

Medium-Long Range

Laser Displacement Sensor

LM2-Q Series



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.



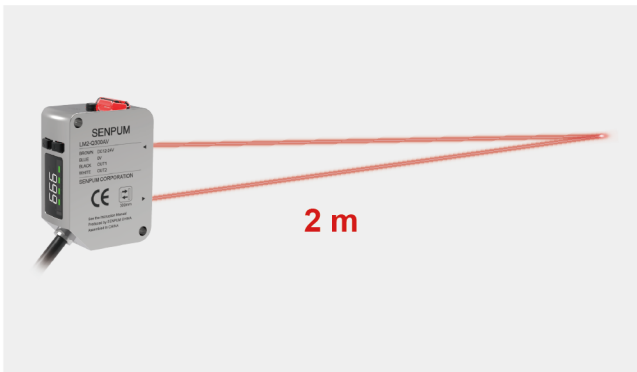
Ultra-high precision, accurately and stably detecting on multiple occasions

Linear accuracy up to $\pm 0.1\%$ F.S., maximum repeatability up to $10\text{ }\mu\text{m}$.

Linear accuracy up to
 $\pm 0.1\%$ F.S

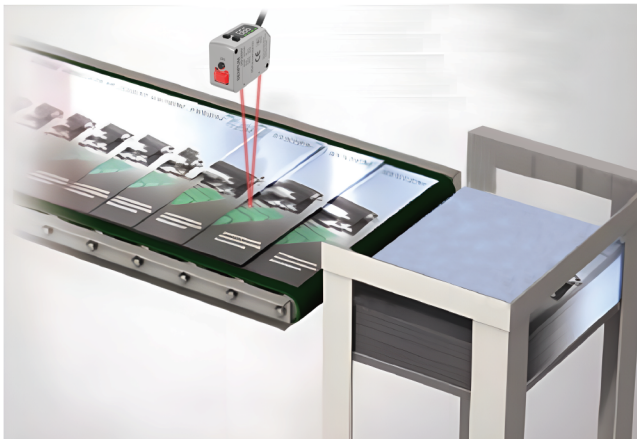
Repeatability accuracy up to
 $10\text{ }\mu\text{m}$

Detection distance up to 2 m, supporting various applications



Stable inspection even when the color of the workpiece changes

Counting and stacking detection of stacking box devices.



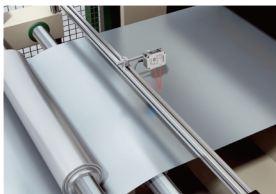
High-definition digital display and status indicators

High-definition digital display and status indicator lights, clearly showing measurement value changes and mode adjustment processes.

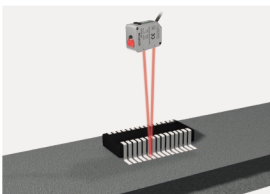
More
Features

- NPN/PNP switchable.
- Integration of sensor head and amplifier, ultra-small size, simple and easy installation.
- With switching output, the upper and lower limit positions are easier to set.
- Analog output 4–20 mA or 0...5 V or 0...10 V, freely convertible.

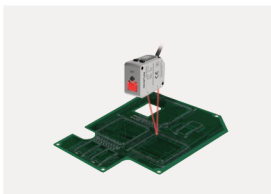
Applications



Sheet metal tracking



Pin Inspection



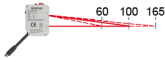
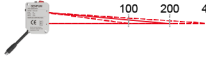
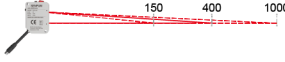
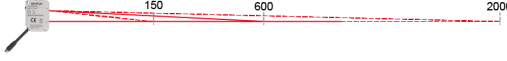
Substrate warpage and thickness

