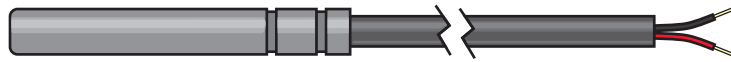


Overview

- Waterproof
- Corrosion Resistant
- UV Resistant Wire
- Operating range -40 to 356°F (-40 to 180°C)
- 0.24 in (6 mm) OD for immersion well installation
- 5 ft (1.5 m) wire length



The tekmar Solar Sensor 085 has a stainless steel head and silicone jacketed wire, ideal for use as an immersion well sensor in a solar collector.

Sensor Wiring

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.

- Sensor wiring can be extended up to 520' (158 m) using 18 AWG wire.
- Wire splices should be properly soldered and protected in an accessible waterproof junction box.

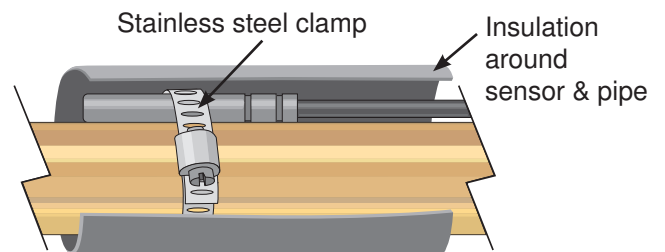
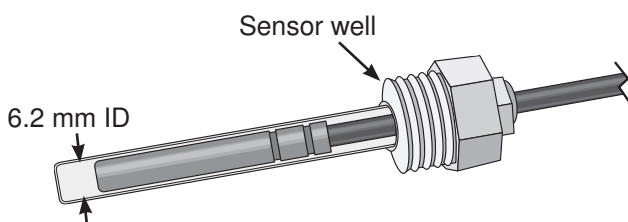
Installation

Controller effectiveness depends heavily on proper installation of temperature sensors. The 085 sensor should always be measuring the hottest part of the collectors which is normally the flow output of the last collector in a string.

The Solar Sensor 085 was specifically designed to mount in a 6.2 mm ID temperature sleeve or well provided by most collector manufacturers.

If a temperature well isn't available, the Solar Sensor 085 can be strapped directly to the pipe using a stainless steel clamp (not provided).

Insulation should be placed around the sensor in this case to reduce the effects of air currents on the temperature measurement. Thermal paste is recommended to improve thermal contact with the sensor.



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 on the

following page, 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 vs. Resistance Table

Temperature		Resistance	Temperature		Resistance	Temperature		Resistance	Temperature		Resistance
°F	°C	Ω	°F	°C	Ω	°F	°C	Ω	°F	°C	Ω
-40°	-40°	336,479	68°	20°	12,493	176°	80°	1,255	284°	140°	235
-31°	-35°	242,681	77°	25°	10,000	185°	85°	1,070	293°	145°	208
-22°	-30°	176,974	86°	30°	8,057	194°	90°	915	302°	150°	186
-13°	-25°	130,421	95°	35°	6,531	203°	95°	786	311°	155°	166
-4°	-20°	97,081	104°	40°	5,326	212°	100°	678	320°	160°	148
5°	-15°	72,957	113°	45°	4,368	221°	105°	587	329°	165°	133
14°	-10°	55,329	122°	50°	3,602	230°	110°	510	338°	170°	119
23°	-5°	42,327	131°	55°	2,986	239°	115°	445	347°	175°	107
32°	0°	32,650	140°	60°	2,488	248°	120°	389	356°	180°	97
41°	5°	25,392	149°	65°	2,083	257°	125°	341	365°	185°	87
50°	10°	19,901	158°	70°	1,752	266°	130°	301	374°	190°	79
59°	15°	15,712	167°	75°	1,480	275°	135°	265	383°	195°	72

Note: This sensor is capable of measuring temperatures beyond the range of some controls. A higher than measurable temperature is displayed as a short circuit while a lower than measurable temperature is displayed as an open circuit. Compare the sensor's resistance with the table above at these extremes to determine the true measured temperature.

Technical Data

Literature	–	D 085
Approvals	–	CSA C US
Operating Range	–	-40°F to 356°F (-40°C to 180°C)
Dimensions	–	0.24" (6 mm) O.D., 1.77" (45 mm) long with 5' (1.5 m) cable length
Sensor	–	NTC thermistor, 10 kΩ @ 77°F (25°C ± 0.2°C), β = 3892
Materials	–	SS304 metal tube, black silicone rubber insulated, 2 conductor cable
Packaged Weight	–	0.12 lb (55 g)

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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