

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

## **SAFETY**

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

## **ADDITIONAL INFORMATION**

More information is regularly made available through our website, [www.networketi.com](http://www.networketi.com). Please visit us online for Data Sheets, Manuals, White Papers, technical articles and more. The most current and up to date 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. If you have any comments about this or any other product from Environmental Technology, Inc., please contact us.

## **CONTACTING ENVIRONMENTAL TECHNOLOGY, INC.**

For assistance, contact Customer Service. Office hours are from 8:00 AM until 5:00 PM ET.

**E-mail:** [info@networketi.com](mailto:info@networketi.com)

**Mail:** ETI  
1850 North Sheridan Street  
South Bend, IN 46628

## **INTRODUCTION**

The Model ES-1 Rain/Snow Interface detects both rain and snow, providing a discrete dry contact closure for each condition. The rain sensor detects the presence of moisture at temperatures above 32°F (0°C). The sensor detects snow as the presence of moisture at temperatures below 38°F (3.3°C). The overlap between 32°F and 38°F is key to controlling snow melting systems during late spring and early fall when snow is possible at temperatures above freezing.

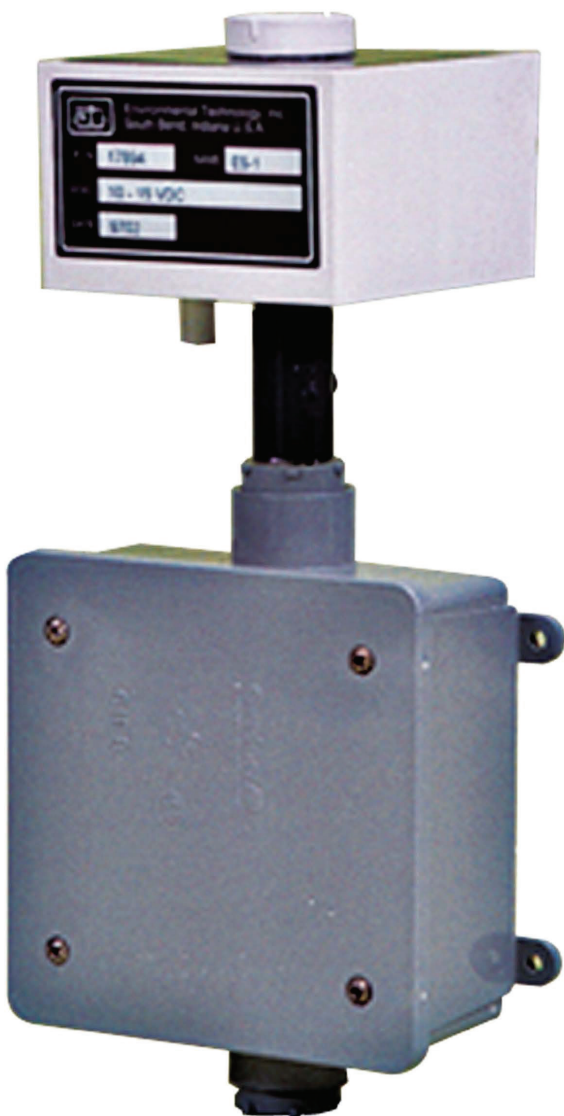
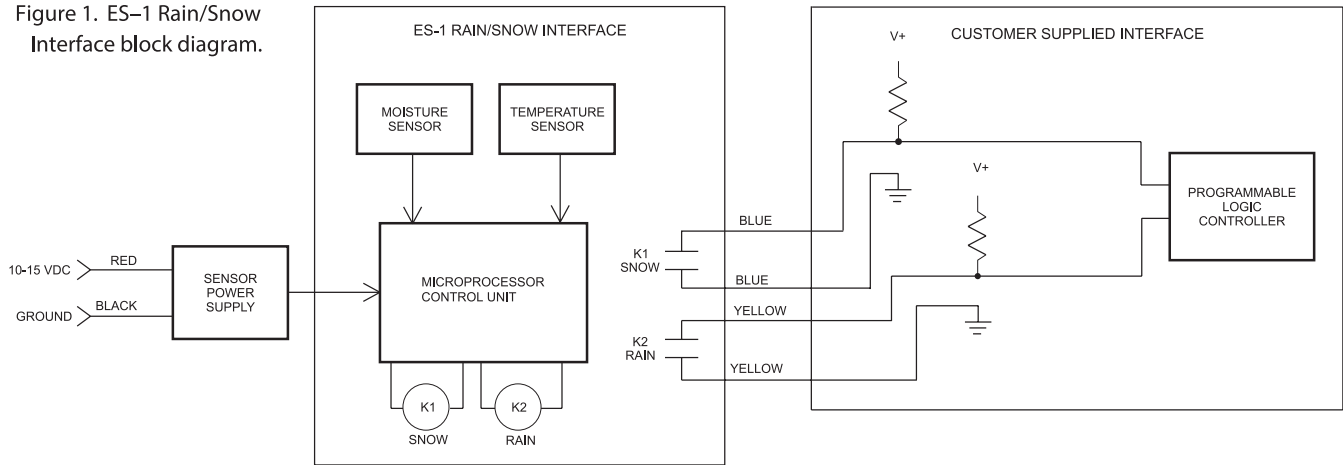


Figure 1. ES-1 Rain/Snow Interface block diagram.



