






















M12 SENSORS SELECTION GUIDE (DC)

Sensing mode	material	Connection	Output mode	Part number
Through-beam mode Sensing distance: 5.2M 	Plastic	 Cable	Emitter	M12P-T5200D-EX9C3L2
			NPN Light/Dark changeover	M12P-T5200N-CX9C4U2
			PNP Light/Dark changeover	M12P-T5200P-CX9C4U2
		 Quick Disconnect (M8)	Emitter	M12P-T5200D-EX9Q4LP
			NPN Light/Dark changeover	M12P-T5200N-CX9Q4UP
			PNP Light/Dark changeover	M12P-T5200P-CX9Q4UP
		 Quick Disconnect (M12)	Emitter	M12P-T5200D-EX9Q4LE
			NPN Light/Dark changeover	M12P-T5200N-CX9Q4UE
			PNP Light/Dark changeover	M12P-T5200P-CX9Q4UE
		 EURO 4 Pins 6" Pig tail	Emitter	M12P-T5200D-EX9P3LE
			NPN Light/Dark changeover	M12P-T5200N-CX9P4UE
			PNP Light/Dark changeover	M12P-T5200P-CX9P4UE
		 Cable	Emitter	M12P-T5200D-EZ9C3L2
			NPN Light/Dark changeover	M12P-T5200N-CZ9C4U2
			PNP Light/Dark changeover	M12P-T5200P-CZ9C4U2
		 Quick Disconnect (M8)	Emitter	M12P-T5200D-EZ9Q4LP
			NPN Light/Dark changeover	M12P-T5200N-CZ9Q4UP
			PNP Light/Dark changeover	M12P-T5200P-CZ9Q4UP
		 Quick Disconnect (M12)	Emitter	M12P-T5200D-EZ9Q4LE
			NPN Light/Dark changeover	M12P-T5200N-CZ9Q4UE
			PNP Light/Dark changeover	M12P-T5200P-CZ9Q4UE

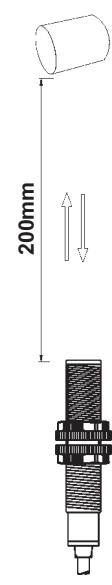









M12 SENSORS SELECTION GUIDE (DC)

Sensing mode	material	Connection	Output mode	Part number
 <p>Through-beam mode Sensing distance:5.2M</p>	Plastic	 EURO 4 Pins 6" Pig tail	Emitter	M12P-T5200D-EZ9P4LE
			NPN Light/Dark changeover	M12P-T5200N-CZ9P4UE
			PNP Light/Dark changeover	M12P-T5200P-CZ9P4UE
		 Right Angle Cable	Emitter	M12P-T5200D-EY9C3L2-Y
			NPN Light/Dark changeover	M12P-T5200N-CY9C4U2-Y
			PNP Light/Dark changeover	M12P-T5200P-CY9C4U2-Y
		 Right Angle disconnect	Emitter	M12P-T5200D-EY9Q4LP-Y
			NPN Light/Dark changeover	M12P-T5200N-CY9Q4UP-Y
			PNP Light/Dark changeover	M12P-T5200P-CY9Q4UP-Y
	Brass (stainless can be produce also)	 EURO 4 Pins 6" Right Angle Pig tail	Emitter	M12P-T5200D-EY9P3LE-Y
			NPN Light/Dark changeover	M12P-T5200N-CY9P4UE-Y
			PNP Light/Dark changeover	M12P-T5200P-CY9P4UE-Y
		 Cable	Emitter	M12B-T5200D-EX9C3L2
			NPN Light/Dark changeover	M12B-T5200N-CX9C4U2
			PNP Light/Dark changeover	M12B-T5200P-CX9C4U2
		 Quick Disconnect (M8)	Emitter	M12B-T5200D-EX9Q4LP
			NPN Light/Dark changeover	M12B-T5200N-CX9Q4UP
			PNP Light/Dark changeover	M12B-T5200P-CX9Q4UP
		 Quick Disconnect (M12)	Emitter	M12B-T5200D-EX9Q4LE
			NPN Light/Dark changeover	M12B-T5200N-CX9Q4UE
			PNP Light/Dark changeover	M12B-T5200P-CX9Q4UE

