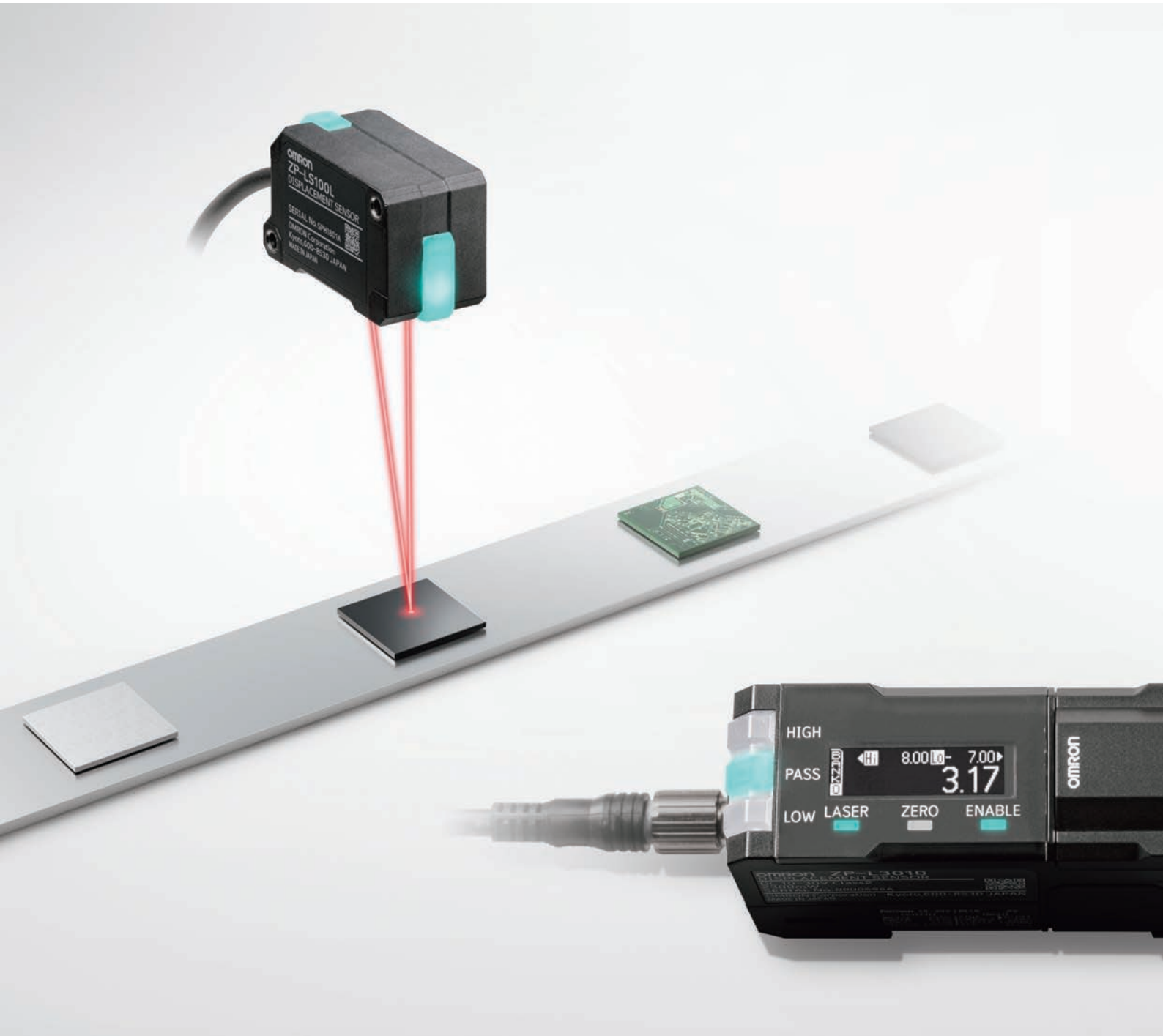
Laser Displacement Sensor
ZP-L

Premium detection stability and optimal usability for Laser Displacement Sensors



For all engineers who don’t have time for the hassle

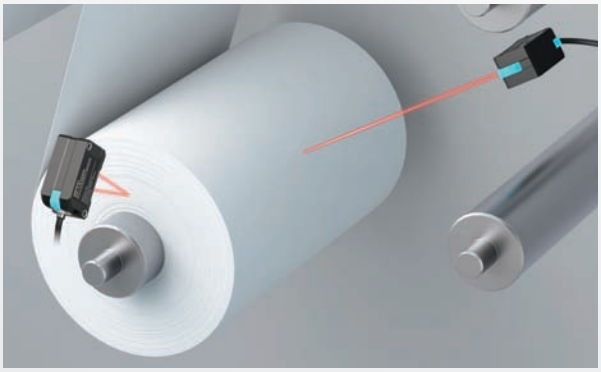
We at OMRON believe that we are now at a time where laser displacement sensors should be selected for their usability.

Our new ZP-L Series products are equipped with a carefully designed user interface, as well as detection accuracy.

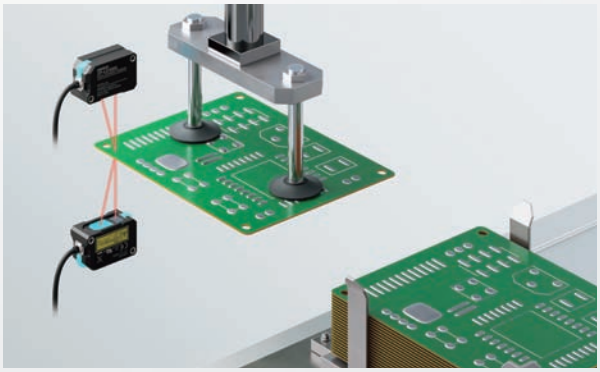
They’re packed with creative features that allow engineers to cut back on time and effort unknowingly spent when working with displacement sensors.

For inspection/detection of around 10 µm to 1 mm

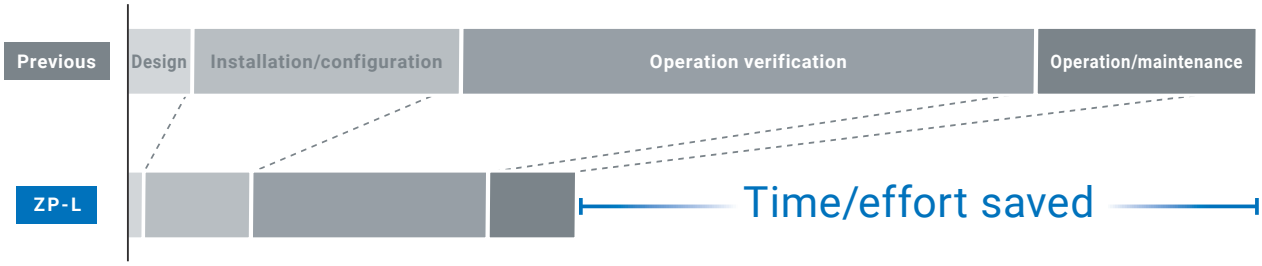
Detecting material remaining on roll



Checking for doubled-up boards

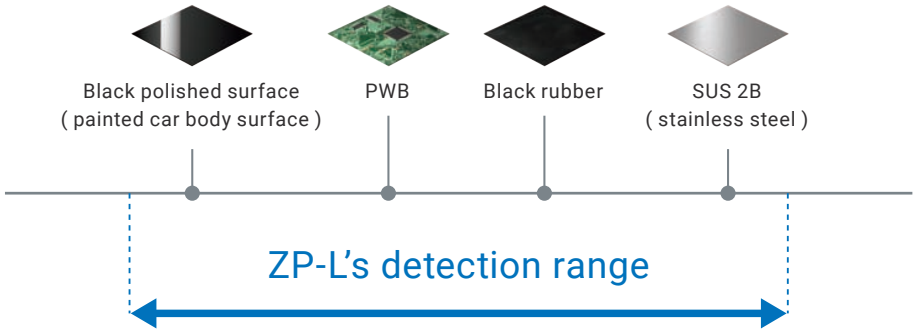


Using displacement sensors is now easier with dramatically less effort



Sensing performance delivering stable detection with initial configuration left intact

P. 4



User interface requiring no manuals for easy understanding

P. 6

Support software allowing quick test without loggers

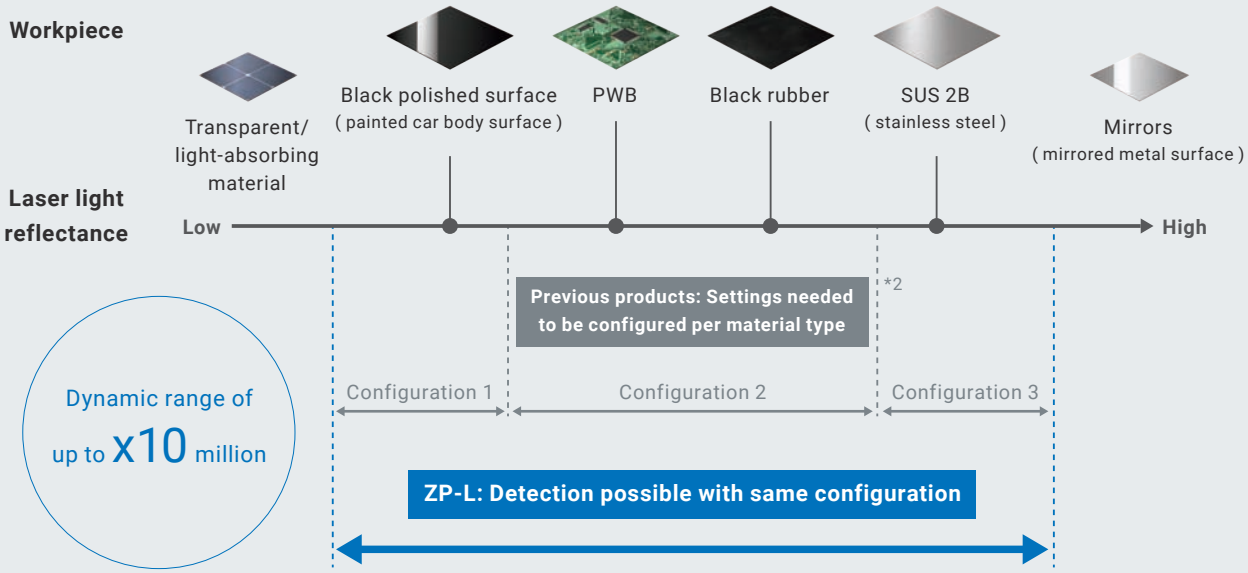
P. 8

Support software Wave Inspire ZP

Sensing performance delivering stable detection with initial configuration left intact

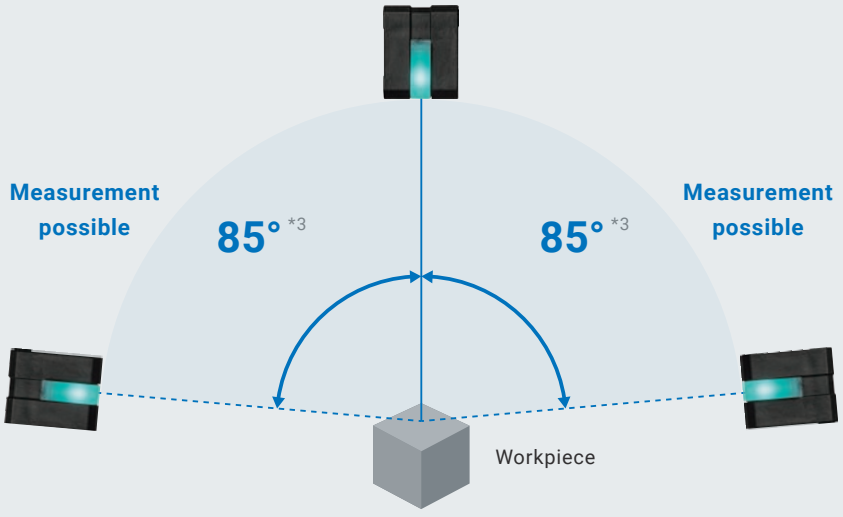
Different materials can be detected with the same configuration

ZP-L delivers a wide dynamic range[*1] that delivers stable detection of a wide range of workpieces, from black polished workpieces (such as the painted surface of a car body), which reflect little light, to metal workpieces, which reflect a lot of light.



Wide angle characteristic enables flexible installation

ZP-L has a wide angle characteristic, powered by its wide dynamic range and OMRON's unique sensing algorithms. It can measure an area of up to approximately 85°,[*3] allowing for flexible installation. For example, in cases where sensors cannot be installed directly above the target workpiece, ZP-L can be positioned diagonally and still deliver reliable measurement.



Reliable best-of-class[*4] detection performance

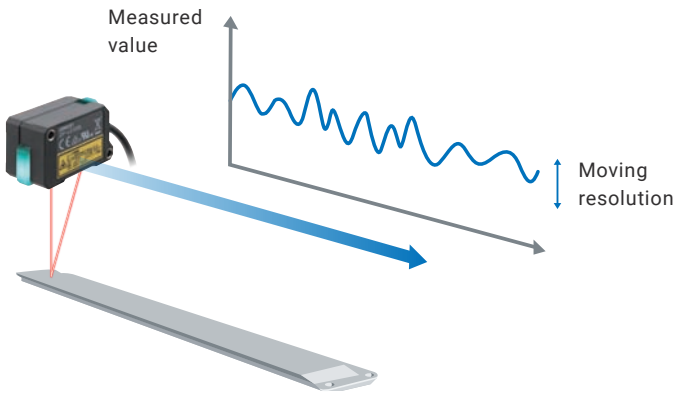
When selecting or replacing your laser displacement sensors, be sure to check the following three performance attributes.

Static resolution	Linearity	Temperature characteristics
0.5 μm	0.025% F.S.	0.01% F.S./℃

Note: Representative ZP-L Series performance values

Reduces two types of variations: those in measurements made in motion and between individual sensor units

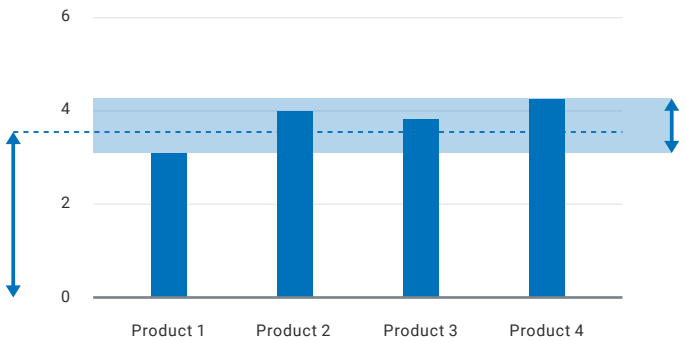
When measuring moving workpieces, laser displacement sensors, by their nature, are impacted by workpiece surface conditions, and variations in measurement values may exceed the resolution set forth in their specifications.



Measurement value variations in measurements made in motion
(moving resolution) [μm]

In-motion variation

The average is approx. 4 μm



Performance variation between individual units

approx.1.2μm

*1. "Dynamic range" is a metric that indicates the range of detectable workpiece types, expressed as the ratio between the reflectance of the most reflective detectable workpiece and that of the least reflective detectable workpiece.
*2. Compared with OMRON's ZX2 Series.
*3. Representative example for workpieces with metal surfaces. Shape or material of measured object may impact measurement. Please check in advance using actual devices.
*4 . Best-performing in class of laser displacement sensors for detecting around 10 μm to 1 mm (according to OMRON investigation in November 2024).

User interface requiring no manuals for easy understanding

Easy-to-understand menu display

Amplifier units for previous laser displacement sensors used segment displays, which made it difficult for workers to know which item they were configuring without referencing their manuals. ZP-L amplifier units are equipped with OLED displays, which are capable of much richer presentation, allowing for easy-to-understand menu displays that save you the time of searching through your manuals for the right page.

