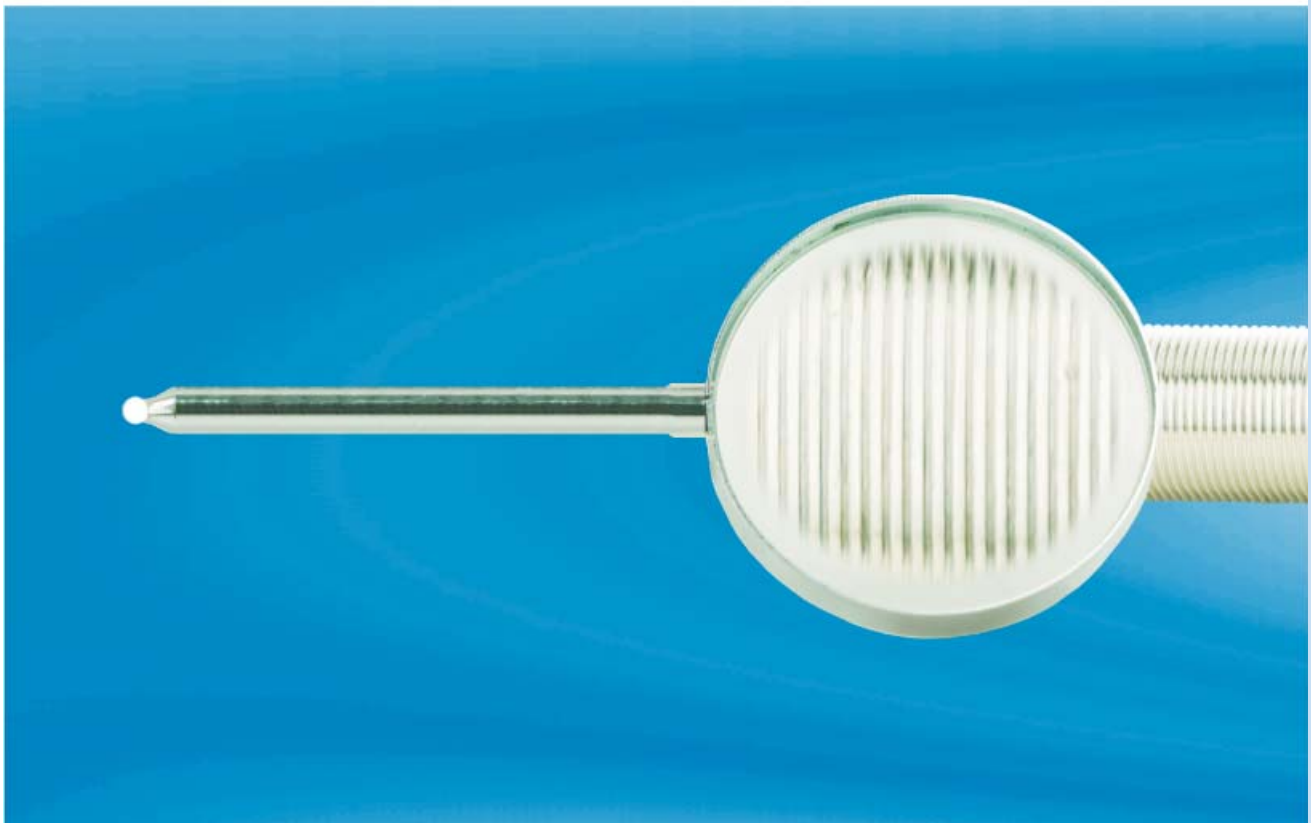


EM18 SERIES

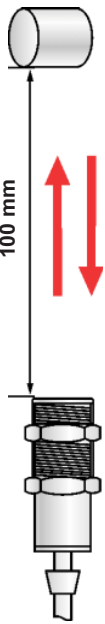
● DC Opposed mode.....	U-01
● DC Diffuse mode.....	U-02~U-04
● DC Polarized reflective mode.....	U-05
● DC Retroreflective mode.....	U-06
● AC Diffuse mode.....	U-07~U-09
● AC Polarized reflective mode.....	U-10
● AC Retroreflective mode.....	U-11
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● AC circuit and wiring diagrams.....	U-21
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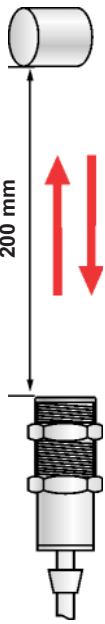
EM18 SENSORS SELECTION GUIDE (DC)

Sensing mode	Material	Connection	Output mode	Part number
Through-beam mode Sensing distance: 10M for plastic tube 20M for brass tube 	Plastic	 Cable	Emitter	EM18P-T010MD-EX9C2L2
			NPN Light/dark changeover	EM18P-T010MN-CX9C4U2
			PNP Light/dark changeover	EM18P-T010MP-CX9C4U2
		 Quick Disconnect	Emitter	EM18P-T010MD-EX9Q2LE
			NPN Light/dark changeover	EM18P-T010MN-CX9Q4UE
			PNP Light/dark changeover	EM18P-T010MP-CX9Q4UE
		 Pigtail	Emitter	EM18P-T010MD-EX9P2LE
			NPN Light/dark changeover	EM18P-T010MN-CX9P4UE
			PNP Light/dark changeover	EM18P-T010MP-CX9P4UE
	Brass(stainless steel can be produced also)	 Cable	Emitter	EM18B-T020MD-EX9C2L2
			NPN Light/dark changeover	EM18B-T020MN-CX9C4U2
			PNP Light/dark changeover	EM18B-T020MP-CX9C4U2
		 Quick Disconnect	Emitter	EM18B-T020MD-EX9Q2LE
			NPN Light/dark changeover	EM18B-T020MN-CX9Q4UE
			PNP Light/dark changeover	EM18B-T020MP-CX9Q4UE
		 Pigtail	Emitter	EM18B-T020MD-EX9P2LE
			NPN Light/dark changeover	EM18B-T020MN-CX9P4UE
			PNP Light/dark changeover	EM18B-T020MP-CX9P4UE

EM18 SENSORS SELECTION GUIDE (DC)

