

# ARUSH SWITCHGEARS

1801, 2<sup>nd</sup> Floor Bhagirath Palace, Delhi  
9312211087/9811514724  
[enquiry@arushswitchgears.com](mailto:enquiry@arushswitchgears.com)  
[www.arushswitchgears.com](http://www.arushswitchgears.com)

**Numerous Brands**  
**One Supplier**

ARUSH



At *Arush Switchgears*, it is our always our constant endeavour to help our esteemed customers get the best on most competitive market prices.

Our strong alliance with the broad-list of brands helps us to always offer an extensive range of items, new product introductions from latest technologies as soon as they are available in the market. There are new products that are introduced on regular basis, from over a ocean of brands.

We'd really appreciate if you can share your product requirements for following brands & categories to get the best quotes from us.

## Our Range

Automation & Control Gears	Lighting
Batteries	Pneumatics
Cables & Wires	Power Supplies
Connectors	Relays
Displays & Optoelectronics	ESD Control & Clean Room
Electricals	Sockets & Circuit Breakers
Enclosure & Storage	Switches
Fuses	Test & Measurement
HVAC, Fan & Thermal Management	Tools

## Our Top Brands





Automation for a Changing World

# Delta Smart Sensors



[www.deltaww.com](http://www.deltaww.com)



**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 food and beverages, packaging, pharmaceuticals, electronic component equipment, rubber and plastics, warehouses, 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



### Fiber Amplifier

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Features  
Dimensions  
Specifications  
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

# Inductive Proximity Sensor M12 / M18 Series

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

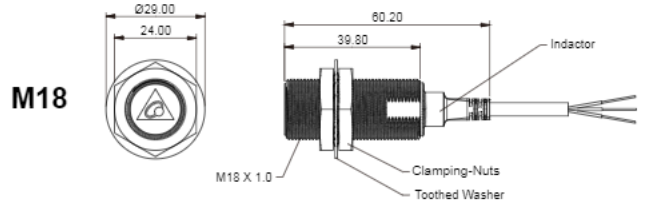
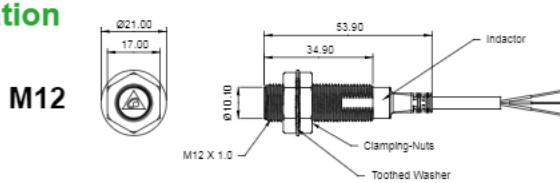


Appearance	Sensing Distance	NPN		PNP	
		NO	NC	NO	NC
M12 Isolation	2 mm	IS-E1202-BNOB2	IS-E1202-BNCB2	IS-E1202-BPOB2	IS-E1202-BPCB2
	4 mm	IS-E1204-BNOB2	IS-E1204-BNCB2	IS-E1204-BPOB2	IS-E1204-BPCB2
M12 Non-isolation	4 mm	IS-N1204-BNOB2	IS-N1204-BNCB2	IS-N1204-BPOB2	IS-N1204-BPCB2
	8 mm	IS-N1208-BNOB2	IS-N1208-BNCB2	IS-N1208-BPOB2	IS-N1208-BPCB2
M18 Isolation	5 mm	IS-E1805-BNOB2	IS-E1805-BNCB2	IS-E1805-BPOB2	IS-E1805-BPCB2
	8 mm	IS-E1808-BNOB2	IS-E1808-BNCB2	IS-E1808-BPOB2	IS-E1808-BPCB2
M18 Non-isolation	8 mm	IS-N1808-BNOB2	IS-N1808-BNCB2	IS-N1808-BPOB2	IS-N1808-BPCB2
	12 mm	IS-N1812-BNOB2	IS-N1812-BNCB2	IS-N1812-BPOB2	IS-N1812-BPCB2

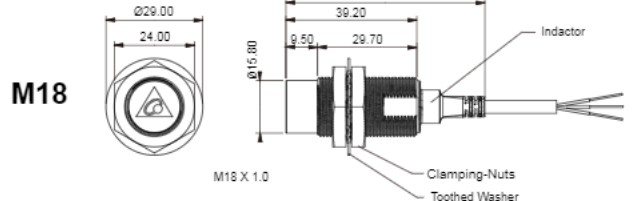
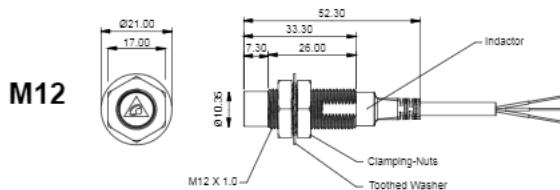
## Dimensions

Unit : mm

### • Isolation



### • Non-Isolation





# Specifications

Inductive Proximity Sensor		M12				M18			
Voltage Range		12 ~ 24 V <sub>DC</sub> ± 10%							
Shielded		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%
Different Travel		10% max. of sensing distance							
Detectable Object		Ferrous metal (the sensing distance decreases with no-ferrous metal)							
Standard Target		Iron, 12 × 12 × 1 mm		Iron, 24 × 24 × 1 mm	Iron, 18 × 18 × 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
Current Consumption		15mA max.							
Control Output	Load Current	200mA max.							
	Residual Voltage	2 V max. (load current: 200 mA, cable length: 2m)							
Indicators		Operation indicator (red)							
Operation Mode		NPN: NO / NC; PNP: NO / NC							
Protection Circuits		Protection against reverse power connection, output overcurrent, power supply surge, output surge							
Ambient Temperature		Operating: -25 ~ +70 °C / Storage: -40 ~ +80 °C (with no icing or condensation)							
Ambient Humidity		≤ 50% RH (at 70 °C)							
Temperature Influences		±10% max. of sensing distance at + 23°C in the temperature range of -25 ~ +70°C							
Enclosure Rating		IP67							
Vibration Resistance		10~55 Hz, 1.5mm, 3 axes for 2 hours							
Shock Resistance		Max. 1000 m/s <sup>2</sup> , 3 axes, 6 directions and 3 times in each							
Insulating Resistance		50 MΩ or more (500VDC) between current-carrying parts and case							
Withstand Voltage		1000 V <sub>AC</sub> 50 / 60Hz 1 min							
Cables		3 Wires 2M PVC cable M12 connector with 200mm cable							
Weight		65 g				85 g			
Materials	Case	Nickel coated brass							
	Sensing Surface	PBT							
	Clamping Nuts	Nickel coated brass							
	Toothed Washer	Zinc-plated iron							
Certifications		CE							

# Photoelectric Sensor PS-R Series

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



Appearance	Sensing Method	Sensing Distance	NPN	PNP / Push Pull	Connection
 Rectangular Type (Trimmer)	Small Spot Reflect	100 mm	PS-RS1-NS12	PS-RS1-PS12	2M cable (3 wires)
	Diffuse Reflect	300 mm	PS-RR3-NS12	PS-RR3-PS12	2M cable (3 wires)
		1 M	PS-RR9-NS12	PS-RR9-PS12	
	Retro-Reflect	4.2 M	PS-RL4-NS12	PS-RL4-PS12	2M cable (3 wires)
Through Beam	12 M	PS-RT9-NS12	PS-RT9-PS12	2M cable (3 wires)	
 Rectangular Type (TEACH)	Small Spot Reflect	100 mm	PS-RS1-NS22	PS-RS1-US22	2M cable (4 wires)
			PS-RS1-NS2B	PS-RS1-US2B	M8 Connector
	Diffuse Reflect	300 mm	PS-RR3-NS22	PS-RR3-US22	2M cable (4 wires)
			PS-RR3-NS2B	PS-RR3-US2B	M8 connector
		1 M	PS-RR9-NS22	PS-RR9-US22	2M cable (4 wires)
			PS-RR9-NS2B	PS-RR9-US2B	M8 connector
	Retro-Reflect	4.2 M	PS-RL4-NS22	PS-RL4-US22	2M cable (4 wires)
			PS-RL4-NS2B	PS-RL4-US2B	M8 connector
	Through Beam	5M (Fixed)	PS-RT5-NSB2	PS-RT5-USB2	2M cable (4 wires)
			PS-RT5-NSBB	PS-RT5-USB	M8 connector

## Dimensions

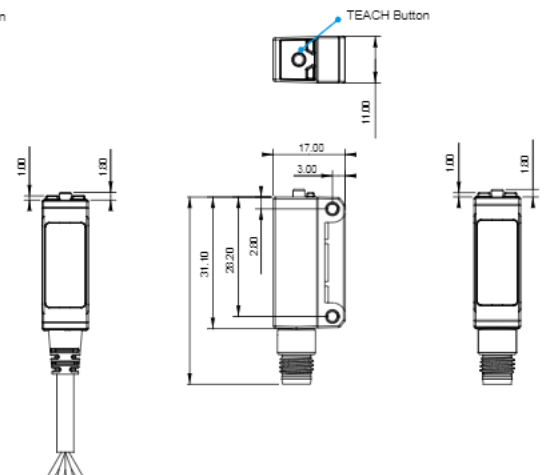
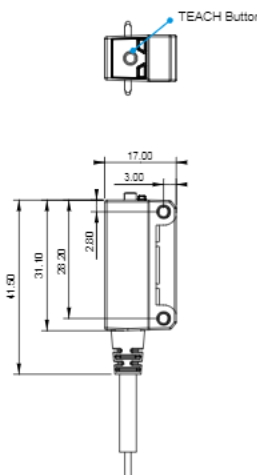
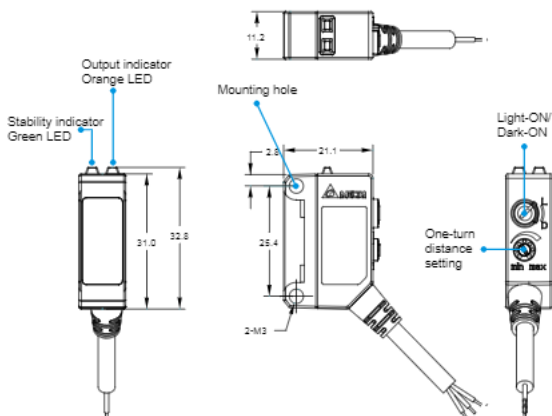
Unit : mm

### • Trimmer

### • TEACH

#### Cable Type



#### Connector Type



# Photoelectric Sensor PS-F / PS-L Series

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

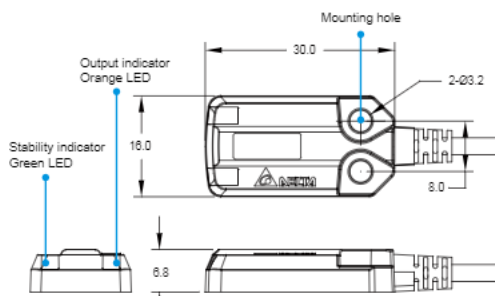


Appearance	Sensing Method	Sensing Distance (Fixed)	NPN		PNP / Push Pull		Connection
			Light on	Dark on	Light on	Dark on	
 Flat Type	Diffuse Reflect	5~50 mm	PS-FR2-NLB2	PS-FR2-NDB2	PS-FR2-PLB2	PS-FR2-PDB2	2M cable (3 wires)
	Diffuse Reflect-BGS	5~30 mm	PS-FB1-NLB2	PS-FB1-NDB2	PS-FB1-PLB2	PS-FB1-PDB2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

