



Automation for a Changing World

# Delta Smart Sensors



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**DELTA**  
Smarter. Greener. Together.



# Sensing for Smart Manufacturing

Delta's smart sensors feature a slim design with different exteriors and can be applied to a wide range of applications, such as logistics, packaging, components, woodworking, warehousing, machine tool industries, and other industrial automation production lines. All types of sensors have stable quality and superior performance, to provide a best solution for smart manufacturing.



### Inductive Proximity Sensor

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Features  
Dimensions  
Specifications



### Photoelectric Sensor

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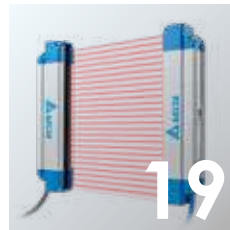
Features  
Dimensions  
Specifications  
Accessories  
Input / Output Circuits



### Laser Displacement

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Features  
Dimensions  
Specifications  
Input / Output Circuits



### Area Sensor

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Features  
Dimensions  
Specifications  
Input / Output Circuits



### Multifunction Pressure Sensor

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Features  
Dimensions  
Specifications  
Accessories



### Gas Flow Meter

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Features  
Dimensions  
Specifications  
Accessories



### Timer/Counter/Tachometer

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Features  
Ordering Information  
Specifications  
Dimensions  
Terminal Definition

# Inductive Proximity Sensor M12 / M18 Series

Sensing magnetic substance for positioning, counting, and object existence, applicable to all industries

- ▶ Nickel coated brass
- ▶ Standard sensors for detecting ferrous metals
- ▶ IP67
- ▶ CE certification
- ▶ Electrical circuit protection



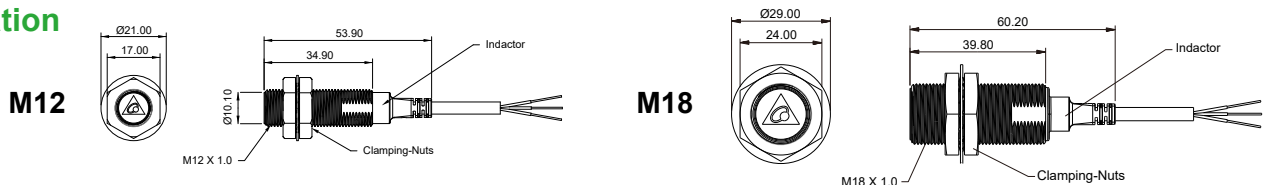
Appearance	Sensing Distance	NPN		PNP	
		NO	NC	NO	NC
<b>M12 Isolation</b>	2 mm	IS-E1202-BNOB □	IS-E1202-BNCB □	IS-E1202-BPOB □	IS-E1202-BPCB □
	4 mm	IS-E1204-BNOB □	IS-E1204-BNCB □	IS-E1204-BPOB □	IS-E1204-BPCB □
<b>M12 Non-isolation</b>	4 mm	IS-N1204-BNOB □	IS-N1204-BNCB □	IS-N1204-BPOB □	IS-N1204-BPCB □
	8 mm	IS-N1208-BNOB □	IS-N1208-BNCB □	IS-N1208-BPOB □	IS-N1208-BPCB □
<b>M18 Isolation</b>	5 mm	IS-E1805-BNOB □	IS-E1805-BNCB □	IS-E1805-BPOB □	IS-E1805-BPCB □
	8 mm	IS-E1808-BNOB □	IS-E1808-BNCB □	IS-E1808-BPOB □	IS-E1808-BPCB □
<b>M18 Non-isolation</b>	8 mm	IS-N1808-BNOB □	IS-N1808-BNCB □	IS-N1808-BPOB □	IS-N1808-BPCB □
	12 mm	IS-N1812-BNOB □	IS-N1812-BNCB □	IS-N1812-BPOB □	IS-N1812-BPCB □

\* □ : 2 = 2 m cable, 3 = 3 m cable, 5 = 5 m cable

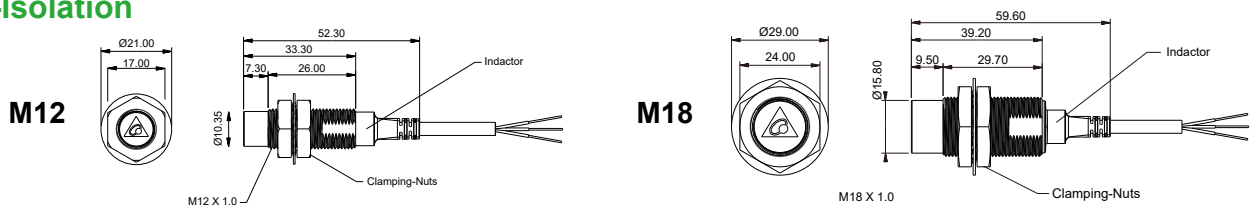
## Dimensions

Unit : mm

### • Isolation



### • Non-Isolation



# Specifications

Appearance		M12				M18			
Type		Isolation		Non-Isolation		Isolation		Non-Isolation	
Model		IS-E1202	IS-E1204	IS-N1204	IS-N1208	IS-E1805	IS-E1808	IS-N1808	IS-N1812
Sensing Distance		2 mm ± 10%	4 mm ± 10%	4 mm ± 10%	8 mm ± 10%	5 mm ± 10%	8 mm ± 10%	8 mm ± 10%	12 mm ± 10%
Min. Sensing Capability		Iron, 12 × 12 × 1 mm			Iron, 24 × 24 × 1 mm		Iron, 24 × 24 × 1 mm		Iron, 36 × 36 × 1 mm
Response Frequency		1.0kHz	1.0kHz	1.0kHz	1.0kHz	1.0kHz	1.0kHz	1.0kHz	1.0kHz
Weight		65 g				85 g			
Appearance		M12 / M18 Common Specifications							
Voltage Range		12 ~ 24 V <sub>DC</sub> ± 10%							
Different Travel		10% max. of sensing distance			Detectable Object		Ferrous metal (the sensing distance decreases with no-ferrous metal)		
Current Consumption		Max. 15 mA			Vibration Resistance		10 ~ 55 Hz, 1.5mm, 3 axes for 2 hours		
Control Output	Load Current	Max. 200 mA			Shock Resistance		Max. 1000 m/s <sup>2</sup> , 3 axes, 6 directions and 3 times in each		
	Residual Voltage	2 V max. (load current: 200 mA, cable length: 2m)			Insulating Resistance		50 MΩ or more (500V <sub>DC</sub> ) between current-carrying parts and case		
Indicators		Operation indicator (red)			Withstand Voltage		1,000 V <sub>AC</sub> 50 / 60Hz 1 min		
Operation Mode		NPN: NO / NC; PNP: NO / NC			Cables		3 Wires 2 m / 3 m / 5 m PVC cable		
Protection Circuits		Protection against reverse power connection, output overcurrent, power supply surge, output surge			Materails	Case		Nickel coated brass	
Ambient Temperature		Operating: -25 ~ 70 °C / Storage: -40 ~ 85 °C (with no icing or condensation)				Sensing Surface		PBT	
Ambient Humidity		≤ 50% RH (at 70 °C)				Clamping Nuts		Nickel coated brass	
Temperature Influence		±10% max. of sensing distance at + 23°C in the temperature range of -25 ~ +70°C			Certifications		CE		
Enclosure Rating		IP67							

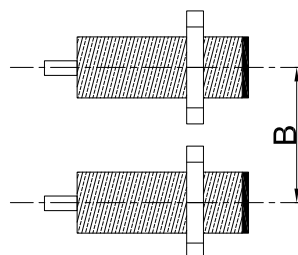
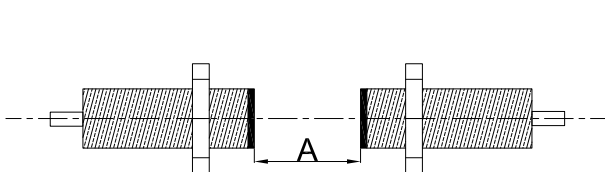
# Influence of Sensing Material

Material	Iron	Stainless Steel	Aluminum	Red Brass	Brass
Decrement Value	1	Approx. 0.8	Approx. 0.45	Approx. 0.4	Approx. 0.4

# Mutual Interference

	Isolation	Non-Isolation
A	≥ 3d	≥ 5d
B	≥ 3d	≥ 5d

▶ When installing sensors face to face or in parallel, be sure to maintain the minimum distances in the following table to avoid mutual interference. **d: Outside DIM. Units: mm**





# Rectangular Inductive Proximity Sensor IS-R Series

Sensing magnetic substance for positing, counting, limit control; robust IP67 rating for stable sensing applications

- ▶ IP67 Rating
- ▶ Two installation methods available
- ▶ Applicable for high-speed rotation control



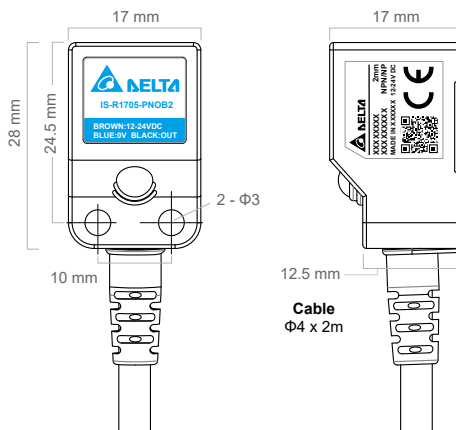
Appearance	Dimensions	Sensing Distance	Min. Sensing Capability	Model			
				NPN		PNP	
				NO	NC	NO	NC
	17 x 17 mm	5 mm	1.0 x 17 x 17 (Iron)	IS-R1705-PNOB2	IS-R1705-PNCB2	IS-R1705-PPOB2	IS-R1705-PPCB2
	18 x 18 mm	4 mm	1.0 x 18 x 18 (Iron)	IS-R1804-PNOB2	IS-R1804-PNCB2	IS-R1804-PPOB2	IS-R1804-PPCB2

## Influence of Sensing Material

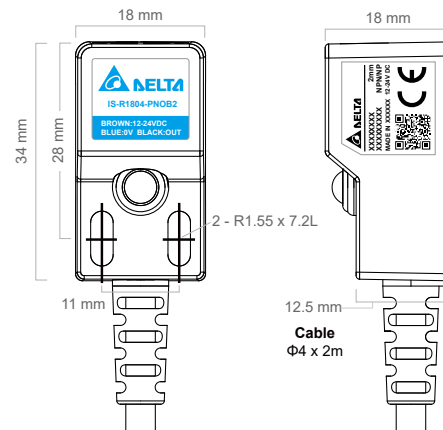
Material	Iron	Stainless Steel	Aluminum	Copper	Brass
Decrement Value	1	Approx. 0.7	Approx. 0.3	Approx. 0.2	Approx. 0.3

## Dimensions

### • IS-R1705-P□□B□



### • IS-R1804-P□□B□

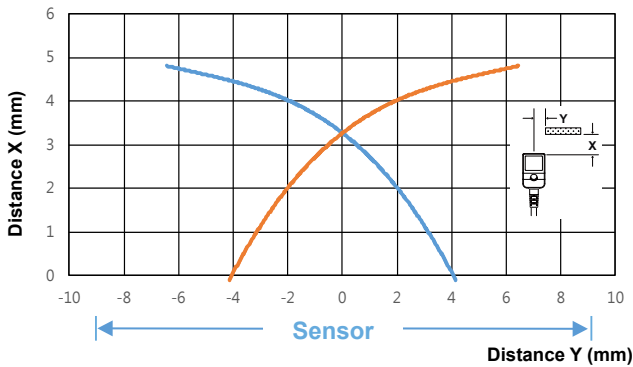


# Specifications

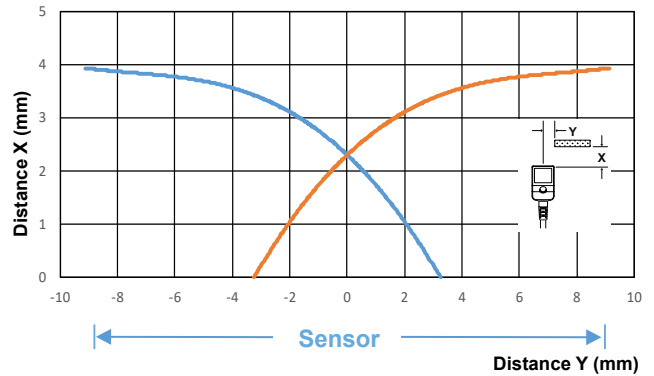
Rectangular Inductive Proximity Sensor IS-R Series			
Response Frequency	600 Hz	Residual Voltage	< 1.0 V <sub>DC</sub>
Hysteresis	< 10% of sensing distance	Operating Temperature	-20 ~ 70 °C
Operating Voltage	12 ~ 24 V <sub>DC</sub> ± 10%	Material	ABS / PE
Consumption Current	< 8 mA (Unloaded)	Rating	IP67
Load Current	200 mA	Circuit Protection	Reverse Voltage, Short-circuit Output
Drain Voltage	1.1 mA (Unloaded)		

## Sensing Range

IS-R1705-P□□B□ Model

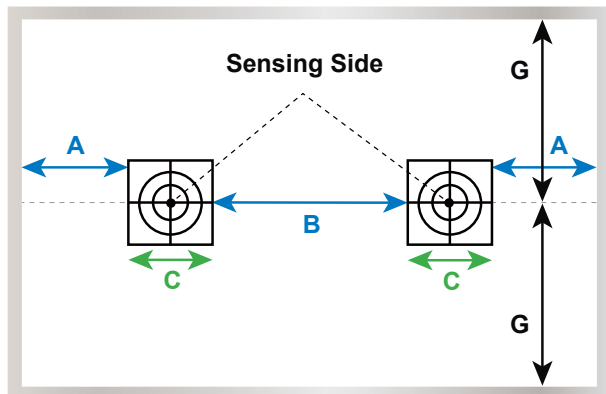


IS-R1804-P□□B□ Model

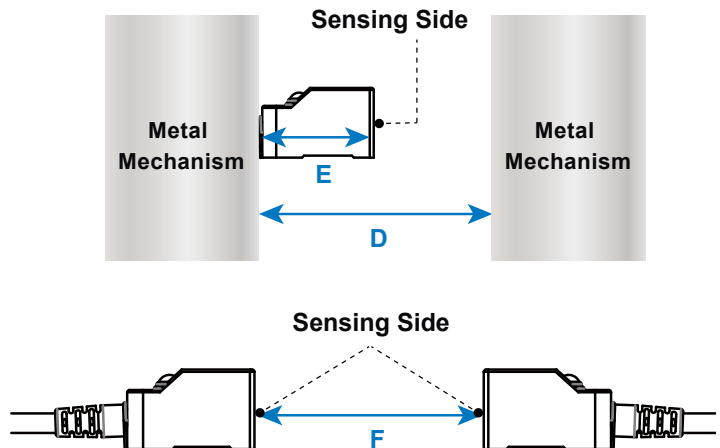


## Installation Information

Unit (mm)	A	B	C	D	E	F	G
R1705	17	34	17	15	10	40	25
R1804	18	36	18	15	10	40	25



\* The grey outline indicates metal mechanisms





# Photoelectric Sensor PS-R Series

- Standard rectangular design, available in trimmer and TEACH types
- Sensing the light-absorption for positioning, counting and object existence, applicable in all industries

- ▶ Different range adjustment (Trimmer or TEACH)
- ▶ M3 mounting hole, easy to assemble
- ▶ IP67
- ▶ CE certification
- ▶ Electrical circuit protection



Appearance	Sensing Method	Sensing Distance	NPN	PNP / Push-pull	Connection
 Rectangular Type (Trimmer <sup>*1</sup> )	Small Spot Reflective <sup>*2</sup>	5 ~ 100 mm	PS-RS1-NS12	PS-RS1-PS12	2 m cable (3 wires)
	Diffuse Reflective	5 ~ 300 mm	PS-RR3-NS12	PS-RR3-PS12	2 m cable (3 wires)
		1 m	PS-RR9-NS12	PS-RR9-PS12	
	Retro-reflective <sup>*3</sup>	4.2 m	PS-RL4-NS12	PS-RL4-PS12	2 m cable (3 wires)
	Through-beam	12 m	PS-RT9-NS12	PS-RT9-PS12	2 m cable (3 wires)
 Rectangular Type (TEACH <sup>*1</sup> )	Small Spot Reflective <sup>*2</sup>	5 ~ 100 mm	PS-RS1-NS22	PS-RS1-US22	2 m cable (4 wires)
			PS-RS1-NS2B	PS-RS1-US2B	M8 connector
	Diffuse Reflective	5 ~ 300 mm	PS-RR3-NS22	PS-RR3-US22	2 m cable (4 wires)
			PS-RR3-NS2B	PS-RR3-US2B	M8 connector
		5 ~ 1,000 mm	PS-RR9-NS22	PS-RR9-US22	2 m cable (4 wires)
			PS-RR9-NS2B	PS-RR9-US2B	M8 connector
	Retro-reflective <sup>*3</sup>	4.2 m	PS-RL4-NS22	PS-RL4-US22	2 m cable (4 wires)
			PS-RL4-NS2B	PS-RL4-US2B	M8 connector
	Through-beam	10 m (Fixed)	PS-RT9-NSB2	PS-RT5-USB2	2 m cable (4 wires)
			PS-RT9-NSBB	PS-RT5-USBB	M8 connector

\*1 : Trimmer: Standard bracket included; TEACH: Optional bracket available (BK-PSR02)

\*2 : Minimum spot 5mm in 100mm sensing distance

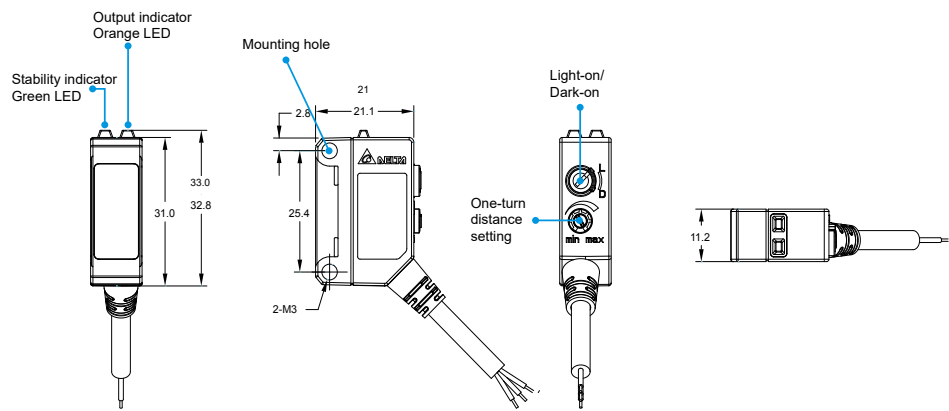
\*3 : Retro-reflective: reflector included



