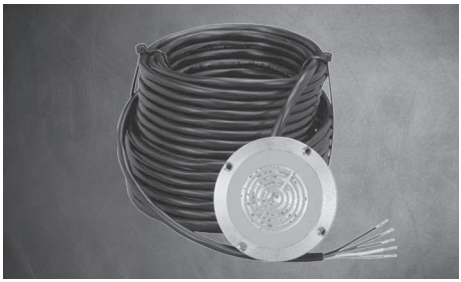
User Guide

Viega Advanced Snow Melt Control Sensor



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Viega products are designed to be installed by licensed and trained plumbing, mechanical, and electrical professionals who are familiar with Viega products and their installation.
Installation by non-professionals may void Viega LLC's warranty.

Description

The Viega Advanced Snow Melt Control Sensor and Housing are used with Viega's Advanced Snow Melt Control. The Advanced Snow Melt Control Sensor has a 65' (cable). The Sensor is designed to sit flush with the slab surface after being mounted into the Sensor Housing. The Housing is installed directly into the snow melt slab halfway between the heating elements or pipes. The sensor measures the slab temperature, sensor surface temperature and sensor surface moisture level.

Installation

WARNING!
Improper installation and operation of this sensor could result in damage to equipment and possibly even personal injury. It is your responsibility to ensure that this sensor is safely installed according to all applicable codes and standards. Please follow these step-by-step instructions to gain a full understanding of this device.

Check Contents

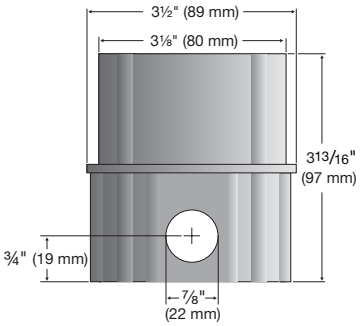
Check the contents of this package. If any of the contents listed are missing or damaged, please contact your wholesaler or Viega sales representative for assistance.

The Viega Advanced Snow Control Sensor includes:

- (1) Advanced Snow Melt Control Sensor
- (4) #6-32 x ⅜" screws
- (4) #4-40 x 7/16" screws
- (1) Installation Instructions

Location Of The Sensor

- The location of the Snow Melt Sensor determines how well the snow melt detector responds to conditions on the snow melting slab. The sensor measures the temperature of the slab surface, and would normally be installed in a location that is representative of the average surface temperature and moisture conditions. The only exception to this practice would be those applications where the sensor is placed in a specific problem area where ice or snow often forms first.
- The installer should be careful to place the sensor in a location where it will not be affected by abnormal temperature conditions that may occur near buildings, hot air exhaust ducts or other heat sources, or sunny areas within a larger slab area.
- As well as reading temperatures, the sensor also detects surface water. The installer should be careful not to place the sensor where standing water could accumulate on its surface. This may cause the snow melt system to be held on far longer than necessary, as the control will be getting a signal that water is present even though the rest of the slab surface may be dry. In addition, the sensor should not be placed in areas where drainage is considerably better than the surrounding area.
- The Snow Melt Sensor should not be installed in locations where vehicles park, near building overhangs or near trees since this may interfere with snow fall accumulation. If in doubt or the first location is an obstacle, a second spare socket and conduit can be installed in order to provide a backup sensor location.
- Vehicle tire and pedestrian traffic can track water and contaminants onto the snow melt area. If the Snow Melt Sensor is located in the traffic area, snow melting will be triggered by the passing traffic. This may be desirable in commercial areas where excessive traffic can cause the surface to become icy. In residential installations, where the amount of traffic is usually limited, an option may be to install the Snow Melt Sensor away from the traffic area. This will reduce the number of snow melt events that occur and thereby reduce the annual fuel consumption.
- The location of the sensor should be midway between the heating pipes.

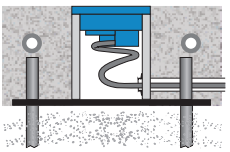


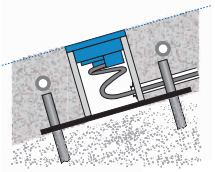
Conduit

Place the Sensor Housing at the chosen location and run a conduit for the cable from the housing to the Viega Advanced Snow Melt Control. If more than 65' (20 m) of cable is required to reach the control, run the conduit to a weatherproof junction box. The sensor cable should be run in its own conduit and not in combination with high voltage wiring. The conduit length from the sensor to the junction box should be less than the 65' (20 m) of cable supplied with the Viega Advanced Snow Melt Control Sensor. At the junction base, additional 18 AWG, 5 conductor cable can be spliced on to increase the total length to 500' (150 m) from the sensor to control. Avoid tying the conduit to the rebar within 6' (2 m) of the socket. This allows the rebar grid to move without disturbing the position of the socket.

Sloped Surfaces

The top of the Snow Melt Sensor should be flush and parallel to that of the snow melt surface. When the sensor is installed on a sloped driveway, the sensor must be installed near the lowest elevation of the slope. This is required since the melting snow or ice runoff water will drain toward the lowest point on the driveway and keep this area wet for longer periods of time.



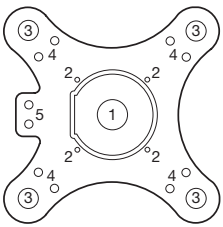


Installing The Socket

A mounting plate has been included to simplify the installation of the sensor socket. When possible, the mounting plate should be located directly on top of gravel in order to provide good drainage. If the slab is more than 4" thick, a mound of crushed rock or a styrofoam or wooden block can be used to elevate the socket. A hole must be punched or drilled in the styrofoam or wooden block in order to provide drainage.

