

SU Series Ultrasonic Sensors



M18 (18 mm) plastic –DC or analog output

- High resolution
- 2 DC models available with adjustable sensitivity
- 3 analog models available
- Complete overload protection
- IP67 rated
- LED status indicator on DC models
- Purchase cable separately (for quick-disconnect model)
- Lifetime warranty



SU Series Ultrasonic DC Output Sensor Selection Chart

Part Number	Price	Sensing Range	Output State	Logic	Connection	Wiring
SU1-B0-0A	<--->	100 to 600mm (3.94-23.62in)	N.O.	PNP	2m (6.5') axial cable	Diagram 1
SU2-A0-0A	<--->	200 to 1500mm (7.87-59.06in)		PNP	2m (6.5') axial cable	

SU Series Ultrasonic Analog Output Sensor Selection Chart

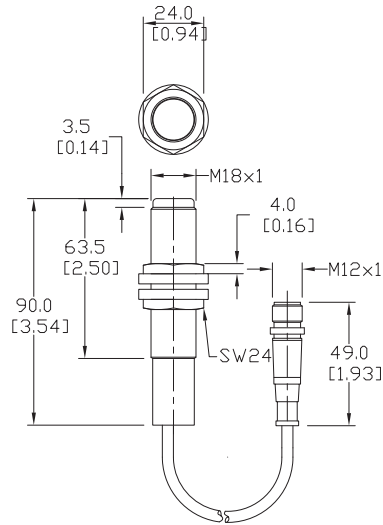
Part Number	Price	Sensing Range	Output	Connection	Wiring
SU1-B1-0A	<--->	100 to 600mm (3.94-23.62in)	0-10VDC	2m (6.5') axial cable	Diagram 2
SU1-B1-0E	<--->			M12 (12mm) connector	
SU2-A1-0E	<--->	200 to 1500mm (7.87-59.06in)	M12 (12mm) connector		

Specifications				
Mounting Type	SU1-B0-0A	SU2-A0-0A	SU1-B1-0*	SU2-A1-0E
Nominal Sensing Distance	100 to 600mm (3.94-23.62in)	200 to 1500mm (7.87-59.06in)	100 to 600mm (3.94-23.62in)	200 to 1500mm (7.87-59.06in)
Operating Distance	N/A			
Output Type	PNP / N.O.		0-10VDC	
Operating Voltage	15-30VDC		18-30VDC	
No-load Supply Current	≤35mA			
Operating (Load) Current	≤500mA		≤5mA	
Off-state (Leakage) Current	≤10µA			
Voltage Drop	≤2.5 volts			
Switching Frequency	25Hz	8Hz	-	
Differential Travel	±2.5%	±2.0%	-	
Repeat Accuracy	0.2%		±2mm	
Time Delay Before Availability (tv)	≤200ms		≤500ms	
Reverse Polarity Protection	Yes			
Short-Circuit Protection	Yes (switch auto-resets after overload is removed)			
Linearity Error	-		≤0.3%	
Ultrasonic Frequency	300kHz	180kHz	300kHz	180kHz
Ultrasonic Beam Angle	8°			
Max. Response Time	-		50ms	150ms
Control Input	Hold / Sync			
Sensitivity Adjustment	Yes		-	
Input Voltage Transient Protection	Yes, only if transient peak does not exceed 30VDC			
Operating Temperature	-25° to +70°C (-13° to 158°F)			
Temperature Compensation	Yes			
Protection Degree	IEC IP67			
Indication/Switch Status	Yellow (output energized)		-	
Housing Material	Polybutylene Terephthalate (PBT)			
Shock/Vibration	See Terminology Section			
Tightening Torque	3 Nm (2.21lb-ft)			
Weight (cable/connector)	54g (1.90oz) / 38g (1.34oz.)			
Connection	2m (6.5') axial cable		2m (6.5') axial cable or M12 (12mm) connector	
Agency Approvals	CE, UL listed file E187310			

SU Series Ultrasonic Sensors

Dimensions

mm [inches]



Wiring Diagrams

Diagram 1*

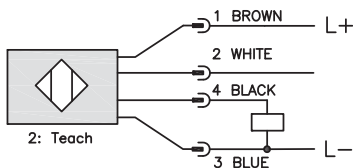
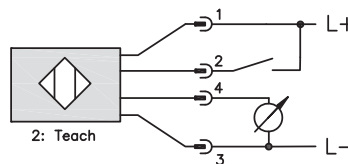


Diagram 2*



*Note: Teach wire can be used to inhibit sensor or to synchronize with another sensor.