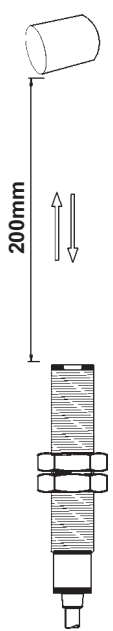


















M12 SENSORS SELECTION GUIDE (DC)

Sensing mode	Material	Connection	Output mode	Part number	
<p>Through-beam mode Sensing distance: 5.2M</p> 	<p>Brass (stainless can be produce also)</p>	 <p>EURO 4 Pins 6" Pig tail</p>	Emitter	M12B-T5200D-EX9P4LE	
		<p>CE</p>	NPN Light/Dark changeover	M12B-T5200N-CX9P4UE	
			PNP Light/Dark changeover	M12B-T5200P-CX9P4UE	
			 <p>Right Angle Cable</p>	Emitter	M12B-T5200D-EY9C4L2-Y
		<p>CE</p>	NPN Light/Dark changeover	M12B-T5200N-CY9C4U2-Y	
			PNP Light/Dark changeover	M12B-T5200P-CY9C4U2-Y	
			 <p>Right Angle disconnect</p>	Emitter	M12B-T5200D-EY9Q4LP-Y
		<p>CE</p>	NPN Light/Dark changeover	M12B-T5200N-CY9Q4UP-Y	
			PNP Light/Dark changeover	M12B-T5200P-CY9Q4UP-Y	
			 <p>EURO 4 Pins 6" Right Angle Pig tail</p>	Emitter	M12B-T5200D-EY9P4LE-Y
		<p>CE</p>	NPN Light/Dark changeover	M12B-T5200N-CY9P4UE-Y	
			PNP Light/Dark changeover	M12B-T5200P-CY9P4UE-Y	











M12 SENSORS SELECTION GUIDE (DC)

Sensing mode	material	Connection	Output mode	Part number
 <p>Diffuse mode Sensing distance:200mm</p>	Plastic	 Cable	NPN Light/Dark changeover	M12P-D0200N-CX9C4U2
			PNP Light/Dark changeover	M12P-D0200P-CX9C4U2
		 Quick Disconnect (M8)	NPN Light/Dark changeover	M12P-D0200N-CX9Q4UP
			PNP Light/Dark changeover	M12P-D0200P-CX9Q4UP
		 Quick Disconnect (M12)	NPN Light/Dark changeover	M12P-D0200N-CX9Q4UE
			PNP Light/Dark changeover	M12P-D0200P-CX9Q4UE
		 EURO 4 Pins 6" Pig tail	NPN Light/Dark changeover	M12P-D0200N-CX9P4UE
			PNP Light/Dark changeover	M12P-D0200P-CX9P4UE
		 Cable	NPN Light/Dark changeover	M12P-D0200N-CZ9C4U2
			PNP Light/Dark changeover	M12P-D0200P-CZ9C4U2
		 Quick Disconnect (M8)	NPN Light/Dark changeover	M12P-D0200N-CZ9Q4UP
			PNP Light/Dark changeover	M12P-D0200P-CZ9Q4UP
		 Quick Disconnect (M12)	NPN Light/Dark changeover	M12P-D0200N-CZ9Q4UE
			PNP Light/Dark changeover	M12P-D0200P-CZ9Q4UE
		 EURO 4 Pins 6" Pig tail	NPN Light/Dark changeover	M12P-D0200N-CZ9P4UE
			PNP Light/Dark changeover	M12P-D0200P-CZ9P4UE
		 Right Angle Cable	NPN Light/Dark changeover	M12P-D0200N-CY9C4U2-Y
			PNP Light/Dark changeover	M12P-D0200P-CY9C4U2-Y

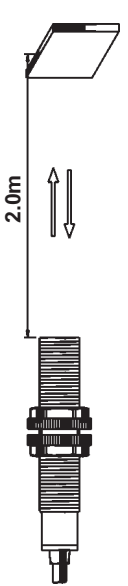









M12 SENSORS SELECTION GUIDE (DC)

