

# **SNOW SWITCH® MODEL SEM-1** AUTOMATIC SNOW/ICE MELTING SYSTEM CONTROL PANEL



Indicator LED	Report
1  SUPPLY	Supply Power from Controller
2  POWER	Power to Sensor 1
3  POWER	Power to Sensor 2
4  SNOW	Sensor 1 indicates snow or ice
5  SNOW	Sensor 2 indicates snow or ice

## DESCRIPTION

Monitor remote weather-event detection sensors for controllers of radiant heat snow and ice management systems with the SEM-1 Sensor Expansion Module. The size of an ordinary light switch, it introduces fuses and conveniently-located activity indicator lights for up to two sensors.

### Why is this helpful?

Properly installed systems place sensors where they'll do the best job at detecting temperature or moisture. Once installed, however, those sensors are likely to be located out of sight. Situated between sensors and controller, the SEM-1 is technology the property manager uses to identify a sensor, to confirm its operation and to note its weather-event activation.

### Operational protection

The SEM-1's three green "POWER" LEDs indicate power is arriving from the heater controller to the SEM-1 (1 in illustration) and is going to each sensor channel (2, 3).

Consider the rare occasion where one sensor of a pair (perhaps a CIT-1 and GIT-1) may not be operating properly. In this situation, the entire system is compromised and both sensors require troubleshooting. Using the SEM-1, if one sensor fails, it is identified and the remainder of the system continues to operate normally while inspection and/ or repairs are made to the troubled unit.

### Are the sensors working?

Each connected sensor has its weather-event activity indicator light, a yellow LED identified as "SNOW" beneath its "POWER" indicator light. ETI heater controllers typically have a single light indicating a snow condition: any sensor may be giving that command. Deciding which one can be challenging. The SEM-1 identifies sensors and their activity even when they are not within the line of sight of their controller.

### Which sensor is which?

The SEM-1 has ample room on the front panel for stickers (included, p/n 24999) or other custom marking to quickly identify which channel goes to which sensor. For example, the lights on the left may be the pavement sensor while the lights on the right are connected to the aerial snow sensor.

### Effective system testing

An internal magnetic switch allows you to simulate a sensor snow event signal. This is helpful for general troubleshooting or verifying the proper operation of a heater controller.

## SENSOR IDENTIFICATION LABELS

The SEM-1 includes a set of six (6) Sensor Identification Labels. Place one on the faceplate beneath the "SNOW" indicator—over the internal magnetic switch—to a connected sensor for quick recognition of the type of sensor connected to that channel. Loosely: the blue snowflake label may be used to indicate an aerial sensor connection; the green tile label, roof or gutter sensor; the red sun label, surface or pavement sensor.

## SAFETY



Make all electrical connections in compliance with the National Electrical Code (NFPA 70) and local electrical code. If you have questions concerning the installation or application, contact Customer Service.



### Abnormal Odor or Smoke

In the event of smoke or a burning or abnormal odor, immediately interrupt power to the unit by disconnecting the unit or by turning off the circuit breaker protecting the unit.