# Dimensions

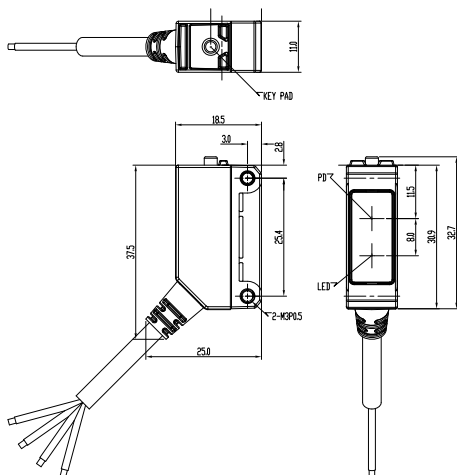
Unit : mm

- **Trimmer**

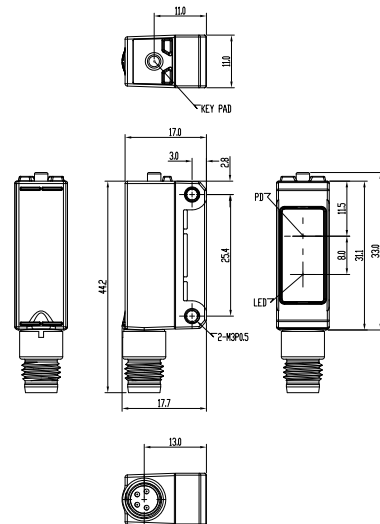


- **TEACH**

Cable Type



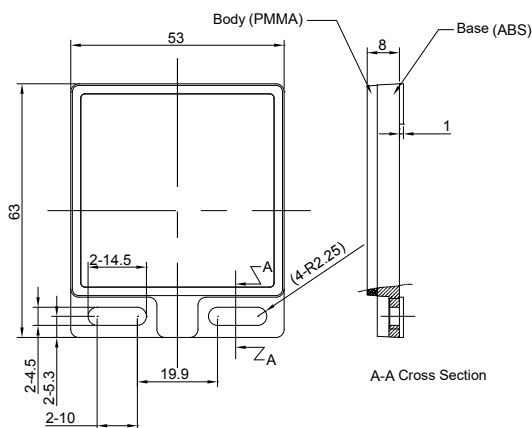
Connector Type



# Accessories

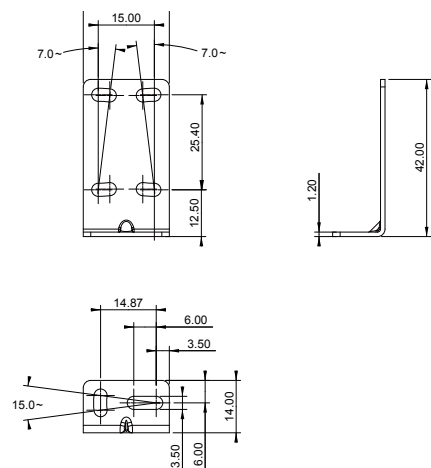
- **Reflector**

Model RM-01



- **Bracket (Optional)**

Model BK-PSR02





## Photoelectric Sensor PS-F / PS-L Series

- Lateral and flat design meets the need for installation in small spaces
- Sensing the light-absorption for positioning, counting and object existence, applicable in all industries

- ▶ Slim and small, easy to assemble
- ▶ IP67
- ▶ CE certification
- ▶ Electrical circuit protection



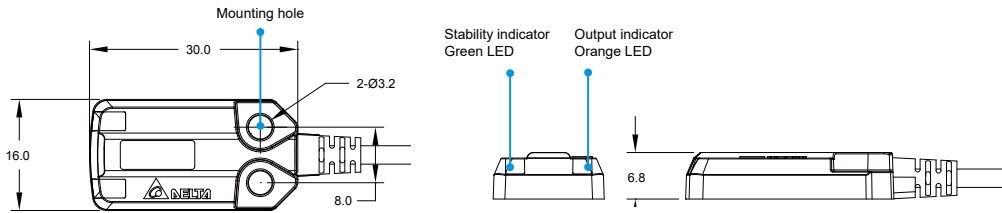
Appearance	Sensing Method	Sensing Distance (Fixed)	NPN		PNP		Connection
			Light-on	Dark-on	Light-on	Dark-on	
 Flat Type	Diffuse Reflective	5~50 mm	PS-FR2-NLB2	PS-FR2-NDB2	PS-FR2-PLB2	PS-FR2-PDB2	2 m cable (3 wires)
	Diffuse Reflective BGS	5~30 mm	PS-FB1-NLB2	PS-FB1-NDB2	PS-FB1-PLB2	PS-FB1-PDB2	2 m cable (3 wires)
	Retro-reflective	1 m	PS-FL3-NLB2	PS-FL3-NDB2	PS-FL3-PLB2	PS-FL3-PDB2	2 m cable (3 wires)
	Through-beam	1 m	PS-FT3-NLB2	PS-FT3-NDB2	PS-FT3-PLB2	PS-FT3-PDB2	2 m cable (3 wires)
Appearance	Sensing Method	Sensing Distance (Fixed)	NPN		Push-pull		Connection
			Light-on	Dark-on	Light-on	Dark-on	
 Lateral Type	Diffuse Reflective	5~50 mm	PS-LR2-NSB2		PS-LR2-USB2		2 m cable (4 wires)*
	Retro-reflective	1 m	PS-LL3-NSB2		PS-LL3-USB2		2 m cable (4 wires)*
	Through-beam	1 m	PS-LT3-NSB2		PS-LT3-USB2		2 m cable (4 wires)*

\* 4 wires: Light-on, dark-on are switched by white wire.  
 \* Retro-reflective: reflector included

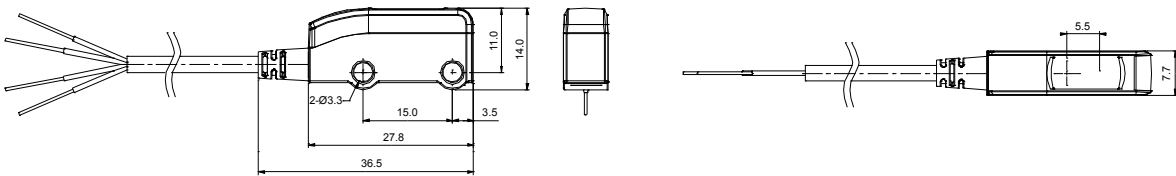
# Dimensions

Unit : mm

- Flat Type (PS-F)



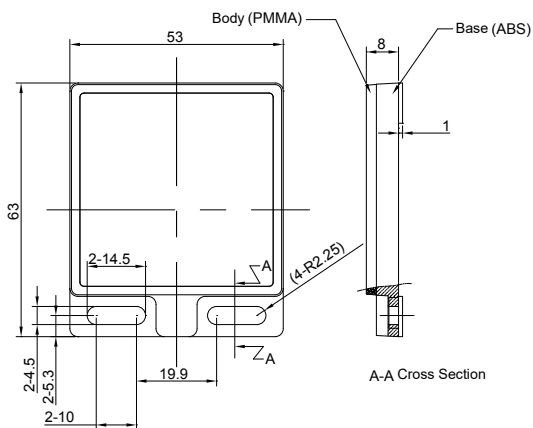
- Lateral Type (PS-L)



# Accessories

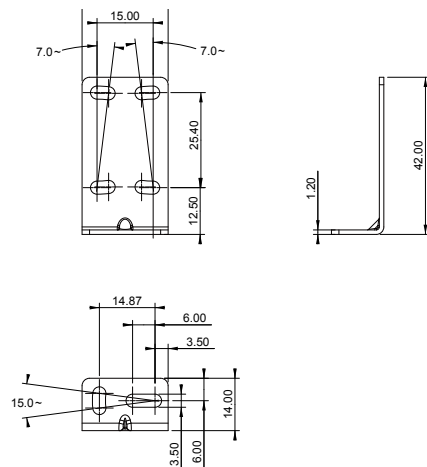
- Reflector

Model RM-01



- Bracket (Optional)

Model BK-PSR02



# Photoelectric Sensor PS-M Series

- Cylindrical design meets the need for installation in irregular shaped spaces
- Sensing the light-absorption for positioning, counting and object existence; applicable in all industries

- ▶ Standard size for mounting (M18)
- ▶ Setting via button
- ▶ IP67
- ▶ CE certification
- ▶ Electrical circuit protection



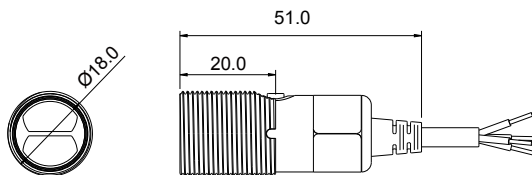
Appearance	Sensing Method	Sensing Distance	NPN	Push-pull	Connection
 Cylindrical Type (TEACH)	Diffuse Reflective	5 ~ 100 mm (Fixed)	PS-MR1-NSB2	PS-MR1-USB2	2 m cable (4 wires)*
			PS-MR1-NSBD	PS-MR1-USBD	M12 connector
		5 ~ 300 mm	PS-MR3-NS22	PS-MR3-US22	2 m cable (4 wires)*
			PS-MR3-NS2D	PS-MR3-US2D	M12 connector
		5 ~ 1,000mm	PS-MR9-NS22	PS-MR9-US22	2 m cable (4 wires)*
			PS-MR9-NS2D	PS-MR9-US2D	M12 connector
	Retro-reflective	4.2m	PS-ML4-NS22	PS-ML4-US22	2 m cable (4 wires)*
			PS-ML4-NS2D	PS-ML4-US2D	M12 connector
	Through-beam	5m (Fixed)	PS-MT5-NSB2	PS-MT5-USB2	2 m cable (4 wires)*
			PS-MT5-NSBD	PS-MT5-USBD	M12 connector

\* 4 wires: Light-on, dark-on are switched by white wire.  
 \* Retro-reflective: reflector included

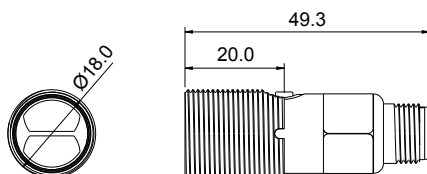
## Dimensions

Unit : mm

### Cable Type

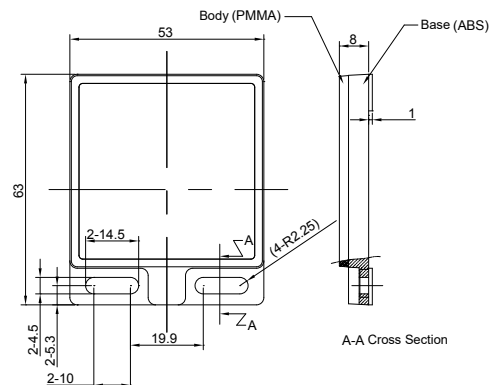


### Connector Type



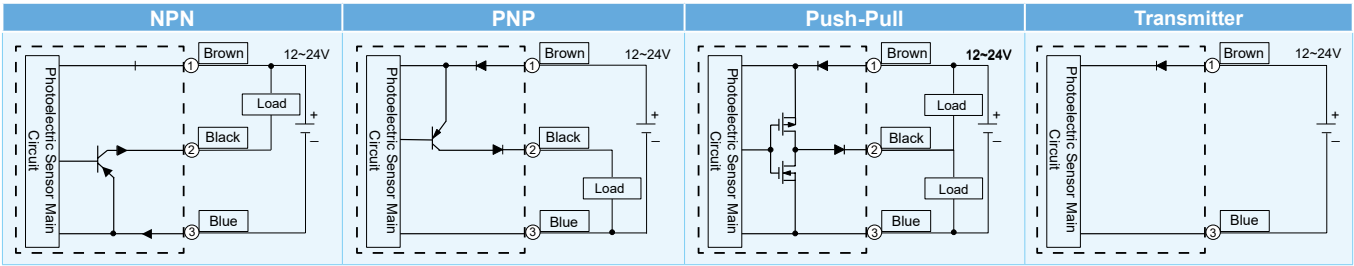
## Accessories

### Reflector Model RM-01

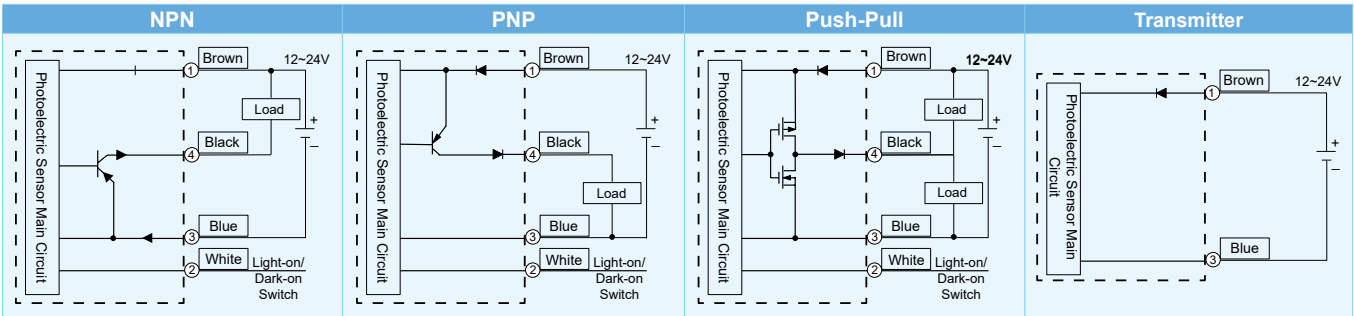


# Input / Output Circuits

- 3 Wires



- 4 Wires





# General Specifications


Photoelectric Sensor	
Voltage Range	12 ~ 24 V <sub>DC</sub> ± 10%
Response Time	ON → OFF: 0.5ms; OFF → ON: 0.5ms
Indicator	Output indicator (orange), stable operation indicator (green)
Protection Circuit	Protection against reverse power connection, output overcurrent, power supply surge, output surge
Operating Temperature	-25 °C ~ 55°C
Storage Temperature	-25 °C ~ 75°C
Ambient Humidity	30 ~ 85%
Enclosure Rating	IP67
Ambient Light Resistance	5,000 lx or less
Vibration Resistance	10~55 Hz, 1.5mm, 3 axes for 2 hours
Shock Resistance	Max. 1,000 m/s <sup>2</sup> , 3 axes, 6 directions and 3 times in each.
Insulating Resistance	20 MΩ or more (500V <sub>DC</sub> )
Withstand Voltage	1,000 VAC 50 / 60 Hz 1min
Certifications	CE

# Photoelectric Sensor Specifications


## • Rectangular Type PS-R

Sensing Method			Diffuse Reflective			Retro-reflective	Through-beam	
Type	Connection	Output	Small Spot	Standard	Long Distance	Standard	Standard	
 Rectangular Type (Trimmer)	Cable	NPN	PS-RS1-NS12	PS-RR3-NS12	PS-RR9-NS12	PS-RL4-NS12	PS-RT9-NS12	
		PNP	PS-RS1-PS12	PS-RR3-PS12	PS-RR9-PS12	PS-RL4-PS12	PS-RT9-PS12	
 Rectangular Type (TEACH)	Cable	NPN	PS-RS1-NS22	PS-RR3-NS22	PS-RR9-NS22	PS-RL4-NS22	PS-RT9-NSB2	
		Push-pull	PS-RS1-US22	PS-RR3-US22	PS-RR9-US22	PS-RL4-US22	PS-RT9-USB2	
	M8 connector	NPN	PS-RS1-NS2B	PS-RR3-NS2B	PS-RR9-NS2B	PS-RL4-NS2B	PS-RT9-NSBB	
		Push-pull	PS-RS1-US2B	PS-RR3-US2B	PS-RR9-US2B	PS-RL4-US2B	PS-RT9-USBB	
Sensing Distance			5 ~ 100mm	5 ~ 300mm	5 ~ 1,000mm	4.2m	10m	
Output			Light-on / Dark-on					
Lighting Source			Red LED / Infrared					
Power Consumption			20mA Max				Transmitter: Max. 6mA Receiver: Max. 14mA	
Material			Lens: PC ; Case: PBT					
Cable			PS-R Trimmer: 3 wires 2m PVC Cable (Through-beam: transmitter - 2 wires 2m PVC Cable) PS-R TEACH: 4 wires 2m PVC Cable (Through-beam: transmitter - 2 wires 2m PVC Cable), M8 water-proof connector					
Dimensions			Trimmer: 11.2x21 x33 mm TEACH (Cable Type): 11 x 17x41.5 mm TEACH (M8 Connector Type): 11 x 17x44.2 mm					
Weight			55g					


## • Cylindrical Type PS-M

Sensing Method			Diffuse Reflective			Retro-reflective	Through-beam	
Type	Connection	Output	Standard		Standard	Long Distance	Standard	
 Cylindrical Type (TEACH)	Cable	NPN	PS-MR1-NSB2	PS-MR3-NS22	PS-MR9-NS22	PS-ML4-NS22	PS-MT5-NSB2	
		Push-pull	PS-MR1USB2	PS-MR3-US22	PS-MR9-US22	PS-ML4-US22	PS-MT5-USB2	
	M12 Connector	NPN	PS-MR1-NSBD	PS-MR3-NS2D	PS-MR9-NS2D	PS-ML4-NS2D	PS-MT5-NSBD	
		Push-pull	PS-MR1-USBD	PS-MR3-US2D	PS-MR9-US2D	PS-ML4-US2D	PS-MT5-USBD	
Sensing Distance			5 ~ 100mm	5 ~ 300mm	5 ~ 1,000mm	4.2m	5m	
Output			Light-on / Dark-on					
Lighting Source			Red LED (630nm)		Infrared (850nm)	Red LED (630nm)		
Power Consumption			Max. 20 mA				Transmitter: Max. 6mA Receiver: Max. 14mA	
Material			Lens: PC ; Case: PBT					
Cable			4 wires 2m PVC Cable (Through-beam: transmitter - 2 wires 2m PVC Cable), M12 water-proof connector					
Dimensions			Cable: M18x51.0 mm M12 Connector: M18x49.3 mm					
Weight			Cable Connection: 67g; M8 Connector: 19g					