Sensing mode	material	Connection	Output mode	Part number	
 <p>Diffuse mode Sensing distance:200mm</p>	Plastic	 Right Angle disconnect	NPN Light/Dark changeover	M12P-D0200N-CY9Q4UP-Y	
			PNP Light/Dark changeover	M12P-D0200P-CY9Q4UP-Y	
		 EURO 4 Pins 6" Right Angle Pig tail	NPN Light/Dark changeover	M12P-D0200N-CY9P4UE-Y	
			PNP Light/Dark changeover	M12P-D0200P-CY9P4UE-Y	
	Brass (stainless can be produce also)	Cable	 Cable	NPN Light/Dark changeover	M12B-D0200N-CX9C4U2
				PNP Light/Dark changeover	M12B-D0200P-CX9C4U2
		Quick Disconnect (M8)	 Quick Disconnect (M8)	NPN Light/Dark changeover	M12B-D0200N-CX9Q4UP
				PNP Light/Dark changeover	M12B-D0200P-CX9Q4UP
		Quick Disconnect (M12)	 Quick Disconnect (M12)	NPN Light/Dark changeover	M12B-D0200N-CX9Q4UE
				PNP Light/Dark changeover	M12B-D0200P-CX9Q4UE
		EURO 4 Pins 6 inch Pig tail	 EURO 4 Pins 6" Pig tail	NPN Light/Dark changeover	M12B-D0200N-CX9P4UE
				PNP Light/Dark changeover	M12B-D0200P-CX9P4UE
		Right Angle Cable	 Right Angle Cable	NPN Light/Dark changeover	M12B-D0200N-CY9C4U2-Y
				PNP Light/Dark changeover	M12B-D0200P-CY9C4U2-Y
		Right Angle disconnect	 Right Angle disconnect	NPN Light/Dark changeover	M12B-D0200N-CY9Q4UP-Y
				PNP Light/Dark changeover	M12B-D0200P-CY9Q4UP-Y
		EURO 4 Pins 6 inch Right Angle Pig tail	 EURO 4 Pins 6" Right Angle Pig tail	NPN Light/Dark changeover	M12B-D0200N-CY9P4UE-Y
				PNP Light/Dark changeover	M12B-D0200P-CY9P4UE-Y

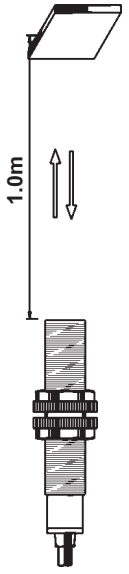









M12 SENSORS SELECTION GUIDE (DC)

Sensing mode	Material	Connection	Output mode	Part number	
 <p>Retro-reflective mode Sensing distance:2.0M</p>	Plastic	 Cable	NPN Light/Dark changeover	M12P-L2000N-CX9C4U2	
			CE	PNP Light/Dark changeover	M12P-L2000P-CX9C4U2
		 Quick Disconnect (M8)	NPN Light/Dark changeover	M12P-L2000N-CX9Q4UP	
		CE	PNP Light/Dark changeover	M12P-L2000P-CX9Q4UP	
		 Quick Disconnect (M12)	NPN Light/Dark changeover	M12P-L2000N-CX9Q4UE	
		CE	PNP Light/Dark changeover	M12P-L2000P-CX9Q4UE	
		 EURO 4 Pins 6" Pig tail	NPN Light/Dark changeover	M12P-L2000N-CX9P4UE	
		CE	PNP Light/Dark changeover	M12P-L2000P-CX9P4UE	
		 Cable	NPN Light/Dark changeover	M12P-L2000N-CZ9C4U2	
		CE	PNP Light/Dark changeover	M12P-L3500P-CZ9C4U2	
		 Quick Disconnect (M8)	NPN Light/Dark changeover	M12P-L2000N-CZ9Q4UP	
		CE	PNP Light/Dark changeover	M12P-L2000P-CZ9Q4UP	
		 Quick Disconnect (M12)	NPN Light/Dark changeover	M12P-L2000N-CZ9Q4UE	
		CE	PNP Light/Dark changeover	M12P-L2000P-CZ9Q4UE	
		 EURO 4 Pins 6" Pig tail	NPN Light/Dark changeover	M12P-L2000N-CZ9P4UE	
		CE	PNP Light/Dark changeover	M12P-L2000P-CZ9P4UE	
		 Right Angle Cable	NPN Light/Dark changeover	M12P-L2000N-CY9C4U2-Y	
		CE	PNP Light/Dark changeover	M12P-L2000P-CY9C4U2-Y	