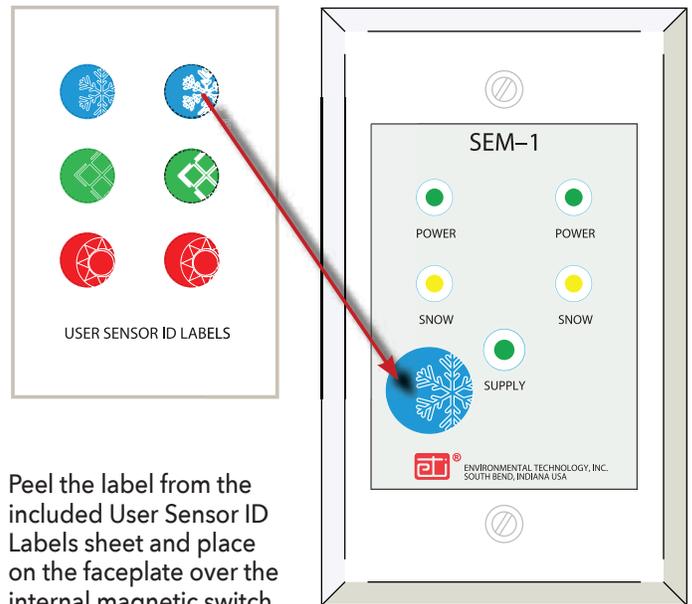


### Electrical Shock / Fire Hazard

Any installation involving electric heater wiring must be grounded to earth to protect against shock and fire hazard. Suitable ground fault detection and interrupting systems must be in use at all times to reduce shock and fire hazard and to protect equipment.

## ADDITIONAL INFORMATION

More information is made available regularly through [networketi.com](http://networketi.com), our website. Please visit us online for data sheets, manuals, White Papers, technical articles and more. The most current version of this and every other manual for our products can be found in Acrobat (PDF) format to view online or to print. This is to assist you in installing and using our products to the best effect possible. Please contact us if you have any comments about this or any other product from ETI



Peel the label from the included User Sensor ID Labels sheet and place on the faceplate over the internal magnetic switch.

## INSTALLATION

### Connections

1. Remove all power. See Safety information.
2. 3-Block Terminal accepts wires from controller (C-Series, EUR-5A, Pro Series) to SEM-1. Red Wire is +24 Volts; White Wire is the signal from sensor/s to controller; Black Wire is ground.
3. 6-Block Terminal is effectively a pair of sensor connection 3-block terminals. The label on the block terminal identifies which sensor is being monitored through which connection ("1" or "2"). Each sensor ("1" or "2") has the same Red, White, Black wire connections as noted above: Red Wire is +24 Volts; White Wire is the signal from sensor(s) to controller; Black Wire is ground. (Note: some Environmental Technology SIT sensors use blue wire instead of white.)
4. On power-up, the three green LED indicators should illuminate. If not, see "Troubleshooting" section. Note: depending on the sensor, its yellow LED on the SEM-1 may illuminate during the sensor's power-up self-test.

## Mounting

Mounting screws are included with the SEM-1 for installation into a user-supplied single-gang box (follow manufacturer's installation instructions).

### Considerations:

- There is a limit on the distance from a controller to the SEM-1 and then to the sensor. The total length from one end of the signal chain to the other should not exceed 1000' using 18 AWG wire or 2000' using 12 AWG wire.
- SEM-1 should be mounted where facility management teams can easily observe status LEDs.
- SEM-1 can be placed wherever an outlet or light switch can be.
- Since the SEM-1 is not specifically weathertight (that is, it is an indoor-use accessory), it likely should be installed next to the control box. However, it may be helpful to have the sensor indication closer to the sensor installation rather than the control box in circumstances where the sensor utility closet is "opposite" the control utility closet.

## MAGNETIC SWITCH

The SEM-1 module includes a pair of internal magnetic reed switches used to simulate weather events for each sensor channel. Placing a magnet to the left or right of the bottom green "SUPPLY" LED activates the circuit which responds by turning on the yellow "SNOW" LED and sending a snow signal to the controller.

### The user:

- quickly taps a magnet externally in front of the switch
- The sensor channel's yellow LED should illuminate
- "HEAT" indicator lamp on controller should illuminate
- If tap is not quick enough, the magnetic switch initiates the controller's manual heater operation.

## TROUBLESHOOTING

The following methods address unlikely situations which may occur.