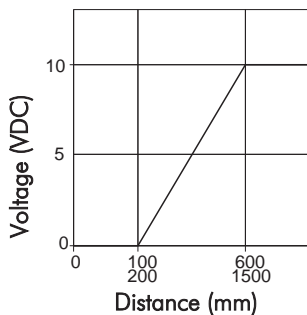
Connector



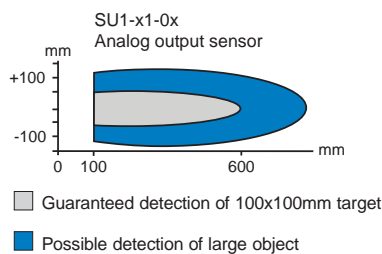
Must be used with 2M or 7M cable (4-wire)

Characteristic Curves

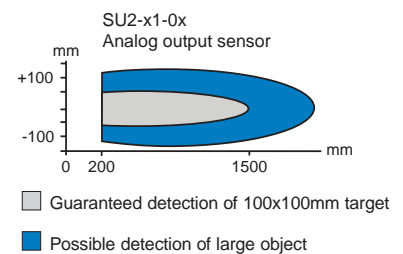
Analog Output



Detection Area SU1 Analog output



Detection Area SU2 Analog output





Company Information

Systems Overview

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C-more & other HMI

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Soft Starters

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Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Current Sensors

Pressure Sensors

Temperature Sensors

Pushbuttons/ Lights

Process

Relays/ Timers

Comm.

Terminal Blocks & Wiring

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Tools

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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

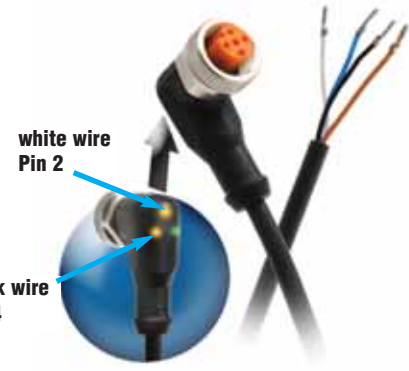
M8 Quick-Disconnect Cables (Pico, Nano)							
Part Number	Price	Length	Poles	Connector	LED	Jacket	Dimensions
M8 Quick-Disconnects							
CD08-0A-020-A1	<--->	2m (6.5ft.)	3	Axial	No	PVC	Figure 1
CD08-0A-020-C1	<--->	2m (6.5ft.)	3	Right-angle	No	PVC	Figure 2
CD08-0A-050-A1	<--->	5m (16.4ft.)	3	Axial	No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

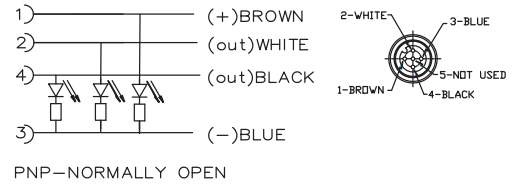
- Industry standard M12 right angle female plug with open leads
- These cables can be used with patch cables
- 2m, 5m and 10m cable lengths
- PUR (polyurethane) jacket for oily and direct sunlight applications
- IP67 /IP68 / IP69K, II rated
- LED indication for 10 -36 VDC PNP sensors only