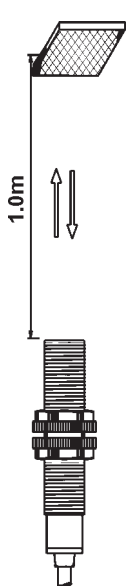


















M12 SENSORS SELECTION GUIDE (DC)

Sensing mode	Material	Connection	Output mode	Part number	
<p>Retro-reflective mode</p> <p>Sensing distance: 2.0M</p> 	Plastic	 Quick Disconnect (M8)	NPN Light/Dark changeover	M12P-L2000N-CY9Q4UP-Y	
			CE	PNP Light/Dark changeover	M12P-L2000P-CY9Q4UP-Y
		 EURO 4 Pins 6" Right Angle Pig tail	NPN Light/Dark changeover	M12P-L2000N-CY9P4UE-Y	
		CE	PNP Light/Dark changeover	M12P-L2000P-CY9P4UE-Y	
	Brass (stainless can be produce also)	Cable	 Cable	NPN Light/Dark changeover	M12B-L2000N-CX9C4U2
			CE	PNP Light/Dark changeover	M12B-L2000P-CX9C4U2
		Quick Disconnect (M8)	 Quick Disconnect (M8)	NPN Light/Dark changeover	M12B-L2000N-CX9Q4UP
			CE	PNP Light/Dark changeover	M12B-L2000P-CX9Q4UP
		Quick Disconnect (M12)	 Quick Disconnect (M12)	NPN Light/Dark changeover	M12B-L2000N-CX9Q4UE
			CE	PNP Light/Dark changeover	M12B-L2000P-CX9Q4UE
		EURO 4 Pins 6 inch Pig tail	 EURO 4 Pins 6" Pig tail	NPN Light/Dark changeover	M12B-L2000N-CX9P4UE
			CE	PNP Light/Dark changeover	M12B-L2000P-CX9P4UE
		Right Angle Cable	 Right Angle Cable	NPN Light/Dark changeover	M12B-L2000N-CY9C4U2-Y
			CE	PNP Light/Dark changeover	M12B-L2000P-CY9C4U2-Y
		Right Angle disconnect	 Right Angle disconnect	NPN Light/Dark changeover	M12B-L2000N-CY9Q4UP-Y
			CE	PNP Light/Dark changeover	M12B-L2000P-CY9Q4UP-Y
		EURO 4 Pins 6 inch Right Angle Pig tail	 EURO 4 Pins 6" Right Angle Pig tail	NPN Light/Dark changeover	M12B-L2000N-CY9P4UE-Y
			CE	PNP Light/Dark changeover	M12B-L2000P-CY9P4UE-Y

M12 SENSORS SELECTION GUIDE (DC)

Sensing mode	Material	Connection	Output mode	Part number
 <p>Retro-reflective mode with polarizing filter Sensing distance: 1.0M</p>	Plastic	 Cable	NPN Light/Dark changeover	M12P-L1000N-CX6C4U2-PF
			PNP Light/Dark changeover	M12P-L1000P-CX6C4U2-PF
		 Quick Disconnect (M8)	NPN Light/Dark changeover	M12P-L1000N-CX6Q4UP-PF
			PNP Light/Dark changeover	M12P-L1000P-CX6Q4UP-PF
		 Quick Disconnect (M12)	NPN Light/Dark changeover	M12P-L1000N-CX6Q4UE-PF
			PNP Light/Dark changeover	M12P-L1000P-CX6Q4UE-PF
		 EURO 4 Pins 6" Pig tail	NPN Light/Dark changeover	M12P-L1000N-CX6P4UE-PF
			PNP Light/Dark changeover	M12P-L1000P-CX6P4UE-PF
		 Cable	NPN Light/Dark changeover	M12P-L1000N-CZ6C4U2-PF
			PNP Light/Dark changeover	M12P-L1000P-CZ6C4U2-PF
		 Quick Disconnect (M8)	NPN Light/Dark changeover	M12P-L1000N-CZ6Q4UP-PF
			PNP Light/Dark changeover	M12P-L1000P-CZ6Q4UP-PF
		 Quick Disconnect (M12)	NPN Light/Dark changeover	M12P-L1000N-CZ6Q4UE-PF
			PNP Light/Dark changeover	M12P-L1000P-CZ6Q4UE-PF
		 EURO 4 Pins 6" Pig tail	NPN Light/Dark changeover	M12P-L1000N-CZ6P4UE-PF
			PNP Light/Dark changeover	M12P-L1000P-CZ6P4UE-PF
		 Right Angle Cable	NPN Light/Dark changeover	M12P-L1000N-CY6C4U2-FY
			PNP Light/Dark changeover	M12P-L1000P-CY6C4U2-FY

