

**Application Notes**

**1. PCB Connectors:** It is recommended that HS-2000DD be socketed rather than soldered to circuit boards. If a direct solder connection is required, it is recommended that hand-soldering be performed using a rosin-based flux. The soldered surfaces may be cleaned with isopropyl alcohol (do not immerse).

The recommended PCB sockets include:

Surface Mount:

Mill-Max: 310-93-104-41-105, 4 pin SMT, Left hand footprint, 30 micro inch gold plate

Mill-Max: 310-93-104-41-107, 4 pin SMT, Right hand footprint, 30 micro inch gold plate

*These sockets are available from Digi-Key in 64 pin strips. See part number ED23064-ND*

Through hole:

Mill-Max: 310-93-104-41-001, 4 pin standard solder tail, 30 micro inch gold plate

*These sockets are available from Digi-Key in 63 pin strips. See part number ED7063-ND*

**2. Chemical Resistance:** Contact Precon for data on resistance to specific chemicals and environments.

**Warranty**

WARRANTY: The Seller warrants that Warranted Goods shall not fail to function in accordance with the seller's specifications because of defects in material or workmanship, for one year from the date of purchase. The foregoing warranty is expressly in lieu of all other warranties, express or implied, including warranties of merchantability or fitness for a particular purpose, or any other matter with respect to the goods are excluded and shall not apply to the goods sold. The warranty undertaking in this agreement does not apply to any goods that have been subjected to accident, disaster, loss or damage during shipment, neglect, misuse, improper installation, corrosive atmosphere harmful to electronic circuitry, excessive electromagnetic fields, failure or insufficiency of electrical power or unusual electrical surge or shock, nor to dysfunction or malfunction of, or caused by, any other equipment or device (other than equipment or devices you have purchased from us) to or in which such goods have been attached or installed.

Seller's employees, agents and/or representatives may have made oral statements about the goods sold or to be sold. Such statements DO NOT constitute warranties and ARE NOT part of a sales Contract. Seller's liability to Buyer, their agents, employees, customers, assigns, successor or other related parties for any and all losses or damages resulting from Seller's breach of a sales Contract, whether in tort or in contract or otherwise, shall be limited to the replacement of a like quantity of goods sold and IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR CONTINGENT DAMAGES (including, without limitation, loss of anticipated profits, business interruption, loss or use or revenue, litigation costs, cost of capital, Buyer's fixed costs, or avoidable costs).

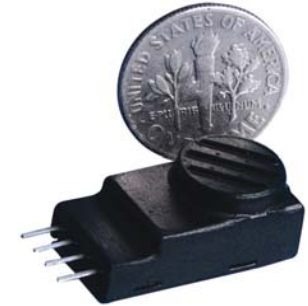
**All specifications are subject to change without notice.** For the latest specifications, visit our website at [www.preconusa.com](http://www.preconusa.com)

The HS-2000DD Digital Humidity Sensor is a fully calibrated and temperature compensated RH sensor for direct digital interface to monitoring or control system microprocessors. The innovative HS-2000DD combines capacitive-polymer sensing technology with a novel measurement method, eliminating the need for temperature correction and calibration by the user. The sensor, which is calibrated at Precon before shipment, includes a thermistor and circuitry to correct for temperature and calculate the true relative humidity. The sensor provides both humidity and temperature outputs and is accurate to  $\pm 2\%$  RH.

The HS-2000DD operates with a single supply voltage of 2.0 to 5.5 volts and can draw its supply from a standard microprocessor I/O pin. The wide supply voltage range and low power consumption make this device ideal for battery-operation.

The output format is ASCII characters at 9,600 baud, which provides for simple and effective communication to microprocessors in OEM and custom systems. No special support components are needed to interface this device to a microprocessor.

The HS-2000DD covers a standard temperature range of 32° to 158°F (0° to 70°C).



**Features**

- Single Supply Voltage
- Direct Digital Interface
- RH & Temperature Outputs
- Temperature Compensated
- Factory Calibrated
- Accurate to  $\pm 2\%$
- Field Replaceable
- Good stability
- Excellent Chemical Resistance
- Low cost

**Typical Applications**

- OEM Equipment
- Medical
- HVAC
- Pharmaceutical
- Food Equipment
- Hand Held Instruments
- Industrial
- Humidifiers
- Data Logging
- Automation
- Refrigeration
- Environmental Chambers
- Laboratory
- Clean Rooms

**MAXIMUM RATINGS**

Operating Temperature .....	32° to 158°F (0° to 70°C)
Storage Temperature .....	-40° to 257°F (-40° to 125°C)
Operating Humidity Range .....	0-100 percent
Supply Voltage .....	+5.5 volts
Soldering Temperature.....	10 sec at 520°F (250°C)

**SPECIFICATIONS**

**Humidity**

Accuracy.....±2.0% RH typical, 0-100% non-condensing (Note 1)  
 Linearity.....±0.5% RH  
 Hysteresis.....±1.0% RH, maximum  
 Temperature Coefficient.....±0.008% RH / °C, maximum  
 Response Time.....25 sec. in slow moving air at 77°F  
 Recovery Time (from condensation).....10 seconds  
 Stability.....±0.5% RH / year

