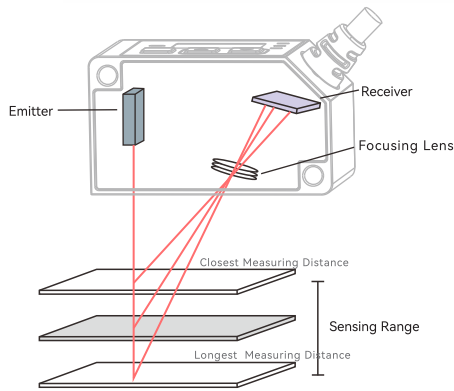


### Meeting the Detection Needs for Long Distance and Large Range

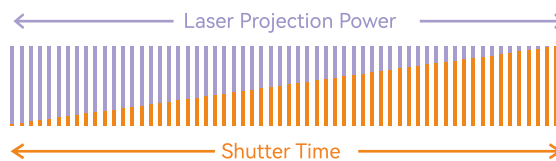
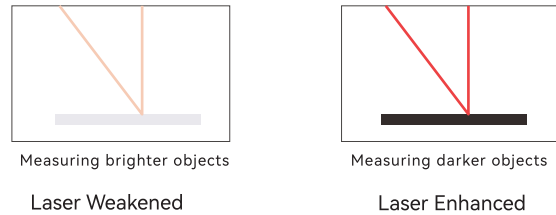


CMOS sensor element  
Highly accurate detection achieved by triangulation principle

By triangulation principle, the incoming light port on the CMOS of the sensor receiver moves as the object position changes. And the change of objects can be checked by detecting the incoming light position.

### Automatic Exposure Adjustment

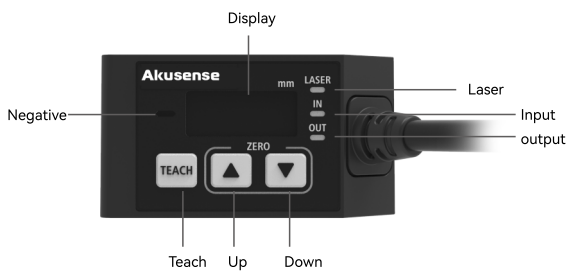
The amount of energy received can be automatically adjusted according to different applications; Detection remains stable even the color or material of the workpiece changes.



- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

Guidance

- Displacement
- Triangulation
- Linear measurement
- Magnetic displacement
- LIDAR Scanner
- Color confocal

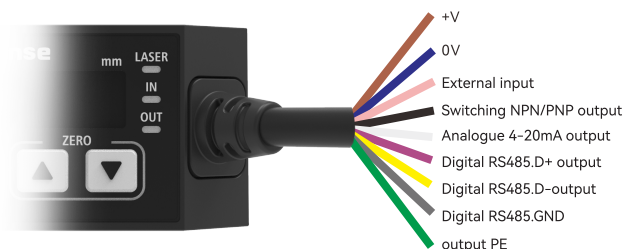


Intuitive digit display on the panel, and button function makes commissioning easy.  
Equipped with display and function buttons within a mini space;

The opening/closing of the laser, external trigger signal and control output signal status can be intuitively presented; most function settings can be made directly via the sensor panel.

It includes parameter item setting, function item setting and threshold setting.

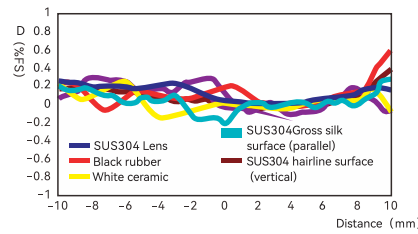
Integrated output methods; Switching, analogue and digital outputs all in one.