Sensing mode	Material	Connection	Output mode	Part number
 Diffuse mode Sensing distance: 100 mm	Plastic	 Cable	NPN Light/dark changeover	EM18P-D0100N-CX9C4U2
			PNP Light/dark changeover	EM18P-D0100P-CX9C4U2
		 Quick Disconnect	NPN Light/dark changeover	EM18P-D0100N-CX9Q4UE
			PNP Light/dark changeover	EM18P-D0100P-CX9Q4UE
		 Pigtail	NPN Light/dark changeover	EM18P-D0100N-CX9P4UE
			PNP Light/dark changeover	EM18P-D0100P-CX9P4UE
	Brass(stainless steel can be produced also)	 Cable	NPN Light/dark changeover	EM18B-D0100N-CX9C4U2
			PNP Light/dark changeover	EM18B-D0100P-CX9C4U2
		 Quick Disconnect	NPN Light/dark changeover	EM18B-D0100N-CX9Q4UE
			PNP Light/dark changeover	EM18B-D0100P-CX9Q4UE
		 Pigtail	NPN Light/dark changeover	EM18B-D0100N-CX9P4UE
			PNP Light/dark changeover	EM18B-D0100P-CX9P4UE

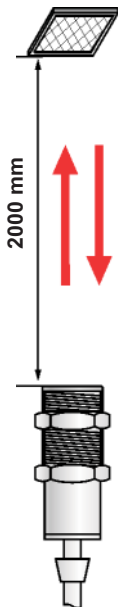
EM18 SENSORS SELECTION GUIDE (DC)

Sensing mode	Material	Connection	Output mode	Part number
 Diffuse mode Sensing distance:200 mm	Plastic	 Cable	NPN Light/dark changeover	EM18P-D0200N-CX9C4U2
			PNP Light/dark changeover	EM18P-D0200P-CX9C4U2
		 Quick Disconnect	NPN Light/dark changeover	EM18P-D0200N-CX9Q4UE
			PNP Light/dark changeover	EM18P-D0200P-CX9Q4UE
		 Pigtail	NPN Light/dark changeover	EM18P-D0200N-CX9P4UE
			PNP Light/dark changeover	EM18P-D0200P-CX9P4UE
	Brass(stainless steel can be produced also)	 Cable	NPN Light/dark changeover	EM18B-D0200N-CX9C4U2
			PNP Light/dark changeover	EM18B-D0200P-CX9C4U2
		 Quick Disconnect	NPN Light/dark changeover	EM18B-D0200N-CX9Q4UE
			PNP Light/dark changeover	EM18B-D0200P-CX9Q4UE
		 Pigtail	NPN Light/dark changeover	EM18B-D0200N-CX9P4UE
			PNP Light/dark changeover	EM18B-D0200P-CX9P4UE

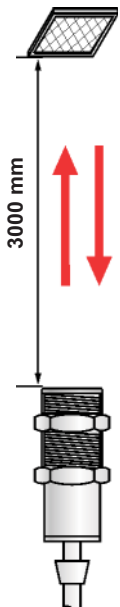
EM18 SENSORS SELECTION GUIDE (DC)

Sensing mode	Material	Connection	Output mode	Part number
 Diffuse mode Sensing distance: 400 mm	Plastic	 Cable	NPN Light/dark changeover	EM18P-D0400N-CX9C4U2
			PNP Light/dark changeover	EM18P-D0400P-CX9C4U2
		 Quick Disconnect	NPN Light/dark changeover	EM18P-D0400N-CX9Q4UE
			PNP Light/dark changeover	EM18P-D0400P-CX9Q4UE
		 Pigtail	NPN Light/dark changeover	EM18P-D0400N-CX9P4UE
			PNP Light/dark changeover	EM18P-D0400P-CX9P4UE
	Brass(stainless steel can be produced also)	 Cable	NPN Light/dark changeover	EM18B-D0400N-CX9C4U2
			PNP Light/dark changeover	EM18B-D0400P-CX9C4U2
		 Quick Disconnect	NPN Light/dark changeover	EM18B-D0400N-CX9Q4UE
			PNP Light/dark changeover	EM18B-D0400P-CX9Q4UE
		 Pigtail	NPN Light/dark changeover	EM18B-D0400N-CX9P4UE
			PNP Light/dark changeover	EM18B-D0400P-CX9P4UE

EM18 SENSORS SELECTION GUIDE (DC)

Sensing mode	Material	Connection	Output mode	Part number
 Retro-reflective mode with polarizing filter Sensing distance:2000 mm	Plastic	 Cable	NPN Light/dark changeover	EM18P-L2000N-CX6C4U2-PF
			PNP Light/dark changeover	EM18P-L2000P-CX6C4U2-PF
		 Quick Disconnect	NPN Light/dark changeover	EM18P-L2000N-CX6Q4UE-PF
			PNP Light/dark changeover	EM18P-L2000P-CX6Q4UE-PF
		 Pigtail	NPN Light/dark changeover	EM18P-L2000N-CX6P4UE-PF
			PNP Light/dark changeover	EM18P-L2000P-CX6P4UE-PF
	Brass(stainless steel can be produced also)	 Cable	NPN Light/dark changeover	EM18B-L2000N-CX6C4U2-PF
			PNP Light/dark changeover	EM18B-L2000P-CX6C4U2-PF
		 Quick Disconnect	NPN Light/dark changeover	EM18B-L2000N-CX6Q4UE-PF
			PNP Light/dark changeover	EM18B-L2000P-CX6Q4UE-PF
		 Pigtail	NPN Light/dark changeover	EM18B-L2000N-CX6P4UE-PF
			PNP Light/dark changeover	EM18B-L2000P-CX6P4UE-PF

EM18 SENSORS SELECTION GUIDE (DC)

Sensing mode	Material	Connection	Output mode	Part number
 Retro-reflective mode Sensing distance: 3000 mm	Plastic	 Cable	NPN Light/dark changeover	EM18P-L3000N-CX9C4U2
			PNP Light/dark changeover	EM18P-L3000P-CX9C4U2
		 Quick Disconnect	NPN Light/dark changeover	EM18P-L3000N-CX9Q4UE
			PNP Light/dark changeover	EM18P-L3000P-CX9Q4UE
		 Pigtail	NPN Light/dark changeover	EM18P-L3000N-CX9P4UE
			PNP Light/dark changeover	EM18P-L3000P-CX9P4UE
	Brass(stainless steel can be produced also)	 Cable	NPN Light/dark changeover	EM18B-L3000N-CX9C4U2
			PNP Light/dark changeover	EM18B-L3000P-CX9C4U2
		 Quick Disconnect	NPN Light/dark changeover	EM18B-L3000N-CX9Q4UE
			PNP Light/dark changeover	EM18B-L3000P-CX9Q4UE
		 Pigtail	NPN Light/dark changeover	EM18B-L3000N-CX9P4UE
			PNP Light/dark changeover	EM18B-L3000P-CX9P4UE

