MODEL 083F
RELATIVE HUMIDITY SENSOR
MANUAL

Met One Instruments, Inc
Corporate Sales & Service: 1600 NW Washington Blvd. Grants Pass, OR 97526
Tel (541) 471-7111 Fax (541) 471-7116
www.metone.com - service@metone.com

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Model 083F Relative Humidity Sensor Manual.

Technical Support

Should you require support, please consult your printed documentation or our website www.metone.com to resolve your problem. If you are still experiencing difficulty, you may contact a Technical Service representative during normal business hours;

Monday – Friday 7:00 a.m. to 4:00 p.m. Pacific Time.

Voice:	(541) 471-7111
Fax:	(541) 471-7116
E-Mail:	service@metone.com
Mail:	Technical Services Department Met One Instruments, Inc. 1600 NW Washington Blvd. Grants Pass, OR 97526

Safety Notice

The contents of this manual have been checked against the hardware and software described herein. Since deviations cannot be prevented entirely, we cannot guarantee full agreement. However, the data in this manual is reviewed regularly and any necessary corrections included in subsequent editions.

Faultless and safe operation of the product presupposes proper transportation, storage, and installation as well as careful operation and maintenance. The seller of this equipment cannot foresee all possible modes of operation in which the user may attempt to utilize this instrumentation. The user assumes all liability associated with the use of this instrumentation. The seller further disclaims any responsibility for consequential damages.

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Products manufactured by Met One Instruments, Inc. are warranted against defects in materials and workmanship for a period of (1) year from the date of shipment from the factory. Offered products not manufactured by Met One Instruments, Inc. will be warranted to the extent and in the manner warranted by the manufacturer of that product.

Any product found to be defective during the warranty period will, at the expense of Met One Instruments, Inc. be replaced or repaired and return freight prepaid. In no case shall the liability of Met One Instruments, Inc. exceed the purchase price of the product.

This warranty may not apply to products that have been subject to misuse, negligence, accident, acts of nature or that have or modified other than by Met One Instruments, Inc. Consumable items such as bearings are not covered under this warranty.

Other than the warranty set forth herein, there shall be no other warranties, whether expressed, implied or statutory, including warranties of fitness or merchantability.

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1. GENERAL INFORMATION

1.1. Description

The 083F sensor is an extremely accurate microprocessor controlled relative humidity sensor. The relative humidity sensor responds to the full range of 0 to 100% humidity. Response is linear with negligible hysteresis or temperature dependence. The sensor is designed to be mounted in a radiation shield when used outdoors. The exact model number you order will determine the functions of your sensor. The following section describes the model number feature assignments.

Figure 1 Model 083F-0-35 Sensor

Figure 2 Model 083F-0-6 Sensor

1.2. 083F Options

The 083F options are defined by dash numbers as follows:

083F-0-__ (Shield Option)

1.2.1. Radiation Shield Compatibility Option:

6 = Use with Model 076B motor aspirated radiation shield. This sensor comes with 8-inch long pigtail wires for connection to the radiation shield junction box. Refer to the radiation shield manual for sensor and cable connections.

35 = Use with Model 074 naturally aspirated radiation shield. This sensor has a circular connector for use with Met One Instruments cable PN 2348.

2. SENSOR SITING

The EPA recommends sensor mounting in a radiation shield at a 2 meter height, ideally over green mowed grass to minimize related terrestrial radiation errors on the readings. Typical installations may vary significantly from these recommendations due to geographic limitations or specific monitoring requirements.

3. INSTALLATION

If the sensor is to be mounted in a radiation shield, refer to the radiation shield manual section for mounting details. Typical installations are shown below.

Sensors not installed in a radiation shield should be mounted in a representative location having good airflow and shaded from sunlight or other heat radiation sources that would affect measurement of relative humidity.

