings. As a result, the thermostat's battery may need to be replaced more often — depending how often and how long the ESM is turned on.
- Refer to the specific panel *Installation Instructions* for wire length limits.

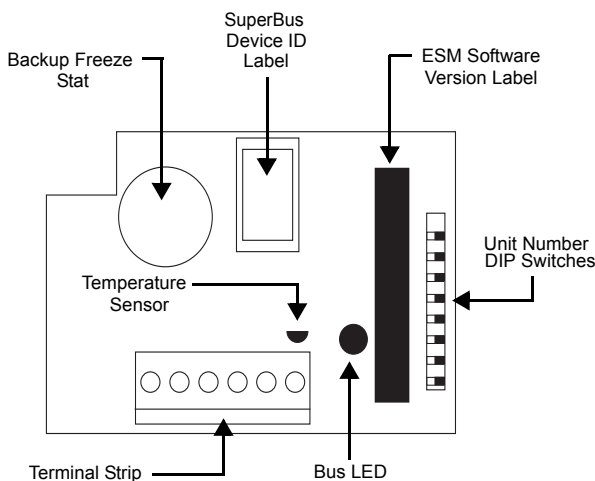
Tools and Supplies

- Screwdrivers (Phillips and slotted)
- Screws and anchors (included)
- Digital voltmeter
- 3/8"-drive drill and drill bits
- Hammer
- Wire cutters/strippers
- Four-conductor, 22-gauge or larger diameter stranded wire
- Two-conductor, 22-gauge or larger diameter stranded wire

Installation

Installation requires you to mount the ESM and wire the module to a panel and an existing HVAC thermostat.

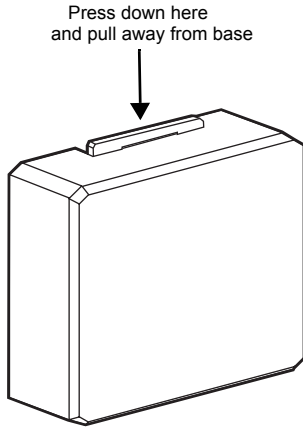
Figure 1. ESM Component Locations



Mounting the ESM

1. Press down on module cover and pull away from base (see Figure 2).

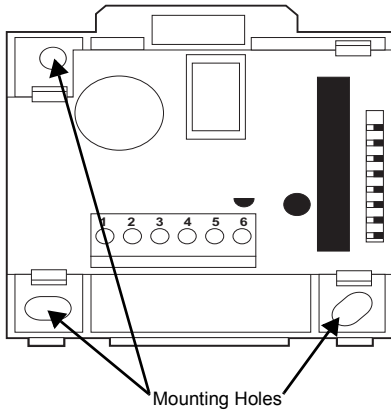
Figure 2. Removing the Module Cover



CAUTION You must be free of static electricity while handling electronic components. Touch a grounded bare metal surface before touching a circuit board.

2. Place the ESM on the wall at the desired location and mark the upper-left and lower mounting holes (see Figure 3).

Figure 3. Module Mounting Hole Locations



3. Install anchors and secure the ESM to the wall.

Wiring

While some thermostats control heating and cooling, others control only heating. A thermostat that controls both heating and cooling uses four wires; a heat-only thermostat typically has two.

Table 2. Four-Wire Thermostat Color Codes

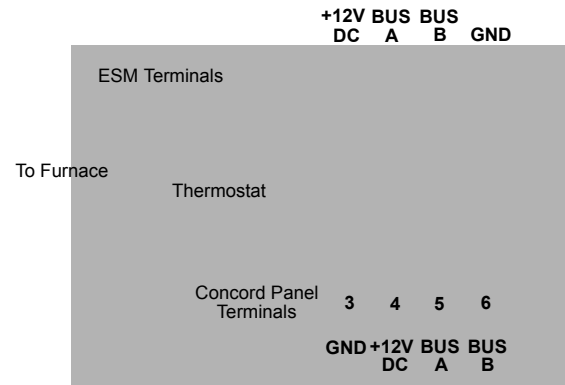
Wire	Function
Red	Power feed to thermostat
Green	Fan control
Yellow	Cooling
White	Heating

Note: If the thermostat wire colors differ from those described, contact a qualified HVAC service person for specific thermostat wiring information. Be sure to give the service person the thermostat's manufacturer name and model number.

