

CMOS

Laser Displacement Sensor

LM Series



EtherCAT[®] RS-232C / RS-485

EtherNet/IP[™] Ethernet (TCP/IP)



Ask SENPUM

+86-755-83330055

Fast Delivery

Standard Models

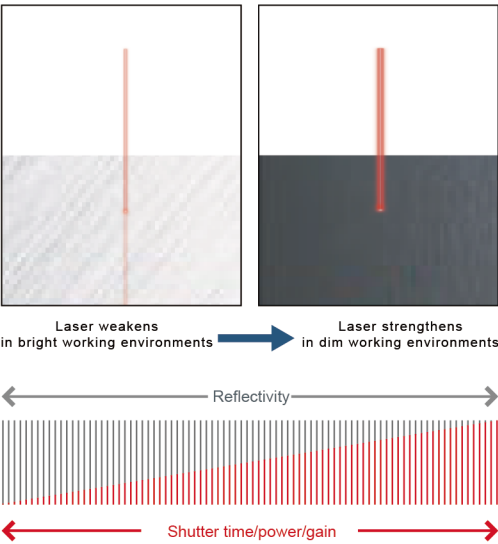


Most products are in stock. Upon receiving your order, we will arrange prompt shipment to minimize your downtime-related costs and losses.

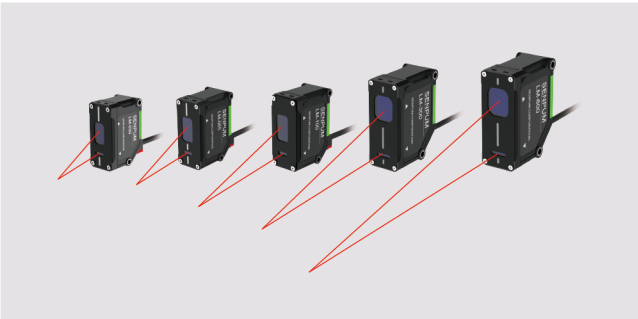


Automatically controls the laser to achieve optimization based on the reflectivity of the target object

Real-time control based on the target object and surface condition enables stable detection.



Supports detection distances from 20 to 1000 mm, suitable for various applications



Robust and durable sensor structure

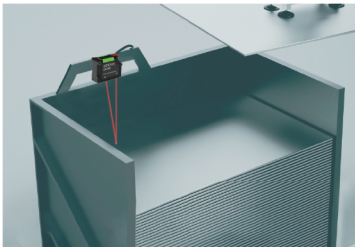
The unique aspherical lens enables an ultra-small sensor structure, and the optical base molded parts are IP67-rated.



More Features

- High-definition numerical display.
- Ultra-small sensor head for easy installation.
- Clear status indicator light.
- Protection class IP67.

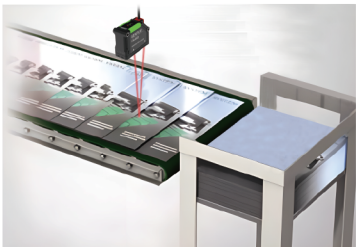
Applications



Material level height monitoring



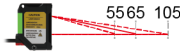
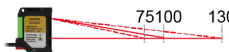
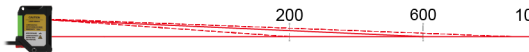
Chip height detection



Counting and stacking detection

Product List

Sensor Head

Appearance	Schematics	Reference distance (mm)	Measuring distance (mm)	Model
		30	20–45	LM-030
		65	55–105	LM-065
		100	75–130	LM-100
		300	160–450	LM-300
		600	200–1000	LM-600

Controller

Appearance	Type	Output method	Model
 Main module	DIN rail mounting	NPN	LM-1000N
		PNP	LM-1000P
		NPN/PNP	LM-1000
 Expansion module		NPN	LM-1050N
		PNP	LM-1050P
		NPN/PNP	LM-1050

Cable (connection cable between sensor head and controller)

Appearance	Sensor side	Cable termination	Material	Cable length	Model
	M8 4-Pin Straight	Controller	Highly flexible drag chain type	2 m	OW-LM2000
				5 m	OW-LM5000
				10 m	OW-LM10M
				20 m	OW-LM20M

Mounting Bracket (accessories)

Appearance	Model
	OW-LM001
	OW-LM002
	OW-LM003

Network Communication Unit

Appearance	Network	Model
	EtherCAT	OW-EC2A
	PROFINET	OW-PN2
	Ethernet (TCP/IP)	OW-EN2
	EtherNet/IP™	OW-EP2
	RS-232C / RS-485	OW-RS1A