EM18 SENSORS SELECTION GUIDE (AC)

Sensing mode	Material	Connection	Output mode	Part number
 Diffuse mode Sensing distance: 100 mm	Plastic	 Cable	LIGHT-ON	EM18P-D0100A-LX9C3U2
			DARK-ON	EM18P-D0100A-DX9C3U2
		 Quick Disconnect	LIGHT-ON	EM18P-D0100A-LX9Q4UM
			DARK-ON	EM18P-D0100A-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18P-D0100A-LX9P4UM
			DARK-ON	EM18P-D0100A-DX9P4UM
	Brass(stainless steel can be produced also)	 Cable	LIGHT-ON	EM18B-D0100A-LX9C3U2
			DARK-ON	EM18B-D0100A-DX9C3U2
		 Quick Disconnect	LIGHT-ON	EM18B-D0100A-LX9Q4UM
			DARK-ON	EM18B-D0100A-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18B-D0100A-LX9P4UM
			DARK-ON	EM18B-D0100A-DX9P4UM

EM18 SENSORS SELECTION GUIDE (AC)

Sensing mode	Material	Connection	Output mode	Part number
Diffuse mode Sensing distance: 200 mm 	Plastic	 Cable	LIGHT-ON	EM18P-D0200A-LX9C3U2
			DARK-ON	EM18P-D0200A-DX9C3U2
		 Quick Disconnect	LIGHT-ON	EM18P-D0200A-LX9Q4UM
			DARK-ON	EM18P-D0200A-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18P-D0200A-LX9P4UM
			DARK-ON	EM18P-D0200A-DX9P4UM
	Brass(stainless steel can be produced also)	 Cable	LIGHT-ON	EM18B-D0200A-LX9C3U2
			DARK-ON	EM18B-D0200A-DX9C3U2
		 Quick Disconnect	LIGHT-ON	EM18B-D0200A-LX9Q4UM
			DARK-ON	EM18B-D0200A-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18B-D0200A-LX9P4UM
			DARK-ON	EM18B-D0200A-DX9P4UM

EM18 SENSORS SELECTION GUIDE (AC)

Sensing mode	Material	Connection	Output mode	Part number
 Diffuse mode Sensing distance:400 mm	Plastic	 Cable	LIGHT-ON	EM18P-D0400A-LX9C3U2
			DARK-ON	EM18P-D0400A-DX9C3U2
		 Quick Disconnect	LIGHT-ON	EM18P-D0400A-LX9Q4UM
			DARK-ON	EM18P-D0400A-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18P-D0400A-LX9P4UM
			DARK-ON	EM18P-D0400A-DX9P4UM
	Brass(stainless steel can be produced also)	 Cable	LIGHT-ON	EM18B-D0400A-LX9C3U2
			DARK-ON	EM18B-D0400A-DX9C3U2
		 Quick Disconnect	LIGHT-ON	EM18B-D0400A-LX9Q4UM
			DARK-ON	EM18B-D0400A-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18B-D0400A-LX9P4UM
			DARK-ON	EM18B-D0400A-DX9P4UM

EM18 SENSORS SELECTION GUIDE (AC)

Sensing mode	Material	Connection	Output mode	Part number
 Retro-reflective mode with polarizing filter Sensing distance:2000 mm	Plastic	 Cable	LIGHT-ON	EM18P-L2000A-LX6C3U2-PF
			DARK-ON	EM18P-L2000A-DX6C3U2-PF
		 Quick Disconnect	LIGHT-ON	EM18P-L2000A-LX6Q4UM-PF
			DARK-ON	EM18P-L2000A-DX6Q4UM-PF
		 Pigtail	LIGHT-ON	EM18P-L2000A-LX6P4UM-PF
			DARK-ON	EM18P-L2000A-DX6P4UM-PF
	Brass(stainless steel can be produced also)	 Cable	LIGHT-ON	EM18B-L2000A-LX6C3U2-PF
			DARK-ON	EM18B-L2000A-DX6C3U2-PF
		 Quick Disconnect	LIGHT-ON	EM18B-L2000A-LX6Q4UM-PF
			DARK-ON	EM18B-L2000A-DX6Q4UM-PF
		 Pigtail	LIGHT-ON	EM18B-L2000A-LX6P4UM-PF
			DARK-ON	EM18B-L2000A-DX6P4UM-PF

EM18 SENSORS SELECTION GUIDE (AC)

Sensing mode	Material	Connection	Output mode	Part number
 Retro-reflective mode Sensing distance: 3000 mm	Plastic	 Cable	LIGHT-ON	EM18P-L3000A-LX9C3U2
			DARK-ON	EM18P-L3000A-DX9C3U2
		 Quick Disconnect	LIGHT-ON	EM18P-L3000A-LX9Q4UM
			DARK-ON	EM18P-L3000A-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18P-L3000A-LX9P4UM
			DARK-ON	EM18P-L3000A-DX9P4UM
	Brass(stainless steel can be produced also)	 Cable	LIGHT-ON	EM18B-L3000A-LX9C3U2
			DARK-ON	EM18B-L3000A-DX9C3U2
		 Quick Disconnect	LIGHT-ON	EM18B-L3000A-LX9Q4UM
			DARK-ON	EM18B-L3000A-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18B-L3000A-LX9P4UM
			DARK-ON	EM18B-L3000A-DX9P4UM

EM18 SENSORS SELECTION GUIDE (AC/DC)

