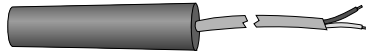


Slab Sensors 072 / 073

The tekmar Slab Sensor 072 and 073 have a PVC plastic sleeve which is designed for use in soils or concrete. The 072 is supplied with 20' (6 m) of 2 conductor cable and the 073 is supplied with 40' (12 m) of 2 conductor cable.



Slab Sensor 079

The tekmar Slab Sensor 079 has a stainless steel sleeve which is designed for use in concrete, thin-set or grout. The 079 is supplied with 10' (3 m) of 2 conductor zipcord.

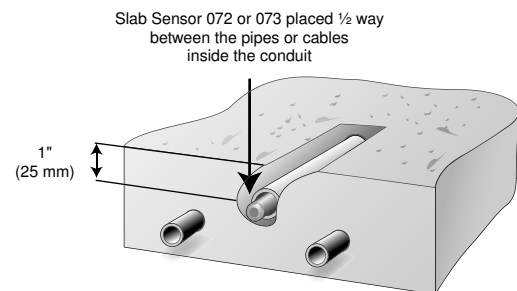


Installation – Slab Sensors 072 and 073

STEP ONE — INSTALLING THE SENSORS

Note: Proper placement of these sensors is critical for correct operation of the control.

These sensors are designed to be embedded in the slab material. However, it is recommended that the sensors be installed in a plastic or metal conduit embedded in the slab. If there is ever a sensor failure, this allows the sensor to be removed and replaced. The sensor should be placed 1" (25 mm) below the slab surface and ½ way between the pipes or electric cables.



STEP TWO — WIRING AND TESTING THE SENSORS

Caution: Do not run sensor wires parallel to telephone or power cables. If the sensor wires are located in an area with strong sources of electromagnetic interference, shielded cable or twisted pair should be used or the wires can be run in a grounded metal conduit. The ground wire should be connected to the common sensor terminal on the control and not to earth ground.

The Slab Sensor 072 is supplied with 20' (6 m) of cable and the Slab Sensor 073 is supplied with 40' (12 m) of cable. If a longer length is required, 18 AWG wire can be spliced onto the two wires from the sensor. The splices should be properly soldered and protected in an accessible, waterproof junction box. Follow the sensor testing instructions given in this brochure and then connect the wires to the control.

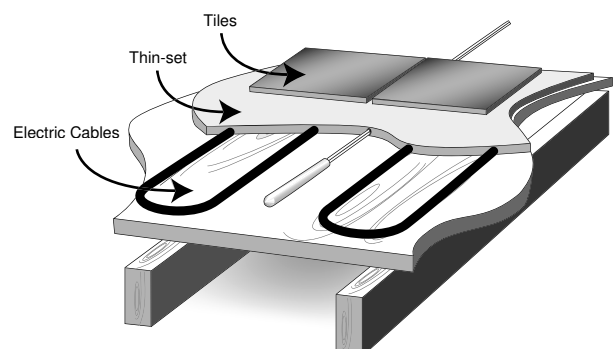
Installation – Slab Sensor 079

STEP ONE — INSTALLING THE SENSOR

New Installations

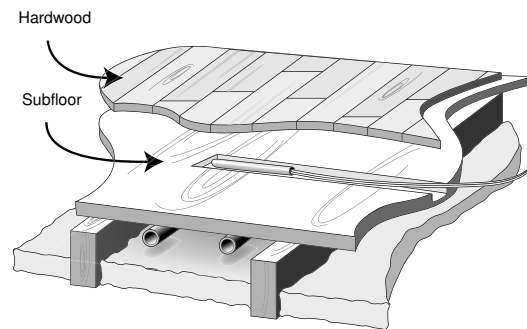
Thin-Set or Thin-Pour Applications

If the floor covering is to be installed over either a thin-set or thin-pour material of sufficient depth, the 079 slab sensor can be placed directly into either the thin-set material or the thin-pour material and covered over. Ensure that the sensor is located in such a position that the attached wire is able to reach to a suitable junction location. Splices within the thin-set or thin-pour should be avoided to ensure trouble free operation. The sensor should be located mid way between the heating elements to ensure a proper temperature reading.



