

# tekmar® - Data Brochure

Duct Sensor 083

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PEXHEAT.COM

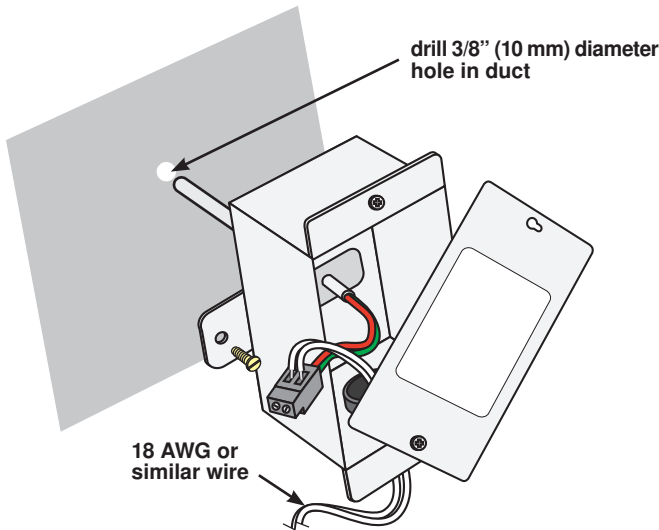
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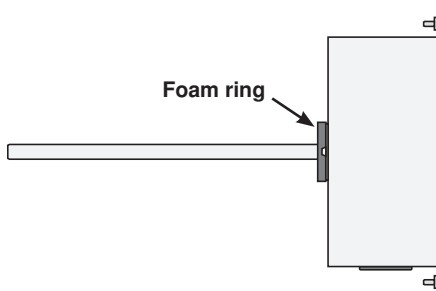
The tekmar Duct Sensor 083 is designed to measure the average temperature of the air stream in a heating, cooling, or ventilation duct. The 083 has a 6" (150 mm) long probe connected to a 2" x 4" electrical box for easy wiring.

## Installing the Sensor

The Duct Sensor 083 probe should be located in the middle of the air stream in order to measure the average temperature of the duct. Drill a 3/8" (10 mm) hole in the duct and place the probe through the hole.



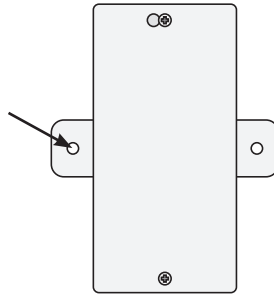
Ensure that the foam ring on the electrical box around the probe fits tight against the duct.



A 4" (102 mm) flange mounted on the electrical box has two holes to (not included) to fasten the sensor to the duct.

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## Wiring the Sensor

Open the electrical box by unscrewing the top screw.

Connect 18 AWG or similar wire to the two terminals provided in the enclosure and run the wires from the 083 to the control. Do not run the wires parallel to telephone or power cables. If the sensor wires are located in an area with strong sources of electromagnetic interference (EMI), shielded cable or twisted pair should be used or the wires can be run in a grounded metal conduit. If using shielded cable, the shield wire should be connected to the Com Sen terminal on the control and not to earth ground.

Follow the sensor testing instruction in this brochure and connect the wires to the control. Close the electrical box by tightening the top screw.

## Testing the Sensor

A good quality test meter capable of measuring up to 5,000 k $\Omega$  (1 k $\Omega$  = 1000  $\Omega$ ) 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

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

**DUCT SENSOR 083**

Literature	D 083
Packaged weight	1 lb (454 g)
Dimensions	4" W x 8" H x 5" L (100 mm x 203 mm x 127 mm)
Probe	1/4" (6.33 mm) O.D., 0.020" (.5 mm) Wall, 6" (150 mm) 304 Stainless Steel
Enclosure	NEMA 1 / IP30, 18 Gauge Galvanized Steel
Approvals	CSA C US Listed
Operating Range	-40 to 250 °F (-40 to 121 °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.

 <p>tekmar Control Systems Ltd., Canada tekmar Control Systems, Inc., U.S.A. Head Office: 5100 Silver Star Road Vernon, B.C. Canada V1B 3K4 (250) 545-7749 Fax. (250) 545-0650 Web Site: <a href="http://www.tekmarcontrols.com">www.tekmarcontrols.com</a></p>	<p>Product design, software and literature are Copyright © 2007 by: tekmar Control Systems Ltd. and tekmar Control Systems, Inc.</p>
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