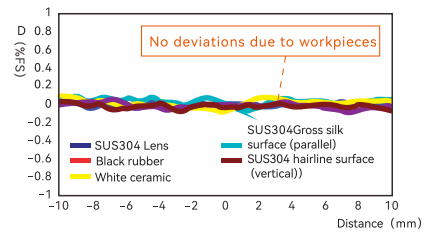
# Selection Guide

## Detection remains stable even the workpiece moves

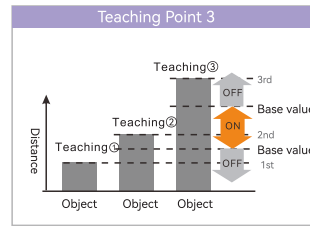
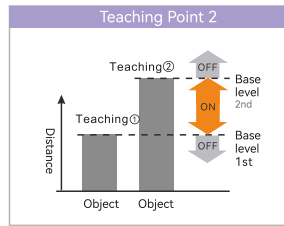
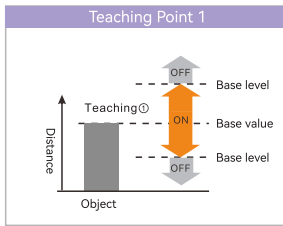
For workpieces with rough surfaces, a linear beam is used to average the amount of reflection. And the amount of light received is corrected at a high speed of 30us per measurement cycle to reduce the alteration of the amount of light received caused by workpiece moving. Thus the detection remains stable even when the workpiece is displaced during the process of measurement.



Material-based linear properties of previous products



Material-based linear properties of MLD21



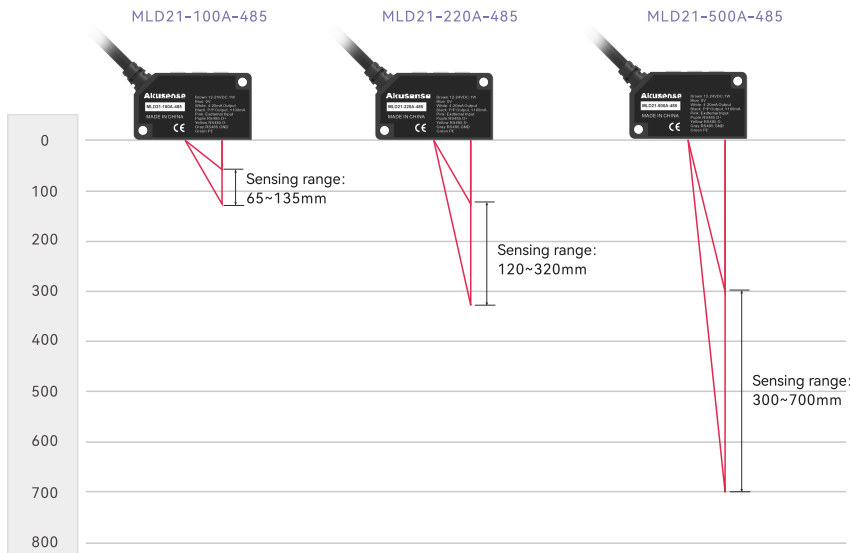
## Built-in rich detection modes for greater functionality

In addition to the basic teaching settings, the following three modes have been implemented: Basic teaching mode for simple setting of the presence or absence of the object to be measured; A single-point serial comparison mode for deviations from the reference measurement surface; A two-point teaching serial comparison mode for precise range control.

## Application



## Selection table



Model	MLD21-100A-485
Repeat accuracy	70μm
Linearity	±0.1%
Base distance	100mm

Model	MLD21-220A-485
Repeat accuracy	200μm
Linearity	±0.2%
Base distance	220mm

Model	MLD21-500A-485
Repeat accuracy	(300~500mm) 300μm (500~700mm) 600μm
Linearity	(300~500mm) ±0.2% (500~700mm) ±0.3%
Base distance	500mm