Sensing mode	Material	Connection	Output mode	Part number
 Diffuse mode Sensing distance: 100 mm	Plastic	 Cable	LIGHT-ON	EM18P-D0100C-LX9C2U2
			DARK-ON	EM18P-D0100C-DX9C2U2
		 Quick Disconnect	LIGHT-ON	EM18P-D0100C-LX9Q4UM
			DARK-ON	EM18P-D0100C-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18P-D0100C-LX9P4UM
			DARK-ON	EM18P-D0100C-DX9P4UM
	Brass(stainless steel can be produced also)	 Cable	LIGHT-ON	EM18B-D0100C-LX9C2U2
			DARK-ON	EM18B-D0100C-DX9C2U2
		 Quick Disconnect	LIGHT-ON	EM18B-D0100C-LX9Q4UM
			DARK-ON	EM18B-D0100C-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18B-D0100C-LX9P4UM
			DARK-ON	EM18B-D0100C-DX9P4UM

EM18 SENSORS SELECTION GUIDE (AC/DC)

Sensing mode	Material	Connection	Output mode	Part number
 Diffuse mode Sensing distance:200 mm	Plastic	 Cable	LIGHT-ON	EM18P-D0200C-LX9C2U2
			DARK-ON	EM18P-D0200C-DX9C2U2
		 Quick Disconnect	LIGHT-ON	EM18P-D0200C-LX9Q4UM
			DARK-ON	EM18P-D0200C-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18P-D0200C-LX9P4UM
			DARK-ON	EM18P-D0200C-DX9P4UM
	Brass(stainless steel can be produced also)	 Cable	LIGHT-ON	EM18B-D0200C-LX9C2U2
			DARK-ON	EM18B-D0200C-DX9C2U2
		 Quick Disconnect	LIGHT-ON	EM18B-D0200C-LX9Q4UM
			DARK-ON	EM18B-D0200C-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18B-D0200C-LX9P4UM
			DARK-ON	EM18B-D0200C-DX9P4UM

EM18 SENSORS SELECTION GUIDE (AC/DC)

Sensing mode	Material	Connection	Output mode	Part number
 Diffuse mode Sensing distance:400 mm	Plastic	 Cable	LIGHT-ON	EM18P-D0400C-LX9C2U2
			DARK-ON	EM18P-D0400C-DX9C2U2
		 Quick Disconnect	LIGHT-ON	EM18P-D0400C-LX9Q4UM
			DARK-ON	EM18P-D0400C-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18P-D0400C-LX9P4UM
			DARK-ON	EM18P-D0400C-DX9P4UM
	Brass(stainless steel can be produced also)	 Cable	LIGHT-ON	EM18B-D0400C-LX9C2U2
			DARK-ON	EM18B-D0400C-DX9C2U2
		 Quick Disconnect	LIGHT-ON	EM18B-D0400C-LX9Q4UM
			DARK-ON	EM18B-D0400C-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18B-D0400C-LX9P4UM
			DARK-ON	EM18B-D0400C-DX9P4UM

EM18 SENSORS SELECTION GUIDE (AC/DC)

Sensing mode	Material	Connection	Output mode	Part number
 Retro-reflective mode with polarizing filter Sensing distance:2000 mm	Plastic	 Cable	LIGHT-ON	EM18P-L2000C-LX6C2U2-PF
			DARK-ON	EM18P-L2000C-DX6C2U2-PF
		 Quick Disconnect	LIGHT-ON	EM18P-L2000C-LX6Q4UM-PF
			DARK-ON	EM18P-L2000C-DX6Q4UM-PF
		 Pigtail	LIGHT-ON	EM18P-L2000C-LX6P4UM-PF
			DARK-ON	EM18P-L2000C-DX6P4UM-PF
	Brass(stainless steel can be produced also)	 Cable	LIGHT-ON	EM18B-L2000C-LX6C2U2-PF
			DARK-ON	EM18B-L2000C-DX6C2U2-PF
		 Quick Disconnect	LIGHT-ON	EM18B-L2000C-LX6Q4UM-PF
			DARK-ON	EM18B-L2000C-DX6Q4UM-PF
		 Pigtail	LIGHT-ON	EM18B-L2000C-LX6P4UM-PF
			DARK-ON	EM18B-L2000C-DX6P4UM-PF

EM18 SENSORS SELECTION GUIDE (AC/DC)

Sensing mode	Material	Connection	Output mode	Part number
 Retro-reflective mode Sensing distance: 3000 mm	Plastic	 Cable	LIGHT-ON	EM18P-L3000C-LX9C2U2
			DARK-ON	EM18P-L3000C-DX9C2U2
		 Quick Disconnect	LIGHT-ON	EM18P-L3000C-LX9Q4UM
			DARK-ON	EM18P-L3000C-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18P-L3000C-LX9P4UM
			DARK-ON	EM18P-L3000C-DX9P4UM
	Brass(stainless steel can be produced also)	 Cable	LIGHT-ON	EM18B-L3000C-LX9C2U2
			DARK-ON	EM18B-L3000C-DX9C2U2
		 Quick Disconnect	LIGHT-ON	EM18B-L3000C-LX9Q4UM
			DARK-ON	EM18B-L3000C-DX9Q4UM
		 Pigtail	LIGHT-ON	EM18B-L3000C-LX9P4UM
			DARK-ON	EM18B-L3000C-DX9P4UM

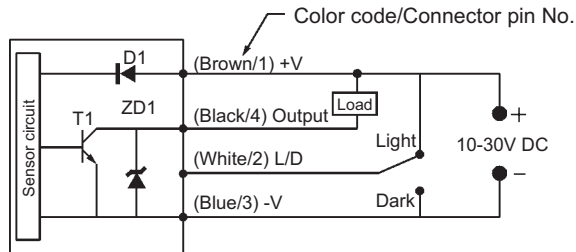
EM18 SENSORS SELECTION GUIDE (DC)