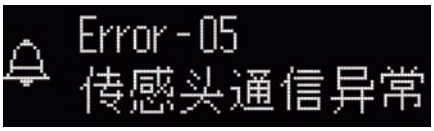
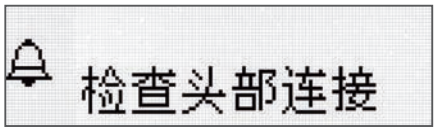
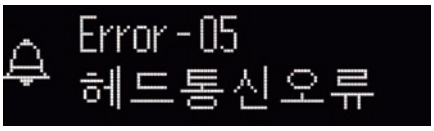
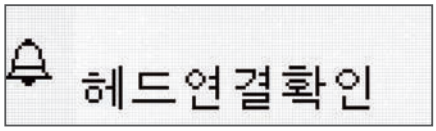
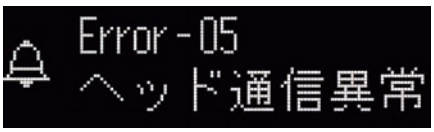
Previous displays

ZP-L display

Required action as well as error displayed in multiple languages

PATENT PENDING [*1]

ZP-L's display supports four languages, so that on-site workers at local factories can understand its configuration. Error displays have been carefully designed as well. The details of the error and the required action can be shown in different languages on the OLED display, allowing on-site first responders to take smooth action and enabling faster recovery.

	Error details	Required action
English		
Chinese		
Korean		
Japanese		

Intuitive screen design

PATENTED [*1]

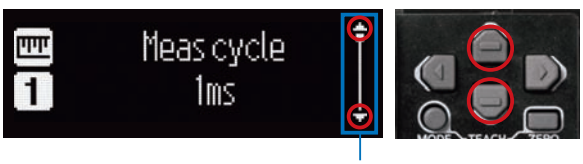
The configuration screen is ingeniously designed to prevent users from losing track of where they are in their configuration process. Its layout, which works in coordination with button operation, allows for intuitive operation.

Shows where you are in configuration process

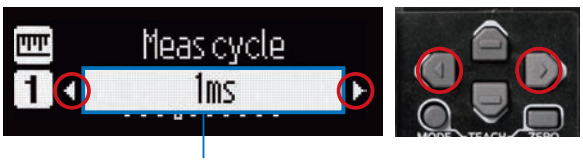
Configuration item group displayed using icon and number

Pixel art icon indicates number of choices and which of them is currently displayed

Guide linked to button positions



Scrollbar



Field for setting value is highlighted

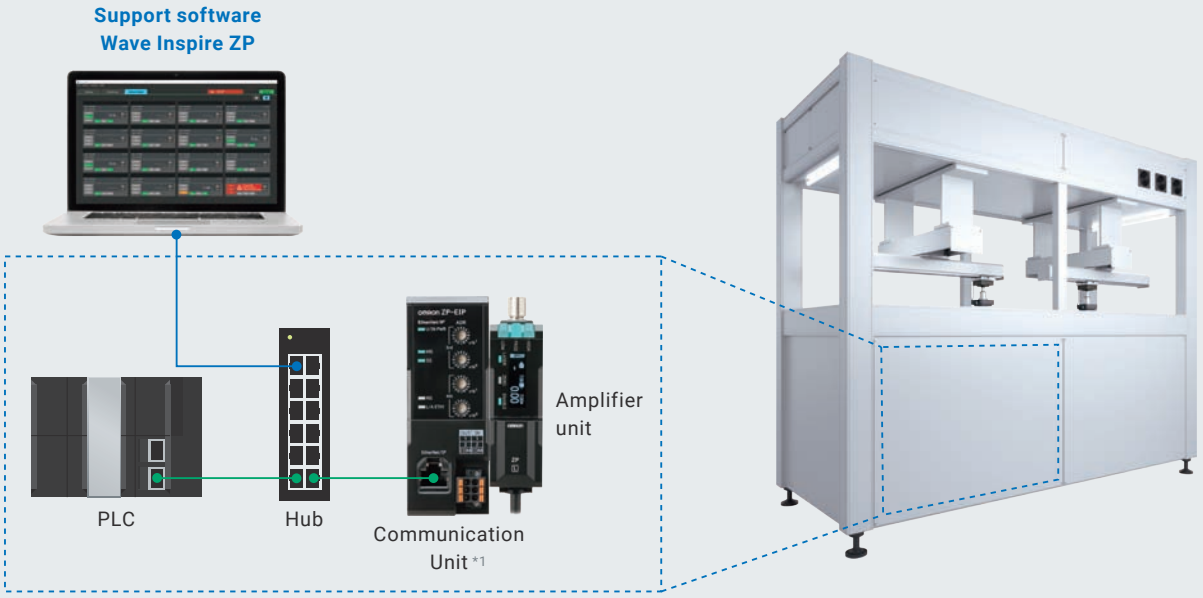
*1. "Patent pending" and "Patented" refer to patent status in Japan (as of November 2024).

Support software allowing quick test without loggers

Operation/maintenance

Sensor conditions can be checked without stopping equipment

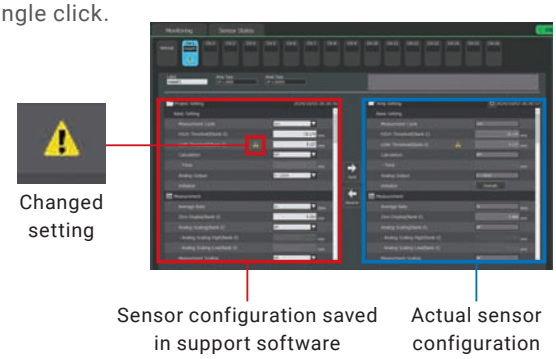
With ZP-L, you can check sensor conditions without impacting the equipment's control operations, just by connecting the PC with the support software Wave Inspire ZP installed to the switching hub. There's no need for data loggers, or to program PLCs for operation checks. The support software Wave Inspire ZP can be downloaded for free. Please refer to the system configuration page in the data sheet for details.



Changes in configuration can be found and reversed quickly

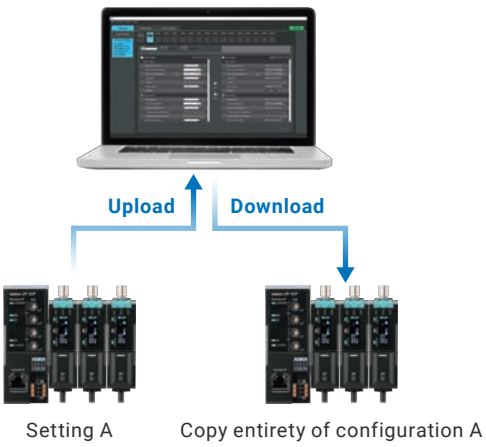
PATENT PENDING *2

Sensor configurations can be saved to the support software Wave Inspire ZP, which means you can compare your current sensor configuration with that at the time of setup. It also means that you can quickly find any changes that may have been made to your usual sensor configuration. Once you find the changes, you can reverse them with just a single click.



No need to set the same configuration over and over again

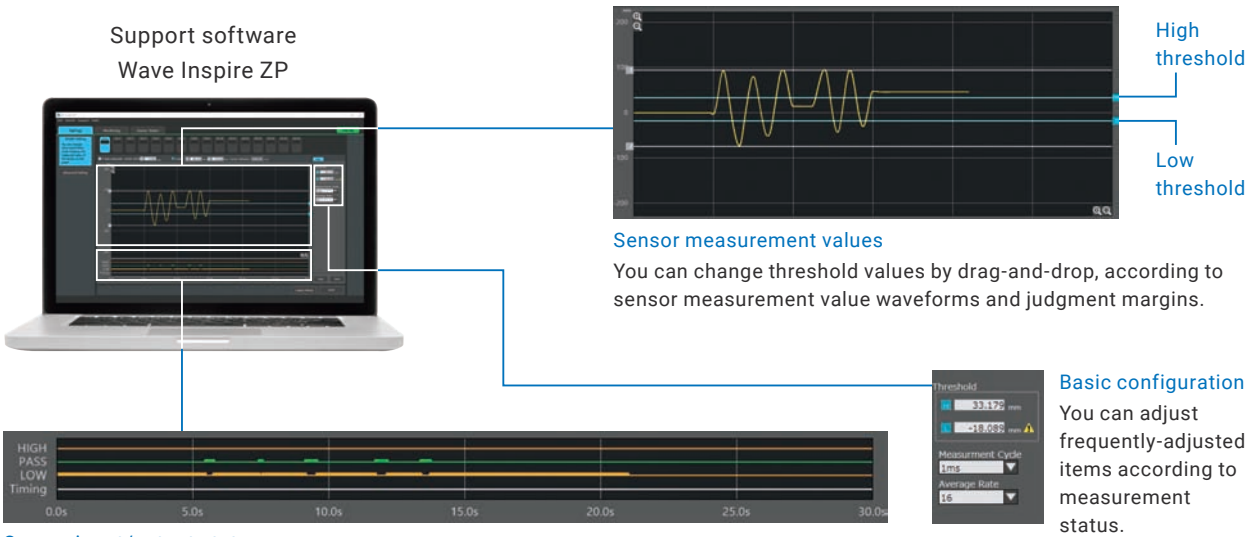
You can copy the saved settings when replacing or expanding the amplifier unit at once.



Testing upon setup

Measurement data can be visualized in just three minutes

Previously, testing upon setup required that measurement values be monitored using upper-level systems such as PLCs or tools such as data loggers, which took time and effort. With ZP-L, you can complete configuration and monitoring in just three minutes after connecting the sensor to the support software Wave Inspire ZP.



Sensor measurement values

You can change threshold values by drag-and-drop, according to sensor measurement value waveforms and judgment margins.

Basic configuration

You can adjust frequently-adjusted items according to measurement status.

Sensor input/output status

The input/output status of judgment results is visualized, along with measurement value waveforms, allowing you to literally see whether the results are as expected.

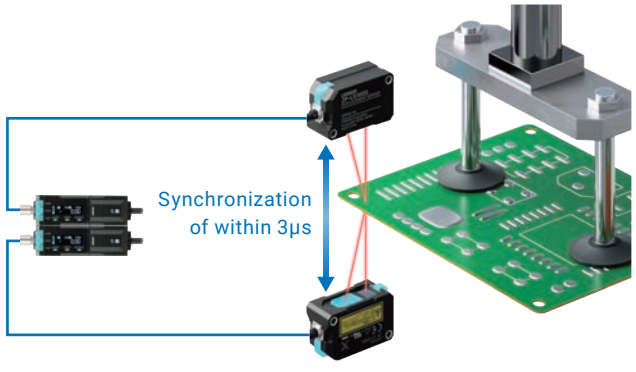
Retrieved data is high-quality as well

Data for testing must be of high simultaneity and retrieved in high speed. ZP-L is equipped with a system that is meticulously designed to deliver high sensing simultaneity (3 µs) and high-speed (1 ms) data retrieval.

Simultaneity

PATENT PENDING *2

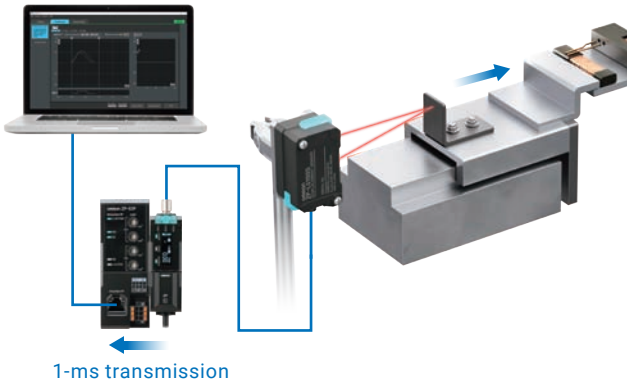
ZP-L delivers high-quality data verification, even in cases using multiple sensor units. The timing of data measurement for all sensors connected to amplifiers is synchronized to within 3 µs, allowing you to conduct verifications without worrying about timing deviations.



Speed

PATENT PENDING *2

ZP-L can also be used to verify high-velocity events.
It can retrieve measurement values in 1-ms intervals, which can then be used to draw charts on your PC screen that closely depict actual equipment behavior.

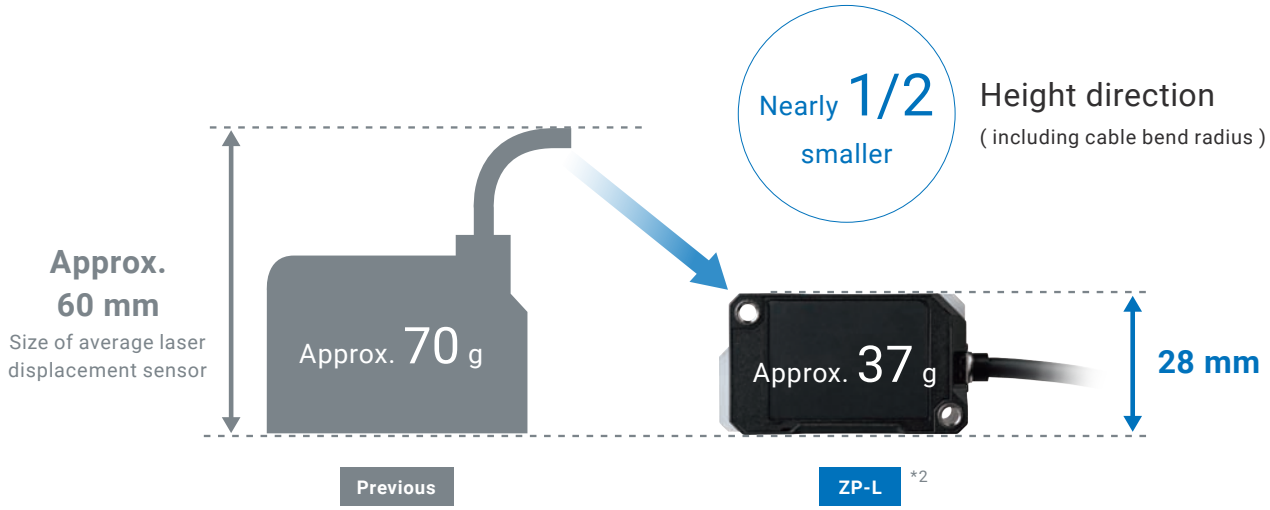


*1. Communication unit ZP-EIP required for connection with PC.
*2. “Patent pending” and “Patented” refer to patent status in Japan (as of November 2024).

Carefully designed for on-site usability

Smallest and lightest in its class,[*1] and therefore easy to embed

Equipment is getting smaller, which means less space inside the equipment for sensor installation. With ZP-L, we were able to achieve our ambition to create a product that delivers both advanced accuracy and compact size, especially in the height direction, where space tends to be more restricted. The sensor head is also lighter, allowing for easier equipment rigidity design.

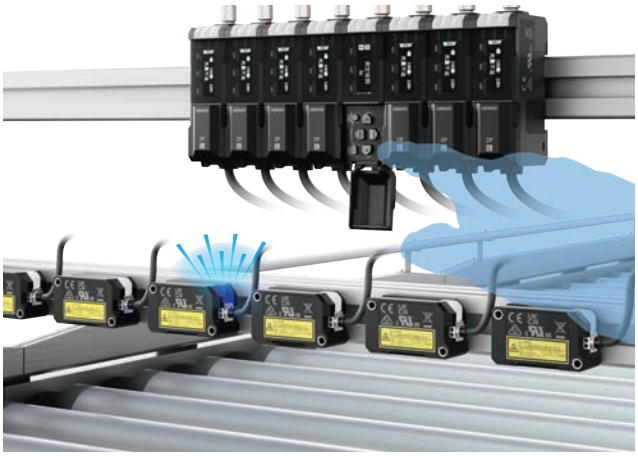


Indicator lights easily visible from all directions

Large indicator lights in two locations (at top and back of sensor head) easily visible from all directions.

Find Me function for identifying sensor paired with amplifier unit

When an amplifier unit is switched to configuration mode, the indicator lights on the sensor head connected to it blinks in blue, making it easy to find, without the tedious task of tracing the cable.



