

Automated Automotive Manufacturing Process

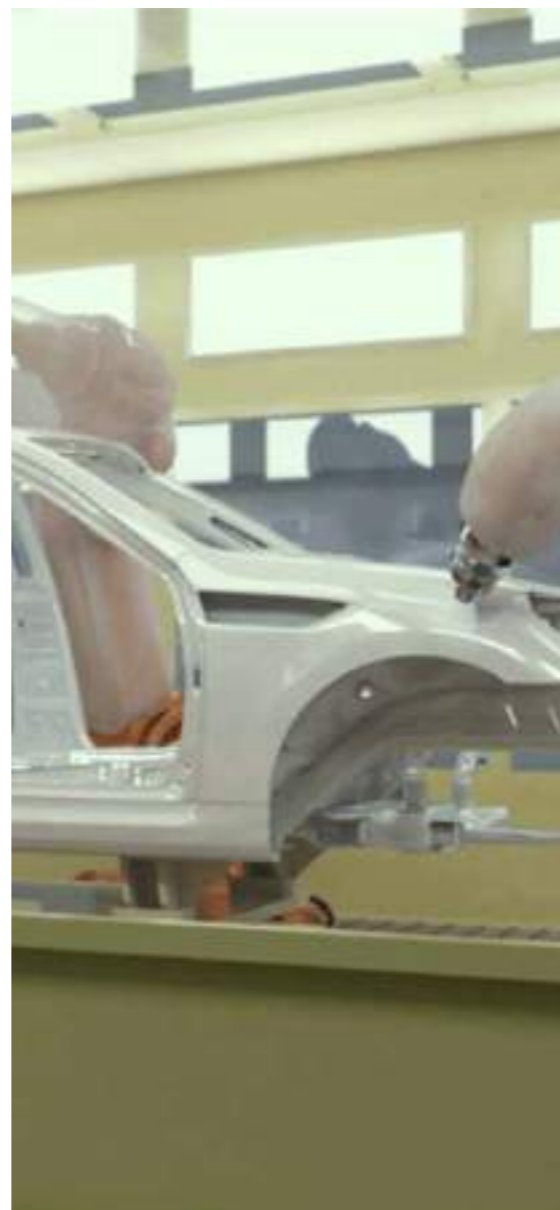
PRESS / WELDING / PAINTING / ASSEMBLY PROCESS



01
PRESS



02
WELDING



03
PAINTING



04
ASSEMBLY

Contents

Press Process

Press Process & Distribution Board 4

Welding Process

Panel Transfer during Assembly & Distribution Board 6

Panel Assembly & Welding Process 8

Painting Process

Painting Process & Distribution Board 10

Assembly Process

Transmission Transfer Line & Distribution Board 12

Transmission Parts Transfer Line 14

Engine Transfer & Distribution Board 16

Engine Washing Line & Distribution Board 18

Frame Transfer Lift 20

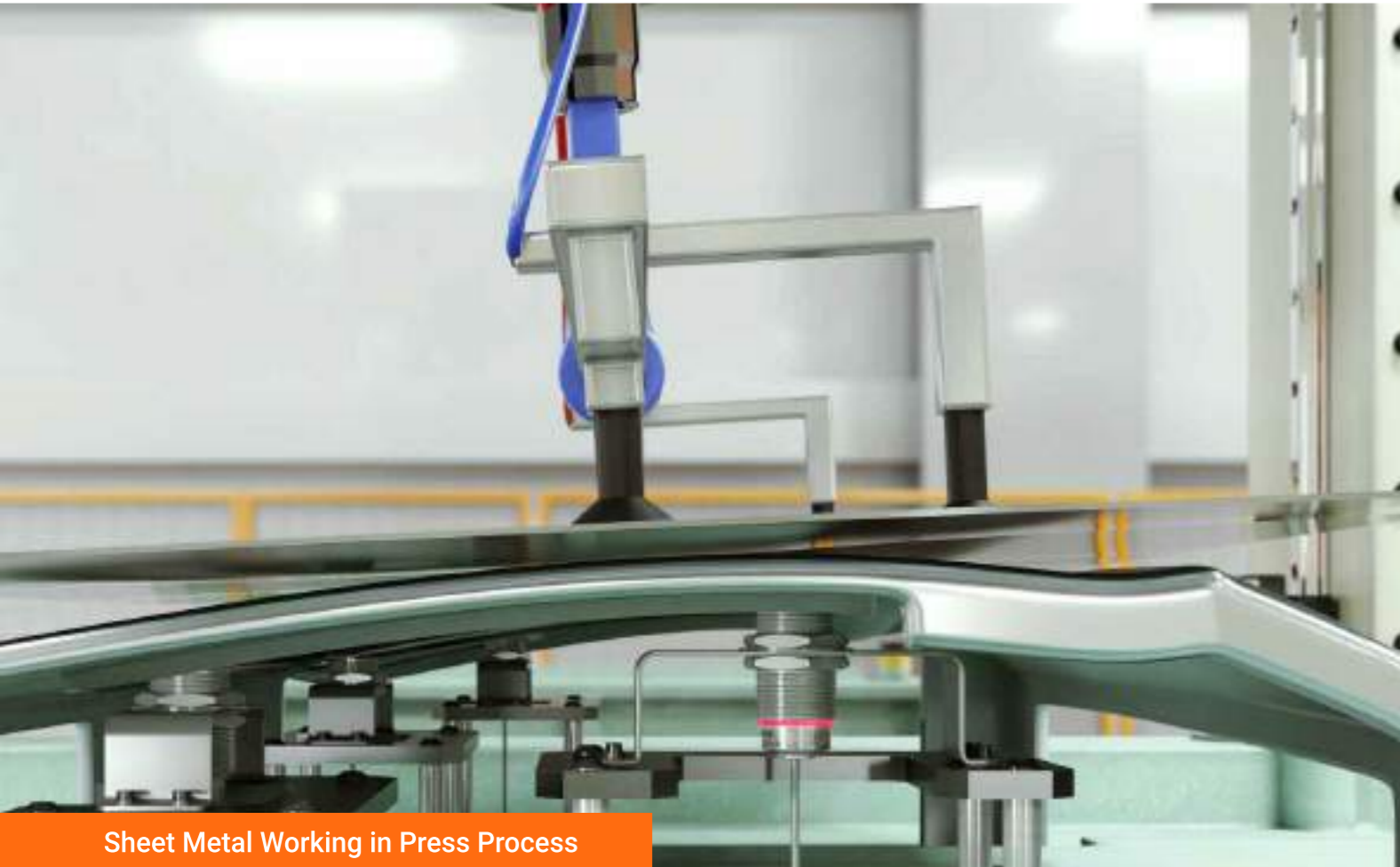
Glass Attachment on Frame 22

Product Overview

24

Press Process

Press Process & Distribution Board



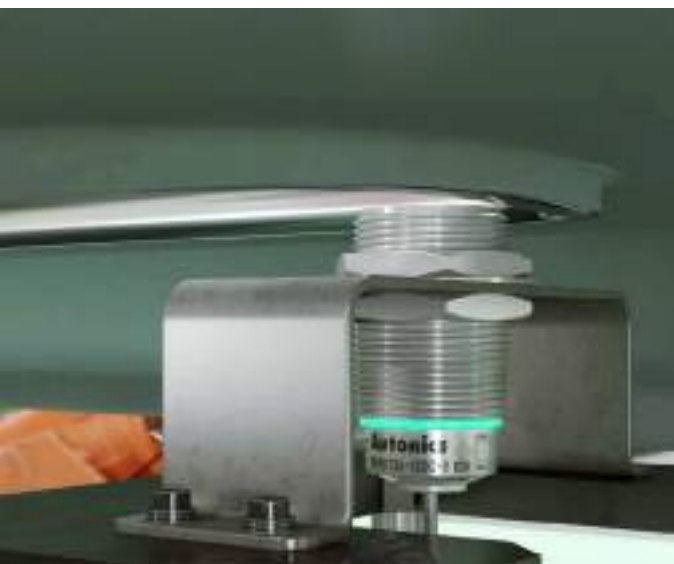
Sheet Metal Working in Press Process

During the sheet metal work in press process, the proximity sensor at the bottom of the mold detects the presence of the sheet metal in the process of creating each vehicle body by modifying it according to the shape of the mold.



Press Machine Distribution Board

Sensor distribution boxes allow simple wiring and easy maintenance of proximity sensors during press machine operation. The distribution boxes are used to supply power and control signals to multiple sensors.



