

Air Sensor TPH-1[™]

Temperature, Barometric Pressure, Relative Humidity

Modbus RTU (RS-485)

DATA SHEET

FEATURE SUMMARY

- Air temperature
- Relative humidity
- Barometric pressure
- 3-hr pressure trend
- Modbus RTU slave device
- Low power: 1.4 mA
- Ultra-low power: <60 microAmp
- Smart-Fan[™] aspiration option
- Easy mounting
- Made in USA.

DESCRIPTION

Air Sensor TPH-1[™] is a high-quality combination temperature, humidity, and barometric pressure sensor module. All sensing elements are integrated into a single probe and radiation shield.

TPH-1 is a low-power digital-output module with a Modbus interface. It is compatible with the Dyacon Control Module or Modbus host devices, such as programmable logic controllers (PLCs) and data loggers.

Not only does **TPH-1** provide current measurements, but it also provides barometric pressure trends for the previous three hours.

User registers for sensor calibration allow the instrument to be calibrated using Modbus messages.

Applications of **TPH-1** include:

- Weather station sensor
- Automated process control sensor
- HVAC air sensor

The following are measurements provided directly by **TPH-1**:

- Air Temperature (Celsius)
- Air Pressure (mbar)
- Relative Humidity (%)
- Air Pressure Trend (rising, falling, steady)



KEY FEATURES

Construction: The sensing probe is housed in a compact, low mass, radiation shield. Cabling to the probe can be routed adjacent to or through the shield and mounting hardware, providing an extra measure of protection from cable strain, fatigue, and animal damage.

Hum-Temp: Temperature and relative humidity are produced from a precision Swiss sensing element. The best-in-class capacitive sensor is highly accurate to the boundaries of its operational limits. The robust sensor is highly stable in harsh environments and exhibits minimal aging.

Barometric Pressure: A 24-bit ADC digital pressure sensor element has the capability to deliver 10 cm (+/- 1.5 mbar) resolution.

The 3-hour barometric pressure trend is given as steady or rising or falling (slow or fast).

Data Connection: Power and data are provided through a 4-wire connection. **TPH-1** uses an RS-485 (Modbus slave) data connection. **TPH-1** is a low power device suitable for solar powered instrumentation systems.

Mounting: The **TPH-1** mounting system is compatible with standard 1" pipe.

Accessories: **TPH-1** can be used with the aspiration kit for improved performance.

TEMPERATURE

Range	-40°C to 80°C
Resolution	0.01°C**
Accuracy (0°C to 60°C)	+/- 0.2 K*
Reproducibility	+/- 0.1 K
Response Time	12 s
Long Term Drift	<0.05 K/yr
Sensor Type	PTAT

RELATIVE HUMIDITY

Range	0% to 100% RH
Resolution	0.01% **
Accuracy	+/- 1.8% (0% to 80%)*
Reproducibility	+/- 0.2% RH*
Hysteresis	< +/- 1% RH
Linearity	< +/- 1% RH
Response Time	12 s
Long Term Drift	<0.5% RH/yr
Sensor Type	Capacitive

BAROMETRIC PRESSURE

Range	10 mbar to 1300 mbar
Resolution	0.065 mbar**
Accuracy	+/- 1.5 mbar*
Response Time	0.5 ms
Long Term Stability	<1 mbar/yr
Sensor Type	MEMS

* Specifications are derived from component sensing elements.

** Standard resolution (0.1) and high resolution registers (0.01) are both available.

ELECTRICAL

Power Input	5 VDC to 24 VDC
Current	1.4 mA _{avg} at 12 VDC full run mode† 60 uA _{avg} in sleep mode‡

MECHANICAL

Material	UV-stabilized, PVC, white
Overall (WxDxH)	13.2 cm x 13.4 cm x 13 cm (5.2" x 5.3" x 5.1")
Cable	4 conductor, 24 AWG, stranded Foil shield w/ drain wire Outdoor rated cable
Total Weight	288 g (10.2 oz)
Weight Shield Only	228 g (8.1 oz)

DATA

Protocols	Modbus RTU slave (RS-485) Half duplex (2-wire)
Min. Request Period	50 ms at 19200 bps

TEMPERATURE

Operating Temperature	-40°C to 60°C
Storage Temperature	-40°C to 80°C

ACCESSORIES

Aspiration	KIT-ASP-122
Horizontal Mounting Kit	KIT-TPHMNT

† Continuous full run mode, reading 200 range registers once per second.

‡ Timeout set to 50 or greater. No Modbus activity.



TPH-1™ with aspirator kit.