

- direct sunlight.
4. After 2 hours check the instrument reading; it should be  $12\% \pm 2\%$ .  
  
If readjustment is necessary:  
Model 509-1/2: Remove 4 screws on back of instrument; gently open housing. See Figure 1 for pot location.  
Model 509-3/4: Remove screw from probe housing and gently pull out the PC board. See Figure 2 for the location of the potentiometers. To readjust the pots without removing the probe housing you can drill through the two prepared holes, situated in the middle of the housing.
  5. Adjust the zero potentiometer for a reading of 12% RH.
  6. Replace the 12% RH bottle with the 90% bottle. Close the 12% bottle.
  7. Wait for 2 hours and check instrument reading; it should be 90%,  $\pm 2\%$ .
  8. If necessary, readjust the span potentiometer for a 90% RH reading.
  9. Repeat Steps 5 through 8 until both readings are correct; when that happens the meter will meet its original accuracy specification. Close the bottles immediately after use and wash your hands; the bottles can contain poisonous solutions. Reassemble the housing.

#### Calibration Standards

Each unit is calibrated against standards traceable to the National Institute of Standards and Technology.

#### Calibration certificates

In addition to the normal calibration procedure, each unit can be supplied with its own traceable calibration certificate.

#### Calibration interval time

Under normal ambient conditions (0 to 50°C, 0 to 70% RH) and for an accuracy of  $\pm 2\%$  RH, we recommend an annual calibration. For an accuracy  $\pm 5\%$  RH we recommend calibration every five years. For environments with airborne chemicals or for high humidity and high temperature conditions we recommend more frequent calibration.

#### Limited Warranty

This product is warranted by Ohmic Instruments Company to be free of defects in material and workmanship for one year after delivery. A product found to be defective for these reasons within this period will be repaired or replaced free of charge by Ohmic. We give no other warranties. Ohmic Instruments Co. shall not be liable for any damages or losses, whether direct or indirect. The warranty cannot be transferred or assigned to third parties.



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## Instruction Manual for Relative Humidity & Temperature Meter DM-509

### Introduction

The DM-509 series of digital handheld meters are designed to indicate the relative humidity or temperature of the ambient air. Featuring auto power-off and a large  $3\frac{1}{2}$  digit LCD display, the meter is standard equipped with a fast response capacitive sensor with a working range of 10 to 95% RH. Accessories like calibration bottles or carrying cases are available from Ohmic.

Description	Model	
Digital meter with fixed probe, temperature in °C	DM-509-M-01	—
Digital meter with fixed probe, temperature in °F	DM-509-M-02	—
Digital meter with separate probe, temperature in °C	DM-509-M-03	DM-509-T-03
Digital meter with separate probe, temperature in °F	DM-509-M-04	DM-509-T-04

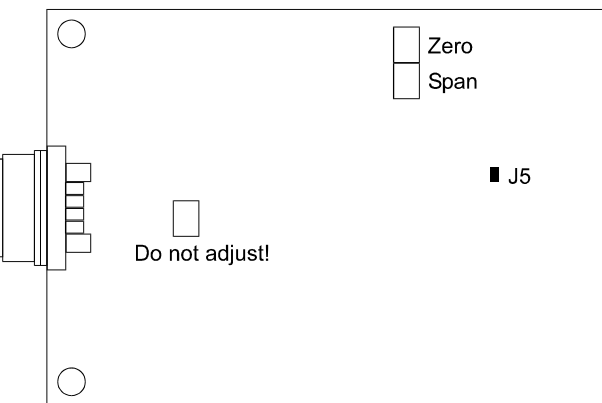
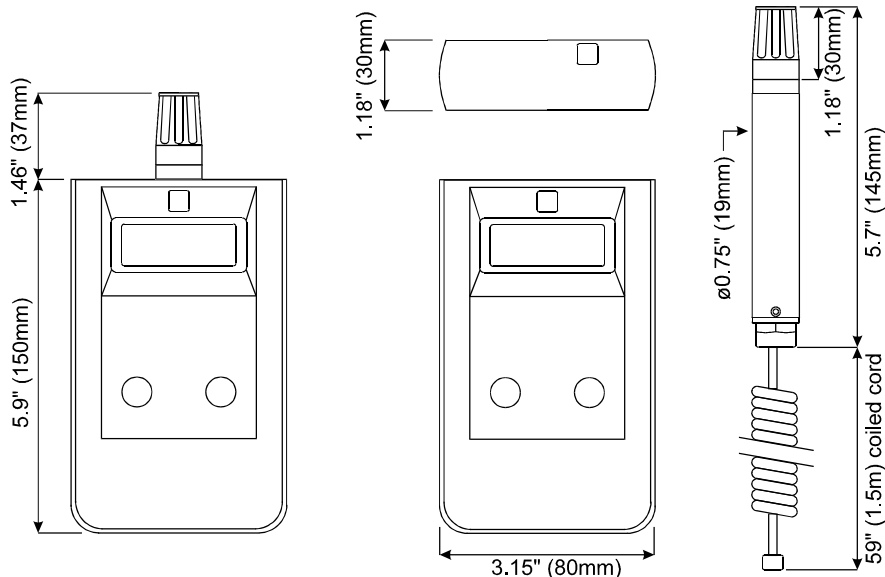


Figure 1: Location of potentiometers on DM 509-1 and -2

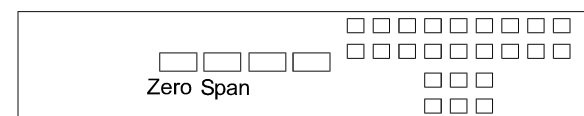


Figure 2: Location of potentiometers on RH probe (DM-509-3 and -4)

Measuring range	0 to 100% RH
Working range	5 to 95% RH
Resolution % RH	0.1% RH
Accuracy @ 25°C typ.	± 2% RH (10 to 95% RH)
Temperature drift	0.05% RH/°C typical
Response time	10 sec. for 90% of the change (air velocity 1 m/s)
Measuring range temperature	-20 to +60°C
Resolution temperature	0.1°C
Accuracy temperature	± 0.2°C ± 1 digit
Power supply	9V alkaline battery
Auto power-off	Approx. 12 minutes
Low battery	BAT indication on display
Battery life	Approx. 200 hours (alkaline battery)
Operating temperature	-20 to +60°C (-4 to +140°F)
Weight	0.45 lb. (0.2Kg)
Display	3½ digit 0.39" (10mm)

### Auto shut-off

The DM-509 is equipped with an auto shut-off switch. To modify for manual on-off operation, remove jumper J5 on the PC board inside the instrument. Refer to Figure 1 for the location.

### Battery

The DM-509 uses a 9 volt alkaline battery. If the word BAT appears on the display, the battery should be replaced. If the unit will not be used for an extended period, remove the battery.

### Calibration Procedure

Recalibration intervals depend on environmental conditions; generally every 12 months is recommended. Calibration should be done only by a qualified technician. Calibration bottles can be used, or better yet, a traceable humidity reference simulator like the S-503, available from Ohmic. The bottles contain a saturated salt solution with standard relative humidity. Use 12% RH for zero calibration and 90% RH for span calibration. Output signal adjustment is made by the "zero" and "span" potentiometers. For pot locations see Figure 1 for the 509-1/2 and Figure 2 for the 509-3/4.

1. Do not remove the slotted cap from the probe during calibration.
2. Visually check the sensor for damage or corrosion. **Do not touch the sensor!**
3. Open the 12% bottle and immediately put the probe into the bottle. It is essential to keep the bottle at a constant temperature of about 20°C (68°F). The humidity is temperature dependent; do not heat the bottle and avoid