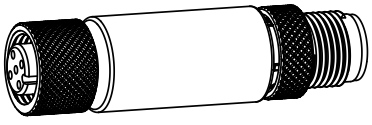
S15C Modbus Master to IO-Link Device Converter for Vibration and Temperature

Datasheet



- Compact ModBus master to IO-Link device converter for use with QM30VT2 Vibration and Temperature sensor
- Predefined ModBus registers are sent over IO-Link automatically
- Rugged over-molded design meets IEC IP65, IEC IP67, and IEC IP68
- Connects directly to a sensor or anywhere in-line for ease of use

Models

Housing	Function		Female		Male	Connector
S15	C	-	MVT	-	K	Q
	C = Converter		MVT = Modbus Vibration Temperature		K = IO-Link	Q = Integral M12/Euro-style quick disconnect

IO-Link®

IO-Link® is a point-to-point communication link between a master device and a sensor and/or light. It can be used to automatically parameterize sensors or lights and to transmit process data. For the latest IO-Link protocol and specifications, please visit www.io-link.com.

For the latest IODD files, please refer to the Banner Engineering Corp website at: www.bannerengineering.com.

Process Data In (Device to Master)

The S15C converter provides for the reading of three user-selectable sets of 15 Modbus Registers.

For more information, see Banner P/N 210732 *Sure Cross® QM30VT2 Vibration and Temperature Sensor*, Banner P/N 217177 *S15C Modbus Converter (Vibration and Temperature) - IO-Link Data Reference Guide*, and Banner P/N 217160 *S15C-MVT-KQ IODD Files*.

RegSet 0

Register Set 0 reads the following Modbus Registers with Imperial System values as applicable:

RegSet 0		
Reg Adr 01	45201	Z-Axis RMS Velocity (in/sec)
Reg Adr 02	45203	Temperature (°F)
Reg Adr 03	45205	X-Axis RMS Velocity (in/sec)
Reg Adr 04	45207	Z-Axis RMS Peak Acceleration (G)
Reg Adr 05	45208	X-Axis RMS Peak Acceleration (G)
Reg Adr 06	45209	Z-Axis Peak Velocity Component Frequency (Hz)
Reg Adr 07	45210	X-Axis Peak Velocity Component Frequency (Hz)
Reg Adr 08	45213	Z-Axis Kurtosis
Reg Adr 09	45214	X-Axis Kurtosis
Reg Adr 10	45215	Z-Axis Crest Factor
Reg Adr 11	45216	X-Axis Crest Factor
Reg Adr 12	45217	Z-Axis Peak Velocity (in/sec)
Reg Adr 13	45219	X-Axis Peak Velocity (in/sec)
Reg Adr 14	45221	Z-Axis High-Frequency RMS Acceleration (G)
Reg Adr 15	45222	X-Axis High-Frequency RMS Acceleration (G)

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ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

RegSet 1

Register Set 1 reads the following Modbus Registers with Metric System values as applicable:

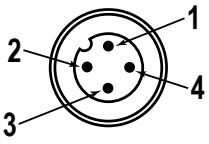
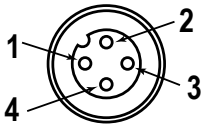
RegSet 1		
Reg Adr 01	45202	Z-Axis RMS Velocity (mm/sec)
Reg Adr 02	45204	Temperature (°C)
Reg Adr 03	45206	X-Axis RMS Velocity (mm/sec)
Reg Adr 04	45207	Z-Axis RMS Peak Acceleration (G)
Reg Adr 05	45208	X-Axis RMS Peak Acceleration (G)
Reg Adr 06	45209	Z-Axis Peak Velocity Component Frequency (Hz)
Reg Adr 07	45210	X-Axis Peak Velocity Component Frequency (Hz)
Reg Adr 08	45213	Z-Axis Kurtosis
Reg Adr 09	45214	X-Axis Kurtosis
Reg Adr 10	45215	Z-Axis Crest Factor
Reg Adr 11	45216	X-Axis Crest Factor
Reg Adr 12	45218	Z-Axis Peak Velocity (mm/sec)
Reg Adr 13	45220	X-Axis Peak Velocity (mm/sec)
Reg Adr 14	45221	Z-Axis High-Frequency RMS Acceleration (G)
Reg Adr 15	45222	X-Axis High-Frequency RMS Acceleration (G)