Item	Type	Through-beam	Retroreflective		Diffuse reflective		
	Model No.			With polarizing filters			
		EM18x-T010Mx-xX9xxxx	EM18x-L3000x-xX9xxxx	EM18x-L2000x-xX6xxxx-PF	EM18x-D0100x-xX9xxxx	EM18x-D0200x-xX9xxxx	EM18x-D0400x-xX9xxxx
Sensing range		10m	3m	2m	100mm	200mm	400mm
Sensing object		Opaque object of ϕ 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 • Applied voltage: 30V DC or less • Maximum sink current: 200mA • Voltage drop: 2.5V or less			<PNP> output type> PNP open-collector transistor • Applied voltage: 30V DC or less • Maximum sink current: 200mA • Voltage drop: 2.5V or less		
Output operation		Selectable either Light-ON Dark-ON by the control input wire					
Short-circuit protection		Yes					
Reverse polarity protection		Yes					
Overload current protection		Yes					
Response time		1.5ms					
Operation indicator		Red LED (light up when the output is activated), Thru-beam sensor is provided it on the receiver					
Pollution degree		3(Industrial environment)					
Protection		IP67(IEC)					
Ambient temperature		-25°C to +55°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 1500V AC for one min, between all supply terminals connected together and enclosure					
Insulation resistance		>20M Ω , with 1500V 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)		
Housing material		Plastic housing: PBT		Metal housing: Nickel-plated brass			
cable		2M or 9m 5.8 ϕ (Plastic Housing:4 ϕ) 4X0.5 (Emitter :3X0.5) PVC.					
Connector		EURO-style quick connector(M12x1 thread)					
Pigtail Tpye		Cable and EURO-style quick connector					

EM18 SENSORS CIRCUIT AND WIRING DIAGRAMS

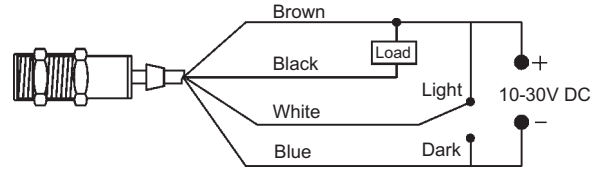
NPN output type

I/O circuit diagram



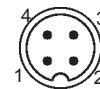
Symbol D1:Reverse polarity protection diode
ZD1:Surge absorption zener diode
T1:NPN output transistor

Wiring diagram



Connector pin position

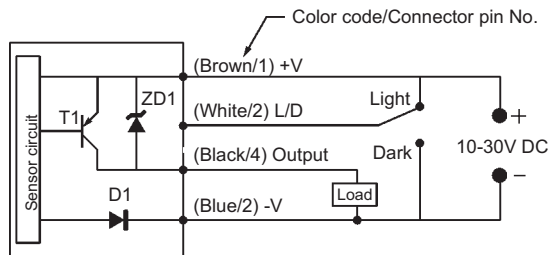
EURO-style



1.+V
2.Light/Dark control
3.0V
4.Sensing output

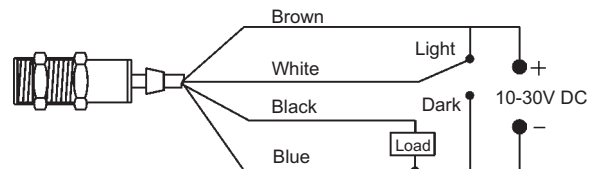
PNP output type

I/O circuit diagram



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

Wiring diagram



Connector pin position

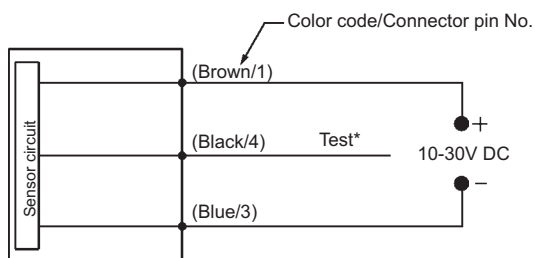
EURO-style



1.+V
2.Light/Dark control
3.0V
4.Sensing output

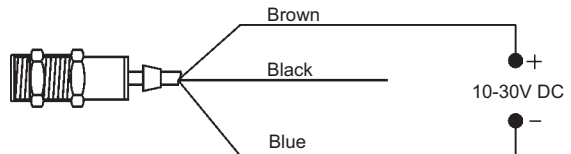
Emitter:

I/O circuit diagram



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

Wiring diagram



Connector pin position

EURO-style

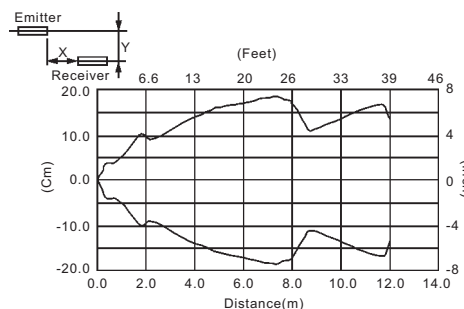
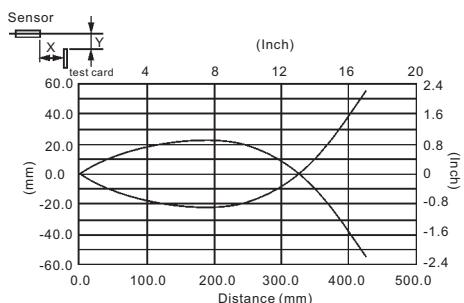
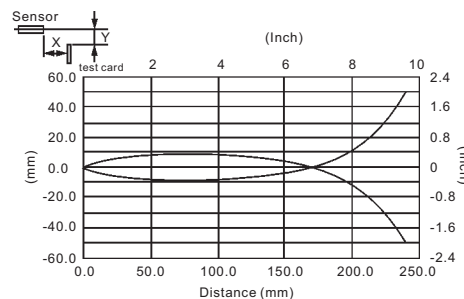
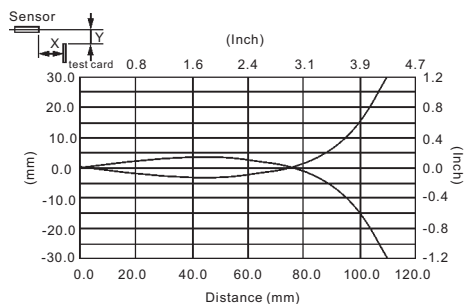


1.+V
2.NO used
3.0V
4.Test*

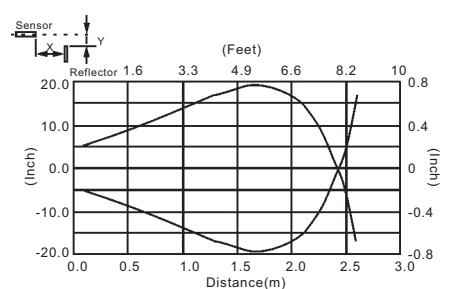
EM18 SENSORS CIRCUIT AND WIRING DIAGRAMS

