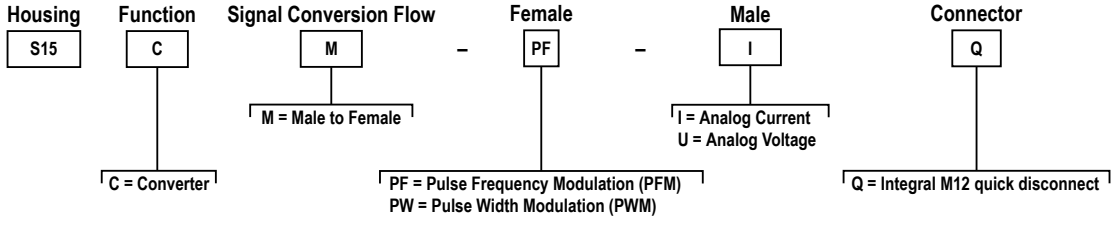
S15C Analog to Pulsed I/O Converter

Datasheet



- Compact converter that connects to a current source (4 mA to 20 mA) or a voltage source (0 V DC to 10 V DC), and outputs the value as a pulsed signal, either PFM or PWM
- Rugged over-molded design meets IP65, IP67, and IP68
- Connects directly to a Pulse Pro enabled indicator or anywhere in-line for ease of use

Models

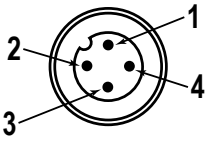
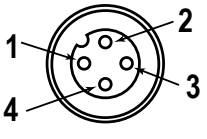


Pulsed I/O

Pulse Frequency Modulation (PFM) is a digital way to represent an analog value by varying the frequency of a pulse train. It is measured in Hertz (Hz).

Pulse Width Modulation (PWM) is a digital way to represent an analog value by varying the width of pulses at a constant frequency. The duty cycle (on-time versus off-time) is measured in percent from 0-100.

Wiring Diagrams

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

Male (Analog Input)	Signal Description
Pin 1	12 V DC to 30 V DC
Pin 2	Analog Input (4 mA to 20 mA, or 0 V to 10 V)
Pin 3	Ground
Pin 4	Analog Reference

Female (Pulse Output)	Signal Description
Pin 1	12 V DC to 30 V DC
Pin 2	Pulse Frequency Modulated (PFM) Output*
Pin 3	Ground
Pin 4	Pulse Width Modulated (PWM) Output*

*Only one output per device based on model

Status Indicators

Power LED Indicator (Green)

- Solid = Power On
- Off = Power Off

Pulsed I/O LED Indicator (Amber)

- Solid = Pulsed output is in range and active
- Flashing = Pulsed output is at limits
- Off = Pulsed output is inactive

Analog Input LED Indicator (Amber)

- Solid = Analog value is within valid range (4 mA to 20 mA, or 0 V to 10 V)
- Flashing = Output is at limits or out of range

Default Value Table		
Analog	**PFM**	**PWM**
0 V	100 Hz	0%
10 V	600 Hz	100%
4 mA	100 Hz	0%
20 mA	600 Hz	100%

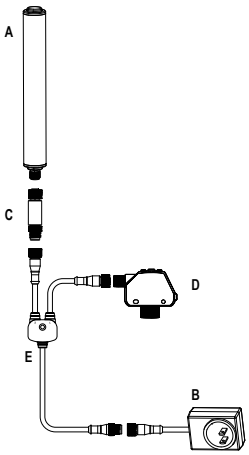
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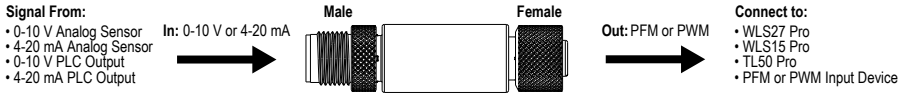
Connecting a Pro Light to a Sensor or PLC



A = WLS27 Pro, WLS15 Pro, or TL50 Pro with Pro Editor
B = Power Supply (PSW-24-1 or PSD-24-4)
C = S15C Pulse Pro Converter; for model selection, see Table 1 below
D = Sensor or PLC with 0-10 V or 4-20 mA analog output; for model selection, see Table 1 below
E = Splitter to connect sensor and light (CSB-M1241M1241)

Table 1: Model Selection

Output: Pulse Pro (Female)	Input: Analog (Male)	
	4-20 mA	0-10 V
PFM	S15CM-PF-IQ	S15CM-PF-UQ
PWM	S15CM-PW-IQ	S15CM-PW-UQ



Note: For installation flexibility, see double-ended cordset options in Accessories on page 3.