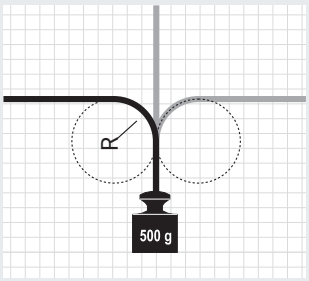
Flexible mounting brackets that can be adjusted in three directions

Previous products required the effort-consuming task of designing and preparing brackets for mounting your sensors, and making fine optical axis adjustments when installing them. The ZP-L Series offers mounting brackets that allow you to easily make optical axis adjustments in three directions: height, horizontal, and angular.

Temporarily hold with a hand to avoid misalignment

Robot cables for moving parts

We offer highly bend-resistant extension robot cables for customers who need cables with high bend resistance. Our robot cables are perfect for moving parts of common machines such as cableveyors and loaders.



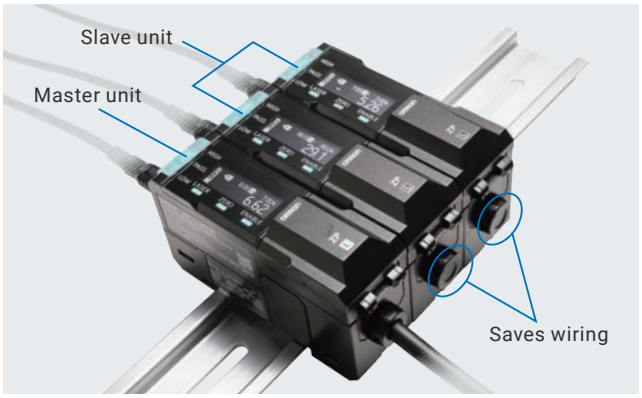
Bending test results *3
≥ 26 million times
Test conditions
Roll radius: 15 mm
Bend angle: 90°
Speed: 90 times/min
Load: 500 g
Evaluation criteria
No disconnection
No anomaly in appearance
(sheath cracks, etc.)

Third-party certified for compliance with laser standards

ZP-L sensor heads have CB certification, a standard for lasers, which means that when you use them in your equipment, it doesn't need to be applied for laser certification.

Slave amplifier units that reduce wiring

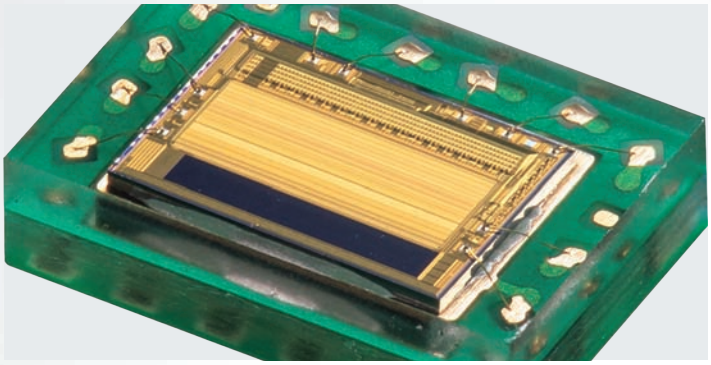
We offer slave amplifier units that help you reduce wiring when using multiple sensors. Power can be supplied from the master unit, which means slave units don't need to be wired for power. You can also save cable termination effort by using slave units without cables for units that don't output judgment.



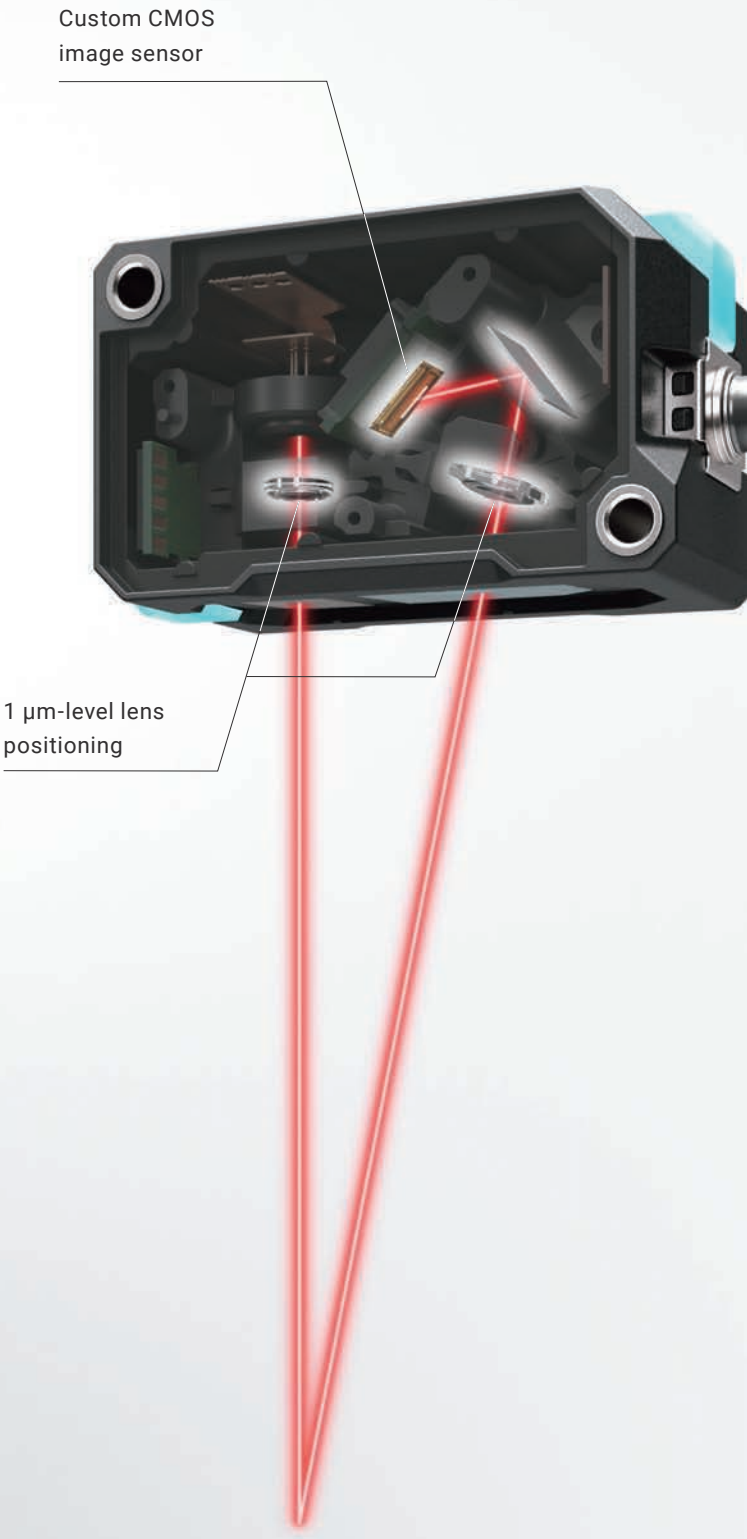
*1. Best-performing in class of laser displacement sensors for detecting around 10 µm to 1 mm (according to OMRON investigation in November 2024).
*2. In case of ZP-LS025/-LS050/-LS100.
*3. Test results are from tests conducted by OMRON and should be used only as reference information, not as guaranteed values when using products in actual customer settings and conditions thereof.

4 technologies powering ZP-L's best-in-class performance[*1]

Custom CMOS image sensor designed to deliver maximum sensing performance

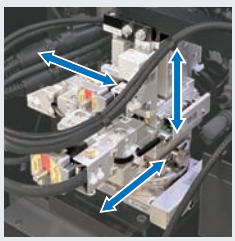


In developing ZP-L, OMRON took a deep dive into the internal structure and production process of CMOS image sensors to custom-develop high-speed, high-sensitivity, low-noise CMOS image sensors that maximize performance.



Unique manufacturing methods that reduce variations between individual units PATENTED [*2]

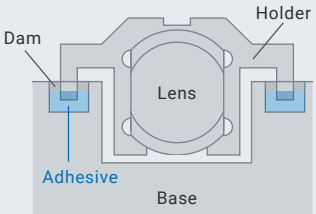
Automatic three-axis adjustment mechanism



Technology for accurate adjustment

+

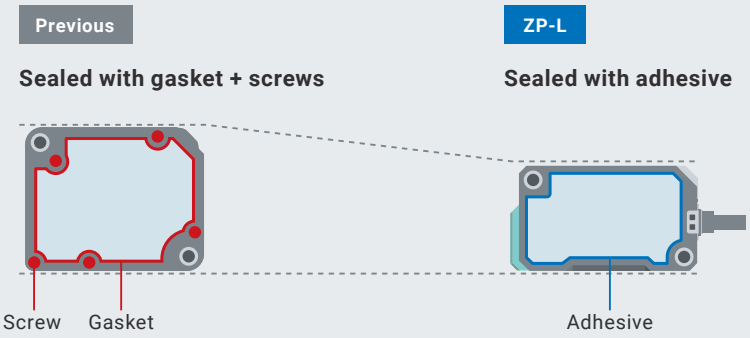
Flexible fixing mechanism using dam structure



Technology for accurate component fixing

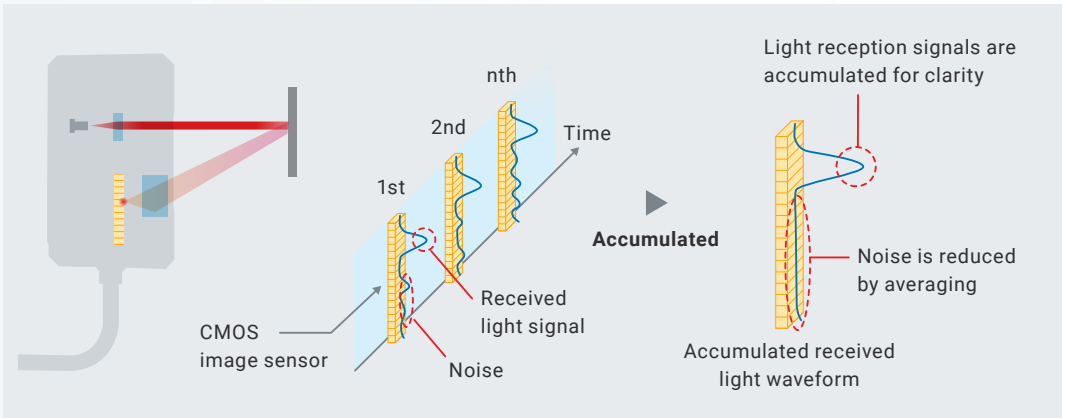
OMRON successfully developed and applied unique technologies that deliver micrometer-level automatic lens adjustment and nanometer-level fixing in the ZP-L production process. Together, these technologies minimize variations in adjustment and assembly, thereby reducing variations in performance between individual sensor units.

Unique adhesive sealing technology that enables downsizing



As a general rule, improving sensor accuracy means using larger optical components, such as lenses and CMOS image sensors. This creates a trade-off between improving accuracy and reducing size. To resolve this dilemma, ZP-L uses a sealing technology using adhesives, which, compared to more conventional sealing methods using screws and gaskets, allows for more efficient use of chassis space. It is thanks to this technology that ZP-L is able to deliver high accuracy while having the smallest chassis in its class.

Sensing algorithm for stable sensing, of different materials and in tilted positions



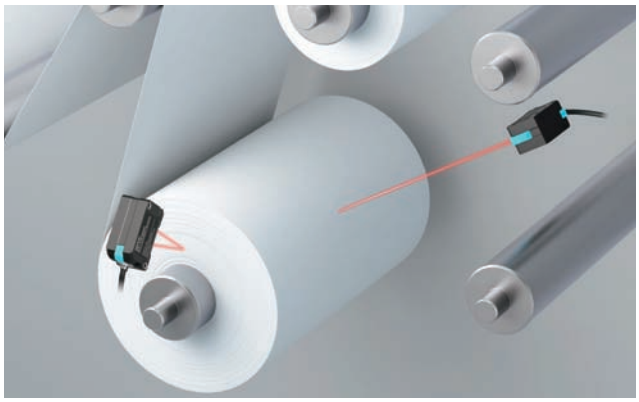
ZP-L delivers significantly higher sensitivity compared to previous products, through its unique process of integrating received light waveforms. This process amplifies the slightest light, allowing for stable detection even when the head is installed in a tilted position.

*1. Best-performing in class of laser displacement sensors for detecting around 10 µm to 1 mm (according to OMRON investigation in November 2024).
*2. "Patent pending" and "Patented" refer to patent status in Japan (as of November 2024).

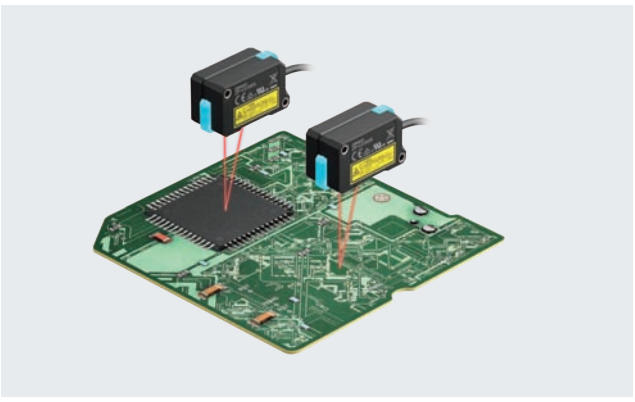
ZP-L can be used to determine positions and
to measure heights/thicknesses of around 10 µm to 1 mm

