

BX Series High Resolution Area Sensor



High resolution area sensor (light screen) - DC

- 70 mm controlled area height
- Operating distance up to 2m
- Adjustable sensitivity
- NPN or PNP with NO/NC selectable output
- Emitter and receiver LED status indicators
- IP67 rated



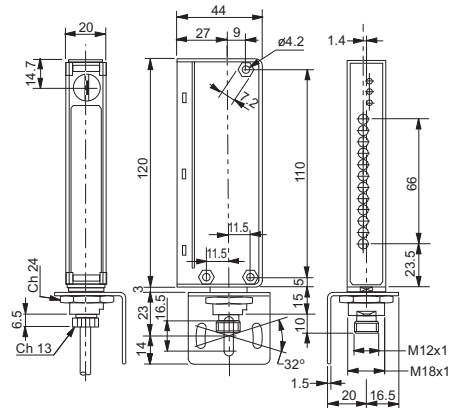
BX80 Series Area Sensor Selection Chart							
Part Number	Price	Function	Sensing Range	Output State	Logic	Connection	Wiring
BX80B-1N-0H	<--->	Receiver	2m (78.74in)	N.O./N.C. selectable	NPN	M12 (12mm) connector	Figure 1
BX80B-1P-0H	<--->	Receiver			PNP		Figure 2
BX80S-10-0H	<--->	Emitter			Receiver dependent		Receiver dependent

Specifications	
Type	Thru-beam
Sensing Distance	2m (2.56 ft)
Light Spot Diameter	N/A
Emission	Infrared (880nm)
Sensitivity	Fixed
Output Type	NPN or PNP; N.O./N.C.selectable
Operating Voltage	12-24VDC
No-load Supply Current	Emitter: 100mA; Receiver: 50mA
Operating (Load) Current	≤100mA
Off-state (Leakage) Current	≤10µA
Voltage Drop	1.2volt maximum at 100mA
Switching Frequency	50Hz
Ripple	≤10%
Time Delay Before Availability (tv)	500ms
Short-Circuit Protection	Yes (switch autoresets after overload is removed)
Operating Temperature	-25° to 50°C (-13° to 122°F)
Protection Degree (DIN 40050)	IEC IP67
Emitter's LED Indicators - Switching Status	Green (power), Red (sync. alarm), Yellow (area occupied)
Receiver's LED Indicators - Switching Status	Green (power), Red (alignment alarm), Yellow (output energized)
Housing Material	Polybutylene Terephthalate (PBT)
Lens Material	Polycarbonate (PC)
Shock/Vibration	See terminology section
Tightening Torque	25 Nm (18.44 lb-ft) max.
Weight	300g (10.58oz)
Agency Approvals	cULus E187310, CE

Switching Element Function		
	Thru-beam and Reflective Models	Diffuse Reflective Models
Light on	N.C.	N.O.
Dark on	N.O.	N.C.

Dimensions

(mm)



Wiring diagrams

Figure 1

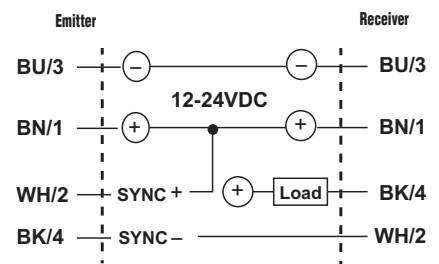
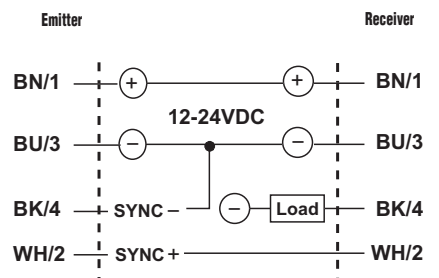
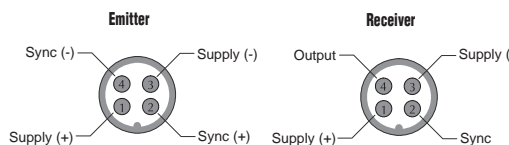


Figure 2



Connectors





Company Information

Systems Overview

Programmable Controllers

Field I/O

Software

C-more & other HMI

Drives

Soft Starters

Motors & Gearbox

Steppers/ Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Current Sensors

Pressure Sensors

Temperature Sensors

Pushbuttons/ Lights

Process

Relays/ Timers

Comm.

