



# Standard M18 Threaded Type Sensor

- Selectable metal or plastic enclosure
- Rich lineup of over 100 variations

Related products

Long-range detection

**C-R**  
● P.224



Industry standard size

**Z3**  
● P.148



## Selection table

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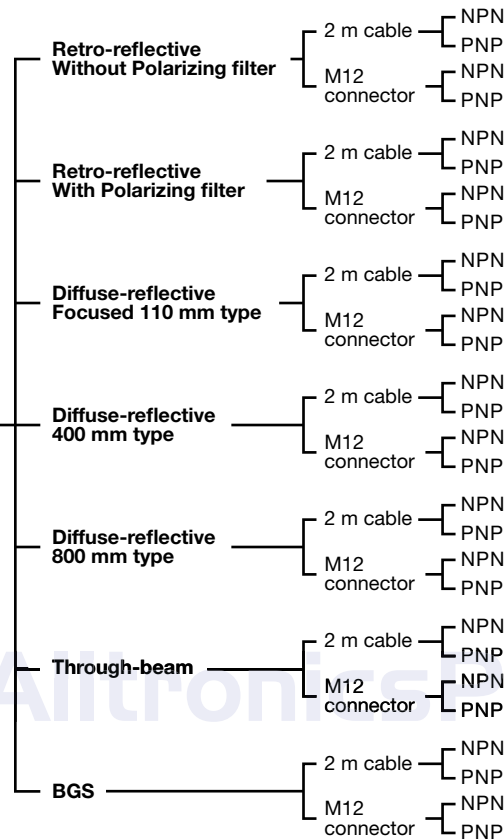


Plastic housing

				Standard	Angle 90°
Plastic housing	Retro-reflective Without Polarizing filter	2 m cable	NPN	C2RP-350N	C2RP-S350N
			PNP	C2RP-350P	C2RP-S350P
		M12 connector	NPN	C2RP-350CN	C2RP-S350CN
			PNP	C2RP-350CP	C2RP-S350CP
	Retro-reflective With Polarizing filter	2 m cable	NPN	C2RP-F400N	C2RP-SF400N
			PNP	C2RP-F400P	C2RP-SF400P
		M12 connector	NPN	C2RP-F400CN	C2RP-SF400CN
			PNP	C2RP-F400CP	C2RP-SF400CP
	Diffuse-reflective Focused 110 mm type	2 m cable	NPN	C2DP-11N	C2DP-S11N
			PNP	C2DP-11P	C2DP-S11P
		M12 connector	NPN	C2DP-11CN	C2DP-S11CN
			PNP	C2DP-11CP	C2DP-S11CP
Diffuse-reflective 400 mm type	2 m cable	NPN	C2DP-40N	C2DP-S40N	
		PNP	C2DP-40P	C2DP-S40P	
	M12 connector	NPN	C2DP-40CN	C2DP-S40CN	
		PNP	C2DP-40CP	C2DP-S40CP	
Diffuse-reflective 800 mm type	2 m cable	NPN	C2DP-80N	C2DP-S80N	
		PNP	C2DP-80P	C2DP-S80P	
	M12 connector	NPN	C2DP-80CN	C2DP-S80CN	
		PNP	C2DP-80CP	C2DP-S80CP	
Through-beam	2 m cable	NPN	C2TP-2000N	C2TP-S2000N	
		PNP	C2TP-2000P	C2TP-S2000P	
	M12 connector	NPN	C2TP-2000CN	C2TP-S2000CN	
		PNP	C2TP-2000CP	C2TP-S2000CP	
BGS	2 m cable	NPN	BGS-CP30N	-	
		PNP	BGS-CP30P	-	
	M12 connector	NPN	BGS-CP30CN	-	
		PNP	BGS-CP30CP	-	



Metal housing



Standard

- C2RM-350N
- C2RM-350P
- C2RM-350CN
- C2RM-350CP

- C2RM-F400N
- C2RM-F400P
- C2RM-F400CN
- C2RM-F400CP

- C2DM-11N
- C2DM-11P
- C2DM-11CN
- C2DM-11CP

- C2DM-40N
- C2DM-40P
- C2DM-40CN
- C2DM-40CP

- C2DM-80N
- C2DM-80P
- C2DM-80CN
- C2DM-80CP

- C2TM-2000N
- C2TM-2000P
- C2TM-2000CN
- C2TM-2000CP

- BGS-CM30N
- BGS-CM30P
- BGS-CM30CN
- BGS-CM30CP

Angle 90°

- C2RM-S350N
- C2RM-S350P
- C2RM-S350CN
- C2RM-S350CP

- C2RM-SF400N
- C2RM-SF400P
- C2RM-SF400CN
- C2RM-SF400CP

- C2DM-S11N
- C2DM-S11P
- C2DM-S11CN
- C2DM-S11CP

- C2DM-S40N
- C2DM-S40P
- C2DM-S40CN
- C2DM-S40CP

- C2DM-S80N
- C2DM-S80P
- C2DM-S80CN
- C2DM-S80CP

- C2TM-S2000N
- C2TM-S2000P
- C2TM-S2000CN
- C2TM-S2000CP

- 
- 
- 
- 

Options/Accessories

Reflector

**Standard**

**V-61**  
60.9 x 50.9 mm  
Sensing distance:  
C2R□-350□  
Red LED: 0.01 to 4 m  
Infrared LED: 0.01 to 3.5 m

**Small type**

**V-42**  
42 x 35 mm  
Sensing distance:  
C2R□-350□  
Red LED: 0.01 to 3 m  
Infrared LED: 0.01 to 2.5 m

**Vertical type**

**P45A**  
54 x 12.4 mm  
Sensing distance:  
C2R□-350□  
Red LED: 0.01 to 1.2 m  
Infrared LED: 0.01 to 1 m

QD connector

**L-shaped**

**DOS-1204-W**  
\*Cable not included.

**Straight**

**DOS-1204-G**  
\*Cable not included.

**Features**

**Custom ASIC with Power Circuit**

The electronic circuit consists mainly of Optex FA's custom ASIC with only 27 electronic components.

The ASIC contains power circuit and this helps to avoid defects by electric damage from the power line.