Full-Metal Long-Distance Cylindrical Inductive Proximity Sensors PRFD Series

- High resistance to impact and wear caused by contact with workpieces or wire brushes (sensor head/housing : stainless steel)
- Reduced risk of malfunction caused by aluminum chips
- Excellent noise immunity with specialized sensor IC
- Oil resistant cable



Sensor Distribution Boxes PT (5-Pin Connector) Series

- 5-pin M12 connector types (cable/connector/spring terminal/ plug-in terminal)
- Check operation status with LED indicators (green, red LED)
- Supply power to multiple sensors using a single power supply
- Simplify complicated wiring and maintenance work



Welding Process

Panel Transfer during Assembly & Distribution Board



Transfer of Vehicle Body Using Robots

Pressure sensors are used to control and display vacuum pressure during transfer of molded parts.



Robot Control Distribution Board

Field network devices are used to control I/O of various robot operations during transfer or welding of molded parts using robots.



Dual Digital Display Pressure Sensors PSQ Series

- Dual display for simultaneous display of process value (PV) and setpoint value (SV)
- Switch between NPN and PNP open collector output via parameter configuration
- 3-color main (PV) display, 12-segment LCD display
- Measurement range : -100.0 to 100.0 kPa /-100 to 1000 kPa
- Analog output : voltage (1-5 VDC), current (DC 4-20 mA)
- Copy parameter settings function



Slim Remote I/O ARIO Series

- Industrial Ethernet/Fieldbus serial communication I/O for Smart Factory
- Multiple I/O distribution control using PLCs and industrial PCs
- Coupler : available in 8 different communication protocols
- Module : various input/output modules, power module



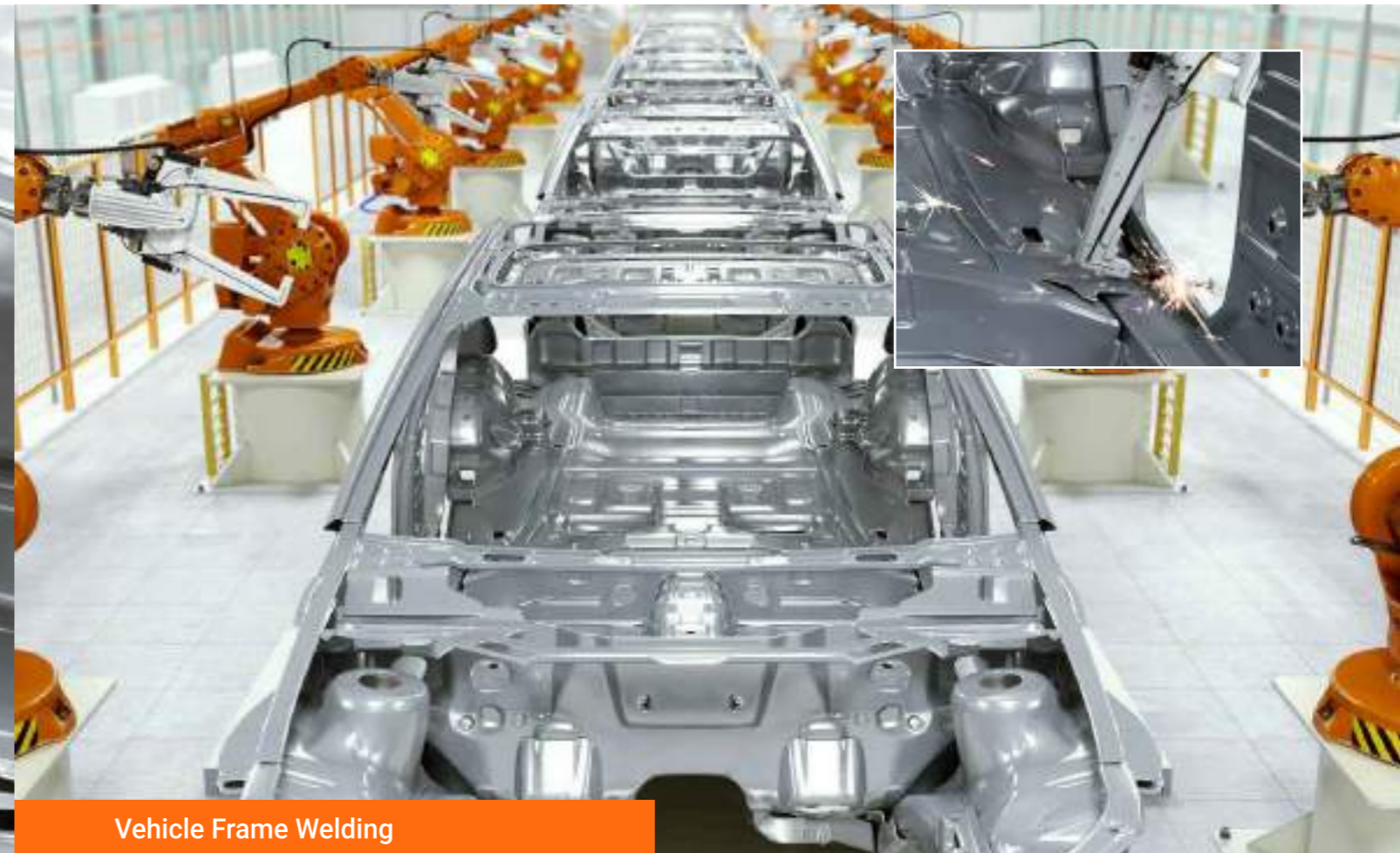
Welding Process

Panel Assembly & Welding Process



Control Panel for Sealing Material

When joining body parts, temperature controllers are used to control sealing temperature of dispersed silicone.



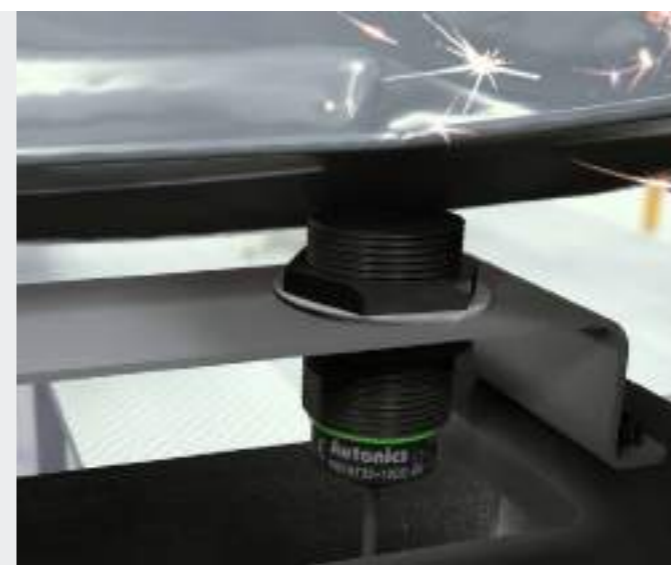
Vehicle Frame Welding

As the molded sheet metal is assembled into the vehicle shape after welding, spatter-resistant proximity sensors attached at the bottom of the jig are used to detect whether the sheet metal is seated.



High Performance PID Temperature Controllers TK Series

- 50 ms high-speed sampling rate and $\pm 0.3\%$ display accuracy
- Simultaneous heating and cooling control function, automatic/manual control option
- SSR drive output (SSRP function) control options : ON/OFF control, cycle control, phase control
- Communication output models available : RS485 (Modbus RTU)



Full-Metal Cylindrical Spatter-Resistant Inductive Proximity Sensors PRFA Series

- High resistance to impact and wear caused by contact with workpieces or wire brushes (sensor head/housing : stainless steel)
- Reduced risk of malfunction caused by aluminum chips
- PTFE coating prevents malfunctions caused by welding spatter (spatter-resistant model)
- Excellent noise immunity with specialized sensor IC
- Oil resistant cable



Painting Process

Painting Process & Distribution Board



Painting Process Distribution Board

The assembled vehicles are painted by robots to prevent corrosion. The robots can be controlled from external control panels.



Control Distribution Board Exterior

Temperature controllers and panel meters in control panel are used to control temperature of paint and check the status of operating voltage/current.



Control Distribution Board Interior

When multiple relay outputs are required, ABS and power controllers can be used to ensure stable output of temperature control loads.

LCD Display PID Temperature Controllers TX Series

- 50 ms high-speed sampling rate and $\pm 0.3\%$ display accuracy
- Large LCD display with easy-to-read white PV characters
- SSR drive output (SSRP function) control options : ON/OFF control, cycle control, phase control
- Communication output model available : RS485 (Modbus RTU)



Relay Terminal Blocks ABS Series

- Ideal for operating various loads using output signals from PLCs
- LED indicator for operation and connection status display
- Diverse models available to accommodate voltage and current from various loads
- DIN rail mount and screw mount methods



Digital Panel Meters with Diverse Input/Output Options MT4Y Series

- Various input/output options (by model)
 - Input options : DC voltage, DC current, AC voltage, AC current
 - Output options : RS485 communication output, low speed serial output, BCD dynamic output, transmission output (DC 4-20 mA), NPN/PNP open collector output, relay contact output (default option : indicator/no output)
- Maximum allowed input : 500 VDC, DC 5A, 500 VAC, AC 5A
- Display range : -1999 to 9999



Slim Single-Phase Power Controllers with LED Display SPR1 Series

- LED display allows real-time monitoring of control input, load voltage, load current, load power, load resistance, and heat-sink temperature
- Stable control with feedback control (constant current, constant voltage, constant power)
- Communication output models available : RS485 (Modbus RTU)
- Various alarm functions (alarm output) : overcurrent, overvoltage, heater disconnection, fuse break, heat-sink overheat, diode (SCR) error



Assembly Process

Transmission Transfer Line & Distribution Board



Transmission Transfer

Oil-resistant/oil-proof sensors can be used in transmission transfer conveyors, where cutting oil or lubricating oil is present. Cable connector types offer easier maintenance.