Appearance

Sensing type	Diffuse reflection		
Center of sensing distance	100mm	220mm	500mm
Sensing distance	65~135mm	120~320mm	300~700mm
Spot size	136 x 110 μm	290 x 238 μm	541 x 330 μm
light source	Laser CLASS 2		
Communication interface	Digital IO/MODBUS RS-485 communication interface Support 9,600, 14400, 19200, 38400, 57600, 115200bps. (Default: 115200bps) Support format: 8,N,1、8,N,2、8,O,1、8,O,2、8,E,1、8,E,2		
Input voltage	12~24VDC ± 10% , 1W		
Linearity	±0.1%	±0.2%	(300~500mm) ±0.2% (500~700mm) ±0.3%
Repeat accuracy	70 μm	200 μm	(300~500mm)300 μm (500~700mm)600 μm
Sampling period	1.5ms/ 3ms/5ms (Default: ms)		
Analog output	Current:4~20mA(Normal)/22mA(Abnormal) ,Load impedance:≤300Ω		
Digital output	Optional function: measurement range/comparison output, Push-Pull Output , <100mA		
Digital input	Optional function:Zero reset/teaching, High-level ≥2V, Low-level ≤0.8V		
Indicator	Laser emission indicator(Blue), Digital output(Green), Digital input(Yellow)		
Circuit protection	Reverse voltage protection, output overcurrent protection, input power surge protection, output surge protection		
Degree of protection	IP67		
Ambient temperature	-10°C~+50°C		
Ambient humidity	35%~85%		
Ambient brightness	3000Lux and below		
Vibration resistance	10~55Hz double amplitude1.5mm, XYZ three directions, 2 hours each		
Insulation resistance	20 MΩ or more(500VDC)		
Pressure resistance	500 VAC 50/60 Hz 1min		
Material	Front cover: PC; Case: Aluminum alloy; Cable: PUR		
Cable	Length:2m		
Model	<b>MLD21-100A-485</b>	<b>MLD21-220A-485</b>	<b>MLD21-500A-485</b>

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement**
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

