

## SureCross™ Temperature and Humidity Sensor

A temperature and humidity sensor with a serial interface designed for the DX80 FlexPower™ Node with Serial Interface



### Features

The SureCross Temperature and Humidity Sensor works in a variety of environments to provide temperature and humidity measurements.

- Provides high accuracy temperature and humidity measurements
- Achieves humidity accuracy of  $\pm 2\%$  or  $\pm 3.5\%$  relative humidity and temperature accuracy of  $0.3^\circ\text{C}$ , depending on calibration process
- Manufactured with a robust metal housing
- Includes one serial single wire interface; RS232 compatible interface optional
- Functions with the DX80 FlexPower™ Node with Serial Interface

For additional information please refer to Banner Engineering's website, [www.bannerengineering.com/surecross](http://www.bannerengineering.com/surecross).

**DRAFT**

### Models

| Model    | Accuracy    | Power                           | I/O   |
|----------|-------------|---------------------------------|---|
| M12FTH1Q | $\pm 2\%$   | 3.6 to 5.5V dc low power option | Standard 1 wire serial interface, optional RS232 compatible interface |
| M12FTH2Q | $\pm 3.5\%$ | 3.6 to 5.5V dc low power option | Standard 1 wire serial interface, optional RS232 compatible interface |

\* Models M12FTH1Q and M12FTH2Q are interchangeable. The accuracy difference depends on the calibration process.



#### **WARNING . . . Not To Be Used for Personnel Protection**

Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death.

These devices do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A device failure or malfunction can cause either an energized or de-energized output condition. Consult your current Banner Safety Products catalog for safety products that meet OSHA, ANSI, and IEC standards for personnel protection.



# SureCross™ Temperature and Humidity Sensor with Serial Interface

## Hookup Diagrams

### 5-pin M12 Euro Hookup



|   | Wire Color | Function   |
|---|------------|--|
| 1 | Brown      | Power (+), constant 3.6 to 5.5V dc                                       |
| 2 | White      | Sinking discrete input   |
| 3 | Blue       | Ground (-)   |
| 4 | Black      | NMOS discrete output   |
| 5 | Gray       | Single wire serial communications (baud rate, 9600, 19.2k, 38.4k, 76.8k) |

## Serial Wire Interface Specification

### Serial Interface Physical Properties

The DX80 Node is the master device that polls the serial sensing device. Four wires make up the serial connection (the 5th wire is not currently used in the Euro-style connector cable).

|   | Wire Color | Use  |
|---|------------|--|
| 1 | Brown      | Power (+), constant 3.6 to 5.5V dc                                       |
| 2 | Blue       | Ground (-)   |
| 3 | Gray       | Single wire serial communications (baud rate, 9600, 19.2k, 38.4k, 76.8k) |
| 4 | White      | Serial Device Select (Input to sensing device)                           |
| 5 | Black      | Output (Optional use)  |



Continuous power is supplied with the brown (+) and blue (-) wires. The gray wire handles the serial communications between the DX80 Node and the serial sensing device. The white wire is a low active signal used to select the appropriate serial sensing device.

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## Specifications

Many of the DX80 parameters are configurable. The values in the tables represent factory defaults unless otherwise noted.

### General

|                  |                                 |
|------------------|---------------------------------|
| Power            | 3.6 to 5.5V dc low power option |
| Mounting Threads | M12 x 1                         |

### Performance

|                             |  |
|-----------------------------|--|
| Humidity Measuring Range    | 0 to 100% relative humidity  |
| Humidity Resolution         | 0.1% relative humidity   |
| Humidity Accuracy           | <b>M12FTH1Q:</b> ±2% relative humidity at 23° C<br><b>M12FTH2Q:</b> ±3.5% relative humidity at 23° C |
| Temperature Measuring Range | -40 to +80° C  |
| Temperature Resolution      | 0.1° C   |
| Temperature Accuracy        | ±0.3° C between 0 and 40° C  |

### Communications

|             |   |
|-------------|---|
| Interface   | Single wire serial interface, optional RS232 compatible interface |
| Baud Rates  | 9.6k, 19.2k (default), or 38.4k                                   |
| Data Format | 8 data bits, no parity, 1 stop bit                                |
| Protocol    | SureCross DX80 Smart Sensor Node Serial Interface                 |

### Environmental

|                        |   |
|------------------------|---|
| Environmental Rating   | IEC IP67; NEMA 6  |
| Operating Temperature* | -40 to +85° C (Electronics)   |
| Operating Humidity     | 95% max. relative (non-condensing)  |
| Shock and Vibration    | IEC 68-2-6 and IEC 68-2-7<br><b>Shock:</b> 30g, 11 millisecond half sine wave, 18 shocks<br><b>Vibration:</b> 0.5 mm p-p, 10 to 60 Hz |

\* Operating the devices at the maximum operating conditions for extended periods can shorten the life of the device.

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The manufacturer does not take responsibility for the violation of any warning listed in this document.



## CAUTION . . .

Make no modifications to this product.

Any modifications to this product not expressly approved by Banner Engineering could void the user's authority to operate the product. Contact the Factory for more information.

Always use lightning arrestors/surge protection with all remote antenna systems to avoid invalidating the Banner Engineering Corp. warranty. No surge protector can absorb all lightning strikes. Do not touch the SureCross device or any equipment connected to the SureCross device during a thunderstorm.

**WARRANTY:** Banner Engineering Corp. warrants its products to be free from defects for one year. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture found to be defective at the time it is returned to the factory during the warranty period. This warranty does not cover damage or liability for the improper application of Banner products. This warranty is in lieu of any other warranty either expressed or implied.

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