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

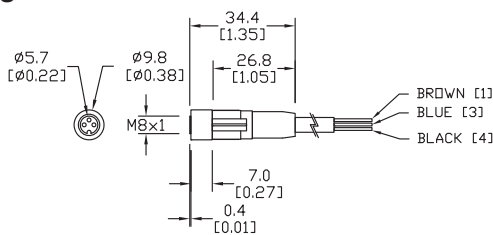
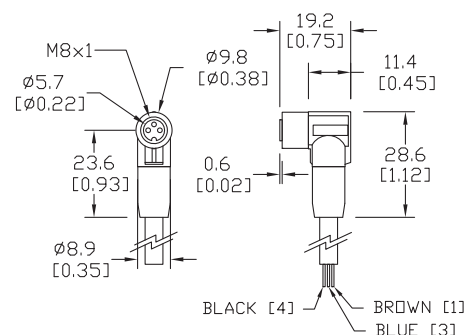


Figure 2



Sensor Cables and Connectors



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mm [inches]

Figure 3

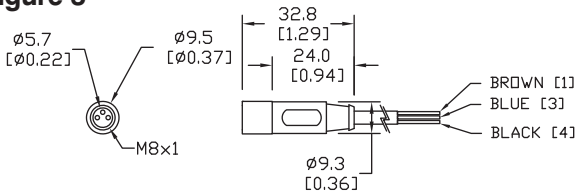


Figure 4

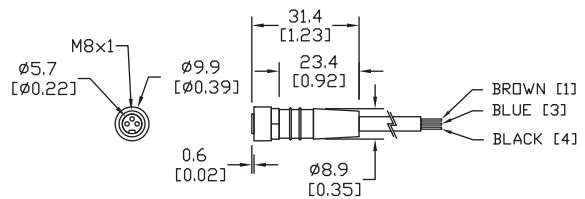


Figure 5

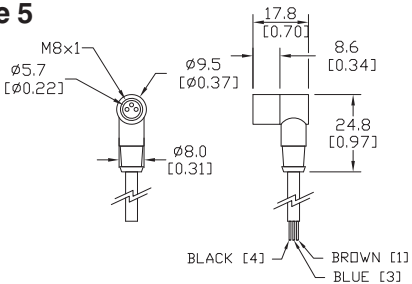


Figure 6

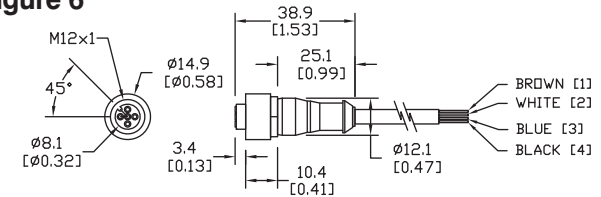


Figure 7

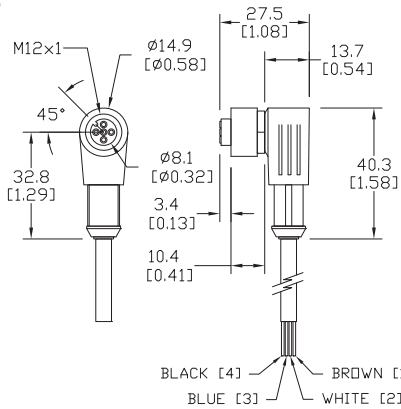


Figure 8

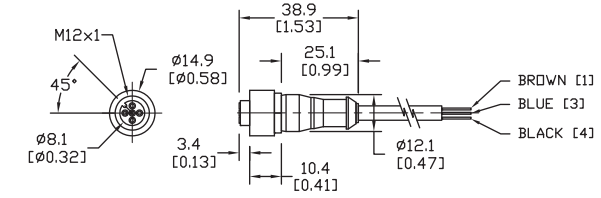


Figure 10

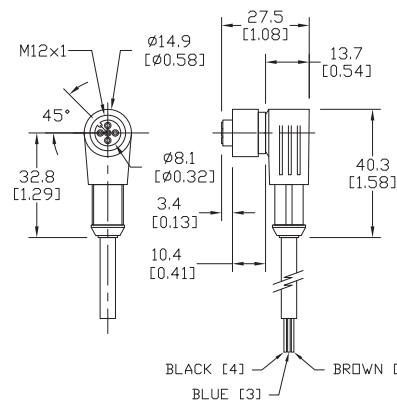