Height/Thickness

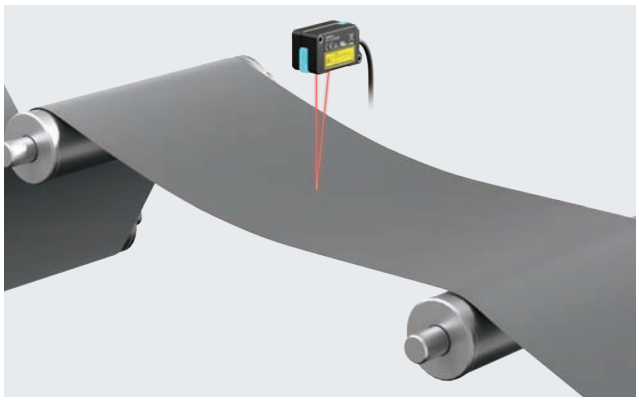
Detecting material remaining on roll



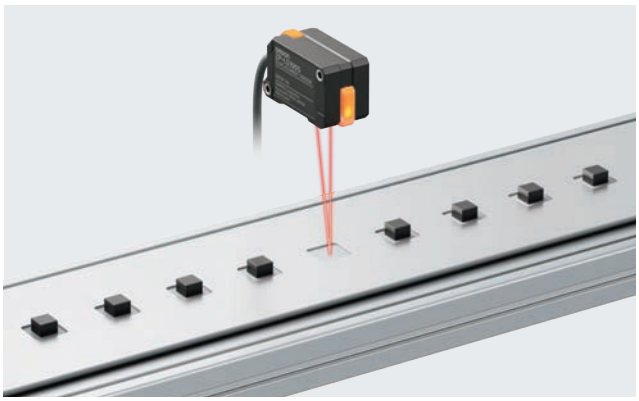
Measuring component heights



Monitoring trends in warp amount

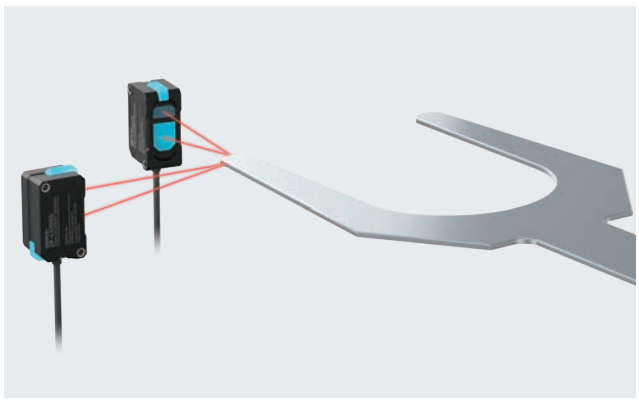


Determining whether part is present

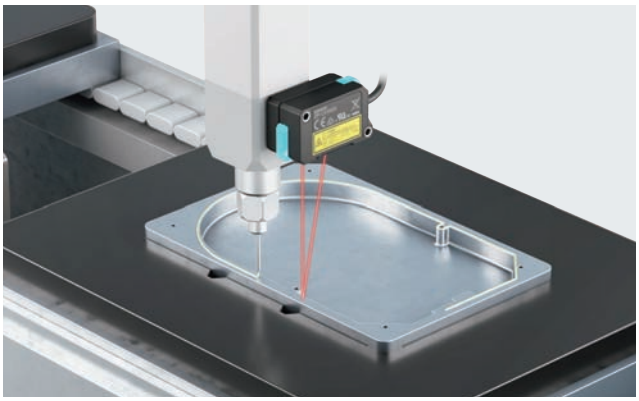


Positioning/Control

Robot hand positioning



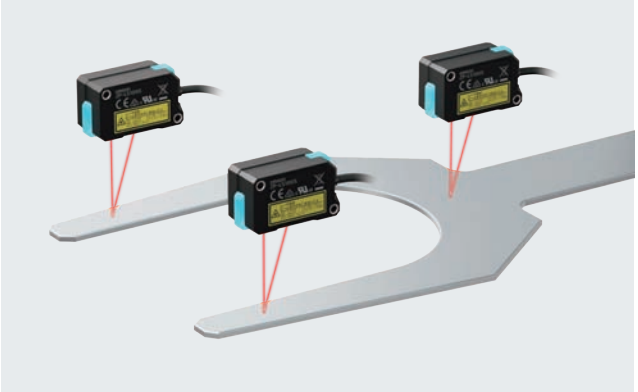
Nozzle height control



Shape/Curves

Shape inspection of metal part

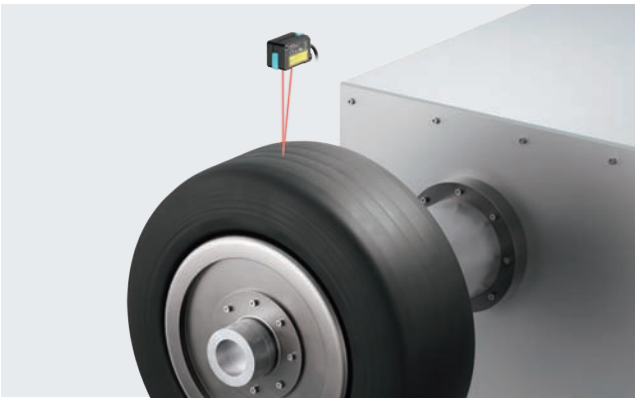
Flatness measurement/inspection



Stroke/Deflection

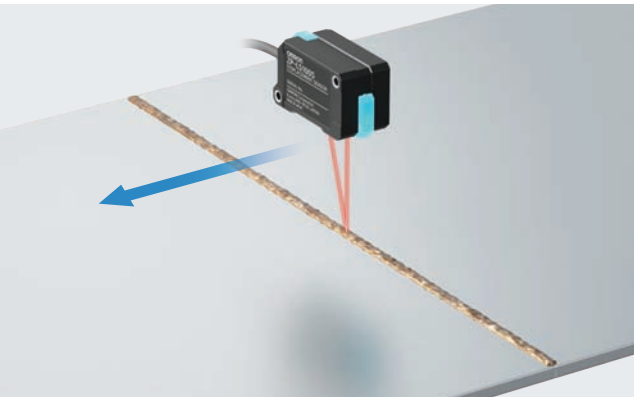
Press stroke management

Tire eccentricity inspection

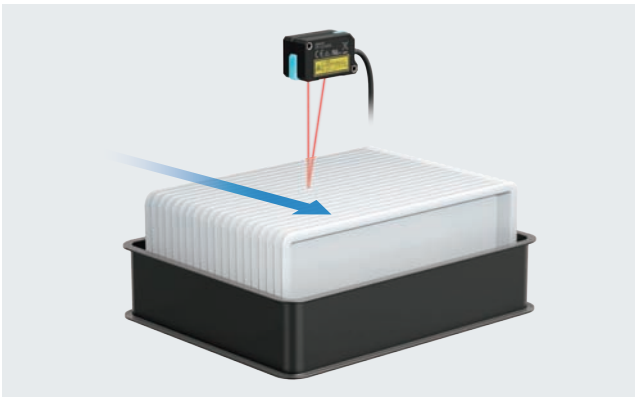


Joints/Counting

Detecting joints in welding



Counting number of trays



Laser Displacement Sensor
ZP-L

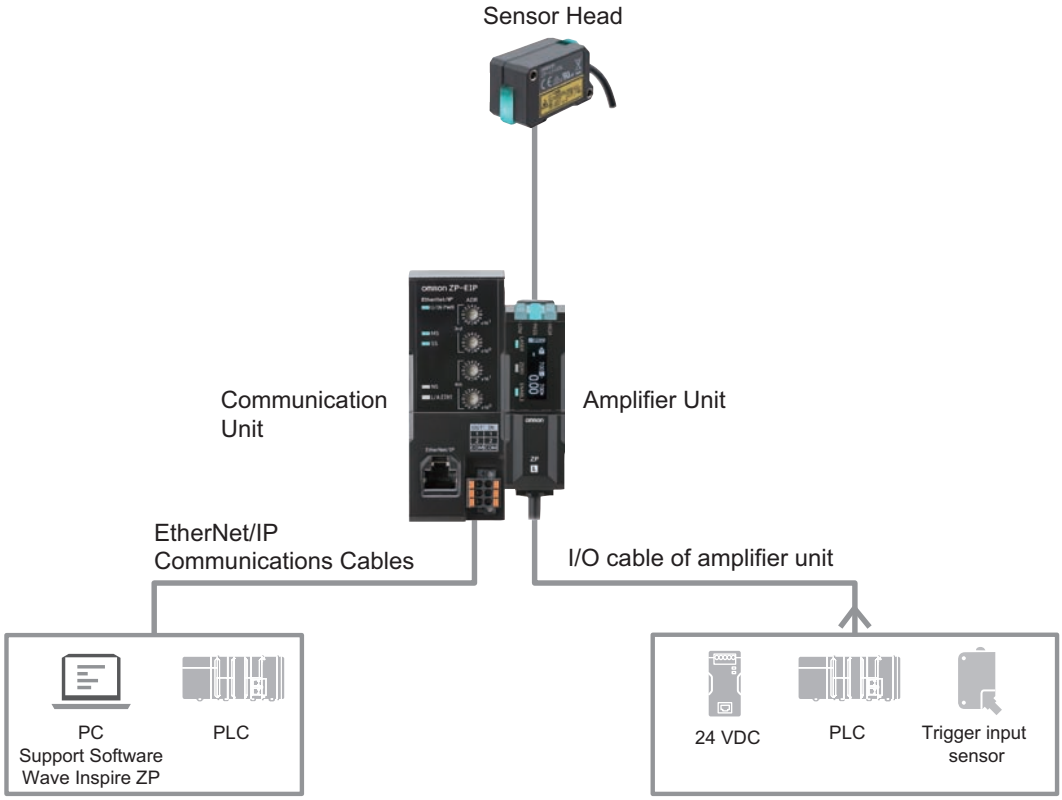
Premium detection stability and optimal usability for Laser Displacement Sensors

- Sensing performance delivering stable detection with initial configuration left intact
- User interface requiring no manuals for easy understanding
- Support software allowing quick test without loggers

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

System configuration

Basic configuration

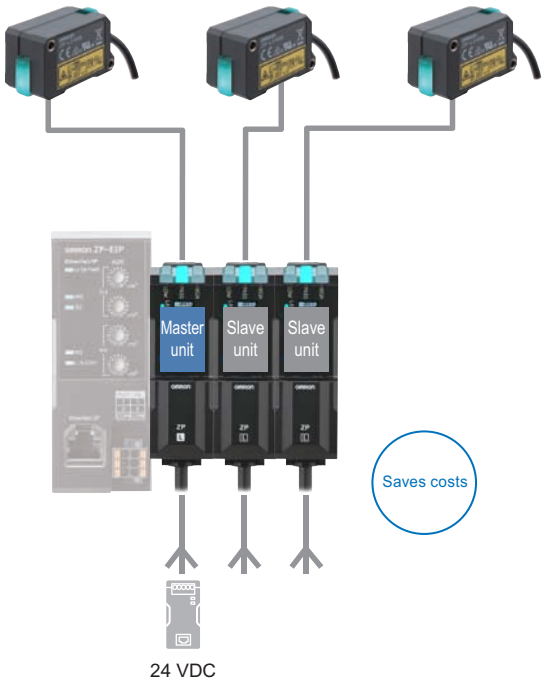


Product	Description
Sensor Head	We offer an extensive lineup from which you can select your product based on measurement distance, beam shape, and resolution.
Amplifier Unit	One amplifier unit is required for each sensor head.
Communication Unit	Required for communication with PC/PLC.
EtherNet/IP Communications Cables	Required for connection with PC/PLC.
Support Software Wave Inspire ZP	Download free from below URL. https://www.ia.omron.com/zp_tool

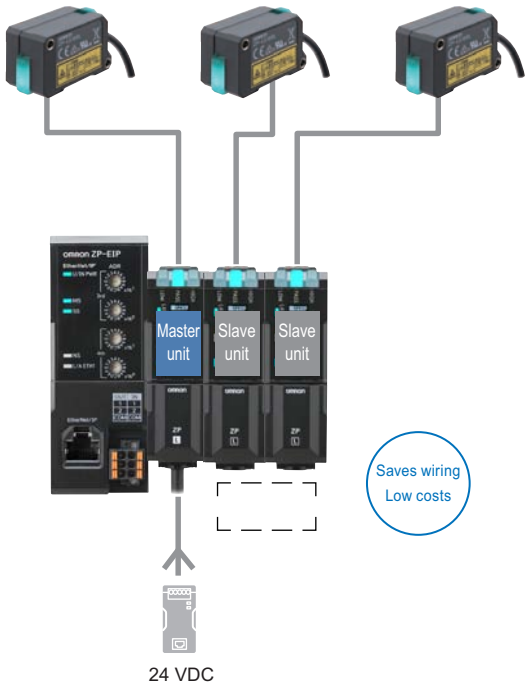
Configuration with multiple units connected

We offer two lines of amplifier unit products: master units and slave units. When using several sensor units, use them with slave units to save costs and wiring. Up to 16 amplifier units can be connected together (one master unit, 15 slave units).

When having judgment output from each amplifier unit
1 master unit,
N slave units (models with input/output: ZP-L3510/-L3560)



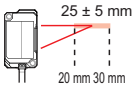
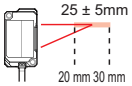
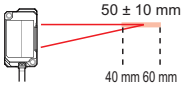
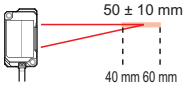
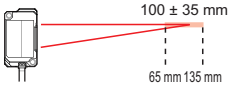
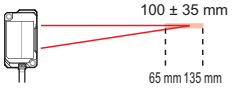
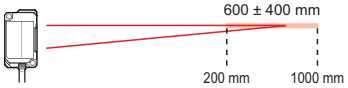
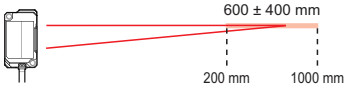
When retrieving measurement values using communication unit
1 master unit,
N slave units (model without input/output: ZP-L3590)



Product	Description
Amplifier unit master unit	First amplifier unit must be master unit. Power supply is connected to master unit only.
Amplifier unit slave unit	Up to 15 units can be connected. There are two types of units: those with input/output and those without input/output.
Communication Unit	Use as needed.

Ordering Information

Sensor Head

Appearance	Optical system	Beam shape	Measurement distance	Resolution ✻	Cable length	Model
	Diffuse-reflective	Line beam		0.5 µm	0.2 m	**ZP-LS025L 0.2M**
					2 m	**ZP-LS025L 2M**
		Spot beam		0.6 µm	0.2 m	**ZP-LS025S 0.2M**
					2 m	**ZP-LS025S 2M**
		Line beam		0.7 µm	0.2 m	**ZP-LS050L 0.2M**
					2 m	**ZP-LS050L 2M**
		Spot beam		0.8 µm	0.2 m	**ZP-LS050S 0.2M**
					2 m	**ZP-LS050S 2M**
		Line beam		1.2 µm	0.2 m	**ZP-LS100L 0.2M**
					2 m	**ZP-LS100L 2M**
		Spot beam		1.3 µm	0.2 m	**ZP-LS100S 0.2M**
					2 m	**ZP-LS100S 2M**
	Diffuse-reflective	Line beam		4 µm	0.2 m	**ZP-LS300L 0.2M**
					2 m	**ZP-LS300L 2M**
		Spot beam		4 µm	0.2 m	**ZP-LS300S 0.2M**
					2 m	**ZP-LS300S 2M**
		Line beam		14 µm	0.2 m	**ZP-LS600L 0.2M**
					2 m	**ZP-LS600L 2M**
		Spot beam		14 µm	0.2 m	**ZP-LS600S 0.2M**
					2 m	**ZP-LS600S 2M**

✻ This shows the width of the variation of measured values when OMRON's standard target (white diffuse object) is measured at a reference distance with a measurement cycle of 1 ms and an average rate of 128 times.

Note: Sensor heads listed on this data sheet use class 2 lasers, but we offer products with class 1 lasers as well, the model names of which end with the letter "C" followed by cable length (example: ZP-LS025LC 2M).

Using different beam shapes

Amplifier Unit

Appearance	Master/Slave ✻1	Analog output	Judgment output ✻2	External input ✻3	Input/output type	Model
	Master unit	Yes	Yes	Yes	NPN	**ZP-L3000**
					PNP	**ZP-L3050**
		No	Yes	Yes	NPN	**ZP-L3010**
					PNP	**ZP-L3060**
	Slave unit	No	Yes	Yes	NPN	**ZP-L3510**
					PNP	**ZP-L3560**
	Slave unit	No	No	No	—	**ZP-L3590**

✻1. First amplifier unit must be master unit.
In a system with multiple amplifier units connected together, there can only be one master unit.
Power supply connection is required for master unit only. All power supplied to slave and communication units is supplied from master unit.
✻2. HIGH/PASS/LOW
✻3. Zero reset, LD-off, timing, reset, bank

Communication Unit

Appearance	Communication type	Connected devices	Model
	EtherNet/IP™ No-protocol (TCP)	PLCs and PCs from different manufacturers	**ZP-EIP**
	RS-232C	PLCs and PCs from different manufacturers	**ZP-RSA**

To use support software Wave Inspire ZP connect your sensor to your PC using the communication unit.
Wave Inspire ZP can be downloaded for free from the URL below.
https://www.ia.omron.com/zp_tool

Wave Inspire ZP is a setup support tool. Please note the following before use.
(1) OMRON assumes no responsibility for damage caused by any malfunctioning of this software, whether directly or indirectly, or caused by the effects of such malfunctioning.
(2) OMRON assumes no responsibility for any damage incurred by the customer due to use of this software.

