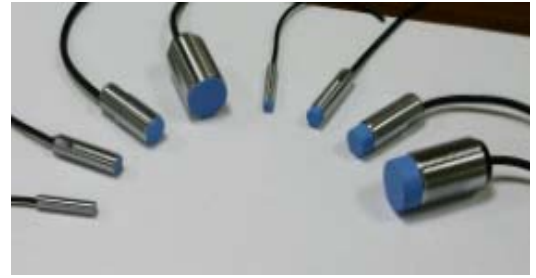


SP2

CYLINDRICAL PROXIMITY Sensor

FEATURES

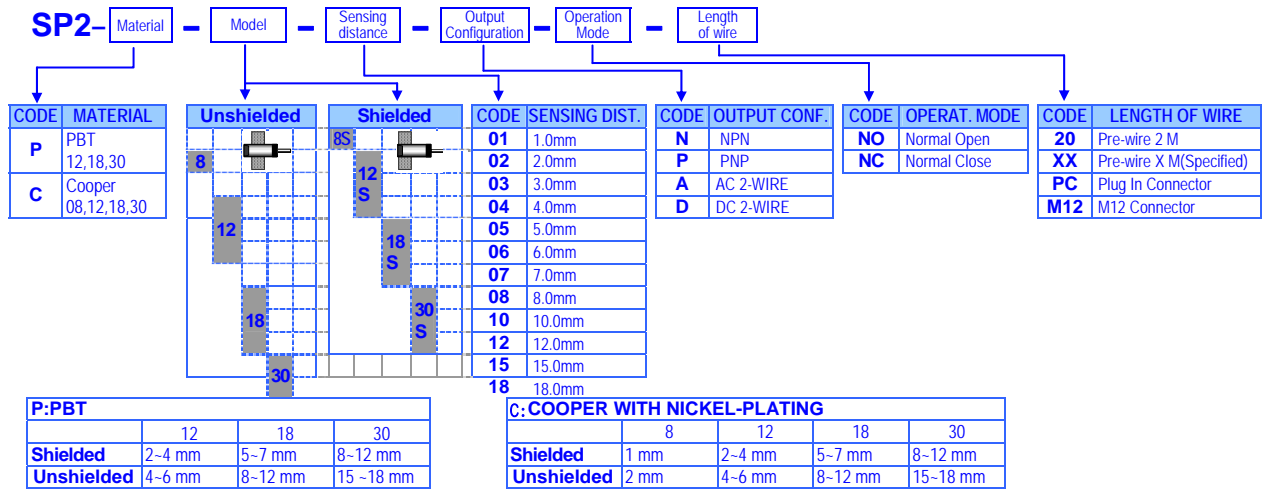
- Easy installation, high-speed pulse generator, high-speed rotation control, and more.
- A wealth of models ideal for limit control, counting control, and other applications.
- Sensing distance from 1~2/2 ~ 6/ 5~ 12/10~15mm
- Housing by PBT with strong structure and acid resisting available.