• Flat Type PS-F

Sensing Method			Diffuse Reflective				Retro-reflective		Through-beam	
Type	Connection	Output	Standard		Background Suppression		Standard		Standard	
 Flat Type (Fixed)	Cable	NPN	PS-FR2-NLB2	PS-FR2-NDB2	PS-FB1-NLB2	PS-FB1-NDB2	PS-FL3-NLB2	PS-FL3-NDB2	PS-FT3-NLB2	PS-FT3-NDB2
		PNP	PS-FR2-PLB2	PS-FR2-PDB2	PS-FB1-PLB2	PS-FB1-PDB2	PS-FL3-PLB2	PS-FL3-PDB2	PS-FT3-PLB2	PS-FT3-PDB2
Sensing Distance			5 ~ 50 mm		5 ~ 30 mm		25 ~ 1,000 mm		1 m	
Output			Light-on	Dark-on	Light-on	Dark-on	Light-on	Dark-on	Light-on	Dark-on
Lighting Source			Red LED (630nm)							
Power Consumption			Max. 20 mA		Max. 30 mA		Max. 20 mA		Transmitter: Max. 6 mA Receiver: Max. 14 mA	
Material			Lens: PC ; Case: PBT							
Cable			3 wires 2m PVC Cable (Through-beam: transmitter - 2 wires 2m PVC Cable)							
Dimensions			16 x 30 x 6.8 mm							
Weight			25g							

• Lateral Type PS-L

Sensing Method			Diffuse Reflective	Retro-reflective	Through-beam
Type	Connection	Output	Standard	Standard	Standard
 Lateral Type (Fixed)	Cable	NPN	PS-LR2-NSB2	PS-LL3-NSB2	PS-LT3-NSB2
		Push-pull	PS-LR2-USB2	PS-LL3-USB2	PS-LT3-USB2
Sensing Distance			5 ~ 50 mm	25 ~ 1,000 mm	1 m
Output			Light-on / Dark-on	Light-on / Dark-on	Light-on / Dark-on
Lighting Source			Red LED (630nm)		
Power Consumption			Max. 20 mA		Transmitter: Max. 6 mA Receiver: Max. 14 mA
Material			Lens: PC ; Case: PBT		
Cable			4 wires 2m PVC Cable (Through-beam: transmitter - 2 wires 2m PVC Cable)		
Dimensions			14 x 27 x 7 mm		
Weight			26g		

# Laser Displacement LD Series

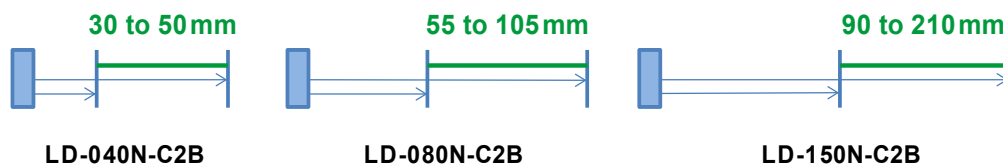
- Senses the distance to the objects using triangular reflection with high-resolution CCD sensor
- Measures the thickness and width of the objects to detect height, gradient, position, flatness, gap, distance and runout

- ▶ Aluminum case, strong structure
- ▶ Slim and small, easy to assemble
- ▶ High precision, average time setting
- ▶ IP67
- ▶ CE certification



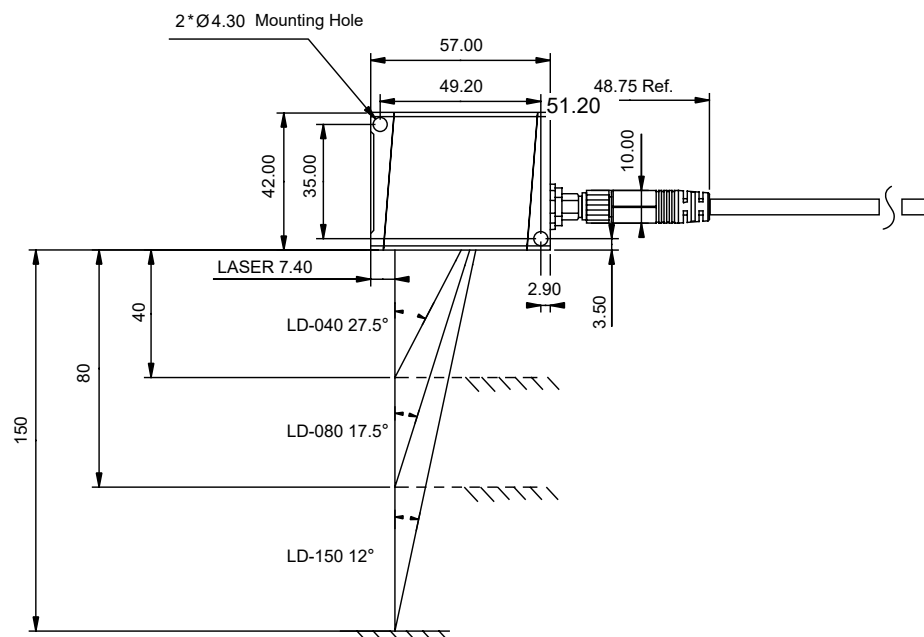
Model Name	Sensing Distance	Repeatability	Interface
LD-040N	30 ~ 50 mm	2 μm*	Digital I/O / Modbus Communication (RS-485)
LD-080N	55 ~ 105 mm	5 μm*	Digital I/O / Modbus Communication (RS-485)
LD-150N	90 ~ 210 mm	15 μm*	Digital I/O / Modbus Communication (RS-485)

\* For an average count of 100. The value is ±2 μm for an average count of 100 (Sensing objective: white ceramic substrate).



## Dimensions

Unit : mm





## Specifications

Laser Displacement			
Sensing Method	Triangulation		
Model Name	LD-040N	LD-080N	LD-150N
Reference Distance	40 mm	80 mm	150 mm
Measurement Range	± 10 mm	± 25 mm	± 60 mm
Interface	Digital IO / Modbus Communication (RS-485)		
Spot Size	50 x 15 μm	95 x 25 μm	168 x 40 μm
Light Source	Laser CLASS 2		
Input Voltage	12 ~ 24 V <sub>DC</sub> ± 10%		
Repeatability*	2 μm	5 μm	15 μm
Linearity	± 0.1%	± 0.1%	± 0.1%
Sampling Rate	1 ms		
Indicator	Laser ON: blue, Measurement range: green, Out of measurement range: orange, DO: yellow, DI: red		
Protection Circuit	Protection against reverse power connection, output overcurrent, power supply surge, output surge		
Operating Temperature	10 °C ~ 50 °C		
Storage Temperature	-20 °C ~ 75 °C		
Ambient Humidity	30 ~ 85%		
Enclosure Rating	IP67		
Ambient Light Resistance	5,000 lx or less		
Vibration Resistance	10 ~ 55 Hz, 1.5mm, 3 axes for 2 hours		
Insulating Resistance	20 MΩ or more (500 V <sub>DC</sub> )		
Withstand Voltage	1,000 V <sub>AC</sub> 50 / 60 Hz 1min		
Certifications	CE		
Materials	Optical window: PMMA; Case: Aluminium; Cable: PVC		
Cables	M8 Connector (8 Pin)		
Dimensions	55 × 42 × 24 mm		
Weight	113 g		

\* For an average count of 100. The value is ±2 μm for an average count of 100 (Sensing objective: white ceramic substrate).

## Laser Label Description



Laser Radiations : Class 2 Product

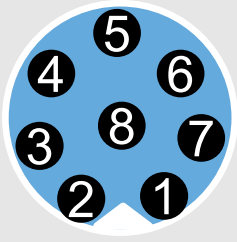
Maximum Output: <math>< 1\text{mW}</math>

Pulse Duration: 0.5ms max.

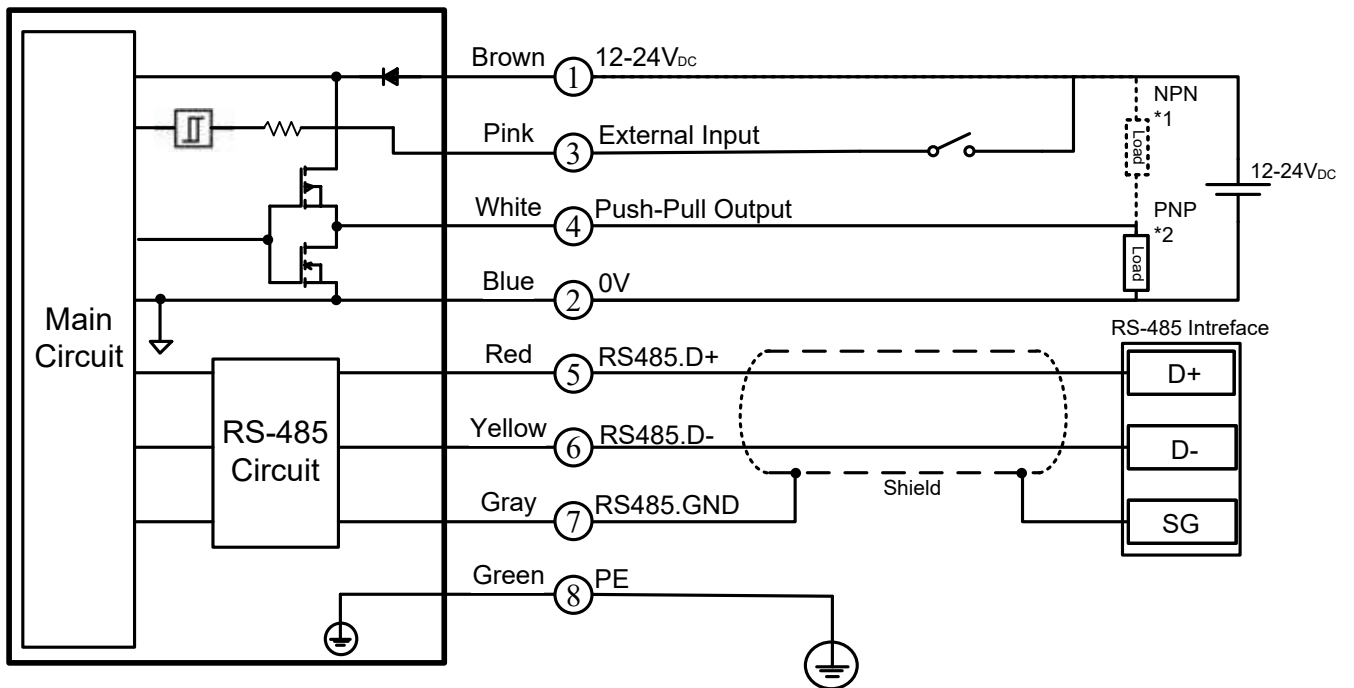
Wave Length: 635nm, IEC 60825-1:2014

## Input / Output Circuits

Pin	Color	Definition
1	Brown	12-24V <sub>DC</sub>
2	Blue	0V
3	Pink	DI
4	White	DO
5	Red	RS485.D+
6	Yellow	RS485.D-
7	Grey	RS485.GND
8	Green	PE



## Wiring Instructions

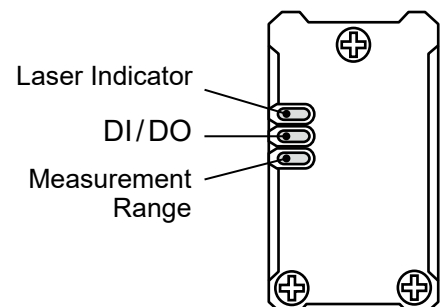


\*1. In case of NPN connection, please connect the load between Pin 4 and Pin 1

\*2. In case of PNP connection, please connect the load between Pin 4 and Pin 2

## Laser Indicator

Indicator	Color	Description
Laser Indicator	Blue light	Start (laser on)
Measurement Range	Green light	Within measurement range
	Orange light	Out of measurement range
DI/DO	Red light	DO
	Green light	DI



# Ordering Information

Model Name	Sensing Distance	Repeatability	Interface
LD-040N-C2B	30 ~ 50 mm	2 μm*	Digital I/O / Modbus Communication (RS-485)
LD-080N-C2B	55 ~ 105 mm	5 μm	Digital I/O / Modbus Communication (RS-485)
LD-150N-C2B	90 ~ 210 mm	15 μm	Digital I/O / Modbus Communication (RS-485)

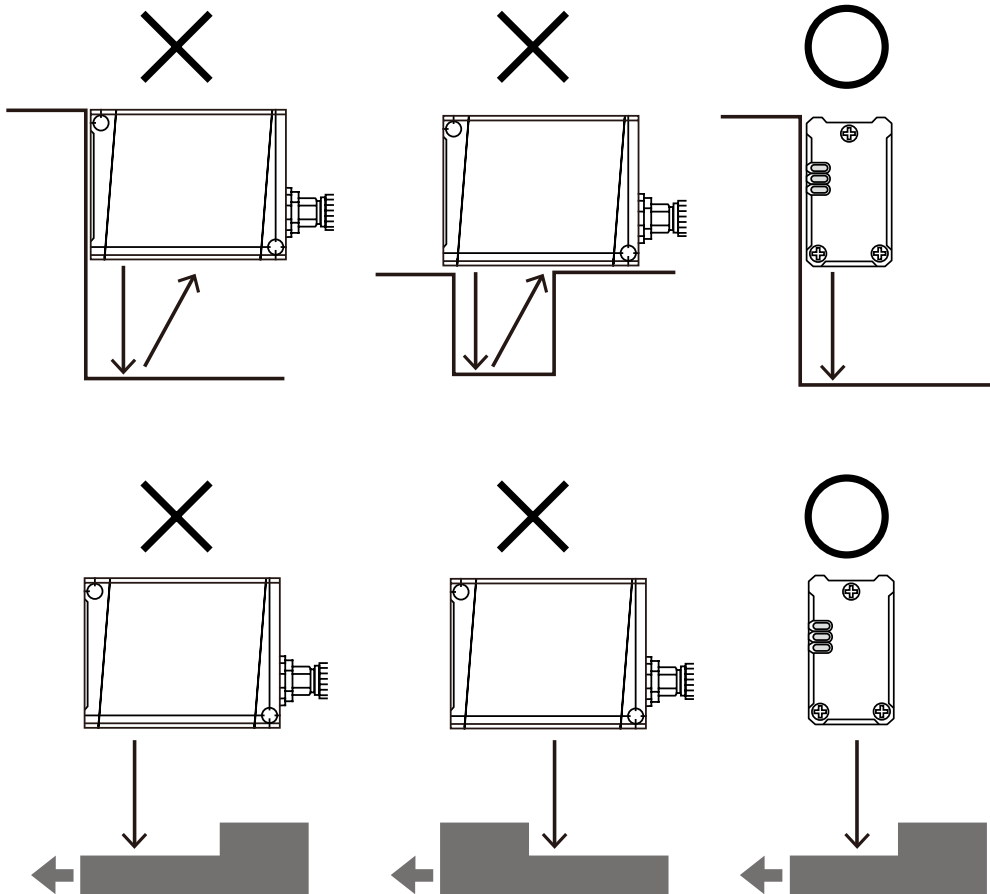
\* When measuring for 100 times, the average repeatability rate is 2 μm (inspecting object: white ceramic substrate)

Wiring Material	Item	Serial Number
Cable	1.5 m	UC-S015088
	3 m	UC-S030088
	5 m	UC-S050088

# Caution on Mounting Direction

For best product performance, please note the following instructions when installing products:

- ▶ When products cling to devices, install the products in parallel with the devices to assure product performance
- ▶ When the shape of an inspection object is extrusive, ensure the product's lighting route is vertical to the inspection object's path to assure product performance



## Area Sensor AS Series Note. Never use this device in any personnel safety application

- Available in Standard Type and Communication Type for different beam quantity and length requirements
- Measures the thickness and width of the objects to detect height, gradient, position, flatness, gap, distance and runout

### Standard Type (Receiver cable: grey)



- ▶ Aluminum case, strong structure
- ▶ No dead zone curtains for detection
- ▶ Effective aperture angle <math>< 2.5^\circ</math>
- ▶ IP67
- ▶ CE certification
- ▶ Self-diagnosis



### Communication Type (Receiver cable: blue)



#### Standard Features

- ▶ Aluminum case, strong structure
- ▶ No dead zone curtains for detection
- ▶ Effective aperture angle <math>< 2.5^\circ</math>
- ▶ IP67
- ▶ CE certification
- ▶ Self-diagnosis

#### Advanced Features

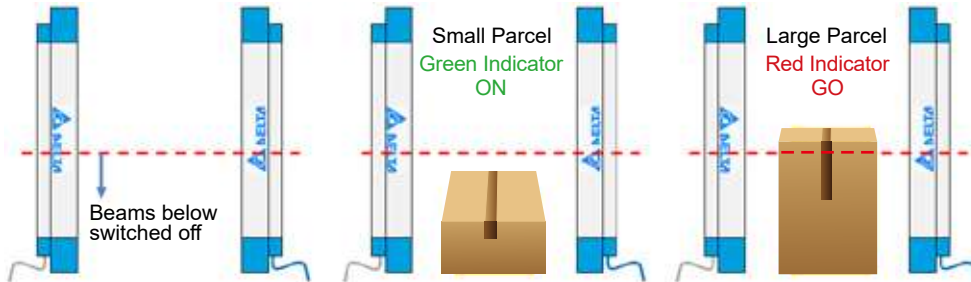
- ▶ Fixed / Floating Mask
- ▶ Interlock / restart functions
- ▶ Energy-saving
- ▶ Measurement
- ▶ Auto-upload
- ▶ Regular scanning cycle

