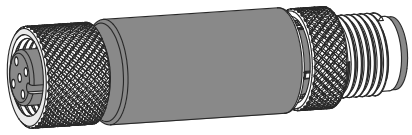
S15C Bimodal Discrete to IO-Link Device Converter

Datasheet



- Compact bimodal to IO-Link device converter that connects discrete inputs and sends the value to the IO-Link Master
- Enables additional logic functions such as delays, totalizer, count, EPM, duration, and mirroring
- Outputs a discrete value as received from IO-Link Master Process Data Out
- Discrete input/output can be independently configured as NPN or PNP
- Rugged overmolded design meets IP65, IP67, and IP68
- Connects directly to a sensor or anywhere in-line for ease of use
- S15C IO-Link converters are a quick, easy, and economical way to integrate non-IO-Link devices into an IO-Link system

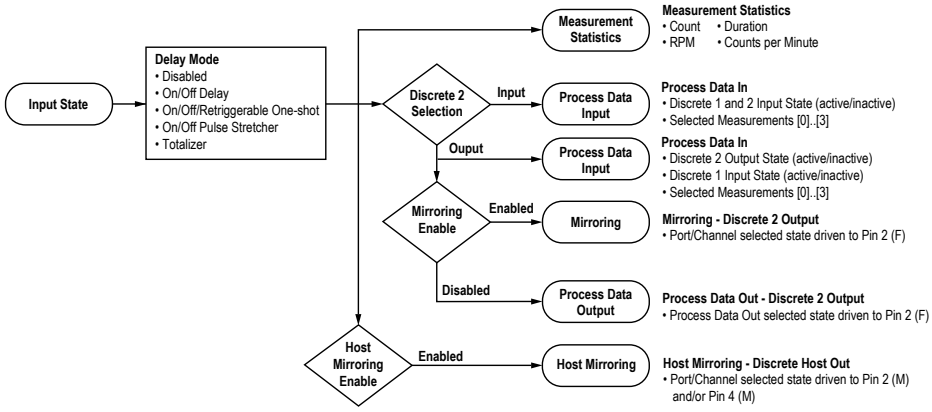
Models

Housing	Function		Female		Male	Connector
S15	C	-	B21	-	K	Q
	C = Converter		B21 = Bimodal, 2 inputs, 1 output		K = IO-Link	Q = Integral M12 quick disconnect

Configuration

For more information, see P/N 220757 *S15C-B21-KQ IO-Link Data Reference Guide* and P/N 220758 *S15C-B21-KQ IODD Files*.

Logic Flow



Measurements – Female Pins

Pin Number – Description	IO Metric	Description
Pin 4 – Discrete 1	Count Value	Running count of the received input pulses
	Duration Value	Duration of the last input pulse in µs with 50 µs granularity
	Events per Minute Value	Instantaneous rate counter in the units of events per minute Range: 1 to 300,000 Max Counter Input Frequency: 5 kHz
	Reset Metrics	• Do Not Reset • Reset
	Counts per Minute	Rolling count per minute average Range: 1 to 300,000 Max Counter Input Frequency: 5 kHz
Pin 2 – Discrete 2	Count Value	Running count of the received input pulses

Continued on page 2

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Continued from page 1

Pin Number – Description	IO Metric	Description
	Duration Value	Duration of the last input pulse in µs with 50 µs granularity
	Events per Minute Value	Instantaneous rate counter in the units of events per minute Range: 1 to 300,000 Max Counter Input Frequency: 5 kHz
	Reset Metrics	• Do Not Reset • Reset
	Counts per Minute	Rolling count per minute average Range: 1 to 300,000 Max Counter Input Frequency: 5 kHz

Pin Configuration – Female Input

Pin Number – Description	Name	Values
Pin 4 – Discrete 1	I/O Selection	• NPN Input • PNP Input
	Discrete 1 Delay Mode	• Disabled • On/Off Delay • On One-shot • Off One-shot • On Pulse-stretcher • Off Pulse-stretcher • Retriggerable On One-shot • Retriggerable Off One-shot • Totalizer
	Discrete 1 Delay Timer 1	Discrete 1 On Delay, One-shot, Pulse-Stretcher Time, or Totalizer Count
	Discrete 1 Delay Timer 2	Discrete 1 Off Delay or Totalizer Time
Pin 2 – Discrete 2	I/O Selection	• NPN Input • PNP Input • NPN Output with Pull Up • PNP Output with Pull Down • NPN Output with Push/Pull • PNP Output with Push/Pull
	Discrete 2 Delay Mode	• Disabled • On/Off Delay • On One-shot • Off One-shot • On Pulse-stretcher • Off Pulse-stretcher • Retriggerable On One-shot • Retriggerable Off One-shot • Totalizer
	Discrete 2 Delay Timer 1	Discrete 2 On Delay, One-shot, Pulse-stretcher Time, Or Totalizer Count
	Discrete 2 Delay Timer 2	Discrete 2 Off Delay or Totalizer Time
	Mirroring Enable	• Disabled • Enabled
	Mirroring Channel Selection	• Pin 4 – Discrete 1 • Pin 2 – Discrete 2
	Mirroring Inversion	• Not Inverted • Inverted
Pin 4 and Pin 2	Counts per Minute Mode	• Slow • Medium • Fast