Terminal Blocks & Wiring

Power

Circuit Protection

Enclosures

Tools

Pneumatics

Safety

Appendix

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Part # Index

Sensor Cables and Connectors

Cables with quick-disconnect plugs

- Industry standard axial and right-angle M8/M12 screw-lock connectors with open leads. The cables listed can be used with patch cables
- 2m, 5m, 7m and 10m cable lengths
- PVC (polyvinyl chloride) jacket for typical industrial applications
- PUR (polyurethane) jacket for oily and direct sunlight applications
- IP67 rated



CD12M-0B-050-C1 and -A1 shown

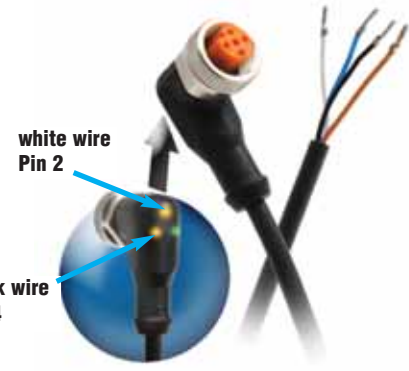
M8 Quick-Disconnect Cables (Pico, Nano)							
Part Number	Price	Length	Poles	Connector	LED	Jacket	Dimensions
M8 Quick-Disconnects							
CD08-0A-020-A1	<--->	2m (6.5ft.)	3	Axial	No	PVC	Figure 1
CD08-0A-020-C1	<--->	2m (6.5ft.)	3	Right-angle	No	PVC	Figure 2
CD08-0A-050-A1	<--->	5m (16.4ft.)	3	Axial	No	PVC	Figure 4
CD08-0C-050-A1	<--->	5m (16.4ft.)	3	Axial	No	PUR	Figure 3
CD08-0A-050-C1	<--->	5m (16.4ft.)	3	Right-angle	No	PVC	Figure 5
CD08-0C-050-C1	<--->	5m (16.4ft.)	3	Right-angle	No	PUR	Figure 5
CD08-0A-070-A1	<--->	7m (23ft.)	3	Axial	No	PVC	Figure 1
CD08-0A-070-C1	<--->	7m (23ft.)	3	Right-angle	No	PVC	Figure 2

M12 Quick-Disconnect Cables (Euro, Micro DC-Single Key)							
Part Number	Price	Length	Poles	Connector	LED	Jacket	Dimensions
M12 Quick-Disconnects							
CD12L-0B-020-A0	<--->	2m (6.5ft)	4	Axial	No	PVC	Figure 6
CD12L-0B-020-C0	<--->	2m (6.5ft)	4	Right-angle	No	PVC	Figure 7
CD12M-0B-050-A1*	<--->	5m (16.4ft)	3	Axial	No	PVC	Figure 8
CD12M-0D-050-A1*	<--->	5m (16.4ft)	3	Axial	No	PUR	Figure 9
CD12M-0B-050-C1*	<--->	5m (16.4ft)	3	Right-angle	No	PVC	Figure 10
CD12M-0D-050-C1*	<--->	5m (16.4ft)	3	Right-angle	No	PUR	Figure 11
CD12M-0B-070-A1	<--->	7m (23ft)	4	Axial	No	PVC	Figure 6
CD12M-0B-070-C1	<--->	7m (23ft)	4	Right-angle	No	PVC	Figure 7

* Note: Do not use with sensors that require 4-pole cables.

Cables with LED and quick-disconnect plugs

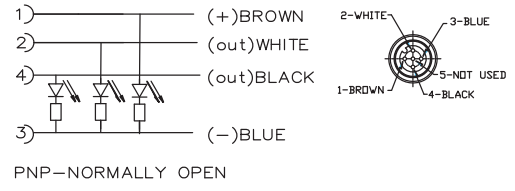
- Industry standard M12 right angle female plug with open leads
- These cables can be used with patch cables
- 2m, 5m and 10m cable lengths
- PUR (polyurethane) jacket for oily and direct sunlight applications
- IP67 /IP68 / IP69K, II rated
- LED indication for 10 -36 VDC PNP sensors only