APPLICATIONS

RPM and Linear line speed detection Counting Control
Limit Control

ORDERING INFORMATION



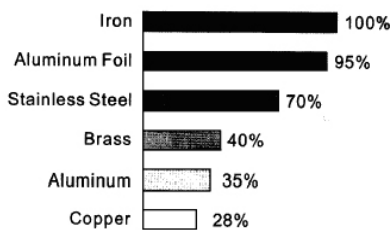
TECHNICAL SPECIFICATION

MODEL	SP2-08(Cooper)		SP2-12(Normal/Long distance)			
	Shielded	Unshielded	Shielded		Unshielded	
Set distance	1mm±10%	2mm±10%	2mm±10%	Long: 4mm±10%	4mm±10%	Long: 6mm±10%
Sensing distance	0-0.8mm	0-1.6mm	0-1.6mm	Long: 0-3.2mm	0-3.2mm	Long: 0-4.8mm
Detection direct.	Front side					
Differential travel	10% max. of sensing distance					
Detectable object	Ferrous metal (The sensing distance decreases with non-ferrous metal.)					
Standard sensing object	Iron, 8×8×1mm		Iron, 12×12×1mm			
Operation mode (with sensing object approaching)	O : Normal Open C : Normal Close		O : Normal Open C : Normal Close			
Detection indicator	Red LED					
	DC 3-WIRE		DC 3-WIRE	DC 2-WIRE	AC 2-WIRE	
Load current	150mA Max.		150mA Max.	3-150mA	5-100mA	
Power supply	DC10-30V, ripple (p-p): 10% max.				AC 24-240V	
Leakage current	<13mA		<13mA	<0.8mA	<13mA	
Protection circuits	DC 3 wire / DC 2 wire: Reverse polarity protection, Surge suppressor				AC 2 wire: Surge	
Response freq.	800Hz		800Hz, Option: 1KHz	800Hz	800Hz, Option: 1KHz	
Ambient temp.	Operating: -25°C ~ 70°C; Storage: -30°C ~ 80°C (Non-condensing)					
Ambient humidity	Operating: 35 to 95 % RH; Storage: 35 to 95 % RH					
Temp. influence	10% max. of sensing distance at 23C in the temperature range of 25 to 70C					
Voltage influence	1% max. of sensing distance at rated voltage in rated voltage 15% range					
Insulation resistance	50 M min. (at 500 VDC) between current-carrying parts and case					
Dielectric strength	DC 3-wire: 1,000 VAC for 1 min between current-carrying parts and case					
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions					
Shock resistance	500 m/s ² (about 50g) 3 times each in X, Y, and Z directions					
Protection	IEC 60529 IP67 [JEM IP67g (water-resistant, oil-resistant)]					
Connection method	DC 3-wire / DC 2-wire: 3C / 3.8 Ø * 2M PVC; oil-resistant; AC 2-wire: 2C/4.8 Ø * 2M PVC;					
Weight	Pre-wire	Cooper: 39g	Cooper: 68g	PBT: 54g		
	Plug con.	Cooper: 57g	Cooper: 66g	PBT: 56g		
Materials	Case	Cooper with Nickel-plating		PBT: Blue color, Cooper with Nickel-plating		
	Sensing surface	PBT: Blue color,		PBT: Blue color,		
	Screw	Cooper with Nickel-plating		PBT: Blue color, Cooper with Nickel-plating		
	Bracket	Iron with Nickel-plating				