Pitch	10 mm	20 mm	40 mm
Resolution	16.5 mm	26.5 mm	46.5 mm
Channels	24~128	8~96	4~36
Protect Height	240~1,280 mm	160~1,920 mm	160~1,440 mm
Sensing Distance	0.1 m~5 m	0.1 m~10 m	0.1 m~10 m
AS-B Standard Type	AS - BF □□□	AS - BH □□□	AS - BA □□□
AS-B Communication Type	AS - BF □□□ - C	AS - BH □□□ - C	AS - BA □□□ - C

# Communication Type Advanced Features

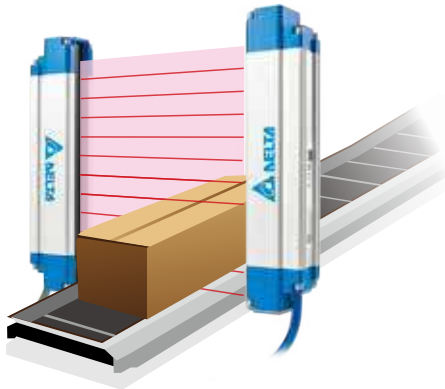
## Fix Blanking

Set up a standard height and switch off the beams below. If the parcel is below the height, green indicator will be on. If the parcel is above the height, red indicator will be on. It is suitable for logistic industry to detect the height of the parcels for further sorting process



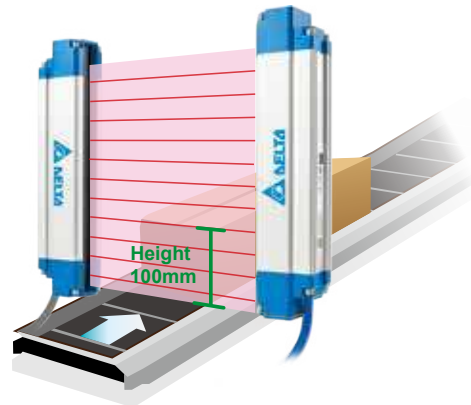
## Floating Blanking

Stably detects the object with pre-set floating beam quantities, suitable for moving objects with fixed length and height, such as parcels on the conveyor or robotic arms in motion



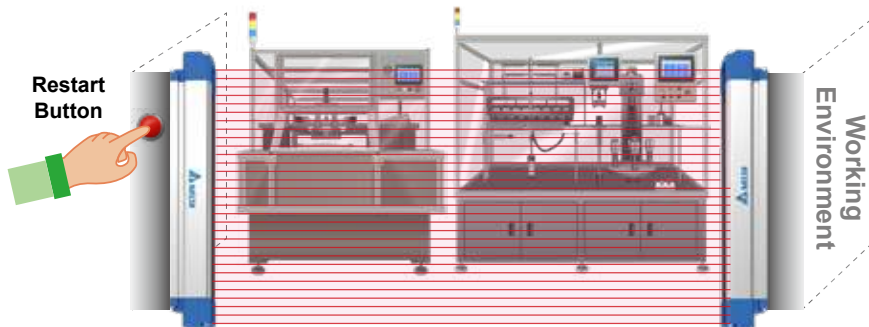
## Measurement

Measures the height of the objects by sensing the light / shading status of each channel. It also senses the deviation and central position of the object with the blanking beams

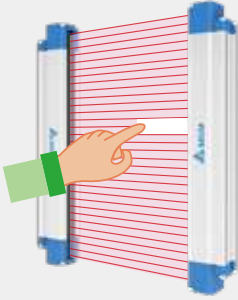


## Interlock / Manual Restart

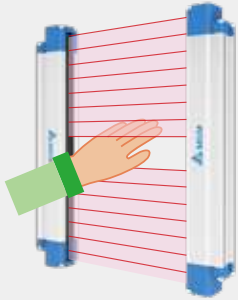
Once the area sensor detects the entry of a person / object in the locked working environment, it will stop the equipment operation until pressing the Restart button manually. It is useful for equipment maintenance



# Product Specifications

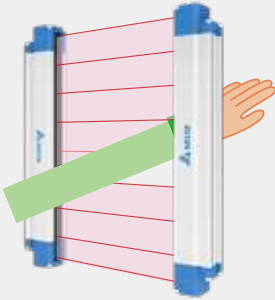
Finger Detection (Pitch: 10 mm)					
	Model Name	Channels	Protect Height (B)	Brackets	Sensing Distance
	AS-BF024□	24	240	2	0.1m ~ 5m
	AS-BF032□	32	320	2	
	AS-BF040□	40	400	4	
	AS-BF048□	48	480	4	
	AS-BF056□	56	560	4	
	AS-BF064□	64	640	4	
	AS-BF072□	72	720	4	
	AS-BF080□	80	800	4	
	AS-BF088□	88	880	4	
	AS-BF096□	96	960	4	
	AS-BF104□	104	1,040	4	
	AS-BF112□	112	1,120	4	
	AS-BF120□	120	1,200	4	
	AS-BF128□	128	1,280	4	

\* □ : N/A = AS-B standard type, -C = AS-B communication type

Hand Detection (Pitch: 20 mm)					
	Model Name	Channels	Protect Height (B)	Brackets	Sensing Distance
	AS-BH008□	8	160	2	0.1m ~ 10m
	AS-BH012□	12	240	2	
	AS-BH016□	16	320	2	
	AS-BH020□	20	400	4	
	AS-BH024□	24	480	4	
	AS-BH028□	28	560	4	
	AS-BH032□	32	640	4	
	AS-BH036□	36	720	4	
	AS-BH040□	40	800	4	
	AS-BH044□	44	880	4	
	AS-BH048□	48	960	4	
	AS-BH052□	52	1,040	4	
	AS-BH056□	56	1,120	4	
	AS-BH060□	60	1,200	4	
	AS-BH064□	64	1,280	4	
	AS-BH068□	68	1,360	4	
	AS-BH072□	72	1,440	4	
	AS-BH076□	76	1,520	4	
	AS-BH080□	80	1,600	4	
	AS-BH084□	84	1,680	4	
AS-BH088□	88	1,760	6		
AS-BH092□	92	1,840	6		
AS-BH096□	96	1,920	6		

\* □ : N/A = AS-B standard type, -C = AS-B communication type

### Arm Detection (Pitch: 40 mm)

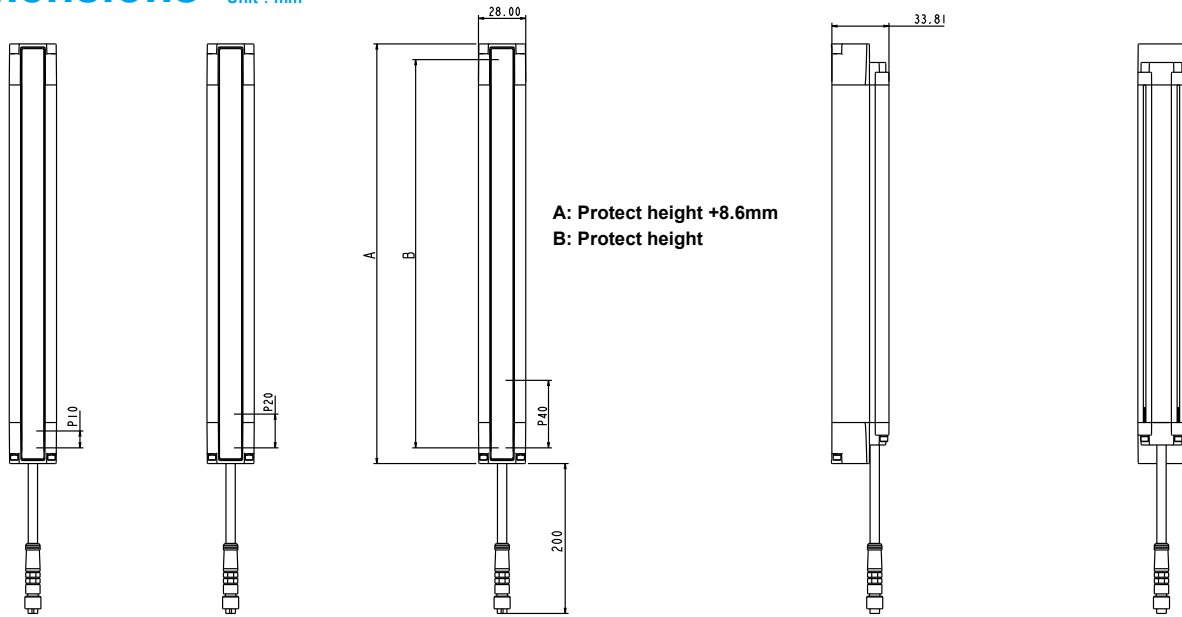
	Model Name	Channels	Protect Height (B)	Brackets	Sensing Distance
	AS-BA004□	4	160	2	0.1 m ~ 10 m
	AS-BA006□	6	240	2	
	AS-BA008□	8	320	2	
	AS-BA010□	10	400	4	
	AS-BA012□	12	480	4	
	AS-BA014□	14	560	4	
	AS-BA016□	16	640	4	
	AS-BA018□	18	720	4	
	AS-BA020□	20	800	4	
	AS-BA022□	22	880	4	
	AS-BA024□	24	960	4	
	AS-BA026□	26	1,040	4	
	AS-BA028□	28	1,120	4	
	AS-BA030□	30	1,200	4	
	AS-BA032□	32	1,280	4	
	AS-BA034□	34	1,360	4	
AS-BA036□	36	1,440	4		

\* □ : N/A = AS-B standard type, -C = AS-B communication type

## General Specifications

Area Sensor	
Voltage Range	24V <sub>DC</sub> ± 10%
Light Source	Infrared LED (850 nm)
Indicator	<ul style="list-style-type: none"> <li>▪ Upper / lower indicator (blue light): when the top and bottom are aligned</li> <li>▪ Green light: all channels are aligned</li> <li>▪ Red light: any channel is mis-aligned or blocked</li> <li>▪ Orange light: without synchronization signal</li> </ul>
Protection Circuit	Protection against reverse power connection, output overcurrent, power supply surge, output surge
Operating Temperature	-10 °C ~ 55°C , no freezing
Storage Temperature	-25 °C ~ 75°C
Ambient Humidity	30 ~ 85%
Enclosure Rating	IP67
Ambient Light Resistance	5,000 lx or less
Vibration Resistance	10 ~ 55 Hz, 1.5mm, 3 axes for 2 hours
Shock Resistance	Max. 100 m/s <sup>2</sup> , 3 axes, 6 directions and 3 times in each
Insulating Resistance	20 MΩ or more (500 V <sub>DC</sub> )
Withstand Voltage	1,000 V <sub>AC</sub> 50 / 60 Hz 1min
Material	Case: Aluminum, Cover lens: PMMA, Upper / lower case: Zinc alloy
Cables	M12 connector, 200mm PVC cable
Certifications	CE

## Dimensions Unit : mm



## Ordering Information

### • Light Curtain

#### Standard Type

**AS** - **B** **H** **016**

**Product Name**  
Area Sensor

**Pitches**  
**F** 10 mm  
**H** 20 mm  
**A** 40 mm

**Channels**  
004~128  
(refer to previous page)

#### Communication Type

**AS** - **B** **H** **016** - **C**

**Product Name**  
Area Sensor

**Pitches**  
**F** 10 mm  
**H** 20 mm  
**A** 40 mm

**Channels**  
004~128  
(refer to previous page)

### • Cable

**AS** - **B** - **W** **T** **025**

**Product Name**  
Area Sensor

**Basic**

**Cable Type**  
**W** Wire Type

#### Length

<b>025</b>	2.5 m
<b>035</b>	3.5 m
<b>050</b>	5 m
<b>100</b>	10 m

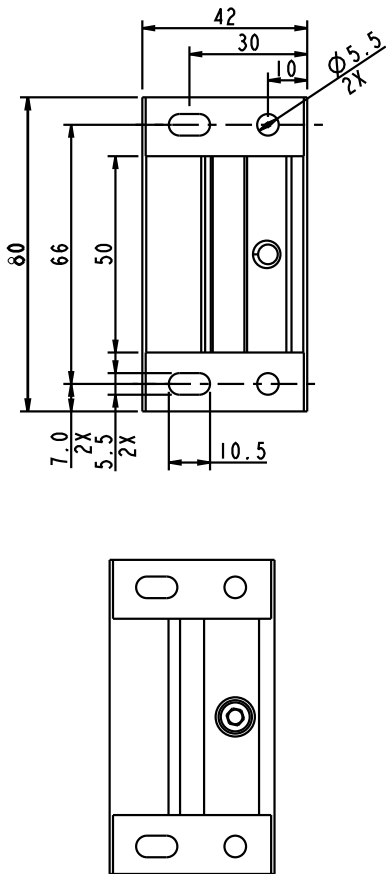
#### Device

<b>T</b>	Transmitter
<b>R</b>	Receiver
<b>C</b>	Communication Type Receiver

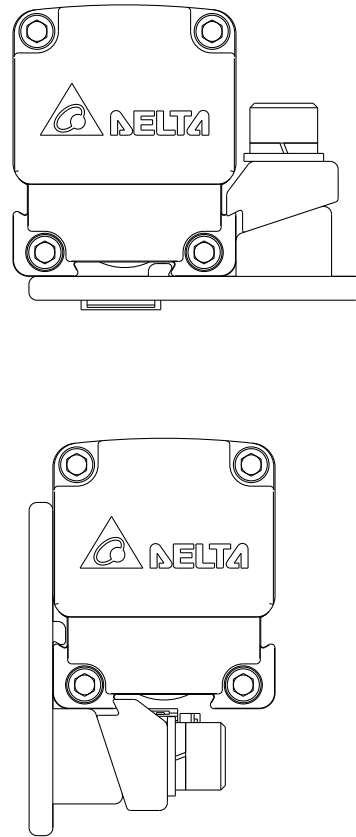


## Bracket Dimensions

Unit : mm

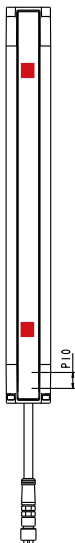


## Bracket Installation



## Sensor Calibration After Power-on

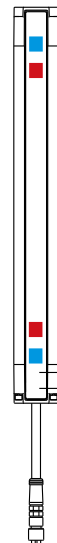
**1. Power on**  
Red indicator on when power on



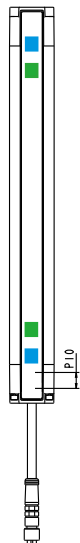
**2. Calibration (top)**  
Top indicator in blue on when top calibration is finished



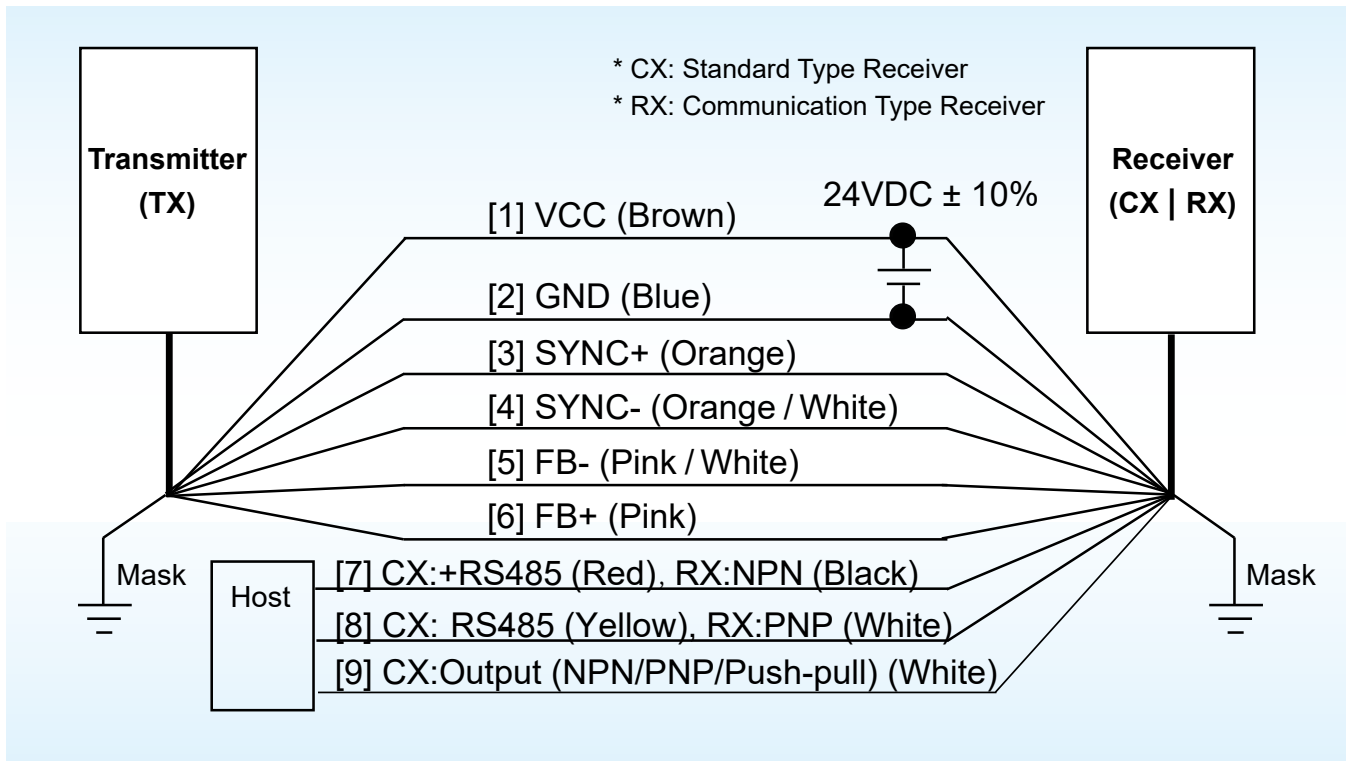
**3. Calibration (bottom)**  
Bottom indicator in blue on when bottom calibration is finished