M12 Quick-Disconnect Cables with LED Indicator (Euro, Micro DC-Single Key)							
Part Number	Price	Length	Poles	Connector	LED	Jacket	Dimensions
M12 Quick-Disconnects							
EVC178*	<--->	2m (6.5ft)	4	Right-angle	Yes	PUR	Figure 12
EVC179*	<--->	5m (16.4ft)	4	Right-angle	Yes	PUR	Figure 12
EVC180*	<--->	10m (32.8ft)	4	Right-angle	Yes	PUR	Figure 12

*Note: LED for 10 to 36 VDC PNP only.
 Do not use with NPN or analog output devices.
 Do not use when white wire (Pin 2) is used for selection of a sensor function.
 Do not use when emitter has check function.

LED Models' Wiring



Sensor Cables and Connectors

Cable Specifications					
Specification	M8		M12		M12 with LED
Length	2m (6.5ft) / 7m (23ft)	5m (16.4ft)	2m (6.5ft) / 7m (23ft)	5m (16.4ft)	2m (6.5 ft) / 5m (16.4ft) / 10m (32.8ft)
Nominal Voltage	50VAC/75VDC	60VAC/DC	300VAC	250VAC/DC	10 to 36VDC
Max Current	4A		4A		4A
LED Current Loading	N/A	N/A	N/A	N/A	10V input Brown wire LED: 1.7mA White and/or Black LED: 0.9mA 36V input Brown wire LED: 7.3mA White and/or Black LED: 4.7mA
Protection Degree	IP67	IP65 / IP68 / IP69K	IP67	PVC: IP68 PUR: IP68 / IP69K	IP67 / IP68 / IP69K
Material Nut	brass; nickel plated		brass; nickel plated		brass; nickel plated
Jacket Material	PolyVinyl Chloride, (PVC)	PVC:CD08-0A-xxx. PUR:CD08-0C-xxx	PVC	PVC:CD12M-0B-xxx. PUR:CD12M-0D-xxx	PolyURethane (PUR)
Housing Material	Polyurethane (PUR)		Polyurethane (PUR)		Polyurethane (PUR)
Contacts Material	Copper-Tin Alloy (CuSn) -gold plated		Copper-Tin Alloy (CuSn) -gold plated		Gold plated brass
Tightening Torque	0.5 Nm	≤ 0.4 Nm	0.5 Nm	≤ 0.4 Nm	0.6 to 1.5 Nm
Conductors Cross Section (AWG)	0.25mm ² (24 AWG)	0.25mm ² (24 AWG)	0.25mm ² (24 AWG)	0.34mm ² (22 AWG)	4 x 0.34mm ² (4 x 22 AWG)
Ø Outer Cable	5mm	PVC: 4 mm PUR: 4 mm	5mm	PVC: 4.2 mm PUR: 4.3 mm	5mm
Temperature Range	-25° to +80°C (-13° to 176°F)	-25° to 90°C (-13° to 194°F)	-25° to +80°C (-13° to 176°F)	PVC: -30° to 70°C (-22° to 158°F) PUR: -50° to 90°C (-58° to 194°F)	-25° to +90°C (-13° to 194°F)
Environmental	N/A	Halogen free, Silicone free	N/A	Halogen free, Silicone free	Halogen free, Silicone free
Function Display Power LED	N/A	N/A	N/A	N/A	Green
Switching Status LED	N/A	N/A	N/A	N/A	2 x Yellow
Drag Chain (Roller Cable Tray) Suitability	Bending Radius	min. 10 x cable diameter			
	Bending Cycles	N/A	N/A	N/A	>5 million
	Travel Speed	N/A	N/A	N/A	Max. 3.3 m/s for a horizontal travel length of 5 meters and max. acceleration of 5 m/s ²
	Torsional Strain	N/A	N/A	N/A	±180°/m
Agency Approvals	RoHS				UL File E191684, RoHS

UL Reference	
Part Number	Mini-Series Female Cord Connectors Series M12, UL Catalog Number
EVC178	ADOAH043MSS0002H04
EVC179	ADOAH043MSS0005H04
EVC180	ADOAH043MSS0010H04
<i>Note: Shown in UL file under Mini-series Female Cord Connectors using catalog number</i>	

Dimensions

mm [inches]