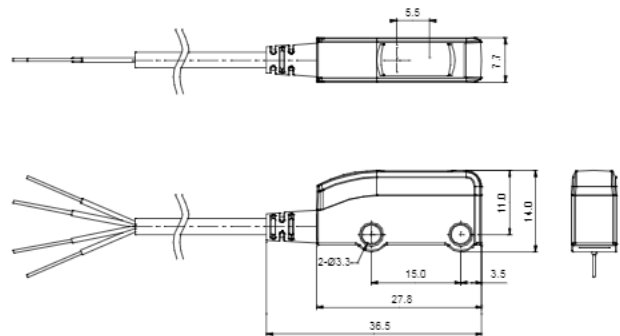
## Dimensions

Unit : mm

### Flat Type (PS-F)




### Lateral Type (PS-L)



# Photoelectric Sensor PS-M Series

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

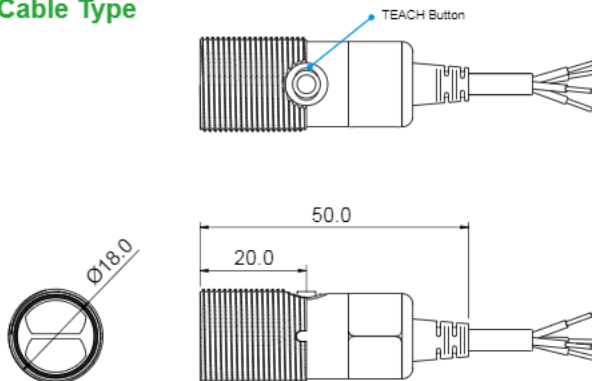


Appearance	Sensing Method	Sensing Distance	NPN	PNP / Push Pull	Connection
 Cylindrical Type (TEACH)	Diffuse Reflect	100 mm (Fixed)	PS-MR1-NSB2	PS-MR1-USB2	2M cable (4 wires)
			PS-MR1-NSBD	PS-MR1-USBD	M12 connector
		300 mm	PS-MR3-NS22	PS-MR3-US22	2M cable (4 wires)
			PS-MR3-NS2D	PS-MR3-US2D	M12 connector
		1 M	PS-MR9-NS22	PS-MR9-US22	2M cable (4 wires)
			PS-MR9-NS2D	PS-MR9-US2D	M12 connector
	Retro-Reflect	4.2 M	PS-ML4-NS22	PS-ML4-US22	2M cable (4 wires)
			PS-ML4-NS2D	PS-ML4-US2D	M12 connector
	Through Beam	5 M (Fixed)	PS-MT5-NSB2	PS-MT5-USB2	2M cable (4 wires)
			PS-MT5-NSBD	PS-MT5-USBD	M12 connector

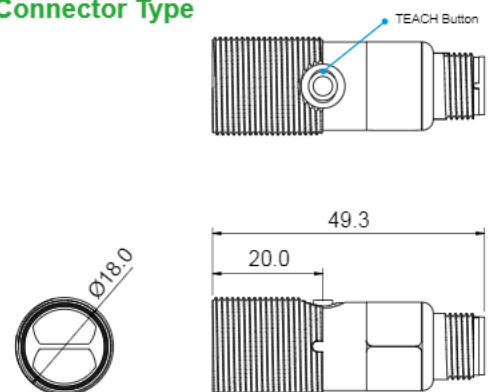
## Dimensions

Unit : mm

### • Cable Type

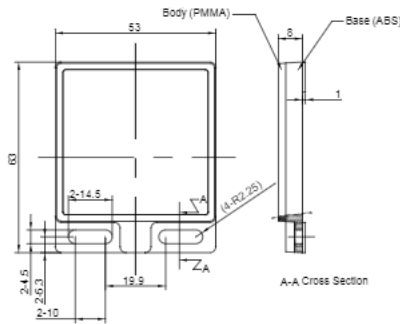


### • Connector Type

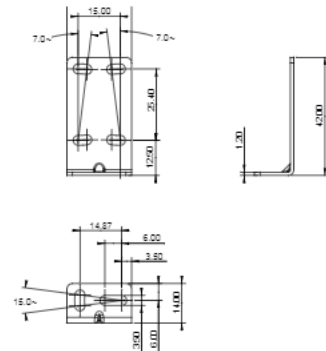


# Accessories

- Reflector

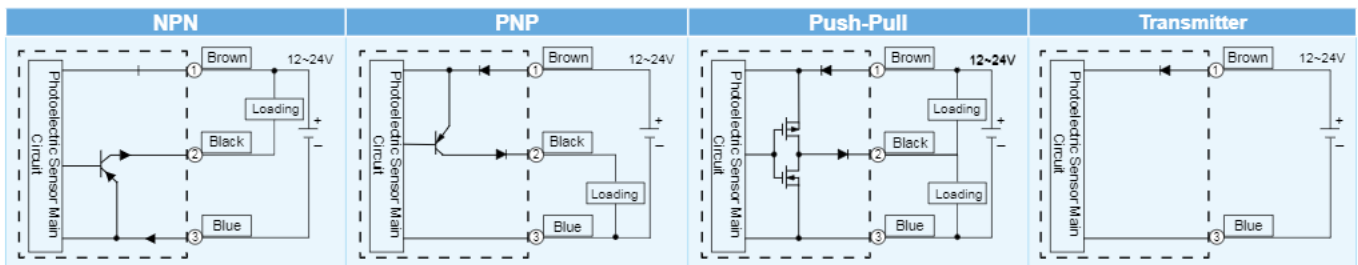


- Bracket (Rectangular type)

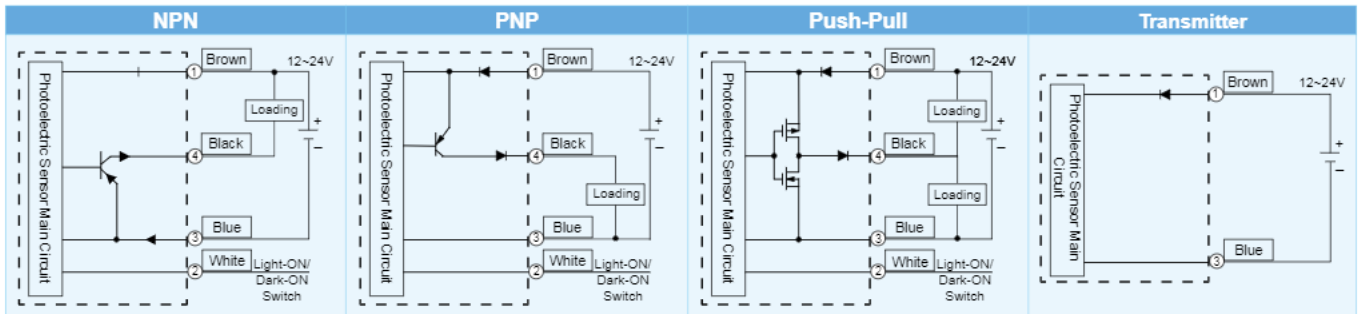


# Input / Output Circuits

- 3 Wires




- 4 Wires





# Common Specifications


Photoelectric Sensor	
Voltage Range	12 ~ 24 VDC ± 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 lux 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 (500VDC)
Withstand Voltage	1,000 VAC 50 / 60 Hz 1min


# Photoelectric Sensor Specifications

Appearance		Sensing Method				
	Sensing Method	Small Spot Reflect		Diffuse Reflect		
	Model	2M Cable	PS-RS1-NS12	PS-RS1-PS12	PS-RR3-NS12	PS-RR3-PS12
	Sensing Distance	100 mm		300 mm		
	Operation Output	NPN	PNP	NPN	PNP	
	Light Source	Red LED (630nm)				
	Power Consumption	20 mA MAX				
	Material					
	Cables	3 Wires 2M PVC Cable (Through)				
	Dimension					
	Weight					

Appearance		Sensing Method				
	Sensing Method	Small Spot Reflect		Diffuse Reflect		
	Model	2M Cable	PS-RS1-NS22	PS-RS1-US22	PS-RR3-NS22	PS-RR3-US22
		M8 Connector	PS-RS1-NS2B	PS-RS1-US2B	PS-RR3-NS2B	PS-RR3-US2B
	Sensing Distance	100 mm		300 mm		
	Operation Output	NPN	PUSH-PULL	NPN	PUSH-PULL	
	Light Source	Red LED (630nm)				
	Power Consumption	20 mA MAX				
	Material					
	Cables	4 Wires 2M PVC Cable (Through)				
	Dimension	Cable Type:				

Appearance		Sensing Method				
	Sensing Method	Diffuse Reflect		Diffuse Reflect - Background Suppression		
	Model	2M Cable	PS-FR2-NLB2	PS-FR2-NDB2	PS-FR2-PLB2	PS-FR2-PDB2
	Sensing Distance	5 ~ 50 mm		5 ~ 30 mm		
	Operation Output	NPN	PNP	NPN	PNP	
	Light Source	Light on	Dark on	Light on	Dark on	
	Power Consumption	20 mA MAX		30 mA MAX		
	Material					
	Cables	3 Wires 2M PVC Cable (Through)				
	Dimension					
	Weight					

Appearance		Sensing Method	
	Sensing Method	Diffuse Reflect	
	Model	2M Cable (4 Wires)	PS-LR2-NSB2
	Sensing Distance	5 ~ 50 mm	
	Operation Output	NPN	PUSH-PULL
	Light Source	Light on / Dark on	
	Power Consumption	20 mA MAX	
	Material		
	Cables	3 Wires 2M PVC Cable (Through)	
	Dimension		
	Weight		

Appearance		Sensing Method				
	Sensing Method	Diffuse Reflect				
	Model	2M Cable	PS-MR1-NSB2	PS-MR1-USB2	PS-MR3-NS22	PS-MR3-US22
		M12 Connector	PS-MR1-NSBD	PS-MR1-USBD	PS-MR3-NS2D	PS-MR3-US2D
	Sensing Distance	100 mm		300 mm		
	Operation Output	NPN	PUSH-PULL	NPN	PUSH-PULL	
	Light Source	Light on / Dark on				
	Power Consumption	20 mA MAX				
	Material					
	Cables	4 Wires 2M PVC Cable (Through)				
	Dimension	M18, Cab				

