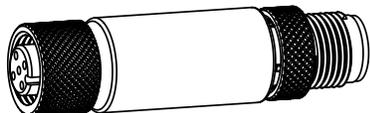


S15C Banner Bus to Modbus T-GAGE Converter



Datasheet



- Converts T-GAGE temperature information to Modbus registers
- Compact Banner 1-wire to Modbus converter for use with T-GAGE M18T Series Infrared Temperature Sensors
- Rugged over-molded design meets IEC IP65, IEC IP67, and IEC IP68
- Connected directly to a sensor or anywhere in-line for ease of use

Models



Overview

The S15C-BB-MTGQ is an easy-to-use converter that presents T-GAGE temperature data over the RS-485 Modbus network. This converter interfaces to the RS-485 Modbus RTU network through a 4-pin or 5-pin M12/Euro-style female cordset. To install the converter to a cable:

1. Align the notch in the cable's female connector with the key in the converter's male connector.
2. Gently slide the converter end into the cable's connector.
3. Rotate the cable's threaded nut to tighten the converter down.



WARNING: DO NOT attempt to rotate the converter after it is connected to the cable end. This will damage the converter.

Configuration Instructions

Sensor Configuration Software

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

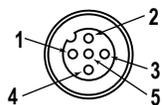
For more information on the T-GAGE M18T series, see Banner P/N 123698 *T-GAGE™ M18T Series Infrared Temperature Sensors*.

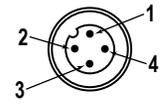
Modbus Register Address	Description	I/O Range	Holding Register Registration	Comments
Temperature – Read Only				
40002	Temperature (°C)	-20–320	-100 to 1600	Temperature = Register Value ÷ 5
40003	Temperature (°F)	-4–644	-20 to 3220	Temperature = Register Value ÷ 5
40004	Core/Ambient Temperature (°C)	-20–320	-100 to 1600	Temperature = Register Value ÷ 5
40005	High Temperature (°C)	-20–320	-100 to 1600	Temperature = Register Value ÷ 5
40006	Low Temperature (°C)	-20–320	-100 to 1600	Temperature = Register Value ÷ 5
40007	Core/Ambient Temperature (°F)	-4–644	-20 to 3220	Temperature = Register Value ÷ 5
40008	High Temperature (°F)	-4–644	-20 to 3220	Temperature = Register Value ÷ 5
40009	Low Temperature (°F)	-4–644	-20 to 3220	Temperature = Register Value ÷ 5
Analog – Read Only				
40400	Output	0-20	0 to 40000	Output = Register Value ÷ 2000
40401	Alarm State	0 = Off, 1 = On		Analog only
40402	Output Designation	0 = mA 1 = V 2 = None		0 = Current device 1 = Voltage 2 = Dual discrete



Modbus Register Address	Description	I/O Range	Holding Register Registration	Comments
Model Info - Read Only				
43000	Model Part Number (High Word)			Model Part Number
43001	Model Part Number (Low Word)			Model Part Number
43002	Model Version			Build, Major - High Byte Build, Minor - Low Byte
43003-43018	Model Name			16 registers/32 bytes (ASCII)
31000	Firmware Part Number (High Word)			Firmware Part Number
31001	Firmware Part Number (Low Word)			Firmware Part Number
31002	Firmware Version			Build, Major - High Byte Build, Minor - Low Byte
31003	Build Number			Build Number
Modbus - Read/Write				
46101	Baud	0 = 9.6k 1 = 19.2k 2 = 38.4k		19.2k = Default
46102	Parity	0 = None 1 = Odd 2 = Even		None = Default
46103	Modbus slave address	1 to 247		1 = Default

Wiring Diagrams

Female (Sensor)	Pin	Wire Color	Signal Description
	1	Brown	18 V DC to 30 V DC
	2	White	Not connected
	3	Blue	Ground
	4	Black	Discrete In
	5	Gray	Banner 1-wire

Male (Gateway)	Pin	Wire Color	Signal Description
	1	Brown	18 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)

- 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

Banner 1-Wire Communication LED Indicator (Amber)

- Flashing Amber (4 Hz) = Banner 1-Wire communications are active
- Off = Banner 1-Wire communications are not present

Specifications

Supply Voltage

18 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

Indicators

Green power
Amber Banner 1-wire
Amber ModBus communications

Connections

Integral 4-pin M12/Euro-style male quick disconnect
Integral 5-pin M12/Euro-style female 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, 1.0 mm amplitude, 5 minutes sweep, 30 minutes dwell)
Meets IEC 60068-2-27 requirements (Shock: 30G 11 ms duration, half sine wave)

Certifications



Environmental Rating

IEC IP65, IEC IP67, IEC 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



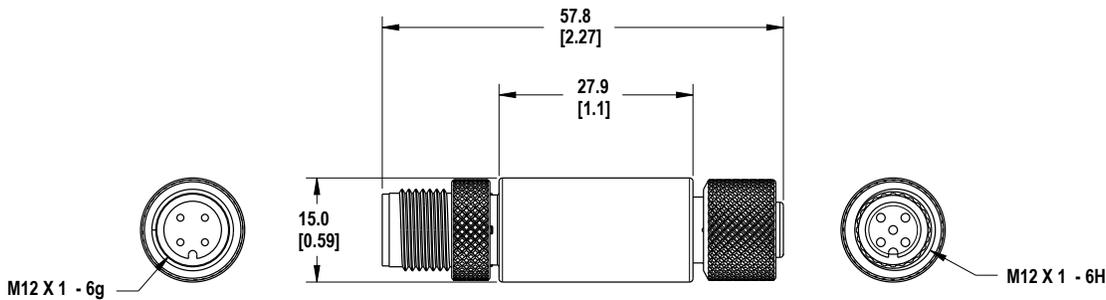
WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

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/Euro-Style 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-408SS	1.83 m (6 ft)			Male
MQDEC-412SS	3.66 m (12 ft)			
MQDEC-420SS	6.10 m (20 ft)			<p>1 = Brown 2 = White 3 = Blue 4 = Black</p>
MQDEC-430SS	9.14 m (30.2 ft)			
MQDEC-450SS	15.2 m (49.9 ft)			

5-Pin Threaded M12/Euro-Style Cordsets—Double Ended					
Model	Length	Style	Dimensions	Pinout (Male)	Pinout (Female)
MQDEC-501SS	0.31 m (1.02 ft)	Male Straight/ Female Straight			
MQDEC-503SS	0.91 m (2.99 ft)				
MQDEC-506SS	1.83 m (6 ft)				
MQDEC-512SS	3.66 m (12 ft)				
				1 = Brown 2 = White 3 = Blue	4 = Black 5 = Gray

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.

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

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.