MODEL	SP2-18				SP2-30			
Shielded / Unshielded	Shielded		Unshielded		Shielded		Unshielded	
Set distance	5mm±10%	Long: 7mm±10%	8mm±10%	Long: 12mm±10%	10mm±10%	Long: 12mm±10%	15mm±10%	Long: 18mm±10%
Sensing distance	0-4.0mm	Long: 0-5.6mm	0-6.4mm	Long: 9.6mm±10%	0-8.0mm	Long: 0-9.6mm	0-12mm	Long: 14.4mm±10%
Detection direct.	Front side							
Differential travel	10% max. of sensing distance							
Detectable object	Ferrous metal (The sensing distance decreases with non-ferrous metal.)							
Standard sensing object	Iron, 18×18×1mm				Iron, 30×30×1mm			
Operation mode (with sensing object approaching)	O : Normal Open C : Normal Close							
Detection indicator	Red LED							
	DC 3-WIRE	DC 2-WIRE	AC 2-WIRE	DC 3-WIRE	DC 2-WIRE	AC 2-WIRE		
Load current	150mA max	3-150mA	3-150mA	150mA max	3-150mA	3-150mA		
Power supply	DC10-30V, ripple (p-p): 10% max.		AC 24-240V	DC10-30V, ripple (p-p): 10% max.		AC 24-240V		
Leakage current	<13mA	<0.8mA	<1.7mA(at AC200V)	3-1<13mA	<0.8mA	<1.7mA(at AC200V)		
Protection circuits	DC 3 wire / DC 2 wire: Reverse polarity protection, Surge suppressor				AC 2 wire: Surge suppressor			
Response freq.	500Hz		30Hz	500Hz		30Hz		
Ambient temp.	Operating: -25°C ~ 70°C; Storage: -30°C ~ 80°C (Non-condensing)							
Ambient humidity	Operating: 35 to 95 % RH; Storage: 35 to 95 % RH							
Temp. influence	10% max. of sensing distance at 23C in the temperature range of 25 to 70C							
Voltage influence	1% max. of sensing distance at rated voltage in rated voltage 15% range							
Insulation resistance	50 M min. (at 500 VDC) between current-carrying parts and case							
Dielectric strength	DC 3-wire: 1,000 VAC for 1 min between current-carrying parts and case							
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions							
Shock resistance	500 m/s ² (about 50g) 3 times each in X, Y, and Z directions							
Protection	IEC 60529 IP67 [JEM IP67g (water-resistant, oil-resistant)]							
Connection method	Pre-wire	DC 3-wire / DC 2-wire: 3C / 3.8 Ø * 2M PVC; oil-resistant;				AC 2-wire: 2C/4.8 Ø * 2M PVC; oil-resistant		
	Plug con.	Available	X	X	Available	X	X	
Weight	Pre-wire	Cooper: 118g PBT: 89g		Cooper: 185g PBT: 126g				
	Plug con.	Cooper: 122g PBT: 91g		Cooper: 187g PBT: 128g				
Materials	Case	PBT; Blue color, Cooper with Nickel-plating						
	Sensing surface	PBT; Blue color,						
	Screw	PBT; Blue color, Cooper with Nickel-plating						
	Bracket	Iron with Nickel-plating						

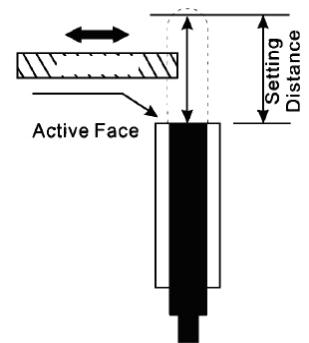
■ SENSING OBJECT MATERIAL

Taking an electrical proximity switch's an example; the sensing distance of the electrical inductive proximity switch is shorter for a non-metal target. In this case, please refer to the following chart for correction of pick up distance.



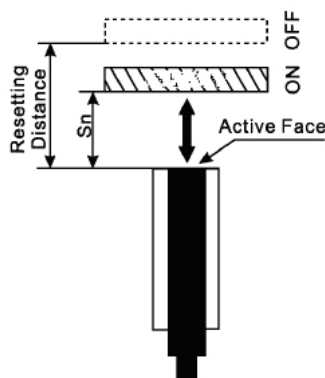
■ SETING DISTANCE

Setting distance refers to the distance from the sensing surface to the passing position of the target which permits the proximity switch to operate without any malfunction due to temperature or voltage fluctuation.



■ SENSING DISTANCE

Sensing distance refers to the distance at the proximity switch operates (or releases) as measured from the reference position (or reference plane) by moving the target in the specified manner.



■ STANDARD OBJECT

Standard Object:

DIN Steel 37 with thickness of 1mm. One side of square equals length of proximity switch diameter.

Smaller than standard

The sensing distance is comparatively shorter and the distance is set according to the actual object.

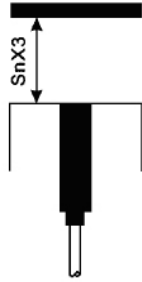
Larger than standard

The distance detected out shall not be changed.

■ INSTALLATION PRECAUTIONS

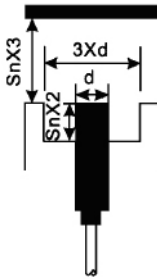
● Flush Type

Since the sensing face of the proximity switch is a flush type, it can be buried in an iron or steel material stockpile to prevent being effected by surrounding metal objects.