Sensing fields (typical)

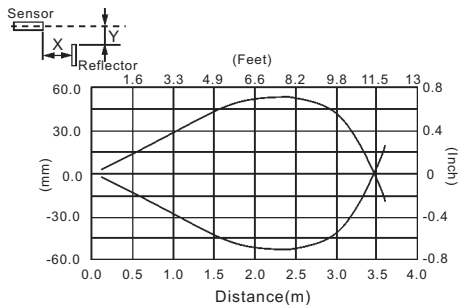
Diffuse sensor



Through-beam sensor



Retro-reflective sensor
(with polarizing filters)



Retro-reflective sensor

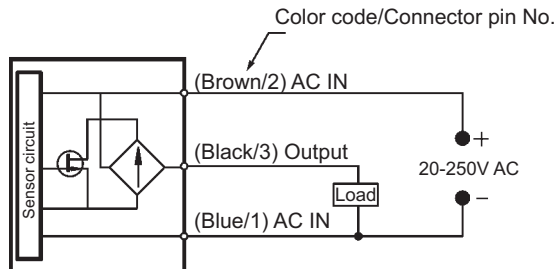
EM18 SENSORS SELECTION GUIDE (AC)

Item	Type	Diffuse reflective			Retroreflective	
	Model No.	EM18x-D0100A-xX9xxxx	EM18x-D0200A-xX9xxxx	EM18x-D0400A-xX9xxxx	EM18x-L3000A-xX9xxxx	With polarizing filters EM18x-L2000A-xX6xxxx-PF
Sensing range		100mm	200mm	400mm	3m	2m
Sensing object		White paper			3-way mirror	3-way mirror
Hysteresis		20% or less of operation distance			————	
Supply Voltage		20 to 250V AC				
Current consumption		5mA or less				
Output		AC non-contact (thyristor output) ● Applied voltage: 20 to 250V AC ● Max. Load current: 300 mA ● Voltage drop: 10V AC or less				
Output operation		Selectable either Light-ON Dark-ON by the control input wire				
Short-circuit protection		Yes				
Overload current protection		Yes				
Response time		1.5ms				
Operation indicator		Red LED (light up when the output is activated)				
Pollution degree		3(Industrial environment)				
Protection		IP67(IEC)				
Ambient temperature		-25℃ to +55℃				
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 1500V AC for one min, between all supply terminals connected together and enclosure				
Insulation resistance		>20MΩ , with 1500V 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)	
Housing material		Plastic housing: PBT Metal housing: Nickel-plated brass				
cable		2M or 9m 5.8 φ (Plastic Housing:4 φ) 4X0.5 (Emitter :3X0.5) PVC.				
Connector		MICRO-style quick connector(1/2"-20UNF thread)				
Pigtail Tpye		cable and MICRO-style quick connector				

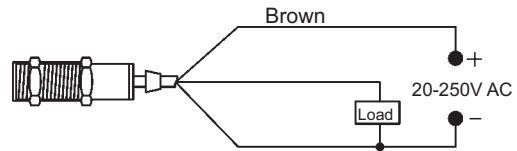
EM18 SENSORS CIRCUIT AND WIRING DIAGRAMS

Retroreflective & diffuse reflective sensor

I/O circuit diagram

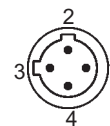


Wiring diagram



Connector pin position

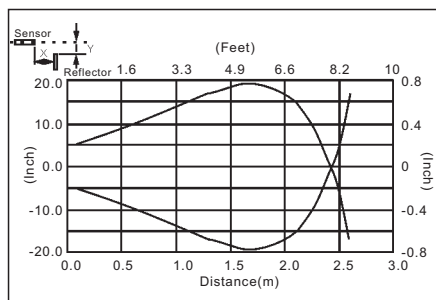
MICRO-style



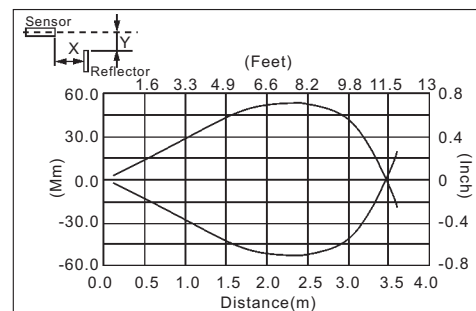
- 1: (Blue) 0V
- 2: (Brown) 20-250V AC
- 3: (Black) Output
- 4: (White) Not connected

Sensing fields (typical)

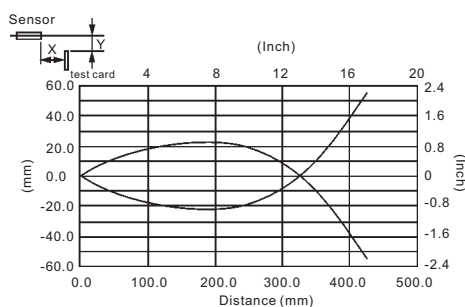
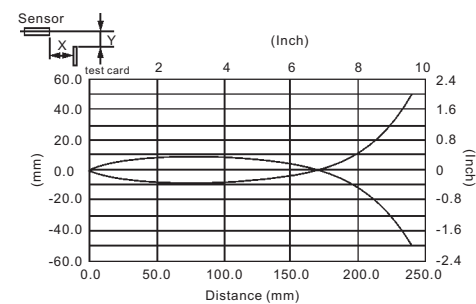
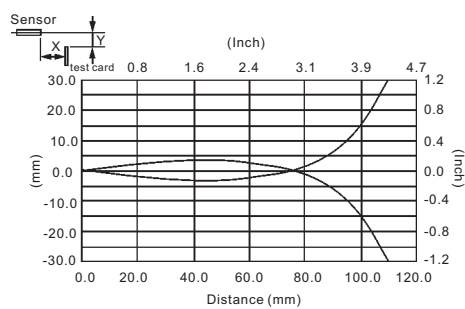
Retro-reflective sensor(with polarizing filters)