Figure 9

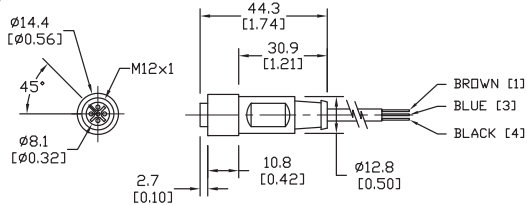


Figure 11

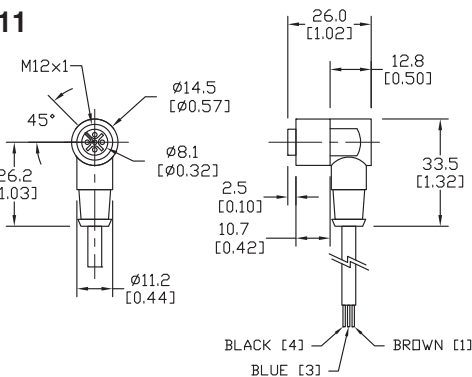
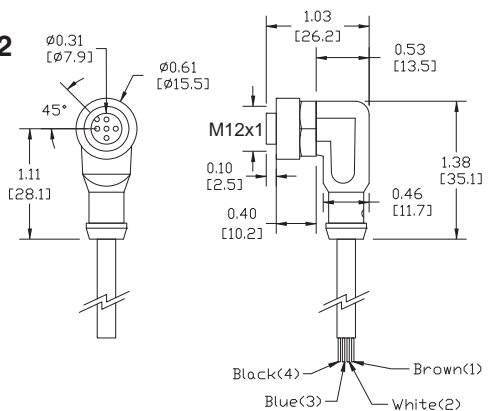


Figure 12



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

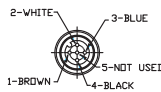
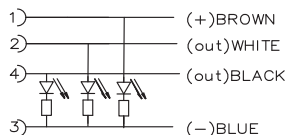
- PUR (polyurethane) jacket for oily and direct sunlight applications
- IP67 /IP68 / IP69K, II rated
- LED indication for 10 -36 VDC PNP sensors only



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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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