Conveyor Belt Control Distribution Board

Digital remotes in distribution boards are used to control various I/O during transmission transfer. The units can be expanded to control a large number of sensors.



Oil-Resistant/Oil-Proof Type Photoelectric Sensors BJR Series

- For use in oil environments such as cutting oil or lubricants (optimized for automotive and machine tool industries)
- Long sensing distance : Through-beam type 15 m, Diffuse reflective type 1 m, Retroreflective type 3 m (MS-2S)
- Light ON/Dark ON operation mode switch
- Excellent noise immunity and minimal influence from ambient light
- IP67 protection structure (IEC standard), IP67F oil-resistant protection structure (JEM standard)



DeviceNet Digital Remote I/O (Terminal Block Type/Sensor Connector Type) ARD Series

- Communication speed auto-recognition
- Network power supply monitoring
- Additional expansion units
- Count number of expansion units



Assembly Process

Transmission Parts Transfer Line



Laser Marking on Transmission Parts

In the process where the completed transmission part is moved through the conveyor belt, product information such as specifications and certifications are marked on the part surface using laser markers.



Transmission Part Transfer Line

Vision sensors are used to determine the presence of laser marking on transmission parts and transfer result images to FTP servers to trace production history.



3D IR Fiber Laser Marking System ALF-3D Series

- Marking on various materials including metallic, non-metallic, aluminum and etc.
- 3D control marking available on curved, different level surfaces and etc.
- Customized solutions for various requirements
- MOF function for efficient marking without standby time
- High quality marking without distortion through X, Y, Z 3-axis control



Vision Sensors VG Series

- Vision sensors with integrated LED lighting
- Global shutter method for accurate image capturing with minimal motion blur
- Various inspection functions : alignment, brightness, contrast, area, edge, length, angle, diameter, object counting, color identification, color area, color object counting
- Inspection simulator function
- Save data to FTP servers



Assembly Process

Engine Transfer & Distribution Board



Engine Transfer

Proximity sensors are used to detect presence of pallets when the assembled engines move through conveyor belts. Connector type sensors offer easier maintenance.



Engine Washing Machine Distribution Board

During engine washing process, temperature controllers in distribution boxes are used to control the heating device in washing machines.



Cylindrical Inductive Proximity Sensors with Long Sensing Distance

PRDCM Series

- Excellent noise immunity with specialized sensor IC
- LED operation indicators on 4 sides (DC 2-wire)
- Built-in surge protection circuit, reverse polarity protection circuit, and overcurrent protection circuits



Modular Multi-Channel High Performance Temperature Controllers

TMH Series

- Easy maintenance with detachable body and base terminal
- Power supply and communication with expansion connectors (up to 32 units)
- Parameter configuration with PCs (USB or RS485 communication)
- Control modules, analog input/output option module, digital input/alarm output option modules, CT input option modules, PLC ladder-less communication (RS485/RS422), Ethernet communication



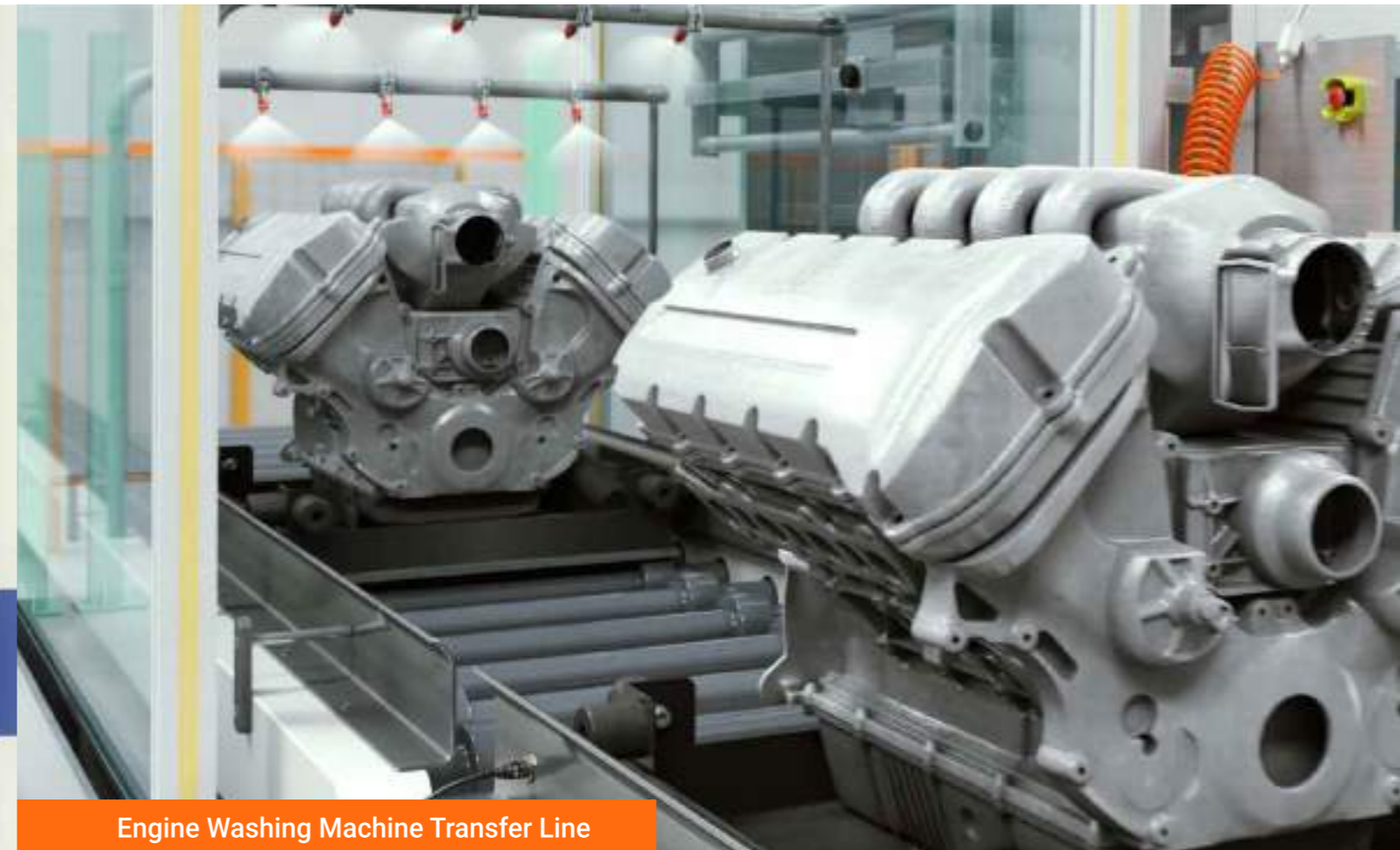
Assembly Process

Engine Washing Line & Distribution Board



Engine Washing Machine Distribution Board

During engine washing process, solid state relays in distribution boxes are used to control the heating device in washing machines.



Engine Washing Machine Transfer Line

Proximity sensors are used to detect the location of engines on conveyor belts after washing.



Single-Phase Solid State Relays with Integrated Heatsink

SRHL1 Series

- Left/right terminal type
- Rated load current : 10 A, 15 A, 20 A, 25 A, 40 A
- Zero cross turn-on/random turn-on models available
- Alarm function (overheating)
- DIN rail mount or panel mount installation



Cylindrical Inductive Proximity Sensors with Long Sensing Distance

PRDW Series

- Excellent noise Immunity with specialized sensor IC
- Built-in surge protection circuit, reverse polarity protection circuit, and overcurrent protection circuits
- Strain relief cables : improved flexural strength of cable connecting component



Assembly Process

Frame Transfer Lift



Lift Level Transfer

During the transfer of vehicle body from 1st floor to 2nd floor, photoelectric sensors are used to detect the presence of the vehicle body in the lift.



Body Transfer in the Lift

When the body is moved to the lift, infrared laser scanner is used to detect whether the body is seated on the lift. Using the remote, it is easy to set up and manage even when the lift is in operation.



