

# Installation & Operation Manual

## Three Outdoor Sensor Module 081



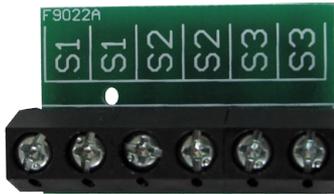
Accessories

081\_D

06/16

Replaces: 05/07

The tekmar Three Outdoor Sensor Module 081 includes three 10 kΩ thermistors which provide an accurate measurement of the outdoor temperature. Each sensor has two separate terminals for wiring. The 081 is designed to be installed in a tekmar Outdoor Sensor 070 enclosure. This allows for three separate sensors to be combined into a single enclosure that is mounted on the exterior of the building.



081 installed in 070 sensor enclosure (sold separately)

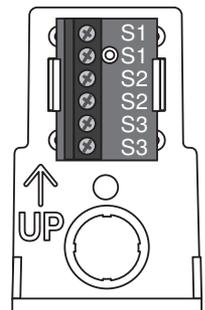
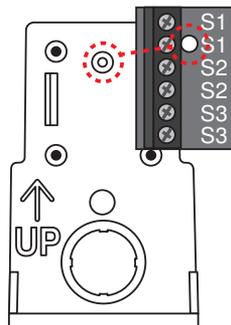
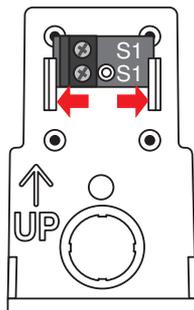
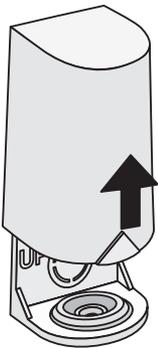


## Installation

### STEP ONE — MOUNTING THE MODULE

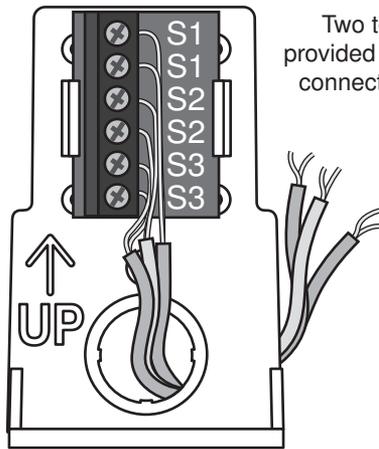
The 081 replaces the existing sensor in the 070 enclosure.

- Remove the 070 cover by sliding it upwards away from the base.
- The circuit board and 2 terminals inside the 070 enclosure can be removed by pushing a plastic catch to the side while pulling the board forward.
- To install the 081, line up the pin in the enclosure with the hole in the board and push the 081 board down until the plastic catches hold it in place.



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Two terminals are provided for each control connecting to the 081.

Outdoor Sensor 070 Enclosure

## STEP TWO — WIRING AND TESTING THE SENSOR

- Connect 18 AWG or similar wire to the two terminals (S1 and S1) provided on the module and run the wires from the module 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 terminal on the control and not to earth ground.
- Follow the sensor testing instructions on the bottom of this brochure and connect the wires to the control.
- Repeat the above steps for the second (S2 and S2) and third (S3 and S3) sensors.
- Replace the front cover of the Outdoor Sensor 070 enclosure.

### Sensor Testing Instructions

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.**

## Resistance Table

Temperature		Resistance
°F	°C	Ω
-50	-46	490,813
-45	-43	405,710
-40	-40	336,606
-35	-37	280,279
-30	-34	234,196
-25	-32	196,358
-20	-29	165,180
-15	-26	139,402
-10	-23	118,018
-5	-21	100,221
0	-18	85,362
5	-15	72,918
10	-12	62,465
15	-9	53,658
20	-7	46,218
25	-4	39,913
30	-1	34,558
35	2	29,996
40	4	26,099
45	7	22,763
50	10	19,900
55	13	17,436
60	16	15,311
65	18	13,474
70	21	11,883
75	24	10,501
80	27	9,299
85	29	8,250

Temperature		Resistance
°F	°C	Ω
90	32	7,334
95	35	6,532
100	38	5,828
105	41	5,210
110	43	4,665
115	46	4,184
120	49	3,760
125	52	3,383
130	54	3,050
135	57	2,754
140	60	2,490
145	63	2,255
150	66	2,045
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

## Technical Data

### THREE OUTDOOR SENSOR MODULE 081

Literature	081_D
Packaged weight	0.13 lb. (60g)
Dimensions	1 1/4" x 13/16" x 1/2" (30.3 x 19.3 x 11.7 mm)
Operating range	-60 to 140°F (-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.

**WARNING:** This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.  
**For more information: [Watts.com/prop65](http://Watts.com/prop65)**

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All specifications are subject to change without notice

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