Figure 1

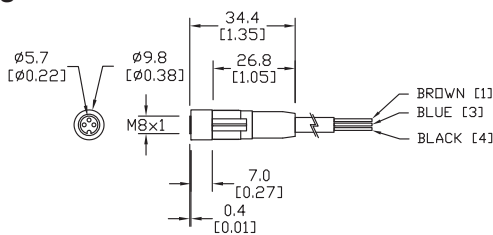
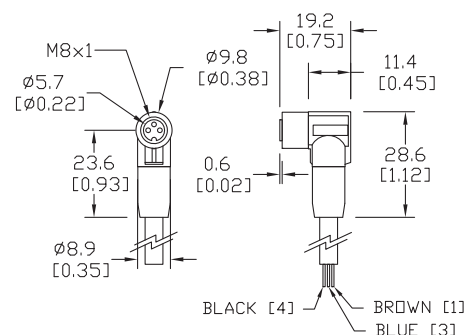


Figure 2



Sensor Cables and Connectors



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Dimensions

mm [inches]

Figure 3

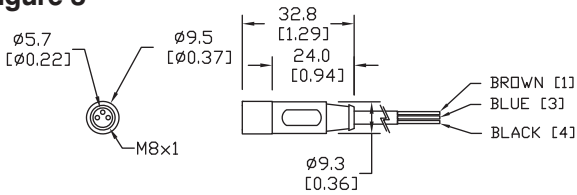


Figure 4

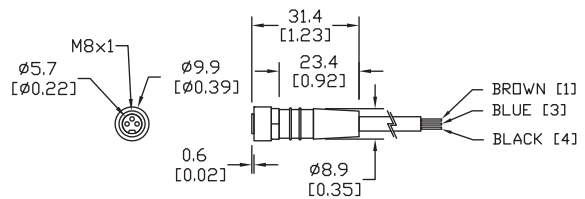


Figure 5

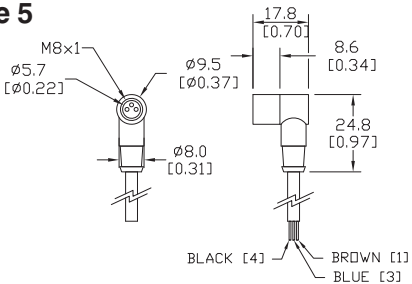


Figure 6

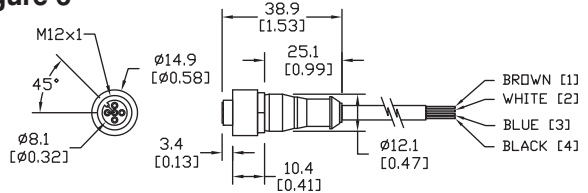


Figure 7

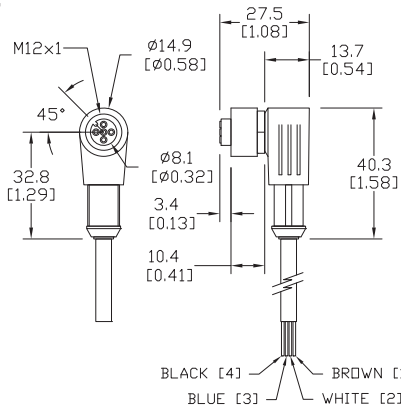


Figure 8

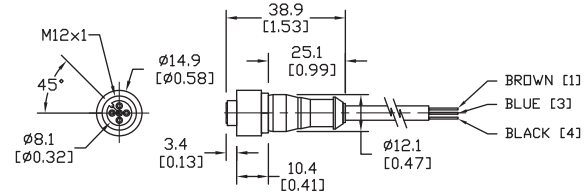


Figure 10

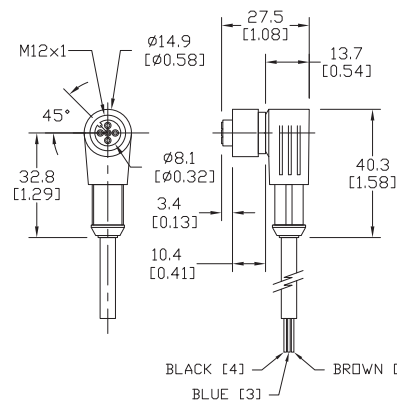


Figure 9

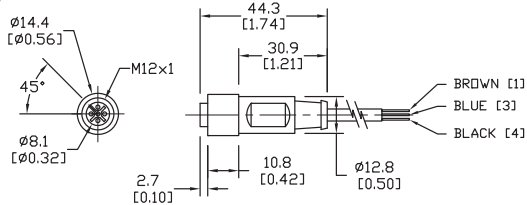


Figure 11

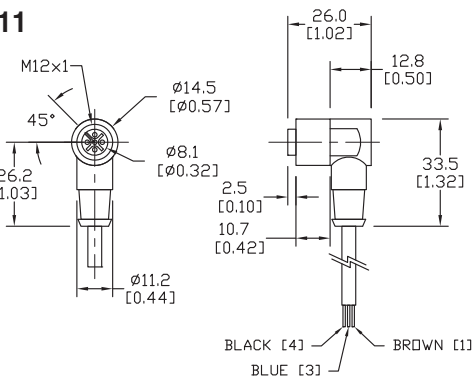
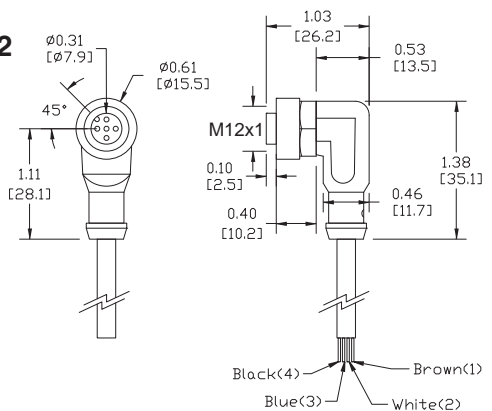


Figure 12



Sensor Cables and Connectors

Patch cables with quick-disconnect plugs on each end

Available patch cables include:

- Industry standard M8 and M12 screw-lock connectors
- One male and one female connector

- Axial and right-angle connector models
- 1m and 3m cable lengths
- PVC (polyvinyl chloride) jacket for typical industrial applications
- IP67 rated



M8 Patch Cables with Quick-Disconnect on Each End (Pico, Nano)						
Part Number	Price	Length	Poles	Connectors	Jacket	Dimensions