Rectangular Type (Trimmer) PS-R											
PS-RR9-NS12		PS-RR9-PS12		Retro-Reflect			Through Beam				
PS-RR9-NS12		PS-RR9-PS12		PS-RL4-NS12		PS-RL4-PS12		PS-RT9-NS12		PS-RT9-PS12	
1M				4.2M			5M				
NPN		PNP		NPN		PNP		NPN		PNP	
Light on / Dark on				Light on / Dark on			Light on / Dark on				
Infrared LED (850nm)							Red LED (630nm)				
							Transmitter: 6 mA Max; Receiver: 14 mA Max				
Lens: PC; Case: PBT; Wire: PC											
Through Beam: Transmitter- 2 Wires 2M PVC Cable), M8 Connector (200mm Cable)											
32.8 × 11.2 × 21.1 mm											
55g											
Rectangular Type (TEACH) PS-R											
PS-RR9-NS22		PS-RR9-US22		Retro-Reflect			Through Beam				
PS-RR9-NS2B		PS-RR9-US2B		PS-RL4-NS2B		PS-RL4-US2B		PS-RT5-NSB2		PS-RT5-USB2	
PS-RR9-NS2B		PS-RR9-US2B		PS-RL4-NS2B		PS-RL4-US2B		PS-RT5-NSBB		PS-RT5-USBB	
1M				4.2M			5M				
NPN		PUSH-PULL		NPN		PUSH-PULL		NPN		PUSH-PULL	
Light on / Dark on				Light on / Dark on			Light on / Dark on				
Infrared LED (850nm)				Red LED (630nm)			Infrared LED (850nm)				
							Transmitter: 6 mA Max; Receiver: 14 mA Max				
Lens: PC; Case: PBT; Wire: PC											
Through Beam: Transmitter- 2 Wires 2M PVC Cable), M8 Connector											
32.8 × 11.2 × 17 mm; Connector Type: 32.8 × 11.2 × 17 mm											
Cable Type: 67g; Connector Type: 19g											
Flat Type (Fixed)											
PS-FB1-PDB2		Retro-Reflect			Through Beam						
PS-FB1-PDB2		PS-FL3-NLB2	PS-FL3-NDB2	PS-FL3-PLB2	PS-FL3-PDB2	PS-FT3-NLB2		PS-FT3-NDB2		PS-FT3-PLB2	PS-FT3-PDB2
		1M			1M						
		NPN		PNP		NPN		PNP			
Dark on		Light on	Dark on	Light on	Dark on	Light on	Dark on	Light on	Dark on		
		Red LED (630nm)									
		20 mA MAX			Transmitter: 6 mA Max; Receiver: 14 mA Max						
Lens: PC; Case: PBT; Wire: PC											
Through Beam: Transmitter- 2 Wires 2M PVC Cable), M8 Connector (200mm Cable)											
16 × 30 × 6.8 mm											
25g											
Lateral Type (Fixed)											
Retro-Reflect				Through Beam							
PS-LL3-NSB2		PS-LL3-USB2			PS-LT3-NSB2			PS-LT3-USB2			
		1M			1M						
NPN		PUSH-PULL			NPN			PUSH-PULL			
Light on / Dark on					Light on / Dark on						
Red LED (630nm)											
					Transmitter: 6 mA Max; Receiver: 14 mA Max						
Lens: PC; Case: PBT; Wire: PC											
Through Beam: Transmitter- 2 Wires 2M PVC Cable), M8 Connector (200mm Cable)											
14 × 27 × 7 mm											
26g											
Cylindrical Type (TEACH)											
PS-MR9-NS22		PS-MR9-US22		Retro-Reflect			Through Beam				
PS-MR9-NS2D		PS-MR9-US2D		PS-ML4-NS2D		PS-ML4-US2D		PS-MT5-NSB2		PS-MT5-USB2	
PS-MR9-NS2D		PS-MR9-US2D		PS-ML4-NS2D		PS-ML4-US2D		PS-MT5-NSBD		PS-MT5-USBD	
1M				4.2M			5M				
NPN		PUSH-PULL		NPN		PUSH-PULL		NPN		PUSH-PULL	
Light on / Dark on				Light on / Dark on			Light on / Dark on				
Infrared LED (850nm)											
							Transmitter: 6 mA Max; Receiver: 14 mA Max				
Lens: PC; Case: PBT; Wire: PC											
Through Beam: Transmitter- 2 Wires 2M PVC Cable), M12 Connector											
Cable Type (Length): 50 mm; Connector Type (Length): 50 mm											
Cable Type: 67g; Connector Type: 19g											

## Fiber Amplifier FA Series

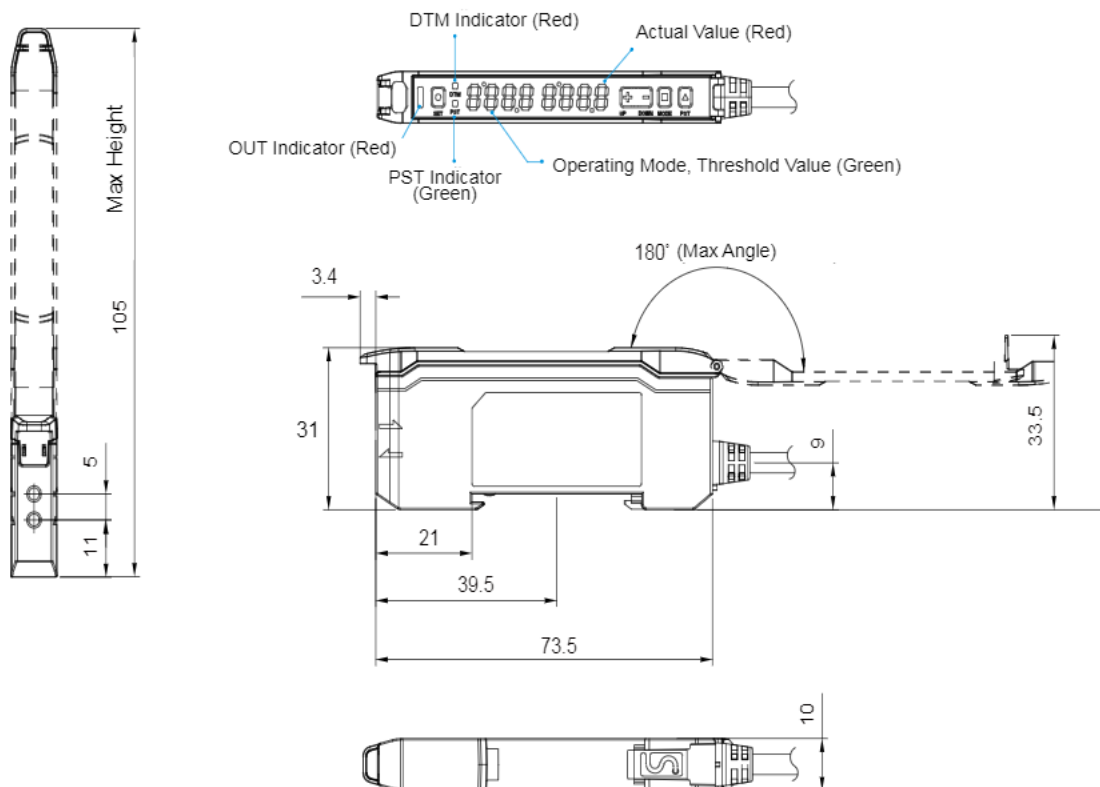
- ▶ Concise and slim, easy to assemble
- ▶ Dual display, visualization for setting
- ▶ SET button makes operation easy
- ▶ CE certification



Appearance	Display	Model Name	Output 1	Output 2 / Input	Connection
Standard	Dual (7-Segments x 2)	FA-HS21-R2	1	1	2M cable (4 wires)
	Dual (7-Segments x 2)	FA-HS1B-R2	1	0	2M cable (3 wires)

## Dimensions

Unit : mm

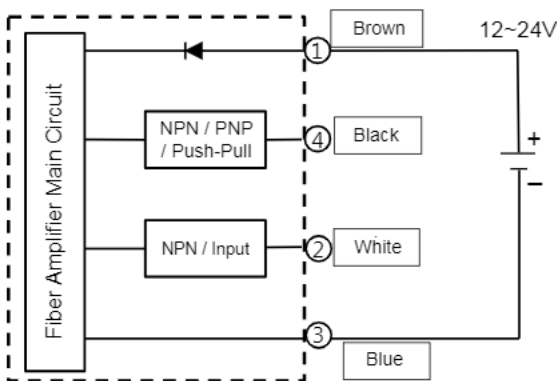


# Specifications

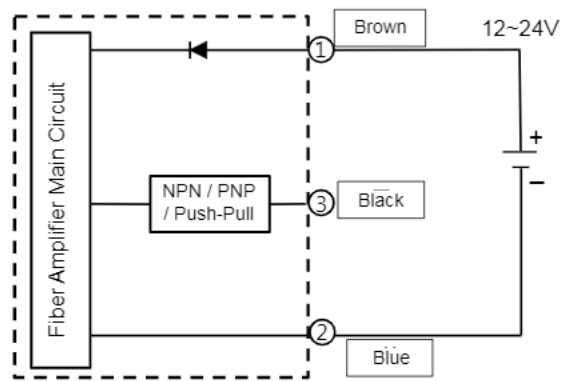
Fiber Amplifier	
Appearance	Standard
Display	7-Segment (dual)
Model Name	FA-HS21-R2
Output 1	1
Output 2/ Input	1
Connection Method	Cable 2M (4 wires)
Light Source	Red LED
Voltage Range	12 ~ 24VDC ± 10%
Output Selection	Light on / Dark on (system-selectable)
Response Time	50 us (high speed), 200 us (normal speed)
Display Indicator	Sub digital display: green, Main digital display: red Display direction: switchable between normal and reversed
Indicator	Output: red, PST: green, DTM: red
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	IP50
Ambient Light Resistance	5,000 lux 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 (500VDC)
Withstand Voltage	1,000 VAC 50 / 60 Hz 1min
Materials	Case: PC, Cover: PC, Angle of cover: 180°
Cable	4 wires 2M PVC cable
Dimensions	73.5 mm x 10 mm x 33.5 mm
Certification	CE

## Input / Output Circuits

- 4 Wires



- 3 Wires



# Laser Displacement LD Series

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

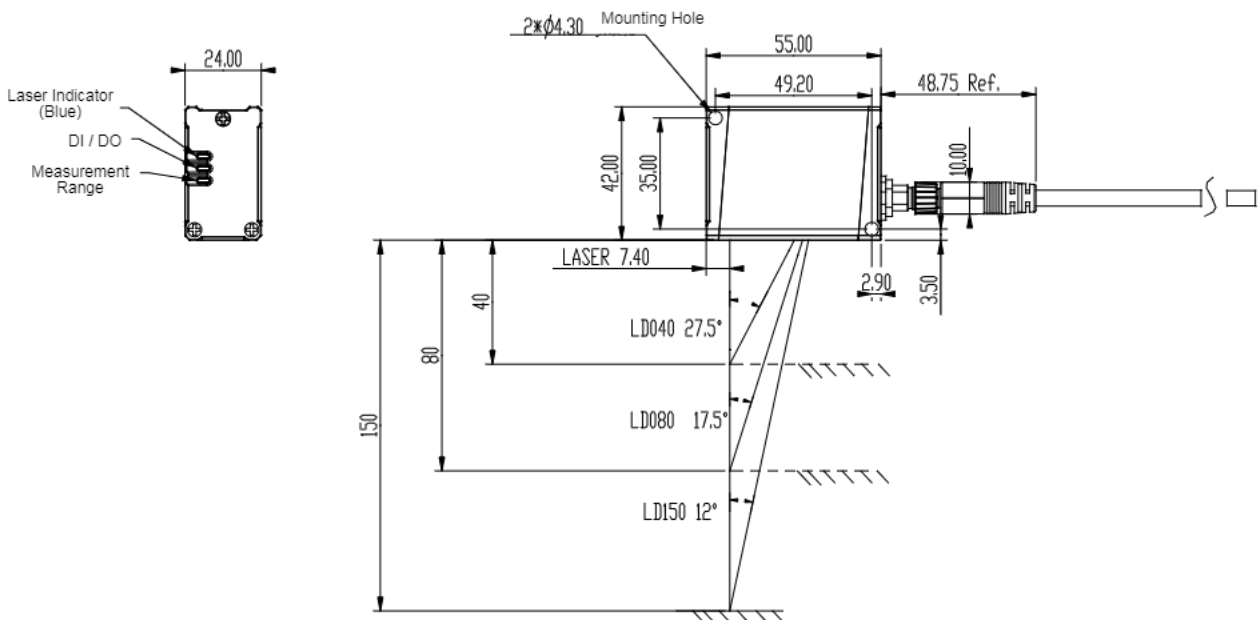


Model Name	Sensing Distance	Repeatability	Interface
LD-040N	30 to 50 mm	2 μm*	Digital I/O / MODBUS Communication (RS-485)
LD-080N	55 to 105 mm	5 μm	Digital I/O / MODBUS Communication (RS-485)
LD-150N	90 to 210 mm	15 μm	Digital I/O / MODBUS Communication (RS-485)