**Potentiometer of Silicon plastic for high durability against chemical impact.**

The potentiometer is tightly sealed against water with IP67 rating.

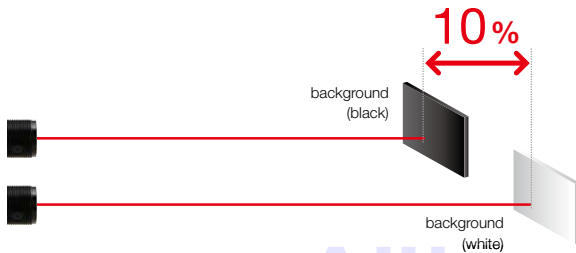
Silicon plastic potentiometer is the best solution against water, oil, chemical and environmental heat.



Silicon plastic

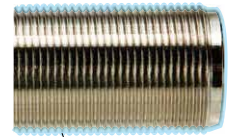
**Hysteresis of Max 10%.  
Between black/white colors.**

Between black/white colors, hysteresis is Max at 10% (Diffuse type). C2DM-11 gives a sensing distance of 110 mm for white object and 90 mm for black object.



**Nickel coating of 20 μ thickness for anti-rust solution.**

Metal type consists of brass-nickel housing with extra nickel coating of 20 μ thickness. This coating is done for the external and internal of the housing. It helps protect the metal housing against rust.



Nickel coating

**Durable to 70 N (7 kg) of tension**

The cable is firmly fixed to the internal circuit board so that it can withstand pulling tension of up to 70 N (7 kg).



**Easy Alignment and installation**

Ample sensing area provides easy alignment when installing the through-beam sensor. For instance, there is an allowance of 700 mm to align optical axis at 10 m distance. The highly bright LED is visible at long distance as well.



**BGS type sensors**

BGS type sensors are designed to detect any target regardless of the color and/or background.



Photoelectric Sensors

Specialized Photoelectric Sensors

Laser Displacement Sensors

Sensors with Built-in Amplifier

Z3

Z-M

Z2

E

J

K

S

S2

C-R

**C2**

PLN

## Specifications

Type			Through-beam type	Retro-reflective type	
				With polarizing filter	Without polarizing filter
Standard	Plastic housing	2 m Cable	<b>C2TP-2000(N,P)</b>	<b>C2RP-F400(N,P)</b>	<b>C2RP-350(N,P)</b>
		M12 Connector	<b>C2TP-2000C(N,P)</b>	<b>C2RP-F400C(N,P)</b>	<b>C2RP-350C(N,P)</b>
Standard	Metal housing	2 m Cable	<b>C2TM-2000(N,P)</b>	<b>C2RM-F400(N,P)</b>	<b>C2RM-350(N,P)</b>
		M12 Connector	<b>C2TM-2000C(N,P)</b>	<b>C2RM-F400C(N,P)</b>	<b>C2RM-350C(N,P)</b>
Angle (90 degree)	Plastic housing	2 m Cable	<b>C2TP-S2000(N,P)</b>	<b>C2RP-SF400(N,P)</b>	<b>C2RP-S350(N,P)</b>
		M12 Connector	<b>C2TP-S2000C(N,P)</b>	<b>C2RP-SF400C(N,P)</b>	<b>C2RP-S350C(N,P)</b>
	Metal housing	2 m Cable	<b>C2TM-S2000(N,P)</b>	<b>C2RM-SF400(N,P)</b>	<b>C2RM-S350(N,P)</b>
		M12 Connector	<b>C2TM-S2000C(N,P)</b>	<b>C2RM-SF400C(N,P)</b>	<b>C2RM-S350C(N,P)</b>
Sensing distance*			20 m	0.01 to 4 m	0.01 to 3.5 m
Spot size			ø1100 mm / 20 m	ø270 mm / 4 m	ø240 mm / 3.5 m
Light source			Red LED		infrared LED
Supply voltage			10 to 30 VDC including ripple (P-P) 10%		
Current consumption			Emitter: 20 mA max. Receiver: 15 mA max.	20 mA max.	
Hysteresis			—		
Response time			0.5 ms max.		
Control output			NPN/PNP Open Collector 100 mA max. / 30 VDC max. (Residual voltage max. 1.8 V / 100 mA max.)		
Output mode			Light ON / Dark ON selectable by control wire		
Distance adjustment			1 turn potentiometer		
Indicator			Output indicator (Orange LED) / Stability indicator (Green LED)		
Ambient illuminance			Sunlight: 10,000 lux, Incandescent lamp: 3,000 lux max.		
Vibration resistance			10 to 55 Hz double amplitude 1.5 mm 2 hours in each of the X, Y, and Z directions		
Shock resistance			500 m/s <sup>2</sup> (50G) 3 times in each of X,Y, and Z directions		
Ambient temperature			Operating temperature: -25 to +55°C (no freezing)		
Storage temperature			Storage temperature: -30 to +70°C		
Ambient humidity / Storage humidity			Ambient humidity: 35 to 85%RH / Storage humidity: 35 to 95%RH		
Degree of protection / Materials			IEC directive IP67 Plastic housing: PBT (glass included) / Metal housing: BSBM, Front Cover, Lens: PMMA		