M12 SENSORS SELECTION GUIDE (DC)

Sensing mode	Material	Connection	Output mode	Part number
 <p>Retro-reflective mode with polarizing filter Sensing distance: 1.0m</p>	Plastic	 Right Angle Cable 	NPN Light/Dark changeover	M12P-L1000N-CY6Q4UP-FY
			PNP Light/Dark changeover	M12P-L1000P-CY6Q4UP-FY
		 EURO 4 Pins 6' Right Angle Pig tail 	NPN Light/Dark changeover	M12P-L1000N-CY6P4UE-FY
			PNP Light/Dark changeover	M12P-L1000P-CY6P4UE-FY
	Brass (stainless can be produce also)	 Cable 	NPN Light/Dark changeover	M12B-L1000N-CX6C4U2-PF
			PNP Light/Dark changeover	M12B-L1000P-CX6C4U2-PF
		 Quick Disconnect (M8) 	NPN Light/Dark changeover	M12B-L1000N-CX6Q4UP-PF
			PNP Light/Dark changeover	M12B-L1000P-CX6Q4UP-PF
		 Quick Disconnect (M12) 	NPN Light/Dark changeover	M12B-L1000N-CX6Q4UE-PF
			PNP Light/Dark changeover	M12B-L1000P-CX6Q4UE-PF
		 EURO 4 Pins 6' Pig tail 	NPN Light/Dark changeover	M12B-L1000N-CX6P4UE-PF
			PNP Light/Dark changeover	M12B-L1000P-CX6P4UE-PF
		 Right Angle Cable 	NPN Light/Dark changeover	M12B-L1000N-CY6C4U2-FY
			PNP Light/Dark changeover	M12B-L1000P-CY6C4U2-FY
		 Right Angle disconnect 	NPN Light/Dark changeover	M12B-L1000N-CY6Q4UP-FY
			PNP Light/Dark changeover	M12B-L1000P-CY6Q4UP-FY
		 EURO 4 Pins 6' Right Angle Pig tail 	NPN Light/Dark changeover	M12B-L1000N-CY6P4UE-FY
			PNP Light/Dark changeover	M12B-L1000P-CY6P4UE-FY