Universal AC/DC Photoelectric Sensors BEN Series

- Slim-size with built-in amplifiers
- Light ON/Dark ON operation mode switch
- Stability indicator (green LED) and operation indicator (red LED)
- Specialized, high-performance sensor IC



Laser Scanners LSE Series

- Activate multiple operation channels from channel 1 to channel 4
 - Set detection area for each channel: from 0.3 m x 0.3 m to 5.6 m x 5.6 m
 - Set concentrated monitoring area for each channel
- Set minimum detection target size (size for each W x H x L : 5/10/15/20 cm)
- Parameter setting and real-time monitoring with "atLidar" laser scanner management software
- Easy parameter settings using remote control



Assembly Process

Glass Attachment on Frame



Glass Attachment on Frame

During the final process of completing the vehicle by working on indoor and outdoor parts, wiring and piping, compact pressure sensors can be installed in small spaces to apply the correct amount of pressure to lift and move windshields to proper positions.



Frame Glass Transfer

During the process of transferring the glass, multiple compact pressure sensors connected to each nozzle can be checked and controlled using multi-channel pressure sensor indicators.



Compact Non-Indicating Pressure Sensors PSS Series

- Rated pressure range
 - negative pressure (0 kPa to -101.3 kPa)
 - positive pressure (0 kPa to 100.0 kPa/0 kPa to 1000 kPa)
 - compound pressure (-101.3 kPa to 100 kPa)
- Compact size : W 11.8 mm x H 29.3 mm x L 24.8 mm (with pressure port)
- Analog output : voltage (1-5 VDC), current (DC 4-20 mA)



Multi-Channel Pressure Sensor Indicators PSM Series

- Display 8 (PSM8) or 4 (PSM4) channels of pressure value from pressure sensors
- Input range : 1-5 VDC, DC 4-20 mA (by model)
- Pressure sensor model auto recognition (Autonics PSS series pressure sensors)
- Set PV display color by control output type (red/green)
- Individual output indicators for each channel
- RS485 (Modbus RTU) communication support



Product Overview

Oil Resistant/ Oil Proof Type Photoelectric Sensors BJR Series



Compact Oil Resistance Type	Model	NPN open collector output		PNP open collector output	
		BJR15M-TDT-□	BJR10M-TDT-□-F	BJR15M-TDT-□-P	BJR10M-TDT-□-P-F
Compact Oil Proof Type	Model	NPN open collector output		PNP open collector output	
		BJR15M-TDT-□-F	BJR10M-TDT-□-P-F	BJR15M-TDT-□-P-F	BJR10M-TDT-□-P-F
Sensing type		Through-beam type		Retroreflective type (built-in polarizing filter)	Diffuse reflective type
Sensing distance		15 m	10 m	3 m ¹⁾	1 m ²⁾ / 100 mm ³⁾
Sensing target		Opaque material over Ø12 mm		Opaque material over Ø75 mm	Translucent, opaque materials
Hysteresis		-		Max. 20 % at sensing distance	
Response time		Max. 1 ms			
Power supply		10-30 VDC±10 % (ripple P-P: max. 10 %)			
Current consumption		Emitter / Receiver: max. 20 mA		Max. 30mA	
Light source		Infrared LED (850 nm)	Red LED (660 nm)	Red LED (660 nm)	Infrared LED (850 nm)
Sensitivity adjustment		Sensitivity adjuster			
Operation mode		Light ON / Dark ON selectable by switch			
Control output		NPN or PNP open collector output • Load voltage: max. 30 VDC± • Load current: max. 100 mA • Residual voltage - NPN: max. 1 VDC±, PNP: max. 2 VDC			
Protection circuit		Power reverse polarity protection circuit, output short over current protection circuit		Power reverse polarity protection circuit, output short over current protection circuit, interference prevention function	
Indicator		Operation indicator: yellow LED, stability indicator: green LED (emitter's power indicator: red LED)			
Connection		Cable type, cable connector type			
Protection structure		IP67 (IEC standard), IP67G (JEM standard)			

1) The sensing distance is specified with using the MS-2S reflector. The distance between the sensor and the reflector should be set over 0.1 m. When using reflective tapes, the reflectivity will vary by size of the tape. Please refer to the catalog or web site.
2) Non-glossy white paper 300x300 mm.
3) Non-glossy white paper 100x100 mm.

Universal AC/DC Photoelectric Sensors BEN Series



Type	Free power, Relay contact output				DC power, Solid state output			
	Through-beam	Retroreflective ¹⁾	Retroreflective ¹⁾ (with polarizing filter)	Diffuse reflective	Through-beam	Retroreflective ¹⁾ (with polarizing filter)	Diffuse reflective	Diffuse reflective
Model	BEN10M-TFR	BEN5M-MFR	BEN3M-PFR	BEN300-DFR	BEN10M-TDT	BEN5M-MDT	BEN3M-PDT	BEN300-DDT
Sensing distance	10 m	0.1 to 5 m	0.1 to 3 m	300 mm (100 x 100 mm non-glossy white paper)	10 m	0.1 to 5 m	0.1 to 3 m	300 mm (100 x 100 mm non-glossy white paper)
Sensing target	Opaque materials of min. Ø16 mm	Opaque materials of min. Ø60 mm		Translucent, opaque materials	Opaque materials of min. Ø16 mm	Opaque materials of min. Ø60 mm		Translucent, Opaque materials
Hysteresis	-		Max. 20 % at sensing distance	-	-		Max. 20 % at sensing distance	-
Response time	Max. 20ms				Max. 1 ms			
Power supply	24-240 VAC±10 % 50/60 Hz, 24-240 VDC±10 % (ripple P-P: max. 10 %)				12-24 VDC±10 % (ripple P-P: max. 10 %)			
Power consumption	Max. 4 VA				-			
Current consumption	-				Max. 50 mA			
Light source	Infrared LED (850 nm)	Red LED (660 nm)	Infrared LED (940 nm)	-	Infrared LED (850 nm)	Red LED (660 nm)	Infrared LED (940 nm)	-
Sensitivity adjustment	-		Sensitivity adjuster	-	-		Sensitivity adjuster	-
Operation mode	Selectable Light ON or Dark ON by switch							
Control output	Relay contact output • Relay contact capacity: 30 VDC± 3 A of resistive load, 250 VAC~ 3 A of resistive load • Relay contact composition: 1 c				NPN open collector/PNP open collector simultaneous output • Load voltage: max. 30 VDC± • Load current: max. 200 mA • Residual voltage - NPN: max. 1 VDC±, PNP: max. 2.5 VDC			
Protection circuit	-				Reverse polarity protection circuit, output short overcurrent protection circuit			
Indication	Operation indicator: red, stable indicator: green (the red lamp on Emitter of through-beam type is for power indication)							
Protection structure	IP50 (IEC standard)							

1) The sensing range and the sensing object of the retroreflective sensor are specified with using the MS-2 reflector. The sensing ranges of the retroreflective sensor in the above table are identified as the possible setting ranges of the MS-2 reflector. The sensor can detect on object under 0.1m apart.

Vision Sensors VG Series



Model	VG-M04□-□E			VG-C04□-□E		
Effective focal length	8 mm	16 mm	25 mm	8 mm	16 mm	25 mm
Min. working distance	50 mm	100 mm	200 mm	50 mm	100 mm	200 mm
Image filter	Preprocessing, external filter (color filter, polarizing filter)					
Image element	1/3 inch mono CMOS			1/3 inch color CMOS		
Resolution	752 x 480 pixel					
Image snap camera frame per second	≤ 60 fps ¹⁾					
Shutter	Global shutter					
Exposure time	20 to 50,000 μs					
Inspection work group	32 (simultaneous inspection: 64)					
Inspection camera frame per second	≤ 60 fps ¹⁾					
Dedicated software	Vision Master					
Light ON/OFF method	Pulse					
Light color	White / Red / Green / Blue model ²⁾					
Trigger mode	External - Internal - Free run setting (software)					
Communication	Ethernet(TCP/IP), 100BASE-TX/10BASE-T					
FTP trans. output	YES					
Indicators	POWER (green), LINK (green), PASS (green), DATA (orange), FAIL (red)					
Approval	CE ENEC					
Power supply	24 VDC±10 %					
Current consumption	1 A					
Rated input signal	24 VDC±10 %					
Output signal	NPN-PNP open collector output setting (software)					
Protection circuit	Output short over current protection circuit					
Protection structure	IP67 (IEC standards)					

1) The number of camera frames per second can be different by image setting or inspection item.
2) Available to buy separately and replace.