**4. Complete**  
Green indicator on when calibration is complete



## Wiring



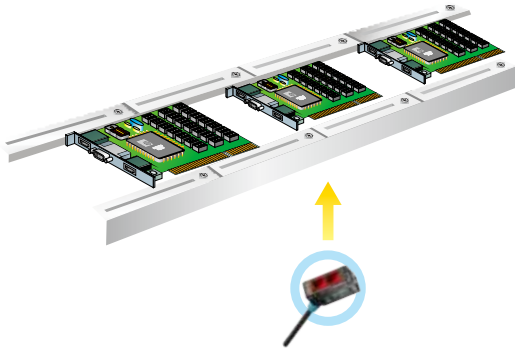
## Troubleshooting

Indicator	Cause	Inspection method
Light is off	Poor power contact	<ul style="list-style-type: none"> <li>Check the power connection and whether or not the connector pin is bent</li> </ul>
Irregular flashing of red/green light	Poor beam alignment	<ul style="list-style-type: none"> <li>Whether it be switched to green light with near-distance alignment</li> <li>Check whether or not module installation with mounting frame is flat and level</li> <li>Check whether mounting method is susceptible to vibration</li> </ul>
	Electrical interference	<ul style="list-style-type: none"> <li>Check whether shielded wire is connected to clean ground</li> <li>Has external high power machine shutdown been improved?</li> </ul>
	Light source interference	<ul style="list-style-type: none"> <li>Is there any external glare affecting device?</li> <li>Installation of multiple light curtains should use transmitter/receiver staggered format</li> </ul>
Blue/green/red lights are lit simultaneously	Over-current	<ul style="list-style-type: none"> <li>Check load at output end</li> <li>Check output mode setting</li> </ul>
Only blue light is lit, and green light is not lit; red light is lit when shielded	Power saving setting	<ul style="list-style-type: none"> <li>Turn off power saving setting</li> </ul>
Orange light	Wiring error, or input voltage exceeds specifications	<ul style="list-style-type: none"> <li>Check if wire connection is normal</li> <li>Check if input voltage is within range</li> </ul>
	Abnormal internal signal/voltage	<ul style="list-style-type: none"> <li>Contact DELTA service center</li> </ul>
Red/green lights are lit, and blue lit is not lit	Abnormal number of beams	<ul style="list-style-type: none"> <li>Beam number setting error, or abnormal number of internal beams Contact DELTA service center</li> </ul>

# Applications

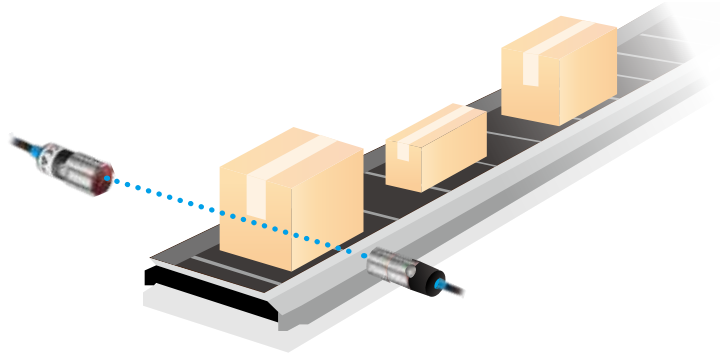
## Electronics Industry

Detects PCB boards



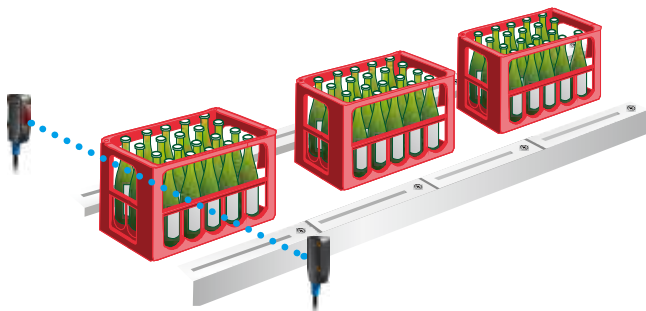
## Warehouse / Logistics

Detects cartons



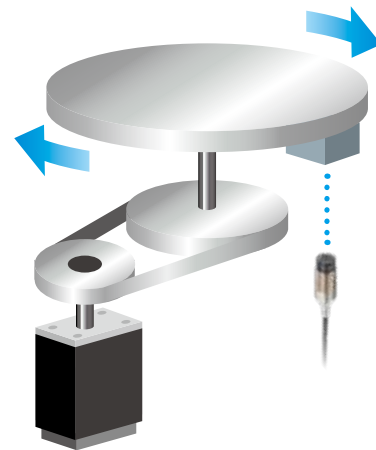
## Food and Beverages

Detects boxes of beverages



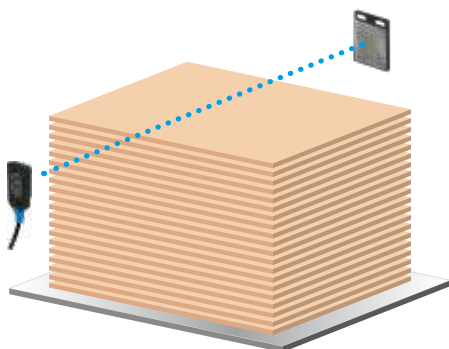
## Equipment & Machines

Sensor for position-setting



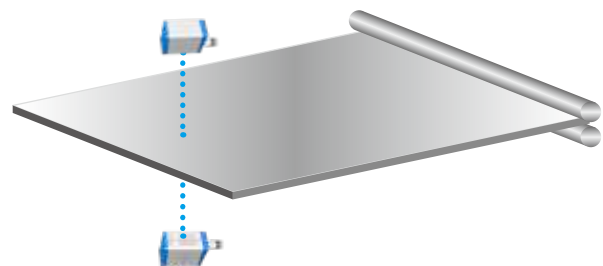
## Wood Industry

Detects wood stacking



## Wood and Steel industry

Measures the thickness of wood or steel

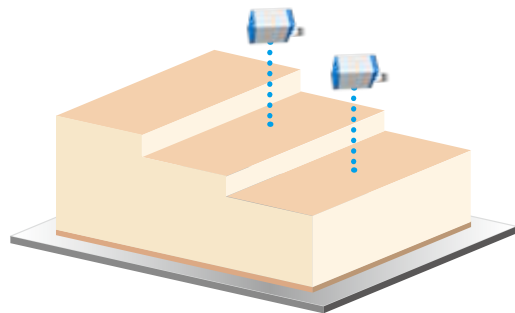


# Applications

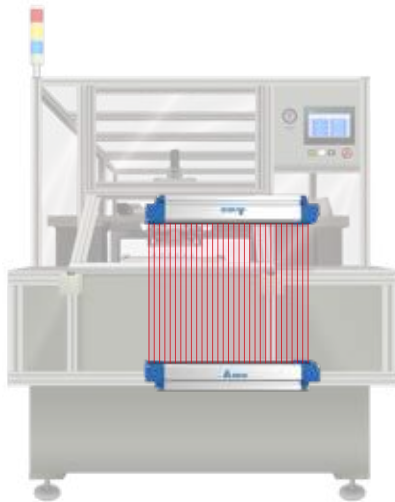
**Electronics Industry**  
Robot arm's reproducibility test



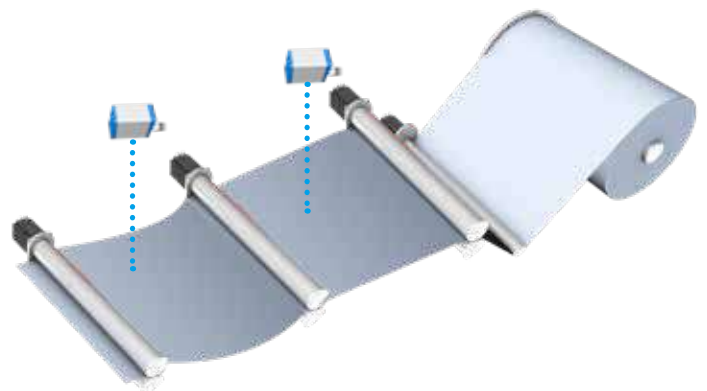
**Electronics Industry**  
Measures the depth/ thickness of product



**Safety**  
Marks a dangerous zone and protects operators



**Textile Industry**  
Measures the hoop slack



# Standard Multifunction Pressure Sensor DPA Series

- ▶ Energy-saving mode
- ▶ Various unit conversion
- ▶ Analog output function
- ▶ Various output modes
- ▶ 10 sets of output response time setup
- ▶ 3 sets of color displays
- ▶ Fast zero reset
- ▶ Safety control function
- ▶ Easy code display
- ▶ Parameter copy function



## Various Unit Conversion

The DPA Series offers 6 kinds of globally adopted pressure units for measurement and display



## Fast Parameter Copy

The DPA Series fast copies the internal parameters to other slaves and saves repeated parameter setup time



## 3-Color LCD Display (Green, Red, Orange)

The large LCD with a green, red and orange 3-color LCD display allows users to set the display color according to the ambient environment, such as when the pressure is in normal range or exceeds the tolerance range. The display's color is orange when in parameter setup mode. This makes it easier for reading and reduces operation errors

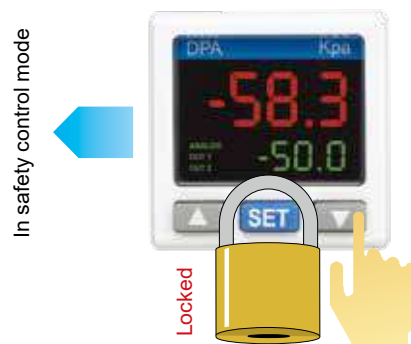


Color for upper / lower limit display (green / red)

Parameter set up (orange)

## Safety Control Mode

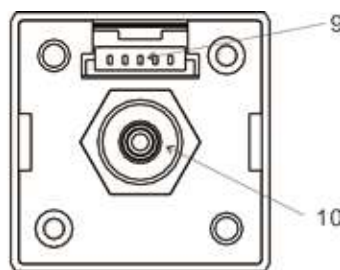
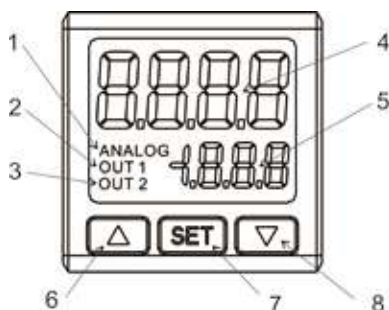
The safety control mode prevents operators from carelessly touching relevant parameters and affecting the operation and production of the equipment



## Specifications

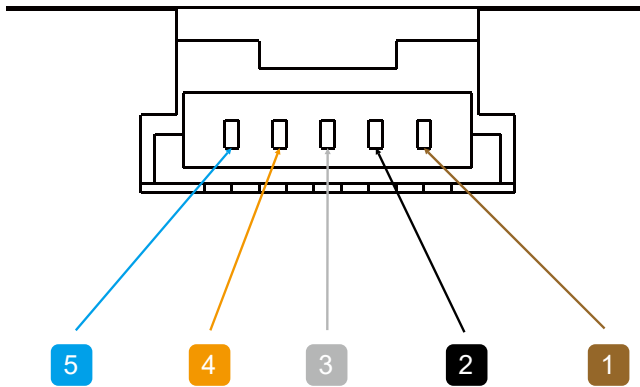
Power Supply	Voltage range	12 ~ 24 V <sub>DC</sub> ± 10% no isolation
	Power consumption	40 mA Max.; current output type 60 mA Max.
Pressure Measurement	Pressure type	Non-corrosive gas, gauge type
	Measurable range	DPA01: -100 kPa ~ 100 kPa
		DPA10: -100 kPa ~ 1,000 kPa
	Max. durable pressure	DPA01: 200 kPa
		DPA10: 1,500 kPa
	Measurement accuracy	± 3% entire process
Temperature inaccuracy	± 2% entire process	
Display	Setup display	2-line LCD display, 4 digits for measured value and 3.5 digits for setup display
	Status display	LCD output status display
	Display mode	3 colors for different modes
	Cycle	250 ms, 500 ms, 1,000 ms
Output	Number of outputs	Built-in 2 NPN or PNP transistor digital outputs and 1 analog output
	Transistor output	NPN: Max. durable pressure 30V / 100 mA, residual voltage 1.5V
		PNP: Max. durable pressure 30V / 100 mA, residual voltage 1.5V
	Analog output	1 ~ 5V: Min. output load resistance 1,000 Ω
		4 ~ 20 mA: Max. output load resistance 400 Ω; linear inaccuracy < 2% entire process
Response time	2 ms, 4 ms, 10 ms, 30 ms, 50 ms, 100 ms, 250 ms, 500 ms, 1,000 ms, 5,000 ms	
Output inaccuracy	Linear inaccuracy: < ± 2% entire process	
Shock Resistance		10 ~ 550 Hz, 100 mm, 3 axes for 2 hours
Vibration Resistance		Max. 100 m/s <sup>2</sup> , 3 axes 6 directions, 3 times each
Operating Ambient Temperature		0°C ~ 50°C
Storage Temperature		-20°C ~ 65°C
Altitude		< 2,000 m
Operating Relative Humidity		35% ~ 80% RH (non-condensing)

## Product Profile & Outline



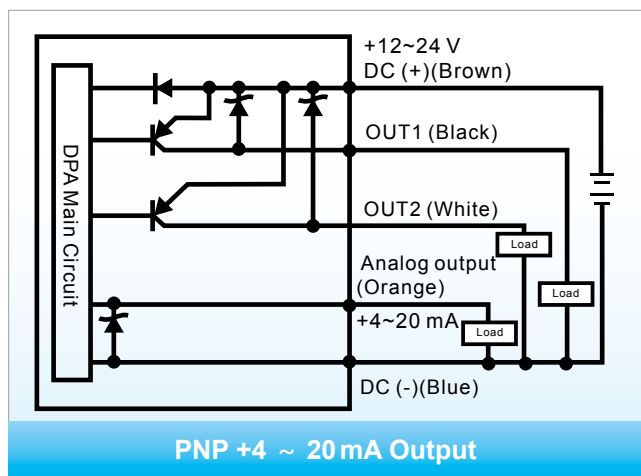
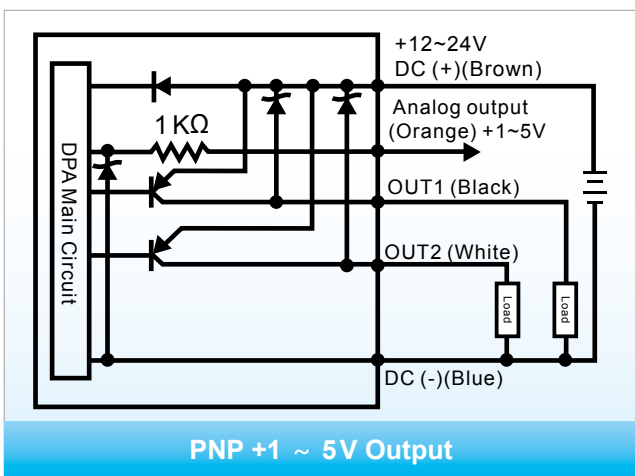
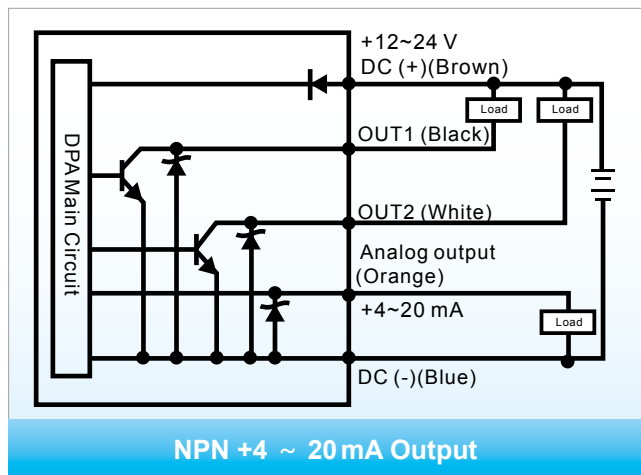
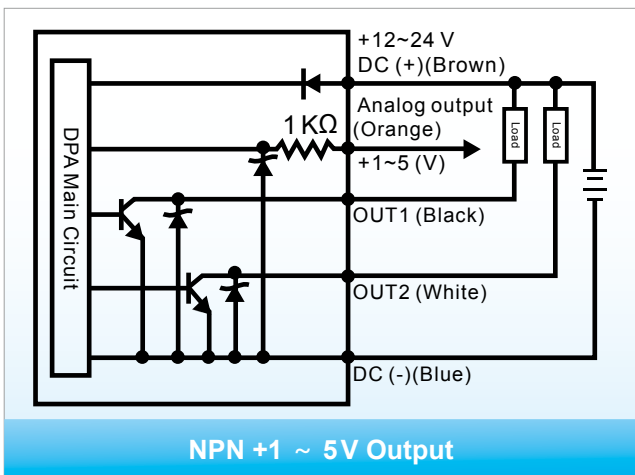
- 1 Analog output indicator
- 2 Digital output 1 indicator
- 3 Digital output 2 indicator
- 4 Pressure / parameter display
- 5 SV / setup item display
- 6 UP key
- 7 SET key
- 8 DOWN key
- 9 Power supply and output terminals
- 10 Pressure input pore

# Terminals



- 1 Positive power supply input (Brown)
- 2 Digital output 1 signal (Black)
- 3 Digital output 2 signal (White)
- 4 Analog output signal (Orange)
- 5 Negative power supply input (Blue)

