# TELAiRE®

# T9602 Humidity & Temperature Sensor

## Humidity and Temperature Sensor for OEM installation



## Features

- Fully Calibrated & Temperature Compensated

- Water resistant

- Digital or Analogue Output

- Optional wire length

- Precision & Accuracy (±2% RH, ±0.3°C, 14 bit)

- Low Current Consumption

- Reliable in Harsh Environments

- Different Mounting Options

## Applications

- Energy Saving HVAC Control —Air Conditioning, Refrigeration, Indoor Air Quality, Vent Fans, Home Appliances, Humi/Dehumidifiers

- Process Control & Instrumentation—Medical Instruments, Handheld Devices, Weather Stations, Food Processing, Printers, RFIDs

T9602 offers the most advanced and cost effective humidity and temperature sensing solution for virtually any type of application.

Based on our own capacitive polymer sensor chip and a CMOS integrated circuit with EEPROM are integrated into an easy mount OEM package.

Individually calibrated and tested the T9602 sensor chip performs at ±2% from 20% to 80% RH (±3% over entire humidity range), and is simple and ready to use without further calibration or temperature compensation.

T9602 provides linearized output signals in various interfaces to customer requirements:
- I$^2$C interface
- PDM convertible to Analogue signal

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# Guide Specifications (Sensor Chip)

## Relative Humidity (RH%)

| | |
|---|---|
| Resolution | 14 bit (0.01% RH) |
| Accuracy[1] | ±2.0% RH (20~80% RH)[2] |
| | ±3.5% from 0% to 20% and 80% to 100% |
| Repeatability | ±0.2% RH |
| Hysteresis | ±2.0% RH |
| Linearity | <2.0% RH |
| Response time[3] | 7.0 sec (t 63%) |
| Temp Coefficient | Max 0.13% RH/°C (at 10~60°C, 10~90% RH) |
| Operating | 0 ~ 100% RH (Non-Condensing) |
| Long Term Drift | <0.5% RH/yr (Normal condition) |

1. Accuracies measured at 25°C, nominal voltage.

2. Measured at 25°C, 1m/sec airflow for achieving 63% of step from 33% RH to 90% RH.

3. Response figure is chip without casing.
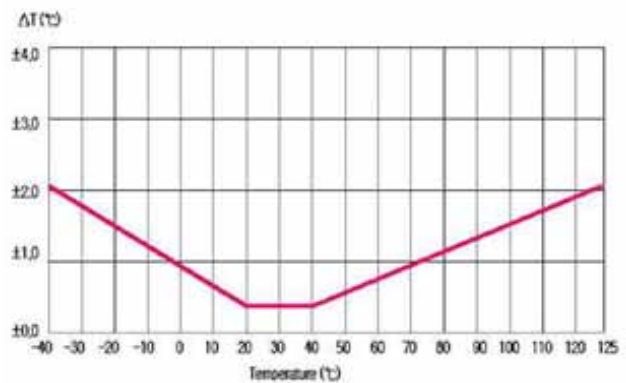
## Typical %RH Accuracy
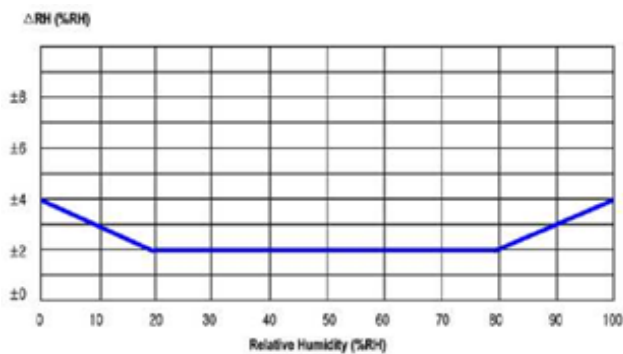


## Temperature (°C)

| | |
|---|---|
| Resolution | 14 bit (0.01°C) |
| Accuracy[1] | ±0.5°C |
| Repeatability | ±0.1°C |
| Response time[2] | 5.0 sec (t 63%) |
| Operating range | 0 to 50°C |
| Long term drift | <0.05°C/yr (Normal condition) |

1. Accuracies measured at 25°C, nominal voltage

2. Min 5.0 sec, Max 20 sec

## Typical Temperature Accuracy

# Guide Specifications (Assembly)

### Method
Capacitive polymer RH Sensor, PTA (Proportional to Absolute) Temperature sensor integrated ASIC chip in LCC (Leadless Chip Carrier) package, SMD, RoHS compliant