\* 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 RS-485	Digital IO / MODBUS RS-485	Digital IO / MODBUS RS-485
	RS-485		
Light Source	Laser CLASS 2		
Input Voltage	12 ~ 24V <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	0 °C ~ 50°C		
Storage Temperature	-20 °C ~ 75 °C		
Ambient Humidity	30 ~ 85%		
Enclosure Rating	IP67		
Ambient Light Resistance	5,000 lux or less		
Vibration Resistance	10 ~ 55 Hz, 1.5 mm, 3 axes for 2 hours		
Insulating Resistance	20 MΩ or more (500V <sub>DC</sub> )		
Withstand Voltage	1,000 V <sub>AC</sub> 50 / 60 Hz 1min		
Certifications	CE		
Materials	Optical window: Glass; Case: Aluminium; Cable: PVC		
Cables	M8 Connector (8 Pin)		
Dimensions	55 × 42 × 24mm		
Weight	113 g		

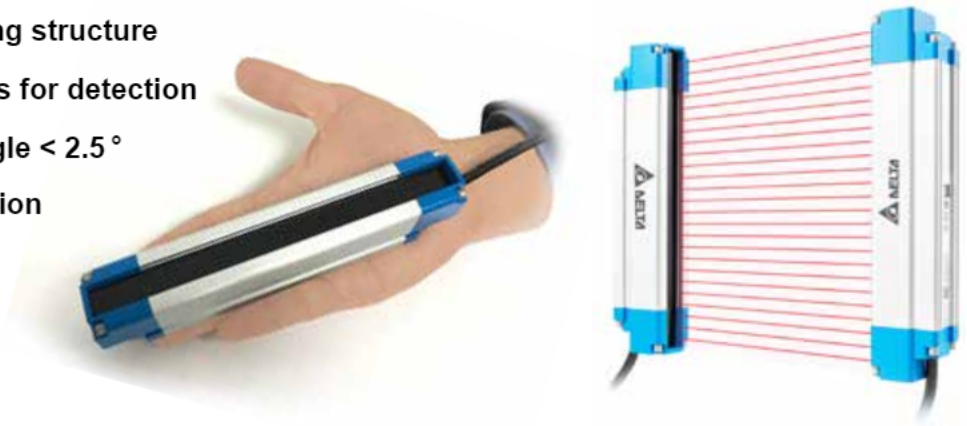
\* For an average count of 100. The value is ±2 μm for an average count of 100 (Sensing objective: white ceramic substrate).

## Input / Output Circuits

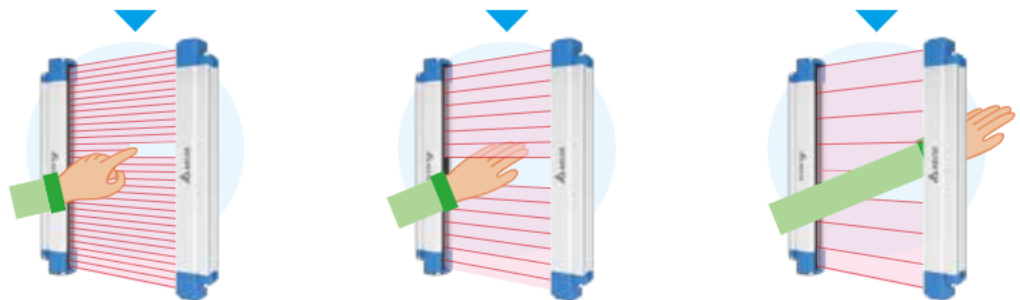
	Pin	Color	Definition
	1	Brown	+24V
2	Blue	PGND	
3	Pink	DI	
4	White	DO	
5	Red	485-D+	
6	Yellow	485-D-	
7	Grey	485-GND	
8	Green	FG	

## Area Sensor AS Series

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

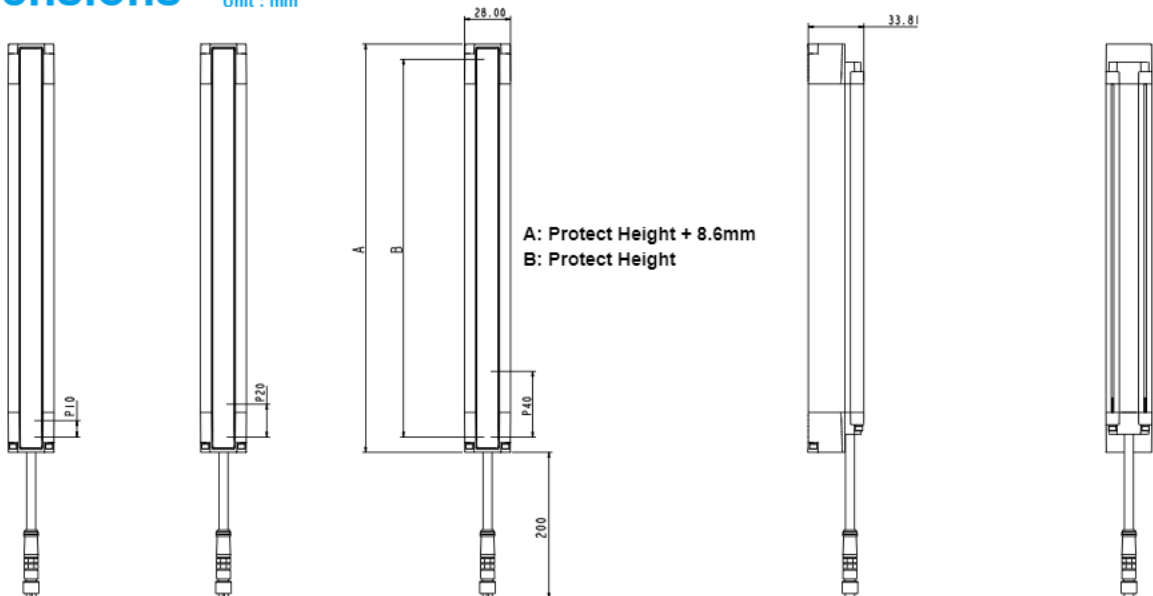


Pitch	10 mm	20 mm	40 mm
Channels	24 ~ 128	8 ~ 96	4 ~ 36
Protect Height	240 to 1,280 mm	160 to 1,920 mm	160 to 1,440 mm
Sensing Distance	0.1 m ~ 5 m	0.1 m ~ 10 m	0.1 m ~ 10 m
Model Name	AS - BF □ □ □	AS - BH □ □ □	AS - BA □ □ □

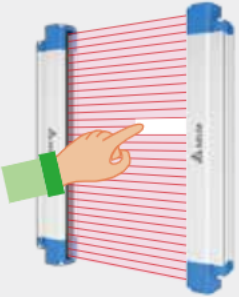



## Dimensions

Unit : mm

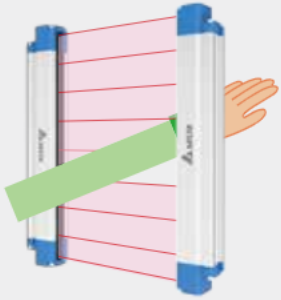


## Specifications

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

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

# Specifications

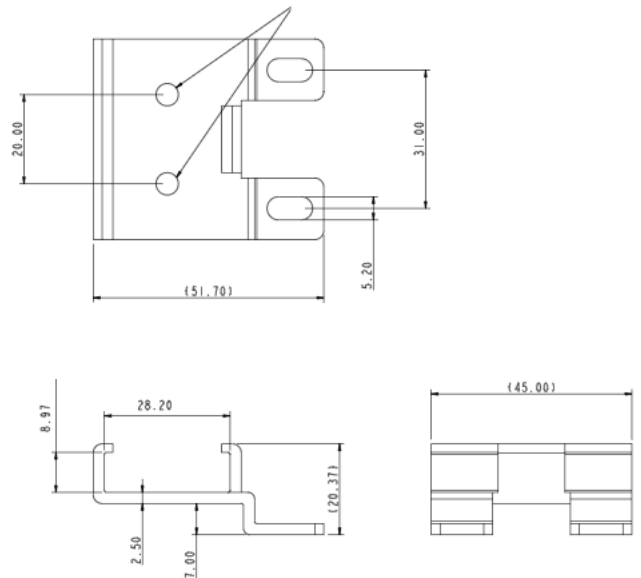
Arm Detection (Pitch: 40 mm)				
	Model Name	Channels	Protect Height (B)	Sensing Distance
	AS-BA004	4	160	0.1M ~ 10M
	AS-BA006	6	240	
	AS-BA008	8	320	
	AS-BA010	10	400	
	AS-BA012	12	480	
	AS-BA014	14	560	
	AS-BA016	16	640	
	AS-BA018	18	720	
	AS-BA020	20	800	
	AS-BA022	22	880	
	AS-BA024	24	960	
	AS-BA026	26	1,040	
	AS-BA028	28	1,120	
	AS-BA030	30	1,200	
	AS-BA032	32	1,280	
AS-BA034	34	1,360		
AS-BA036	36	1,440		