# Various Output Control Modes



## Ordering Information

**DPA** **0** **1** **N** - **P**

### Range for Pressure Measurement

- 01** -100 kPa ~ 100 kPa
- 10** -100 kPa~1,000 kPa

### Pressure Pore Type

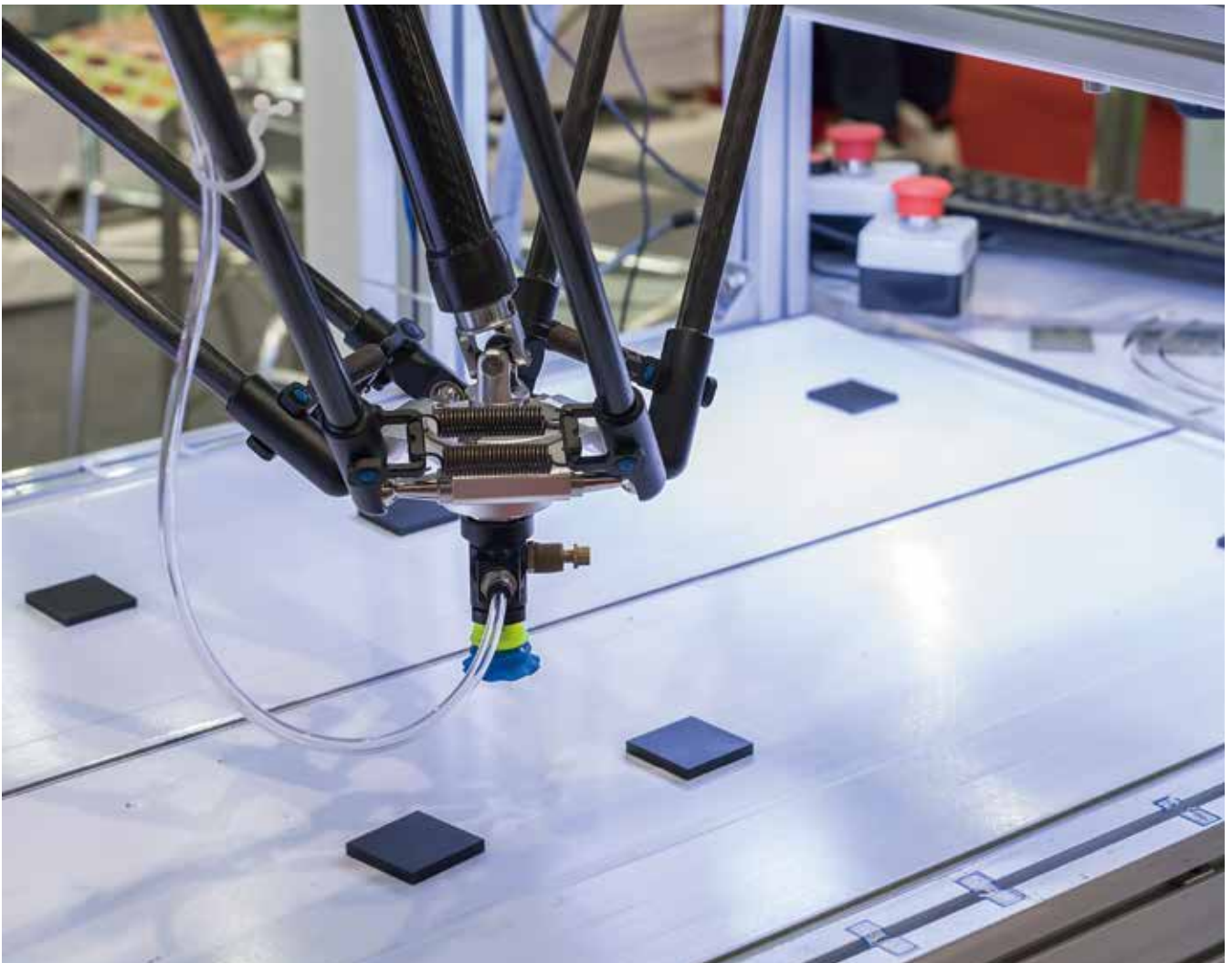
- P** Outer pore 1/8 PT, inner pore M5
- N** Outer pore 1/8 NPT, inner pore M5
- G** Outer pore 1/8 G, inner pore M5

### Output Type

- N** NPN output + 4 ~ 20 mA
- M** NPN output + 1~ 5 V
- P** PNP output + 4 ~ 20 mA
- Q** PNP output + 1 ~ 5V

### Product Name

DPA Series pressure sensor





## Basic Multifunction Pressure Sensor DPB Series

- ▶ Various unit conversion
- ▶ Various output modes
- ▶ 3 sets of color displays
- ▶ 10 sets of output response time setup
- ▶ Fast zero reset
- ▶ Safety control function
- ▶ Easy code display



### Various Unit Conversion

The DPB Series offers 6 kinds of globally adopted pressure units for measurement and display



### 3-Color LCD Display (Green, Red, Orange)

The large LCD with a green, red and orange 3-color LCD display allows users to set the display color according to the ambient environment, such as when the pressure is in normal range or exceeds the tolerance range. The display's color is orange when in parameter setup mode. This makes it easier for reading and reducing operation errors



Color for upper / lower limit display (green / red)



Parameter set up (orange)

### Safety Control Mode

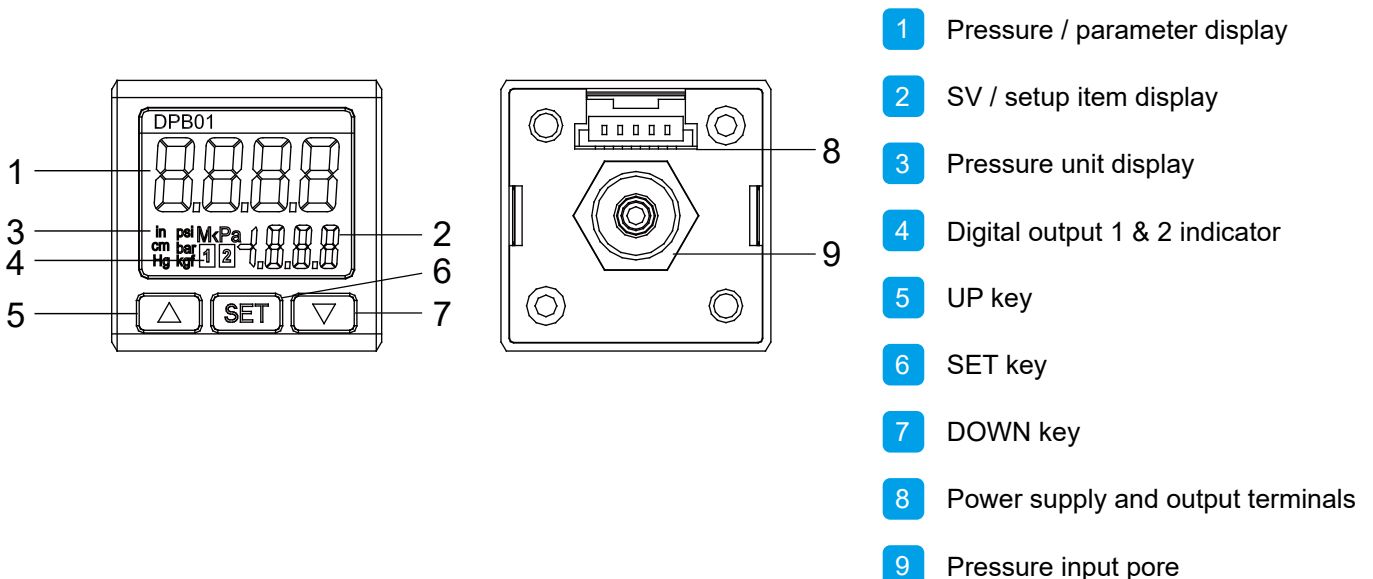
The safety control mode prevents operators from carelessly touching relevant parameters and affecting the operation and production of the equipment



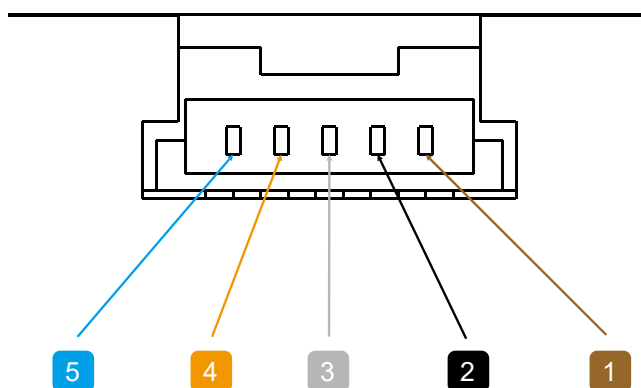
## Specifications

Power Supply	Voltage range	12 ~ 24 V <sub>DC</sub> ± 10% no isolation
	Power consumption	40 mA Max.
Pressure Measurement	Pressure type	Non-corrosive gas, gauge type
	Measurable range	DPB01: -100 kPa ~ 100 kPa; DPB10: -100 kPa ~ 1,000 kPa
	Max. durable pressure	DPB01: 200 kPa; DPB10: 1,500 kPa
	Accuracy	± 3% entire process
Display	Setup display	2-line LCD display, 4 digits for measured value and 3.5 digits for setup display
	Cycle	100ms, 250ms, 500ms, 1,000ms
Output	Number of outputs	Built-in 2 NPN or PNP transistor digital outputs
	Transistor output	Max. durable pressure 30V / 100mA, residual voltage 1.5V
	Response time	2ms, 4ms, 10ms, 30ms, 50ms, 100ms, 250ms, 500ms, 1,000ms, 5,000ms
Temperature	Ambient: 0°C ~ +50°C; Storage: -20°C ~ +65°C	
Ambient humidity	35% ~ 80% RH (non-condensing)	

## Product Profile

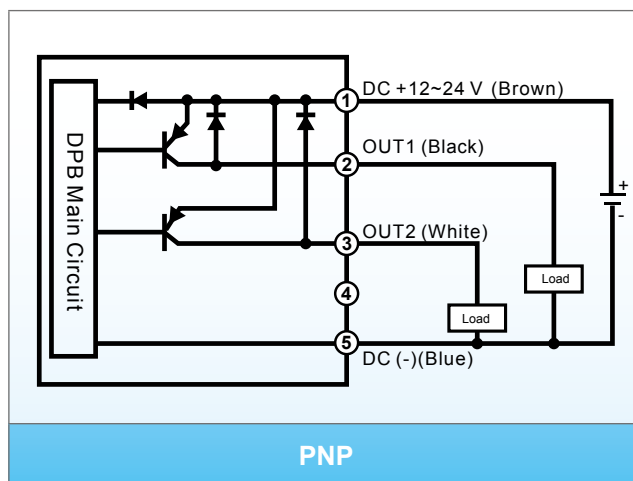
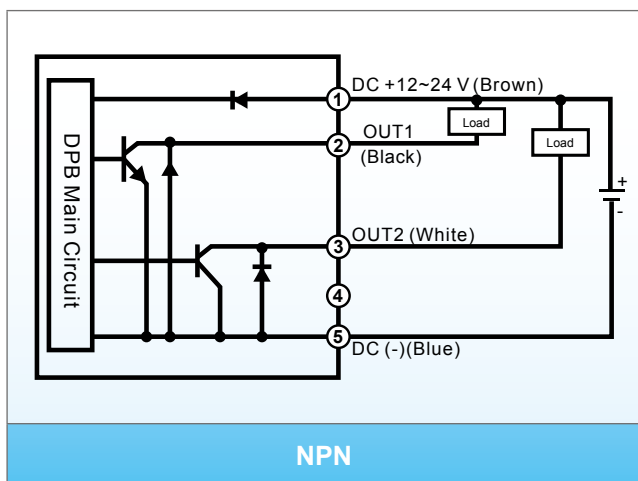


## Terminals



- 1 Positive power supply input (Brown)
- 2 Digital output 1 signal (Black)
- 3 Digital output 2 signal (White)
- 4 No function (Orange)
- 5 Negative power supply input (Blue)

## Various Output Control Modes



## Ordering Information

**DPB** **0** **1** **N** - **P**

### Range for Pressure Measurement

- 01** -100 kPa ~ 100 kPa
- 10** -100 kPa ~ 1,000 kPa

### Pressure Pore Type

- P** Outer pore 1/8 PT, inner pore M5
- N** Outer pore 1/8 NPT, inner pore M5
- G** Outer pore 1/8 G, inner pore M5

### Output Type

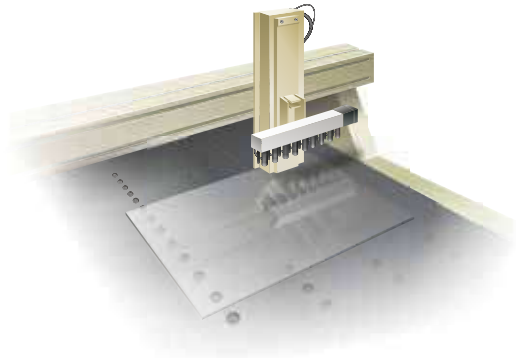
- N** NPN output
- P** PNP output

### Product Name

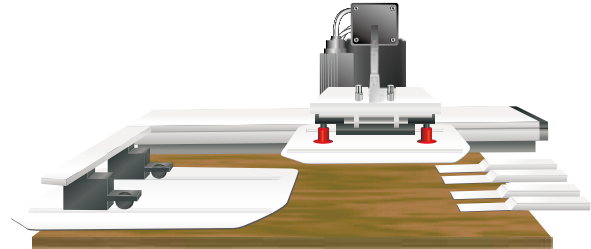
DPB Series pressure sensor

# Applications

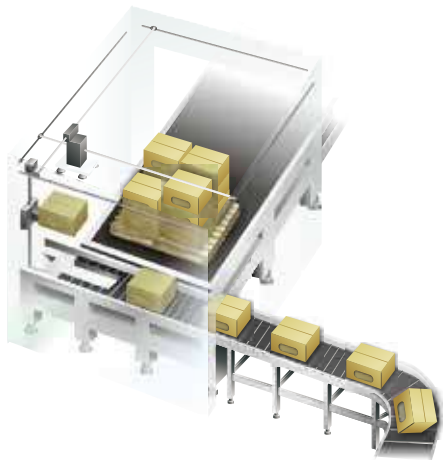
- **Mechanical Processing Industry**  
Mechanical product processing and fixing



- **Solar Energy Industry**  
Turnkey module lines suction



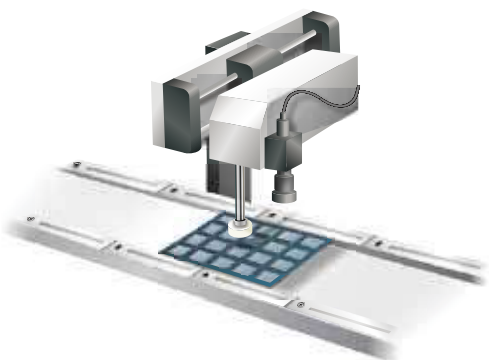
- **Food Packaging Industry**  
Drinks, cans suction and packaging



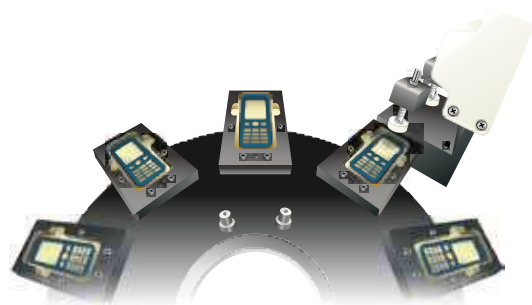
- **Semiconductor Industry**  
Wafer suction and loading



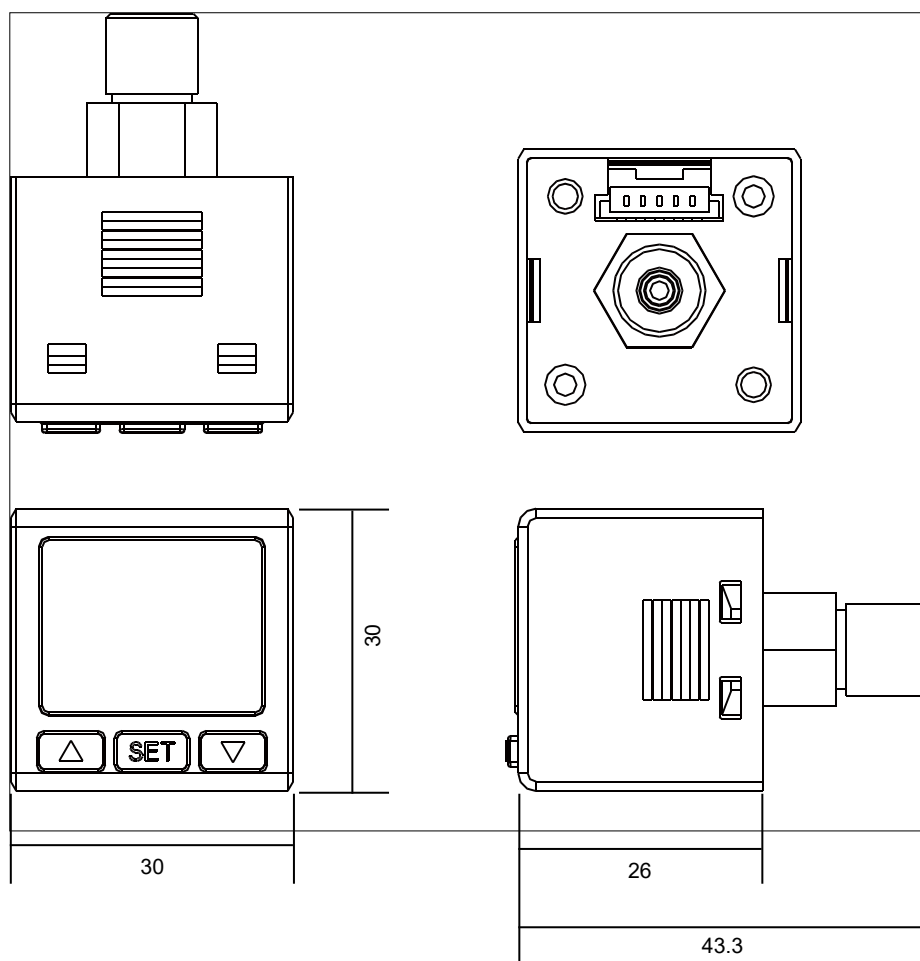
- **Electronic Components Industry**  
IC component suction and confirmation



- **Automatic Assembly Industry**  
Automation component assembly and confirmation