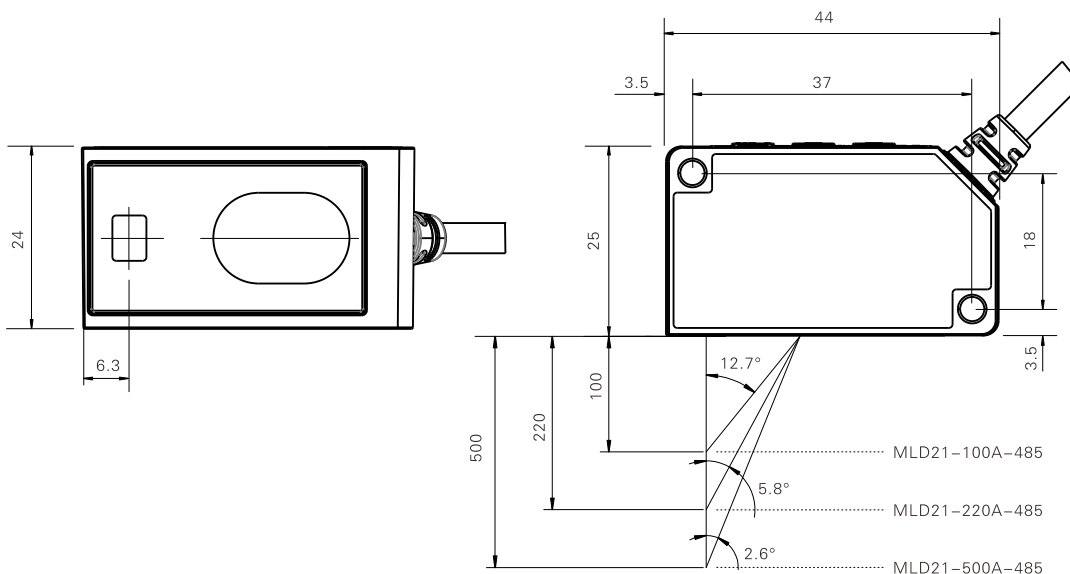
**Guidance**

**Displacement**

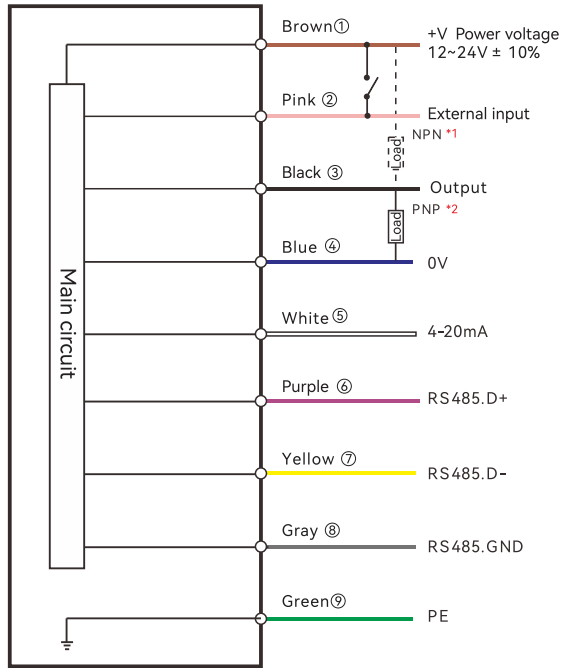
- Triangulation**
- Linear measurement
- Magnetic displacement
- LIDAR Scanner
- Color confocal

**Dimensions**

Unit: mm



Circuit diagram



Remark:

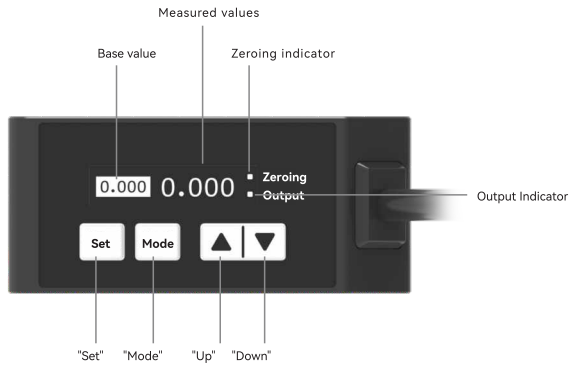
- 1.NPN output connection : Connect Black with Brown (+V)
- 2.PNP output connection: Connect Black with Blue (0V)

Fiber Optic
Slot Sensors
Photoelectric
Laser
Proximity
<b>Displacement</b>
Magnetic
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Accessories

Guidance

<b>Displacement</b>
Triangulation
Linear measurement
Magnetic displacement
LiDAR Scanner
Color confocal



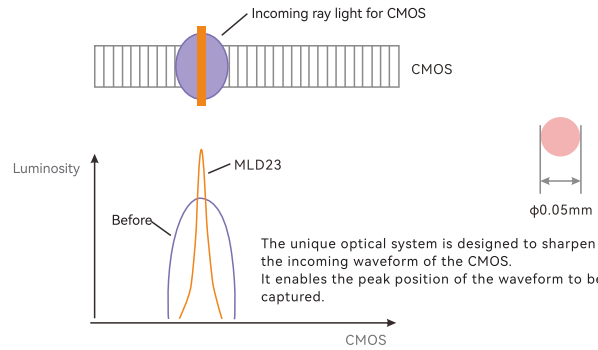


### Mini Chinese Display

More Intuitive and Simple for Commissioning

### Convergent harnesses for more accurate detection

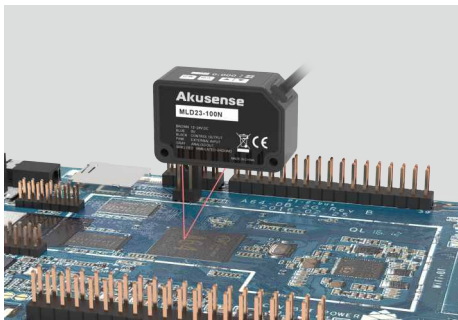
Akusense has developed its own optical system to significantly converge and improve the beam to 50um; An ultra-small spot size of 0.05mm formed, which detects objects with stability and accuracy.