How to connect amplifier units and communication units

Accessories (sold separately)

Sensor head - amplifier unit extension cable

Cable specifications	Cable connection direction	Assembly tutorial video	Cable length	Model
Normal cable	Amplifier unit side: Straight Sensor head side: Straight		1 m	**XS3W-M421-401-R**
			2 m	**XS3W-M421-402-R**
			5 m	**XS3W-M421-405-R**
			10 m	**XS3W-M421-410-R**
			20 m	**XS3W-M421-420-R**
	Amplifier unit side: L-shaped Sensor head side: L-shaped		1 m	**XS3W-M422-401-R**
			2 m	**XS3W-M422-402-R**
			5 m	**XS3W-M422-405-R**
			10 m	**XS3W-M422-410-R**
			20 m	**XS3W-M422-420-R**
	Amplifier unit side: Straight Sensor head side: L-shaped		1 m	**XS3W-M423-401-R**
			2 m	**XS3W-M423-402-R**
			5 m	**XS3W-M423-405-R**
			10 m	**XS3W-M423-410-R**
			20 m	**XS3W-M423-420-R**
	Amplifier unit side: L-shaped Sensor head side: Straight		1 m	**XS3W-M424-401-R**
			2 m	**XS3W-M424-402-R**
			5 m	**XS3W-M424-405-R**
			10 m	**XS3W-M424-410-R**
			20 m	**XS3W-M424-420-R**
Robot cable	Amplifier unit side: Straight Sensor head side: Straight		1 m	**XS3W-M421-401-PR**
			2 m	**XS3W-M421-402-PR**
			5 m	**XS3W-M421-405-PR**
			10 m	**XS3W-M421-410-PR**
			20 m	**XS3W-M421-420-PR**
	Amplifier unit side: L-shaped Sensor head side: L-shaped		1 m	**XS3W-M422-401-PR**
			2 m	**XS3W-M422-402-PR**
			5 m	**XS3W-M422-405-PR**
			10 m	**XS3W-M422-410-PR**
			20 m	**XS3W-M422-420-PR**
	Amplifier unit side: Straight Sensor head side: L-shaped		1 m	**XS3W-M423-401-PR**
			2 m	**XS3W-M423-402-PR**
			5 m	**XS3W-M423-405-PR**
			10 m	**XS3W-M423-410-PR**
			20 m	**XS3W-M423-420-PR**
	Amplifier unit side: L-shaped Sensor head side: Straight		1 m	**XS3W-M424-401-PR**
			2 m	**XS3W-M424-402-PR**
			5 m	**XS3W-M424-405-PR**
			10 m	**XS3W-M424-410-PR**
			20 m	**XS3W-M424-420-PR**

Note: You cannot use multiple extension cables connected together.

<Key points in selecting your extension cable>

- The pre-wired cable of the sensor head is a standard cable. In cases where cable bending is necessary, connect an extension robot cable, and bend the extension cable. We recommend you use a 0.2-m cable for your sensor head.
- Using the L-shaped cable connector for amplifier unit connection allows you to secure space around the area of connection.

Mounting bracket

For ZP-LS025/-LS050/-LS100

Appearance	Illustration of installed bracket	Assembly tutorial video	Model
L-shaped Mounting Bracket 			ZP-XL1
Rear Mounting Bracket 			ZP-XL2
Flexible Mounting Bracket 			ZP-XL5
Post 50 mm 			E39-L262
Post 100 mm 			E39-L263

For ZP-LS300/-LS600

Appearance	Illustration of installed bracket	Assembly tutorial video	Model
L-shaped Mounting Bracket 			ZP-XL3
Rear Mounting Bracket 			ZP-XL4
Flexible Mounting Bracket 			ZP-XL6
Post 50 mm 			E39-L262
Post 100 mm 			E39-L263

Recommended EtherNet/IP Communications Cables

For EtherNet/IP, required specification for the communications cables varies depending on the baud rate. For 100BASE-TX/10BASE-T, use a straight or cross STP (shielded twisted-pair) cable of category 5 or higher.

Cable with Connectors

Item		Recommended manufacturer	Cable length (m)	Model
Wire gauge and number of pairs: AWG26, 4-pair cable Cable sheath material: PUR	Cable with Connectors on Both Ends (RJ45/RJ45) Standard RJ45 plugs ✻1 Cable color: Yellow ✻2 EtherNet/IP (10BASE/100BASE) 	OMRON	0.3	**XS6W-6PUR8SS30CM-YF**
			0.5	**XS6W-6PUR8SS50CM-YF**
			1	**XS6W-6PUR8SS100CM-YF**
			2	**XS6W-6PUR8SS200CM-YF**
			3	**XS6W-6PUR8SS300CM-YF**
			5	**XS6W-6PUR8SS500CM-YF**
	Cable with Connectors on Both Ends (RJ45/RJ45) Rugged RJ45 plugs ✻1 Cable color: Light blue EtherNet/IP (10BASE/100BASE) 		0.3	**XS5W-T421-AMD-K**
			0.5	**XS5W-T421-BMD-K**
			1	**XS5W-T421-CMD-K**
			2	**XS5W-T421-DMD-K**
			5	**XS5W-T421-GMD-K**
			10	**XS5W-T421-JMD-K**

✻1. Cables with standard RJ45 plugs are available in the following lengths: 0.2 m, 0.3 m, 0.5 m, 1 m, 1.5 m, 2 m, 3 m, 5 m, 7.5 m, 10 m, 15 m, 20 m. Cables with rugged RJ45 plugs are available in the following lengths: 0.3 m, 0.5 m, 1 m, 2 m, 3 m, 5 m, 10 m, 15 m. For details, refer to the *Industrial Ethernet Connectors Catalog* (Cat. No. G019).

✻2. Cable colors are available in yellow, green, and blue.

Cables/Connectors

Item			Recommended manufacturer	Model
Products for EtherNet/IP (100BASE-TX/ 10BASE-T)	Wire gauge and number of pairs: AWG22, 2-pair cable	Cable	Kuramo Electric Co.	**KETH-PSB-OMR ✻1**
			JMACS Japan Co., Ltd.	**PNET/B ✻1**
		RJ45 Assembly Connector 	OMRON	**XS6G-T421-1 ✻1**

✻1. We recommend you to use the above Cable and RJ45 Assembly Connector together.

Ratings and Performance

Sensor Head

Item		Specification					
		ZP-LS025L(C)	ZP-LS025S(C)	ZP-LS050L(C)	ZP-LS050S(C)	ZP-LS100L(C)	ZP-LS100S(C)
Reference distance		25 mm		50 mm		100 mm	
Measurement distance		20 to 30 mm		40 to 60 mm		65 to 135 mm	
Light source		Red semiconductor laser					
Wavelength		660 nm					
Laser class		ZP-LS□L, ZP-LS□S: Class 2 (JIS/IEC/EN/FDA/GB) ZP-LS□LC, ZP-LS□SC: Class 1 (JIS/IEC/EN/FDA/GB)					
Laser power		ZP-LS□L, ZP-LS□S: 1 mW max. ZP-LS□LC, ZP-LS□SC: 0.376 mW max.					
Spot diameter ✻1		Approx. 50 × 1,000 μm	Approx. 50 μm dia.	Approx. 70 × 1,600 μm	Approx. 70 μm dia.	Approx. 130 × 2,900 μm	Approx. 120 μm dia.
Linearity ✻2	Near side	±0.05% F.S. (±5 μm)	±0.1% F.S. (±10 μm)	±0.03% F.S. (±6 μm)	±0.075% F.S. (±15 μm)	±0.025% F.S. (±17.5 μm)	±0.07% F.S. (±49 μm)
		when used at 20 to 25 mm		when used at 40 to 50 mm		when used at 65 to 100 mm	
	Total area	±0.08% F.S. (±8 μm)	±0.125% F.S. (±12.5 μm)	±0.04% F.S. (±8 μm)	±0.1% F.S. (±20 μm)	±0.065% F.S. (±45.5 μm)	±0.085% F.S. (±59.5 μm)
		when used at 20 to 30 mm		when used at 40 to 60 mm		when used at 65 to 135 mm	
Resolution (Repeatability) ✻3		0.5 μm	0.6 μm	0.7 μm	0.8 μm	1.2 μm	1.3 μm
Temperature characteristics ✻4		0.01% F.S./°C		0.01% F.S./°C		0.01% F.S./°C	
Indicators		2 indicators (identified by color) HIGH (orange)/PASS (green)/LOW (orange), Out of range (white), Error (red), SETTING mode (blue)					
Ambient illuminance		Illuminance of light-receiving surface, Incandescent lamp: 10,000 lx max.					
Ambient temperature range		Operating: -10 to 50°C, Storage: -15 to 70°C (with no icing or condensation)					
Ambient humidity range		Operating and storage: 35% to 85% RH each (with no condensation)					
Dielectric strength		1,000 VAC 50/60 Hz for 1 min.					
Insulation resistance		20 MΩ min. (at 500 VDC)					
Vibration resistance		10 to 500 Hz, double amplitude 1.5 mm, 120 min. each in X, Y and Z directions					
Shock resistance		300 m/s^2, 3 times each in 6 directions along X, Y, and Z axes					
Degree of protection		IP67 (IEC60529)					
Connection method ✻5		Pre-wired Connector type (Standard cable length: 2 m/0.2 m)					
Material		Case and cover: Polybutylene terephthalate, Optical window: Glass, Threaded portion: SUS304, Cable: PVC					
Weight (Main unit only)		Approx. 90 g (Cable length: 2 m), Approx. 45 g (Cable length: 0.2 m)					
Accessories		Instruction manual, compliance sheet, FDA certification label, fixing screws (M3 × 30 mm. 2 screws), laser warning label (ZP-LS□L and ZP-LS□S models only)					

✻1. This is the value (actual value) at the standard distance, which is defined as 1/e^2 (13.5%) of the central light intensity.
✻2. This shows the error of displacement output relative to the ideal line when OMRON's standard target (white diffuse object) is measured. Linearity and measured values may vary depending on the target object.
F.S. refers to the entire measuring range (70 mm for ZP-LS100L).
✻3. This shows the width of the variation of measured values when OMRON's standard target (white diffuse object) is measured at a reference distance with a measurement cycle of 1 ms and an average rate of 128 times.
✻4. This is the value (typical value) measured at the reference distance, with the Sensor Head and OMRON's standard object (white diffuse object) fixed with an aluminum jig between them.
✻5. This product is powered by the Laser Displacement Sensor Amplifier Unit (ZP-L3□□□).

Item		Specification			
		ZP-LS300L(C)	ZP-LS300S(C)	ZP-LS600L(C)	ZP-LS600S(C)
Reference distance		300 mm		600 mm	
Measurement distance		150 to 450 mm		200 to 1,000 mm	
Light source		Red semiconductor laser			
Wavelength		660 nm			
Laser class		ZP-LS□L, ZP-LS□S: Class 2 (JIS/IEC/EN/FDA/GB) ZP-LS□LC, ZP-LS□SC: Class 1 (JIS/IEC/EN/FDA/GB)			
Laser power		ZP-LS□L, ZP-LS□S: 1 mW max. ZP-LS□LC, ZP-LS□SC: 0.376 mW max.			
Spot diameter ∗1		Approx. 340 × 2,800 μm	Approx. 310 μm dia.	Approx. 670 × 5,800 μm	Approx. 600 μm dia.
Linearity ∗2	Near side	±0.03% F.S. (±90 μm)	±0.04% F.S. (±120 μm)	±0.06% F.S. (±480 μm)	±0.075% F.S. (±600 μm)
		when used at 150 to 300 mm		when used at 200 to 600 mm	
	Total area	±0.1% F.S. (±300 μm)	±0.125% F.S. (±375 μm)	±0.15% F.S. (±1,200 μm)	±0.2% F.S. (±1,600 μm)
		when used at 150 to 450 mm		when used at 150 to 450 mm	
Resolution (Repeatability) ∗3		4 μm		14 μm	
Temperature characteristics ∗4		0.01% F.S./°C		0.02% F.S./°C	
Indicators		2 indicators (identified by color) HIGH (orange)/PASS (green)/LOW (orange), Out of range (white), Error (red), SETTING mode (blue)			
Ambient illuminance		Illuminance of light-receiving surface, Incandescent lamp: 5,000 lx max.			
Ambient temperature range		Operating: -10 to 50°C, Storage: -15 to 70°C (with no icing or condensation)			
Ambient humidity range		Operating and storage: 35% to 85% RH each (with no condensation)			
Dielectric strength		1,000 VAC 50/60 Hz for 1 min.			
Insulation resistance		20 MΩ min. (at 500 VDC)			
Vibration resistance		10 to 500 Hz, double amplitude 1.5 mm, 120 min. each in X, Y and Z directions			
Shock resistance		300 m/s^2, 3 times each in 6 directions along X, Y, and Z axes			
Degree of protection		IP67 (IEC60529)			
Connection method ∗5		Pre-wired Connector type (Standard cable length: 2 m/0.2 m)			
Material		Case and cover: Polybutylene terephthalate, Optical window: Glass, Threaded portion: SUS304, Cable: PVC			
Weight (Main unit only)		Approx. 110 g (Cable length: 2 m), Approx. 70 g (Cable length: 0.2 m)			
Accessories		Instruction manual, compliance sheet, FDA certification label, fixing screws (M3 × 35 mm. 2 screws), laser warning label (ZP-LS□L and ZP-LS□S models only)			

∗1. This is the value (actual value) at the standard distance, which is defined as 1/e^2 (13.5%) of the central light intensity.
∗2. This shows the error of displacement output relative to the ideal line when OMRON's standard target (white diffuse object) is measured. Linearity and measured values may vary depending on the target object.
F.S. refers to the entire measuring range (70 mm for ZP-LS100L).
∗3. This shows the width of the variation of measured values when OMRON's standard target (white diffuse object) is measured at a reference distance with a measurement cycle of 1 ms and an average rate of 128 times.
∗4. This is the value (typical value) measured at the reference distance, with the Sensor Head and OMRON's standard object (white diffuse object) fixed with an aluminum jig between them.
∗5. This product is powered by the Laser Displacement Sensor Amplifier Unit (ZP-L3□□□).

Amplifier Unit

Master unit ZP-L30□0

Item		Specification			
		ZP-L3000	ZP-L3010	ZP-L3050	ZP-L3060
Master/Slave unit		Master Unit			
I/O type		NPN		PNP	
Analog output ✻1	Current output	4 to 20 mA Maximum load resistance: 350 Ω	No analog output	4 to 20 mA Maximum load resistance: 350 Ω	No analog output
	Voltage output	±5 V, 1 to 5 V, 0 to 5 V Output impedance: 100 Ω		±5 V, 1 to 5 V, 0 to 5 V Output impedance: 100 Ω	
Control output ✻2		HIGH/PASS/LOW/ Error output Open collector output: 30 VDC, 50 mA max., Residual voltage: 2 V max. N.O./N.C. switchable			
External input		Zero reset, Laser OFF, Timing, Reset, BANK			
		When ON: 0 V short-circuit or 1.2 V max. When OFF: Open (Leakage current: 0.1 mA max.)		When ON: Power supply voltage short-circuit or within -1.2 V of power supply voltage When OFF: Open (Leakage current: 0.1 mA max.)	
Measurement cycle		125 µs/250 µs/500 µs/1 ms/2 ms/4 ms/20 ms/50 ms/100 ms switchable			
Maximum number of connected units		16 (15 slave units can be connected per master unit)			
Display		OLED display Judgment indicators: HIGH (orange/red), PASS (green/red), LOW (orange/red) Status indicators: LASER (green), ZERO (green), ENABLE (green)			
Power supply voltage ✻3		10 to 30 VDC, including 10% ripple (p-p)			
Power consumption ✻4		2,300 mW max.	2,000 mW max.	2,300 mW max.	2,000 mW max.
Ambient temperature range		Operating: -10 to 50°C (standalone or multi-unit connection) Storage: -15 to 70°C (with no icing or condensation)			
Ambient humidity range		Operating and storage: 35% to 85% RH each (with no condensation)			
Dielectric strength		1,000 VAC 50/60 Hz for 1 min.			
Insulation resistance		20 MΩ min. (at 500 VDC)			
Vibration resistance		10 to 150 Hz, double amplitude 0.7 mm, 80 minutes each in X, Y, and Z directions			
Shock resistance		300 m/s^2, 3 times each in 6 directions along X, Y, and Z axes			
Degree of protection ✻5		IP40 (IEC60529)			
Connection method		Cable pull-out type (Standard cable length: 2 m)			
Material		Main unit case, operating section cover: Polycarbonate Cable: PVC			
Weight (Main unit only)		Approx. 160 g	Approx. 150 g	Approx. 160 g	Approx. 150 g
Accessories		Instruction manual, compliance sheet			

✻1. Select ±5 V, 1 to 5 V, 0 to 5 V, or 4 to 20 mA to use this.
✻2. When six or more Amplifier Units are added including the master unit, use a load current of 20 mA/ch or less.
✻3. Use a Class 2 power supply to supply power to this product. When six or more Amplifier Units are added including the master unit, use a power supply voltage of 20 to 30 V, including 10% ripple (p-p).
✻4. This includes the power consumption of the Sensor Head. It does not include the load current of each output.
✻5. For slave units, this indicates the degree of protection when connected.