Laser Displacement Sensors

LM2-Q

LM2-H

LM

LS

LM-S

- Fiber Optic Sensors
- Photoelectric Sensors
- Color Sensors
- Laser Sensors
- Proximity Sensors
- Precision Contact Sensors
- Area Sensors/
Safety Light Curtains
- Laser Scanners
- Digital Contact Sensors
- Laser Displacement Sensors
- Laser Micrometers
- Confocal Displacement Sensors
- Barcode Readers
- AI Vision Sensors
- RFID
- Infrared Temperature Sensors
- Pressure Sensors
- Flow Sensors
- Magnetic Sensors
- Ultrasonic Sensors
- Magnetic Scales
- Static Eliminators



LM2-Q

LM2-H

LM

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LM-S

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Magnetic Scales

Static Eliminators



SENPUM

1239

LM

CMOS Laser Displacement Sensor

Specifications

Sensor Head

Model		LM-030	LM-065	LM-100	LM-300	LM-600
Reference distance (mm)		30	65	100	300	600
Measuring distance (mm)		20–45	55–105	75–130	160–450	200–1000
Light source	Type	Red laser (639 nm)				
	Laser type	Class 2 laser products				
	Output	600 μW				
Spot size (at reference distance)		Approx. 200 × 750 μm	Approx. 550 × 1750 μm	Approx. 0.4 × 1.4 mm	Approx. ø0.5 mm	Approx. ø1.6 mm
Linearity*1*2		25 to 35 mm: ±0.1% F.S.	55 to 75 mm: ±0.1% F.S.	80 to 120 mm: ±0.15% F.S.	160 to 440 mm: ±0.25% F.S.	200 to 600 mm: ±0.25% F.S. 200 to 1000 mm: ±0.5% F.S.
Repeatability (at reference distance)*3		1 μm	2 μm	4 μm	30 μm	50 μm
Sampling period		0.33/1/2/5 ms switchable				
Temperature characteristics*2		0.05% F.S./°C	0.06% F.S./°C	0.06% F.S./°C	0.08% F.S./°C	
Housing rating		IP67				
Ambient light**4		Incandescent lamp: 5,000 lux	Incandescent lamp: 7,500 lux	Incandescent lamp: 7,500 lux	Incandescent lamp: 5,000 lux	
Ambient temperature		-10 to +50 °C (no freezing)				
Ambient humidity		35 to 85% RH (no condensation)				
Vibration resistance		10 to 55 Hz, Double amplitude 1.5 mm, 2 hours in each of the X, Y, and Z directions				
Material		Housing: PC; Indicator cover: PC; Lens cover: Glass; Cable: PVC				
Weight		Approx. 60 g	Approx. 80 g		Approx. 130 g	
Mounting bracket		OW-LM001	OW-LM002		OW-LM003	

*1 Data when detecting white diffuse reflective target.
*2 F.S. for each model: LM-030: ±5 mm, LM-065: ±10 mm, LM-100: ±20 mm, LM-300: ±140 mm, LM-600: ±400 mm
*3 Measured at reference distance with 2 ms sampling cycle, 128-time averaging, using white diffuse reflective target.
*4 Data with 2 ms or 5 ms sampling cycle.

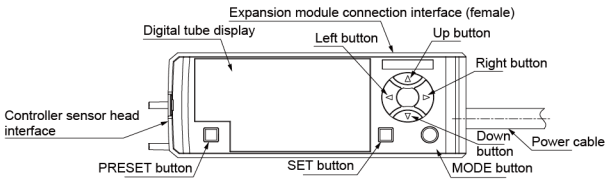
Controller

Model	NPN	LM-1000N	LM-1050N
	PNP	LM-1000P	LM-1050P
	NPN/PNP	LM-1000	LM-1050
Main module/Expansion module		Main module	Expansion module
Mounting type		DIN rail mounting	
Sensing head compatibility		Available	
Display	Minimum display unit	LM-030: 1 μm, LM-065/LM-100: 2 μm, LM-300: 10 μm, LM-600: 50 μm	
	Display range	LM-030/LM-065/LM-100: ±199.999 mm to ±199 mm (adjustable in 4 levels), LM-300/LM-600: ±1999.99 mm to ±1999 mm (adjustable in 3 levels)	
	Display rate	Approx. 10 times/sec	
Analog voltage output		±5 V, 1 to 5 V, 0 to 5 V Output impedance 100 Ω	-
Analog current output		4 to 20 mA Maximum load resistance 350 Ω	
Control input	Channel switching input	NPN: On at 0 V, OFF at 24 V PNP: On at 24 V, OFF at 0 V	
	Zero drift input		
	Launch stop input		
	Timer input		
	Reset input		
Control output*1	Judgment output	Open collector, 50 mA max (NPN/PNP; NO/NC, switchable)	
	Alarm output	Open collector, 50 mA max (NPN/PNP; normally closed, non-switchable)	
Power supply	Power voltage*1	10 to 30 VDC, including ripple (P-P) 10%	Power supply through the main unit
	Power consumption (without load)	1950 mW or less (at 30 V, 65 mA max.)	1800 mW or less (at 30 V, 60 mA max.)
Ambient temperature		-10 to +50 °C (no freezing)	
Ambient humidity		35 to 85% RH (no condensation)	
Vibration resistance		10 to 55 Hz, Double amplitude 1.5 mm, 2 hours in each of the X, Y, and Z directions	
Material		Housing: polycarbonate; Pushbuttons: polyacetal; Cable: PVC	
Weight (including accessories)		Approx. 150 g	Approx. 140 g