\* · Retro-reflective type: Reflector V-61

· Diffuse-reflective type: White paper 90% 200 x 200 mm

· Limited diffuse reflective type: White paper 90% 100 x 100 mm

Z3

Z-M

Z2

E

J

K

S

S2

C-R

C2

PLN

Type			Diffuse-reflective type			BGS
			Focused 110 mm type	400 mm type	800 mm type	
Standard	Plastic housing	2 m Cable	<b>C2DP-11(N,P)</b>	<b>C2DP-40(N,P)</b>	<b>C2DP-80(N,P)</b>	<b>BGS-CP30(N,P)</b>
		M12 Connector	<b>C2DP-11C(N,P)</b>	<b>C2DP-40C(N,P)</b>	<b>C2DP-80C(N,P)</b>	<b>BGS-CP30C(N,P)</b>
Standard	Metal housing	2 m Cable	<b>C2DM-11(N,P)</b>	<b>C2DM-40(N,P)</b>	<b>C2DM-80(N,P)</b>	<b>BGS-CM30(N,P)</b>
		M12 Connector	<b>C2DM-11C(N,P)</b>	<b>C2DM-40C(N,P)</b>	<b>C2DM-80C(N,P)</b>	<b>BGS-CM30C(N,P)</b>
Angle (90 degree)	Plastic housing	2 m Cable	<b>C2DP-S11(N,P)</b>	<b>C2DP-S40(N,P)</b>	<b>C2DP-S80(N,P)</b>	—
		M12 Connector	<b>C2DP-S11C(N,P)</b>	<b>C2DP-S40C(N,P)</b>	<b>C2DP-S80C(N,P)</b>	—
	Metal housing	2 m Cable	<b>C2DM-S11(N,P)</b>	<b>C2DM-S40(N,P)</b>	<b>C2DM-S80(N,P)</b>	—
		M12 Connector	<b>C2DM-S11C(N,P)</b>	<b>C2DM-S40C(N,P)</b>	<b>C2DM-S80C(N,P)</b>	—
Sensing distance			110 mm*	400 mm*	800 mm*	300 mm*
Spot size			ø8 mm / 110 mm	ø20 mm / 400 mm	ø30 mm / 800 mm	ø15 mm / 300 mm
Light source			Red LED			
Supply voltage			10 to 30 VDC including ripple (P-P) 10%			
Current consumption			20 mA max.			35 mA max.
Hysteresis			—		10% max.	
Response time			0.5 ms max.			1 ms max.
Control output			NPN/PNP Open Collector 100 mA max. / 30 VDC max. (Residual voltage max. 1.8 V / 100 mA max.)			
Output mode			Light ON / Dark ON selectable by control wire			
Distance adjustment			1 turn potentiometer			4 turn pot.
Indicator			Output indicator (Orange LED) / Stability indicator (Green LED)			
Ambient illuminance			Sunlight: 10,000 lux, Incandescent lamp: 3,000 lux max.			
Vibration resistance			10 to 55 Hz double amplitude 1.5 mm 2 hours in each of the X, Y, and Z directions			
Shock resistance			500 m/s <sup>2</sup> (50G) 3 times in each of X,Y, and Z directions			
Ambient temperature			Operating temperature: -25 to +55°C (no freezing)			
Storage temperature			Storage temperature: -30 to +70°C			
Ambient humidity / Storage humidity			Ambient humidity: 35 to 85%RH / Storage humidity: 35 to 95%RH			
Degree of protection / Materials			IEC directive IP67 Plastic housing: PBT (glass included) / Metal housing: BSBM, Front Cover, Lens: PMMA			

\* White Paper 90%

Photoelectric  
SensorsSpecialized  
Photoelectric  
SensorsLaser  
Displacement  
SensorsSensors with  
Built-in  
Amplifier

Z3

Z-M

Z2

E

J

K

S

S2

C-R

C2

PLN

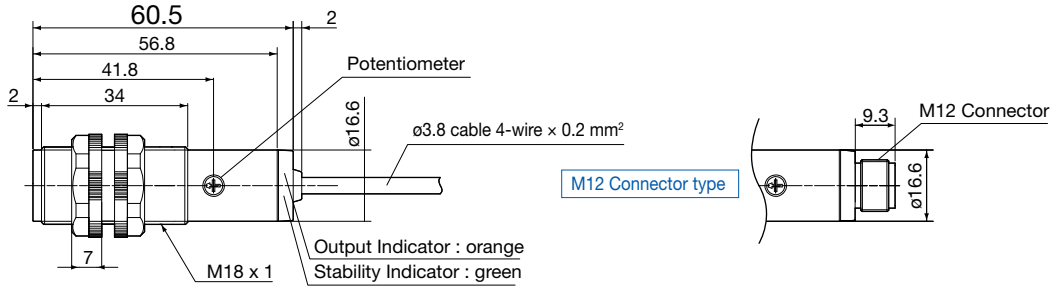
Dimensions

Plastic housing

(Unit: mm)

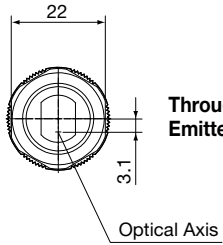
Standard

Cable type

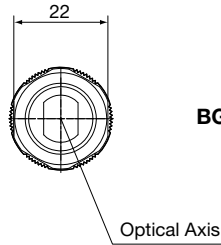


M12 Connector type

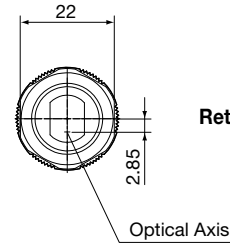
Diffuse-reflective  
Through-beam receiver



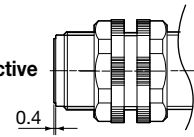
Through-beam Emitter



BGS

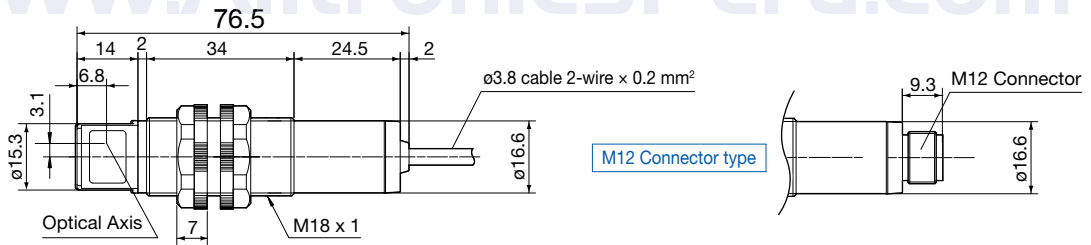


Retro-reflective



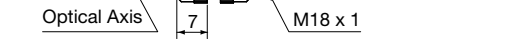
Angle (90 degree)

Cable type

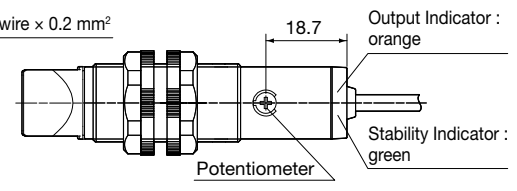
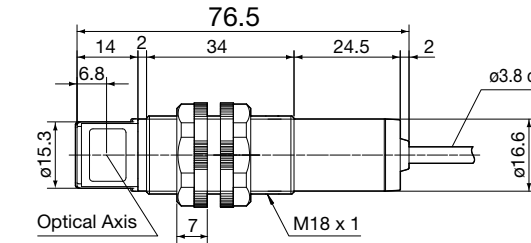