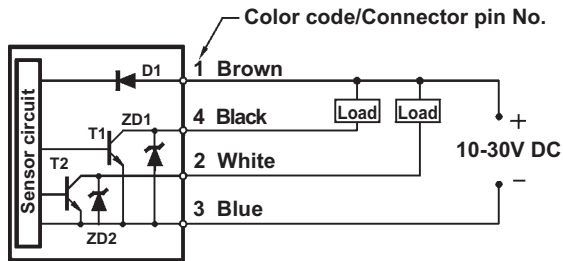
M12 SENSORS SPECIFICATIONS

Item	Type Model No.	Through-beam	Retroreflective		Diffuse reflective
				With polarizing filters	
		M12x-T5200x-xxxxxx	M12x-L2000x-xxxxxx	M12x-L1000x-xxxxxx-PF	M12x-D0200x-xxxxxx
Sensing range		5.2m	2.0m	1m	200mm
Sensing object		Opaque object of 8mm or more	3-way mirror	3-way mirror	White paper
Hysteresis		_____			20% or less of operation distance
Supply Voltage		10 to 30V DC Ripple P-P 10% or less			
Current consumption		30mA or less			
Output		<NPN> output type NPN open-collector transistor <ul style="list-style-type: none"> • Applied voltage: 30V DC or less • Maximum sink current: 150mA • Voltage drop: 2.5V or less 		<PNP> output type PNP open-collector transistor <ul style="list-style-type: none"> • Applied voltage: 30V DC or less • Maximum sourc current: 150mA • Voltage drop: 2.5V or less 	
Output operation		Light/ dark changeover by the A. load or B. Load			
Short-circuit protection		Yes			
Reverse polarity protection		Yes			
Overload current protection		Yes			
Response time		1ms			
Operation indicator		Red LED (light up when the output is activated)			
Pollution degree		3(Industrial environment)			
Protection		IP67(IEC)			
Ambient temperature		-25 to 70°C			
Ambient humidity		35 to 85% RH,Storage:35 to 85% RH			
EMC		IEC 60947-5-2, Parts 7.2.6.1. 2. 3 or RFI>3V/m(in 30-1000MHZ), EFT>1KV, ESD>4KV(contact)			
Voltage Withstand Ability		IEC 60947-5-2, Part 8.3.3.4 or 1500VAC for one min, between all supply terminals connected together and enclosure			
Insulation Resistance		>20MΩ, with 150V AC megger between all supply terminals connected together and enclosure			
Vibration Resistance		IEC 60947-5-2, Part 7.4.2 or 10-55HZ, 1.0mm amplitude in x , y and z directions for 30 min			
Shock Resistance		IEC 60947-5-2, Part 7.4.1 or 30g, 11ms in x , y and z directions for six time each			
Emitting element		Infrared LED (modulated)	Red LED (modulated)	Infrared LED (modulated)	
Material		Enclosure: PBT			
Cable		cable 2m long with four conductors			
Pigtail type		See page Q-01 for cable and connect at pigtail			

M12 SENSORS CIRCUIT AND WIRING DIAGRAMS

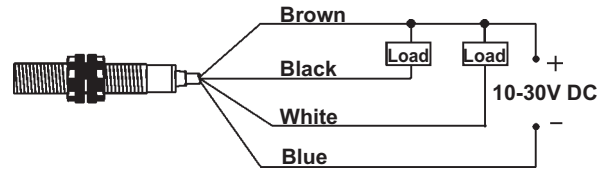
NPN output type

I/O circuit diagram



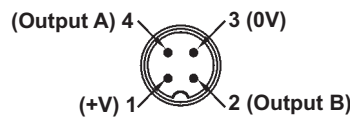
Symbol D1: Reverse polarity protection diode
 ZD1, ZD2: Surge absorption zener diode
 T1, T2: NPN output transistor

Wiring diagram

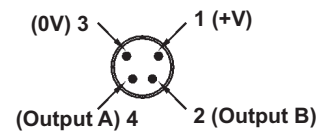


Connector pin position

EURO-Style

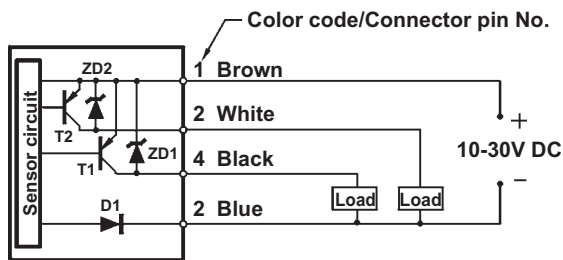


PICO-Style



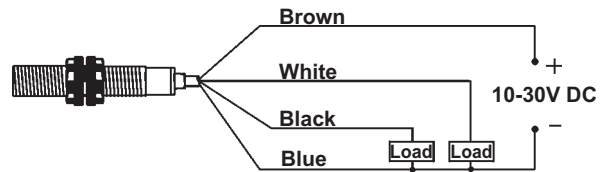
PNP output type

I/O circuit diagram



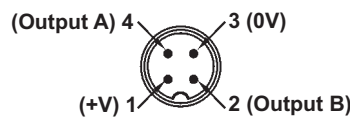
Symbol D1: Reverse polarity protection diode
 ZD1: Surge absorption zener diode
 T1: PNP output transistor