M8 Quick-Disconnect Patch Cables						
CDP08-0A-010-AA	<--->	1m (3.28ft)	3	2 Axial. One male and one female connector	PVC	Figure 1
CDP08-0A-010-BB	<--->	1m (3.28ft)	3	2 Right-angle. One male and one female connector	PVC	Figure 3
CDP08-0A-030-AA	<--->	3m (9.84ft)	3	2 Axial. One male and one female connector	PVC	Figure 2
CDP08-0A-030-BB	<--->	3m (9.84ft)	3	2 Right-angle. One male and one female connector	PVC	Figure 3

M12 Patch Cables with Quick-Disconnect on Each End (Euro, Micro DC-Single Key)						
Part Number	Price	Length	Poles	Connectors	Jacket	Dimensions
M12 Quick-disconnect Patch Cables						
CDP12-0B-010-AA	<--->	1m (3.28ft.)	4	2 Axial. One male and one female connector	PVC	Figure 4
CDP12-0B-010-BB	<--->	1m (3.28ft.)	4	2 Right-angle. One male and one female connector	PVC	Figure 5
CDP12-0B-030-AA	<--->	3m (9.84ft.)	4	2 Axial. One male and one female connector	PVC	Figure 4
CDP12-0B-030-BB	<--->	3m (9.84ft.)	4	2 Right-angle. One male and one female connector	PVC	Figure 5

Patch Cables with LED

Available patch cables with LED include:

- Right-angle M12 female plug with LED indication on one end and axial male plug on the other end
- 0.3m, 0.6m, 1m, 2m, 5m, and 10m cable lengths

