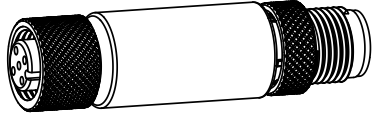


# S15C Modbus Master to IO-Link Device Converter

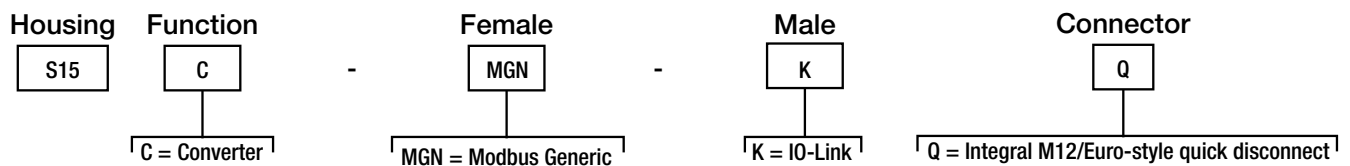


## Datasheet



- Compact Modbus master to IO-Link device converter that is user-configurable to read up to 60 registers and write up to 15
- 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



## Configuration

For more information, see Banner P/N 217176 *S15C Modbus Converter (Generic) - IO-Link Data Reference Guide* and Banner P/N 217165 *S15C-MGN-KQ IODD Files*.

## 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](http://www.io-link.com).

For the latest IODD files, please refer to the Banner Engineering Corp website at: [www.bannerengineering.com](http://www.bannerengineering.com).

## Register Read

The status of Modbus Register Reads is available via Process Data In. The S15C converter provides for the reading of four user-selectable sets of Modbus Registers:

- Read Register Set 0
- Read Register Set 1
- Read Register Set 2
- Read Register Set 3

Using IO-Link Parameter values, each Read Register Set allows 15 ModBus register addresses to be entered and read.

Using the Register Set To Read value in the Process Data Out, four sets of 15 ModBus registers can be read over Process Data In for a potential total of 60 unique ModBus register reads.

## Register Write

The status of Modbus Register Writes and Verification is available via Process Data In. The S15C converter provides for writing data to 15 Modbus registers. Using IO-Link Parameter values, the following write update types are available:

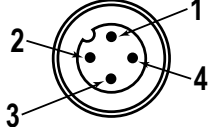
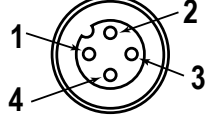
- Write Each Cycle
- Write Once
- Write Each Cycle if Mismatched
- Write Once if Mismatched

Using IO-Link Parameter values, the choice of verifying the results of a write is available, along with the following write command types:

- Use Write Single Register Command
- Use Write Multiple Register Command



## 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



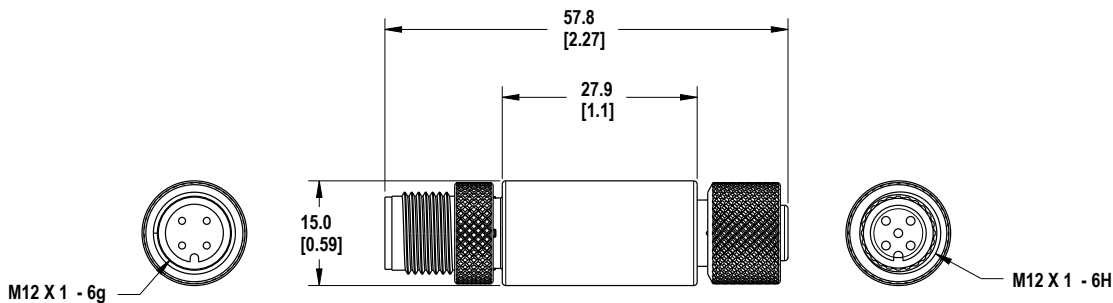
**WARNING:** Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

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](http://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-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](http://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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