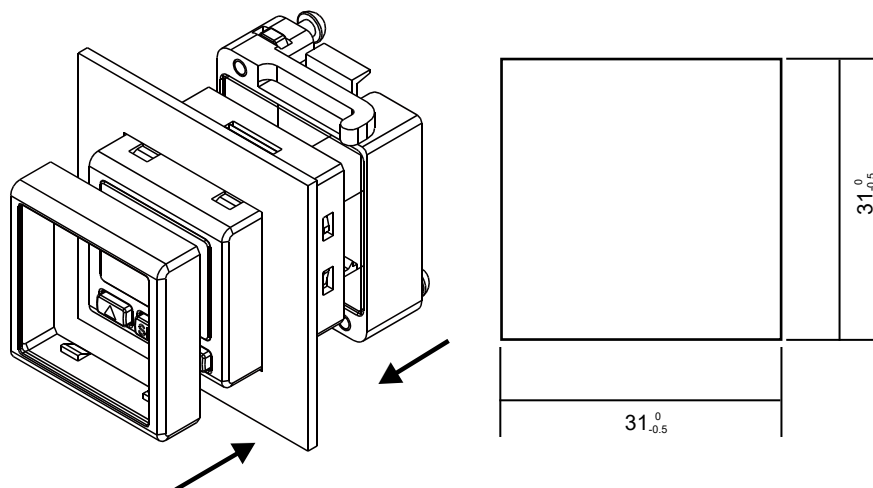


## Dimensions (DPA / DPB) Unit : mm



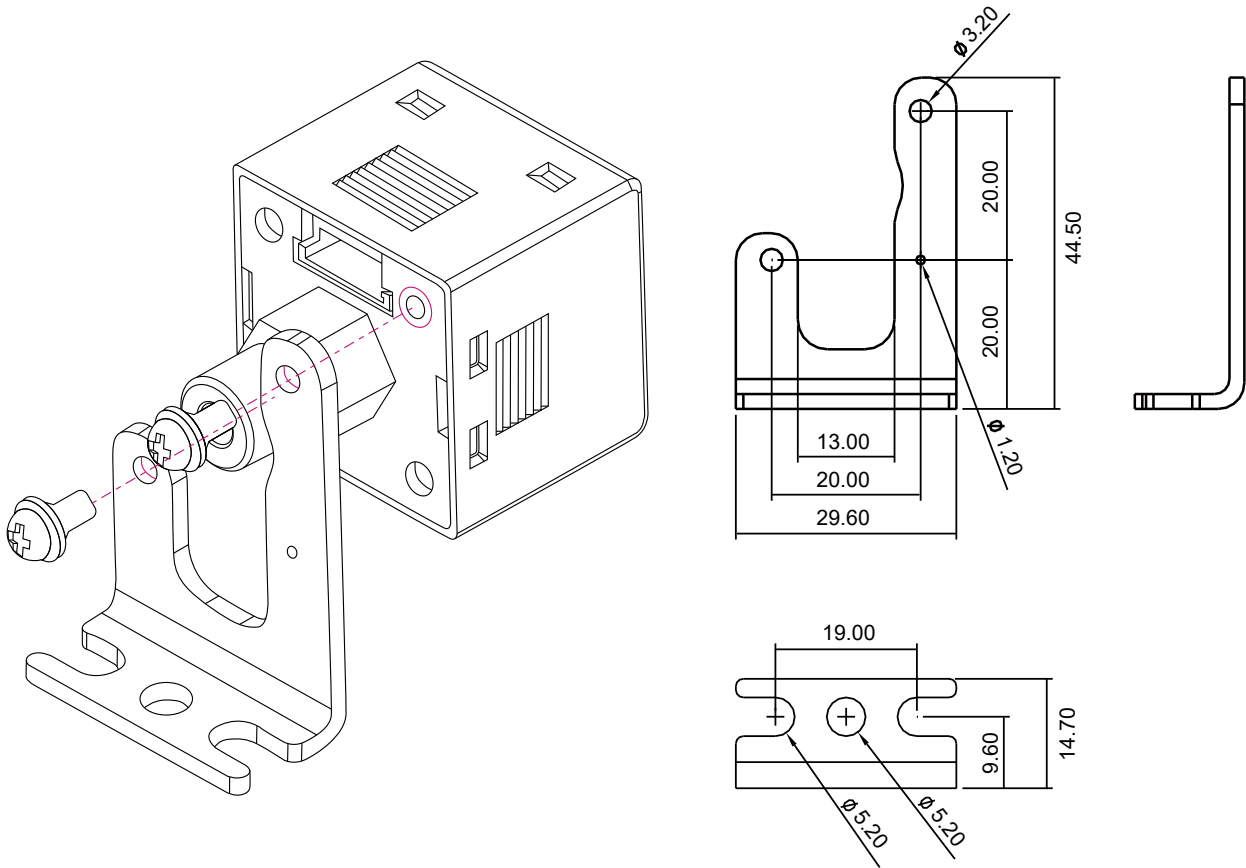
## Panel Accessory (DPA / DPB) Unit : mm

Model: DPA-PFKit



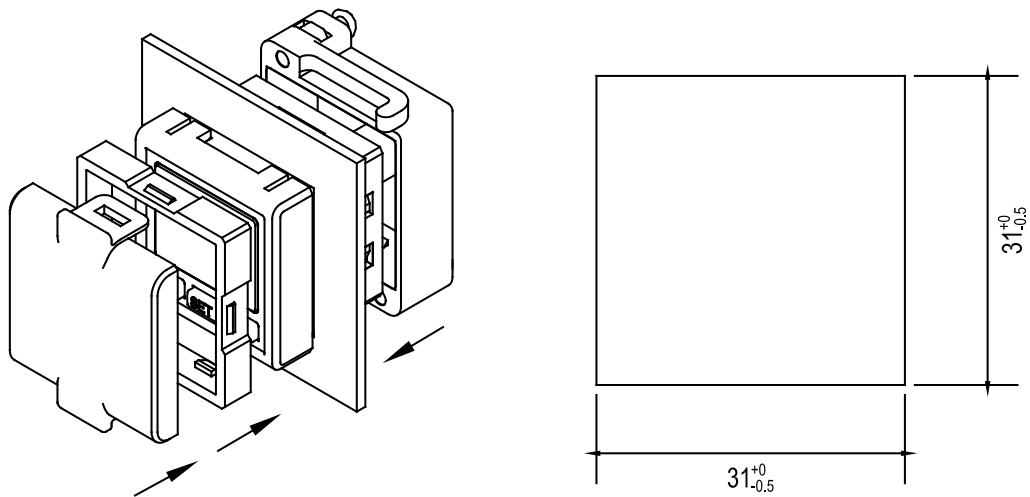
# Shelf Accessory (DPA / DPB) Unit : mm

Model: DPA-FMKit



# Transparent Protective Cover (DPA / DPB) Unit : mm

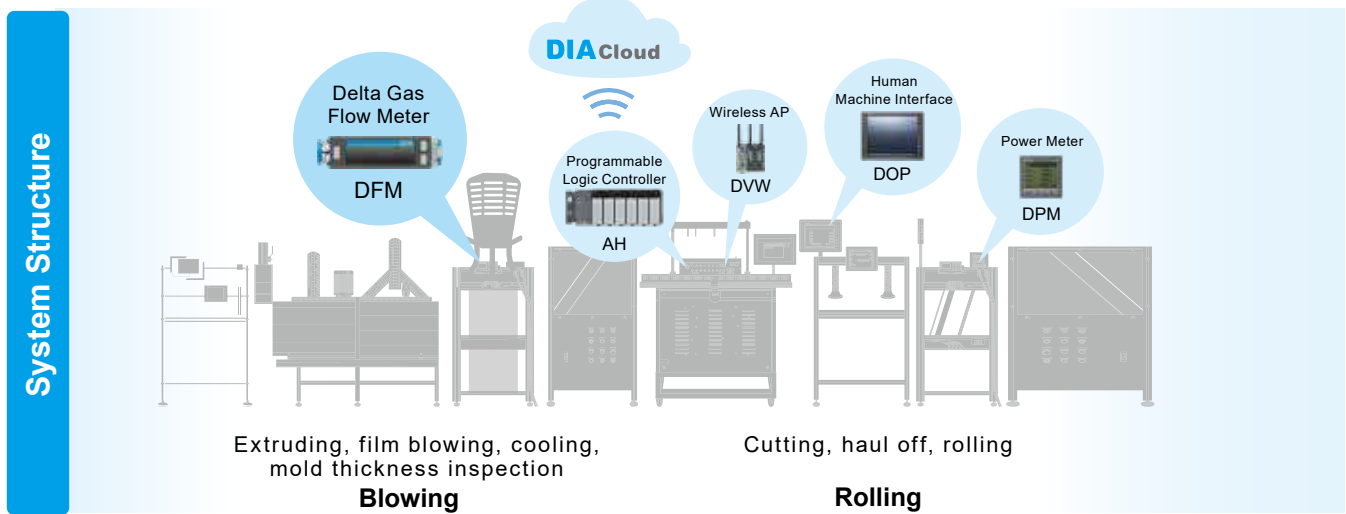
Model: DPA-FPCKIT



# Gas Flow Meter DFM Series

Suitable for various gas flow control and measurement applications, such as forming machines and static eliminators

- ▶ Thermopile technology
- ▶ Bi-direction gas flow measurement
- ▶ Maximum and minimum gas flow volume alert settings
- ▶ 3-layer embedded tranquilizer
- ▶ Supports analog and digital outputs



## Product Features

### Flexible installation

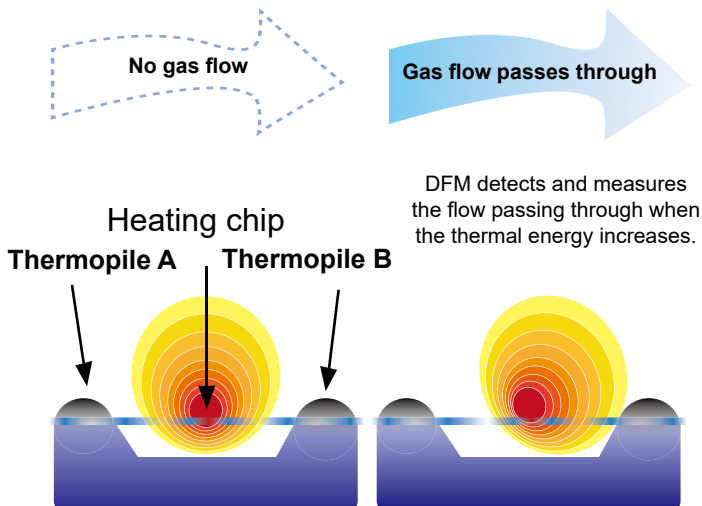
Vertical, horizontal or tilted installation based on users' needs with a display that faces all directions, providing agile, flexible and easy applications



## Product Features

### Highly precise gas flow measurement

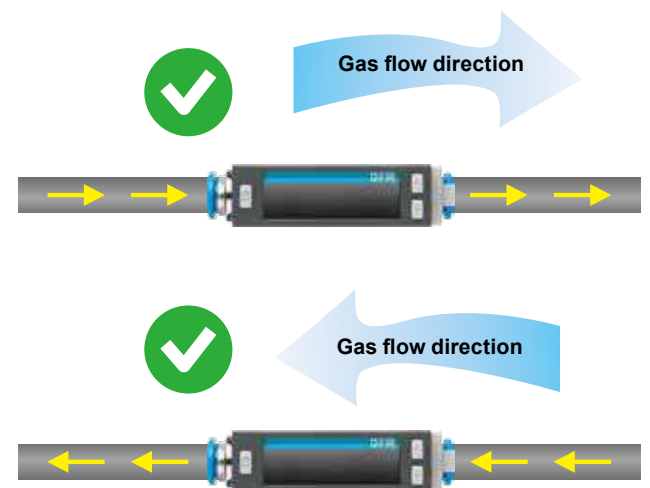
Adopts Thermopile technology with quick response time to conduct stable and accurate gas flow measurement



Measurement Diagram

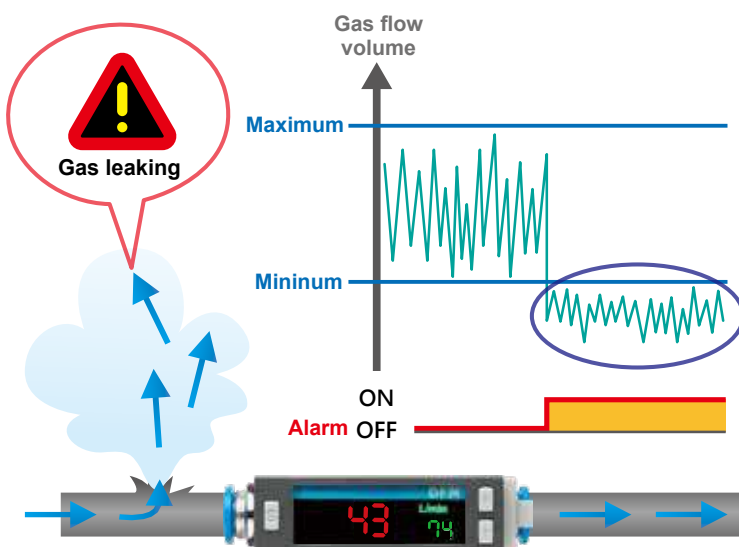
### Two-sided gas flow measurement

No need to alternate installation for gas flow direction. Users can flexibly operate based on needs



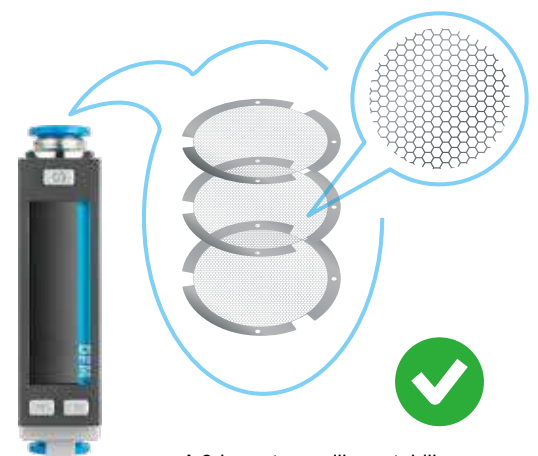
### Flow limit setting for safe and reliable operation

Users can set up max. and min. limits of gas flow volume. The system will sound an alarm if the detection exceeds/fails the limits



### Embedded tranquilizer to stabilize gas flow

A 3-layer embedded tranquilizer eliminates gas flow chaos in bending pipe, providing stable and convenient gas flow detection



A 3-layer tranquilizer stabilizes gas flows and blocks impurity in gas to protect the device.



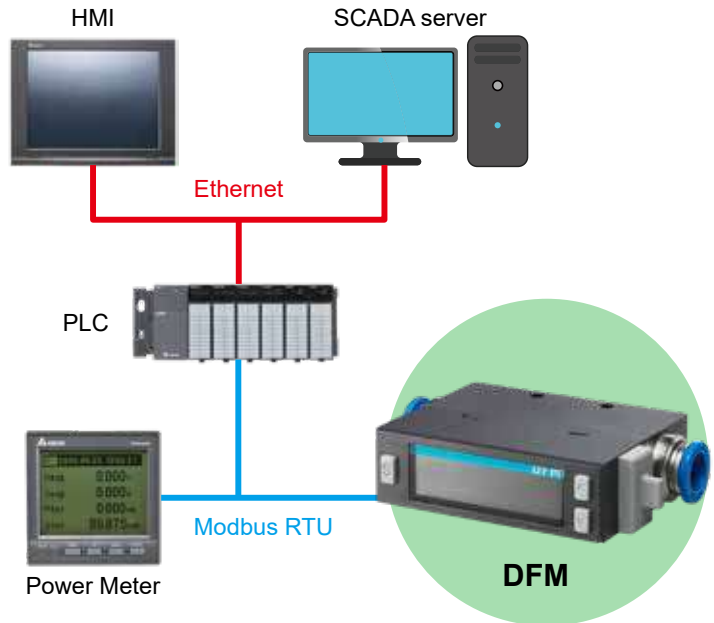
## High quality LCD display

Clear characters display for easy device status monitoring in all kinds of environments



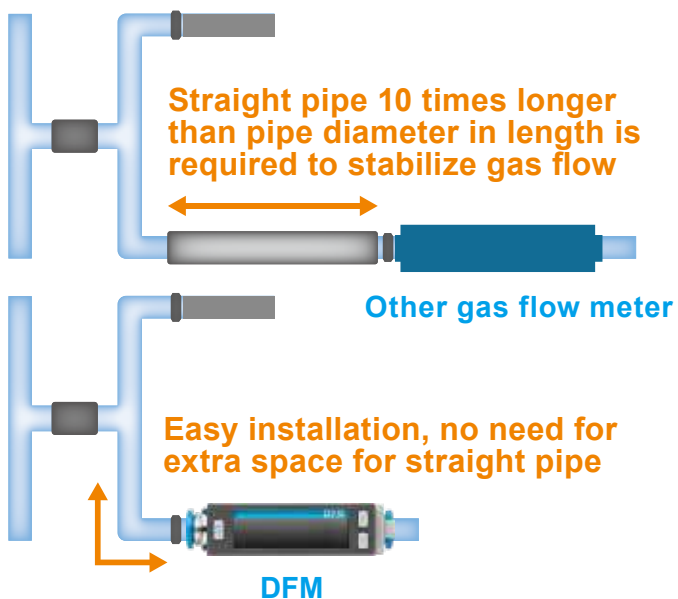
## Supports analog and digital output

Fast connection to obtain real-time data; analog voltage, analog current and digital RS-485 outputs available on different models



## Built-in stabilizer

Connecting with the pipe directly according to the requirements of the installation environment; no need to install 10 times further than the pipe diameter, providing flexibility and space-saving advantages