Retro-reflective sensor



Diffuse sensor



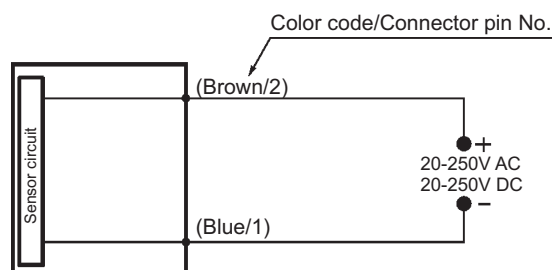
EM18 SENSORS SELECTION GUIDE (AC/DC)

Item	Type	Diffuse reflective			Retroreflective	With polarizing filters
	Model No.	EM18x-D0100C-xX9xxUx	EM18x-D0200C-xX9xxUx	EM18x-D0400C-xX9xxUx	EM18x-L3000C-xX9xxUx	EM18x-L2000C-xX6xxUx-PF
Sensing range		100mm	200mm	400mm	3m	2m
Sensing object		White paper			3-way mirror	3-way mirror
Hysteresis		————			20% or less of operation distance	
Supply Voltage		20-250V AC, 50-60Hz; 20-250 V DC				
Current consumption		30mA or less				
Output		● Applied voltage: 20 to 250V AC or 20 to 250V DC ● Max Load current: 300mA ● Voltage drop: <=10V AC or <=8V DC				
Output operation		Light-ON or Dark-ON				
Short-circuit protection		Yes				
Reverse polarity protection		Yes				
Overload current protection		Yes				
Response time		1.5ms				
Operation indicator		Red LED (light up when the output is activated)				
Pollution degree		3(Industrial environment)				
Protection		IP67(IEC)				
Ambient temperature		-25°C to +55°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 1500V AC for one min, between all supply terminals connected together and enclosure				
Insulation resistance		>20MΩ, with 1500V 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)
Housing material		Plastic housing: PBT Metal housing: Nickel-plated brass				
cable		2M or 9m 5.8 φ (Plastic Housing:4 φ) 4X0.5 (Emitter :3X0.5) PVC.				
Connector		MICRO-style quick connector(1/2"-20UNF thread)				
Pigtail Tpye		cable and MICRO-style quick connector				

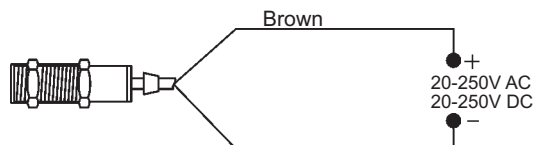
EM18 SENSORS CIRCUIT AND WIRING DIAGRAMS

Retroreflective & diffuse reflective sensor

I/O circuit diagram

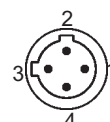


Wiring diagram



Connector pin position

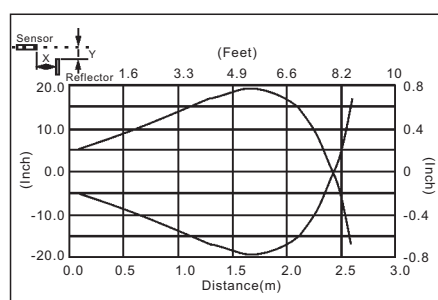
MICRO-style



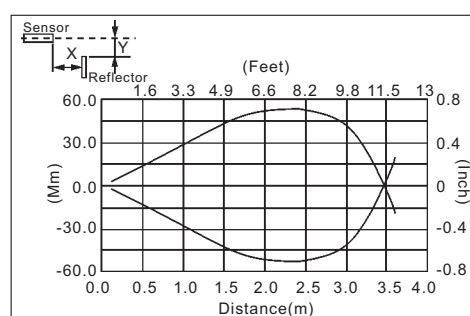
- 1: (Blue) 0V
- 2: (Brown) 20-250V AC
- 3: (Black) Not connected
- 4: (White) Not connected

Sensing fields (typical)

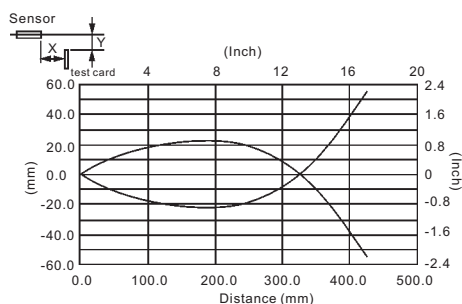
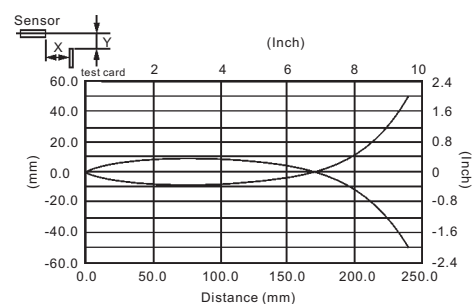
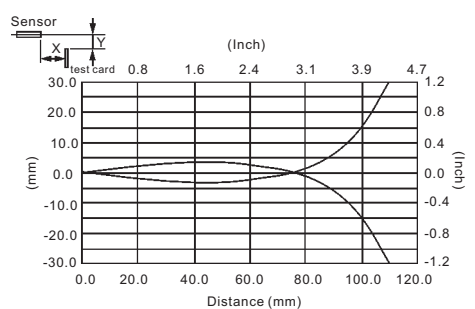
Retro-reflective sensor(with polarizing filters)



