

SMS-1 and SMH-1 Snowmelt Sensor and Housing

SUPERSEDES: New

EFFECTIVE: October 28, 2011

Plant ID: 001-4047

Inventory

Part No.	Item Description
SMS-1	SMS-1 Assembly and Accessories (with 60' leads)
SMH-1	SMH-1 Pavement Sensor Housing
502-035	Installation Manual (this document)
	Duct Seal, 1 lb. (inc. with SMS-1)
	Screw, Set, Hex Socket, 3/8-16, 0.25" L (Qty 3) (inc. with SMS-1)
	Screw, Machine, S-BH-SS, #8-32, 0.375 L (Qty. 3) (inc. with SMS-1)
	Hex L-Key, 3/16 (inc. with SMS-1)

NOTE: The SMS-1 Sensor requires Pavement Sensor Housing SMH-1.

Installation

Sensor Housing

Locate the pavement-mounted sensor carefully. The location should be:

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

The SMS-1 sensors can be located up to 2,000 feet (609.6 meters) from the associated system controls. Use 4-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 without 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. Refer to Figure 1. 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

Use the plastic cover supplied with the SMH-1 to protect the sensor housing during paving. The sensor plate should not be installed until after paving is complete and the plastic cover is removed. Caulking may be required between the sensor housing and the paved surface.

Conduit

Use individual 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.

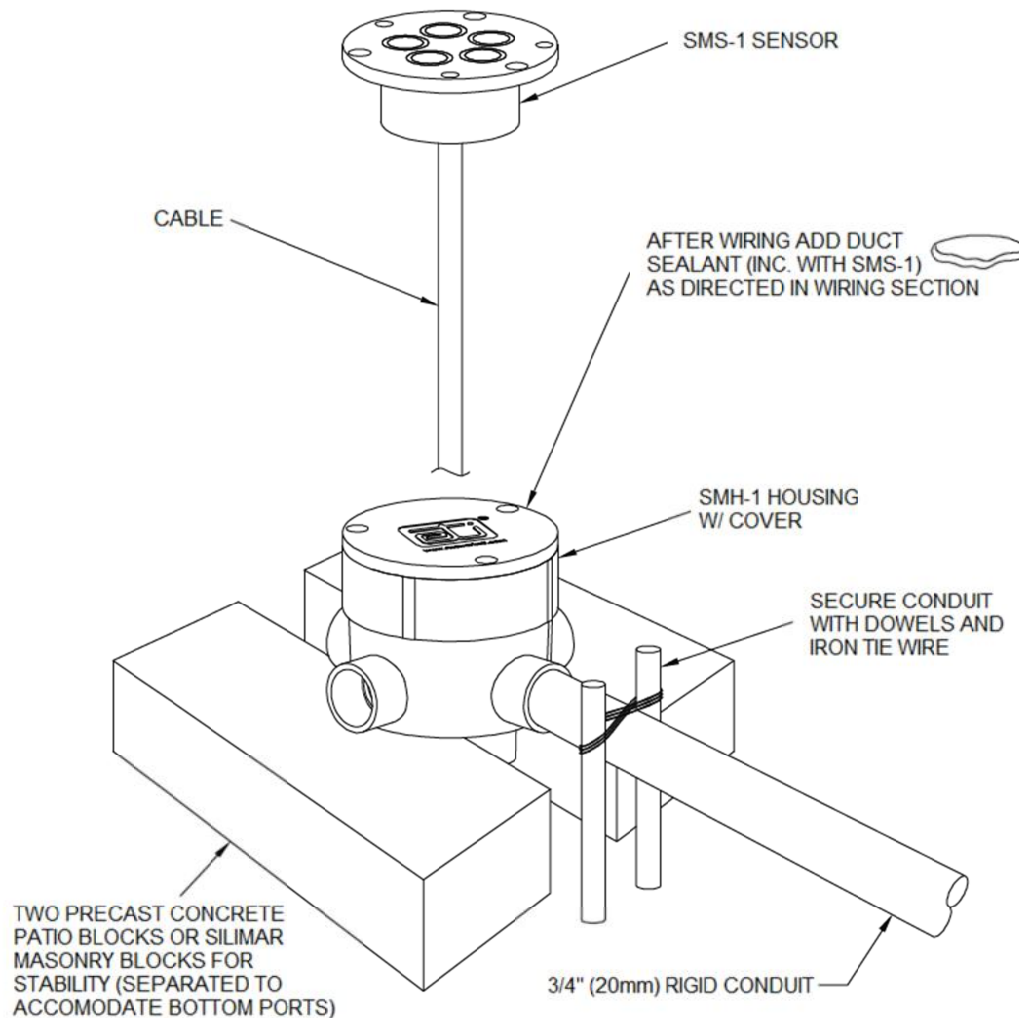


Figure 1. INSTALLATION DIAGRAM.