M12 Connector type

Diffuse-reflective  
Through-beam receiver

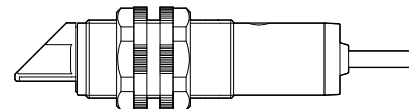
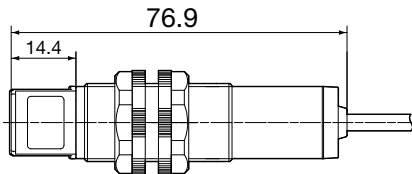


Through-beam Emitter



Top view

Retro-reflective



Side view

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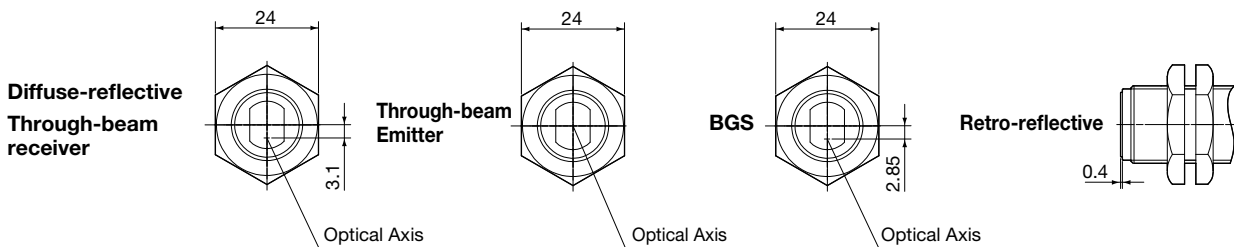
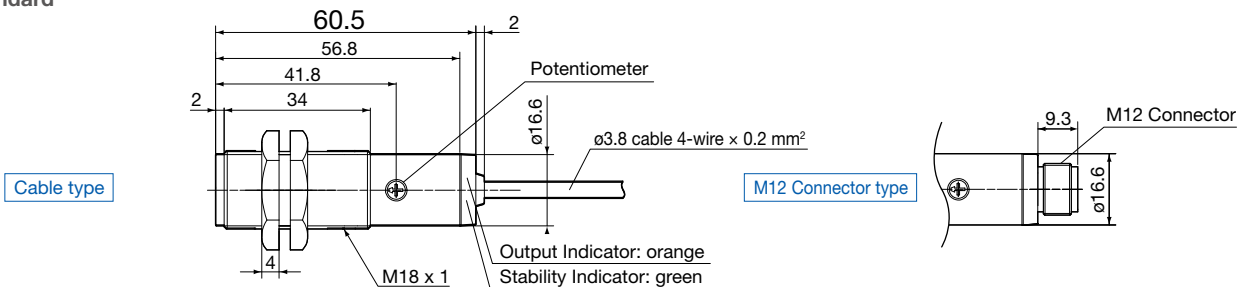
Photoelectric Sensors
Specialized Photoelectric Sensors
Laser Displacement Sensors
Sensors with Built-in Amplifier
Z3
Z-M
Z2
E
J
K
S
S2
C-R
<b>C2</b>
PLN

**Dimensions**

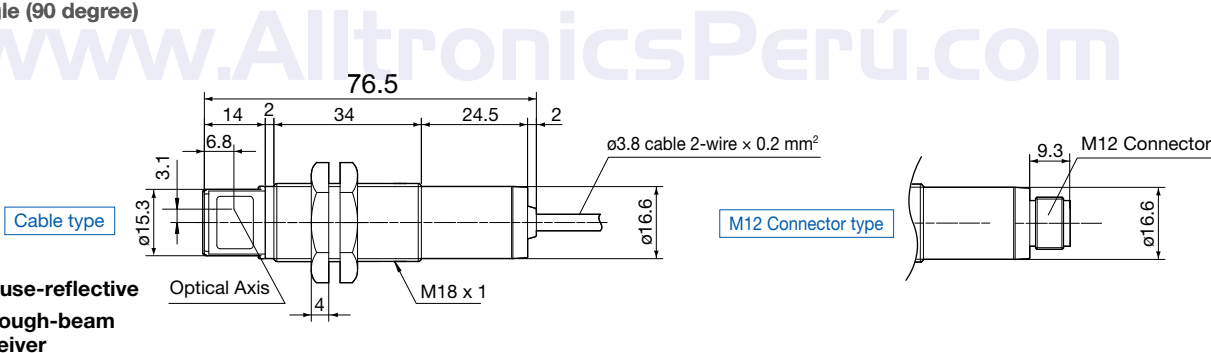
**Metal housing**

(Unit: mm)

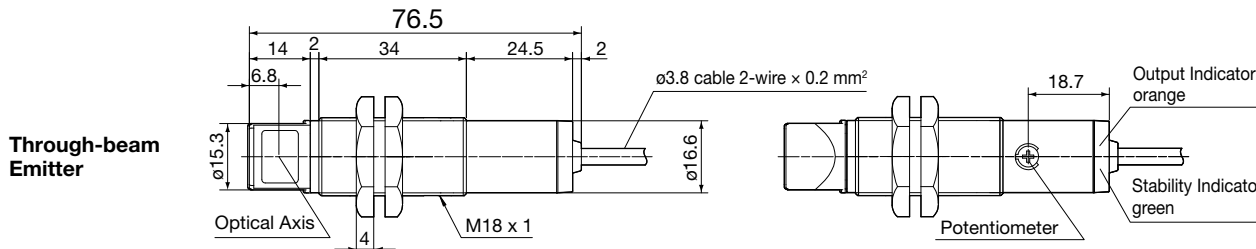
■ Standard



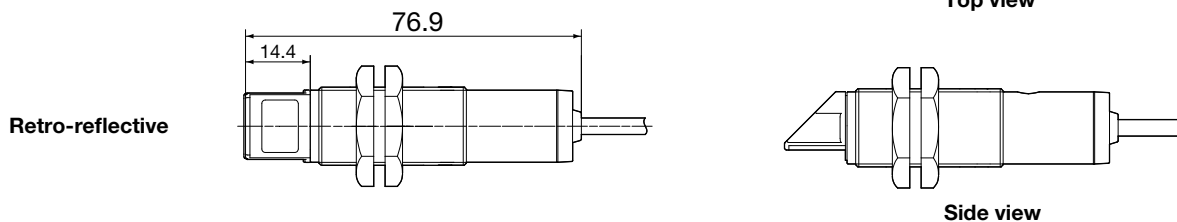
■ Angle (90 degree)