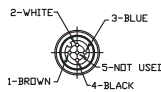
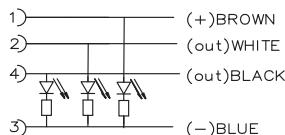
- PUR (polyurethane) jacket for oily and direct sunlight applications
- IP67 /IP68 / IP69K, II rated
- LED indication for 10 -36 VDC PNP sensors only



white wire
Pin 2

black wire
Pin 4

LED Models' Wiring



PNP-NORMALLY OPEN

M12 Patch Cables with LED Indicator (Euro, Micro DC-Single Key)							
Part Number	Price	Length	Poles	Connectors	LED	Jacket	Dimensions
M12 Patch Cables							
EVC322*	<--->	0.3m (0.98ft)	4	Right-angle female, axial male	Yes	PUR	Figure 6
EVC323*	<--->	0.6m (1.97ft)	4	Right-angle female, axial male	Yes	PUR	Figure 6
EVC324*	<--->	1m (3.28ft)	4	Right-angle female, axial male	Yes	PUR	Figure 6
EVC325*	<--->	2m (6.5ft)	4	Right-angle female, axial male	Yes	PUR	Figure 6
EVC326*	<--->	5m (16.4ft)	4	Right-angle female, axial male	Yes	PUR	Figure 6
EVC327*	<--->	10m (32.8ft)	4	Right-angle female, axial male	Yes	PUR	Figure 6

*Note: LED for 10 to 36 VDC PNP only.
Do not use with NPN or analog output devices.
Do not use when white wire (Pin 2) is used for selection of a sensor function.
Do not use when emitter has check function.

Sensor Cables and Connectors



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- Part # Index

Cable Specifications			
Specification	M8	M12	M12 with LED
Length	1m (3.28ft.) / 3m (9.84ft.)		0.3m (0.98ft) / 0.6m (1.97ft) / 1m (3.28ft) 2m (6.5ft) / 5m (16.4ft) / 10m (32.8ft)
Nominal Voltage	60 VAC/DC	250 VAC/DC	10 to 36VDC
Max Current	4A		4A
LED Current Consumption	N/A		10V input Brown wire LED: 1.7mA White and/or Black LED: 0.9mA 36V input Brown wire LED: 7.3mA White and/or Black LED: 4.7mA
Protection Degree	IEC IP67		IEC IP67/IP68/IP69K
Material Nut	Brass: nickel plated		Brass: nickel plated
Jacket Material	PolyVinyl Chlorided (PVC)		PolyURethane (PUR)
Housing Material	PolyURethane (PUR)		Connector: Orange PUR, Socket: Black PUR
Contacts Material	Copper-tin(CuSn)=Brass		Brass; gold plated
Conductors Cross Section (AWG)	0.34mm ²		0.34mm ² (22 AWG)
Tightening Torque	0.5 Nm		Plug: 0.6 to 1.5 Nm (take into account the maximum value of the counterpart) Socket: 0.6 to 1.5 Nm
Ø Outer Cable	5mm		5mm
Temperature Range	-25° to +70°C (-13° to 158°F)		-25° to +90°C (-13° to 194°F)
Function Display LED	N/A		Green
Switching Status LED	N/A		2 x Yellow
Drag Chain (Roller Cable Tray) Suitability	Bending Radius	min. 10 x cable diameter	
	Bending Cycles	>5 million	
	Travel Speed	N/A	Max. 3.3 m/s for a horizontal travel length of 5 m and max. acceleration of 5 m/s ²
	Torsional Strain	N/A	±180°/m
Agency Approvals	RoHS		UL File E191684, RoHS

UL Reference	
Part Number	Cable Assemblies Series M12, UL Catalog Number
EVC322	VDOAH043MSS00.3H04STGH040MSS
EVC323	VDOAH043MSS00.6H04STGH040MSS
EVC324	VDOAH043MSS0001H04STGH040MSS
EVC325	VDOAH043MSS0002H04STGH040MSS
EVC326	VDOAH043MSS0005H04STGH040MSS
EVC327	VDOAH043MSS0010H04STGH040MSS
Note: Shown in UL file under Cable Assemblies using catalog number	

Sensor Cables and Connectors

Dimensions mm [inches]