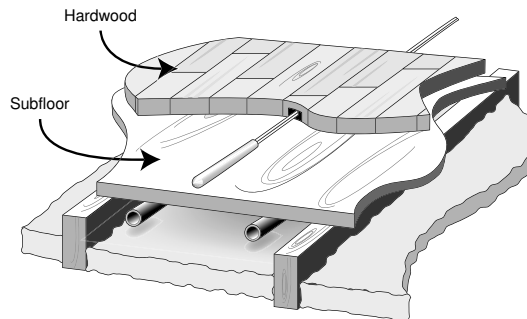
Thin Floor Coverings (less than $\frac{3}{8}$ " (10 mm))

If a thin floor covering is to be installed directly to the subfloor, a groove $\frac{1}{8}$ " (4 mm) wide by $\frac{1}{16}$ " (2 mm) deep can be cut into the surface of the subfloor to accommodate the wire for the sensor. Ensure that the sensor is located in such a position that the attached wire is able to reach to a suitable junction location. Splices under the floor covering should be avoided to ensure trouble free operation. A groove $\frac{3}{16}$ " (5 mm) wide by $\frac{3}{16}$ " (5 mm) deep by $1\frac{3}{4}$ " (45 mm) long should be cut to accommodate the sensor. The sensor should be located mid way between the heating elements to ensure a proper temperature reading.



Thick Floor Coverings (greater than $\frac{3}{8}$ " (10 mm))

If a thick floor covering is to be installed directly to the subfloor, a groove $\frac{1}{8}$ " (4 mm) wide by $\frac{1}{16}$ " (2 mm) deep can be cut into the back of the flooring material to accommodate the wire for the sensor. Ensure that the sensor is located in such a position that the attached wire is able to reach to a suitable junction location. Splices under the floor covering should be avoided to ensure trouble free operation. A groove $\frac{3}{16}$ " (5 mm) wide by $\frac{3}{16}$ " (5 mm) deep by $1\frac{3}{4}$ " (45 mm) long should be cut to accommodate the sensor. The sensor should be located mid way between the heating elements to ensure a proper temperature reading.

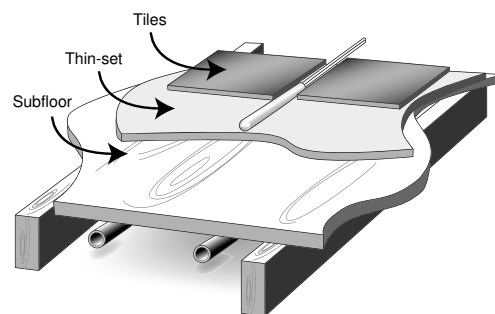


Note: If it is not practical to cut a groove in the surface covering, follow the installation method used for thin floor coverings.

Retro-fit Installations

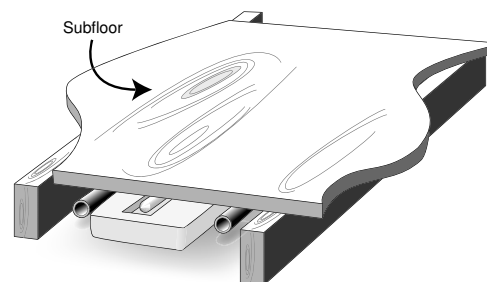
Tile Floor Coverings

If a Slab Sensor 079 is to be installed into an existing tile floor with sufficiently large grout lines, the sensor and wire can be installed in one of the grout lines between the tiles. Select a low traffic area of the floor that is mid way between the heating elements for the sensor location. Ensure that the sensor is located in such a position that the attached wire is able to reach to a suitable junction location. Splices within the grout should be avoided to ensure trouble free operation. Remove the appropriate grout line and place the sensor and wire in the floor. Re-grout the area.



Installing the Sensor to the Bottom of a Subfloor

If the sensor is to be installed to the bottom of a subfloor, cut a piece of 1" (25 mm) thick rigid insulation into a 6" (150 mm) by 6" (150 mm) square. A groove $\frac{3}{16}$ " (5 mm) wide by $\frac{3}{16}$ " (5 mm) deep by $1\frac{3}{4}$ " (45 mm) long should be cut into the insulation to accommodate the sensor. Place the sensor in the groove and sandwich the sensor between the insulation and the subfloor. Use a suitable fastening method to affix the insulation to the subfloor.