Product List

Cable Type

Diffuse reflective	Appearance	Schematics	Detection distance (mm)	Repeat-ability	Output method	Model
Short-range type			25—45	10 μm	NPN/PNP Analog voltage/current	LM2-Q045AV
		NPN/PNP RS-485			LM2-Q045T	
Medium-range type			35—80	30 μm	NPN/PNP Analog voltage/current	LM2-Q080AV
		NPN/PNP RS-485			LM2-Q080T	
			60—165	70 μm	NPN/PNP Analog voltage/current	LM2-Q165AV
					NPN/PNP RS-485	LM2-Q165T
			100—400	200 μm	NPN/PNP Analog voltage/current	LM2-Q400AV
					NPN/PNP RS-485	LM2-Q400T
Long-range type		150—1000	0.5 mm	NPN/PNP Analog voltage/current	LM2-Q1000AV	
				NPN/PNP RS-485	LM2-Q1000T	
				150—2000	NPN/PNP Analog voltage/current	LM2-Q2000AV
					NPN/PNP RS-485	LM2-Q2000T

Relay Type

Diffuse reflective	Appearance	Schematics	Detection distance (mm)	Repeat-ability	Output method	Model
Short-range type			25—45	10 μm	NPN/PNP Analog voltage/current	LM2-Q045CAAV
		NPN/PNP RS-485			LM2-Q045CAT	
Medium-range type			35—80	30 μm	NPN/PNP Analog voltage/current	LM2-Q080CAAV
		NPN/PNP RS-485			LM2-Q080CAT	
			60—165	70 μm	NPN/PNP Analog voltage/current	LM2-Q165CAAV
					NPN/PNP RS-485	LM2-Q165CAT
		100—400	200 μm	NPN/PNP Analog voltage/current	LM2-Q400CAAV	
				NPN/PNP RS-485	LM2-Q400CAT	
Long-range type		150—1000	0.5 mm	NPN/PNP Analog voltage/current	LM2-Q1000CAAV	
				NPN/PNP RS-485	LM2-Q1000CAT	
				150—2000	NPN/PNP Analog voltage/current	LM2-Q2000CAAV
					NPN/PNP RS-485	LM2-Q2000CAT

Cable (sold separately)

Appearance	Sensor side	Cable termination	Material	Output method	Cable length	Model
	M8 6PIN	Loose wire	PVC	Analog	2 m	OW-LM2Q2000
				RS-485		OW-LM2QT2000
				Analog	5 m	OW-LM2Q5000
				RS-485		OW-LM2QT5000
				Analog	10 m	OW-LM2Q10M
				RS-485		OW-LM2QT10M

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

LS

LM-S

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Fiber Optic Sensors

Photoelectric Sensors

Color Sensors

Laser Sensors

Proximity Sensors

Precision Contact Sensors

Area Sensors/
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Magnetic Sensors