## Electrical Specifications

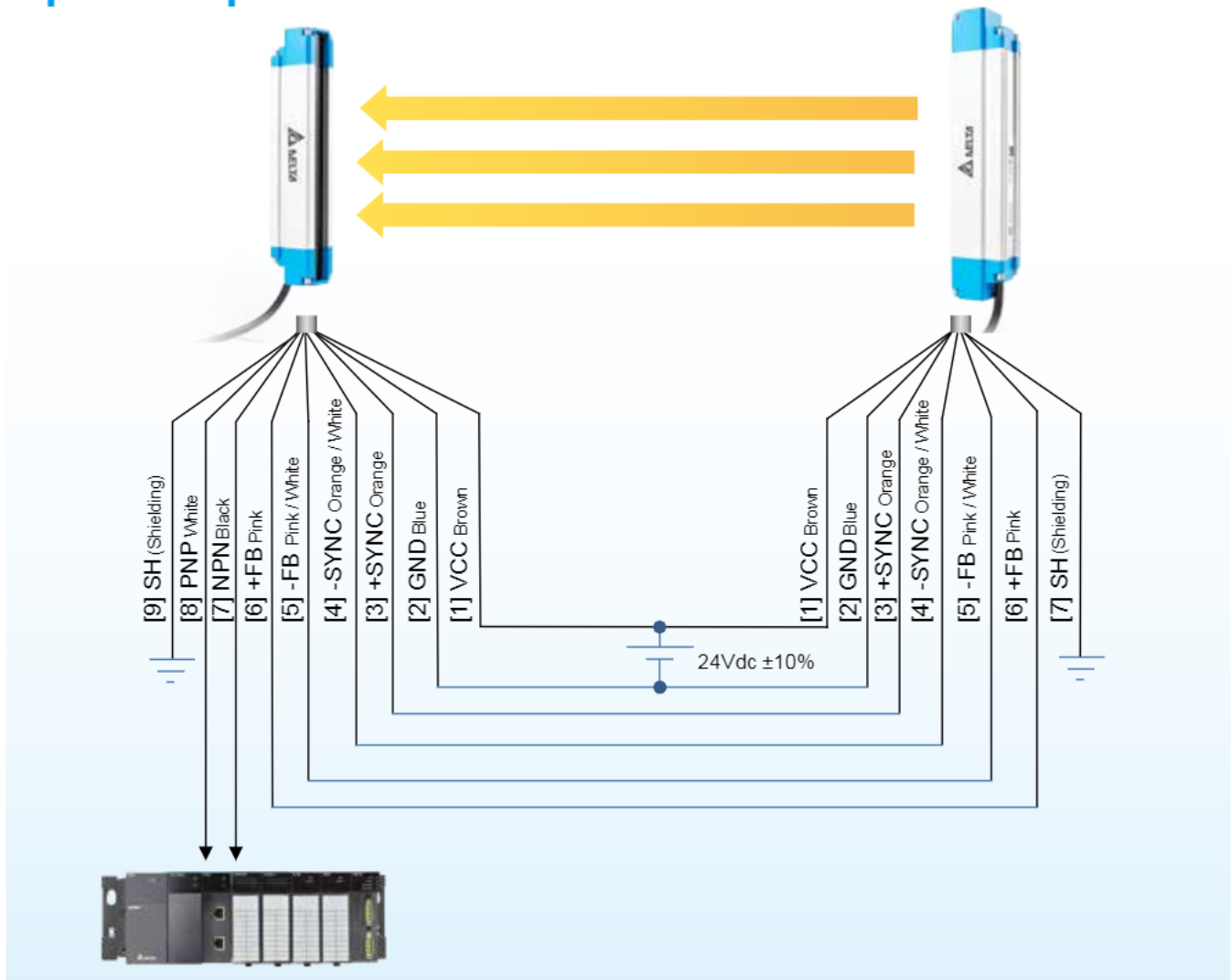
Area Sensor	
Voltage Range	24VDC ± 10%
Light Source	Infrared LED (850nm)
Indicator	<ul style="list-style-type: none"> <li>■ Upper / Lower indicator (blue light): when the top and bottom are aligned</li> <li>■ Green light: all channel are aligned</li> <li>■ Red light: any channel is mis-aligned or blocked</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 lux 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 VDC)
Withstand Voltage	1,000 VAC 50 / 60 Hz 1min
Material	Case: Aluminum, Cover lens: PMMA, Upper / lower case: Zinc alloy
Cables	M12 connector, 200mm PVC cable
Certifications	CE

## Brackets

Unit : mm



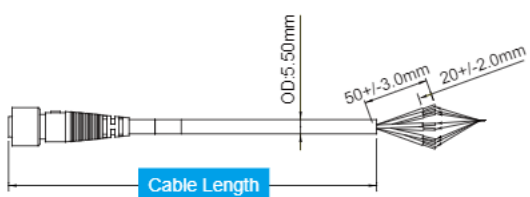
## Input / Output Circuits



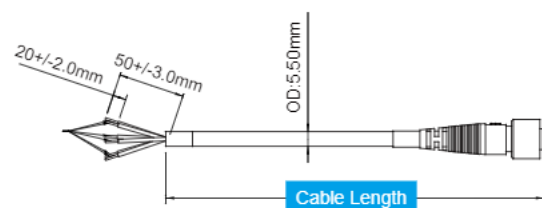
## Dimensions

<b>Cable Length</b>	3.5 m
	5 m
	10 m

### • Transmitter



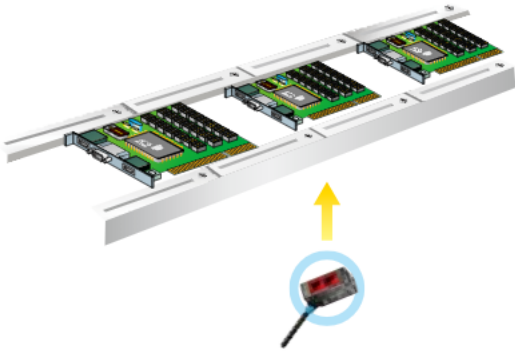
### • Receiver



# Applications

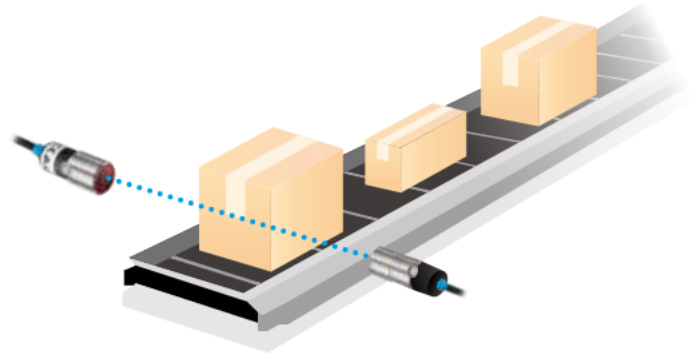
## Electronics Industry

Detects PCB boards



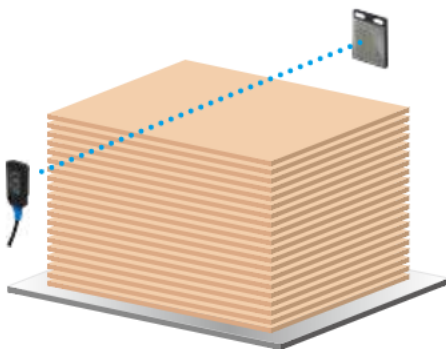
## Warehouse / Logistics

Detects cartons



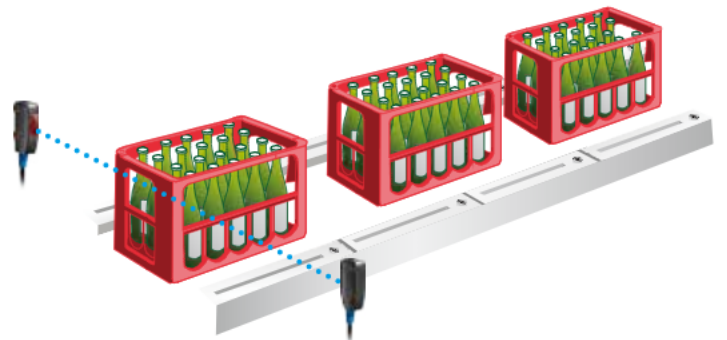
## Wood Industry

Detects wood stacking



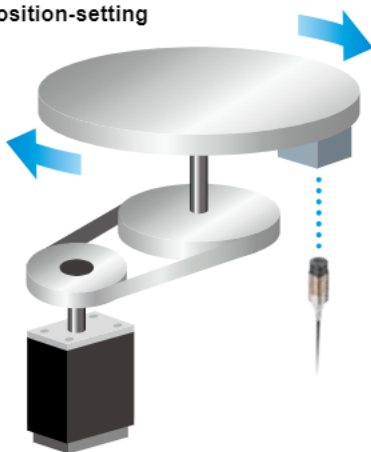
## Food and Beverages

Detects boxes of beverages



## Equipment & Machines

Sensor for position-setting



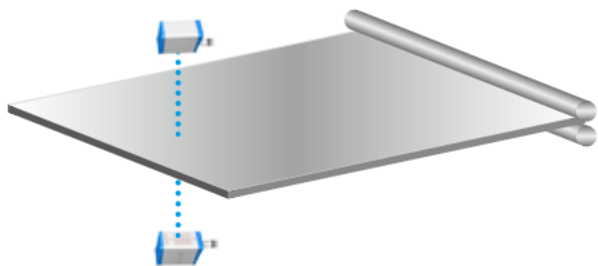
## Electronics Industry

Detects IC components



### Wood and Steel industry

Measures the thickness of wood or steel



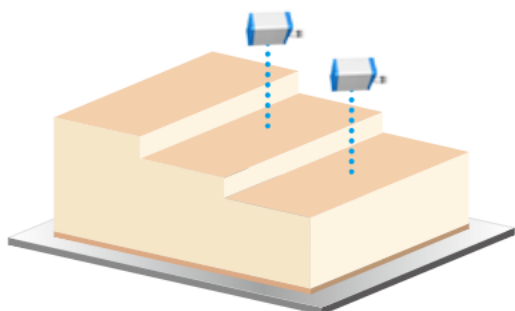
### Electronics Industry

Robot arm's reproducibility test



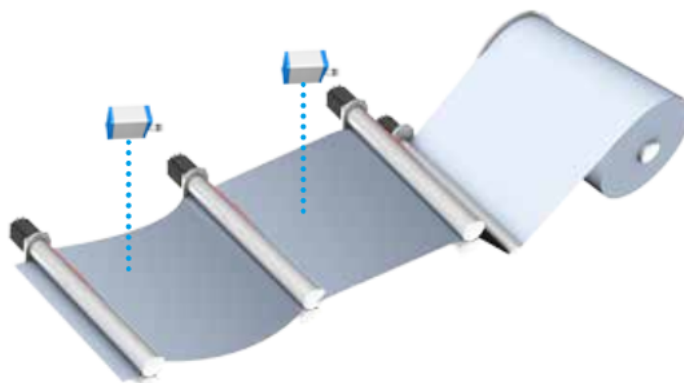
### Electronics Industry

Measures the depth/ thickness of product



### Textile Industry

Measures the hoop slack



### Safety

Marks a dangerous zone and protects operators



### Safety

Marks a dangerous zone and protects operators



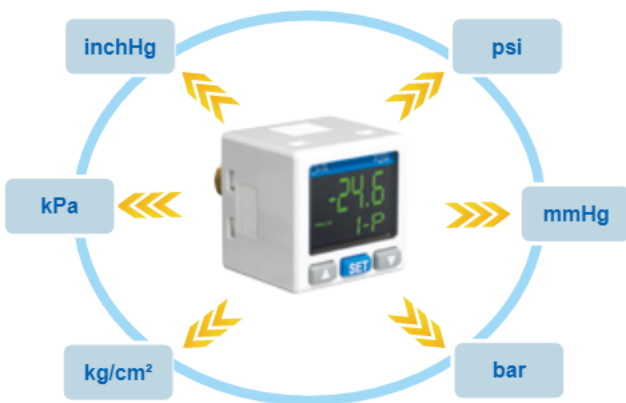
## Multifunction Pressure Sensor DPA Series

- ▶ Energy-saving mode
- ▶ Various unit conversion
- ▶ Analog output function
- ▶ Various output modes
- ▶ 10 sets of output response time setup
- ▶ 3 sets of color display
- ▶ 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 within normal range or exceeds the allowed range. The display's color is orange when in parameter setup mode. This makes it easy for reading and reduces operation errors.