STEP TWO — WIRING AND TESTING THE SENSOR

Caution: Do not run sensor wires parallel to telephone or power cables. If the sensor wires are located in an area with strong sources of electromagnetic interference, shielded cable or twisted pair should be used or the wires can be run in a grounded metal conduit.

The Slab Sensor 079 is supplied with 10' (3 m) of cable. If a longer length is required, 24 AWG or larger wire can be spliced onto the two wires from the sensor. The splices should be properly soldered and protected in an accessible junction box. Follow the sensor testing instructions given in this brochure and then connect the wires to the control.

Sensor Testing Instructions

A good quality test meter capable of measuring up to 5,000 k Ω (1 k Ω =1000 Ω) is required to measure the sensor resistance. In addition to this, the actual temperature must be measured with either a good quality digital thermometer, or if a thermometer is not available, a second sensor can be placed alongside the one to be tested and the readings compared.

First measure the temperature using the thermometer and then measure the resistance of the sensor at the control. The wires from the sensor must not be connected to the control while the test is performed. Using the chart below, estimate the temperature measured by the sensor. The sensor and thermometer readings should be close. If the test meter reads a very high resistance, there may be a broken wire, a poor wiring connection or a defective sensor. If the resistance is very low, the wiring may be shorted, there may be moisture in the sensor or the sensor may be defective. To test for a defective sensor, measure the resistance directly at the sensor location.

Do not apply voltage to a sensor at any time as damage to the sensor may result.

Temperature			Resistance			Temperature			Resistance			Temperature			Resistance			Temperature			Resistance		
°F	°C	Ω	°F	°C	Ω	°F	°C	Ω	°F	°C	Ω	°F	°C	Ω	°F	°C	Ω	°F	°C	Ω	°F	°C	Ω
-50	-46	490,813	20	-7	46,218	90	32	7,334	160	71	1,689	-45	-43	405,710	25	-4	39,913	95	35	6,532	165	74	1,538
-40	-40	336,606	30	-1	34,558	100	38	5,828	170	77	1,403	-35	-37	280,279	35	2	29,996	105	41	5,210	175	79	1,281
-30	-34	234,196	40	4	26,099	110	43	4,665	180	82	1,172	-25	-32	196,358	45	7	22,763	115	46	4,184	185	85	1,073
-20	-29	165,180	50	10	19,900	120	49	3,760	190	88	983	-15	-26	139,402	55	13	17,436	125	52	3,383	195	91	903
-10	-23	118,018	60	16	15,311	130	54	3,050	200	93	829	-5	-21	100,221	65	18	13,474	135	57	2,754	205	96	763
0	-18	85,362	70	21	11,883	140	60	2,490	210	99	703	5	-15	72,918	75	24	10,501	145	63	2,255	215	102	648
10	-12	62,465	80	27	9,299	150	66	2,045	220	104	598	15	-9	53,658	85	29	8,250	155	68	1,857	225	107	553

Technical Data

Slab Sensor 072

Literature	— D 079
Packaged weight	— 0.37 lb. (170 g), PVC sleeve. 20' (6 m) jacketed wire
Dimensions	— 1/2" OD x 2" (13 OD x 51 mm)
Approvals	— CSA C US
Operating range	— -60 to 140°F (-50 to 60°C)
Sensor	— NTC thermistor, 10 kΩ @ 77°F (25°C ±0.2°C), β=3892

Slab Sensor 073

Literature	— D 079
Packaged weight	— 0.7 lb. (320 g), PVC sleeve. 40' (12 m) jacketed wire
Dimensions	— 1/2" OD x 2" (13 OD x 51 mm)
Approvals	— CSA C US
Operating range	— -60 to 140°F (-50 to 60°C)
Sensor	— NTC thermistor, 10 kΩ @ 77°F (25°C ±0.2°C), β=3892