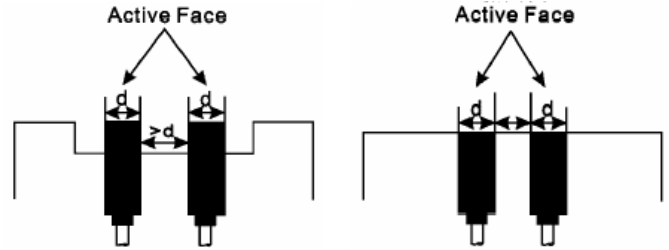
● Non-Flush Type

A space should be provided between the sensing face and the surrounding metals, or the sensing face should protrude to prevent surrounding interference.



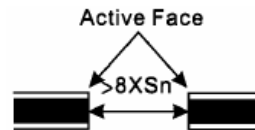
● Mutual Interference

A minimum distance must be observed when identical cylindrical rectangular sensors are mounted opposite each other or in parallel.



Non-Flush mountable sensors mounted in parallel

Flush mountable sensors mounted in parallel



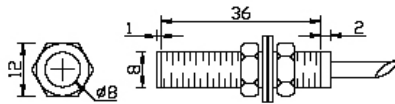
mounted opposite each other

■ DIMENSIONS

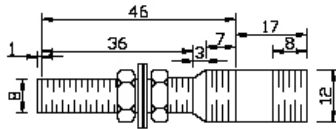
SP2-08(Cooper)

Flush Type

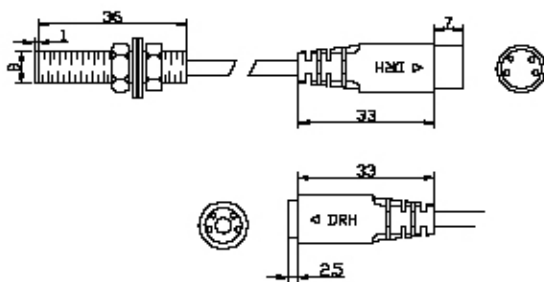
Pre-wired



M12 Connector

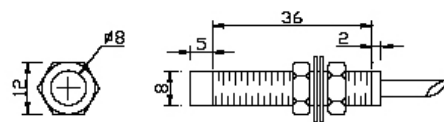


Plug in Connector

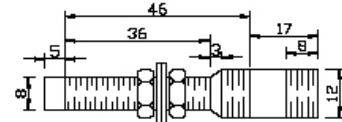


Non-Flush Type

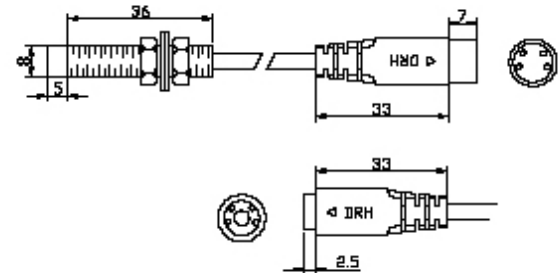
Pre-wired



M12 Connector



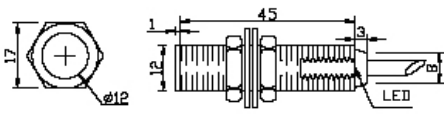
Plug in Connector



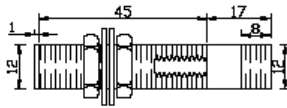
SP2-12(Cooper)