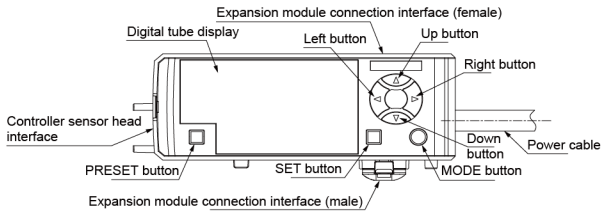
*1 When connecting extension devices, the following restrictions apply depending on the number of connected units.
When connecting 2 to 8 units (including the main unit):
- Power supply voltage: 20 to 30 VDC
- Control output current: Maximum 20 mA

Control Panel Description

LM-1000N / LM-1000P / LM-1000

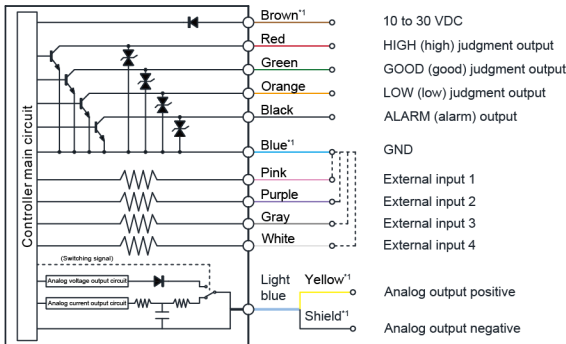


LM-1050N / LM-1050P / LM-1050



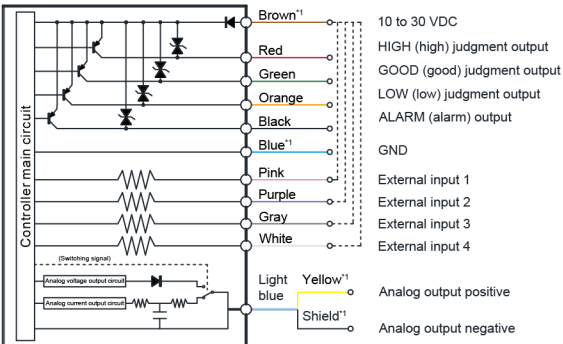
I/O Circuit Diagrams

NPN



*1 Main module only.

PNP

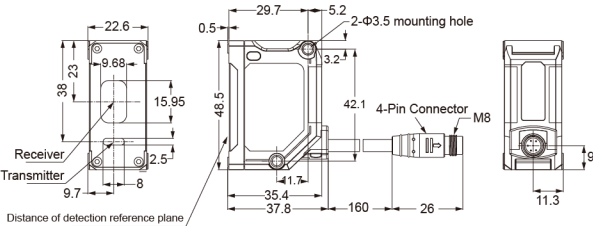


*1 Main module only.

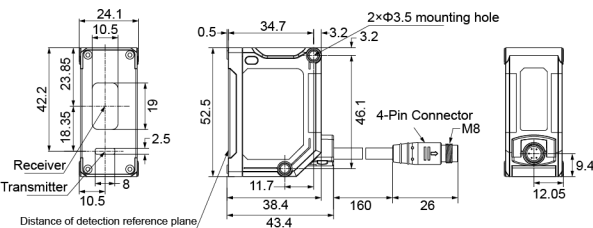
Dimensions

Unit: mm

Sensor Head
LM-030



LM-065 / LM-100



Laser Displacement Sensors

- LM2-Q
- LM2-H
- LM
- LS
- LM-S

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- Proximity Sensors
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- Laser Scanners
- Digital Contact Sensors
- Laser Displacement Sensors
- Laser Micrometers
- Confocal Displacement Sensors
- Barcode Readers
- AI Vision Sensors
- RFID
- Infrared Temperature Sensors
- Pressure Sensors
- Flow Sensors
- Magnetic Sensors
- Ultrasonic Sensors
- Magnetic Scales
- Static Eliminators