Slave unit ZP-L35□0

Item		Specification		
		ZP-L3510	ZP-L3560	ZP-L3590
Master/Slave unit		Slave Unit		
I/O type		NPN	PNP	No I/O
Analog output ✻1	Current output	No analog output		
	Voltage output			
Control output ✻2		HIGH/PASS/LOW/ Error output Open collector output: 30 VDC, 50 mA max., Residual voltage: 2 V max. N.O./N.C. switchable		No control output
External input		Zero reset, Laser OFF, Timing, Reset, BANK		No external input
		When ON: 0 V short-circuit or 1.2 V max. When OFF: Open (Leakage current: 0.1 mA max.)	When ON: Power supply voltage short-circuit or within -1.2 V of power supply voltage When OFF: Open (Leakage current: 0.1 mA max.)	
Measurement cycle		125 µs/250 µs/500 µs/1 ms/2 ms/4 ms/20 ms/50 ms/100 ms switchable		
Maximum number of connected units		16 (15 slave units can be connected per master unit)		
Display		OLED display Judgment indicators: HIGH (orange/red), PASS (green/red), LOW (orange/red) Status indicators: LASER (Green), ZERO (Green), ENABLE (Green)		
Power supply voltage ✻3		Supplied by master unit		
Power consumption ✻4		2,000 mW max.		
Ambient temperature range		Operating: -10 to 50°C (standalone or multi-unit connection) Storage: -15 to 70°C (with no icing or condensation)		
Ambient humidity range		Operating and storage: 35% to 85% RH each (with no condensation)		
Dielectric strength		1,000 VAC 50/60 Hz for 1 min.		
Insulation resistance		20 MΩ min. (at 500 VDC)		
Vibration resistance		10 to 150 Hz, double amplitude 0.7 mm, 80 minutes each in X, Y, and Z directions		
Shock resistance		300 m/s^2, 3 times each in 6 directions along X, Y, and Z axes		
Degree of protection ✻5		IP40 (IEC60529)		
Connection method		Cable pull-out type (Standard cable length: 2 m)		None
Material		Main unit case, operating section cover: Polycarbonate Cable: PVC		Main unit case, operating section cover: Polycarbonate
Weight (Main unit only)		Approx. 140 g	Approx. 140 g	Approx. 70 g
Accessories		Instruction manual, compliance sheet		

✻1. Select ±5 V, 1 to 5 V, 0 to 5 V, or 4 to 20 mA to use this.
✻2. When six or more Amplifier Units are added including the master unit, use a load current of 20 mA/ch or less.
✻3. Use a Class 2 power supply to supply power to this product. When six or more Amplifier Units are added including the master unit, use a power supply voltage of 20 to 30 V, including 10% ripple (p-p).
✻4. This includes the power consumption of the Sensor Head. It does not include the load current of each output.
✻5. This indicates the degree of protection when connected to a master unit.

Main functions

Function name	Description
Measurement cycle	Set as needed according to workpiece reflectance, tilt, etc. You can also use the auto-configuration feature to automatically set the optimal measurement cycle for the workpiece being measured.
Average rate	Set as needed according to measurement value stability.
Calculation	Enables calculation between multiple sensor heads and amplifier units. Provides addition and subtraction features, which you can use to measure level difference, thickness, etc. Calculation is performed by the master unit.
Analog output	Allows you to change analog output to voltage output and current output.
Analog scaling	Function for adjusting analog output against measurement results. Use, for example, when you want to present slight changes in displacement as large changes in analog output.
Measurement scaling	Function for applying correction to measurement results. Use when there is a difference between the expected result and measurement result, or when you want to apply a certain offset value.
Detection select	Allows you to select which surface to use for your measurement result, in cases where multiple measurement surfaces exist within the range of measurement. Use when measuring through glass, or detecting front/back surfaces of thin film.
Differential calculation	With this function, the measurement result is the difference between the current displacement amount and that of a given time earlier. Use when counting thin, board-like workpieces or when exclusively detecting sudden changes.
Hold function	With this function, the detection result is the feature value for the specified period. You can select which feature value to extract, e.g., the peak value (peak hold), the bottom value (bottom hold), the range of change (peak-to-peak hold), and so forth.
Timer mode	Allows you to delay upon changes in judgment output, or turn PASS output ON for a given period. Use when the judgment output changes so rapidly that upper-level devices cannot receive the signals.
Synchronization	Allows you to specify sensor head measurement timing. By staggering measurement timing, you can prevent mutual interference between sensors.
BANK change	Allows you to save/load sensor settings to the BANK. This function lets you change multiple settings (e.g., measurement cycles and threshold values) at once, which is useful in product changeovers, etc.

Communication Unit

ZP-EIP

General Specifications

Item	Specification
	ZP-EIP
Sensor that can be connected	ZP-series Amplifier Unit
Power supply voltage	10 to 30 VDC, including 10% ripple (p-p) (supplied from Amplifier Unit)
Power consumption	1,500 mW max. (not including Amplifier Unit)
Indicators	MS (Green/Red), NS (Green/Red), L/A ETH1 (Green), U/IN PWR (Green), SS (Green/ Red)
External input	Mode 1: Control input for Communication Unit buffering (2 inputs) Mode 2: Cuing information input (2 inputs) • DC input method Input voltage: 10 to 30 VDC Input current: 8 mA typical (24 VDC) ON voltage/current: 8.8 V min./2 mA min. OFF voltage/OFF current: 4 V max./0.5 mA max.
Control output	Communication Unit buffering status output (2 outputs) • Transistor output method Output voltage: 10 to 30 VDC Maximum load current: 50 mA ON residual voltage: 2 V max. OFF leakage current: 0.1 mA max.
Ambient temperature range	Operating: -10 to 50°C, Storage: -15 to 70°C (with no icing or condensation)
Ambient humidity range	Operating and storage: 35% to 85% (with no condensation)
Vibration resistance	10 to 150 Hz, double amplitude 0.7 mm, 80 minutes each in X, Y, and Z directions
Shock resistance	300 m/s^2, 3 times each in 6 directions along X, Y, and Z axes
Dielectric strength	1,000 VAC, 50/60 Hz for 1 minute
Insulation resistance	20 MΩ min. (at 500 VDC)
Maximum number of connected sensors	16 units max.
Degree of protection ✻1	IP20 (IEC60529)
Material	Polycarbonate
Weight (Main unit only)	Approx. 85 g
Accessories	Instruction manual, compliance sheet, End Plates (2)

✻1. This indicates the degree of protection when connected to an Amplifier Unit.

EtherNet/IP Communications Specifications

Item		Specification
		ZP-EIP
Communications protocols		EtherNet/IP protocol • Implicit messages (Class1) • Explicit messages (Class 3, UCMM)
Modulation		Baseband
Link speed		10 Mbps or 100 Mbps
Ethernet physical layer ✻1		100BASE-TX or 10BASE-T (100BASE-TX is recommended.)
Ethernet switch		Layer-2 switch
Transmission media		Category 5 or higher twisted-pair cable (Recommended cable: double-shielded cable with aluminum tape and braiding)
Transmission distance		100 m or less (Distance between nodes and between hub and node)
Topology		Star, tree
Number of connected Units		• Star No restrictions • Tree There is no restrictions in the number of cascade connections when an Ethernet switch is used.
EtherNet/IP tag data links	**Number of connections ✻2**	1 (Point to Point)
	Packet Interval (RPI)	1 to 10,000 ms
	Allowed communications bandwidth per Unit	4,000 pps
Explicit message	**Class 3 (number of connections) ✻2**	5
	UCMM (unconnected) ✻2	Supported
EtherNet/IP I/O connection size		Input: 276 bytes max. (including input data, status, and unused areas) Output: 24 bytes max. (including output data and unused areas)
Support functions	**Supported services**	Tag data link, CIP message communications, automatic clock adjustment (NTP/SNTP client), BOOTP client, DHCP client
	IP address conflict detection	Provided

✻1. If tag data links are used, use 100BASE-TX.
✻2. The maximum number of connections is 10 when tag data links (Class 1), Class 3, and UCMM are used simultaneously.

ZP-RSA
General Specifications

Item	Specification
Sensor that can be connected	ZP-series Amplifier Unit
Power supply voltage	10 to 30 VDC, including 10% ripple (p-p) (supplied from Amplifier Unit)
Power consumption	700 mW max. (not including Amplifier Unit)
Indicators	MS (Green/Red), SS (Green/Red), RD (Green), SD (Green)
External input	Request input When ON: 0 V short-circuit or 1.2 V max. When OFF: Open (Leakage current: 0.1 mA max.)
Ambient temperature range	Operating: -10 to 50°C Storage: -15 to 70°C (with no icing or condensation)
Ambient humidity range	Operating and storage: 35% to 85% RH each (with no condensation)
Vibration resistance	10 to 150 Hz, double amplitude 0.7 mm, 80 minutes each in X, Y, and Z directions
Shock resistance	300 m/s^2, 3 times each in 6 directions along X, Y, and Z axes
Dielectric strength	1,000 VAC, 50/60 Hz for 1 minute
Insulation resistance	20 MΩ min. (at 500 VDC)
Maximum number of connected sensors	16 units max.
Degree of protection ✻1	IP20 (IEC60529)
Material	Polycarbonate
Weight (Main unit only)	Approx. 75 g
Accessories	Instruction manual, compliance sheet, End Plates (2)

✻1. This indicates the degree of protection when connected to an Amplifier Unit.

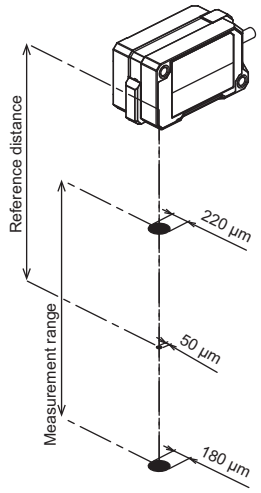
RS-232C Communications Specifications

Item		Specification
Communications port		RS-232C (terminal block)
Communications method		Full duplex
Synchronization method		Start/stop synchronization
Transmission code		ASCII
Communications speed ✻1		2,400, 4,800, 9,600 (default) 19,200, 38,400, 57,600, or 115,200 bps
Data bit length ✻1		7 bits or 8 bits (default)
Parity check ✻1		None (default), Even, or Odd
Stop bit length		1 bit
Data delimiter	**When receiving**	CR or CR + LF automatically recognized
	When sending	CR + LF fixed

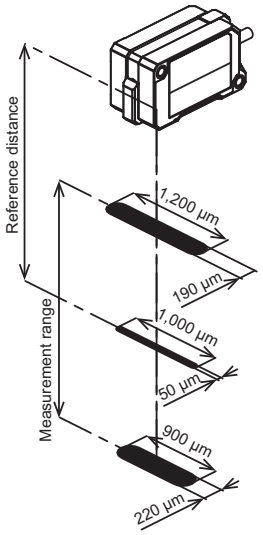
✻1. Use the rotary switches on the front panel of the ZP-RSA to switch between settings. Turn OFF the power supply before changing the switch settings. The settings will be reflected when the power supply is turned ON next time.