CAUTION!
Failure to provide adequate drainage under the socket may reduce the life expectancy of the Snow Melt Sensor.

Mounting Plate



1. Drainage hole
2. Socket screw holes
3. Rebar holes
4. Rebar tie holes
5. Conduit tie holes

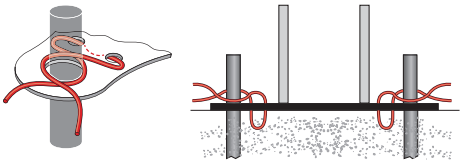
The mounting plate can be fastened to the ground by driving ½" (12.7 mm) rebar through the four holes located on each of the four corners and then tying the mounting plate to the rebar.

1. Cut four pieces of rebar at least 12" (300 mm) long.
2. Drive the rebar into the ground through each of the mounting plate rebar holes. Leave approximately 2" (50 mm) of rebar above the ground.
3. Cut several 12" (300 mm) pieces of steel wire.
4. Form a U shape and pull wire through the rebar tie hole from the bottom to the top side.
5. Repeat by pulling the U shape from the top to the bottom side.
6. Repeat (4) and (5) for each of the four corners.
7. Cross the wire, then wrap around the rebar
8. Twist wire using pliers to tighten.

The mounting plate also has conduit tie holes to allow a cable tie or steel wire to fasten the conduit to the mounting plate.

Placing Concrete

A plastic plug is provided with the socket to prevent it from being accidentally filled with concrete. The plastic plug is the same thickness as the sensor flange. This allows the finished surface of the concrete (asphalt, etc. to be troweled flush with the plug. The plug must be installed prior to placing the concrete. Also ensure that the mounting plate drainage hole remains unplugged once the concrete has cured.

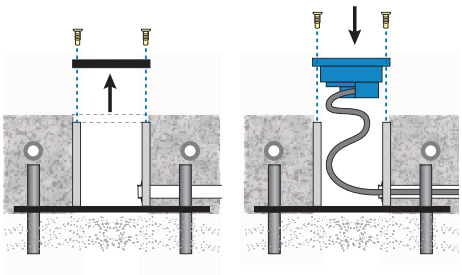


Installing Brick Pavers

If using brick pavers instead of concrete, it is recommended to mortar surrounding brick pavers to the side of the socket. This ensures good thermal conduction from the brick pavers to the socket. The top of the brick pavers should be level with the socket when the plastic plug is installed.

Install The Sensor Cable

When the snow melt surface is finished, remove the plastic plug from the socket and fish the cable through the conduit until there is only 6 to 12" (150 to 300 mm) of cable between the sensor and conduit. Loop this remaining extra wire in a loose coil so as to not twist it, and place the sensor into the socket. Secure the sensor to the socket with the four screws provided, making sure the sealing element is in place and properly seated.



Salt and Brine Contamination

The performance of the Snow Melt Sensor water detection can be compromised when exposed to deicing agents such as road salt, magnesium chloride, or calcium chloride. These contaminants can permanently damage the sensor. It is recommended to locate the sensor away from areas exposed to these deicing agents when at all possible. Locations to avoid could include tire track areas or areas close to a curb where traveling vehicles may splash contaminated water on to the sensor.

Maintenance

The Snow Melt Sensor is installed in a hostile environment. Accumulation of dirt, salty grime, etc., on its surface will inhibit proper water detection. It should be checked on a regular basis and, when necessary, cleaned. Before cleaning, the control power should be shut off to prevent the control from entering the snow melt mode. Next, use a soft bristle brush and warm soapy water to clean the sensor surface. Do not use a steel wire brush as this will damage the sensor. Then, use a paper towel to thoroughly dry the sensor surface. After cleaning, re-power the control and push the test button to cycle the control through the test routine.

Electrical Connections

The Snow Melt Sensor cable has 5 wires: Red, Black, Blue, Yellow, and Brown. The wires connect to the respective Red, Black, Blue, Yellow and Brown terminals on the Advanced Snow Melt Control.

Test the Sensor

When performing these tests:

- The sensor head should be installed in the slab.
- The five cable wires at the control should be disconnected (unplug terminal plug).
- Use a good quality electrical testing meter with an ohm scale range of 0 to 2,000,000 Ohms. The sensor has two 10k Ohm thermistors. One reads slab surface temperature, and the other checks sensor heater temperature. If the sensor has been disconnected from the control for an hour or more, the readings for both thermistors should be very close.
- Using the ohmmeter and standard testing practices, measure the resistance between: (a) the yellow and black sensor wires (sensor temperature), and (b) the brown and black sensor wires (slab temperature). The table lists the expected resistance values at various sensor temperatures.
- Measure the resistance between the blue and black wires. When the sensor surface is dry, the reading should be 2,000,000 Ohms. When the sensor surface is wet it should be between 10,000 and 300,000 Ohms.
- Measure the resistance between the red and black wires of the heating element. This reading should be close to 50 Ohms.

Temperature °F	Temperature °C	Resistance Ω	Temperature °F	Temperature °C	Resistance Ω	Temperature °F	Temperature °C	Resistance Ω
-49	-45	472,000	5	-15	72,900	59	15	15,700
-40	-40	337,000	14	-10	55,300	68	20	12,500
-31	-35	243,000	23	-5	42,300	77	25	10,000
-22	-30	177,000	32	0	32,600	86	30	8,060
-13	-25	130,000	41	5	25,400	95	35	6,530
-4	-20	97,000	50	10	19,900	104	40	5,330

Viega LLC
585 Interlocken Blvd.
Broomfield, CO 80021

Phone (800) 976-9819
www.viega.us

UG-HC 566307 1219 Advanced Snow Melt Control Sensor (EN)