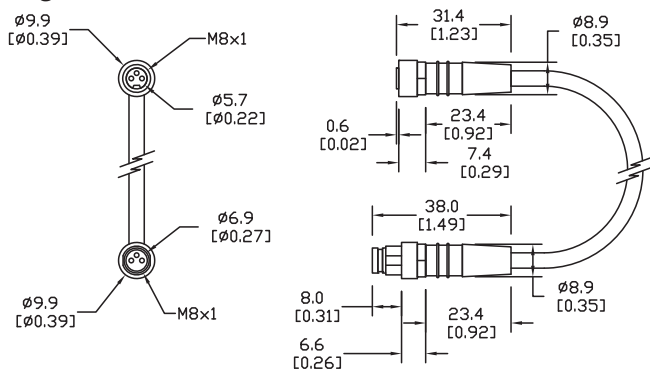


Figure 2

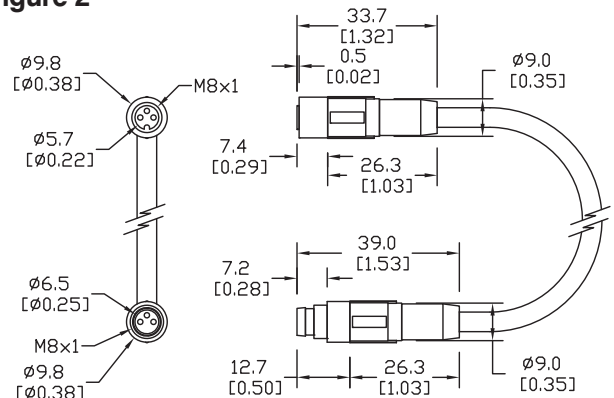


Figure 3

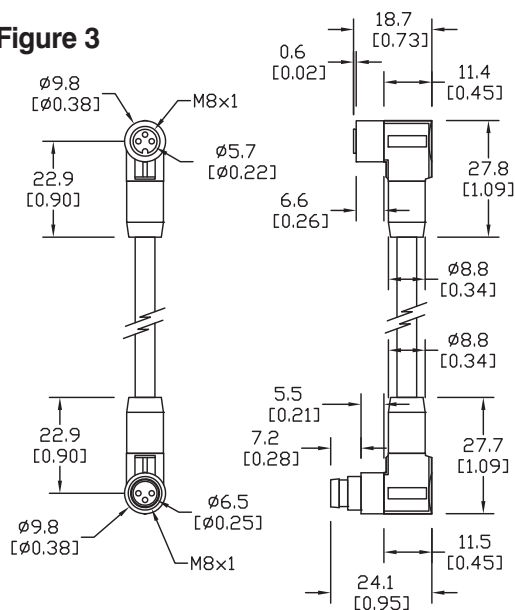


Figure 4

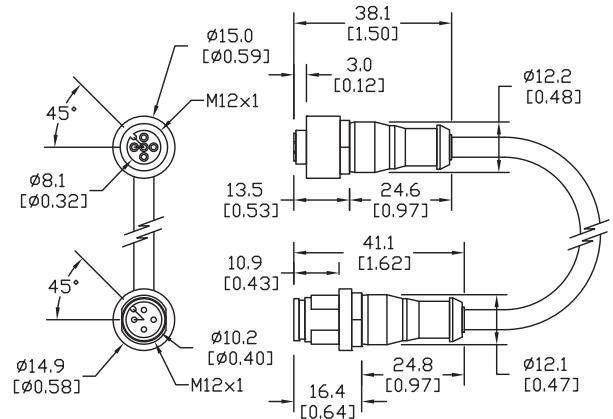


Figure 5

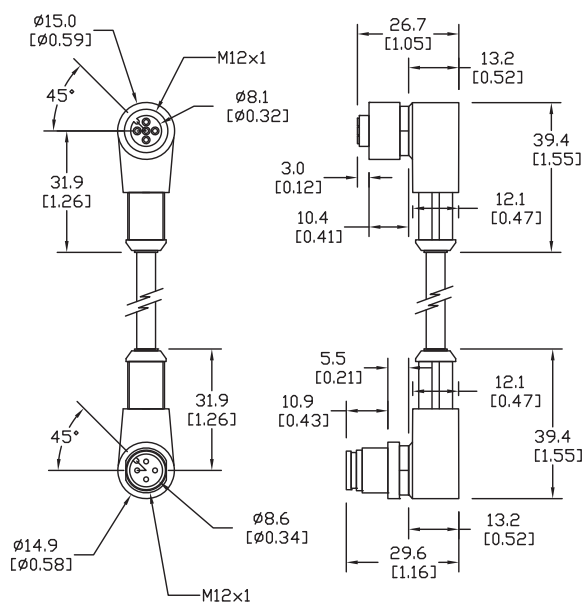
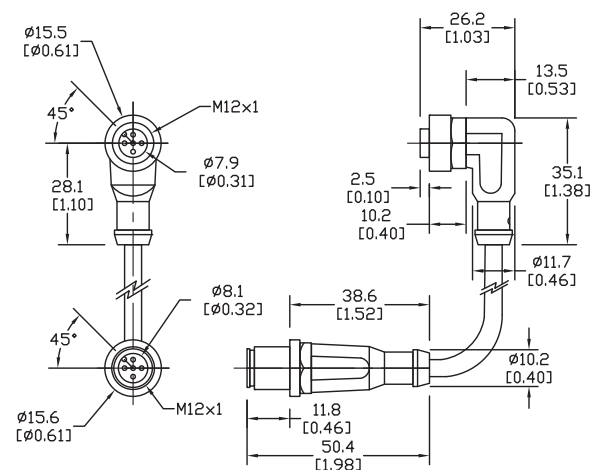


Figure 6



Accessories: Mounting Brackets

ST30A axial bracket

Mounting M30 (30 mm) sensors. Has two mounting holes (use 5 mm screws) and allows the rotation of an optical axis for right-beam-angle-adaptor sensors. Hexagonal nuts not included.



