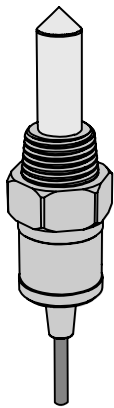


S24 Features

The S24 Dew Point Sensor monitors compressed air quality to help prevent damage to equipment and manufactured goods.



- Monitors dew point, humidity, and temperature in a compressed air system
- Stainless steel housing with an integrated 1/2 NPT process connection
- Provides serial data output for use in a control system
- Installs in the main distribution line or downstream line

S24 Models

Model	Function	Connector
S24AS-D-MQP	Dew point sensor with Modbus	Process connection: One 1/2" Male NPT 12-inch cable with a molded 4-pin M12 quick disconnect connector

Configuration Instructions

Sensor Configuration Software

The Sensor Configuration Software offers an easy way to manage the sensor Modbus settings, retrieve data, and visually show sensor data. The Sensor Configuration Software runs on any Windows machine and uses an adapter cable (BWA-UCT-900, p/n 19970) to connect the sensor to the computer.

Download the most recent version of the Sensor Configuration Software from the Banner Engineering website: https://info.bannerengineering.com/cs/groups/public/documents/software/b_3128586.exe.

S24 Modbus Registers

Sensor Data - Read Only

Sensor Address	Description	I/O Range		Holding Register Registration	
		Min Value	Max Value	Min (Dec)	Max (Dec)
40001	Humidity (%RH)	0	100%	0	10000
40002	Temperature (°C)	-1638.4	1638.3	-32768	32767
40003	Temperature (°F)				
40004	Dew Point (°C)				
40005	Dew Point (°F)				

The temperature = (Modbus register value) ÷ 20. The humidity = (Holding register value) ÷ 100. The dew point = (Holding register value) ÷ 100.

COMs Settings

Sensor Address	Description	I/O Range	Comments	Default	Access
40601	Baud Rate	0 = 9.6k 1 = 19.2k 2 = 38.4k	0 = 9600 1 = 19200 2 = 38400	1	RW

Continued on page 2

Continued from page 1

Sensor Address	Description	I/O Range	Comments	Default	Access
40602	Parity	0 = None 1 = Odd 2 = Even	0 = None 1 = Odd 2 = Even	0	RW
40603	Address	1-254	-	1	RW
40605	Restore Factory Configuration	0 = No Operation, 1 = Restore	-	-	WO

Device Information

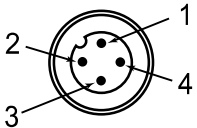
Sensor Address	Description	I/O Range	Comments	Default	Access
40606-40615	Banner Name	0-65535	-	Banner Engineering	RO
40616-40631	Product Name	0-65535	-	S24AS-D-MQP	RO
40632	Item H	0-65535	814716 split into two registers	12	RO
40633	Item L	0-65535		28284	RO
40634	Serial Number 1 (H)	0-65535	-	-	RO
40635	Serial Number 2	0-65535	-	-	RO
40636	Serial Number 3	0-65535	-	-	RO
40637	Serial Number 4 (L)	0-65535	-	-	RO
40644-40659	User Define Tag	0-65535	User writable space	More Sensors. More Solutions.	RW

S24 Installation Best Practices

The sensor can be installed directly into a pressurized air pipe using the integrated pipe fitting to secure and seal the connection.

- Install the sensor in a vertical or horizontal pipe
- Install the sensor in the top of a horizontal pipe to prevent liquid accumulation
- Verify the probe tip is exposed to the air stream for a proper reading
- Avoid mounting the sensor in a dead-end where airflow can be stagnant

Wiring Diagrams

Male (Gateway)	Pin	Wire Color	Sensor Connection
	1	Brown	10 V DC to 30 V DC
	2	White	RS485/D1/B/+
	3	Blue	Ground (-)
	4	Black	RS485/D0/A/-

S24 Specifications

Supply Voltage

10 V DC to 30 V DC at 50 mA maximum

Supply Current

Active Comms at 30 V DC: 4.5 mA

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Indicators

Green LED: Power

Amber LED (Flashing): Modbus communications active

Connections

12-inch cable with a 4-pin M12 quick disconnect connector

Construction

Housing: 316L Stainless Steel

Coupling: Nickel-plated brass

Process connection: 1/2" Male NPT

Strain relief: PVC

Vibration and Mechanical Shock

Meets IEC 60068-2-6 requirements (Vibration: 10 Hz to 55 Hz, 0.5 mm amplitude, 5 minutes sweep, 30 minutes dwell)

Meets IEC 60068-2-27 requirements (Shock: 15G 11 ms duration, half sine wave)

Environmental Rating at M12 Connection

IP65, IP67, IP68

Temperature and/or Humidity Input

Sample Rate: 3 seconds

Dew Point

Measuring Range: -116 °C to 85 °C (-176 °F to 185 °F)

Resolution: 0.1 °C (0.18 °F)

Accuracy:

- ±4.5 °C (20-90% RH)
- ±7 °C (10-20% RH)

Humidity

Measuring Range: 0 to 100% relative humidity (RH)

