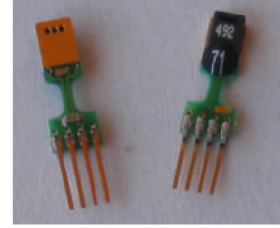


SHT75PG

Humidity and temperature sensor
mounted in PG7 gland
for sealing to enclosure or probe body.

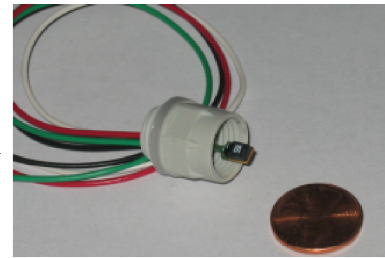
SHT75PG

The Sensirion humidity/temperature sensor is a single integrated sensor chip that produces fully calibrated digital output with Swiss precision. Values can be read by a microcontroller via the sensor's two-wire digital serial interface, and converted to achieve $\pm 2\%$ humidity accuracy and $\pm 0.5\%$ Celsius temperature accuracy.



The basic SHT75 comes in a SIP package that features a long neck for low thermal mass, a flow-through air path for fast response, and pins on 0.05" centers.

In order to apply this sensor conveniently in weather stations and in other harsh environments, EME Systems adds value by mounting the sensor in a PG7 gland nut, sealed at the back with 4 color coded wires. This arrangement allows for sealing to an enclosure, while maintaining low thermal mass and good air flow. The SHT75PG includes additional components for the microprocessor interface, and provides a GORE-TEX® membrane to protect the sensor element from spray and pollutants.



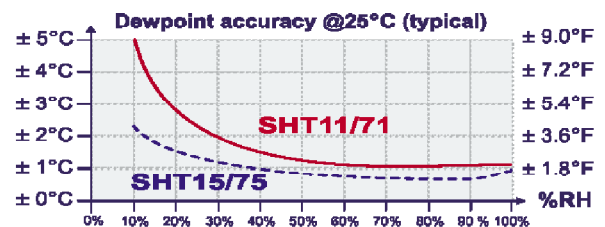
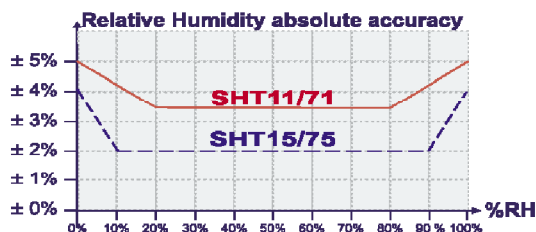
Specifications

Humidity

- resolution 0.03% RH
- repeatability $\pm 0.1\%$ RH
- accuracy & interchangeability $\pm 2\%$ RH
(over range of 10% to 90% RH)
- non linearity $< 1\%$ RH (after linearity compensation math)
- range 0%–100% RH
- response time 4 seconds
(slowly moving air, no cap) to within 67% of final
- hysteresis $\pm 1\%$ RH
- long term stability $< 1\%$ RH per year typical

Temperature

- resolution $\pm 0.01\text{ }^{\circ}\text{C}$
- repeatability $\pm 0.1\text{ }^{\circ}\text{C}$
- accuracy $\pm 0.5\text{ }^{\circ}\text{C}$ from $0\text{ }^{\circ}\text{C}$ to $40\text{ }^{\circ}\text{C}$,
 $< 1\text{ }^{\circ}\text{C}$ from $-20\text{ }^{\circ}\text{C}$ to $+65\text{ }^{\circ}\text{C}$
- range -40 to $+123\text{ }^{\circ}\text{C}$
- response time 5 to 30 seconds to
within 67% of final value





In the photo above, the SHT75PG is mounted on a sealed polycarbonate enclosure. The sensor element itself is protected by the gore-tex membrane making it permeable only to water vapor. The enclosure could hold a data logger or transition wiring to a cable.



The SHT75PG/3M above is mounted on a length of 3/8" PVC pipe. Connection is made to a three meter cable that terminates in four tinned wires. This unit is shown with the protective cap removed for fastest response. Observe that the open PG7 guards the sensor from breakage, but allows for good air flow.

Spare GORE-TEX vents, available from EME Systems

The Gore-tex protective vent should be replaced periodically or when it becomes dirty. It comes on a circle of material with a strong acrylic adhesive on one side. To replace the membrane, remove the old one and clean the rim of the funnel shaped opening of the cap. Remove the new vent from the carrier strip and place it adhesive side up on a smooth surface. Center the cap over the vent and press down firmly. Allow the adhesive to cure overnight. Using a sharp razor, trim the edges of the vent. Replace the cap and sealing washer onto the sensor.



Schematic diagram and connections

The SHT75PG includes the necessary resistors and bypass capacitor to drive the sensor. There is a pullup resistor on the data (dta) line, a pull-down resistor on the clock (sck) line, and small resistors protect the chip from mis-wiring and static discharge.

White or yellow wire is clock signal from microprocessor.

Red wire to +5 volts.

Black wire to common.

Green wire is data signal to and from the microprocessor.