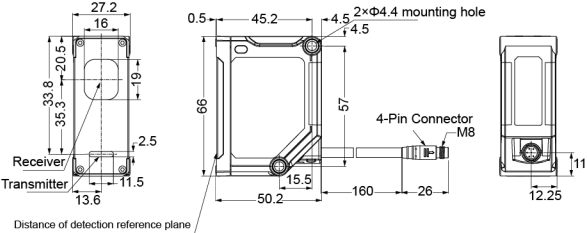




Dimensions

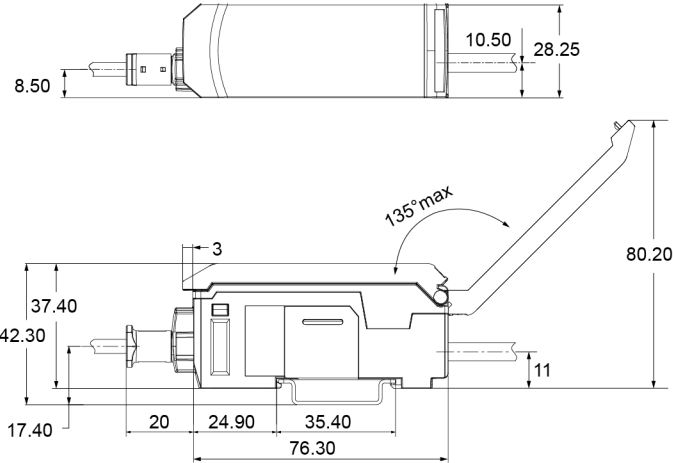
Unit: mm

LM-300 / LM-600

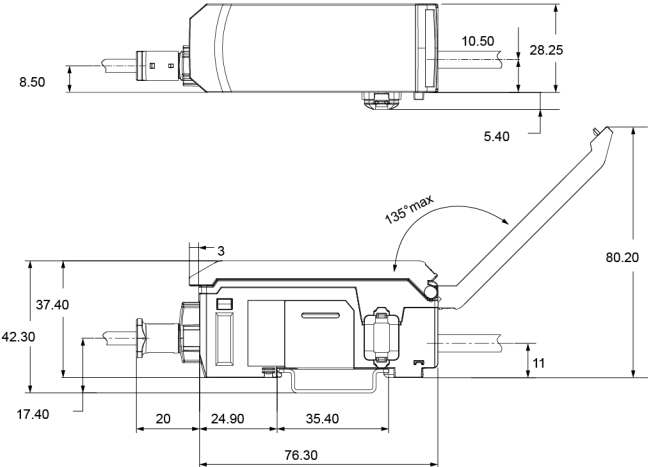


Controller

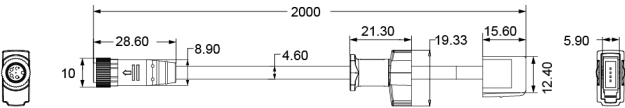
LM-1000N / LM-1000P / LM-1000



LM-1050N / LM-1050P / LM-1050



Cable
OW-LM2000 / OW-LM5000 / OW-LM10M / OW-LM20M

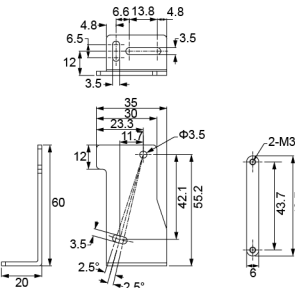


Pin definition

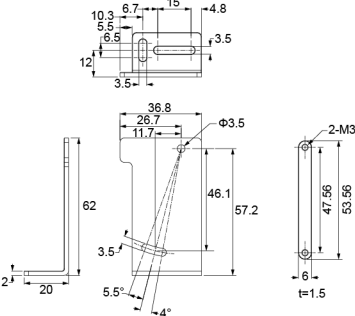


No.	Jacket color
①	Brown
②	Orange
③	Blue
④	Black

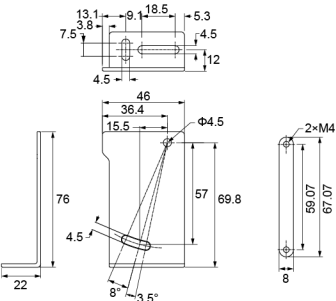
Mounting Bracket (accessories)
OW-LM001



OW-LM002



OW-LM003



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