Laser Scanners LSE Series



Model	LSE-4A5R2	
Power supply	24 VDC±	
Allowable voltage range	80 to 120 % of rated voltage	
Emitting property	Laser class	CLASS 1
	Wavelength band	905 nm
	Max. pulse output power	75 W
Angular resolution	0.4°	
Aperture angle	90°	
Object reflectivity	Min. 2 %	
Scanning mode	Motion and presence	
Monitoring zone ¹⁾	0.3 x 0.3 m to 5.6 x 5.6 m (object reflectivity: at approx. 10 %)	
Min. size of the scanning target	• At detection distance of 3 m: approx. W 2.1 x H 2.1 x L 2.1 cm • At detection distance of 5 m: approx. W 3.5 x H 3.5 x L 3.5 cm • Object reflectivity: 90 % (at Kodak Gray card R-27, white)	
Power consumption	Max. 8 W	
Response time ²⁾	Typ. 20 to 80 ms+monitoring time	
Input	Photocoupler input: 1 (output test mode) • [H]: min. 8 VDC± (max. 30 VDC±), [L]: max. 3VDC • [H] operates as output test mode and outputs obstacle detection output and error status output	
	Output	
Installation angle ³⁾	Laser scanner angle	-45°, 0°, 45°
	Bracket rotation angle ⁴⁾	-5 to 5°
	Bracket tilt angle	-3 to 3°
Front contamination	Normal operation with max. 30 % contamination of one material	
Communication interface ⁵⁾	Ethernet	
Life expectancy	Max. 6.8 years (60,000 hours)	
Protection structure	IP67 (IEC standard)	

1) The monitoring zone may be changed by the sensitivity level setting.
2) 'Monitoring time' is able to be set with the remote control or at Lidar.
3) Please refer to 'Installation'.
4) It represents alignment range of laser scanner and is able to be set within the range from -5 to 5° based on the mark line.
5) It is used for setting sensor positions, parameters, and monitoring status information.

Product Overview

Cylindrical Inductive Full-Metal Long-Distance Proximity Sensors PRFD Series



Installation	Flush type			
General	PRFD□T08-2DO-□	PRFD□T12-3DO-□	PRFD□T18-7DO-□	PRFD□T30-12DO-□
Spatter-resistant	PRFDA□T08-2DO-□	PRFDA□T12-3DO-□	PRFDA□T18-7DO-□	PRFDA□T30-12DO-□
DIA. of sensing side	Ø 8 mm	Ø 12 mm	Ø 18 mm	Ø 30 mm
Sensing distance ¹⁾	2 mm	3 mm	7 mm	12 mm
Setting distance	0 to 1.4 mm	0 to 2.1 mm	0 to 4.9 mm	0 to 8.4 mm
Hysteresis	≤ 15 % of sensing distance			
Standard sensing target: iron	12 × 12 × 1 mm	12 × 12 × 1 mm	30 × 30 × 1 mm	54 × 54 × 1 mm
Response frequency ²⁾	150 Hz	80 Hz	80 Hz	50 Hz
Affection by temperature	≤ ± 20 % for sensing distance at ambient temperature 20 °C			
Indicator	Stability indicator (green), operation indicator (red)			
Power supply	12-24 VDC= (ripple P-P: ≤ 10 %), operating voltage: 10-30 VDC=			
Leakage current	≤ 0.8 mA			
Control output	3 to 100 mA			
Residual voltage	≤ 3.5 V			
Protection	IP67 (IEC standards)			

1) Use accessories (nut, washer) made of SUS. Or, sensing distance cannot be guaranteed.
2) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

Cylindrical Inductive Full-Metal Spatter-Resistant Proximity Sensors PRFA Series



Installation	Flush type			
General	PRF□T08-1.5DO-□	PRF□T12-2DO-□	PRF□T18-5DO-□	PRF□T30-10DO-□
Spatter-resistant	PRFA□T08-1.5DO-□	PRFA□T12-2DO-□	PRFA□T18-5DO-□	PRFA□T30-10DO-□
DIA. of sensing side	Ø 8 mm	Ø 12 mm	Ø 18 mm	Ø 30 mm
Sensing distance ¹⁾	1.5 mm	2 mm	5 mm	10 mm
Setting distance	0 to 1.05 mm	0 to 1.4 mm	0 to 3.5 mm	0 to 7 mm
Hysteresis	≤ 15 % of sensing distance			
Standard sensing target: iron	8 × 8 × 1 mm	12 × 12 × 1 mm	30 × 30 × 1 mm	54 × 54 × 1 mm
Response frequency ²⁾	200 Hz	100 Hz	80 Hz	50 Hz
Indicator	Operating indicator (red)			
Power supply	12-24 VDC= (ripple P-P: ≤ 10 %), operating voltage: 10-30 VDC=			
Leakage current	≤ 0.8 mA			
Control output	3 to 100 mA			
Residual voltage	≤ 3.5 V			
Protection circuit	Surge protection circuit, output short over current protection circuit, reverse polarity protection			
Protection	IP67 (IEC standards)			

1) Use accessories (nut, washer) made of SUS. Or, sensing distance cannot be guaranteed.
2) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

Cylindrical Inductive Proximity Sensors with Long Sensing Distance (Cable Connector Type) PRDW Series



DC 3-wire

Installation	Flush type			
General	PRD□08-2D □	PRD□12-4D □	PRD□18-7D □	PRD□30-15D □
Spatter-resistant	-	PRDACM12-4D □	PRDACM18-7D □	PRDACM30-15D □
DIA. of sensing side	Ø 8 mm	Ø 12 mm	Ø 18 mm	Ø 30 mm
Sensing distance	2 mm	4 mm	7 mm	15 mm
Setting distance	0 to 1.4 mm	0 to 2.8 mm	0 to 4.9 mm	0 to 10.5 mm
Hysteresis	≤ 15 % of sensing distance			
Standard sensing target: iron	8 × 8 × 1 mm	12 × 12 × 1 mm	20 × 20 × 1 mm	45 × 45 × 1 mm
Response frequency ¹⁾	1 kHz	500 Hz	300 Hz	100 Hz
Affection by temperature	± 10 % for sensing distance at ambient temperature 20°C (DIA. of sensing side Ø 8 mm: ≤ ± 15 %)			
Indicator	Operation indicator (red)			
Approval	CE ENEC	CE ENEC	CE ENEC	CE ENEC

1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

Installation	Non-flush type			
General	PRD□08-4D □	PRD□12-8D □	PRD□18-14D □	PRD□30-25D □
DIA. of sensing side	Ø 8 mm	Ø 12 mm	Ø 18 mm	Ø 30 mm
Setting distance	0 to 2.8 mm	0 to 5.6 mm	0 to 9.8 mm	0 to 17.5 mm
Sensing distance	4 mm	8 mm	14 mm	25 mm
Hysteresis	≤ 15 % of sensing distance			
Standard sensing target: iron	12 × 12 × 1 mm	25 × 25 × 1 mm	40 × 40 × 1 mm	75 × 75 × 1 mm
Response frequency ¹⁾	800 Hz	400 Hz	200 Hz	100 Hz
Affection by temperature	± 10 % for sensing distance at ambient temperature 20°C (DIA. of sensing side Ø 8 mm: ≤ ± 15 %)			
Indicator	Operation indicator (red)			
Approval	CE ENEC	CE ENEC	CE ENEC	CE ENEC

1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

Unit weight (package)	Ø 8 mm	Ø 12 mm	Ø 18 mm	Ø 30 mm	
Cable	Normal	≈ 43 g (≈ 63 g)	≈ 62 g (≈ 74 g)	≈ 97 g (≈ 115 g)	≈ 143 g (≈ 180 g)
	Long	-	≈ 82 g (≈ 94 g)	≈ 127 g (≈ 145 g)	≈ 183 g (≈ 220 g)
Cable connector	Normal	≈ 25 g (≈ 45 g)	≈ 37 g (≈ 67 g)	≈ 62 g (≈ 80 g)	≈ 108 g (≈ 145 g)
	Long	-	≈ 32 g (≈ 55 g)	≈ 92 g (≈ 110 g)	≈ 130 g (≈ 203 g)
Connector	Normal	≈ 12 g (≈ 32 g)	≈ 20g (≈ 49 g)	≈ 41 g (≈ 81 g)	≈ 138 g (≈ 197 g)
	Long	-	≈ 24 g (≈ 54 g)	≈ 60 g (≈ 78 g)	≈ 193 g (≈ 252 g)

Cylindrical Inductive Proximity Sensors with Long Sensing Distance (Connector Type) PRDCM Series



