S15S Temperature and Humidity Sensor

Datasheet

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

- Connects via RS485 Modbus® registers
- Rugged over-molded design meets IP65, IP67, and IP68
- Connects directly to a sensor or anywhere in-line for ease of use
- Ships with aluminum grill filter cap
- Optional stainless steel 10 µm sintered filter available separately

Models

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.

Modbus Configuration

Table 1: 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.

Table 2: COMs Settings

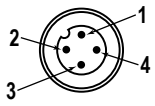
Sensor Address	Description	I/O Range	Comments	Default	Access
40601	Baud Rate	0 = 9.6k 1 = 19.2k 2 = 38.4k	0 = 9600 1 = 19200 2 = 38400	1	RW
40602	Parity	0 = None 1 = Odd 2 = Even	0 = None 1 = Odd 2 = Even	0	RW

Sensor Address	Description	I/O Range	Comments	Default	Access
40603	Address	1-254	-	1	RW
40605	Restore Factory Configuration	0 = No Operation, 1 = Restore	-	-	WO

Table 3: 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	-	S15S-TH-MQ	RO
40632	Item H	0..65535	812242 split into two registers	12	RO
40633	Item L	0..65535		27164	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

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/-

Status Indicators

Power LED Indicator (Green)

- Solid Green = Power On
- Off = Power Off

Modbus Communication LED Indicator (Amber LED 1)

- Flashing Amber= Modbus communications are active
- Off = Modbus communications are not present

Sensor Measurement LED Indicator (Amber LED 2)

- Flashes every five seconds

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

Leakage Current Immunity
400 µA

Resolution
12-bits

Indicators
Green LED: Power
Amber LED 1 (Flashing): Modbus communications active
Amber LED 2 (Flashing Every 5 Seconds): Sensor measurement LED indicator

Connections
Integral male/female 4-pin M12 quick disconnect

Temperature and/or Humidity Input
Sample Rate: 3 seconds

Humidity
Measuring Range: 0 to 100% relative humidity (RH)
Resolution: 0.1% RH
Accuracy:
± 2% at 25 °C
± 3% at 0 °C to +70 °C (+32 °F to +158 °F) and 10% to 90% RH
± 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)

Construction

Coupling Material: Nickel-plated brass
Connector Body: PVC translucent black

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

IP65, IP67, IP68
UL Type 1

Certifications

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

Turck Banner LTD Blenheim House, Blenheim Court, Wickford, Essex SS11 8YT, Great Britain

Operating Conditions

Temperature: –40 °C to +70 °C (–40 °F to +158 °F)
90% at +70 °C maximum relative humidity (non-condensing)
Storage Temperature: –40 °C to +80 °C (–40 °F to +176 °F)

Required Overcurrent Protection

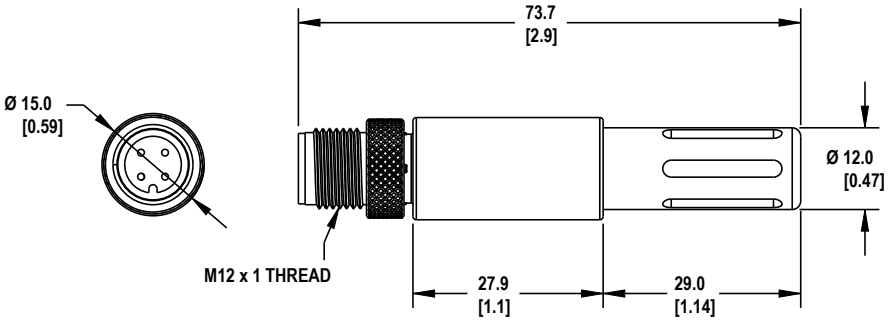
WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

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 www.bannerengineering.com.

Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

Dimensions

All measurements are listed in millimeters [inches], unless noted otherwise.



Accessories

Temperature-Humidity Filter Caps

FTH-FIL-001

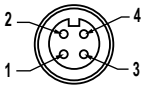
- Aluminum grill filter cap (factory default, ships with the M12FT*Q and Q45 All-in-One sensors)

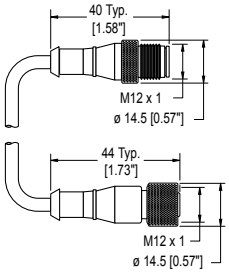
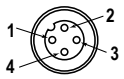
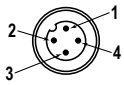
FTH-FIL-002

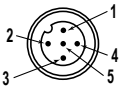
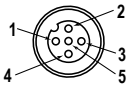
- Stainless steel, sintered to 10 micrometer porosity (for high dust environments.)

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		 1 = Brown 2 = White 3 = Blue 4 = Black

4-Pin Threaded M12 Cordsets—Double Ended				
Model	**Length**	**Style**	**Dimensions**	**Pinout**
MQDEC-401SS	0.31 m (1 ft)	Male Straight/ Female Straight		Female  Male  1 = Brown 2 = White 3 = Blue 4 = Black
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)			

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

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

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

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.