



We Manage Heat

Model ES™-1
Rain/Snow Interface
Part Number 17894

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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.

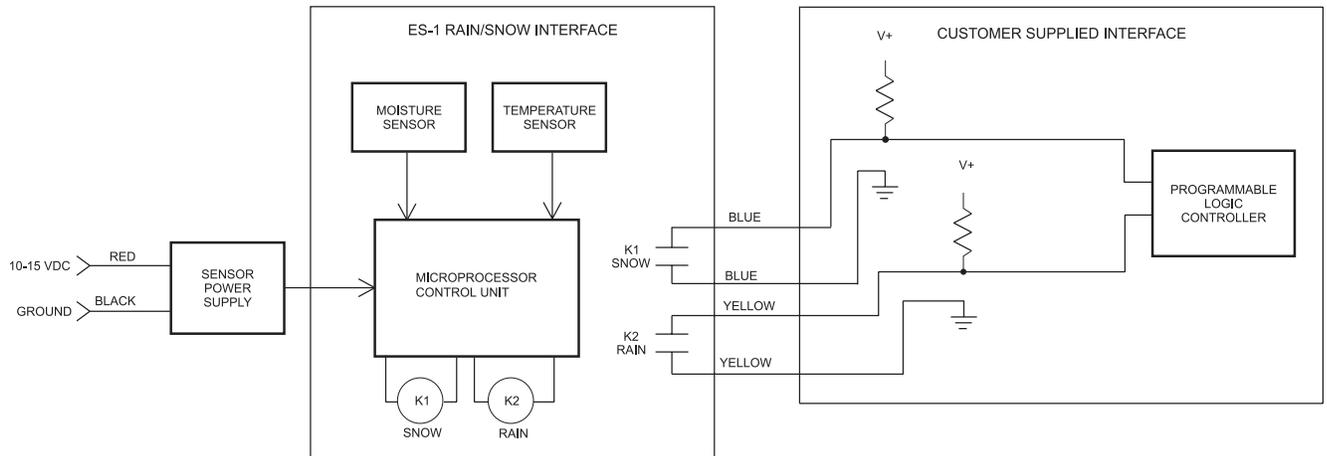


Figure 1. ES–1 Rain/Snow Interface block diagram.

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 either the snow relay or 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.

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.

Inventory 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 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, Environmental Technology, Inc. will repair or replace the ES–1 without waiting for the claims settlement.

Installation

IF YOU HAVE ANY QUESTIONS ABOUT THIS PRODUCT OR ITS INSTALLATION, CALL CUSTOMER SERVICE. THIS 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 or blowing debris occurs

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

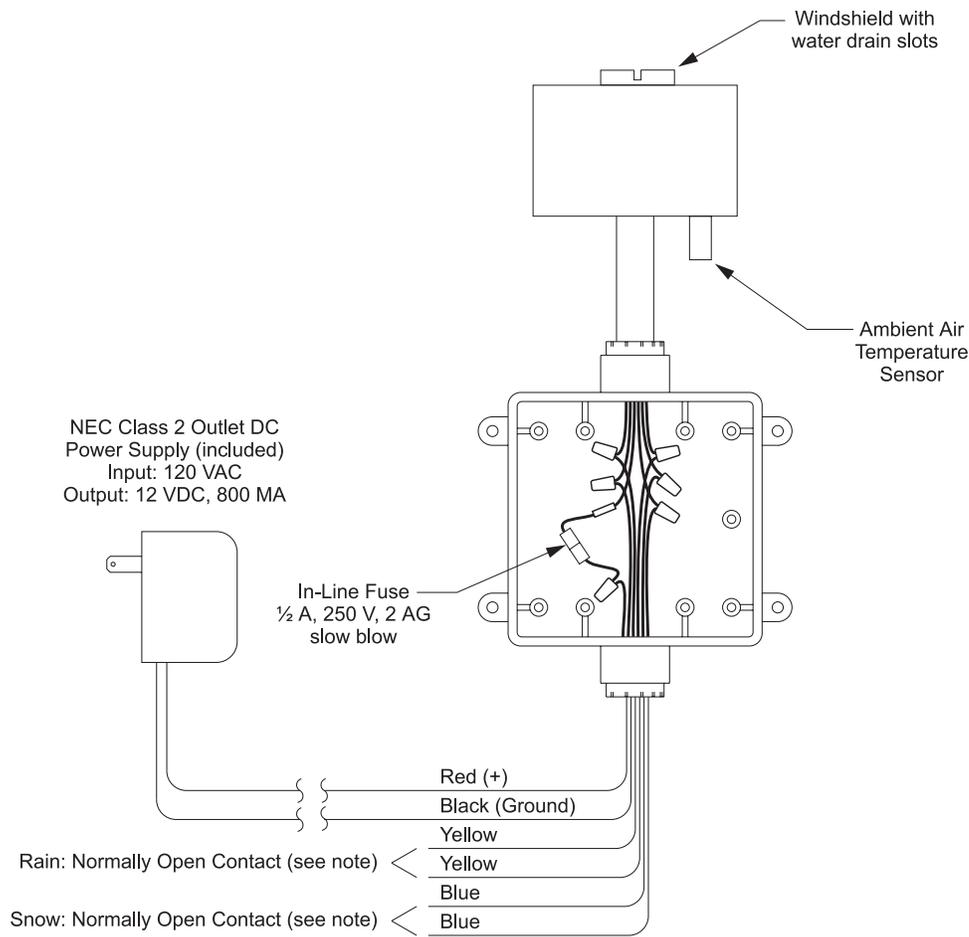
AWG	L (feet)
12	1388
14	925
16	581
18	294

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 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.



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

Figure 2. ES-1 Rain/Snow Interface.

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).

Contacting Customer Service

Office Hours

8:00 AM to 5:00 PM EST

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