



# Predictive Sensor Technology

## Wireless Condition Monitoring

www.PSensorTech.com

(888) 295-5321

316 North Main Street, Lynchburg, Ohio 45142

### Wireless 0 to 5 volt Sensor PST-A05

#### Description

The *PST 0-5 volt Sensor* is a cost-effective way to accurately measure the 0 to 5 volt output signal of an analog instrument. The signal data can then be transmitted wirelessly, stored in a database, and viewed with *iStatus Reporting* software. The sensor data can easily be scaled to output in whatever engineering units are needed.

#### Transmitter

The Wireless 0-5 volt Sensor Transmitter uses two AA batteries with an approximate two-year battery life. These 900 MHz transmitter radios use the license-free 902-928 MHz ISM band. Before each transmission, the radio checks for a clear channel before it sends the sensor data. If the channel is busy, it waits until it finds an opening; then transmits the data. This clear channel assessment approach allows the system to function efficiently in noisy areas or heavy RF traffic areas without disrupting other communications. Data is typically transmitted once every 30 seconds to optimize battery life and minimize RF traffic. This data rate is more than sufficient for condition monitoring applications, but custom update rates are available from the factory if the 30 second rate does not meet the needs of your application. The transmitter range will vary depending on the location. Typical industrial environments are not ideal for RF reception; it is best to evaluate the site with a transmitter and software to find the ideal locations for transmitters and receivers.



#### Sensor

<b>Temperature Range</b>	-40°C to 80°C	(-40°F to 176°F)
<b>Nominal Voltage Range</b>	0-6 volts	
<b>Measurable Voltage Range</b>	0 to 6 volts	
<b>Resolution</b>	10 mv	
<b>Accuracy</b>	+/- .2%	
<b>FCC ID-X58-PST-TX01</b>		
<b>Batteries</b>	2 "AA" 1.5 volt cells	
<b>Radio Frequency</b>	902 to 928 digitally modulated spread spectrum radio	

#### Parts List

Quantity	Part
1	PST-A05 0-5 volt Transmitter



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### Wiring

The 0-5 volt Sensor comes with two stripped 22 AWG wire leads. Connect the sensor in parallel with other voltage devices.

### Scaling in iStatus Software

Inputs from the PST-A05 are easily scaled in software using Zero and Span values in the Sensor Setup tab.

#### The Math:

*ScaledOutput* =

$$(RawInputFromSensor(volts) + ZeroValueinSensorSetup) * SpanValueinSensorSetup$$

#### Example 1:

Scale a 0-5 volt input for a 0 to 100% output. Relative Humidity in this case.

Step 1: Calculate the Span value.

Span Value in Sensor Setup =

$$SpanVal = \left( \frac{MaxScaledVal - MinScaledVal}{MaxRawVal - MinRawVal} \right) \quad SpanVal = \left( \frac{100\% - 0\%}{5volts - 0volts} \right) = 20$$

Step2 : Calculate the zero value.

Zero Value in Sensor Setup =

$$Zero = \left( \frac{MinScaledVal}{SpanVal} \right) - MinRawVal \quad Zero = \left( \frac{0\%}{20} \right) - 0volts = 0$$

Step 3: Enter the calculated values into Sensor Setup table under the Zero and Span columns for that sensor.

Alias	Units1	LowCritical1	LOW1	HI1	HiCritical1	Zero1	Span1
RH	%	10	25	70	75	0	20

Step 4: Select the Save Changes button. It can take up to 1 minute for scaling changes to take effect.

#### Example 2:

Scale a 0-5 volt input for a 20° to 100° output. Dewpoint in this case.

Step 1: Calculate the Span value.

$$SpanVal = \left( \frac{MaxScaledVal - MinScaledVal}{MaxRawVal - MinRawVal} \right) \quad SpanVal = \left( \frac{100^{\circ}F - 20^{\circ}F}{5volts - 0volts} \right) = 16.0$$

Step2 : Calculate the zero value.

$$Zero = \left( \frac{MinScaledVal}{Span} \right) - MinRawVal \quad Zero = \left( \frac{20^{\circ}F}{16.0} \right) - 0.0volts = 1.25$$



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Step 3: Enter the calculated values into Sensor Setup table under the Zero and Span columns for that sensor.

Step 4: Select the Save Changes button. It can take up to 1 minute for scaling changes to take effect.

Alias	Units1	LowCritical1	LOW1	HI1	HiCritical1	Zero1	Span1
Dewpoint	°F	-2	-1	50	60	1.25	16.0

Note: The low alarm limits have been set below the range of the sensor so that they are essentially out of the way because there isn't a LOW condition that would be cause for alarm in this example.

**This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:**

- 1) This device may not cause harmful interference, and
- 2) This device must accept any interference received, including interference that may cause undesired operation.

**Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.**

The Multi-Point Transmitter (MPT) is a low powered low bandwidth device that is designed for the monitoring of equipment and process parameters that change slowly over time. The factory default data update rate is 5 times per minute. This slow update rate allows this transmitter to enjoy a long battery life while maintaining a continuous watch on your equipment's health. The data rate is not suitable for control purposes and Predictive Sensor Technology does not recommend that it be used to control equipment.