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Static Eliminators



SENPUM

1231

LM2-Q

Medium-Long Range Laser Displacement Sensor

Specifications							
Cable Type							
Type		Short-range type	Medium-range type			Long-range type	
Model	NPN/PNP Analog voltage/current	LM2-Q045AV	LM2-Q080AV	LM2-Q165AV	LM2-Q400AV	LM2-Q1000AV	LM2-Q2000AV
	NPN/PNP +RS-485	LM2-Q045T	LM2-Q080T	LM2-Q165T	LM2-Q400T	LM2-Q1000T	LM2-Q2000T
Measurement center distance		30 mm	50 mm	100 mm	200 mm	400 mm	600 mm
Measuring range		25–45 mm	35–80 mm	60–165 mm	100–400 mm	150–1000 mm	150–2000 mm
Repeatability		10 μm	30 μm	70 μm	200 μm@100–300 mm 400 μm@300–400 mm	0.5 mm@150–400 mm 1 mm@400–600 mm 3 mm@600–800 mm 6 mm@800–1000 mm	0.5 mm@150–400 mm 1 mm@400–600 mm 3 mm@600–800 mm 6 mm@800–1200 mm 10 mm@1200–1800 mm 20 mm@1800–2000 mm
Linear accuracy		±0.1% F.S.			±0.2% F.S. (100–300 mm) ±0.3% F.S. (300–400 mm)	±0.2% F.S. (150–400 mm) ±0.3% F.S. (400–600 mm) ±0.5% F.S. (600–800 mm) ±1% F.S. (800–1000 mm)	±0.2% F.S. (150–400 mm) ±0.3% F.S. (400–600 mm) ±0.5% F.S. (600–800 mm) ±1% F.S. (800–1200 mm) ±1.5% F.S. (1200–1800 mm) ±2% F.S. (1800–2000 mm)
Temperature characteristics		0.03% F.S./°C					
Light source		Red semiconductor laser Class 2 Maximum output: 1 mW, light beam wavelength: 650 nm					
Beam diameter		Approx. 0.5 x 1.5 mm at 25 mm Approx. 0.3 x 0.6 mm at 45 mm	Approx. 0.5 x 1.5 mm at 35 mm Approx. 0.3 x 0.5 mm at 80 mm	Approx. 0.5 x 1.5 mm at 60 mm Approx. 0.4 x 0.5 mm at 160 mm	Approx. Φ0.8 mm at 100 mm Approx. Φ0.6 mm at 400 mm	Approx. Φ1 mm at 150 mm Approx. Φ2 mm at 1000 mm	Approx. Φ1 mm at 150 mm Approx. Φ2 mm at 1000 mm Approx. Φ7 mm at 2000 mm
Power voltage		12 to 30 VDC ±10%, including fluctuations of 10% (p-p)					
Current consumption		35 mA or less (at 24 VDC), 60 mA or less (at 12 VDC)					
Control output		NPN/PNP switchable; maximum output current 200 mA					
Analog output		0–20 mA; 4–20 mA; 0–5 V; 0–10 V; ±5 V; ±10 V					
Response time		1.5 ms/5 ms/10 ms/50 ms switchable					
External input		NPN contactless input Effective: 0 to +1.2 VDC Input impedance: approx. 10 kΩ					
Protective construction		IP67					
Ambient temperature		-10 to +40 °C (no freezing)					
Ambient humidity		35 to 85% RH (no condensation)					
Ambient illumination		Incandescent lamp: 3,000 lux or less					
Vibration resistance		10 to 55 Hz, Double amplitude 1.5 mm, 2 hours in each of the X, Y, and Z directions					
Power cable		2 m highly flexible drag chain type cable					
Material		Housing: Zinc alloy, Indicator cover: PC, Lens: Glass, Buttons: ABS, Cable: PVC					
Weight		Approx. 150 g (including cable)					
Note: When measurement conditions are not specified, the following conditions are used: Power supply voltage: 24 VDC, ambient temperature: +20 °C, response time: 10 ms, analog output value of the measurement center distance. Target object: white diffuse object.							
Relay Type							
Type		Short-range type	Medium-range type			Long-range type	
Model	NPN/PNP Analog voltage/current	LM2-Q045CAAV	LM2-Q080CAAV	LM2-Q165CAAV	LM2-Q400CAAV	LM2-Q1000CAAV	LM2-Q2000CAAV
	NPN/PNP +RS-485	LM2-Q045CAT	LM2-Q080CAT	LM2-Q165CAT	LM2-Q400CAT	LM2-Q1000CAT	LM2-Q2000CAT
Measurement center distance		30 mm	50 mm	100 mm	200 mm	400 mm	600 mm
Measuring range		25–45 mm	35–80 mm	60–165 mm	100–400 mm	150–1000 mm	150–2000 mm
Repeatability		10 μm	30 μm	70 μm	200 μm@100–300 mm 400 μm@300–400 mm	0.5 mm@150–400 mm 1 mm@400–600 mm 3 mm@600–800 mm 6 mm@800–1000 mm	0.5 mm@150–400 mm 1 mm@400–600 mm 3 mm@600–800 mm 6 mm@800–1200 mm 10 mm@1200–1800 mm 20 mm@1800–2000 mm
Linear accuracy		±0.1% F.S.			±0.2% F.S. (100–300 mm) ±0.3% F.S. (300–400 mm)	±0.2% F.S. (150–400 mm) ±0.3% F.S. (400–600 mm) ±0.5% F.S. (600–800 mm) ±1% F.S. (800–1000 mm)	±0.2% F.S. (150–400 mm) ±0.3% F.S. (400–600 mm) ±0.5% F.S. (600–800 mm) ±1% F.S. (800–1200 mm) ±1.5% F.S. (1200–1800 mm) ±2% F.S. (1800–2000 mm)
Temperature characteristics		0.03% F.S./°C					
Light source		Red semiconductor laser Class 2 Maximum output: 1 mW, light beam wavelength: 650 nm					
Beam diameter		Approx. 0.5 x 1.5 mm at 25 mm Approx. 0.3 x 0.6 mm at 45 mm	Approx. 0.5 x 1.5 mm at 35 mm Approx. 0.3 x 0.5 mm at 80 mm	Approx. 0.5 x 1.5 mm at 60 mm Approx. 0.4 x 0.5 mm at 160 mm	Approx. Φ0.8 mm at 100 mm Approx. Φ0.6 mm at 400 mm	Approx. Φ1 mm at 150 mm Approx. Φ2 mm at 1000 mm	Approx. Φ1 mm at 150 mm Approx. Φ2 mm at 1000 mm Approx. Φ7 mm at 2000 mm
Power voltage		12 to 30 VDC ±10%, including fluctuations of 10% (p-p)					
Current consumption		35 mA or less (at 24 VDC), 60 mA or less (at 12 VDC)					
Control output		NPN/PNP switchable; maximum output current 200 mA					
Analog output		0–20 mA; 4–20 mA; 0–5 V; 0–10 V; ±5 V; ±10 V					
Response time		1.5 ms/5 ms/10 ms/50 ms switchable					
External input		NPN contactless input Effective: 0 to +1.2 VDC Input impedance: approx. 10 kΩ					
Protective construction		IP67					
Ambient temperature		-10 to +40 °C (no freezing)					
Ambient humidity		35 to 85% RH (no condensation)					
Ambient illumination		Incandescent lamp: 3,000 lux or less					
Vibration resistance		10 to 55 Hz, Double amplitude 1.5 mm, 2 hours in each of the X, Y, and Z directions					
Power cable		15 cm highly flexible drag chain type cable M8 6PIN					
Material		Housing: Zinc alloy, Indicator cover: PC, Lens: Glass, Buttons: ABS, Cable: PVC					
Weight		Approx. 150 g (including cable)					
Note: When measurement conditions are not specified, the following conditions are used: Power supply voltage: 24 VDC, ambient temperature: +20 °C, response time: 10 ms, analog output value of the measurement center distance. Target object: white diffuse object.							