Specifications

Supply Voltage
12 V DC to 30 V DC at 50 mA maximum exclusive of load
PWM/PFM output: 50 mA maximum

Supply Protection Circuitry
Protected against reverse polarity and transient voltages

Sampling Rate
20 Hz

Indicators
Green power
Amber pulse output present
Amber analog value present

Connections
Integral male/female 4-pin M12 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

Advanced Capabilities
PULSE® PRO I/O

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

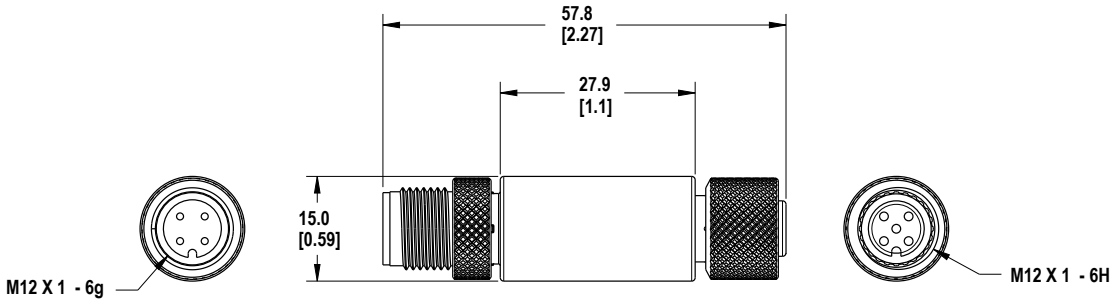
WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

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 (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

Dimensions

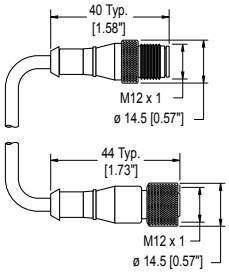
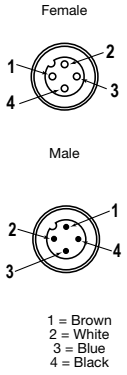
All measurements are listed in millimeters [inches], unless noted otherwise.



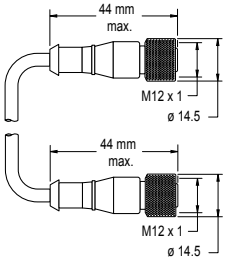
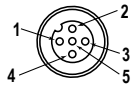
Accessories

Cordsets

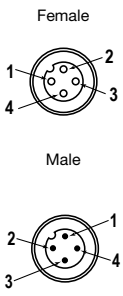
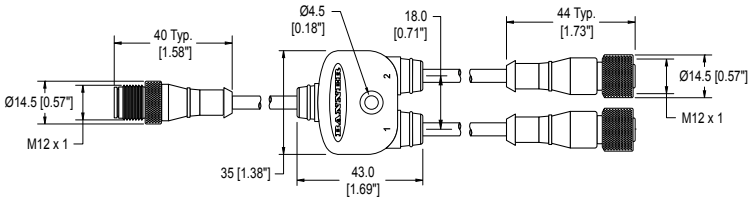
4-Pin Threaded M12 Cordsets—Double Ended

Model	Length	Style	Dimensions	Pinout
MQDEC-401SS	0.31 m (1 ft)	Male Straight/Female Straight		 1 = Brown 2 = White 3 = Blue 4 = Black
MQDEC-403SS	0.91 m (2.99 ft)			
MQDEC-406SS	1.83 m (6 ft)			
MQDEC-430SS	9.14 m (30.2 ft)			

5-Pin Threaded M12 Shielded Twisted Pair Cordsets—Double Ended

Model	Length	Style	Dimensions	Pinout (Female)
MQDEC-STP-501SS-FF	0.31 m (1 ft)	Female Straight/ Female Straight		 1 = Brown 2 = White 3 = Blue 4 = Black 5 = Shield

4-Pin Threaded M12 Splitter Cordsets—Flat Junction

Model	Branches (Female)	Trunk (Male)	Pinout
CSB-M1240M1240	No branch	No trunk	 1 = Brown 2 = White 3 = Blue 4 = Black
CSB-M1240M1241	2 × 0.3 m (1 ft)	No trunk	
CSB-M1241M1241		0.30 m (1 ft)	
CSB-M1248M1241		2.44 m (8 ft)	
CSB-M12415M1241		4.57 m (15 ft)	
CSB-M12425M1241		7.60 m (25 ft)	
CSB-UNT425M1241		7.60 m (25.0 ft) Unterminated	
			

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FCC Part 15

This device complies with Part 15 of the FCC Rules. 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.

Industry Canada

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.

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