Diffuse-reflective Through-beam receiver



Through-beam Emitter

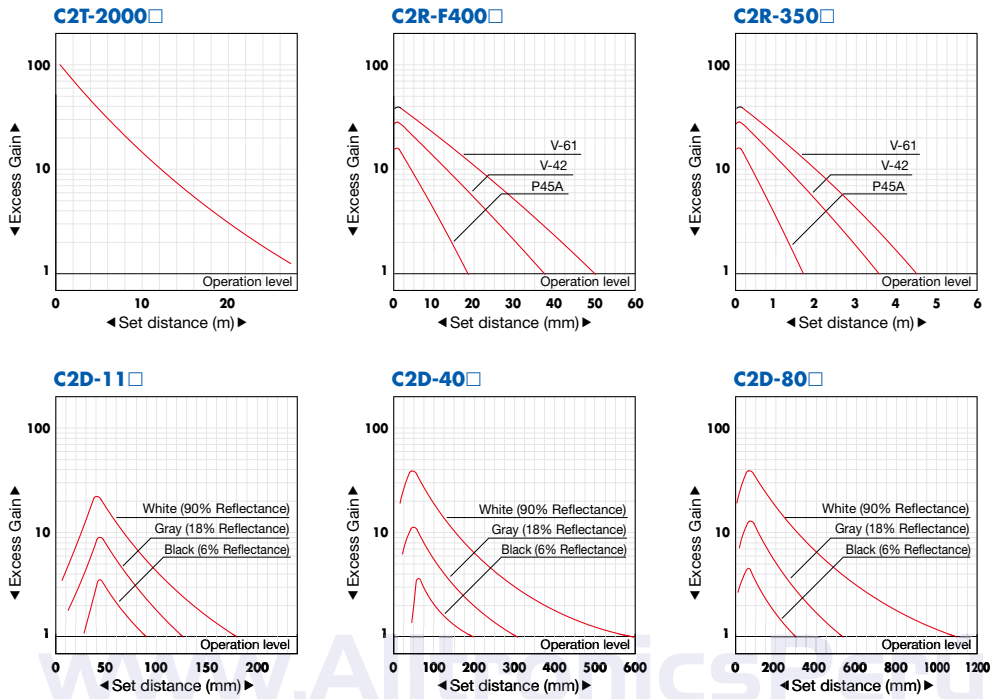


Retro-reflective

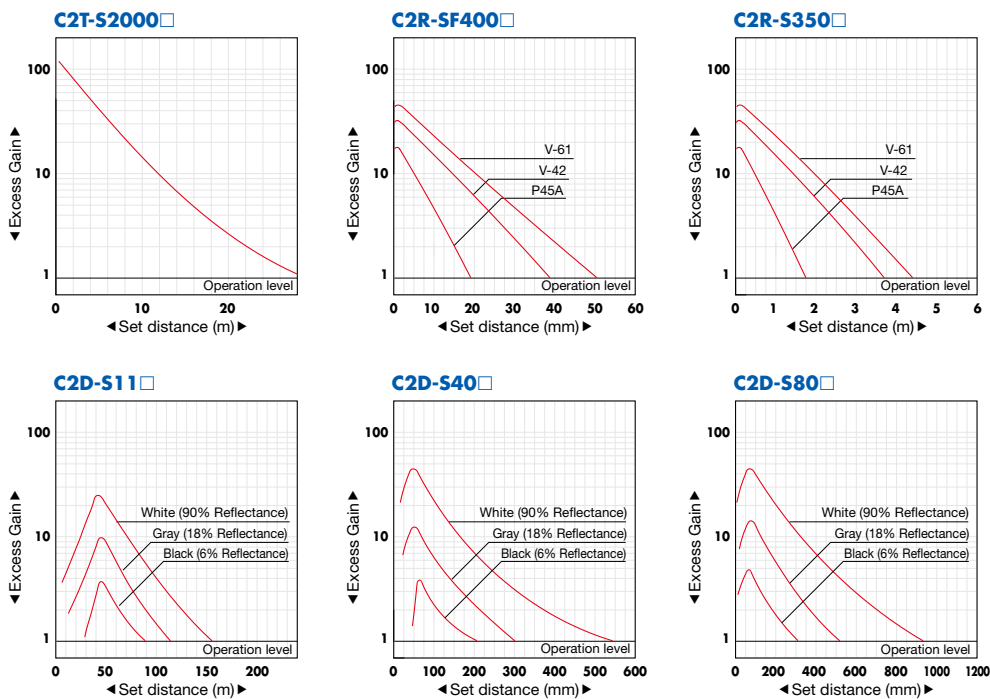
## Typical characteristic data

Excess gain \*common between plastic / metal housing

### Standard



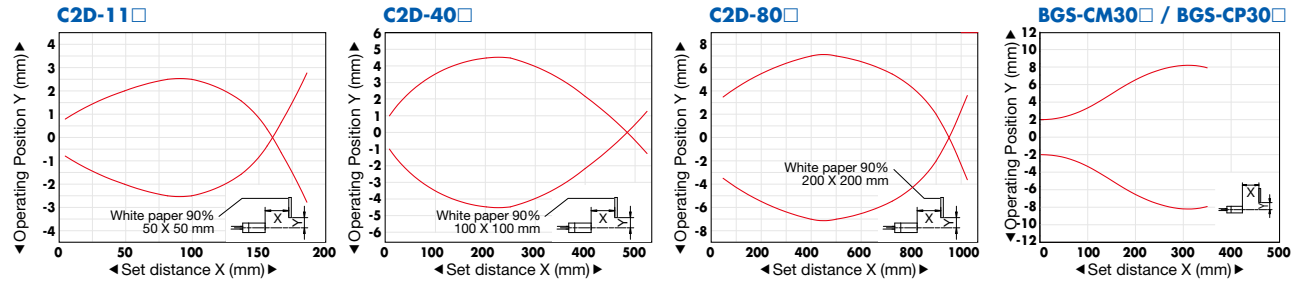
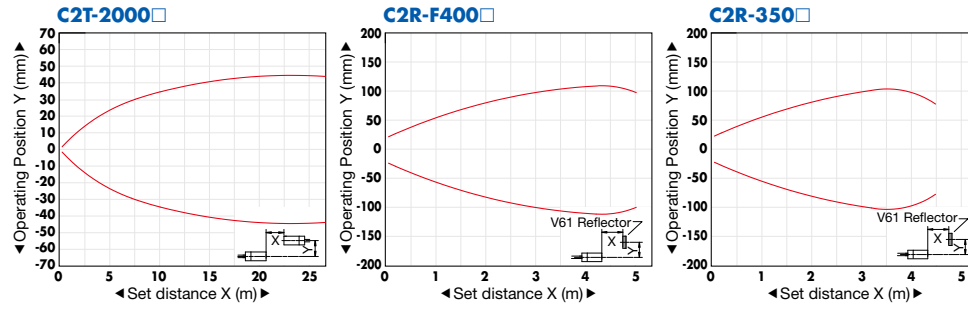