Wiring the ESM to a Concord Panel

1. Remove panel AC power and disconnect the backup battery.
2. Turn off the thermostat and remove cover.
3. Route a four-conductor, 22-gauge or larger diameter stranded wire from the ESM to the panel.
4. Connect terminals 3-6 to the panel (see Figure 4).

Figure 4. ESM Wiring Connections to Thermostat and Concord Panel

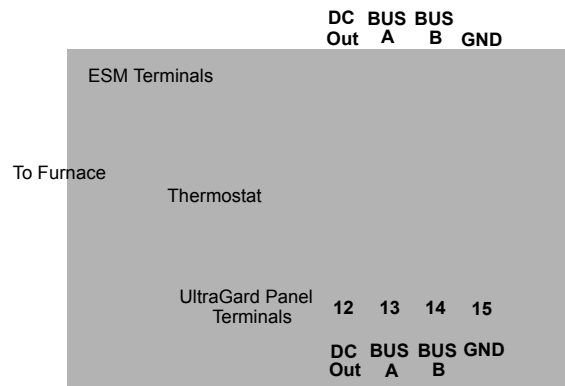


5. Route a two-conductor, 22-gauge or larger diameter stranded wire from the ESM to the thermostat.

Wiring the ESM to an UltraGard Panel

1. Set the panel's power switch to OFF. Next, unplug the AC power transformer and disconnect the backup battery.
2. Turn off the thermostat and remove cover.
3. Route a four-conductor, 22-gauge or larger diameter stranded wire from the ESM to the panel.
4. Connect terminals 3-6 to the panel (see Figure 5).

Figure 5. ESM Wiring Connections to Thermostat and UltraGard Panel



5. Route a two-conductor, 22-gauge or larger diameter stranded wire from the ESM to the thermostat.

Connecting a Four-wire Thermostat

1. On the thermostat, disconnect the red wire (power) and splice it to the wire connected to ESM Terminal 1.
2. Splice the wire from ESM Terminal 2 to the thermostat terminal where the red wire (power) was disconnected.

Connecting a Two-wire Thermostat

1. On the thermostat, disconnect a wire and reconnect it to ESM terminal 1.
2. Connect a wire from ESM terminal 2 to the thermostat where the original wire was disconnected.

Setting a Module Unit Number

Concord (v2.0-later), Concord 4, and Concord Express (v4) Panels

For Concord (v2.0-later), Concord 4, and Concord Express (v4) panels, unit numbers are automatically learned by the panel after the system receives power. If using one module per partition, the panel automatically assigns *each* module a partition number.

Concord (v1.0–1.6) and UltraGard Panels

A module can be set to any unit number (0-15) with the module's DIP switches. If no other bus modules are installed in a system, the default setting (0) can be used.

If using one module per partition, the lower unit number is assigned to Partition 1; the higher unit number is assigned to Partition 2.

Note: Because unit numbers for Concord RF receivers are factory set to 15, do not use this unit number setting.

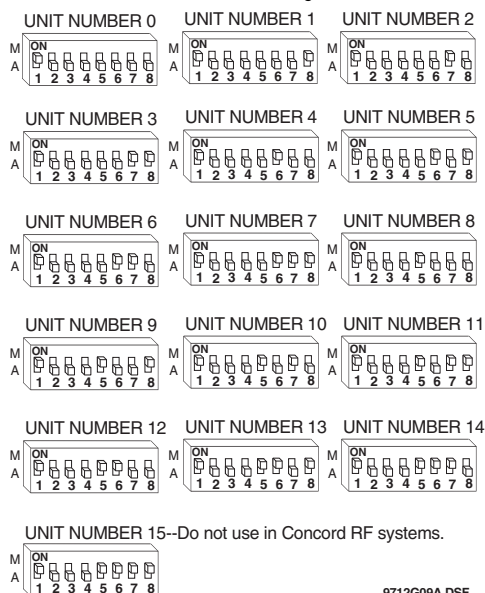
Setting DIP Switches

On the module, locate the DIP switches (see Figure 1). Next, set the desired unit number from 0 to 15 (see Figure 6) *before* turning the power on.

Note: Do not change DIP switch settings after the panel is powered.