Power supply	12-24 VDC= (ripple P-P: ≤ 10%), operating voltage: 10-30 VDC=
Current consumption	≤ 10 mA
Control output	≤ 200 mA
Residual voltage	DIA. of sensing side Ø 8mm: ≤ 2 V DIA. of sensing side Ø 12 mm, Ø 18 mm, Ø 30 mm: ≤ 1.5 V
Protection circuit	Surge protection circuit, output short over current protection circuit, reverse polarity protection
Insulation resistance	≥ 50 MΩ (500 VDC= megger)
Dielectric strength	DIA. of sensing side Ø 8mm : 1,000 VAC~ 50/60 Hz for 1 min (between all terminals and case) (connector type: 1,500 VAC~ 50/60 Hz for 1 min (between all terminals and case)) DIA. of sensing side Ø 12 mm, Ø 18 mm, Ø 30 mm : 1,500 VAC~ 50/60 Hz for 1 min (between all terminals and case)
Vibration	1 mm amplitude at frequency 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours
Shock	500 m/s ² (≈ 50 G) in each X, Y, Z direction for 3 times
Ambient temperature	-25 to 70°C, storage: -30 to 80°C (non-freezing or non-condensation)
Ambient humidity	35 to 95 %RH, storage: 35 to 95 %RH (non-freezing or non-condensation)
Protection structure	IP67 (IEC standards)
Connection	Cable type ¹⁾ / Cable connector type ¹⁾ / Connector type model
Cable spec. ²⁾	DIA. of sensing side Ø 8 mm: Ø 3.5 mm, 3-wire DIA. of sensing side Ø 12 mm: Ø 4 mm, 3-wire DIA. of sensing side Ø 18 mm, Ø 30 mm: Ø 5 mm, 3-wire
Wire spec.	Ø 3.5 mm cable : AWG 24 (0.08 mm, 40-wire), insulator diameter: Ø 1 mm Ø 4 mm, Ø 5 mm cable : AWG 22 (0.08 mm, 60-wire), insulator diameter: Ø 1.25 mm
Connector spec.	M12 connector
Material	Standard type cable (black): polyvinyl chloride (PVC) Oil resistant cable (gray): polyvinyl chloride (oil resistant PVC)
General	Case/Nut: nickel plated brass (DIA. of sensing side Ø 8 mm connector type case: SUS303), washer: nickel plated iron, sensing side: PBT
Spatter-resistant	Case/Nut: PTFE coated brass, washer: PTFE coated iron, sensing side: PTFE

1) Except spatter-resistant type
2) Cable type: 2 m, Cable connector type: 300 mm

Product Overview

Multi-Channel Pressure Sensor Indicators PSM Series



Model	PSM4-V □□	PSM4-A □□	PSM8-V □□	PSM8-A □□
Display pressure range	Depending on pressure type, pressure unit (refer to Rated Pressure and Max. Display Pressure Range)			
Power supply	12-24 VDC≐ (ripple P-P: max. 10 %)			
Allowable voltage range	90 to 110 % of rated voltage			
Power consumption	Max. 3 W			
Current consumption ¹⁾	Max. 100 mA (120mA for RS485 communication.)			
Max. inputs	4		8	
Sensor input	1-5 VDC≐	DC4-20 mA	1-5 VDC≐	DC4-20 mA
Power supply for sensor ²⁾	12-24 VDC≐, 40 mA for each channel (max. current of 1-4 CH: max. 100 mA, max. current of 5-8 CH: max. 100 mA)			
Control output	NPN or PNP open collector output • Load voltage: max. 30 VDC≐ • Load current: max. 100 mA • Residual voltage-NPN: max. 1 VDC≐, PNP: max. 2 VDC			
Hysteresis	Min. display interval			
Repeat error	±0.1 % F.S. ±min. display interval			
Response time	2.5 ms, 100 ms, 500 ms, 1000ms		5 ms, 100 ms, 500 ms, 1000 ms	
Protection circuits	Output short overcurrent protection, reverse power polarity protection circuit			
Number of display digits	PV display part, SV display part: 4-digit, channel display part: 1-digit			
Display method	Display part	7-segment LED method • PV display part: red or green ³⁾ • SV display part: green • Channel display part: red		
	Output indicator	8 (OUT1, OUT2: 4 for each)		16 (OUT1, OUT2: 8 for each)
Display accuracy	±0.1 % ±2-digit (at 23 ±5°C)			
Control output and display temperature	0 to 50°C: ±0.2 % F.S. ±2-digit (based on 25°C), -10 to 0 °C: ±0.3 % F.S. ±2-digit			
Digital input ⁴⁾	Digital input (1 point) • Contact input-[L]: max. 0.2V • Non-contact input: ON- residual voltage max. 1.0V, OFF- leakage current max. 0.1 mA			
Communication ⁵⁾	RS485 communication (Modbus RTU method)			
Connections	Input	Sensor connector (for CNE-P04, sold separately) terminal		
	Output	Hirose connector 20-pin (HIF3BA-20D-2.54R, flat cable 20-wire, sold separately) terminal		

- 1) Except current consumption of sensor part. When all output LED are ON, it is max. 120 mA.
 2) Do not short +V and 0V of sensor connector. It may cause break inner circuit.
 3) It is able to select at PV display part color [CLOR] in parameter 2 group.
 4) It is only for the digital input option model (PSM□□□□D).
 5) It is only for the RS485 communication option model (PSM□□□□R).

Compact Non-Indicating Pressure Sensors PSS Series



Model	Voltage (1-5VDC) output	PSS-V01V-R1/8	PSS-01V-R1/8	PSS-1V-R1/8	PSS-C01V-R1/8
		PSS-V01A-R1/8	PSS-01A-R1/8	PSS-1A-R1/8	PSS-C01A-R1/8
Pressure type	Gauge pressure		Standard pressure		Compound pressure
		Negative pressure			
Rated pressure range	0.0 to -101.3 kPa	0.0 to 100.0 kPa	0 to 1,000 kPa	-101.3 to 100.0 kPa	
Analog output range	5.0 to -101.3 kPa	-5.0 to 110.0 kPa	-50 to 1,100 kPa	-101.3 to 110.0 kPa	
Max. pressure range	2 times of rated pressure	2 times of rated pressure	1.5 times of rated pressure	2 times of rated pressure	
Applied fluid	Air, Non-corrosive gas				
Power supply	12-24 VDC≐ (ripple P-P: Max. 10 %)				
Permissible voltage range	90 to 110 % of rated voltage				
Current consumption	Voltage output type: Max. 15 mA, Current output type: —				
Analog output	Voltage output	• Output voltage: 1-5 VDC≐ ±2 % F.S. • Linear: Max. ±1 % F.S. • Output impedance: 1 kΩ			
	Current output	• Output current: DC4-20 mA ±2 % F.S. • Linear: Max. ±1 % F.S.			
Temp. characteristics of analog output	Max. ±2 % F.S. of output voltage/current at 25°C within temperature range 0 to 50°C				
Protection structure	IP40(IEC Standards)				

Dual Digital Display Pressure Sensors PSQ Series



Pressure type	Gauge pressure (compound pressure)			
Type	NPN or PNP open collector output type		NPN or PNP open collector output +analog output or external input type	
Model ¹⁾	PSQ-C01C- □	PSQ-C1C- □	PSQ-C01CU- □	PSQ-C1CU- □
Rated pressure range	-100.0 to 100.0 kPa	-100 to 1,000 kPa	-100.0 to 100.0 kPa	-100 to 1,000 kPa
Display & Setting pressure range	-101.3 to 110.0 kPa	-101 to 1,100 kPa	-101.3 to 110.0 kPa	-101 to 1,100 kPa
Min. display unit	0.1 kPa	1 kPa	0.1 kPa	1 kPa
Max. pressure range	2 times of rated pressure	1.5 times of rated pressure	2 times of rated pressure	1.5 times of rated pressure
Applied fluid	Air, non-corrosive gas			
Power supply	12-24 VDC≐ (ripple P-P: max. 10 %)			
Allowable voltage range	90 to 110 % of rated voltage			
Current consumption	Max. 50 mA		Max. 50 mA (analog output: max. 70 mA)	
Control output	NPN or PNP open collector output • Load voltage: max. 30 VDC≐ • Load current: max. 100 mA • Residual voltage: max. 2 VDC≐			
Hysteresis ²⁾	Min. display interval			
Repeat error	±0.2 % F.S. ± min. display interval			
Response time	Select one; 2.5 ms, 5 ms, 10 ms, 25 ms, 50 ms, 100 ms, 250 ms, 500 ms, 1,000 ms, 5,000 ms			
Protection circuit	Output short over current protection circuit			
Analog output ³⁾	Voltage output	• Output voltage: 1-5 VDC≐ ±2.5 % F.S. • Linear: max. ±1 % F.S. • Resolution: 1/2,000 • Output impedance: approx. 240 Ω • Response time: 50 ms		
	Current output	• Output current: DC4-20 mA ±2.5 % F.S. • Linear: max. ±1 % F.S. • Resolution: 1/2,000 • Output impedance: approx. 100 kΩ • Response time: 50 ms		
External input ³⁾ (Auto shift/ Remote zero/ Hold)	-		• ON voltage: Max. 0.4VDC≐ • OFF voltage: 5-Vin or open • Resolution: 1/2,000 • Output impedance: approx. 100 kΩ	
Display digits	Present value (PV) indicator, setting value (SV) indicator: 4-digit			
Display method	12 segment LCD method			
Protection structure	IP40 (IEC standard)			

- 1) □ in model represents the type of pressure port. Standard: Rc1/8, option: R1/8, NPT1/8.
 2) In hysteresis output mode, it is variable.
 3) Select one between analog output (voltage or current) and external input.