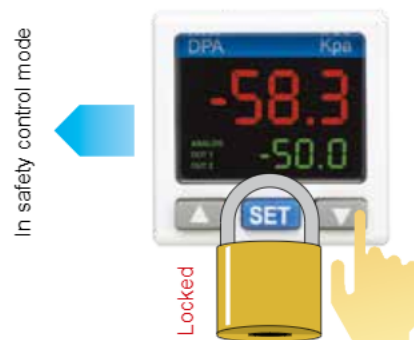


Color for upper / lower limit display (green / red)

Parameter set up (orange)

### Safety Control Mode

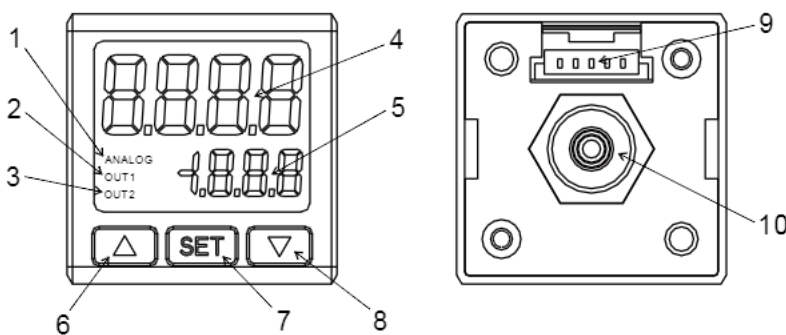
The safety control mode prevents operators from carelessly touching relevant parameters and affecting the operation and production of the equipment.



# Specifications

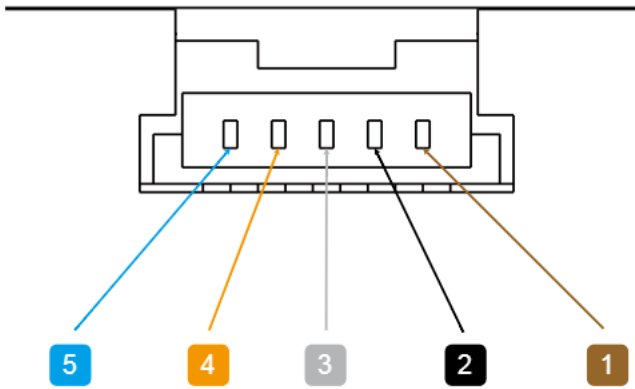
<b>Power Supply</b>	Voltage range	12 ~ 24V <sub>DC</sub> ± 10% no isolation
	Power consumption	40mA Max.; current output type 60mA Max.
<b>Pressure Measurement</b>	Pressure type	Non-corrosive gas, gauge type
	Measurable range	DPA01: -100kPa ~ 100kPa DPA10: -100kPa ~ 1,000kPa
	Max. durable pressure	DPA01: 200kPa DPA10: 1,500kPa
	Measurement accuracy	± 3% entire process
	Temperature inaccuracy	± 2% entire process
<b>Display</b>	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	250ms, 500ms, 1,000ms
<b>Output</b>	Number of outputs	Built-in 2 NPN or PNP transistor digital outputs and 1 analog output
	Transistor output	NPN: Max. durable pressure 30V / 100mA, residual voltage 1.5V PNP: Max. durable pressure 30V / 100mA, residual voltage 1.5V
	Analog output	1 ~ 5V: Min. output load resistance 1,000Ω 4 ~ 20mA: Max. output load resistance 400Ω; linear inaccuracy < 2% entire process
	Response time	2ms, 4ms, 10ms, 30ms, 50ms, 100ms, 250ms, 500ms, 1,000ms, 5,000ms
	Output inaccuracy	Linear inaccuracy: < ± 2% entire process
<b>Pore Size</b>	P	Outer diameter PT1/8, inner diameter M5
	N	Outer diameter NPT1/8, inner diameter M5
	R	Outer diameter Rc1/8, inner diameter M5
<b>Shock Resistance</b>	10 ~ 550Hz, 100mm, 3 axes for 2 hours	
<b>Vibration Resistance</b>	Max. 100m/s <sup>2</sup> , 3 axes 6 directions, 3 times each	
<b>Operating Ambient Temperature</b>	0°C ~ +50°C	
<b>Storage Temperature</b>	-20°C ~ +65°C	
<b>Altitude</b>	< 2,000m	
<b>Operating Relative Humidity</b>	35% ~ 80% RH (non-condensing)	

## Product Profile & Outline



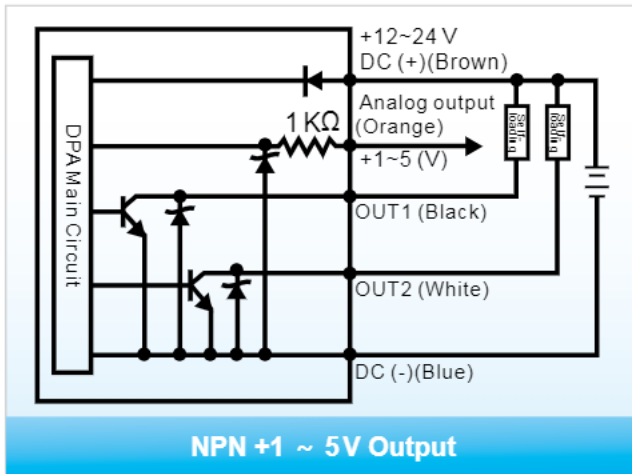
- 1 Analog output indicator
- 2 Digital output 1 indicator
- 3 Digital output 2 indicator
- 4 Pressure / parameter display
- 5 SV / setup item display
- 6 UP key
- 7 SET key
- 8 DOWN key
- 9 Power supply and output terminals
- 10 Pressure input pore

# Terminals

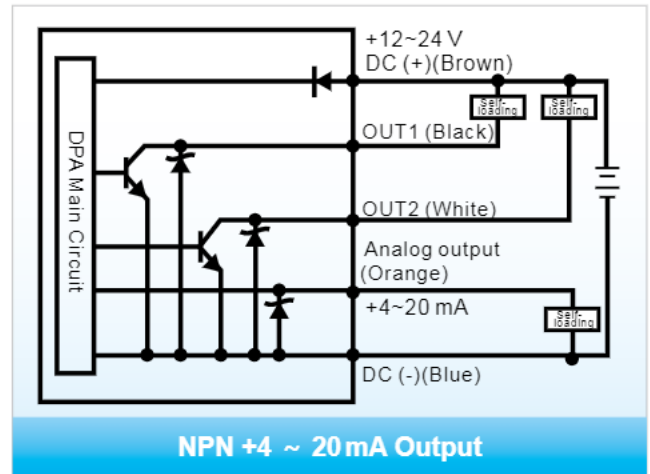


- 1** Positive power supply input (Brown)
- 2** Digital output 1 signal (Black)
- 3** Digital output 2 signal (White)
- 4** Analog output signal (Orange)
- 5** Negative power supply input (Blue)