### Angle (90 degree)



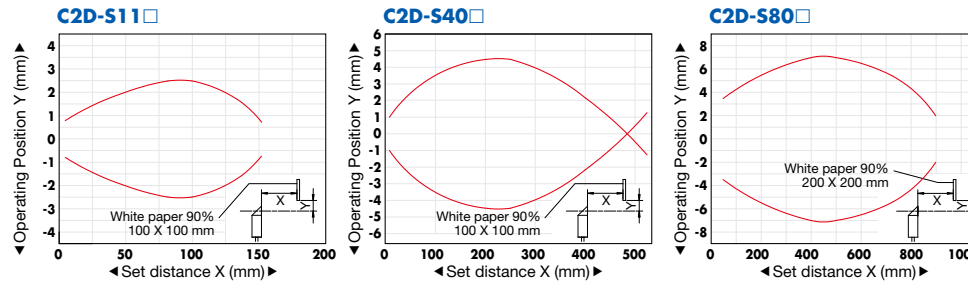
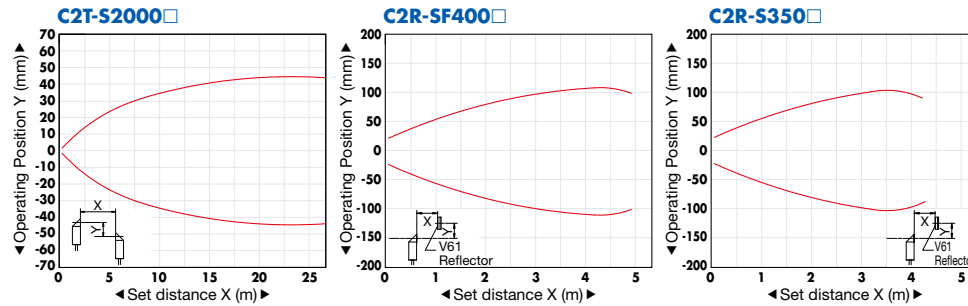


Sensing area \*common between plastic / metal housing

Standard



Angle (90 degree)



Z3

Z-M

Z2

E

J

K

S

S2

C-R

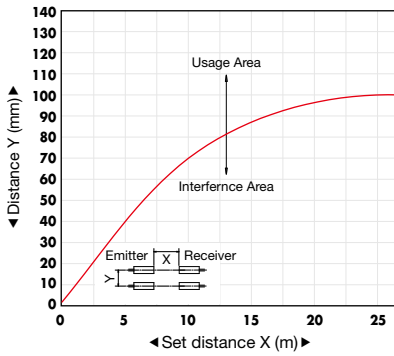
C2

PLN

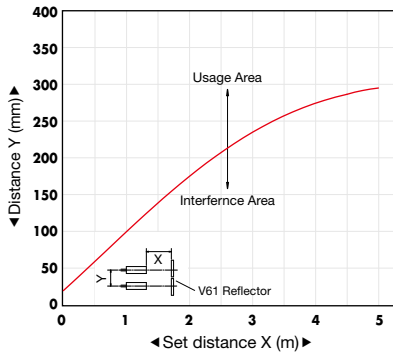
**Interference area** \*common between plastic / metal housing