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Pin Configuration – Male Output

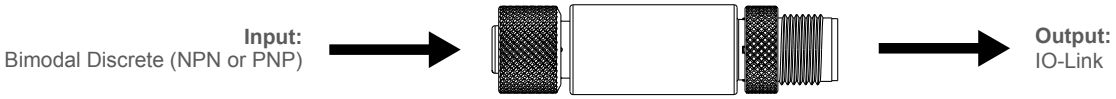
Pin Number – Description	Name	Values
Pin 2 – Discrete Host Out **Pin 4 – Discrete Host Out**	Host Mirroring Enable	• Disabled • Enabled
	Host Mirroring Channel Selection	• Pin 4 – Discrete 1 • Pin 2 – Discrete 2
	Host Mirroring Inversion	• Not Inverted • Inverted
	Host Mirroring Polarity	• PNP • NPN
	Host Mirroring Output Type	• Internal Pull Up/Down (Pin 2 only) • Open Collector • Push/Pull

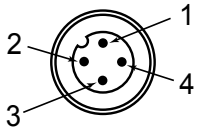
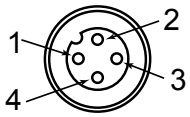
IO-Link®

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.

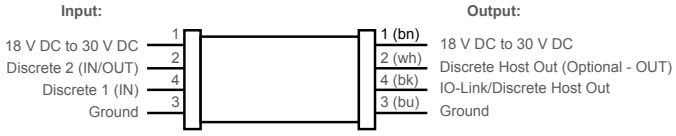
For the latest IODD files, please refer to the Banner Engineering Corp website at: www.bannerengineering.com.

Wiring Diagrams



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

Connecting Devices with Discrete Outputs



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

Discrete LED Indicator (Amber)

- Solid Amber = Discrete OUT is active
- Off = Discrete OUT is inactive

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Specifications

Supply Voltage
18 V DC to 30 V DC at 50 mA maximum

Power Pass-Through Current
1 A maximum

Discrete Output Load Rating
50 mA

Supply Protection Circuitry
Protected against reverse polarity and transient voltages

Leakage Current Immunity
400 µA

Discrete Output Ratings
OFF-state leakage current:
NPN: 300 µA
PNP: 10 µA
ON-state saturation voltage:
NPN: 2 V at 50 mA
PNP: 2 V at 50 mA

Indicators
Green: Power
Amber: IO-Link communications
Amber: Discrete OUT active

Connections
Integral male/female 4-pin M12 quick-disconnect connector

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)

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 (A)	Supply Wiring (AWG)	Required Overcurrent Protection (A)
20	5.0	26	1.0
22	3.0	28	0.8
24	1.0	30	0.5

Certifications

Banner Engineering BV
Park Lane, Culliganlaan 2F bus 3
1831 Diegem, BELGIUM

Turck Banner LTD Blenheim House
Blenheim Court
Wickford, Essex SS11 8YT
GREAT BRITAIN

c UL us LISTED PROGRAMMABLE CONTROLLER E316212

IO-Link®

FCC Part 15 Class B

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. 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 dealer or an experienced radio/TV technician for help.

Industry Canada ICES-003(B)

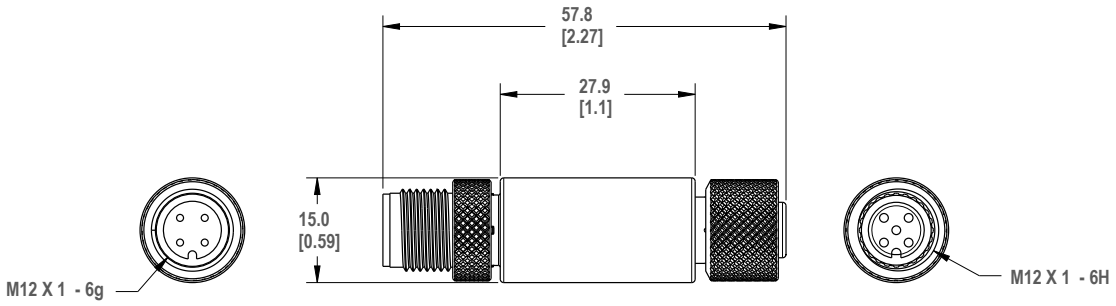
This device complies with CAN ICES-3 (B)/NMB-3(B). Operation is subject to the following two conditions: 1) This device may not cause harmful interference; and 2) This device must accept any interference received, including interference that may cause undesired operation.

Cet appareil est conforme à la norme NMB-3(B). Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas occasionner d'interférences, et (2) il doit tolérer toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité du dispositif.

Dimensions

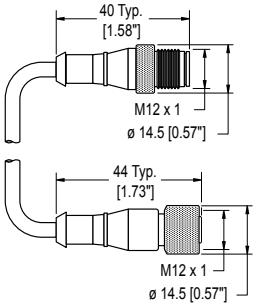
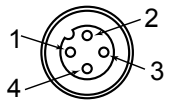
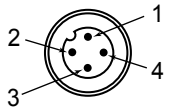
All measurements are listed in millimeters [inches], unless noted otherwise.

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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  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)			

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