



Model HSC[®]–4 Snow Switch[®]

Part Number 20931

Model HSC[®]–5 Snow Switch[®]

Part Number 21070

Installation Manual

Installation

Sensor Housing

Take care in choosing a location for your pavement-mounted sensor. The location should be:

- Centered between runs of hydronic tubing or heater cable.
- Exposed to precipitation and pedestrian or vehicular traffic.
- Away from external heat sources in excess of 185° F. (85° C.).

The HSC–4/HSC–5 sensors can be located up to 2,000 feet (609.6 meters) from the associated system controls. Use 3-conductor #18 AWG jacketed cable for distances up to 500 feet (152.4 meters). Use #12 AWG for greater lengths. Insulate and waterproof all splices.

The sensor plate ships installed in the sensor housing. Before installing the sensor housing remove the sensor plate, placing the sensor plate and the three machine screws where they will not be lost or damaged.

Install the sensor housing on a firm, smooth surface such as a precast patio block or similar masonry module. Care should be exercised in adjusting the final grade and level of the sensor to ensure that the sensor surface will be flush with the finished pavement, and that the adjacent pavement be either level or slightly crowned. A sensor submerged in puddled water will not function properly. To stabilize the final location of the sensor prior to paving, insert lengths of reinforcing rod or similar dowels on opposite sides of the $\frac{3}{4}$ " (20 mm) rigid conduit and secure with iron tie wire.

Use the sheet metal cover supplied with the HSC–4/HSC–5 to protect the sensor housing during paving. The sensor plate should not be installed until after paving is complete and the sheet metal cover is removed. Caulking may be required between the sensor housing and the paved surface.

Conduit

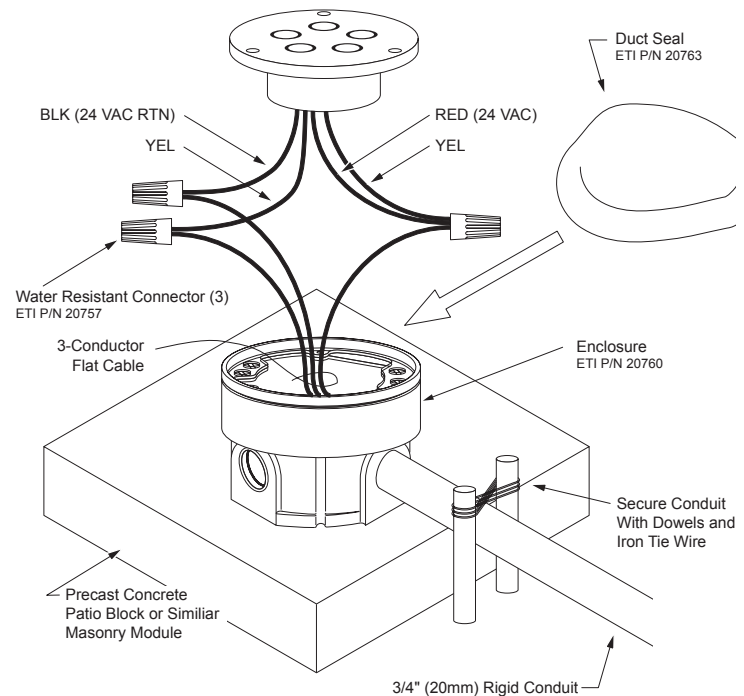
Use individual $\frac{3}{4}$ " (20 mm) rigid conduit for the entire installed length of the sensor cable, taking care to ensure that all embedded or outdoor couplings and terminations are made watertight. Do not share conduit with other wiring. Do not route conduit across pavement expansion or control joints. For sensors embedded in slab on grade, conduit should be depressed under these joints, as necessary.

Wiring

The HSC–4/HSC–5 sensor is furnished with 18"(46 cm) #18 AWG field leads. The unswitched 24 VAC power supply is connected across red and black wires — black being the grounded conductor. Output relay normally-open contact connections are made via the two yellow wires without discrimination. Use the epoxy filled wire nuts supplied.

After wiring the sensor, kneed the supplied duct sealant till pliable. Pack duct sealant into the sensor housing leaving enough space for the sensor electronics and wiring. Properly used, the duct sealant will minimize the accumulation of water and ice in the housing and protect the sensor against possible ice damage.

Next, place wiring and electronics into the housing. Check for alignment between the sensor and pavement surfaces. If the sensor and pavement are not aligned remove the sensor from the housing and adjust the housing flange. The housing flange can be raised up to .63"(16 mm) to allow the sensor surface to be aligned with the pavement surface. A low sensor will pool water and not function properly.



HSC–4/5 Installation Drawing

Testing

Should paving material or other residue be adhered to the sensing elements, clean the surface with a Scotch™ Brite Pad. Do not use metallic or coarse abrasives or detergents.

Thoroughly check the system before placing it in service. Our experience shows that installation errors cause the majority of problems. Frequently encountered problems include wiring errors and improper waterproofing. Simple electrical tests and visual inspections identify these problems.

Independent of weather conditions, the functional operation of an installed HSC-4/HSC-5 sensor may be determined using a digital voltmeter (DVM) and a ten pound (4.54kg) bag of crushed ice, in the following manner:

1. If you do not wish to actually energize the snow/ice melting system as a result of this procedure, disconnect the two yellow sensor wires from the associated control system.
2. With the DVM set the 100 VAC range, verify the sensor supply voltage by connecting the negative (-) test lead to the sensor black wire and the positive (+) test lead to the sensor red wire. A DVM reading between 22 and 28 volts is acceptable.
3. Remove the positive (+) test lead and connect the red sensor wire and one of the yellow sensor wires together.
4. Reconnect the positive (+) test lead to the second sensor yellow wire and confirm there is less than 10VAC is present.
5. Place the entire supply of crushed ice atop the sensor and allow a time lapse in excess of 20 minutes before observing that a DVM reading between 22 and 28 volts is indicated. (A nominal temperature below 38°F (1°C) must be detected before the sensor's normally-open contact is closed. If the sensor surface temperature was excessive prior to commencing this procedure, it will be necessary to extend the cool down time interval by as much as an additional 20 minutes.)
6. With satisfactory results, disconnect the DVM and restore all sensor wiring connections.

You may elect to de-energize the snow/ice melting system heaters at the season's end, however it is suggested the HSC-4/ HSC-5 sensor's 24 VAC power supply be maintained continuously. The heat energy dissipated from the internal heater, although modest, will enhance the long-term reliability of the HSC-4/HSC-5 sensor.

QUESTIONS AND COMMENTS

For technical help, questions or comments concerning this product or any of Environmental Technology, Inc. products contact the Customer Service Department between 8:00am and 5:00pm EST at:

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