Spot Diameter

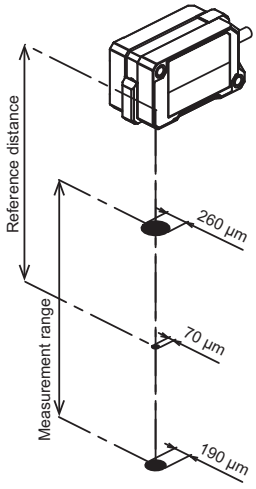
ZP-LS025S



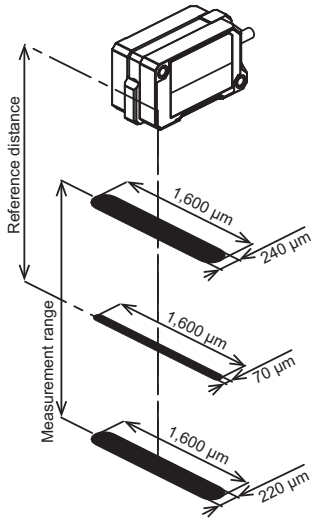
ZP-LS025L



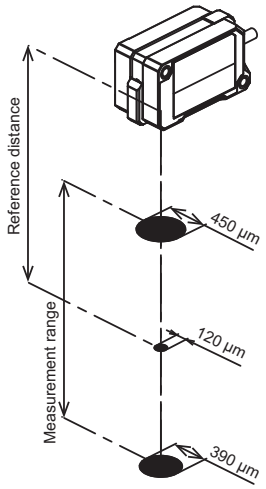
ZP-LS050S



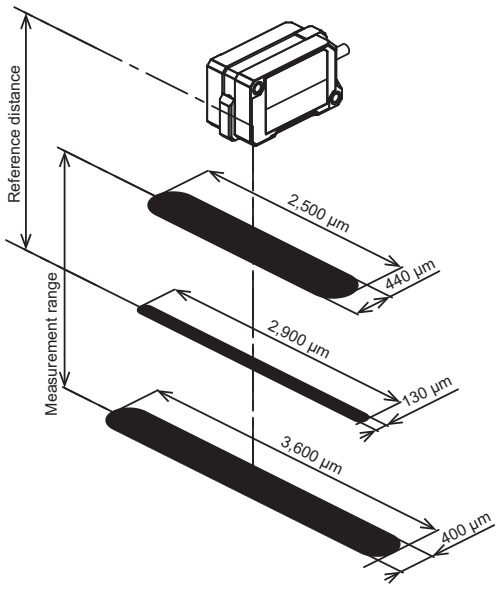
ZP-LS050L



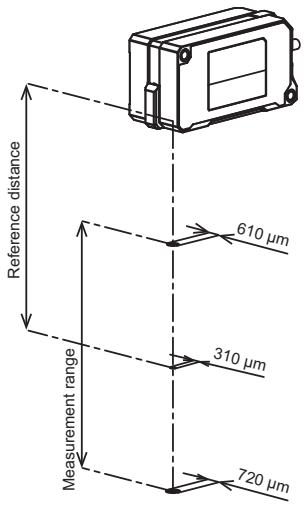
ZP-LS100S



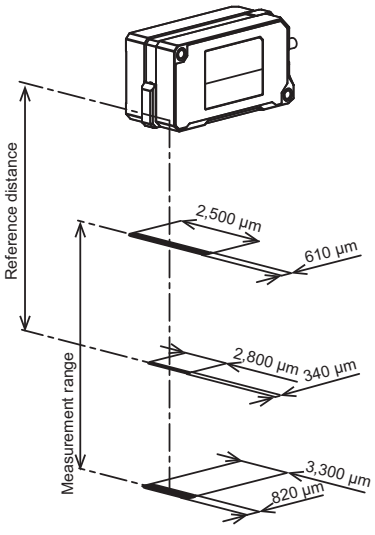
ZP-LS100L



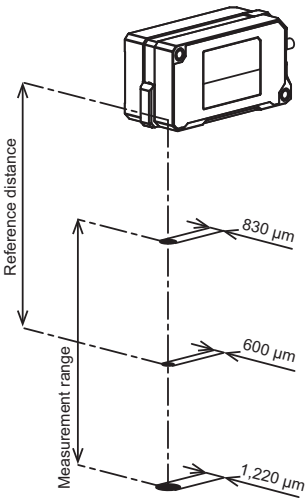
ZP-LS300S



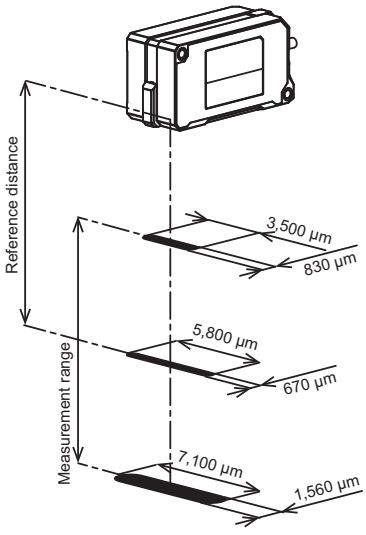
ZP-LS300L



ZP-LS600S

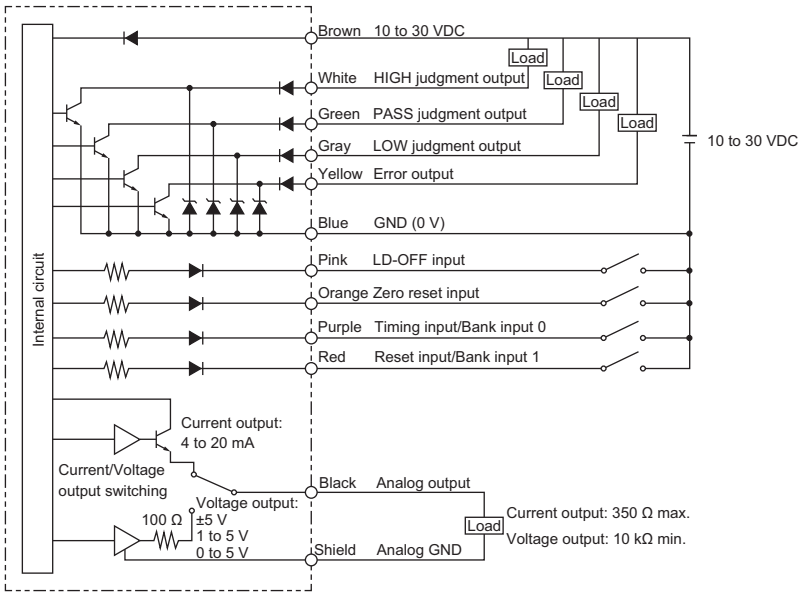


ZP-LS600L



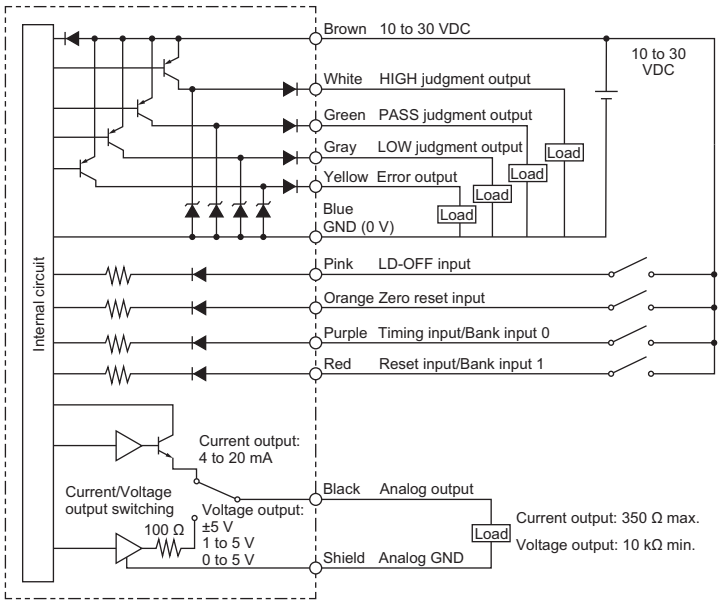
I/O Circuit Diagrams

ZP-L3000/ZP-L3010/ZP-L3510 (NPN Type)



Item	ZP-L3000	ZP-L3010/ZP-L3510
Power consumption ✻1	2,300 mW max.	2,000 mW max.
Control output	Open collector output: 30 VDC, 50 mA max. (20 mA per channel when 5 or more additional slave units are installed) Residual voltage: 2 V max.	
External input	When ON: 0 V short-circuit or 1.2 V max. When OFF: Open (Leakage current: 0.1 mA max.)	
Analog output	Current output: 4 to 20 mA (Maximum load resistance: 350 Ω) Voltage output: 5 V, 1 to 5 V, 0 to 5 V (Output impedance: 100 Ω)	No analog output

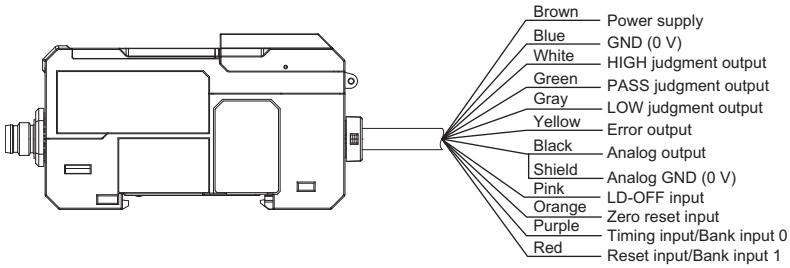
ZP-L3050/ZP-L3060/ZP-L3560 (PNP Type)



Item	ZP-L3050	ZP-L3060/ZP-L3560
Power consumption ✻1	2,300 mW max.	2,000 mW max.
Control output	Open collector output: 30 VDC, 50 mA max. (20 mA per channel when 5 or more additional slave units are installed) Residual voltage: 2 V max.	
External input	When ON: Power supply voltage short-circuit or within -1.2 V of power supply voltage When OFF: Open (Leakage current: 0.1 mA max.)	
Analog output	Current output: 4 to 20 mA (Maximum load resistance: 350 Ω) Voltage output: 5 V, 1 to 5 V, 0 to 5 V (Output impedance: 100 Ω)	No analog output

✻1. This includes the power consumption of the Sensor Head. It does not include the load current of each output. The power consumption of the ZP-L3590 is 2,000 mW max.

Wiring



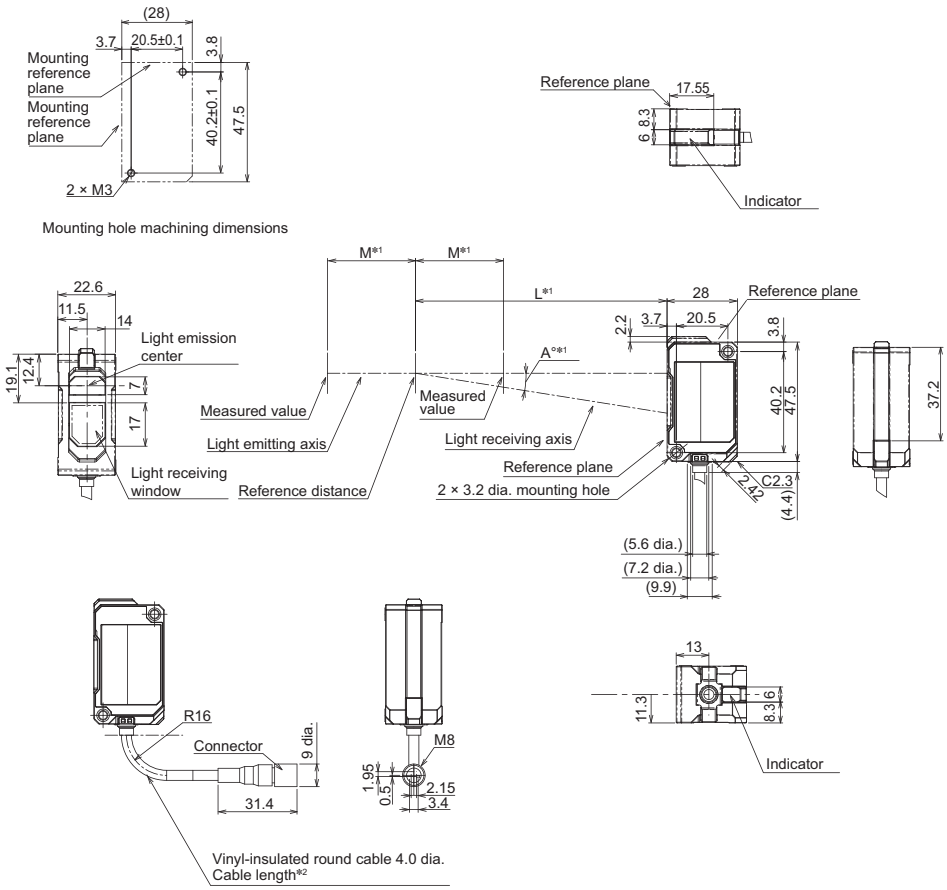
ZP-L3010/ZP-L3060 does not have black (analog output/GND).
ZP-L3510/ZP-L3560 does not have black (analog output/GND), brown (power supply), and blue (GND).
ZP-L3590 does not have power supply or input/output lines.

Dimensions

(Unit: mm)

Sensor Head

ZP-LS025□
ZP-LS050□
ZP-LS100□



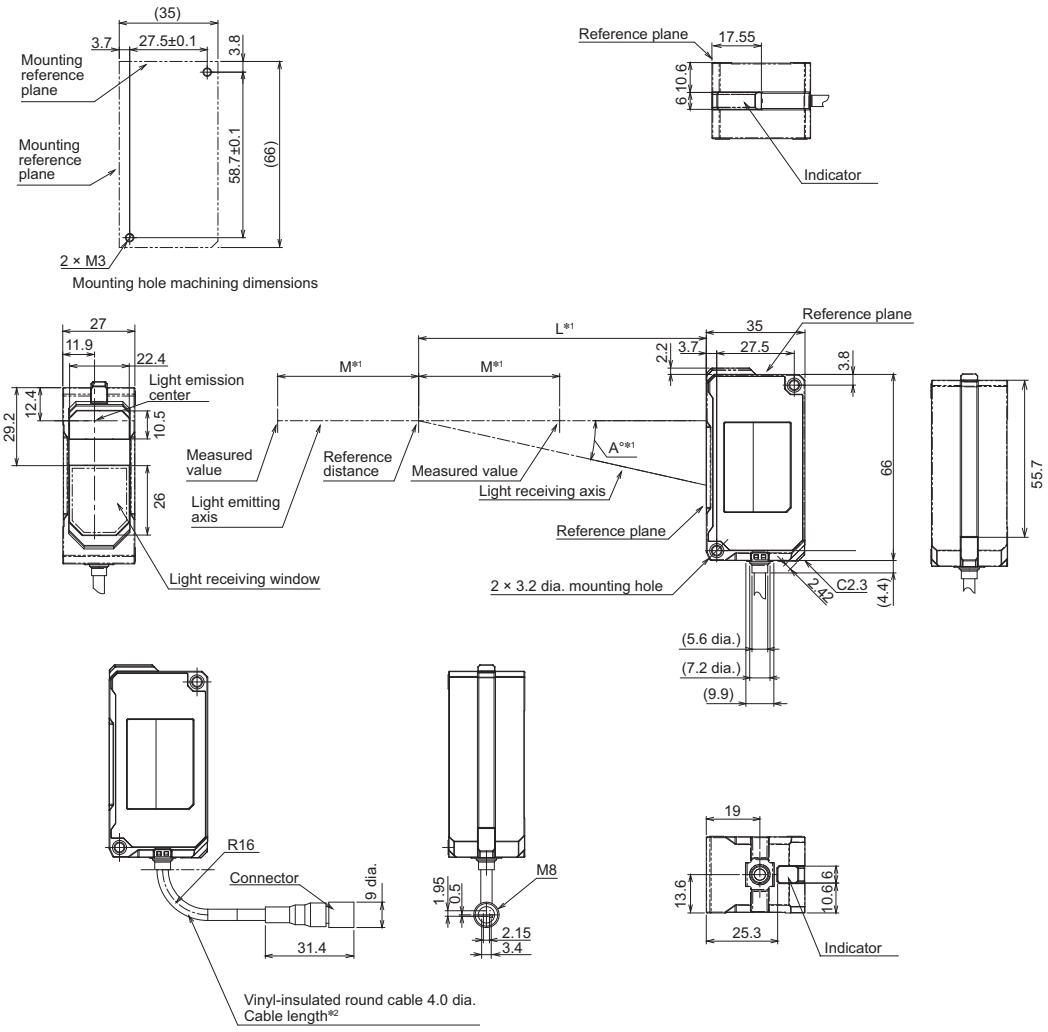
*1.

Model	L	M	A
ZP-LS025□	25	5	24.2
ZP-LS050□	50	10	16.4
ZP-LS100□	100	35	9

*2.

Length specification	Standard length (mm)
0.2 M	(260)
2 M	(2000)

ZP-LS300□
ZP-LS600□



*1.

Model	L	M	A
ZP-LS300□	300	150	5.91
ZP-LS600□	600	400	2.95

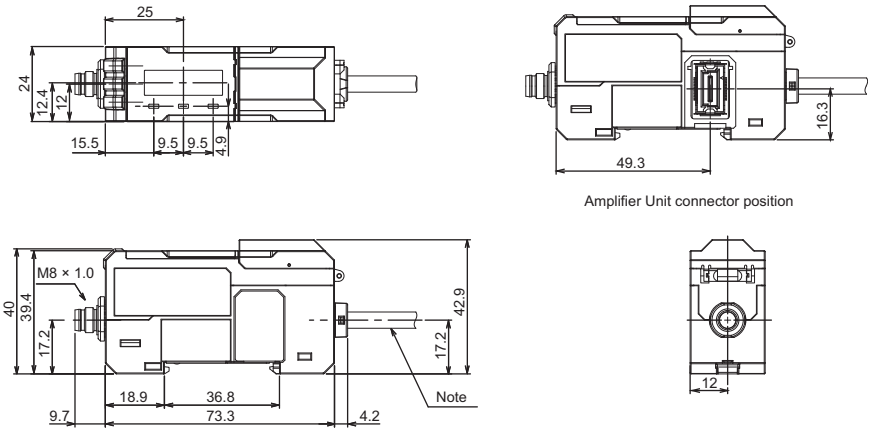
*2.

Length specification	Standard length (mm)
0.2 M	(260)
2 M	(2000)

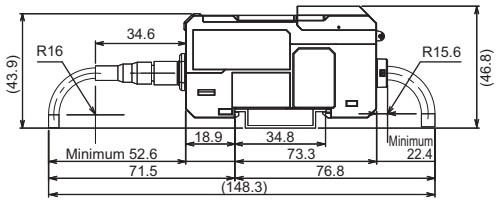
Amplifier unit

Master unit

ZP-L30□0

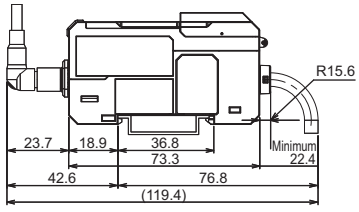


XS3W connector cable socket (straight)



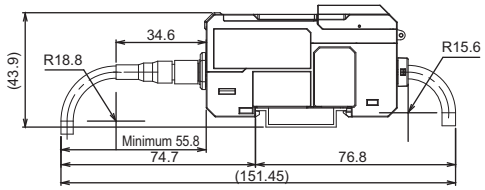
When ZP-LS□ and extension cable (XS3W-M421/M423-□-R) are connected

XS3W connector cable socket (L shape)

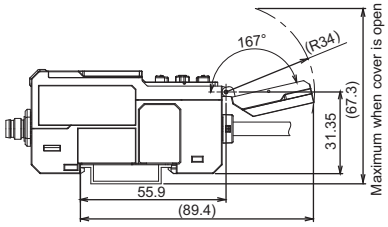


When extension cable (XS3W-M422/M424-□-□) is connected

XS3W connector cable socket (straight)



When extension cable (XS3W-M421/M423-□-PR) is connected



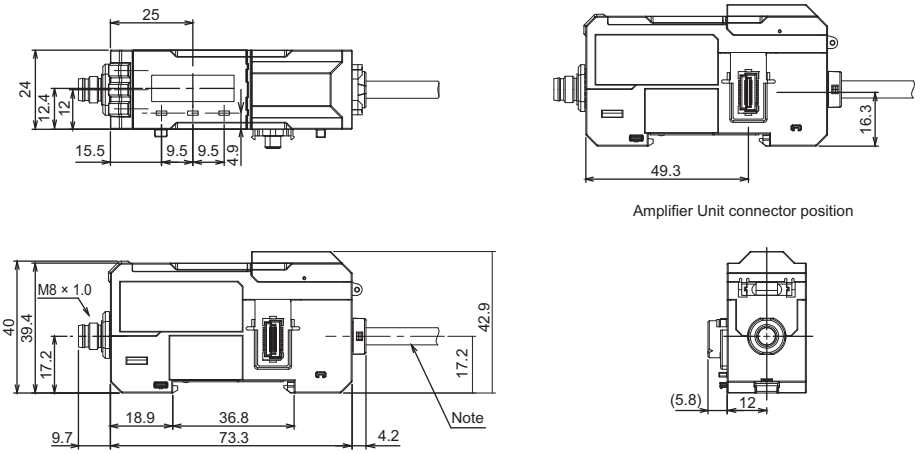
Cover open position (DIN Track mounting)

Note: The cable specifications are as follows:
The table below does not include information on shielding (analog output (0 V)).