Retro-reflective sensor

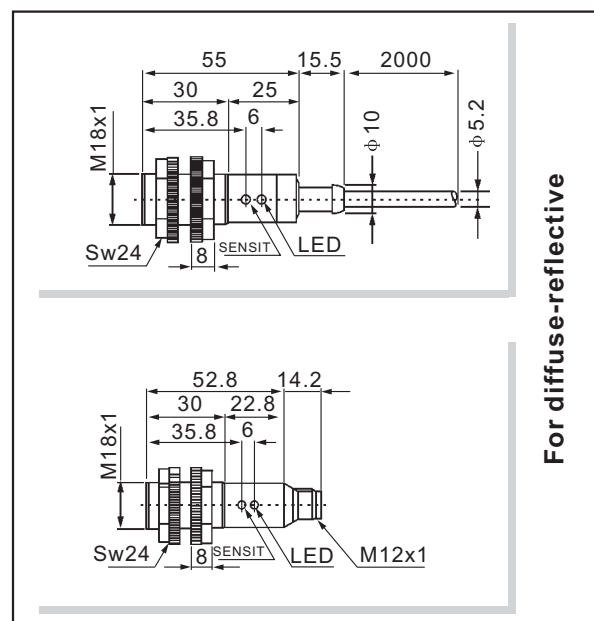
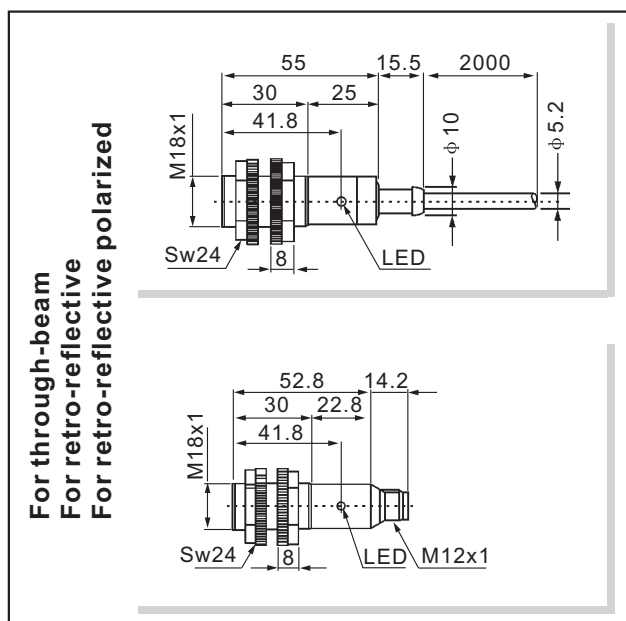


Diffuse sensor

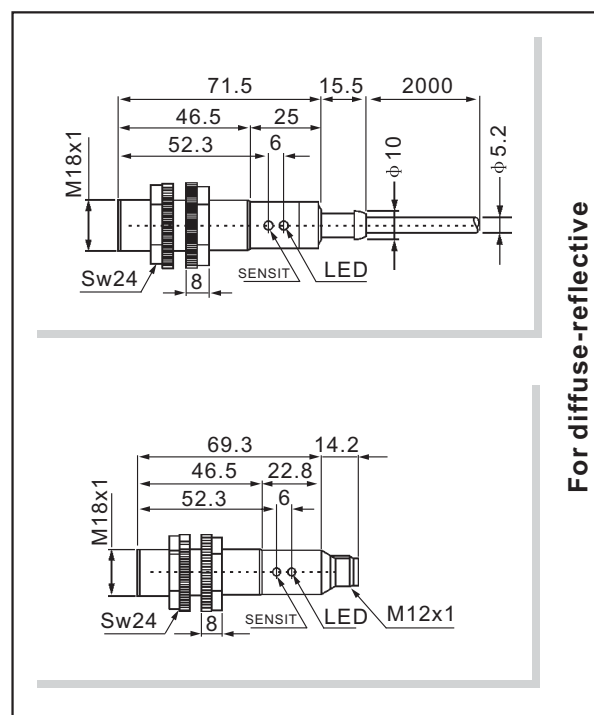
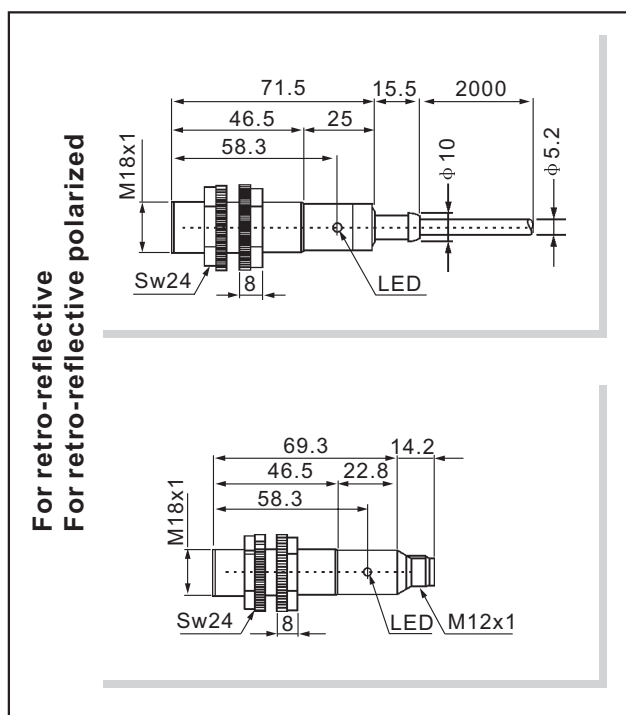


EM18 SENSORS DIMENSIONS

Plastic housing(DC)



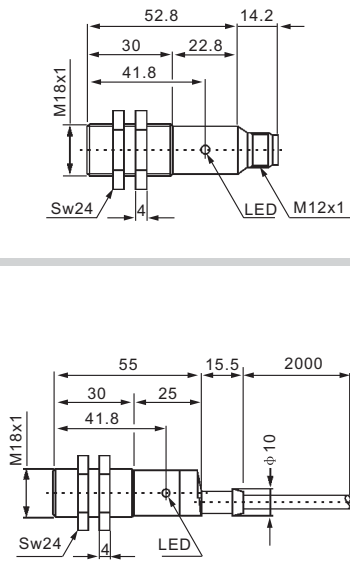
Plastic housing(AC or AC/DC)



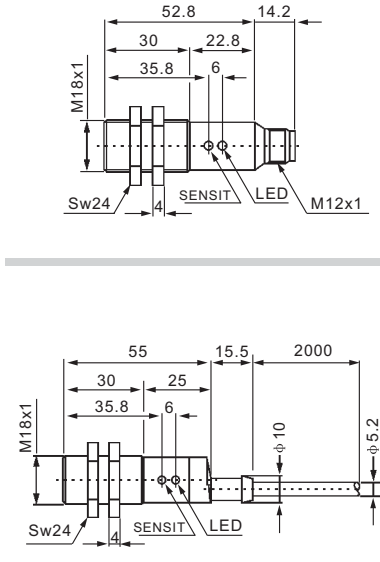
EM18 SENSORS DIMENSIONS

Brass housing(DC)

For through-beam



For retro-reflective
For diffuse-reflective
For retro-reflective polarized



Brass housing(AC or AC/DC)

For diffuse-reflective
For retro-reflective
For retro-reflective polarized