Modular Multi-Channel High Performance Temperature Controllers TMH Series



Model	TMH2	TMH4
No. of channels	2 channels	4 channels
Sampling period	50 ms (2 channels or 4 channels synchronous sampling)	
Input specification	Thermocouple, RTD, Analog (refer to 'Input Specification')	
CT input	• 0.0 - 50.0 A (primary current measurement range) • CT ratio: 1/1,000 • Measurement accuracy: ±5 % F.S. ±1 digit	
Digital input	• Connect input ON: ≤ 1 kΩ, OFF: ≥ 100 kΩ • Solid state input Residual voltage: ≤ 0.9 V, Leakage current: ≤ 0.5 mA • Outflow current: ≈ 0.3 mA per input	
Control type	Heating, cooling, heating & cooling: ON/OFF, P, PI, PD, PID control	
Control output	• Relay: 250 VAC~ 3 A 1a mechanical life cycle: ≥ 10,000,000 operations, electrical life cycle: ≥ 100,000 operations • SSR: 12 VDC≐ ±3 V, ≤ 20 mA • Current ¹⁾ : DC 4 - 20 mA or DC 0 - 20 mA (Load: ≤ 500 Ω)	
Alarm output	250 VAC~ 3 A 1a Mechanical life cycle: ≥ 10,000,000 operations Electrical life cycle: ≥ 100,000 operations	
Communication	Modbus RTU	
Power supply ²⁾	24 VDC≐	
Allowable voltage range	90 to 110 % of rated voltage	
Power Consumption	≤ 5 W (for max. load)	
Protection structure	IP20 (IEC standard)	

- 1) When the control output is set to the current output, the heater current value monitoring function through the CT input terminals is not available.
 2) The control extension/option/communication module uses the power voltage from the control basic module.

Product Overview

Digital Panel meters with Diverse Input/ Output Options MT4Y Series



Model	MT4Y-DV-4□	MT4Y-DA-4□	MT4Y-AV-4□	MT4Y-AA-4□
Input type	DC voltage	DC current	AC voltage ¹⁾	AC current ¹⁾
Max. allowable input	110 % F.S. for each measured input range			
Display method	7-segment (red) LED (character height: 14.2 mm)			
Display accuracy	Dependent on the ambient temperature			
23 ± 5°C	± 0.1 % F.S. rdg ± 2 digit	± 0.1 % F.S. rdg ± 2 digit ²⁾	± 0.3 % F.S. rdg ± 3 digit	± 0.3 % F.S. rdg ± 3 digit
-10 to 50°C	± 0.5 % F.S. rdg ± 3 digit			
Max. display range	-1999 to 9999 (4 digit)			
A / D conversion method	ΣΔ (Sigma Delta) ADC			
Sampling cycle	50 ms	16.6 ms		
Preset output	None (indicator) / Relay / NPN open collector / PNP open collector output model			
Relay	Contact capacity: 250 VAC ~ 3 A, 30 VDC = 3 A Contact composition: N.O (1a)			
NPN / PNP open collector	Output capacity: ≤ 12 - 24 VDC = ± 2 VDC =, 50 mA resistive load			
Sub output	None (indicator) / BCD Dynamic / Transmission (DC 4 - 20 mA) / Low speed serial / RS485 Communication output mode			
BCD Dynamic / Low speed serial	NPN open collector output Output capacity: ≤ 12 - 24 VDC =, 50 mA resistive load			
Transmission (DC 4 - 20 mA)	Resolution: 1/12,000 (load resistance: ≤ 600 Ω) Response time: ≤ 450 ms			
Power supply	100 - 240 VAC ~ ± 10 % 50 / 60 Hz			
Power consumption	5 VA			

1) Available frequency display, Display accuracy (23 ± 5°C): ± 0.1% F.S. rdg ± 2 digit
2) 5 A terminal: ± 0.3% F.S. rdg ± 3 digit

DeviceNet Digital Remote I/O (Terminal Block Type) ARD-D Series



Model	ARD-DI08A	ARD-DI16N	ARD-DI16P	ARD-DO08R	ARD-DO08S	ARD-DO16N	ARD-DO16P	ARD-DX16N	ARD-DX16P
	ARD-DI08AE	ARD-DI16NE	ARD-DI16PE	ARD-DO08RE	ARD-DO08SE	ARD-DO16NE	ARD-DO16PE	ARD-DX16NE	ARD-DX16PE
Power supply	Rated voltage: 24 VDC =, Voltage range: 12-28 VDC =								
Power consumption	Max. 3 W								
Isolation type	Photocoupler isolated								
I/O points	8 points of AC input	16 points of NPN input	16 points of PNP input	8 points of Relay output	8 points of SSR output	16 points of NPN output	16 points of PNP output	Each 8 points of NPN input + output	Each 8 points of PNP input + output
Control I/O	Voltage	75-250 VAC ~	10-28 VDC =	Normally Open (N.O.) 250 VAC ~ 2A 1a	30-250 VAC ~	10-28 VDC = (Voltage drop: Max. 0.5V)		Input: 10 mA, Output: 0.5A/point (Leakage current: Max. 0.5 mA)	
	Current	13 mA/point	10 mA/point		1A/point	0.5A/point (Leakage current: Max. 0.5 mA)			
Common	8 points, Common			1 point, 1 COM	8 points, Common				
Protection	IP20(IEC standard)								
Protection circuit	Surge, Reverse polarity protection circuit (Common) • TR output type: Overcurrent protection circuit(NPN type: Operated at min. 1.9A - Power is resupplied in overcurrent status, PNP type: Operated at min. 0.7A), Overheating protection(over 165°C), Short-circuit protection								
Indicator	Network status(NS) LED(Green, Red), Unit status(MS) LED(Green, Red), I/O status LED(Input: Green, Output: Red)								
Mounting	DIN rail or Screw lock type								

DeviceNet Communication

Item	Specification
Communication	I/O Slave messaging(Group 2 Only slave) - Poll command: Yes - Bit_strobe command: Yes - Cyclic command: Yes - COS command: Yes
Communication distance	Max. 500 m(125 kbps), Max. 250 m(250 kbps), Max. 100 m(500 kbps)
Node address setting	Max. 64node(Set by front rotary switch)
Communication speed ¹⁾	125, 250, 500 kbps (Automatic setting when connecting with Master)
Insulation	I/O and inner circuit: Photocoupler insulation, DeviceNet and inner circuit : Non-insulated, Power of DeviceNet: Non-insulated
Power supply	- Rated voltage: 24 VDC - Voltage: 12-28 VDC - Power consumption: Max. 3 W
Approval	ODVA Conformance tested

1) The communication speed is automatically set to the communication speed of the Master (PC, PLC, etc.) When changing the communication speed during operation, the network status (NS) LED flashes in red and communication is not possible.

Slim Remote I/O ARIO Series



Coupler

Model	ARIO-C-EC	ARIO-C-CL	ARIO-C-PN	ARIO-C-PB	ARIO-C-EI	ARIO-C-DN	ARIO-C-MT	ARIO-C-MR
Coupler type	EtherCAT	CC-Link	ProfiNet	ProfiBus	Ethernet/IP	DeviceNet	ModbusTCP compatible	ModbusRTU compatible
Power supply ¹⁾	ABUS(external consump.)	24 VDC =, max. 400 mA (max. 9.6 W, coupler+module, max. 200 mA/CH, 2 CH/COM)						
	ABUS(internal supply)	5 VDC =, max. 960 mA (max. 4.8 W, module)						
I/O	24 VDC =, max. 4,000 mA (max. 96 W, max. 2,000 mA/CH, 2 CH/COM)							
Power consumption	24 VDC = standby/run: 200 mA, max. load: 400 mA (coupler max. load)							
Comm. speed	100 Mbps	10 Mbps	100 Mbps	12 Mbps	10/100 Mbps	500 kbps	10/100 Mbps	115.2 kbps
Memory ²⁾	Input	512 byte	256 byte	512 byte	244 byte	504 byte	255 byte	512 byte
	Output	512 byte	256 byte	512 byte	244 byte	504 byte	255 byte	512 byte
Max. connections for modules ²⁾	64 units	32 units	64 units	32 units	64 units	32 units	64 units	32 units
Comm. connector	RJ45 connectors: 2	5-pin PCB connector	RJ45 connectors: 2	9-pin D SUB connector	RJ45 connectors: 2	5-pin PCB connector	RJ45 connectors: 2	5-pin PCB connector
Setting and monitoring	PC connection with USB 2.0 Micro type connector (comprehensive device management program, DAQMaster)							
Protection structure ³⁾	IP20 (IEC standards)							