Wiring

The SMS-1 is furnished with 60' (18.29m) 4-conductor jacketed #18 AWG field leads. The unswitched 24 VAC power supply is connected across red and black wires — black being the grounded conductor. Output relay NO contact connections are made via the two relay output wires without discrimination. These are white, green, yellow, orange, or blue.

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. Refer back to Figure 1.

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 sensor from

housing and adjust housing flange. The flange can be raised up to 0.63"(16 mm) to allow sensor surface to be aligned with pavement surface. A low sensor will pool water and not function properly. See Figure 2 for a schematic diagram of the sensor wiring.

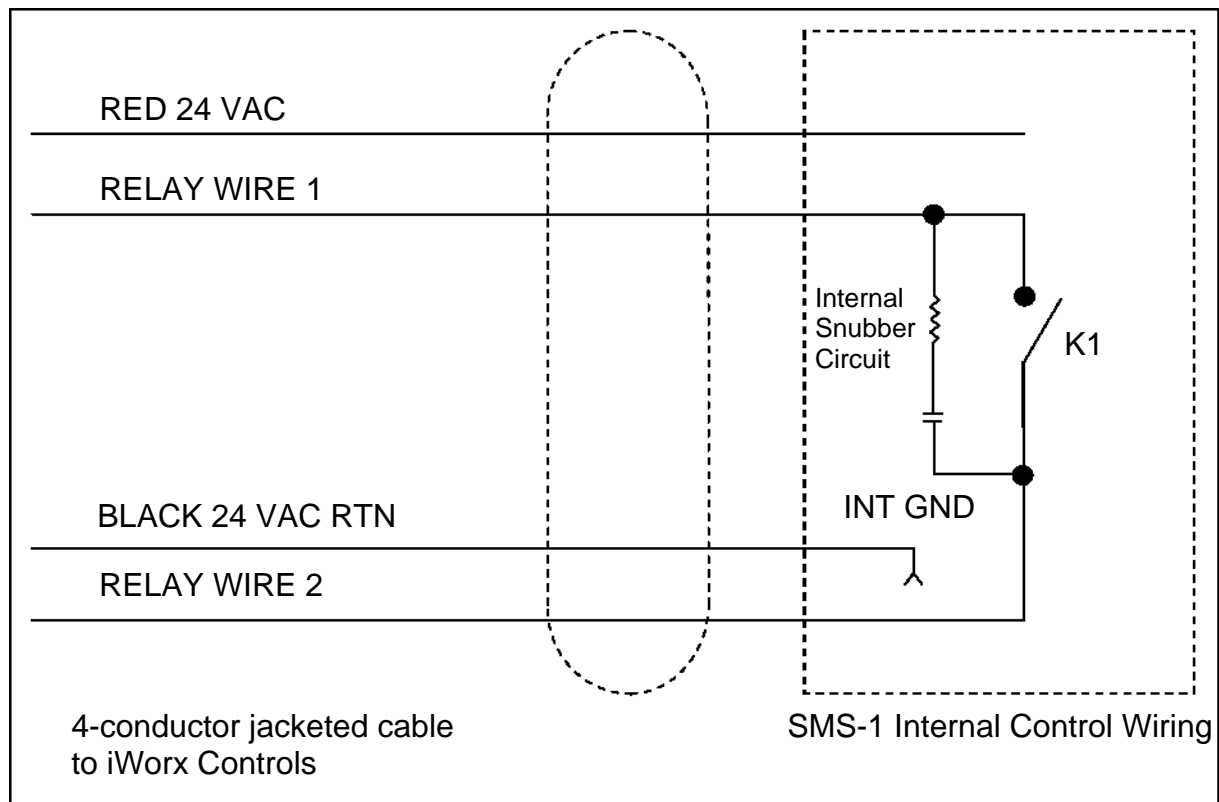


Figure 2. SMS-1 WIRING SCHEMATIC DIAGRAM.

Note that Relay Wires 1+2 may be any color but black and red.

Install all cable leads through conduit as indicated in the Conduit section. Make sure that all cable runs greater than 60' are spliced together in a junction box or in another water-tight location.

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 SMS-1 sensor may be determined using a digital voltmeter (DVM) and water 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 relay output wires from the associated control system. The relay output wires are white, green, or yellow.
2. With the DVM set to 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 both test leads and connect across the relay output wires. These can be white, yellow, green, orange, or blue.
4. Set DVM to read continuity. There should be an open circuit across the relay wires.
5. Place ice and water atop the sensor or apply freeze spray to the sensor and allow 0 to 5 minutes before observing a closed, short circuit between the relay output wires.
6. With satisfactory results, disconnect the DVM and restore all wiring connections.

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