Slab Sensor 079

Literature	— D 079
Packaged weight	— 0.08 lb. (35 g), 316 stainless steel, 10' (3 m) 24 AWG, 300 volt PVC insulated Zipcord
Dimensions	— 3/16" OD x 1-1/2" (5 OD x 38 mm)
Approvals	— CSA C US, CE
Operating range	— -50 to 60°C
Sensor	— NTC thermistor, 10 kΩ @ 77°F (25°C ±0.2°C), β=3892

Limited Warranty and Product Return Procedure

Limited Warranty *The liability of tekmar under this warranty is limited. The Purchaser, by taking receipt of any tekmar product ("Product"), acknowledges the terms of the Limited Warranty in effect at the time of such Product sale and acknowledges that it has read and understands same.*

The tekmar Limited Warranty to the Purchaser on the Products sold hereunder is a manufacturer's pass-through warranty which the Purchaser is authorized to pass through to its customers. Under the Limited Warranty, each tekmar Product is warranted against defects in workmanship and materials if the Product is installed and used in compliance with tekmar's instructions, ordinary wear and tear excepted. The pass-through warranty period is for a period of twenty-four (24) months from the production date if the Product is not installed during that period, or twelve (12) months from the documented date of installation if installed within twenty-four (24) months from the production date.

The liability of tekmar under the Limited Warranty shall be limited to, at tekmar's sole discretion: the cost of parts and labor provided by tekmar to repair defects in materials and/or workmanship of the defective product; or to the exchange of the defective product for a warranty replacement product; or to the granting of credit limited to the original cost of the defective product, and such repair, exchange or credit shall be the sole remedy available from tekmar, and, without limiting the foregoing in any way, tekmar is not responsible, in contract, tort or strict product liability, for any other losses, costs, expenses, inconveniences, or damages, whether direct, indirect, special, secondary, incidental or consequential, arising from ownership or use of the product, or from defects in workmanship or materials, including any liability for fundamental breach of contract.

The pass-through Limited Warranty applies only to those defective Products returned to tekmar during the warranty period. This Limited Warranty does not cover the cost of the parts or labor to remove or transport the defective Product, or to reinstall the repaired or replacement Product, all such costs and expenses being subject to Purchaser's agreement and warranty with its customers.

Any representations or warranties about the Products made by Purchaser to its customers which are different from or in excess of the tekmar Limited Warranty

are the Purchaser's sole responsibility and obligation. Purchaser shall indemnify and hold tekmar harmless from and against any and all claims, liabilities and damages of any kind or nature which arise out of or are related to any such representations or warranties by Purchaser to its customers.

The pass-through Limited Warranty does not apply if the returned Product has been damaged by negligence by persons other than tekmar, accident, fire, Act of God, abuse or misuse; or has been damaged by modifications, alterations or attachments made subsequent to purchase which have not been authorized by tekmar; or if the Product was not installed in compliance with tekmar's instructions and/or the local codes and ordinances; or if due to defective installation of the Product; or if the Product was not used in compliance with tekmar's instructions.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, WHICH THE GOVERNING LAW ALLOWS PARTIES TO CONTRACTUALLY EXCLUDE, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, DURABILITY OR DESCRIPTION OF THE PRODUCT, ITS NON-INFRINGEMENT OF ANY RELEVANT PATENTS OR TRADEMARKS, AND ITS COMPLIANCE WITH OR NON-VIOLATION OF ANY APPLICABLE ENVIRONMENTAL, HEALTH OR SAFETY LEGISLATION; THE TERM OF ANY OTHER WARRANTY NOT HEREBY CONTRACTUALLY EXCLUDED IS LIMITED SUCH THAT IT SHALL NOT EXTEND BEYOND TWENTY-FOUR (24) MONTHS FROM THE PRODUCTION DATE, TO THE EXTENT THAT SUCH LIMITATION IS ALLOWED BY THE GOVERNING LAW.

Product Warranty Return Procedure All Products that are believed to have defects in workmanship or materials must be returned, together with a written description of the defect, to the tekmar Representative assigned to the territory in which such Product is located. If tekmar receives an inquiry from someone other than a tekmar Representative, including an inquiry from Purchaser (if not a tekmar Representative) or Purchaser's customers, regarding a potential warranty claim, tekmar's sole obligation shall be to provide the address and other contact information regarding the appropriate Representative.



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