## UNPACKING/PACKING

Immediately inspect the container and packing material for shipping damage. Unpack the ES-1 and related accessories, taking care not to damage the packaging materials. Save the shipping container and related materials until normal operation has been established.

## PACKING LIST

The shipping container should include the following:

| Qty. | Part Number | Description                    |
|------|-------------|--------------------------------|
| 1    | 17894 ES-1  | Rain/Snow Interface            |
| 1    | 18009 NEC   | Class 2 outlet DC power supply |
| 1    | 18007       | Accessory package containing:  |
| 1    | 18008       | Power connector cable          |
| 6    | 15271       | Wire nuts                      |
| 1    | 17914       | Instruction Manual             |

## INITIAL INSPECTION

Contact Customer Service (page 2) if any of the following are found:

- Contents incomplete or incorrect
- Internal or external mechanical damage
- Defective operation

In the event of shipping damage, keep the packing materials for inspection by the carrier. Normally, ETI will repair or replace the ES-1 without waiting for the claims settlement.

## OPERATION

The Model ES-1 Rain/Snow Interface requires a source of 10-15 Vdc. The unit uses a moisture sensor and a temperature sensor as inputs to the microprocessor control unit. Based on these inputs, the microprocessor control unit determines whether it is raining or snowing. Once the determination has been made, the microprocessor control unit will energize/de-energize the snow relay, the rain relay or both.

During the first minute of operation, the moisture sensor and temperature sensor inputs are ignored. This allows the internal heater for the moisture sensor to stabilize. Thereafter, the ES-1 will begin normal operation. The heater evaporates the moisture on the moisture sensor so the main control block can determine when it has stopped raining or snowing. The rain and snow relays will remain closed for at least five minutes.

If the moisture occurs at temperatures above 32°F (0°C), the microprocessor control unit energizes the rain relay. If moisture at temperatures below 38°F (3.3°C), the microprocessor control unit energizes the snow relay. When moisture is present at temperatures between 32°F and 38°F, both relays will operate.

The ES-1 rain/snow interface external signal wires are internally connected to the normally open contacts of the rain relay and snow relay. The rain relay and snow relay are de energized upon power application, and five minutes after the rain or snow conditions no longer exist.

## INSTALLATION

**IF YOU HAVE ANY QUESTIONS ABOUT THIS PRODUCT OR ITS INSTALLATION, CALL CUSTOMER SERVICE. THERE IS NO CHARGE FOR TECHNICAL ASSISTANCE.**

1. Determine the best location for the ES-1 rain/snow interface where it can be mounted in an upright position.

AVOID overhead trees, eaves, etc.

AVOID exposure to artificial heat sources

AVOID locations where falling/blowing debris occurs

2. Size power supply extension wires per the table shown below:

| <u>AWG</u> | <u>L (feet)</u> |
|------------|-----------------|
| 12         | 1388            |
| 14         | 925             |
| 16         | 581             |
| <u>18</u>  | <u>294</u>      |