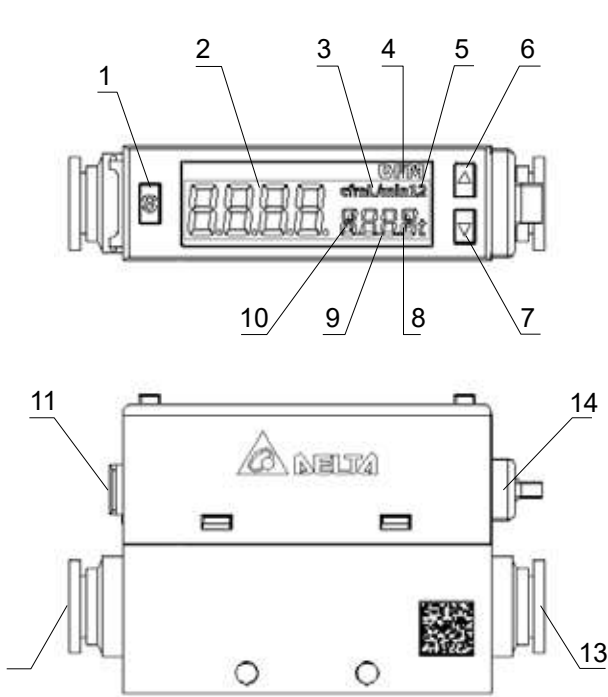


## Optional bracket for easy installation

Optional bracket for easy installation with screws



# Product Profile

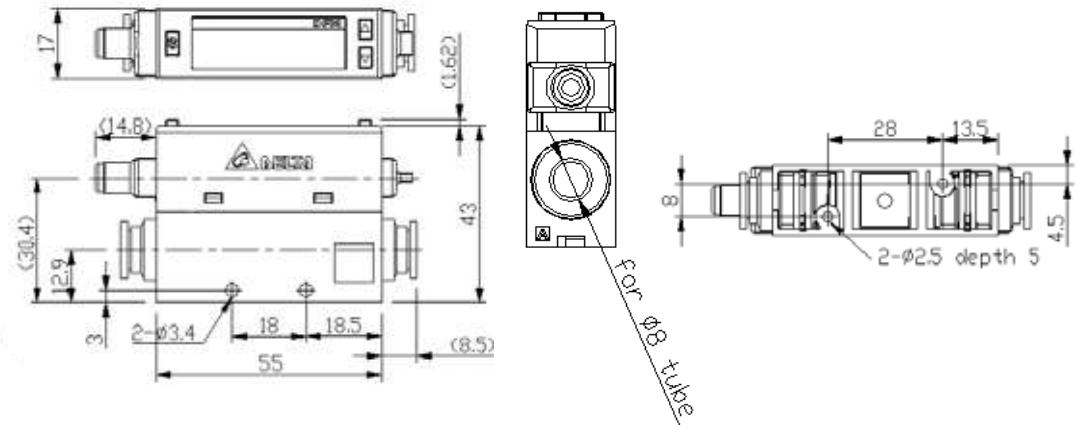


- ① Function setting bottom
- ② Main display (flow volume/parameters)
- ③ Gas flow unit
- ④ First digital on/off signal
- ⑤ Second digital on/off signal
- ⑥ Up
- ⑦ Down
- ⑧ Flow direction right
- ⑨ Secondary display (setting value / setting function)
- ⑩ Flow direction left
- ⑪ Power and I/O terminals
- ⑫ A side fast connection port
- ⑬ B side fast connection port
- ⑭ RS-485 output terminal protector (optional)

# Dimensions

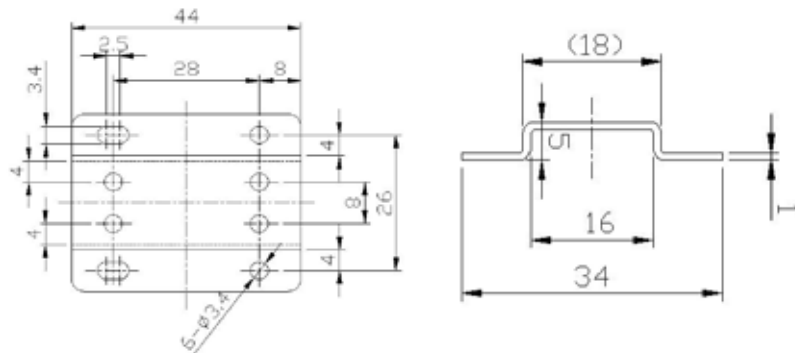
## Gas Flow Meter

Unit: mm



## Bracket (optional)

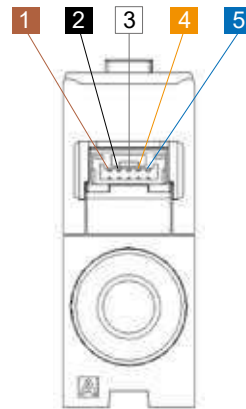
Unit: mm



# Connection Terminals

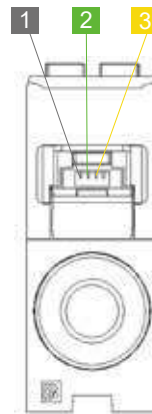
## Power and I/O terminals (A side)

- 1. Positive power input
- 2. OUT1, first digital output signal
- 3. OUT2/IN, second digital I/O signal
- 4. Analog output signal
- 5. Negative power input



## RS-485 output terminals (B side)

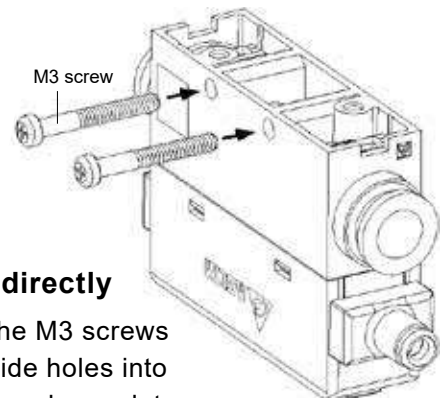
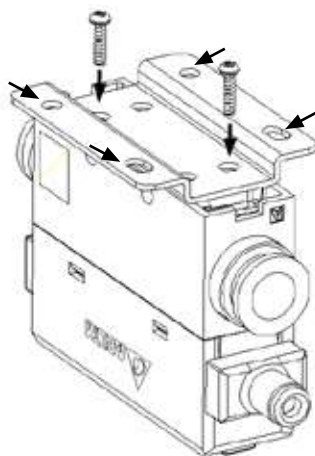
- 1. Anti-jamming grounding
- 2. RS-485 D+ terminal
- 3. RS-485 D- terminal



# Installation

## Screw with bracket

- 1. Use two screws to fix the bracket onto the DFM
- 2. Screw the bracket into position on the DFM to complete installation.






## Screw directly


Screw the M3 screws by the side holes into position and complete installation.

# Product Specifications

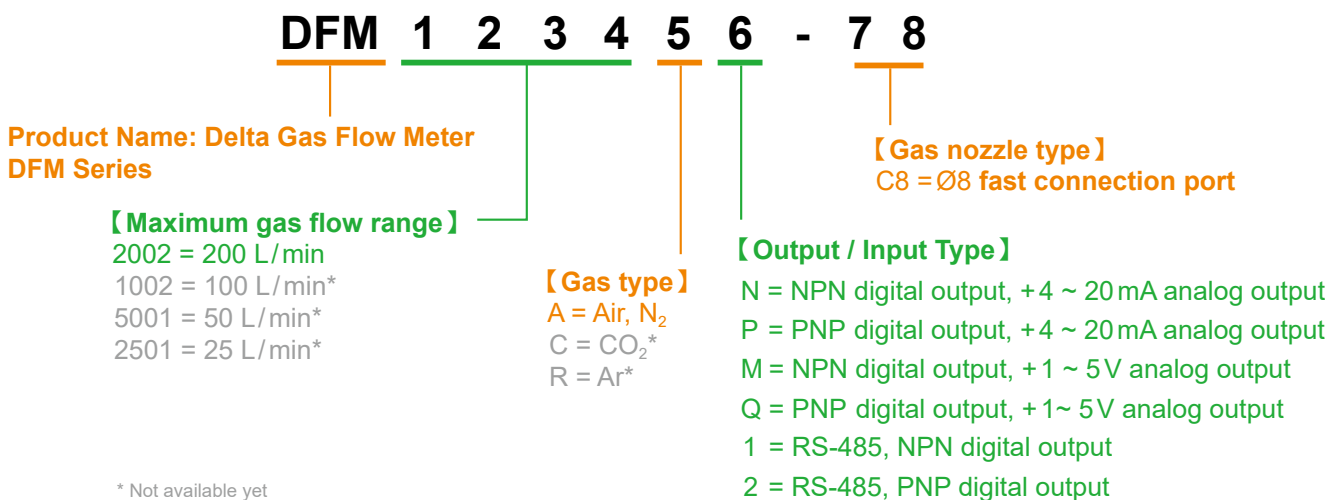
## Delta Gas Flow Meter

Product	Model	Model Name	Output type
	Voltage output model	DFM2002AM-C8	NPN
		DFM2002AQ-C8	PNP
	Current output model	DFM2002AN-C8	NPN
		DFM2002AP-C8	PNP
	Digital RS-485 model	DFM2002AI-C8	NPN
		DFM2002A2-C8	PNP

## Bracket (optional)

Product	Model	Model Name
	DFM bracket	DFM2002-BMKIT

## Ordering Information



## Technical Specifications

Input Power	Voltage range	24V <sub>DC</sub> ± 10 % non-isolation
	Power consumption	24V: - Voltage output and RS-485 models: max. 0.96 W - Current output model: max. 1.2 W
Gas Flow Measurement	Measurement range*2	2 ~ 200 L/min*1
	Measurable gas	Air, N <sub>2</sub> , Ar, CO <sub>2</sub> (varies in different models)
	Operation pressure	0 ~ 0.75 MPa
	Max. durable pressure	1 MPa
	Pressure-related inaccuracy	± 5 % F.S. (0 ~ 0.75 MPa) entire process The process is based on pressure 0.35 MPa. Pressure can also lead to inaccuracies other than measurement inaccuracy.*3
	Measurement accuracy	± 3 % F.S. entire process
	Temperature-related inaccuracy	± 5 % F.S. (0 °C ~ 50 °C) entire process The process is based on temperature 25 °C. Temperature can also lead to inaccuracies other than measurement inaccuracy
	Functions	Peak volume display/accumulated volume display/reverse display/zero adjustment/button lockup/energy-saving mode/percentage (analog output)/delay decision
Display	Flow volume display	Max. 4 digits for peak volume, 8 digits for accumulated volume
	Display modes	2 colors (red and green) display available based on different modes
Output	Output terminals	Built-in 2 NPN or PNP transistor digital outputs and 1 analog output (varies in different models)
	Input terminals	Built-in 1 digital output, shares terminal with 2 <sup>nd</sup> output
	Output form	NPN: max. durable pressure 30V/100mA, residual voltage 1.5V PNP: max. durable pressure 30V/100mA, residual voltage 1.5V
	Output (varies in different models)	Analog voltage: 1 ~ 5V, min. output load resistance 50 kΩ Linear inaccuracy < ± 3% entire process
		Analog current: 4 ~ 20 mA, max. output load resistance 300 Ω Linear inaccuracy < ± 3% entire process
		Digital RS-485
Response time	50 ms / 100 ms / 500 ms / 1 secs / 2 secs	
Gas Nozzle Size	C8	Fast connection port Ø8 (8 mm diameter pipe connectable)
Cable Specifications	Connector	Standard 2 m cable included
Operation Temperature	0 °C ~ 50 °C	
Storage Temperature	-10 °C ~ 60 °C	
Operation Humidity	35 % ~ 85 % RH (Non-condensed)	

\*1 Dry and clean gas without dirt and oil

\*2 Flow transfers into value below. Standard volume std (pre-setting): 20 °C, AP 101.3 kPa

\*3 Please ensure both sides are connected to pipe when operating. If one side is not connected, pressure will decrease and lead to inaccurate measurement

## Timer/Counter/Tachometer CTA Series

- ▶ 3-in-1 timer/counter/tachometer
- ▶ Mixed timer + counter function
- ▶ 6-digit LCD display
- ▶ Maximum speed of the counter: 10Kpps
- ▶ NPN or PNP input signals available
- ▶ Pre-scale function
- ▶ Counting types: 1-stage, 2-stage, batch, total, dual



## Ordering Information

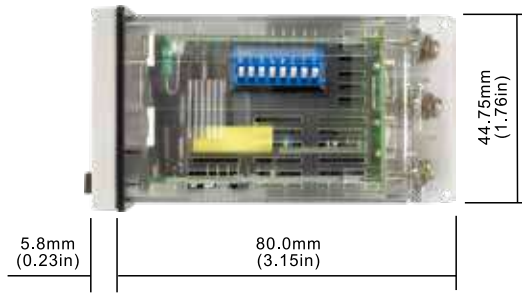
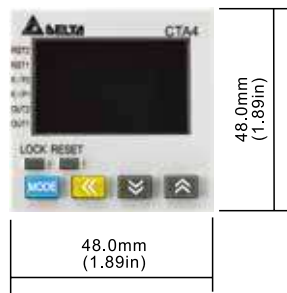
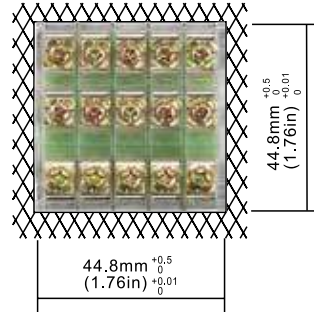
CTA 4 0 0 0 A  
 ① ② ③ ④ ⑤

① Panel size	4 : 48mm × 48mm
② Output 2	0 : Transistor ; 1 : Relay
③ Preset stage	0 : 2 stages
④ Communication	0 : None ; 1 : Communication
⑤ Power supply	A : AC100~240V ; D : DC24V

## Specifications

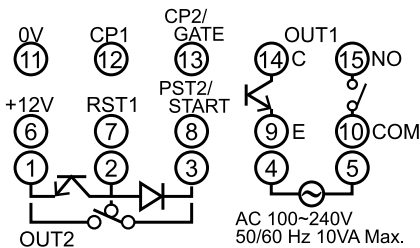
Power input	100~240V <sub>AC</sub> , 50/60Hz or 24V <sub>DC</sub> , isolated switching power supply
Input voltage range	85% to 110%, rated voltage
Power consumption	Less than 10VA
External power supply	12DC ± 10%, 100mA
Display	Double-line, 6-digit negative transmissive LCD display
Input signal	Non-voltage input (NPN): ON impedance max. 1K ohm ON residual voltage: max. 2V
	Voltage input (PNP): High level: 4.5 to 30V <sub>DC</sub> , Low level: 0 to 2V <sub>DC</sub>
Output 1	Relay: SPST max. 250V <sub>AC</sub> , 5A (resistance load)
	Transistor: NPN open collector. When 100mA/30V <sub>DC</sub> , residual voltage = max. 1.5V <sub>DC</sub>
Output 2	Relay: SPDT max. 250V <sub>AC</sub> , 5A (resistance load)
	Transistor: NPN open collector. When 100mA/30V <sub>DC</sub> , residual voltage = max. 1.5V <sub>DC</sub>
Dielectric strength	2000 V <sub>AC</sub> 50/60Hz for 1 minute
Vibration resistance	Without damage: 10 ~ 55Hz, amplitude = 0.75mm, 3 axes for 2 hours
Shock resistance	Without damage: drop 4 times, 300m/s <sup>2</sup> , 3 edges, 6 surfaces and 1 corner
Ambient temperature	0°C to 50°C
Storage temperature	-20°C to 65°C
Altitude	2000m or less
Ambient humidity	35% to 85% RH (non-condensing)
Pollution degree	2
Communication	RS-485

# Dimensions Unit : mm

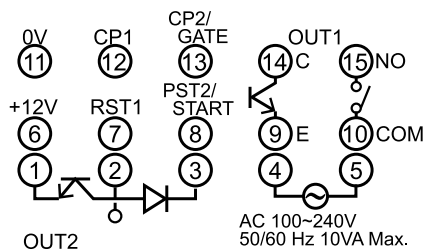


# Terminal Definition

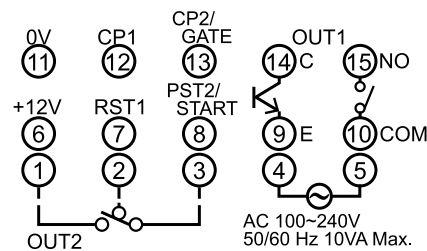
## CTA4 Series



Counter	Timer	Tachometer	Timer + Counter
CP1		CP1	CP1
CP2	Gate		Gate
Reset1	Reset1	Reset1	Reset1
Reset2	Start		Start



CTA4000 Series



CTA4100 Series



Smarter. Greener. Together.

## Industrial Automation Headquarters

### Delta Electronics, Inc.

Taoyuan Technology Center  
No.18, Xinglong Rd., Taoyuan District,  
Taoyuan City 33068, Taiwan  
TEL: 886-3-362-6301 / FAX: 886-3-371-6301

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No.182 Minyu Rd., Pudong Shanghai, P.R.C.  
Post code : 201209  
TEL: 86-21-6872-3988 / FAX: 86-21-6872-3996  
Customer Service: 400-820-9595

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2-1-14 Shibadaimon, Minato-ku  
Tokyo, Japan 105-0012  
TEL: 81-3-5733-1155 / FAX: 81-3-5733-1255

### Delta Electronics (Korea), Inc.

Seoul Office  
1511, 219, Gasan Digital 1-Ro., Geumcheon-gu,  
Seoul, 08501 South Korea  
TEL: 82-2-515-5305 / FAX: 82-2-515-5302

### Delta Energy Systems (Singapore) Pte Ltd.

4 Kaki Bukit Avenue 1, #05-04, Singapore 417939  
TEL: 65-6747-5155 / FAX: 65-6744-9228

### Delta Electronics (India) Pvt. Ltd.

Plot No.43, Sector 35, HSIIDC Gurgaon,  
PIN 122001, Haryana, India  
TEL: 91-124-4874900 / FAX : 91-124-4874945

### Delta Electronics (Thailand) PCL.

909 Soi 9, Moo 4, Bangpoo Industrial Estate (E.P.Z),  
Pattana 1 Rd., T.Phraksa, A.Muang,  
Samutprakarn 10280, Thailand  
TEL: 66-2709-2800 / FAX : 662-709-2827

### Delta Electronics (Australia) Pty Ltd.

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Research Triangle Park, NC 27709, U.S.A.  
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São Paulo Sales Office  
Rua Itapeva, 26 - 3º, andar Edifício Itapeva,  
One - Bela Vista 01332-000 - São Paulo - SP - Brazil  
TEL: 55-12-3932-2300 / FAX: 55-12-3932-237

### Delta Electronics International Mexico S.A. de C.V.

Mexico Office  
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