Wiring diagram

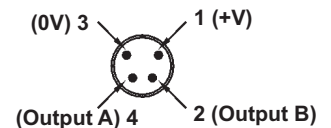


Connector pin position

EURO-Style

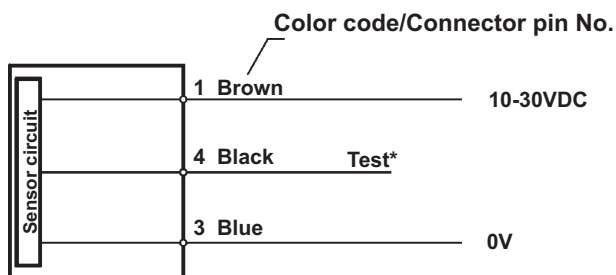


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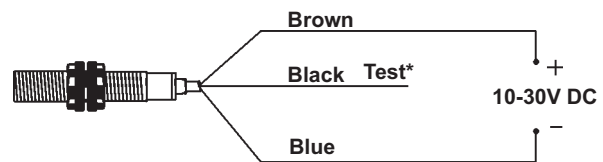
Emitter:

I/O circuit diagram



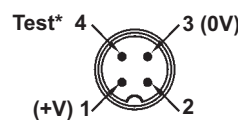
*: Test (black wire) = 0V, Emitter Off.

Wiring diagram

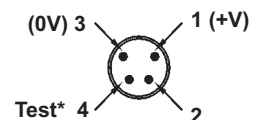


Connector pin position

EURO-Style

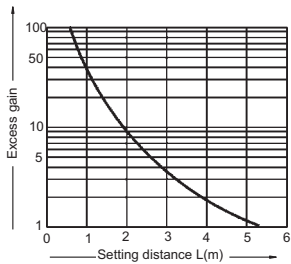


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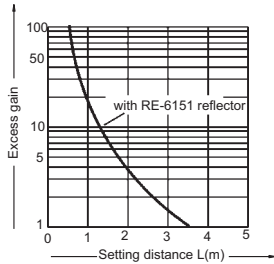


M12 SENSORS SENSING FIELDS

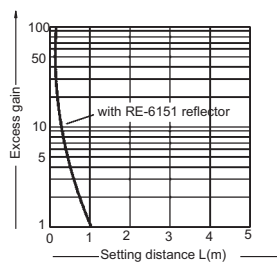
Correlation between setting distance and excess gain



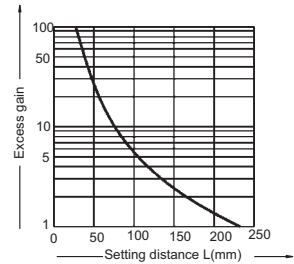
Through-beam sensor



Retro-reflective sensor



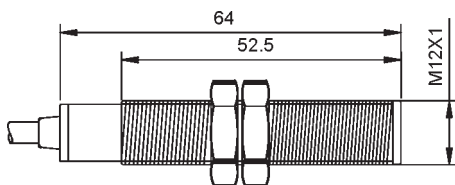
Retro-reflective sensor
(With polarizing filter)



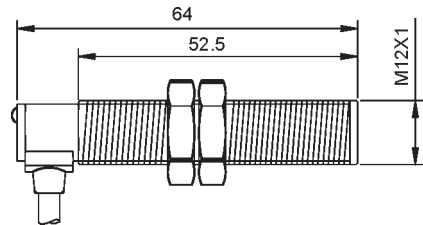
Diffuse sensor

DIMENSIONS (Brass Housing Series)