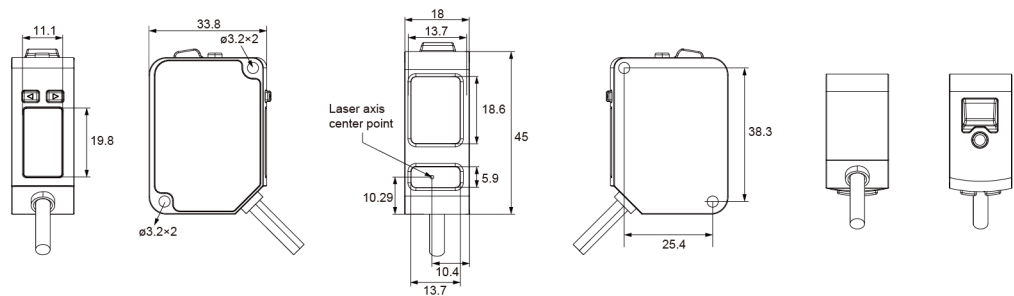
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Dimensions

Cable Type

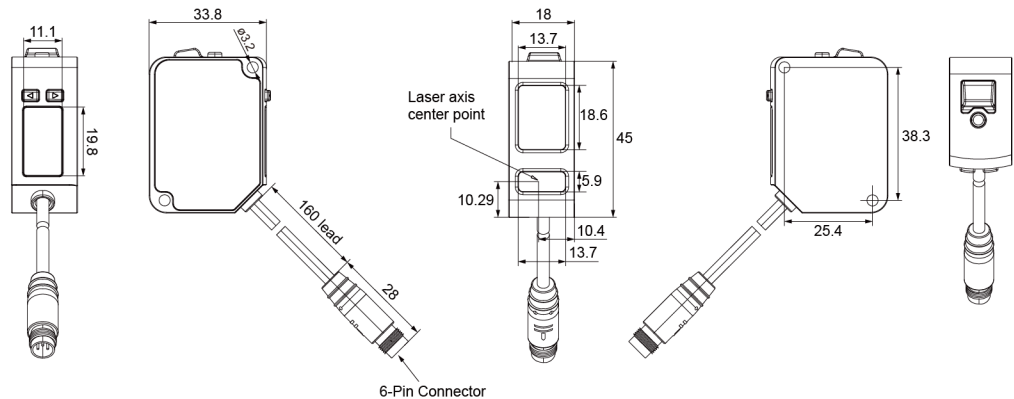
LM2-Q045T/080T/165T/400T/1000T/2000T
LM2-Q045AV/080AV/165AV/400AV/1000AV/2000AV