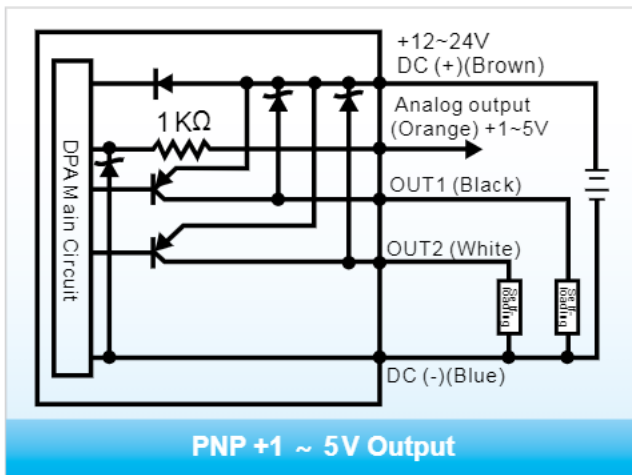
# Various Output Control Modes



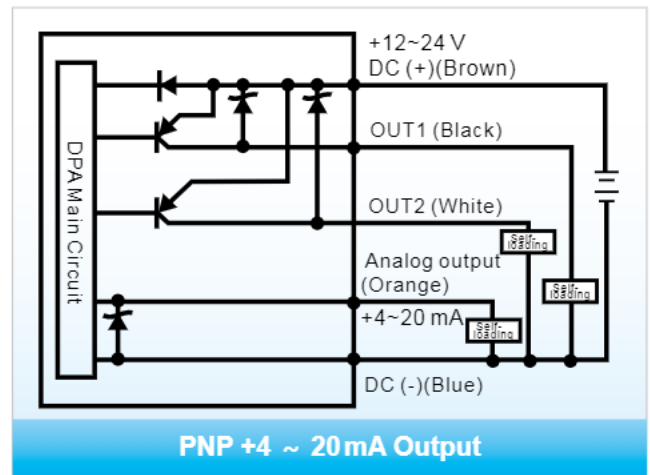
**NPN +1 ~ 5V Output**



**NPN +4 ~ 20 mA Output**

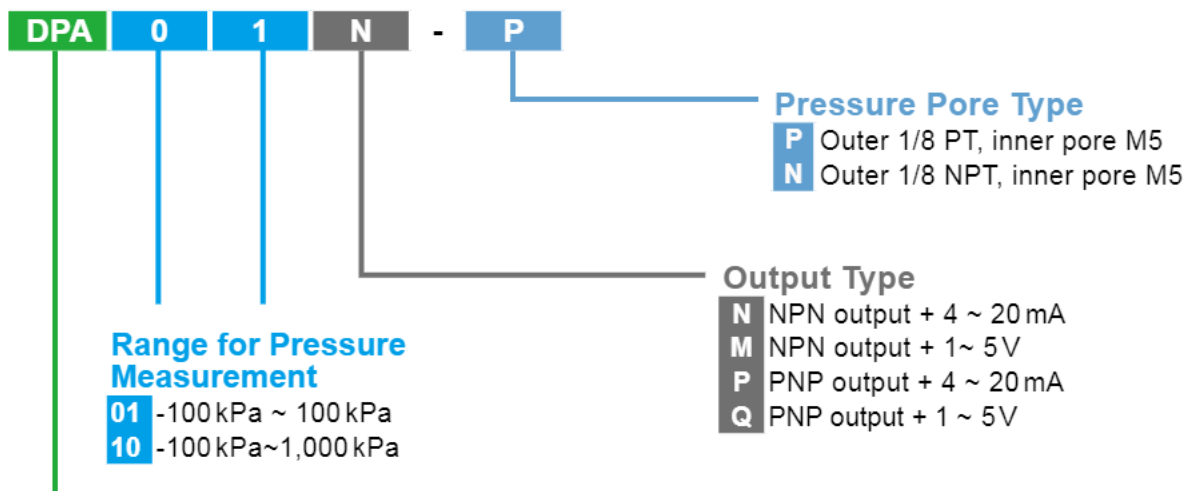


**PNP +1 ~ 5V Output**



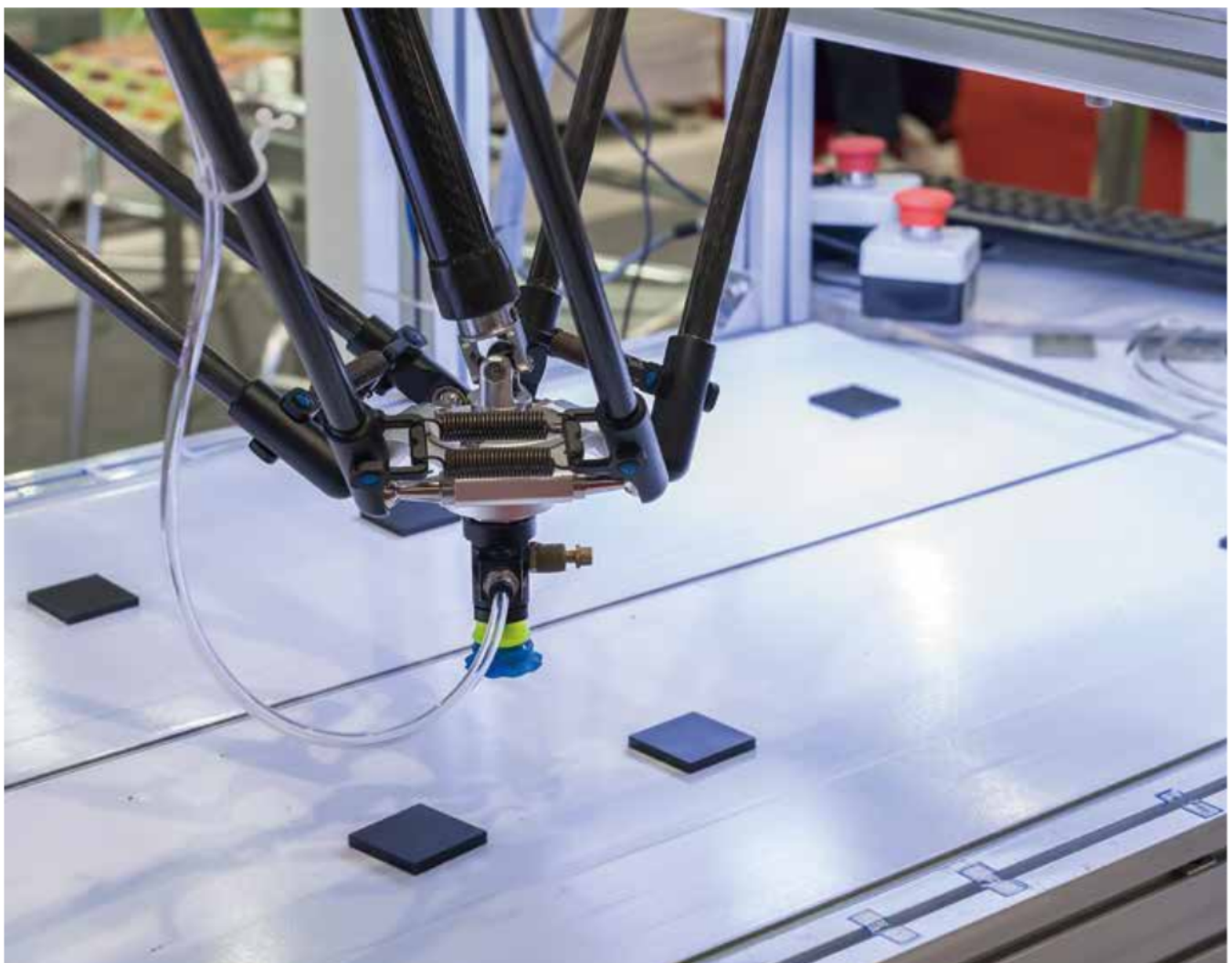
**PNP +4 ~ 20 mA Output**

## Ordering Information



### Product Name

DPA Series pressure sensor



## Cost-efficient Multifunction Pressure Sensor DPB Series

- ▶ Various unit conversion
- ▶ Various output modes
- ▶ 3 sets of color display
- ▶ 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 within normal range or exceeds the allowed range. The display's color is orange when in parameter setup mode. This makes it easy for reading and reduces operation errors.



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



Parameter set up  
(orange)

### Safety Control Mode

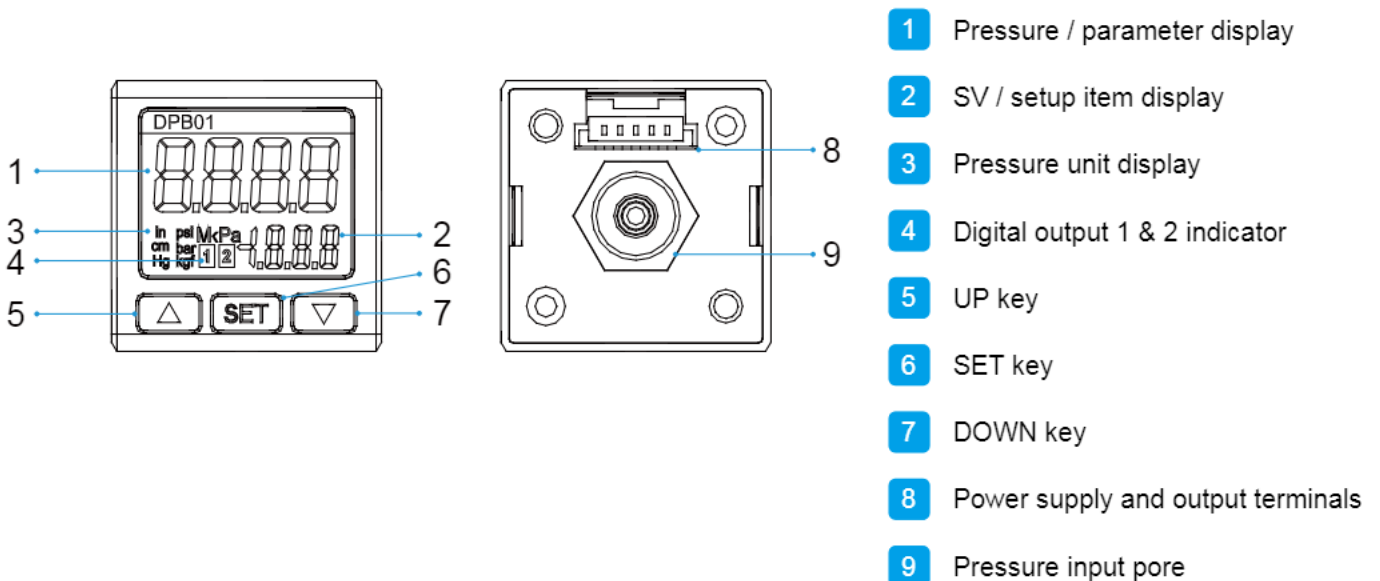
The safety control mode prevents operators from carelessly touching relevant parameters and affecting the operation and production of the equipment.



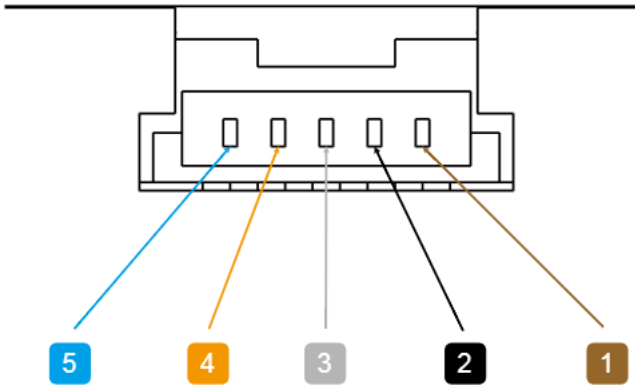
## Specifications

Power Supply	Voltage range	12 ~ 24 V <sub>DC</sub> ± 10% no isolation
	Power consumption	40 mA Max.
Pressure Measurement	Pressure type	Non-corrosive gas, gauge type
	Measurable range	DPB01: -100kPa ~ 100kPa; DPB10: -100kPa ~ 1,000kPa
	Max. durable pressure	DPB01: 200kPa; DPB10: 1,500kPa
	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 & Outline

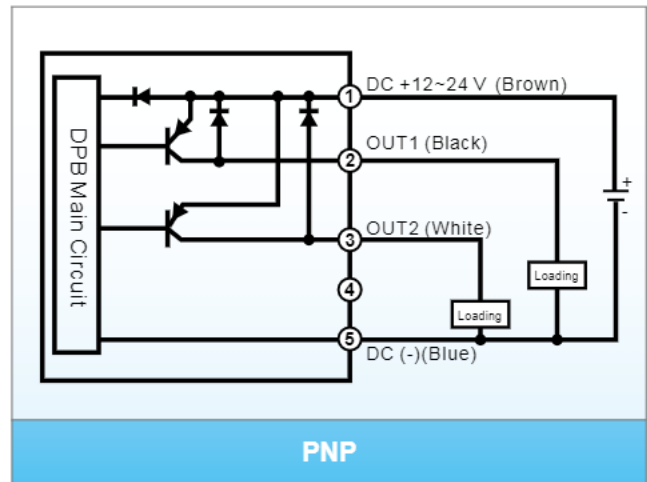
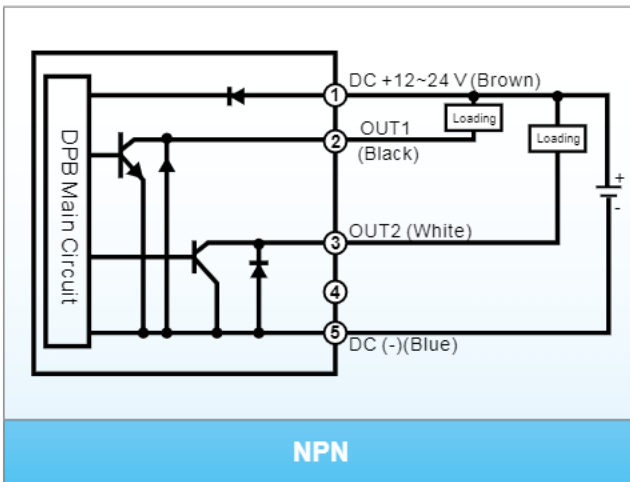