**Temperature**

Accuracy.....±0.40°C Typical (Note 2)  
 Response Time.....50 sec. in slow moving air

**General**

Power Requirements...  
 Voltage Supply.....2.0 to 5.5V, 32° to 158°F (0 to 70°C)  
 Operating Current.....Less than 1 mA  
 Baud Rate.....9,600 baud  
 Data Format.....ASCII Text:  
 8 data bits, no parity, 1 stop bit  
 Hxxx.x T±xx.x <CR>  
 Output Rate.....First data out within 250 milliseconds from power on, then every 1.4 ±0.3 seconds  
 Package.....Four pin SIP with 0.100 inch lead spacing  
 Handling.....ESD >4 KV, Human Body Model

**PIN DIAGRAM**

(Front View)



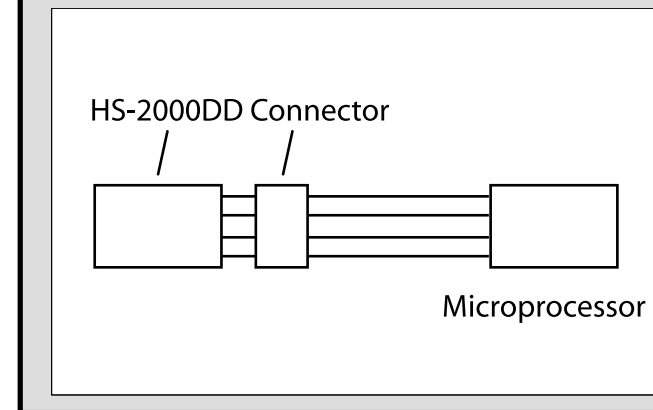
Pin # 1 2 3 4

Pin 1	TXD
Pin 2	Positive Supply
Pin 3	RXD (Data OUT from Sensor)
Pin 4	Ground

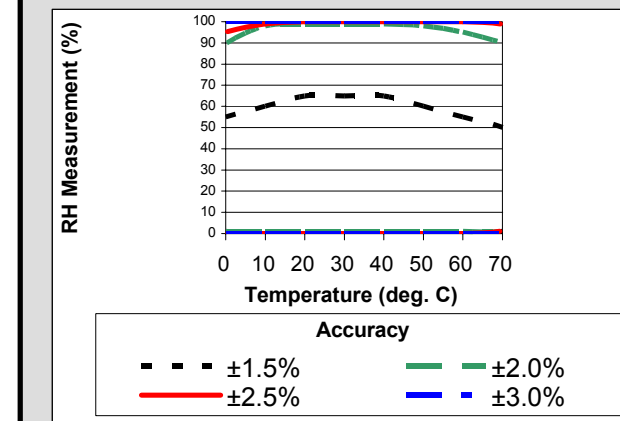
**Notes:**

1. See Figure 2 on page 3
2. See Figure 3 on page 3

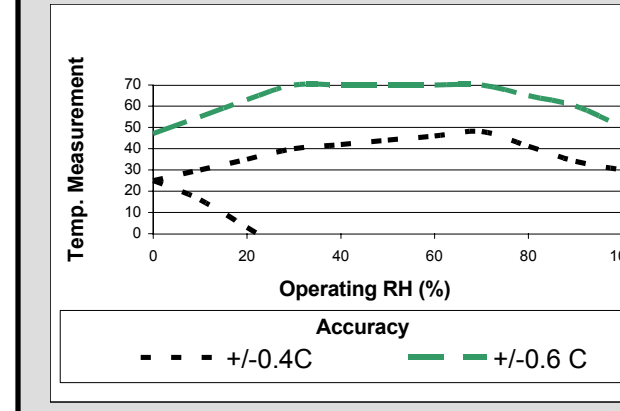
**FIG. 1 TYPICAL INSTALLATION**



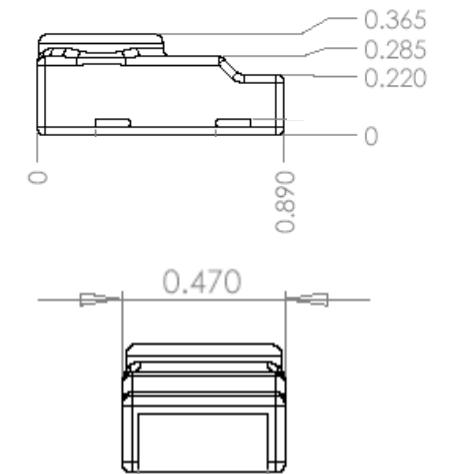
**FIG. 2 RH ACCURACY**



**FIG. 2 TEMPERATURE ACCURACY**



**Dimensions**



Tolerance on all dimensions ± 0.005 inch

**Ordering Information**

MODEL NUMBER	DESCRIPTION
HS-2000DD	Relative humidity and temperature sensor: standard serial output; RH range: 0 to 100%; Temperature range: 32° to 158°F (0° to 70°C)