■ **Standard**

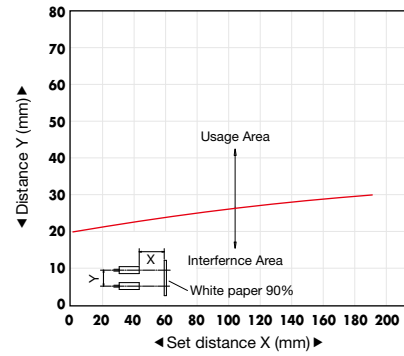
**C2T-2000**



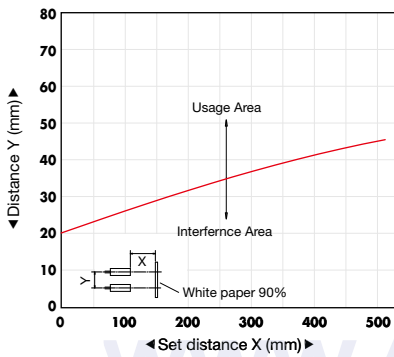
**C2R-350 / C2R-F400**



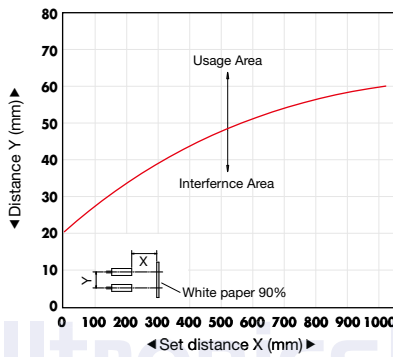
**C2D-11**



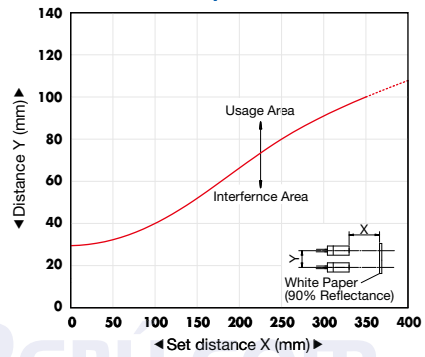
**C2D-40**



**C2D-80**

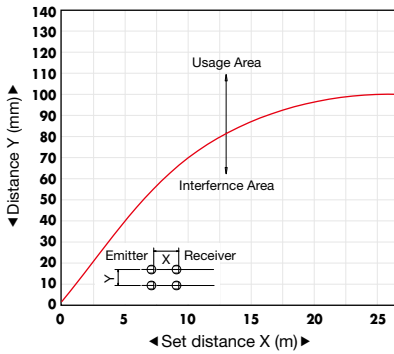


**BGS-CM30 / BGS-CP30**

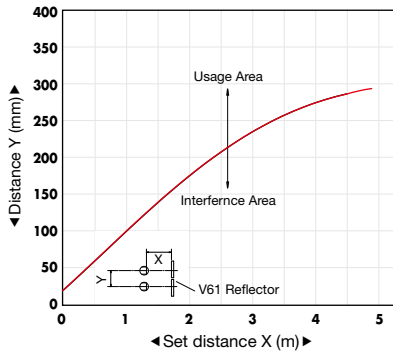


■ **Angle (90 degree)**

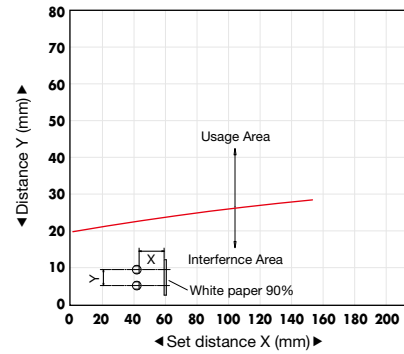
**C2T-S2000**



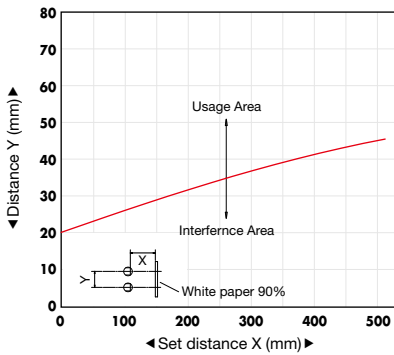
**C2R-S350 / C2R-SF400**



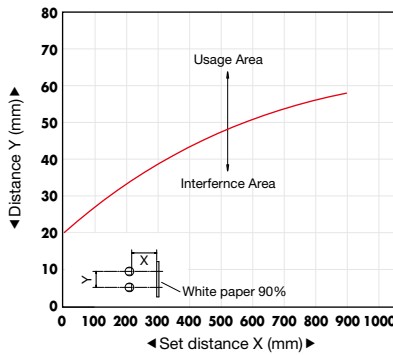
**C2D-S11**



**C2D-S40**



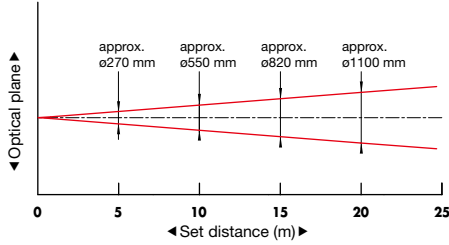
**C2D-S80**



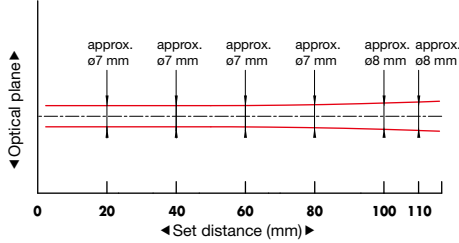
Spot size \*common between plastic / metal housing

Standard

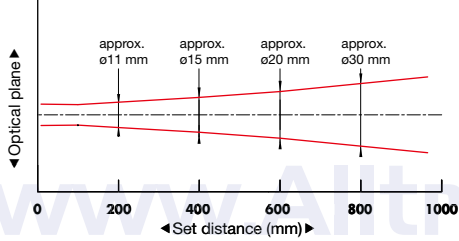
**C2T-2000**



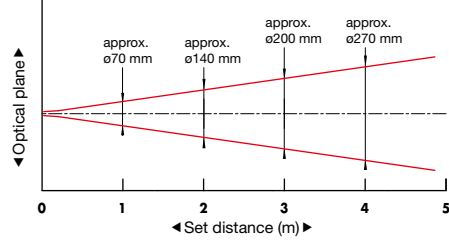
**C2D-11**



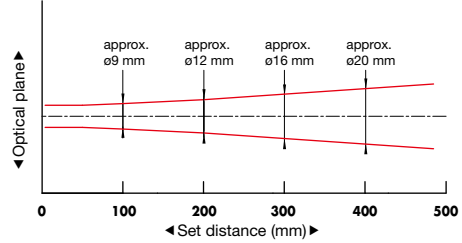
**C2D-80**



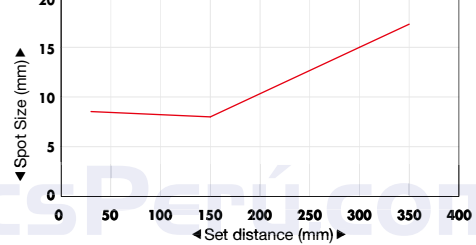
**C2R-350**



**C2D-40**

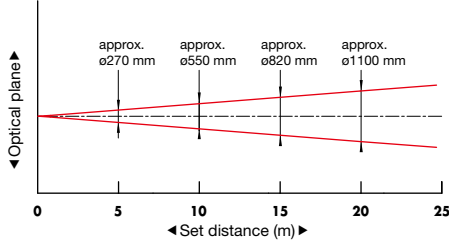


**BGS-CM30 / BGS-CP30**

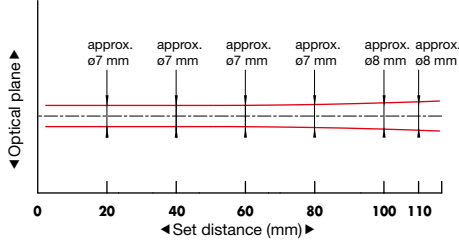


Angle (90 degree)

