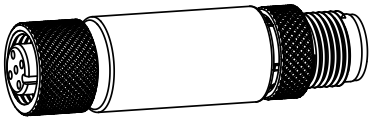
S15C Modbus Master to IO-Link Device Converter for EZ-ARRAY

Datasheet



- Compact Modbus master to IO-Link device converter for use with EZ-ARRAY receivers that have ModBus communications (for example, the EA5R-MODQ line)
- 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

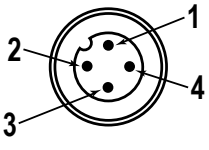
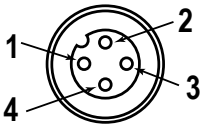
Models

Housing	Function		Female		Male	Connector
S15	C	-	MEZ	-	K	Q
	C = Converter		MEZ = Modbus EZ-ARRAY		K = IO-Link	Q = Integral M12/Euro-style quick disconnect

Installation Instructions

To connect to the RS-485 connection on the EZ-ARRAY, a 5-pin male-to-male cordset is required. The MQDEC-STP-501SS-MM (part number 806295) is a Banner cordset that can be used to connect the S15C converter to the EZ-ARRAY.

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

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ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

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 126701 *A-GAGE® EZ-ARRAY™ System Quick Start Guide*, Banner P/N 130426 *A-GAGE® EZ-ARRAY™ System Instruction Manual*, Banner P/N 217181 *S15C Modbus Converter (EZ-ARRAY) - IO-Link Data Reference Guide*, and Banner P/N 217164 *S15C-MEZ-KQ IODD Files*.

RegSet 0

Register Set 0 reads the following Modbus Registers with channel beam states for arrays 1200 mm or less:

RegSet 0		
Reg Adr 01	30003	Channel 1-16
Reg Adr 02	30004	Channel 17-32 (150 mm stick = 30/4 bytes, 2 registers)
Reg Adr 03	30005	Channel 33-48
Reg Adr 04	30006	Channel 49-64 (300 mm = 60/8 bytes, 4 registers)
Reg Adr 05	30007	Channel 65-80
Reg Adr 06	30008	Channel 81-96 (450 mm = 90/12 bytes, 6 registers)
Reg Adr 07	30009	Channel 97-112
Reg Adr 08	30010	Channel 113-128 (600 mm = 120/16 bytes, 8 registers)
Reg Adr 09	30011	Channel 129-144
Reg Adr 10	30012	Channel 145-160 (750 mm = 150/20 bytes, 10 registers)
Reg Adr 11	30013	Channel 161-176
Reg Adr 12	30014	Channel 177-192 (900 mm = 180/24 bytes, 12 registers)
Reg Adr 13	30015	Channel 193-208
Reg Adr 14	30016	Channel 209-224 (1050 mm = 210/28 bytes, 14 registers)
Reg Adr 15	30017	Channel 225-240 (1200 mm = 240/30 bytes, 15 registers)

RegSet 1

Register Set 1 reads the following Modbus Registers with measurement values and diagnostic data:

RegSet 1		
Reg Adr 01	30500	FBB
Reg Adr 02	30501	LBB
Reg Adr 03	30502	TBB
Reg Adr 04	30503	TRN
Reg Adr 05	30504	CBB
Reg Adr 06	30505	FBM
Reg Adr 07	30506	LBM
Reg Adr 08	30507	TBM
Reg Adr 09	30508	CBM
Reg Adr 10	30509	MBB
Reg Adr 11	40046	Emitter Power (Low Byte), Gain Method (High Byte)
Reg Adr 12	40047	Low sensitivity (Low Byte), HW Flags (High Byte)
Reg Adr 13	40050	Number of dirty channels
Reg Adr 14	40051	time of service 1/2
Reg Adr 15	40052	time of service 2/2

RegSet 2

Register Set 2 reads the following Modbus Registers with higher channel beam states specific to arrays 1500 mm and greater:

RegSet 2		
Reg Adr 01	30018	Channel 241-256
Reg Adr 02	30019	Channel 257-272
Reg Adr 03	30020	Channel 273-288
Reg Adr 04	30021	Channel 289-304 (1500 mm = 300/38 bytes, 19 registers)
Reg Adr 05	30022	Channel 305-320
Reg Adr 06	30023	Channel 321-336
Reg Adr 07	30024	Channel 337-352
Reg Adr 08	30025	Channel 353-360
Reg Adr 09	30026	Channel 369-384 (1800 mm = 360/46 bytes, 23 registers)
Reg Adr 10	30027	Channel 385-400
Reg Adr 11	30028	Channel 401-416
Reg Adr 12	30029	Channel 417-432 (2100 mm = 420/54 bytes, 27 registers)
Reg Adr 13	30030	Channel 433-448
Reg Adr 14	30031	Channel 449-464
Reg Adr 15	30032	Channel 465-480 (2400 mm = 480/60 bytes, 30 registers)

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

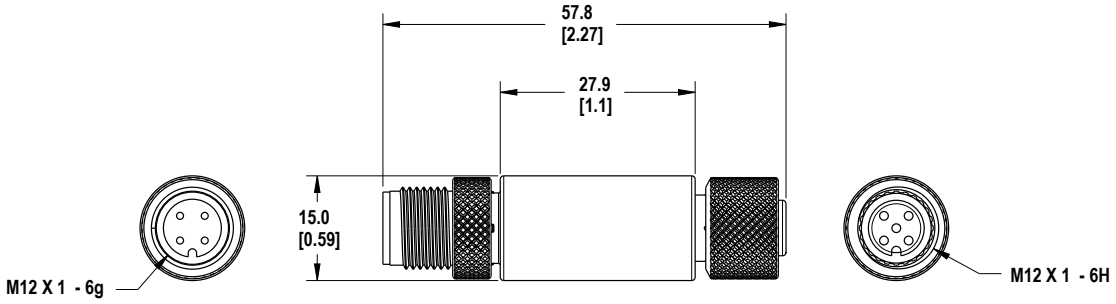
WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

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

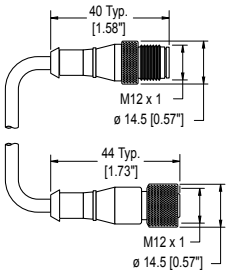
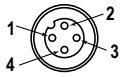
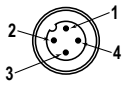
Dimensions

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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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.

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