Figure 1

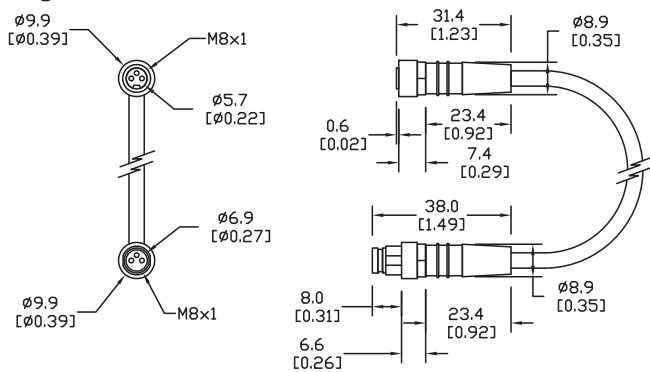


Figure 2

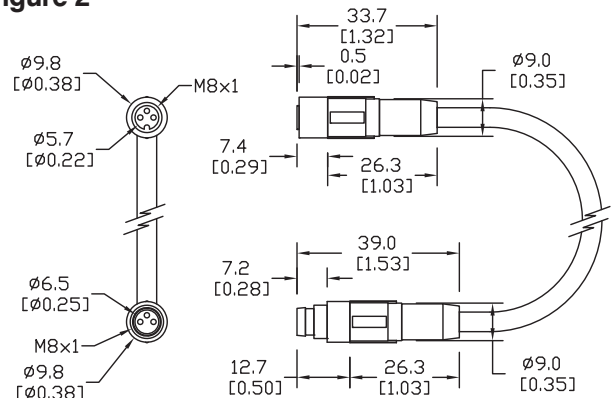


Figure 3

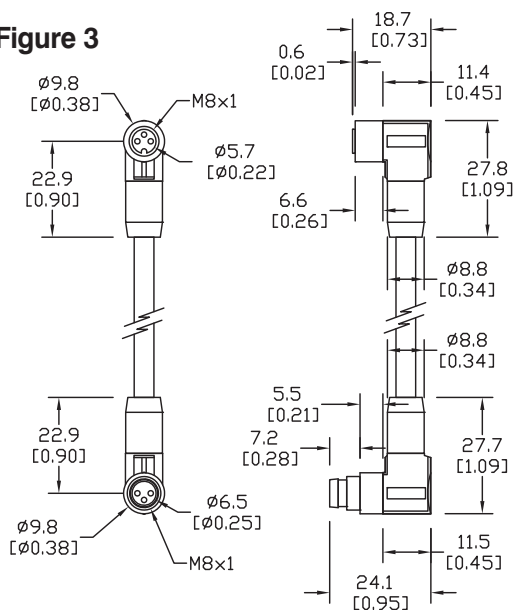


Figure 4

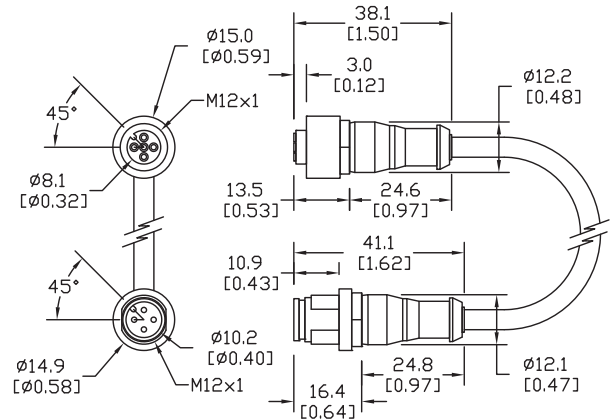


Figure 5

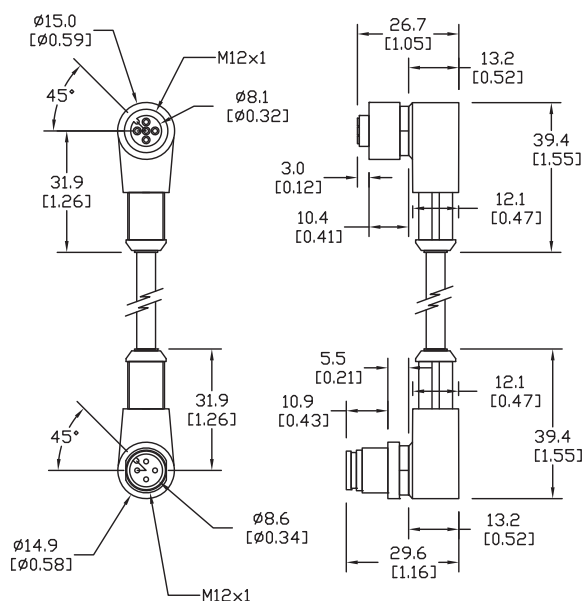


Figure 6

