

S15C Thermistor Temperature Probe to Modbus® Converter

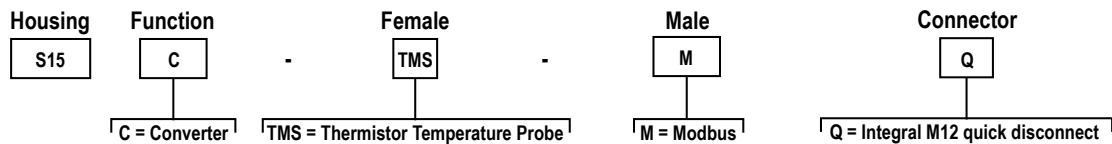


Datasheet



- Compact converter that connects to a thermistor probe and outputs the value to Modbus® registers
- Rugged over-molded design meets IP65, IP67, and IP68
- Connects directly to a sensor or anywhere in-line for ease of use

Models



Modbus Configuration

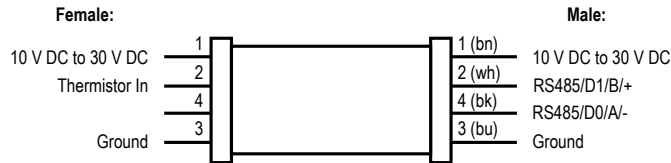
Modbus Register Address	Type	Name	I/O Range	Description	Notes	Default
IO Data Out						
40001	int16, Read Only	IO Data	Temperature °C (°F) = -4000 to +10500 (-4000 to +22100) Thermistor Resistance = 70 to 23980	Analog Data output ¹	Temperature °C/°F = Data Output ÷ 100 Thermistor Resistance = Data Output × 10	-
40002	int16, Read Only	IO Alarm State	-	-	0 = Within threshold range 1 = Out of threshold range	-
40003	int16, Read Only	IO Error Status	STATUS_ERROR_TYPE_NO_ERROR = 0 STATUS_ERROR_TYPE_BELOW_MIN = 1 STATUS_ERROR_TYPE_ABOVE_MAX = 2 STATUS_ERROR_TYPE_INVALID_THERM_OUTPUT = 3 STATUS_ERROR_TYPE_INVALID_THERM_TYPE = 4	Status of program	0-4 value	-
IO Data Rate						
41001	int16, Read and Shadow write	Sample IO	-	Sample interval time for IO	Minimum rate: 62.5 ms (0x01)	0x10 (1 sec)
Thermistor Input 1						
41014	uint16, Read and Shadow write	Thermistor curve Type	THERM_TYPE_G_CURVE = 0 THERM_TYPE_J_CURVE = 1	Selects which Thermistor type is utilized.	0 - 1 value, Thermistor Only	0
41015	uint16, Read and Shadow write	Output Type	THERM_OUTPUT_TYPE_C = 0 THERM_OUTPUT_TYPE_F = 1 THERM_OUTPUT_TYPE_RES = 2	Select which data value (Celsius, Fahrenheit, or Resistance) to output to IO 1 data (40001)	0 - 2 value	0
COMs Settings						

¹ IO Data readings below the minimum or above the maximum readings (see I/O range at register address 40001) rails to -32768 or 32767, respectfully.



Modbus Register Address	Type	Name	I/O Range	Description	Notes	Default
46101	Baud Rate	-	0 = 9.6k 1 = 19.2k 2 = 38.4k	-	-	1
46102	Parity	-	0 = None 1 = Odd 2 = Even	-	-	None
46103	Modbus Slave Address	-	1 to 247	-	-	1

Wiring Diagrams



Male (Gateway)	Female (Sensor)	Pin	Wire Color
		1	Brown
		2	White
		3	Blue
		4	Black



Important: If using a cable to connect the converter to an analog sensor, use of a shielded M12 cable is recommended, with the shield tied to pin 3.

Status Indicators

Power LED Indicator (Green)

- Solid Green = Power On
- Off = Power Off

Modbus Communication LED Indicator (Amber)

- Flashing Amber (4 Hz) = Modbus communications are active
- Solid Amber for 2 seconds to Off = Modbus communications are lost after connection
- Solid Amber for 2 seconds to Flashing Amber (4 Hz) = Modbus communications momentarily lost, but communication reestablished
- Solid Amber = Modbus communications are intermittent, or communications error occurs more frequently than once every 2 seconds
- Off = Modbus communications are not present

Specifications

Supply Voltage

10 V DC to 30 V DC at 50 mA maximum

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Leakage Current Immunity

400 µA

Resolution

12-bits

Accuracy

± 1.5 °C (± 3 °F)

Indicators

Green power
Amber Modbus communications

Connections

Integral male/female 4-pin M12 quick disconnect

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)

Certifications



Environmental Rating

IP65, IP67, IP68
NEMA/UL Type 1

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.

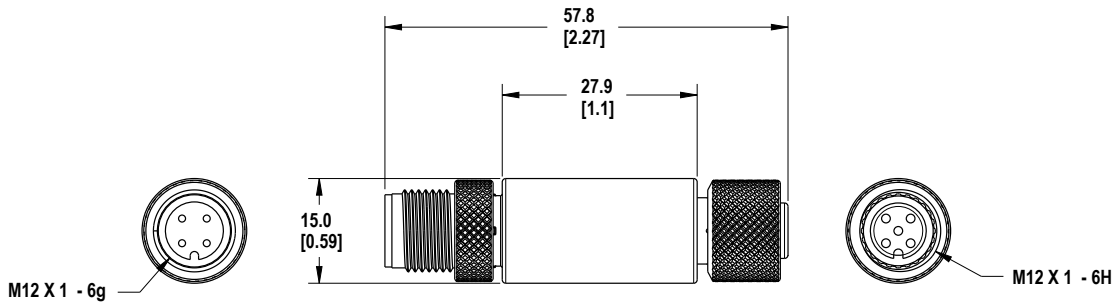
Supply wiring leads < 24 AWG shall not be spliced.

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

Cordsets

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)			1 2 3 4
MQDEC-406SS	1.83 m (6 ft)			Male
MQDEC-412SS	3.66 m (12 ft)			1 2 3 4
MQDEC-420SS	6.10 m (20 ft)			
MQDEC-430SS	9.14 m (30.2 ft)			
MQDEC-450SS	15.2 m (49.9 ft)			1 = Brown 2 = White 3 = Blue 4 = Black

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FCC Part 15 and CAN ICES-3 (B)/NMB-3(B)

This device complies with part 15 of the FCC Rules and 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.

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 and CAN ICES-3 (B)/NMB-3(B). 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 manufacturer.



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