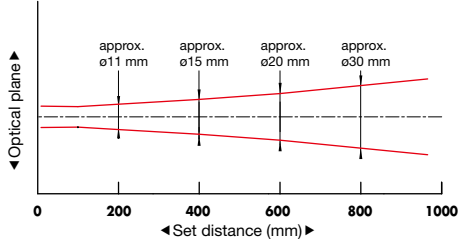
**C2T-S2000**



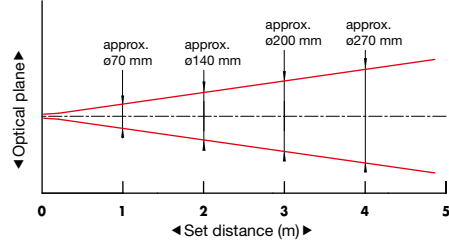
**C2D-S11**



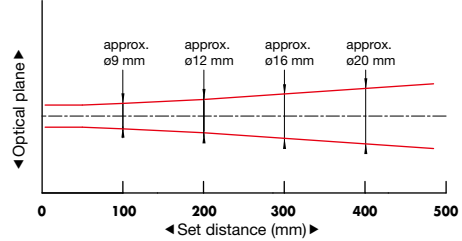
**C2D-S80**



**C2R-S350 / C2R-SF400**



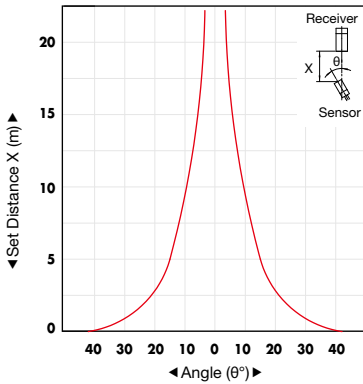
**C2D-S40**



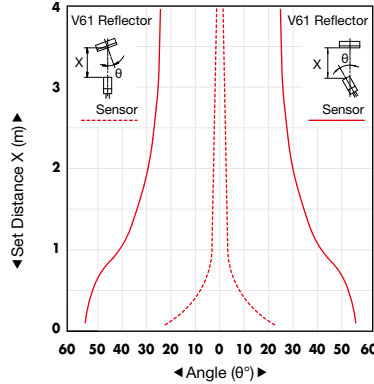
**Angular deviation** \*common between plastic / metal housing

■ Standard

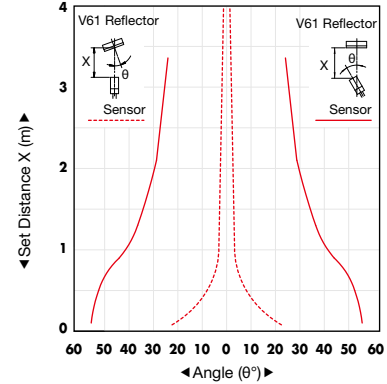
**C2T-2000**



**C2R-F400**

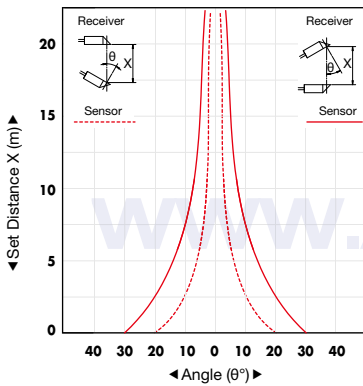


**C2R-350**

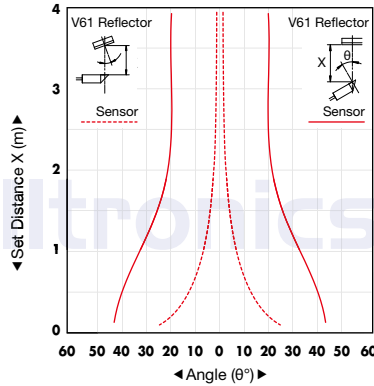


■ Angle (90 degree)

**C2T-S2000**



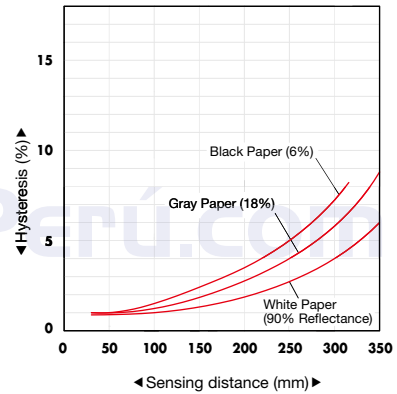
**C2R-S350 / C2R-SF400**



**BGS Hysteresis**

\*common among all the BGS types

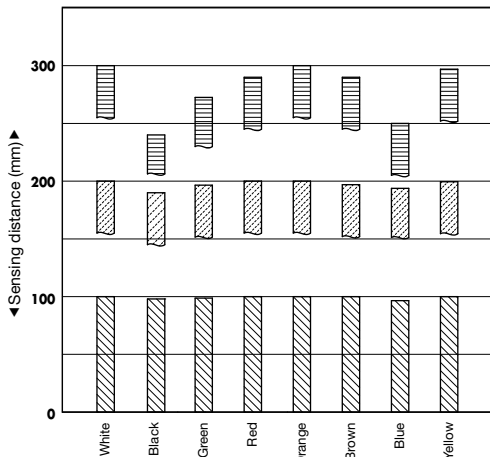
**BGS-CM30 / BGS-CP30**



**BGS Response** \*common among all the BGS types

■ Color response

**BGS-CM30 / BGS-CP30**



■ Material response

**BGS-CM30 / BGS-CP30**