Flush Type

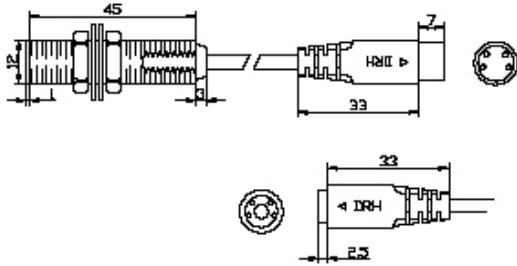
Pre-wired



M12 Connector

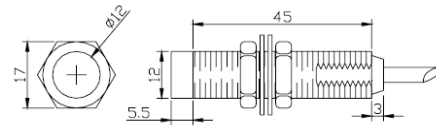


Plug in Connector

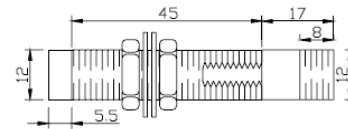


Non-Flush Type

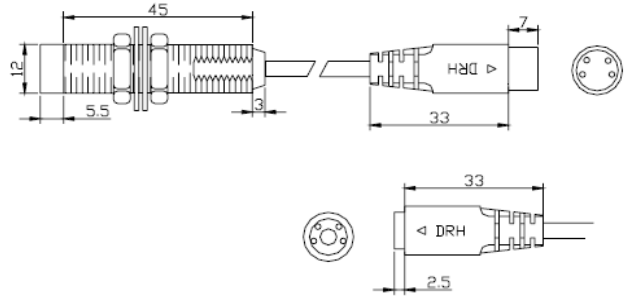
Pre-wired



M12 Connector



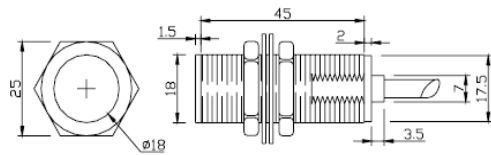
Plug in Connector



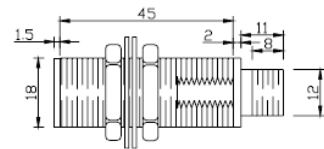
SP2-18(Cooper)

Flush Type

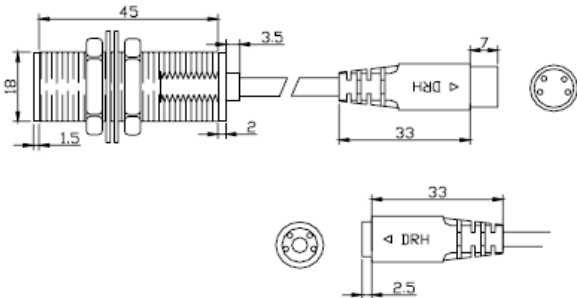
Pre-wired



M12 Connector

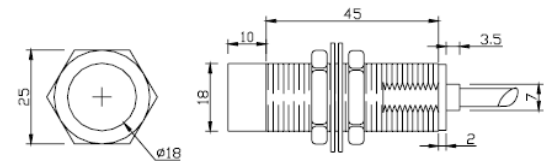


Plug in Connector

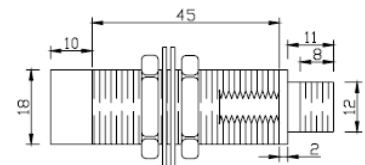


Flush Type

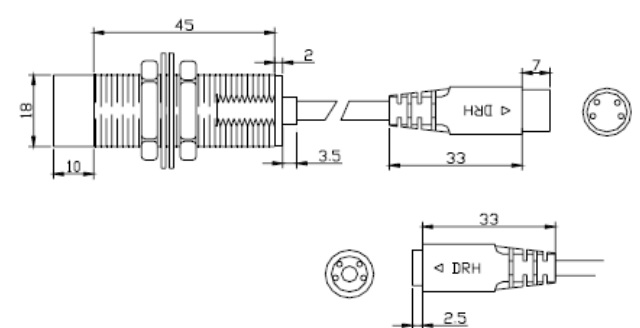
Pre-wired



M12 Connector



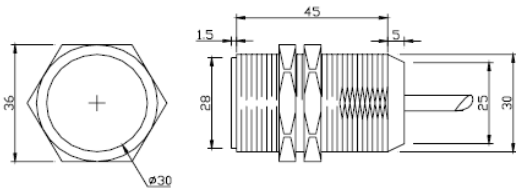
Plug in Connector



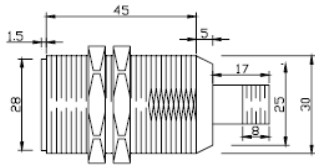
SP2-30(Cooper)