3.1. Mounting Instructions

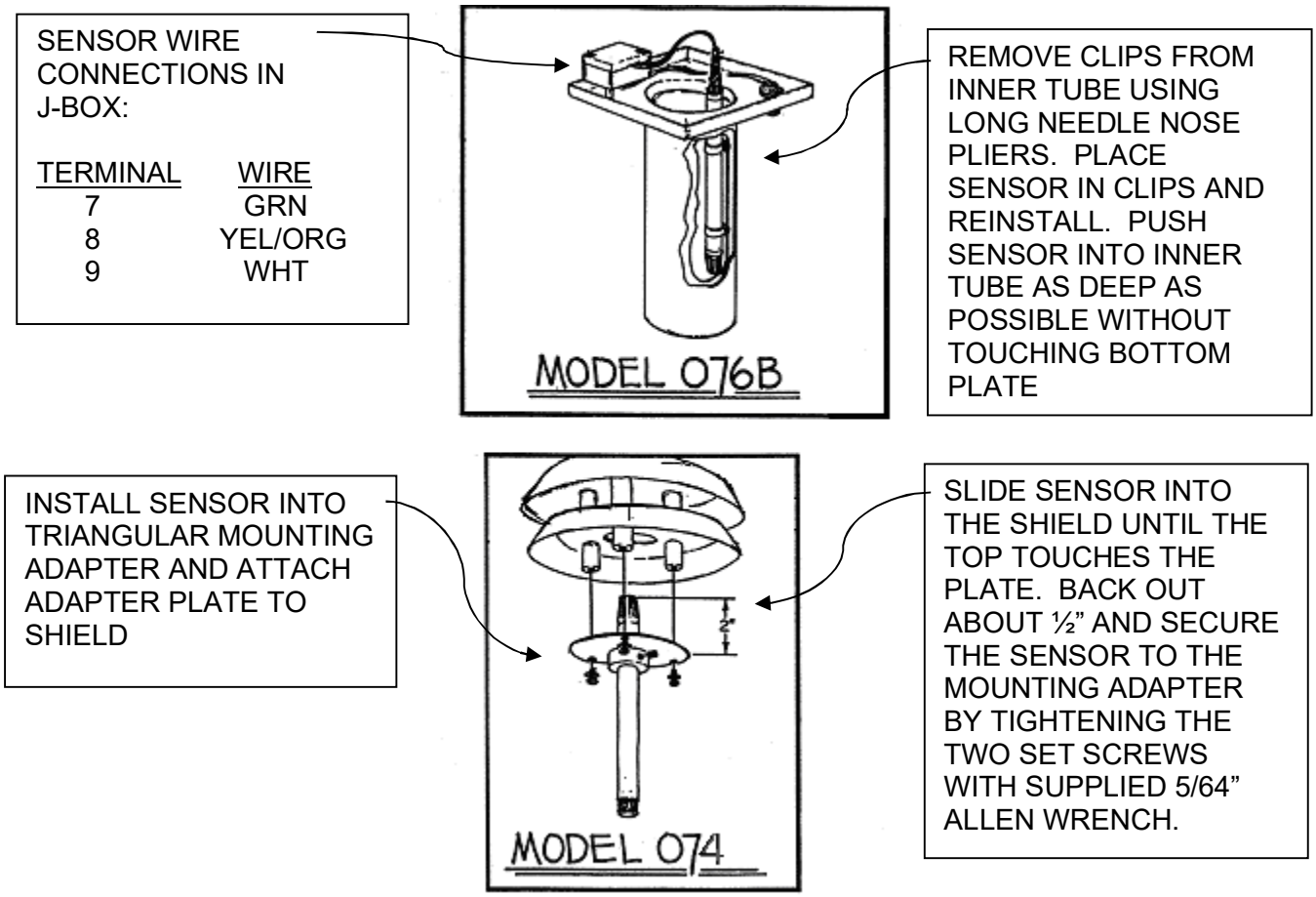

Figure 2 Radiation Shield Installation

3.2. Wiring Instructions

Sensor Connection	Wire Color	Description
Pin A	White	+10 to +18 VDC
Pin B	Green	Signal Ground
Pin C	Yellow or Orange	RH Analog Output
Pin D	Black	No Connection
Pin E	Red	No Connection
Pin F	No Connection	No Connection
No Connection	White/Brown	Shield

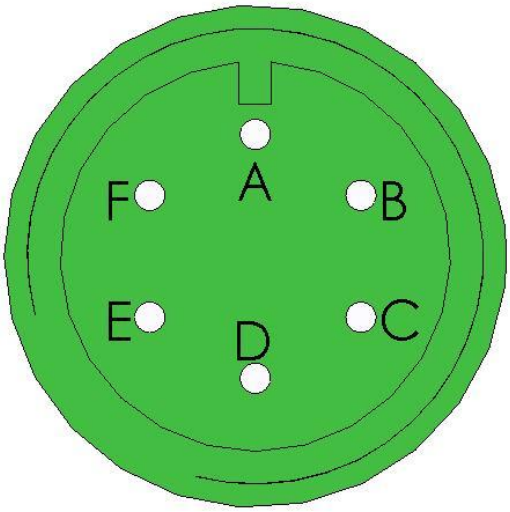

Figure 3 Electrical Connector
View looking at connector pins. (Pins are also identified on connector).

4. OPERATIONAL CHECK-OUT AND CALIBRATION

4.1. Relative Humidity Sensor Check-out

To verify correct wiring and test the basic sensor operation, blow on the sensor. The moisture in your breath should cause the relative humidity reading to rise.