ST30C right-angle bracket

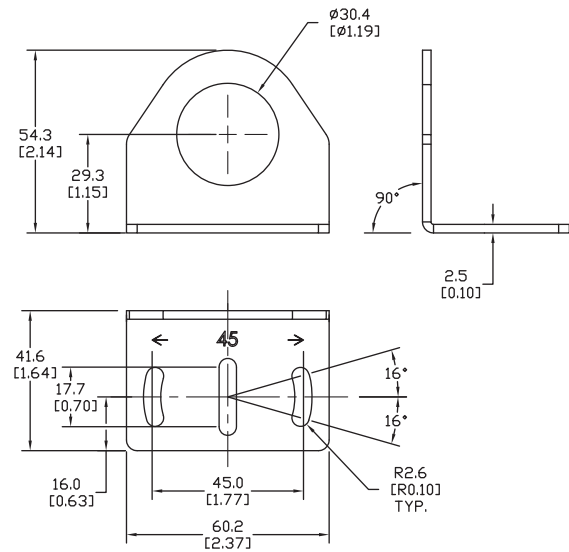
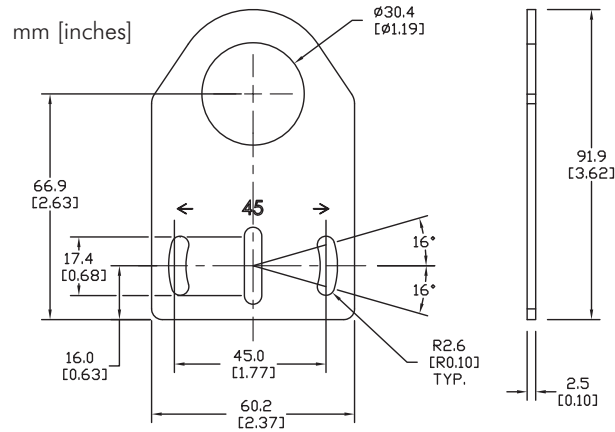
Angular mounting bracket for M30 (30 mm) sensors. Has two mounting holes (use 5 mm screws) and allows the rotation of an optical axis for axial sensors. Hexagonal nuts not included.



Brackets		
Part Number	Price	Description
ST30A	<-->	Metal axial bracket for 30 mm sensors, 1/pk

Brackets		
Part Number	Price	Description
ST30C	<-->	Metal right angle bracket for 30 mm sensors, 1/pk

All Dimensions





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Registration required

For inductive proximity sensors sold to the Original User for the lifetime of the original application.

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3. This WARRANTY shall be valid only if the product was purchased by the Original User from AUTOMATIONDIRECT, or from an authorized AUTOMATIONDIRECT Value Added Reseller, or was an integral part of a piece of machinery and equipment obtained by the Original User from an original equipment manufacturer, where the part was purchased by the original equipment manufacturer directly from AUTOMATIONDIRECT or from an authorized AUTOMATIONDIRECT Value Added Reseller.

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2. Repay to the Original User that price paid by the Original User; provided that if the claim is made under the lifetime warranty, and such product is not then being supplied by AUTOMATIONDIRECT, then the amount to be repaid by AUTOMATIONDIRECT to the Original User shall be reduced according to the following schedule:

Number of Years Since Date of Purchase by Original User	Percent of Original Purchase Price To Be Paid by AutomationDirect
10	50 percent
15	25 percent
20	10 percent
More than 20	5 percent

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