- **UltraGard — UNIT NUMBER 0-7**
- **Concord — UNIT NUMBER 0-15**

Figure 6. ESM Unit Number DIP Switch Settings



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Power Up and Bus Communication

When powering the system or verifying bus communications, refer to the following procedures:

For Concord Panels (all versions)

Note: To enter panel program mode and verify unit numbers, an alphanumeric touchpad must be connected to the Concord panel. Refer to the specific panel *Installation Instructions* for more information.

1. Verify all wiring at the panel and module is correct.
2. Connect the panel's backup battery and plug in the AC power transformer.
3. Verify that the ESM LED flashes.
 - If desired, enter panel program mode and verify that unit numbers exist and that the module is in the correct partition (see panel *Installation Instructions* for more information).

Note: If the ESM LED does not flash, disconnect the panel's AC power transformer and backup battery. If you continue to experience problems, refer to Table 3.

For UltraGard Panels

1. Verify all wiring at the panel and module is correct.
2. Connect the panel's backup battery and plug in the AC power transformer.
3. Set the panel's power switch to ON.
4. Set the panel's Run/Program switch to PROGRAM.

If the alphanumeric display reads *1-OFF* and the *1* flashes, you must enter an installer code to place the panel into program mode. Refer to specific panel *Installation Instructions* for more information.

The ESM LED continuously flashes to indicate successful panel communication.

Note: If the ESM LED does not continuously flash, set the Run/Program switch to RUN. Next, set the panel's power switch to OFF and disconnect the AC power transformer and backup battery. If you continue to experience problems, refer to Table 3.

Additional Information

For information on operating, programming, testing, and deleting an ESM, please refer to specific panel *Installation Instructions* or *User's Manual*.

Note: To ensure consistency between an ESM and home thermostat, the ESM must be installed and powered for a minimum of 15 minutes. For best results, wait one hour to adjust the ESM's room temperature setting.

Troubleshooting

If your module does not function properly, refer to Table 3 for a list of troubleshooting solutions.

Table 3. Troubleshooting

Problem	Action/Solution
Bus LED remains off.	<ol style="list-style-type: none"> 1. Check for proper wiring connections. 2. Ensure the panel's AC power transformer is plugged in and the backup battery is connected. For UltraGard panels, ensure the panel's power switch is set to ON. 3. Verify the panel recognizes the ESM and is located in the correct partition. 4. If the LED remains off, replace the module.

Table 3. Troubleshooting (continued)

Problem	Action/Solution
Bus LED fails to flash.	<p><i>Concord</i></p> <ol style="list-style-type: none"> 1. Check for proper wiring connections. 2. Ensure each bus device is set with different unit numbers (v1.0-1.6 only). 3. If the unit number DIP switches are changed, disconnect and reconnect panel power (v1.0-1.6 only). Next, enter the panel's Program Mode and delete the previously assigned ESM unit number (see specific panel <i>Installation Instructions</i> for more information). 4. If the LED fails to flash, replace the module. <p><i>UltraGard</i></p> <ol style="list-style-type: none"> 1. Set the Run/Program switch to RUN and set the panel's power switch to OFF. 2. Check for proper wiring connections. 3. Ensure each bus device is set with different unit numbers. 4. If the unit number DIP switches are changed, turn the panel off and turn on again. Next, enter the panel's program mode and delete the previously assigned ESM unit number (see specific panel <i>Installation Instructions</i> for more information). 5. If the module continues to fail, replace the module.
Temperatures are incorrect OR the wrong furnace/AC unit is under control.	<ol style="list-style-type: none"> 1. Check for proper wiring connections. 2. Verify the module is learned into the proper partition. 3. Ensure the ESM is turned on.

Specifications

Compatibility	Concord, Concord 4, Concord Express (v4), and UltraGard panels
Power Requirements	12V DC; 30 mA maximum (from panel)
Storage Temperature	-30° to 140°F (-34° to 60°C)
Operating Temperature	32° to 140°F (0° to 60°C)
Dimensions	2.60" x 2.60" x 0.90" (L x W x D)
Case Material	ABS Plastic
Installation	Wall Mount
Color	Belgian Gray

Notices

FCC Part 15 Information to the User

Changes or modifications not expressly approved by GE Security can void the user's authority to operate the equipment.

FCC Part 15 Class B

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 interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the affected equipment and the panel receiver to separate outlets, on different branch circuits.
- Consult the dealer or an experienced radio/TV technician for help.