Flush Type

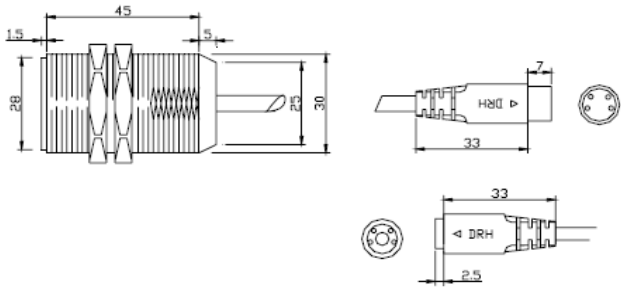
Pre-wired



M12 Connector

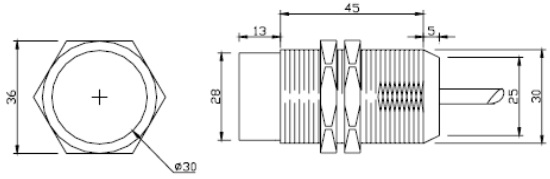


Plug in Connector

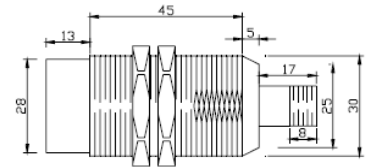


Non-Flush Type

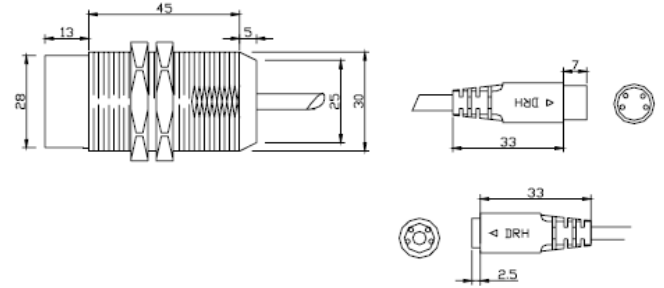
Pre-wired



M12 Connector



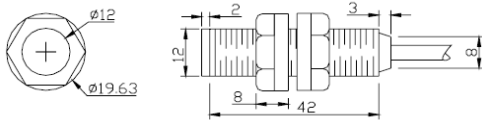
Plug in Connector



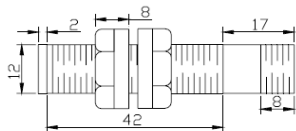
SP2-12(PBT)