## Terminals



- 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

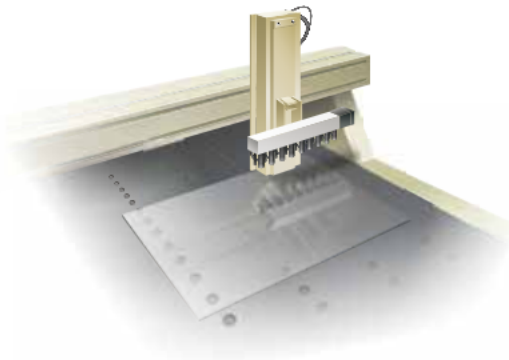
### Product Name

DPB Series pressure sensor

# Applications

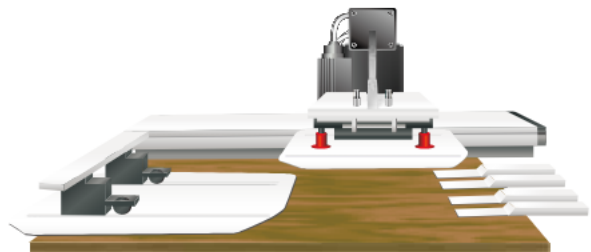
## ■ Mechanical Processing Industry

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



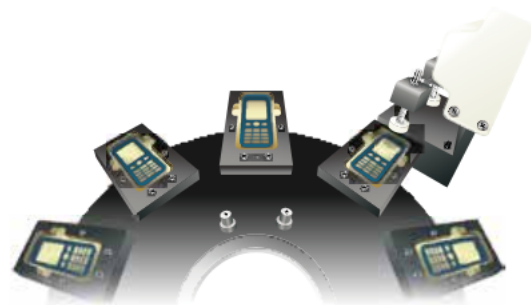
## ■ Electronic Components Industry

IC component suction and confirmation



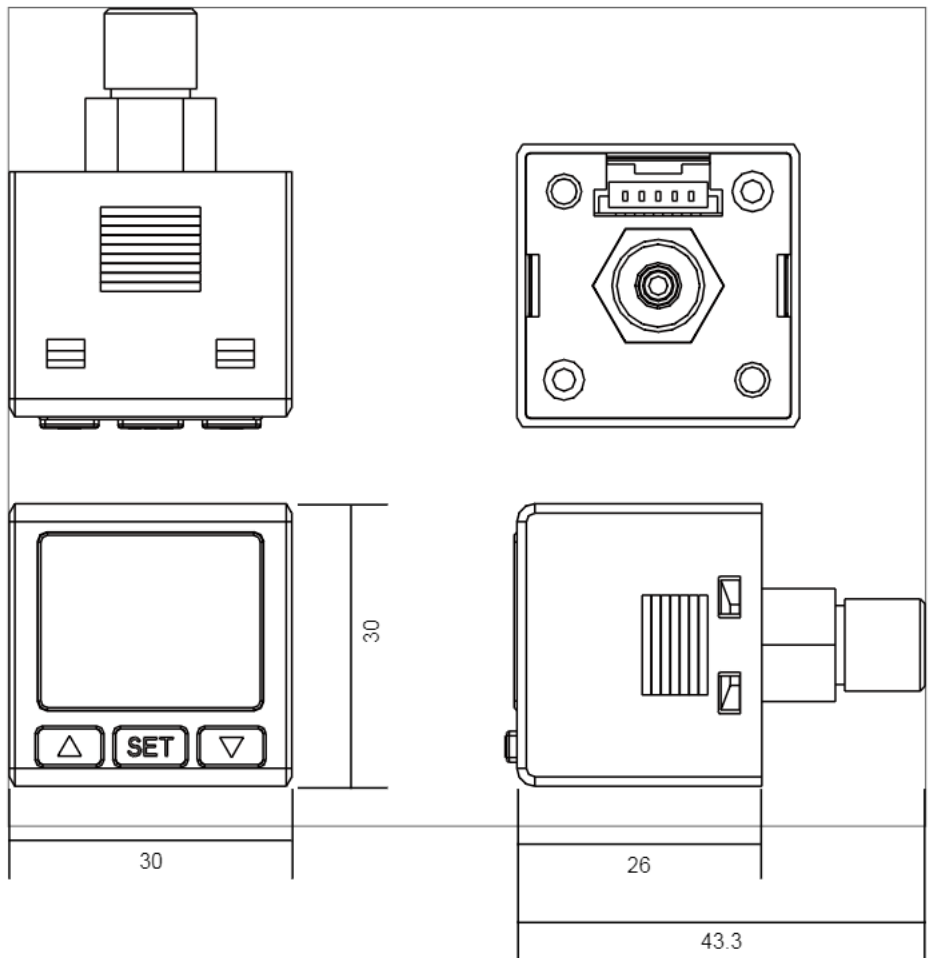
## ■ Automatic Assembly Industry

Automation component assembly and confirmation



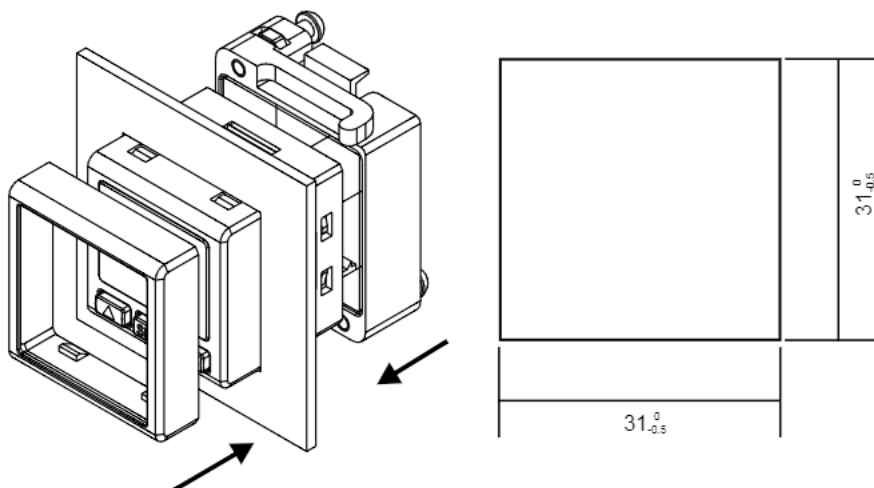


## Dimensions (DPA / DPB) Unit : mm



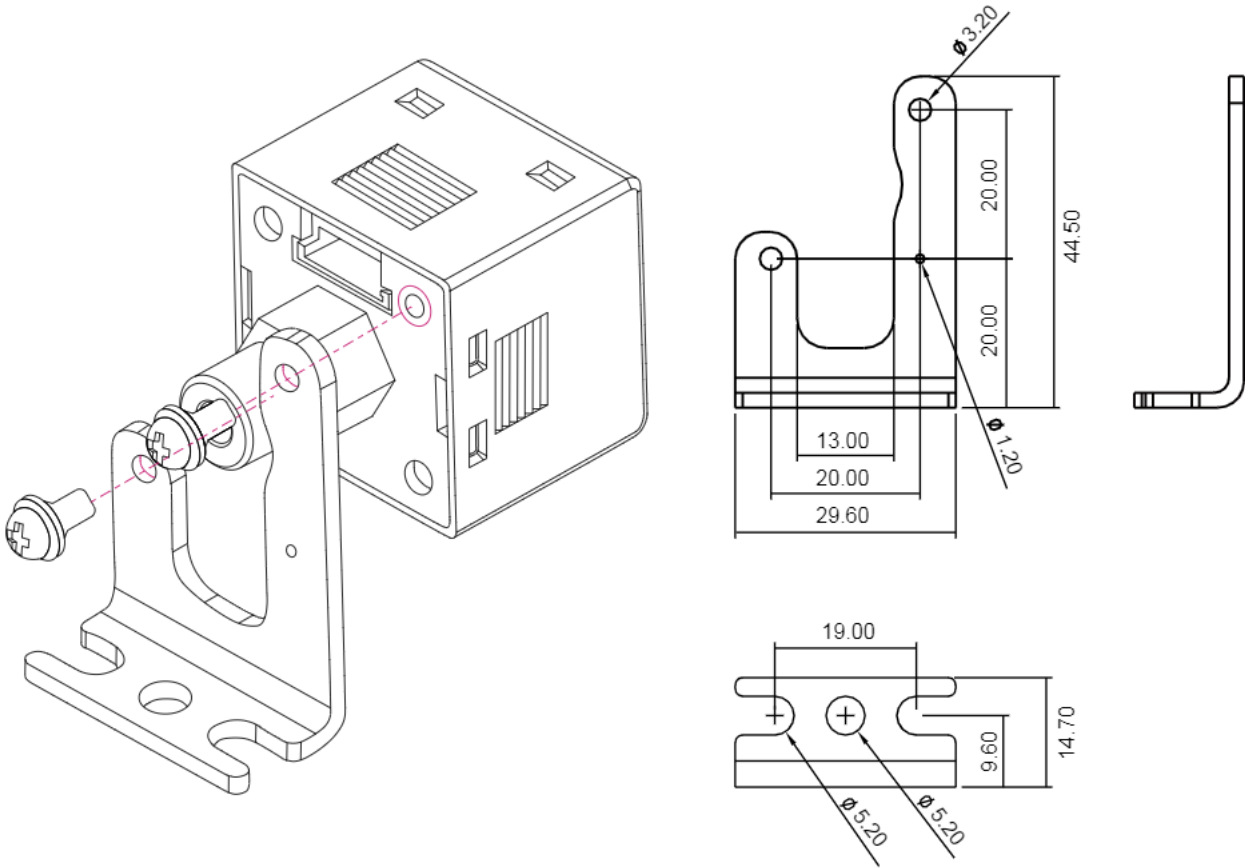
## Panel Accessory (DPA / DPB) Unit : mm

Model: DPA-PFKit



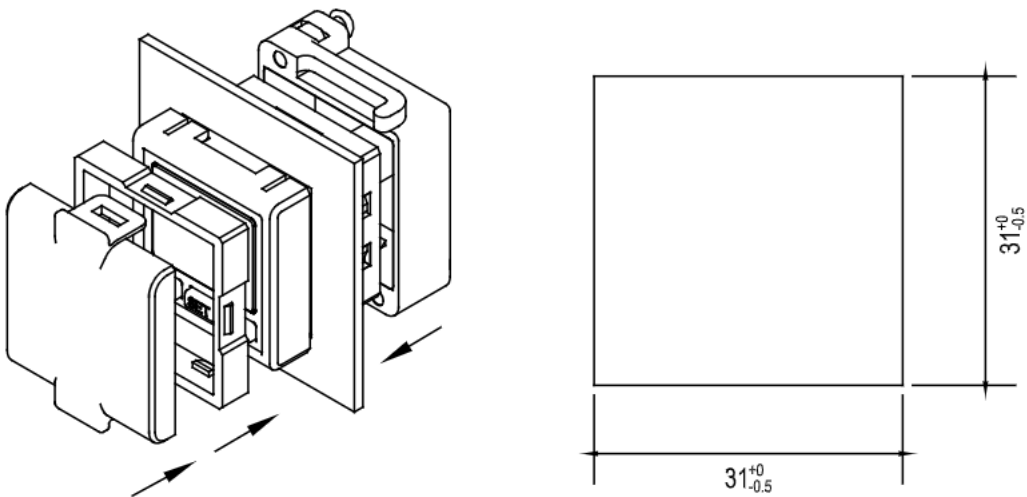
## Shelf Accessory (DPA / DPB) Unit : mm

Model: DPA-FMKit



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

Model: DPA-FPCKIT





Smarter. Greener. Together.

## **Industrial Automation Headquarters**

### **Delta Electronics, Inc.**

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

## **Asia**

### **Delta Electronics (Jiangsu) Ltd.**

Wujiang Plant 3  
1688 Jiangxing East Road,  
Wujiang Economic Development Zone  
Wujiang City, Jiang Su Province,  
People's Republic of China (Post code: 215200)  
TEL: 86-512-6340-3008 / FAX: 86-769-6340-7290

### **Delta Greentech (China) Co., Ltd.**

238 Min-Xia Road, Pudong District,  
ShangHai, P.R.C.  
Post code : 201209  
TEL: 86-21-58635678 / FAX: 86-21-58630003

### **Delta Electronics (Japan), Inc.**

Tokyo Office  
2-1-14 Minato-ku Shibadaimon,  
Tokyo 105-0012, Japan  
TEL: 81-3-5733-1111 / FAX: 81-3-5733-1211

### **Delta Electronics (Korea), Inc.**

1511, Byucksan Digital Valley 6-cha, Gasan-dong,  
Geumcheon-gu, Seoul, Korea, 153-704  
TEL: 82-2-515-5303 / FAX: 82-2-515-5302

### **Delta Electronics Int'l (S) Pte Ltd**

4 Kaki Bukit Ave 1, #05-05, 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

## **Americas**

### **Delta Products Corporation (USA)**

Raleigh Office  
P.O. Box 12173, 5101 Davis Drive,  
Research Triangle Park, NC 27709, U.S.A.  
TEL: 1-919-767-3800 / FAX: 1-919-767-8080

### **Delta Greentech (Brasil) S.A**

Sao Paulo Office  
Rua Itapeva, 26 - 3º andar Edifício Itapeva One-Bela Vista  
01332-000-São Paulo-SP-Brazil  
TEL: +55 11 3568-3855 / FAX: +55 11 3568-3865

## **Europe**

### **Delta Electronics (Netherlands) B.V.**

Eindhoven Office  
De Witbogt 20, 5652 AG Eindhoven, The Netherlands  
TEL: +31 (0)40-8003800 / FAX: +31 (0)40-8003898

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