RegSet 2

Register Set 2 reads the following Modbus Registers specific to sensor information:

RegSet 2		
Reg Adr 01	44101	Serial Number Upper
Reg Adr 02	44102	Serial Number Lower
Reg Adr 03	44103	Model Number Upper
Reg Adr 04	44104	Model Number Lower
Reg Adr 05	44105	Production Date Upper
Reg Adr 06	44106	Production Date Lower
Reg Adr 07	44301	RF Firmware Part Number Upper
Reg Adr 08	44302	RF Firmware Part Number Lower
Reg Adr 09	44303	RF Firmware Version Upper
Reg Adr 10	44304	RF Firmware Version Lower
Reg Adr 11	44305	RF Firmware Version Engineering
Reg Adr 12	44306	RF EEPROM Part Number Upper
Reg Adr 13	44307	RF EEPROM Part Number Lower
Reg Adr 14	44308	RF EEPROM Version Upper
Reg Adr 15	44309	RF EEPROM Version Lower

Wiring Diagrams

Male	Female	Pin	Wire Color
		1	Brown
		2	White
		3	Blue
		4	Black

Female (Sensor)	Signal Description
Pin 1	18 V DC to 30 V DC
Pin 2	RS485/D1/B/+
Pin 3	Ground
Pin 4	RS485/D0/A/-

Male (IO-Link Master)	Signal Description
Pin 1	18 V DC to 30 V DC
Pin 2	Banner-specific
Pin 3	Ground
Pin 4	IO-Link

Status Indicators

Power LED Indicator (Green)

- Solid Green = Power On
- Off = Power Off

IO-Link Communication LED Indicator (Amber)

- Flashing Amber (900 ms On, 100 ms Off) = IO-Link communications are active
- Off = IO-Link communications are not present

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
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 IO-Link communications
Amber ModBus communications

Connections
Integral male/female 4-pin M12/Euro-style 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
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

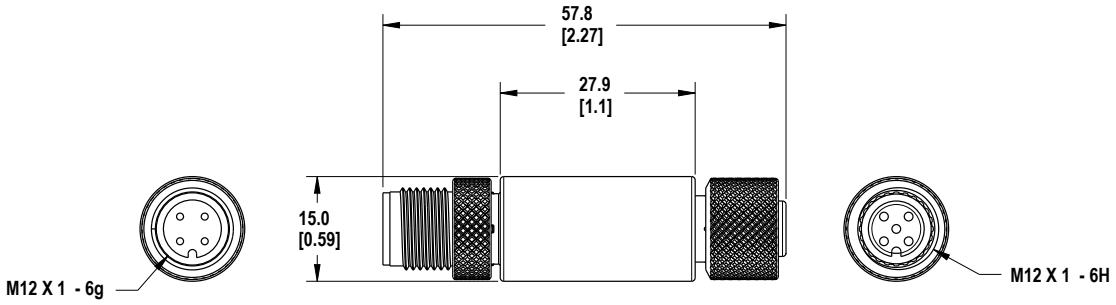
WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

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

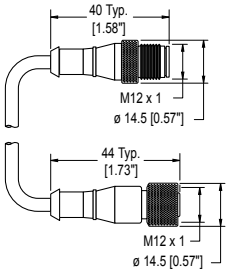
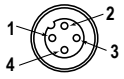
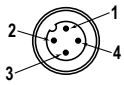
Dimensions

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  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)			

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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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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