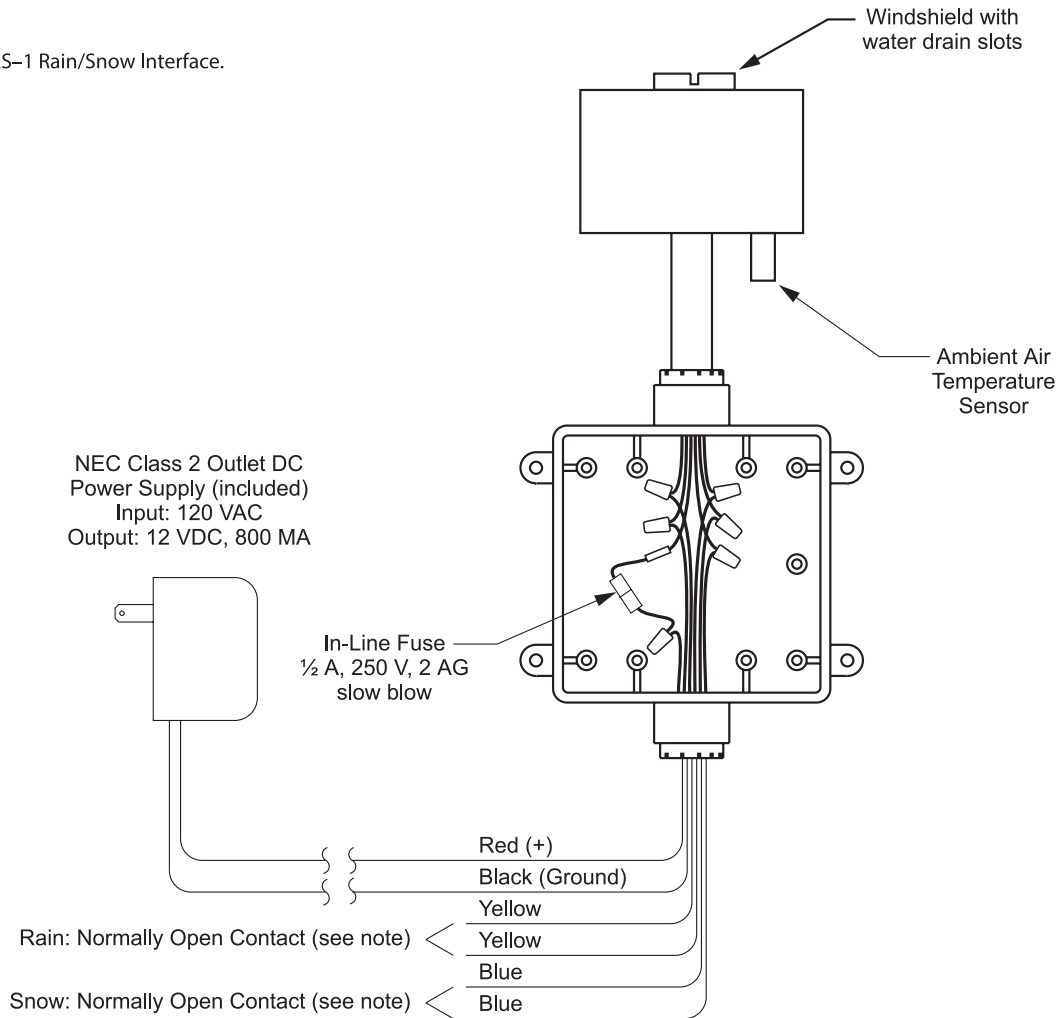
3. Remove the four screws from the junction box cover of the ES-1 rain/snow interface.
4. Remove cover and set aside.
5. Route the power source and signal wires through the ES-1 junction box.
6. Mount the ES-1 rain/snow interface secure in an upright position so it will be subject to direct precipitation. A 1/2" NPT opening is provided on the underside of the junction box to attach rigid conduit.
7. Plumb the ES-1 rain/snow interface to ensure it is level. Make sure the threaded conduit connection at the base of the unit is watertight.
8. Using wire nuts, connect the wires to their appropriate mates (see Figure 2). The ES-1 rain/snow interface wire colors and functions are as follows:  

|              |                                  |
|--------------|----------------------------------|
| RED wire     | DC power source positive         |
| BLACK wire   | DC power source ground           |
| YELLOW wires | Rain normally open relay contact |
| BLUE wires   | Snow normally open relay contact |
9. Reinstall junction box cover and secure with the original four screws.

## INITIAL CHECKOUT

1. Apply power to the ES-1. Wait one minute before proceeding to the next step.
2. Verify the resistance between the yellow wires is greater than 10 mega ohms (rain relay contact open).
3. Verify the resistance between the blue wires is greater than 10 mega ohms (snow relay contact open).
4. Put a few drops of water on the moisture sensing grid.
5. Wait 25 seconds and then verify the resistance between the yellow wires is less than 10 ohms (rain relay contact closed).
6. Verify the resistance between the blue wires is greater than 10 mega ohms (snow relay contact open).
7. Put a few drops of water on the moisture sensing grid.
8. Wait 25 seconds and verify the resistance between the yellow wires is less than 10 ohms (rain relay contact closed).
9. Spray a few short bursts of cool spray on the ambient air temperature sensor to simulate a temperature less than 38°F.
10. Wait 25 seconds and then verify the resistance between the blue wires is less than 10 ohms (snow relay contact closed).
11. Allow moisture sensing grid to evaporate the water and then wait five minutes.
12. Verify the resistance between the yellow wires is greater than 10 mega ohms (rain relay contact open).
13. Verify the resistance between the blue wires is greater than 10 mega ohms (snow relay contact open).

Figure 2. ES-1 Rain/Snow Interface.



Note: Output relays have dry reed contact rated at 0.5 amps, 10 watts max

## 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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