Flush Type

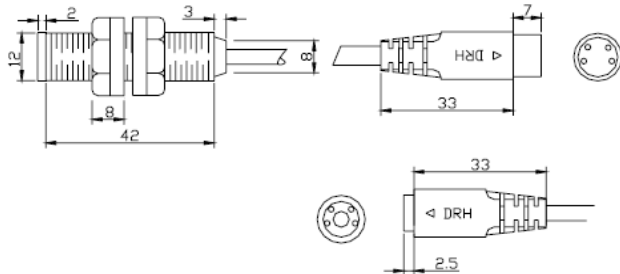
Pre-wired



M12 Connector

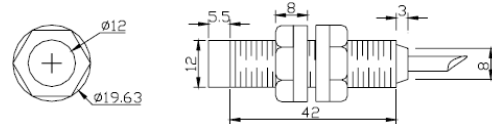


Plug in Connector

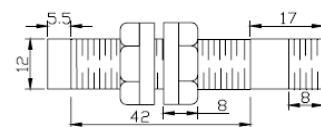


Non-Flush Type

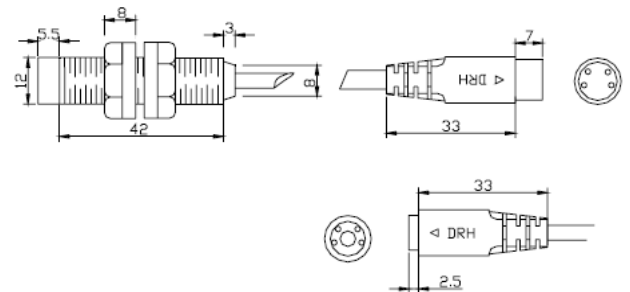
Pre-wired



M12 Connector



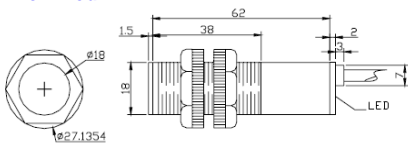
Plug in Connector



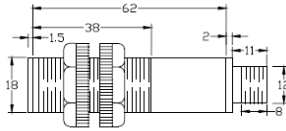
SP2-18(PBT)

Flush Type

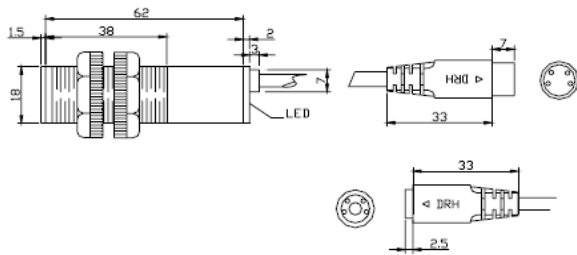
Pre-wired



M12 Connector

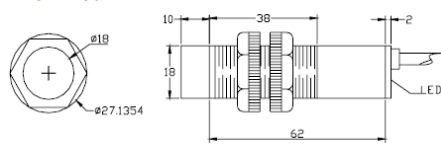


Plug in Connector

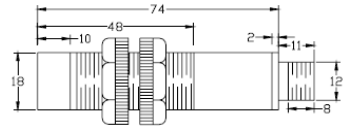


Non-Flush Type

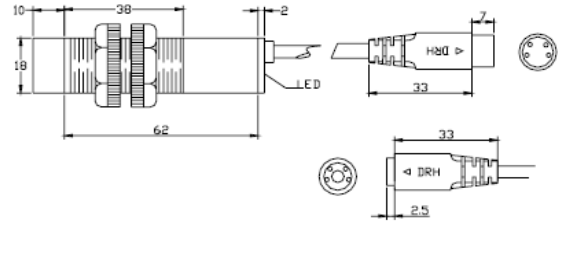
Pre-wired



M12 Connector



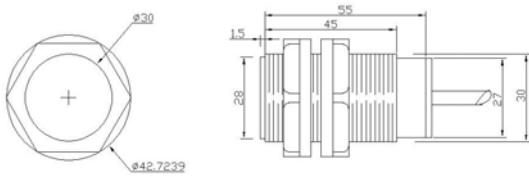
Plug in Connector



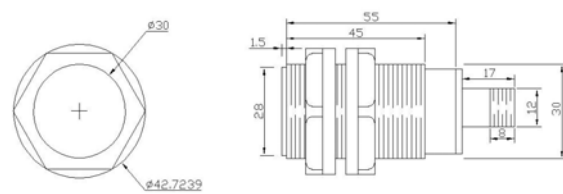
SP2-30(PBT)