Unit: mm

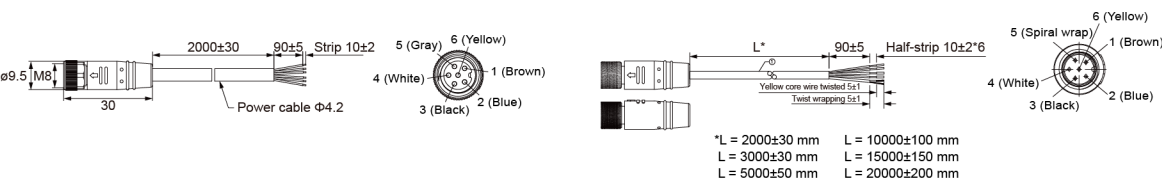


Relay Type

LM2-Q045CAT/080CAT/165CAT/400CAT/1000CAT/2000CAT
LM2-Q045CAAV/080CAAV/165CAAV/400CAAV/1000CAAV/2000CAAV



Cable (sold separately)

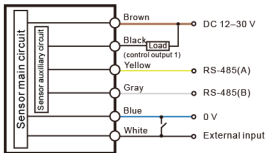


I/O Circuit Diagrams

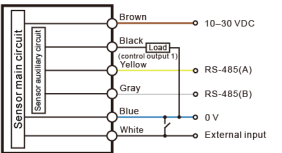
RS-485

LM2-Q045T/080T/165T/400T/1000T/2000T
LM2-Q045CAT/080CAT/165CAT/400CAT/1000T/2000CAT

When selecting NPN output, NPN input



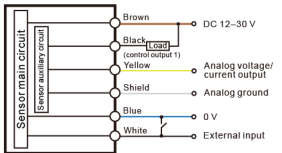
When selecting PNP output, NPN input



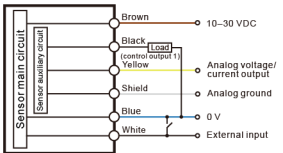
Analog

LM2-Q045AV/080AV/165AV/400AV/1000AV/2000AV
LM2-Q045AV/080CAAV/165CAAV/400CAAV/1000CAAV/2000CAAV

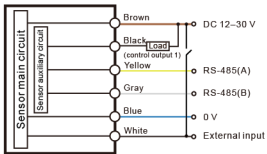
When selecting NPN output, NPN input



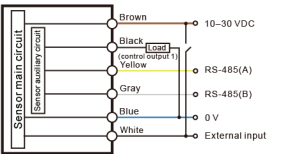
When selecting PNP output, NPN input



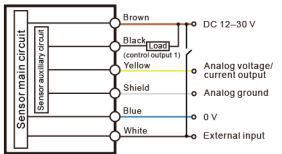
When selecting NPN output, PNP input



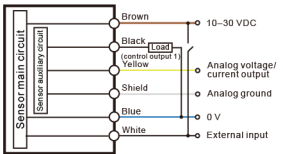
When selecting PNP output, PNP input



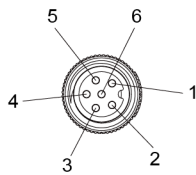
When selecting NPN output, PNP input



When selecting PNP output, PNP input



Connector Schematic



485 Output type

	Jacket color	Function
1	Brown	Power supply positive
2	Blue	Power supply negative
3	Black	Control output / IO-Link
4	White	Control input
5	Gray	RS485(B)
6	Yellow	RS485(A)

Analog output type

	Jacket color	Function
1	Brown	Power supply positive
2	Blue	Power supply negative
3	Black	Control output / IO-Link
4	White	Control input
5	Shield	Analog ground
6	Yellow	Analog voltage/current output

Laser Displacement Sensors

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LM2-H
LM
LS
LM-S

Fiber Optic Sensors

Photoelectric Sensors

Color Sensors

Laser Sensors

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