Model	Cable outside diameter	Number of conductors	Insulator diameter (mm)		Conductor cross-section (mm^2)		AWG size		Cable length
			Brown/ Blue/Black	Others	Brown/ Blue/Black	Others	Brown/ Blue/Black	Others	
ZP-L3000	5.2 mm dia.	11	1.1±0.1	0.7±0.05	0.22 ✻1	0.09	24	28	2 m
ZP-L3010		10							
ZP-L3050		11							
ZP-L3060		10							

✻1. Black wire not provided for ZP-L3010 and ZP-L3060

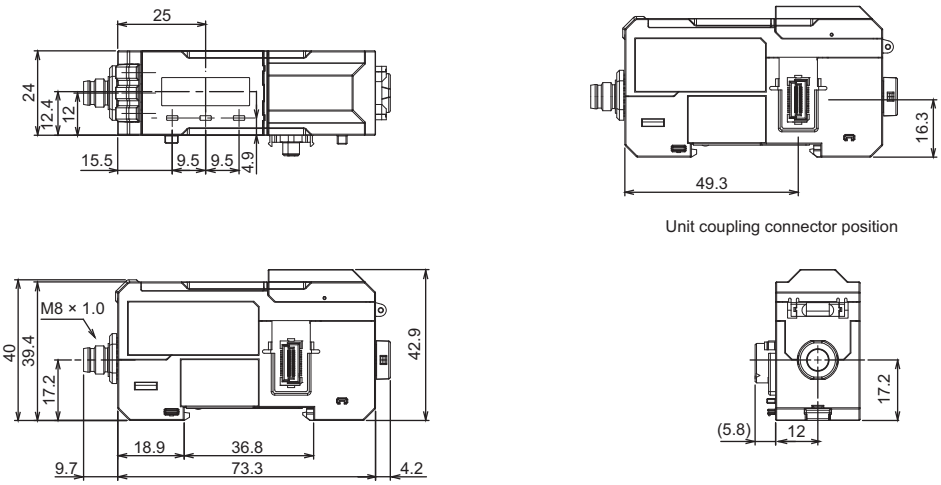
Slaver unit
ZP-L3510
ZP-L3560



Note: The cable specifications are as follows:

Model	Cable outside diameter	Number of conductors	Conductor cross-section (mm^2)	AWG size	Cable length
ZP-L3510	5.2 mm dia.	8	0.09	28	2 m
ZP-L3560					

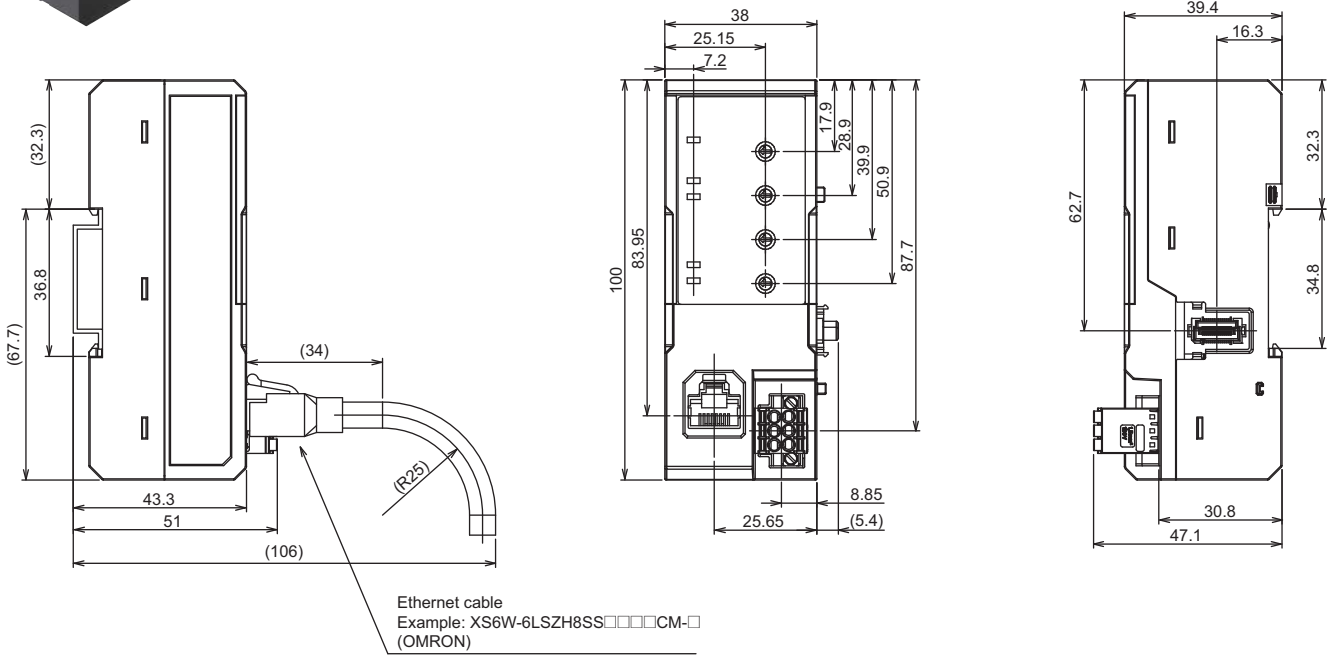
ZP-L3590



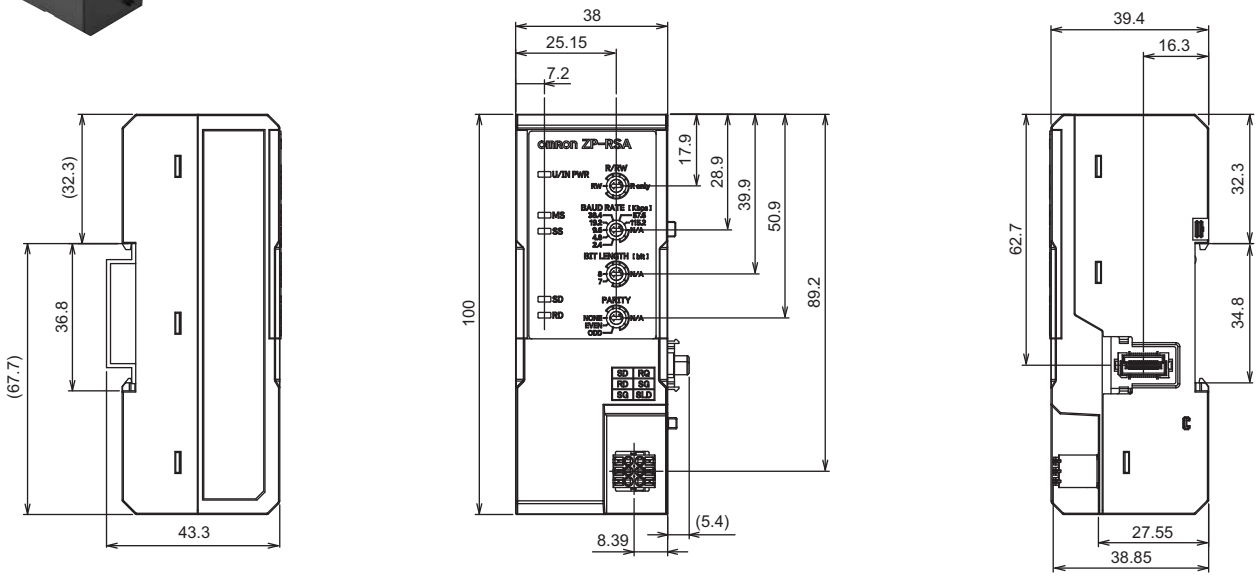
Accessories (sold separately)

Communication Unit

ZP-EIP



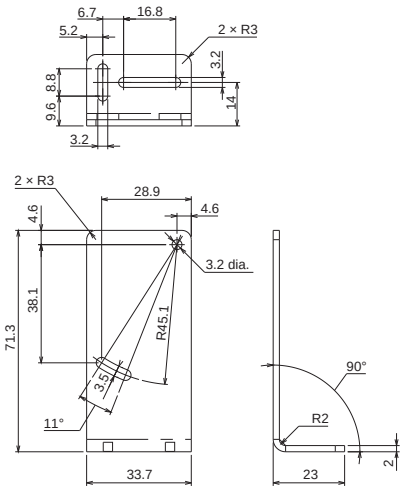
ZP-RSA



Mounting bracket

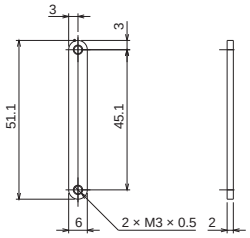
ZP-XL1

Mounting bracket



Material: Stainless steel (SUS304)
Weight: Approx. 43 g

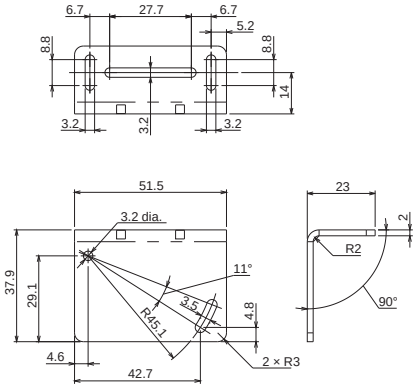
Fixing bracket



Material: Stainless steel (SUS304)
Weight: Approx. 4 g

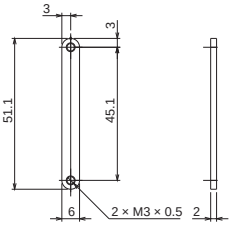
ZP-XL2

Mounting bracket



Material: Stainless steel (SUS304)
Weight: Approx. 41 g

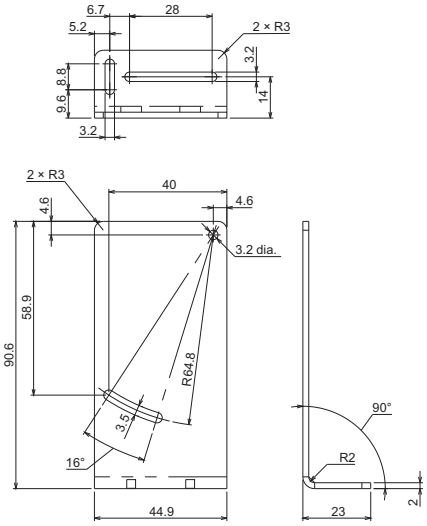
Fixing bracket



Material: Stainless steel (SUS304)
Weight: Approx. 4 g

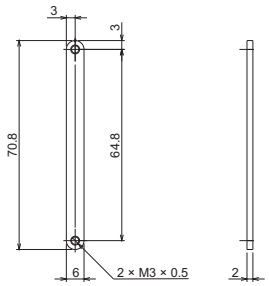
ZP-XL3

Mounting bracket



Material: Stainless steel (SUS304)
Weight: Approx. 71 g

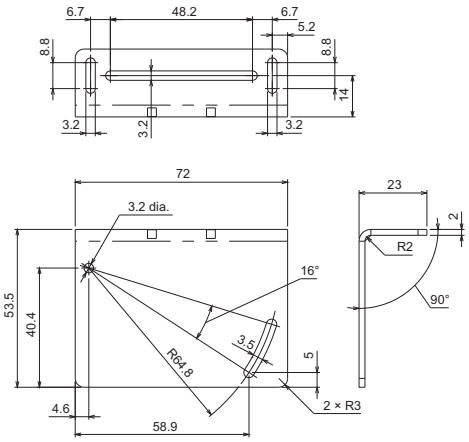
Fixing bracket



Material: Stainless steel (SUS304)
Weight: Approx. 6 g

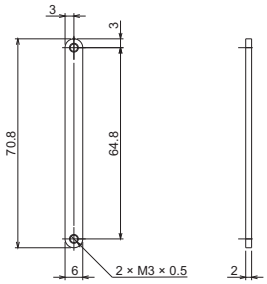
ZP-XL4

Mounting bracket



Material: Stainless steel (SUS304)
Weight: Approx. 73 g

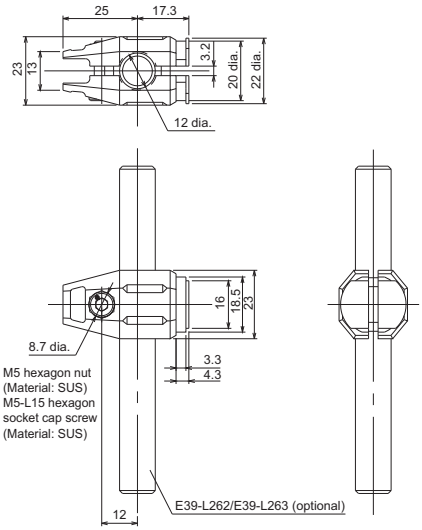
Fixing bracket



Material: Stainless steel (SUS304)
Weight: Approx. 6 g

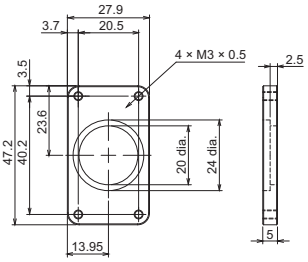
ZP-XL5

Clamp



Material: Zinc die casting (ZDC2)
Weight: Approx. 56 g (including clamp fixing screw)

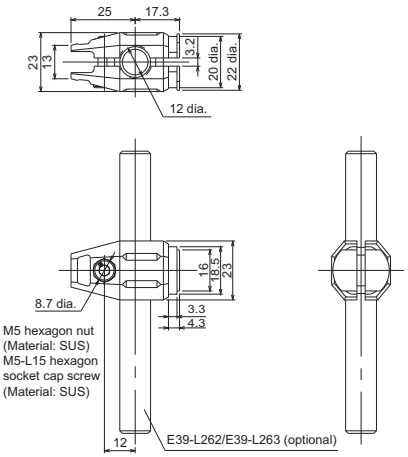
Bracket



Material: Aluminum (A5052)
Weight: Approx. 12 g

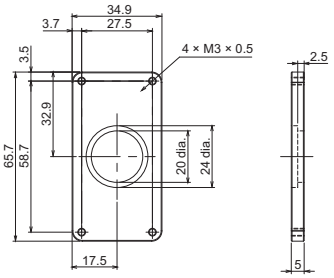
ZP-XL6

Clamp



Material: Zinc die casting (ZDC2)
Weight: Approx. 56 g (including clamp fixing screw)

Bracket



Material: Aluminum (A5052)
Weight: Approx. 25 g

Related Manuals

Man. No.	Model	Manual
Z495	ZP-LS□□/ZP-L3□□□	ZP Series Laser Displacement Sensor User's Manual
Z496	ZP-EIP	ZP-series EtherNet/IP™ Communications Unit
Z499	ZP-RSA	ZP-series RS-232C Communication Unit User's Manual

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Note: Do not use this document to operate the Unit.

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