Flush Type

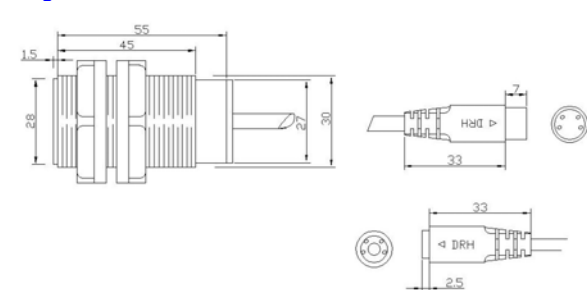
Pre-wired



M12 Connector

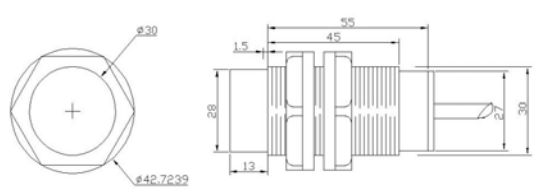


Plug in Connector

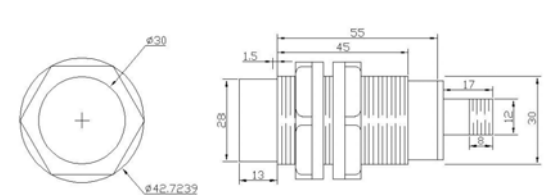


Non-Flush Type

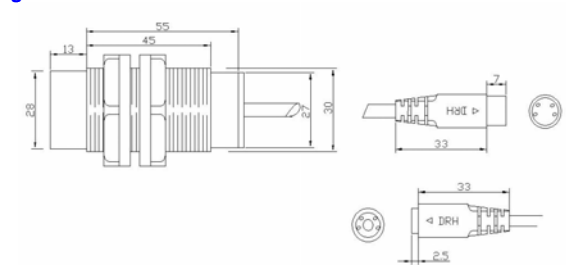
Pre-wired



M12 Connector



Plug in Connector

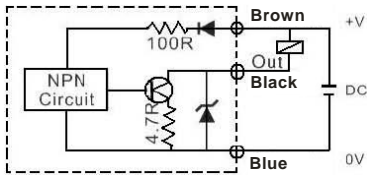


SP2 Proximity Sensor

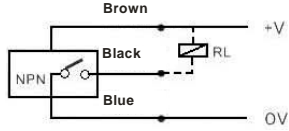
CONNECTION

DC 3-WIRE

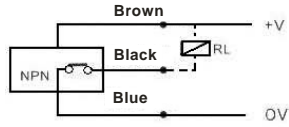
NPN NO/NC



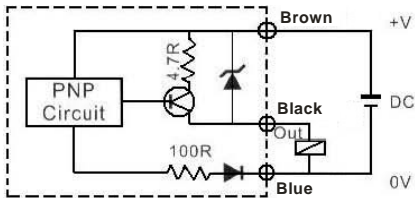
Normal Open



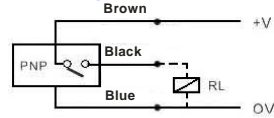
Normal Close



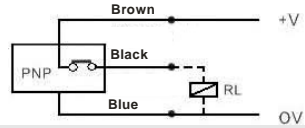
PNP NO/NC



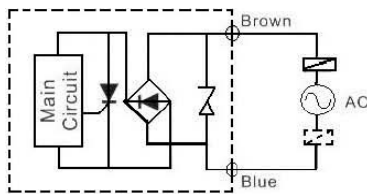
Normal Open



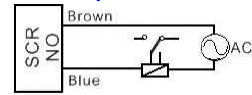
Normal Close



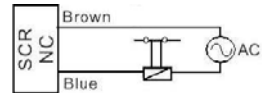
AC 2 wire type



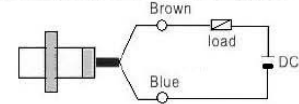
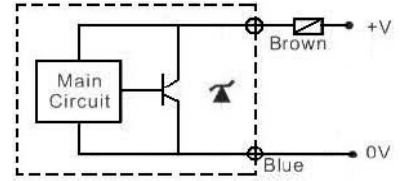
Normal Open



Normal Close



DC 2 wire type



or