### No lights

- Turn on power to controller
- Check POWER connection
- RED and BLACK wires from controller may be touching; fuse in controller is blown
- Call ETI

### Two of three green lights lit

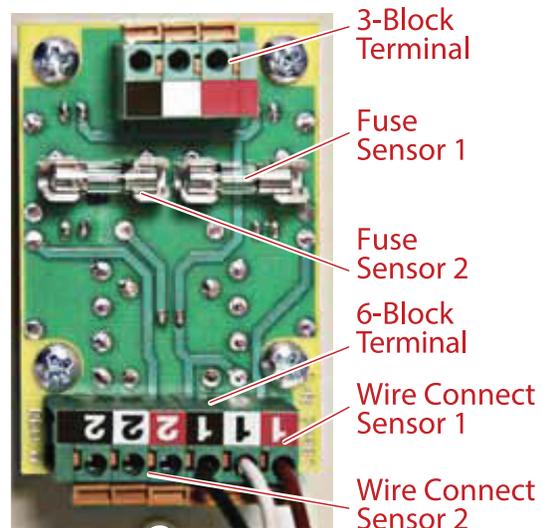
- Check the SEM-1 fuse for the dark indicator's sensor; replace as needed
- If new fuse blows immediately, check for shorts downstream to that channel's sensor
- If not the fuse, call ETI

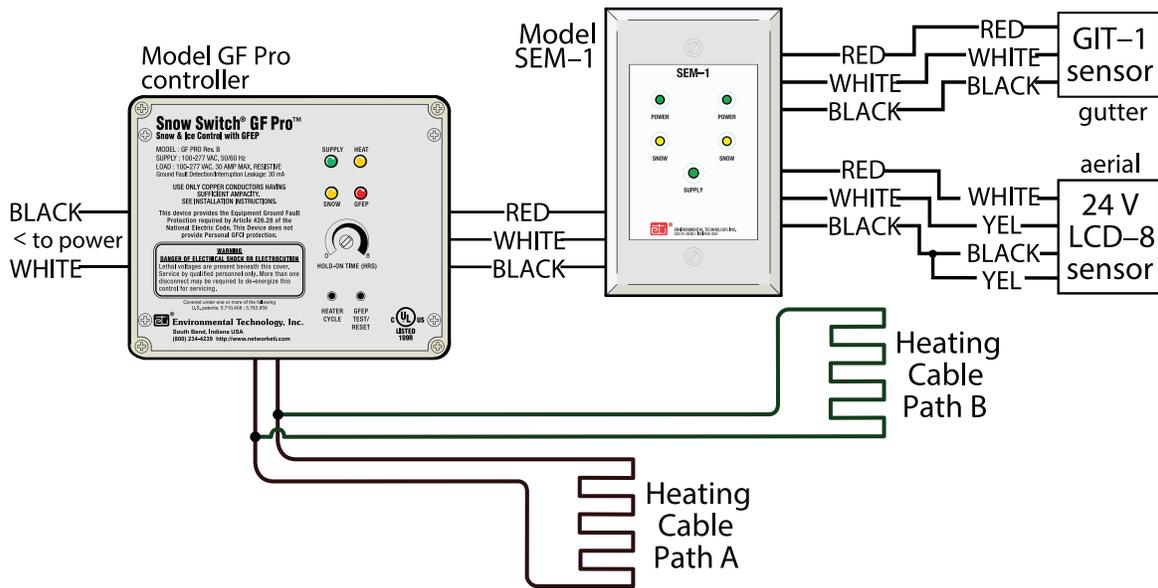
### Green lights lit, but no yellow lights during test

- Try larger/stronger magnet over switch
- Call ETI

## TESTING

Be certain to follow sensor and controller testing protocols to confirm yellow LED indicator lamp illuminates.





## ORDERING INFORMATION

Order#	Description
24991	SEM-1 Sensor Expansion Module

## SPECIFICATION

The SEM-1 operates on 24 VAC supplied from the host control panel. User supplied 3 conductor jacketed cable connects the sensor to the control panel. Use #18 AWG (ETI p/n 11647 or equivalent) for lengths up to 500' (152.4m), #12 AWG for lengths up to 2,000' (609.6m).

## LIMITED WARRANTY

ETI's two year limited warranty covering defects in workmanship and materials applies. Contact Customer Service for complete warranty information.

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