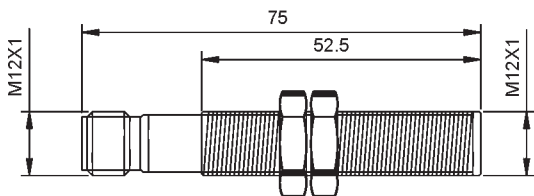
X-state, Cable version



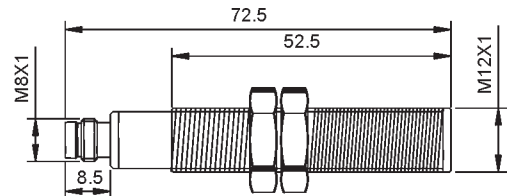
Y-state, Right Angle with Cable version



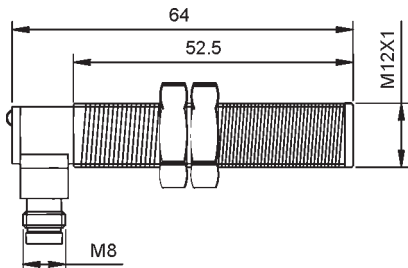
X-state, EURO-style quick connector



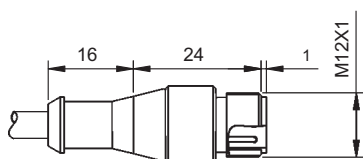
X-state, PICO-style quick connector



Y-state, Right Angle with PICO-style quick connector



EURO-style quick connector for Pig-tail series

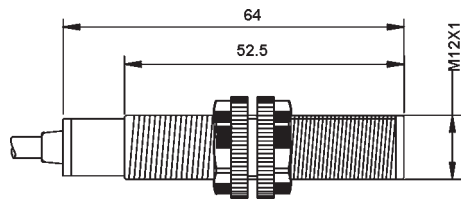


EURO-style quick connector for Pig-tail series

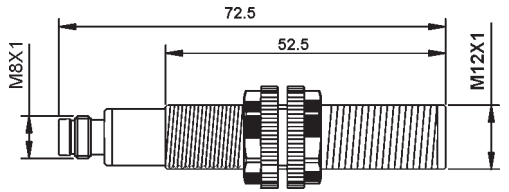


M12 SENSORS DIMENSIONS (Plastic Housing Series)

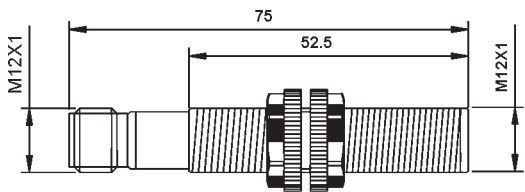
X-state, Cable version



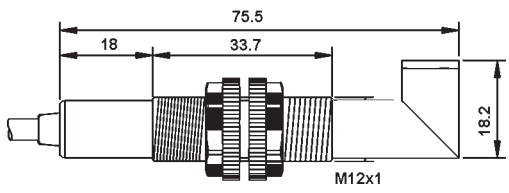
X-state, PICO-style quick connector



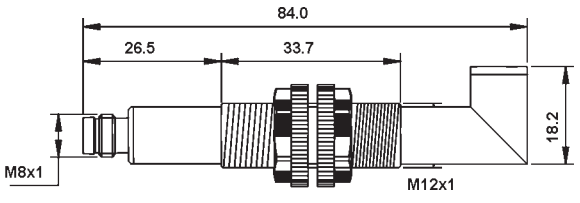
X-state, EURO-style quick connector



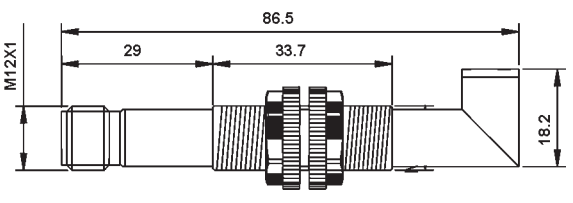
Z-state, Cable version



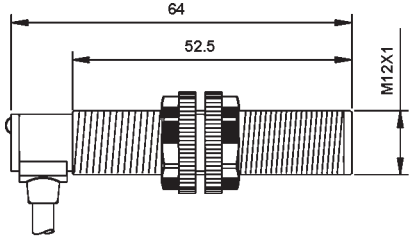
Z-state, PICO-style quick connector



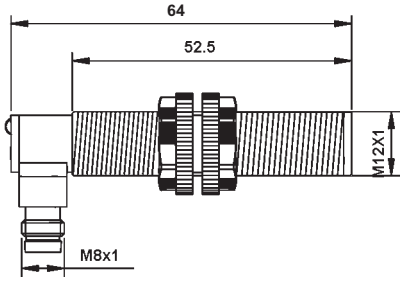
Z-state, EURO-style quick connector



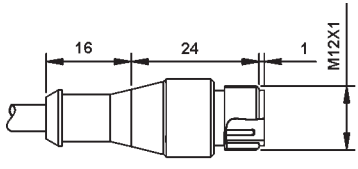
Y-state, Right Angle with Cable version



Y-state, Right Angle with PICO-style quick connector



EURO-style quick connector for Pig-tail series



EURO-style quick connector for Pig-tail series

