

# 083E RELATIVE HUMIDITY SENSOR

- **ALL SOLID STATE CONSTRUCTION, DIGITAL ELECTRONICS**
- **FAST RESPONSE OF LESS THAN 5 SECONDS TO 90% OF FINAL VALUE**
- **LOW POWER CONSUMPTION OF 4 MA AT 12 VDC**
- **EASILY CLEANED USING DISTILLED WATER**
- **0-1V OUTPUT FOR 0-100% RH**
- **WILL OPERATE FROM A 12 VDC BATTERY**



*Relative Humidity Sensor  
Model 083E*

The 083E Relative Humidity Sensor is a highly sensitive and stable temperature measurement tool that provides outstanding accuracy. It is reliable in the full range of relative humidity conditions, from 0-100%, performing equally well in meteorological, industrial, laboratory and other demanding settings.

This model is also available with a mounted temperature sensor, and can be used with a variety of radiation shields.

## OPERATION

The 083E Relative Humidity Sensor measures variance in the capacitance change of a one micron thick dielectric polymer layer.

This film absorbs water molecules through a metal electrode, and causes capacitance change proportional to relative humidity. The thin polymer layer reacts very quickly, providing up to 90% of the final value of relative humidity in fewer than five seconds.

The sensor's response is essentially linear, with small hysteresis, and negligible temperature dependence.

## CONSTRUCTION

- The sensor is mounted on a small probe, which measures, records and displays humidity levels
- Because the sensor measures only ambient humidity, in most settings temperature compensation is unnecessary
- The probe body is water tight and made from corrosion resistant aluminum
- Immersion of the sensor element in water does not adversely affect the calibration

THE STANDARD  
OF MEASUREMENT

**BELFORT** INSTRUMENT  
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# RELATIVE HUMIDITY SENSOR

Model 083E

## SPECIFICATIONS

### POWER

Input Power: 4 mA at 12 VDC (10-14 VDC)

### RELATIVE HUMIDITY

Sensing Element: Thin film polymer capacitor

Range: 0 - 100% relative humidity

Temperature Operation Range: -50°C to +50°C (-58°F to 122°F)

Response Time: 10 sec. with 2 m/s aspiration

Temperature Coefficient: 0.04% RH/°C

Accuracy: ±2.0% from 0 - 100% humidity

Output: 0 to 1 VDC – Standard  
(0 to 5.0 VDC Optional)

### TEMPERATURE

Temperature Sensor: Thermistor (precision multi-element)

Temperature Operation Range: -50°C to +50°C (-58°F to 122°F)

Accuracy: ±.10°C (0.18°C)

Output: Resistive

### PHYSICAL CHARACTERISTICS

Dimensions: .75 in (19.05 mm) diameter  
7.5 in (190.5 mm) length

Weight: 2.5 oz (70.9 g)

## ORDERING INFORMATION

- 083E - X - Y
- 0 Temperature sensor not included
  - 1 -50°C to +50°C, (-58°F to +122°F).  
Temperature sensor included  
Accuracy ±0.1°C (±0.18°F)
  - 35 With connector for direct use with  
Model 073B Radiation Shield or  
Model 5980 Radiation Shield  
PN 2348 Cable Assembly – Specify  
length in feet or meters
  - 6 With 6" Signal Cable for direct use  
with Model 076B Motor Aspirated  
Radiation Shield

Specifications are subject to change at any time.



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