The relative humidity sensor has been calibrated at the factory. To check for proper operation of the sensor it is advised that the output signal be checked against a local weather service facility or a local relative humidity measuring device such as a psychrometer. Due to normal atmospheric and geographical variations, the local weather service data should be used only as a guideline. Ambient air relative humidity can be expected to vary significantly over short distances and in brief periods of time.

4.2. Limitations of RH Measurements at Below Freezing Temperatures

The sensor's relative humidity output is referenced to saturated water vapor pressure above liquid water. When the air temperature is below freezing, the sensor's maximum theoretical measurement range is limited as follows:

Air Temperature (Deg C)	Maximum RH (%)
0	100
-5	96
-10	92
-15	88
-20	84
-25	80
-30	76
-35	72
-40	68
-45	64
-50	60

4.3. General Maintenance Schedule

6 – 12 Month Intervals:

Inspect the sensor for proper operation per Section 4.0.

12 Month Interval:

Return the sensor to Met One Instruments for calibration.

Replace the two 720050 O-Rings.

Replace the 860014 Filter Membrane.

4.4. 083F Relative Humidity Sensor Maintenance and Calibration

WARNING: The sensor can be incorrectly calibrated or permanently damaged through improper acts. Do not attempt a repair or calibration if you are unsure of the procedure. Do not touch the sensor element if you do not know the correct procedure.

The instrument should operate for an extended period of time with a minimum of care or maintenance.

The sensor should be re-calibrated every 12 months.

If parts or maintenance assistance are required, contact Met One Instruments. Obtain shipping instructions and a return authorization (RA) before returning any unit.

4.5. Sensor Maintenance

4.5.1. Sensor Element

The RH sensor element is not user-replaceable (replacement requires sensor recalibration). If the element becomes damaged please send the 083F sensor to Met One Instruments for repair. Please obtain shipping instructions and a return authorization (RA) number before returning any unit.

Met One Instruments manufactures an RH Calibration Kit part number 10233 which can be purchased to perform a calibration after the sensor element is replaced. Please contact the Met One Service Department to purchase the calibration kit.

4.5.2. Spare Parts

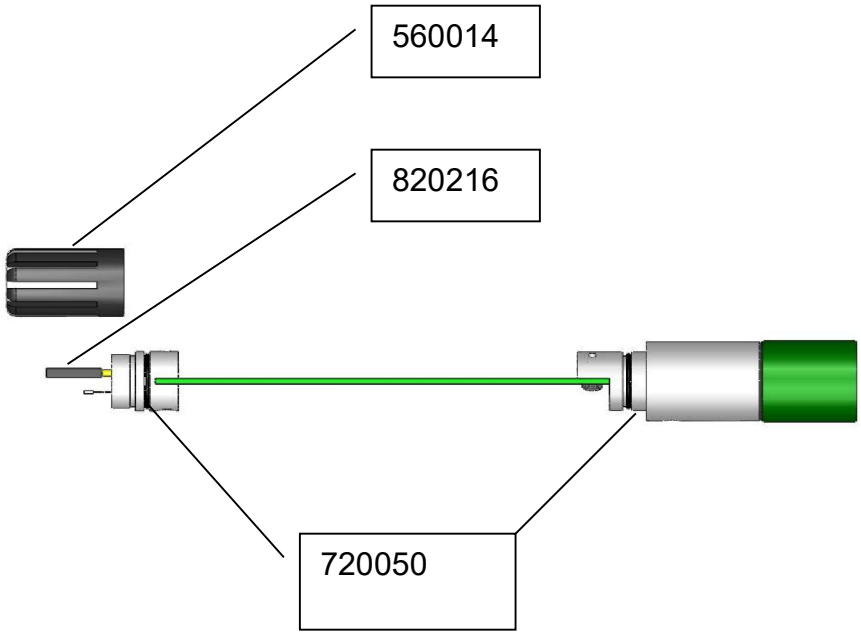

Figure 5 Spare Parts

820216	RH SENSOR ELEMENT (Requires factory calibration)
560014	FILTER, MEMBRANE
720050	O-RING (Two required)

5. Operational Specifications

Model Number:	083F
Relative Humidity	
RH Sensing Element:	Thin film polymer capacitor
Range:	0 to 100% RH
Accuracy:	± 2.0% from 0 to100% RH
Response Time:	10 sec. with 2 m/s aspiration
Temperature:	
Temperature Operation Range:	-50° C to +50° C (-58° F to 122° F)
Temperature Coefficient:	Compensated internally
Analog Output:	0 to 1 VDC
AutoMet Auto ID:	No
General	
Input Power:	10 to 18 VDC @ < 5 mA
Dimensions:	Length: 8.5 in (21.59 cm) Diameter: 0.75 in (1.91 cm)