### Operating Temperature Range
• 0°C to 50°C

### Operating RH Range
• 0% to 100% RH (non-condensing)

### Dimensions (ex wire)
• Overall 42 mm X 13.5 mm diameter approx

### Operating Conditions
• 32°F to 122°F (0°C to 50°C)
• 0% to 95% RH, non-condensing

### Storage Conditions
• -40°C to 85°C

### Output
• I2C Digital or PDM

### Protection
• IP65

### Power Supply Requirements
• 3.3 or 5 VDC regulated (±5%) for best results

### Power Consumption
• 750 µA (typical)

### Pin Designations
1 – V+
2 – GND
3 – SDA/PWM Humidity
4 – SCL/PWM Temperature

### Cable
Circular Section 4.20±0.20mm diameter, 4 core and shield double insulated. Halogen Free.
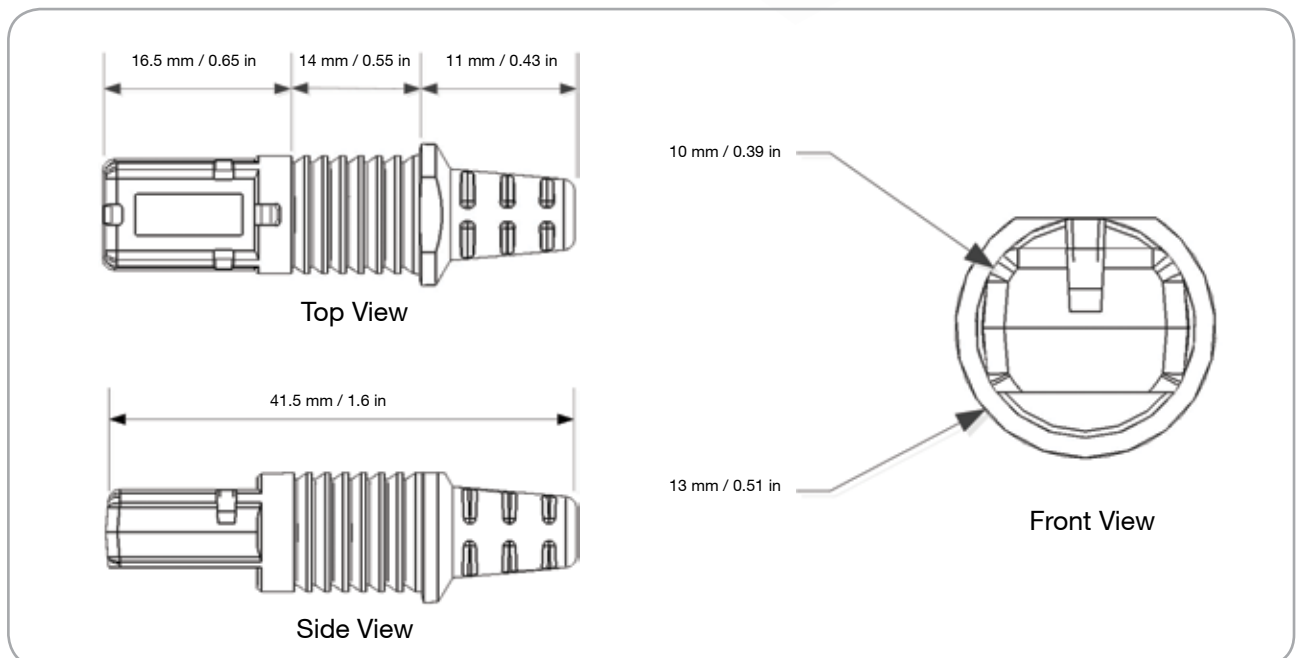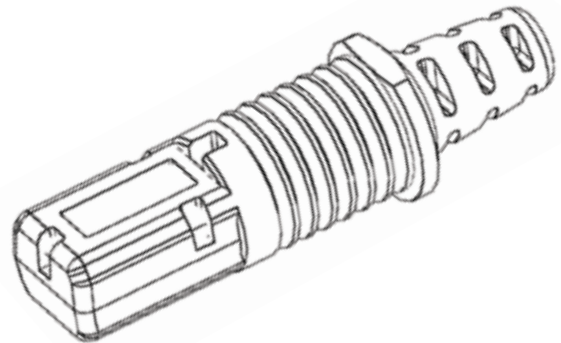
### Mounting
Grommet or Cable P Clamp, 7/16 in or 11.0 mm diameter.

### Connector
• JST EHR-4 connector with SEH-001T-P0.6 crimps.
• Mating PCB Connector JST B4B-EH-A or S4B-EH

### Warranty Terms
• 12 months





16.5 mm / 0.65 in    14 mm / 0.55 in    11 mm / 0.43 in

Top View

41.5 mm / 1.6 in

Side View

10 mm / 0.39 in

13 mm / 0.51 in

Front View

# Ordering Information

| Part Number | Output | Operating Voltage | |
|---|---|---|---|
| T9602-3-D | I2C Digital | 3V | 1.8m cable length |
| T9602-5-D | I2C Digital | 5V | 1.8m cable length |
| T9602-3-D-1 | I2C Digital | 3V | 1m cable length |
| T9602-5-D-1 | I2C Digital | 5V | 1m cable length |
| | | | |
| T9602-3-A | PDM Analogue | 3V | 1.8m cable length |
| T9602-5-A | PDM Analogue | 5V | 1.8m cable length |
| T9602-3-A-1 | PDM Analogue | 3V | 1m cable length |
| T9602-5-A-1 | PDM Analogue | 5V | 1m cable length |

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