Resolution: 0.1% RH

Accuracy:

- $\pm 2\%$ at 25 °C
- $\pm 3\%$ at 0 °C to +70 °C (+32 °F to +158 °F) and 10% to 90% RH
- $\pm 7\%$ at 0 °C to +70 °C (+32 °F to +158 °F), and 0% to 10% or 90% to 100% RH

Temperature

Measuring Range: -40 °C to +85 °C (-40 °F to +185 °F)

Resolution: 0.1 °C (32.18 °F)

Accuracy:

- -40 °C to 0 °C (-40 °F to +32 °F): ± 0.8 °C (± 1.5 °F)
- 0 °C to +60 °C (+32 °F to +140 °F): ± 0.7 °C (± 1 °F)
- +60 °C to +85 °C (+140 °F to +185 °F): ± 1.3 °C (± 2.2 °F)

Operating Conditions

Temperature: -40 °C to +70 °C (-40 °F to +158 °F)

Storage Temperature: -40 °C to +80 °C (-40 °F to +176 °F)

Operating Pressure: 1 to 13 bar (14.5 to 188 PSIG)

Permissible Over Pressure: 27.58 bar (400 PSIG)

Required Overcurrent Protection

WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.

Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to Key definition for "{keyrefName}" not found in the DITA map..

Supply Wiring (AWG)	Required Overcurrent Protection (A)	Supply Wiring (AWG)	Required Overcurrent Protection (A)
20	5.0	26	1.0
22	3.0	28	0.8
24	1.0	30	0.5

Certifications

Banner Engineering BV
Park Lane, Culliganlaan 2F bus 3
1831 Diegem, BELGIUM



Turck Banner LTD Blenheim House
Blenheim Court
Wickford, Essex SS11 8YT
GREAT BRITAIN

Product Identification**FCC Part 15 Class B**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

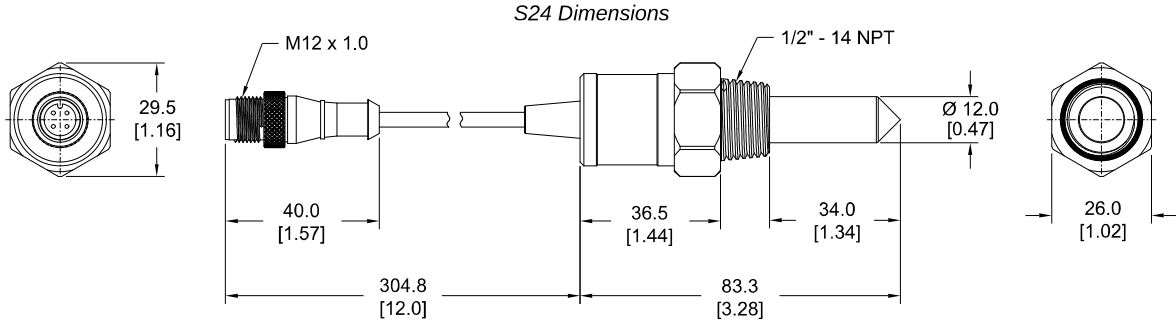
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Industry Canada ICES-003(B)

This device complies with CAN ICES-3 (B)/NMB-3(B). 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.

Cet appareil est conforme à la norme NMB-3(B). Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas occasionner d'interférences, et (2) il doit tolérer toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité du dispositif.

S24 Dimensions



S24 Accessories

Replacement filters:

FTH-FIL-002

Stainless steel, sintered to 40 micrometer porosity (for high dust environments.)



Cordsets

4-Pin Threaded M12 RS-485 to USB Adapter Cordset, with Wall Plug

Model	Length	Style	Dimensions	Pinout (Female)
BWA-UCT-900	1 m (3.28 ft)	Straight		<p>1 = Brown 2 = White 3 = Blue 4 = Black</p>

4-Pin Threaded M12 Cordsets—Double Ended

Model	Length	Style	Dimensions	Pinout
MQDEC-401SS	0.31 m (1 ft)	Male Straight/Female Straight		Female
MQDEC-403SS	0.91 m (2.99 ft)			
MQDEC-406SS	1.83 m (6 ft)			
MQDEC-412SS	3.66 m (12 ft)			
MQDEC-420SS	6.10 m (20 ft)			
MQDEC-430SS	9.14 m (30.2 ft)			
MQDEC-450SS	15.2 m (49.9 ft)	Male	<p>1 = Brown 2 = White 3 = Blue 4 = Black</p>	

5-Pin Threaded M12 Splitter Tee				
Model	Description		Pinout (Male)	Pinout (Female)
CSB-M1250M1250-T	Female trunk, 1 female branch, 1 male branch		 <p>1 = Brown 2 = White 3 = Blue</p>	 <p>4 = Black 5 = Green/Yellow</p>

Banner Engineering Corp Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change; Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersedes that which is provided in any other language. For the most recent version of any documentation, refer to: www.bannerengineering.com.

For patent information, see www.bannerengineering.com/patents.

Document title: S24 Dew Point Sensor
 Part number: 235396
 Revision: A
 Original Instructions
 © Banner Engineering Corp. All rights reserved.