1) It is for including power/special modules and excluding coupler/end modules. In case of one coupler module connecting, the ARIO digital module is available to connect up to 8 units and the ARIO analog module is available to connect up to 4 units. For connecting the modules, consider power consumption of the sensors and drivers connected the ARIO coupler.
2) If it is over the limit size or connected units, system may be error.
3) Autonics test standard

Digital I/O Module

Type	Digital input module				Digital output module	
Model	4CH	ARIO-S-DI04N	ARIO-S-DI04P	ARIO-S-DO04N	ARIO-S-DO04P	
	8CH	ARIO-S-DI08N	ARIO-S-DI08P	ARIO-S-DO08N	ARIO-S-DO08P	
I/O common	NPN	PNP	NPN	PNP		
Input voltage	Turn ON: min. 7 VDC = Turn OFF: max. 0.4 VDC =			—		
Output leakage voltage	—			Max. 1.2 VDC =		
I/O signal level ¹⁾	24 VDC = ± 10%					
I/O current consumption	4CH	Max. 6 mA/CH, 4 CH/COM		—		
	8CH	Max. 6 mA/CH, 8 CH/COM		—		
Rated output current	4CH	—		Max. 500 mA/CH, 4 CH/COM		
	8CH	—		Max. 500 mA/CH, 8 CH/COM		
On delay time	Max. 0.5 ms					
Off delay time	Max. 1.5 ms					
Power consump. (ABUS)	5 VDC =, max. 100 mA (max. 0.5 W)					

1) Power supply is from ARIO-P Series. Normal operation is available when I/O power voltage is supplied.

Analog I/O Module

Type	Analog input module			Analog output module	
Model	2CH	ARIO-S-AI02V1	ARIO-S-AI02C1	ARIO-S-AO02V1	ARIO-S-AO02C1
	4CH	ARIO-S-AI04V1	ARIO-S-AI04C1	ARIO-S-AO04V1	ARIO-S-AO04C1
I/O method	Voltage input	Current input	Voltage output	Current output	
I/O range	-10 to 10 VDC =	0 to 20 mA	-10 to 10 VDC =	0 to 20 mA	
Accuracy	Room temp.	± 0.3 % F.S.			
	Out of room temp.	± 0.6 % F.S.			
Input impedance	Min. 1 MΩ	Max. 250 Ω	—		
Load resistance	—		Min. 5 kΩ	Max. 350 Ω	
Status indicator ON conditions	Below -1V or over 1V	Over 1 mA	Below -1V or over 1V	Over 1 mA	
Resolution	12bit				
Power consumption	ABUS	5 VDC =, max. 180 mA (max. 0.9 W)			5 VDC =, max. 100 mA (max. 0.5W)
	I/O	24 VDC =, max. 15 mA (max. 0.36 W)			24 VDC =, max. 60 mA (max. 1.44W)

Product Overview

Relay Terminal Blocks ABS Series



Model	ABS-S04PA-CN ABS-S04TN-CN	ABS-H16PA-NN(PN) ABS-H16TN-NN(PN)	ABS-H32PA-NN(PN) ABS-H32TN-NN(PN)
Power supply	24 VDC± 10 %		
Rated load voltage & current ¹⁾	250 VAC~ 3 A, 30 VDC= 3A		250 VAC~ 2A, 30 VDC= 2A (2A/1point, 8A/1COM)
Current consumption	PA type	≤ 8 mA ²⁾	≤ 8 mA ²⁾ / ≤ 13 mA ³⁾
	TN type	≤ 8.5 mA ²⁾	≤ 8.5 mA ²⁾ / ≤ 13.5 mA ³⁾
Output type	1a contact relay output		
Applicable relay	PA: APAN3124 [MATSUSHITA (Panasonic)], TN: NYP24W-K [TAKAMISAWA (Fujitsu)]		
No. of relay points	4-point	16-point	32-point (8-point/1COM)
No. of connector pins	-	20-pin	40-pin
Indicator	Operation indicator: blue LED		Operation indicator: red LED, operation and disconnection indicator: blue LED
Accessory ⁴⁾	Jumper bar: 2 (Model No: JB-7.62-04)	Jumper bar: 2 (Model No: JB-7.62-08)	-

- 1) Relay contact capacity for resistive load.
 2) The current consumption including LED current by one relay.
 3) The current consumption including power LED current of '1'.
 4) ABS-H32 □□-NN(PN) does not supply jumper bar.

IR Fiber Laser Marking System ALF-3D Series



Marking Specifications by Lens

Item	Lens	Marking Range	Marking Distance	Focal Distance Control
Standard	160 mm	□100 mm	170±3 mm	±22 mm
	100 mm	□55 mm	110±3 mm	±22 mm
Optional	254 mm	□160 mm	294±5 mm	±22 mm
	420 mm	□300 mm	465±10 mm	±22 mm

Specifications

Models	ALF-20-3D	ALF-30-3D	ALF-50-3D
Laser type	Yb: Fiber laser		
Max output power	20 W	30 W	50 W
Laser wavelength	1,064 nm		
Marking method	Galvanometer scanning method		
Marking speed	Up to 12,000 mm/s		
Power supply	220 VAC, 60 Hz		
Power consumption	Under 500 VA		
Output accuracy	±5 % F.S.		
Cooling method	Air-cooling		
Environment	Temp.	5 to 40°C (41 to 104°F)	
	Humi.	10 to 90 %RH (no condensation)	
	Ground	Length of wire: min. 2.6 mm (5.5 mm), resistance: max. 10 Ω	
Unit weight	22 kg		

※ The laser output is customizable.

Sensor Distribu- tion Boxes (M12 5-pin Connector) PT Series



Type	M12 5-pin connector type																																					
	Cable type						Connector type						Spring terminal type ¹⁾			Pluggable screw terminal type ¹⁾																						
Model	NPN type		PT4-3DN5-□		PT4-4DN5-□		PT6-3DN5-□		PT6-4DN5-□		PT8-3DN5-□		PT8-4DN5-□		PT4-C3DN5		PT4-C4DN5		PT6-C3DN5		PT6-C4DN5		PT8-C3DN5		PT8-C4DN5		PT4-S3DN		PT6-S3DN		PT8-S3DN		PT4-P3DN		PT6-P3DN		PT8-P3DN	
	PNP type		PT4-3DP5-□		PT4-4DP5-□		PT6-3DP5-□		PT6-4DP5-□		PT8-3DP5-□		PT8-4DP5-□		PT4-C3DP5		PT4-C4DP5		PT6-C3DP5		PT6-C4DP5		PT8-C3DP5		PT8-C4DP5		PT4-S3DP		PT6-S3DP		PT8-S3DP		PT4-P3DP		PT6-P3DP		PT8-P3DP	
Port	4-port		6-port		8-port		4-port		6-port		8-port		4-port		6-port		8-port		4-port		6-port		8-port		4-port		6-port		8-port		4-port		6-port		8-port			
Output type ²⁾	3-wire (1-sig- nal)		4-wire (2-sig- nal)		3-wire (1-sig- nal)		4-wire (2-sig- nal)		3-wire (1-sig- nal)		4-wire (2-sig- nal)		3-wire (1-sig- nal)		4-wire (2-sig- nal)		3-wire (1-sig- nal)		4-wire (2-sig- nal)		3-wire (1-sig- nal)		4-wire (2-sig- nal)		3-wire (1-sig- nal)		4-wire (2-sig- nal)		3-wire (1-sig- nal)		4-wire (2-sig- nal)		3-wire (1-sig- nal)					
Power supply	12-24 VDC=																																					
Rated current	2A (per signal), 4A (per port), 10A (total)												2A (per signal), 2A (per port), 7A (total)																									
Leakage current	Max. 0.5 mA												-																									
Current consump- tion	Max. 5mA																																					
Connection life cycle	Min. 200 operations																																					
Insulation resistance	Over 100 MΩ (at 500 VDC megger)																																					
Dielectric strength	500 VAC 50/60 Hz for 1 min																																					
Vibration	3mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours																																					
Shock	500 m/s ² (approx. 50G) in each X, Y, Z direction for 3 times																																					
Indicator	Power indicator: Red LED, Operation indicator: Green LED																																					
Protection ³⁾	IP67 (IEC Standards/when mounting connector, waterproof cover) or IP52 (IEC Standards/when mounting protection cover)																																					

- 1) Applicable cable out diameter is 10.5mm±0.3 for Spring/Pluggable screw terminal type.
 2) Connect the sensor to the proper output type.
 3) This is not applicable when connectors and protection/waterproof covers are not mounted.

Autonics

Products

Sensors, Controllers, Motion Devices, Safety, Measuring Equipment, Laser Marking System, Connection Equipment and more

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* The dimensions or specifications on this product guide may change and some models may be discontinued without notice.

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