- Fiber Optic
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**Guidance**

- Displacement
- Triangulation
- Linear measurement
- Magnetic displacement
- LIDAR Scanner
- Color confocal

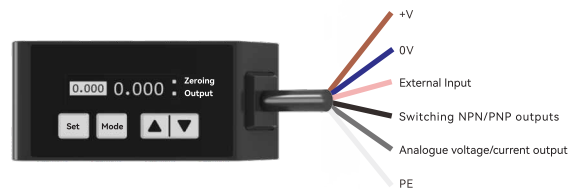


### Micron-level linear accuracy

Linear accuracy reaches to 0.01mm for easy inspection with high accuracy

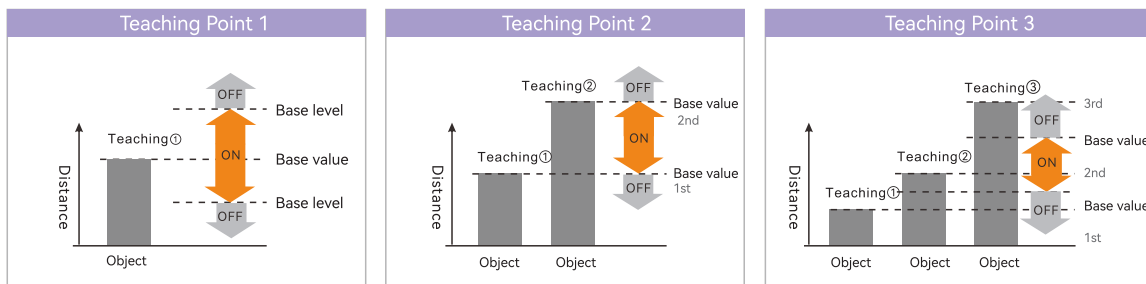
### Convenient Installation

Integration of analogue voltage, analogue current and switching



### Simple and flexible test patterns

Multiple teaching modes to make testing easier



# Selection Guide

## MLD23 Series

Faster, more stable, more accurate

Three test modes are for option: standard, high speed and high accuracy

① Ultra-high speed computing and processing

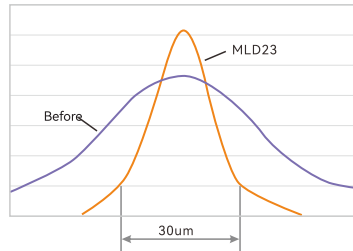
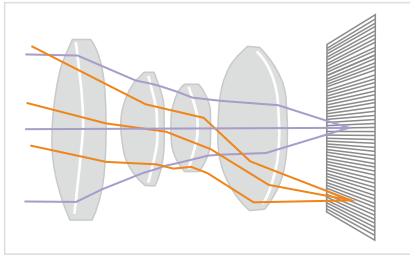
The application of Akusense's advanced IC and algorithm technology has greatly improved the sensor's detection rate and data accuracy, allowing for both high speed transmission and stable detection of measured values.



Max 1.5ms response time

Repeat accuracy up to 10um

Min ±0.1% F.S linearity

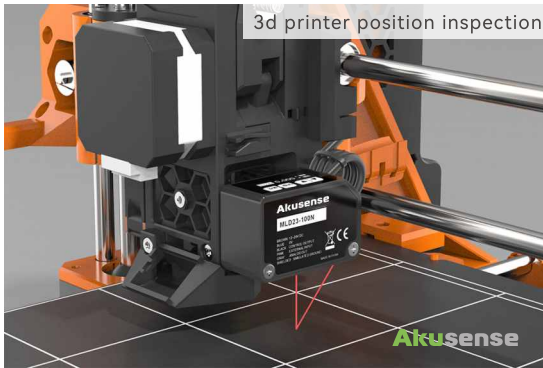


② Achieving greater precision

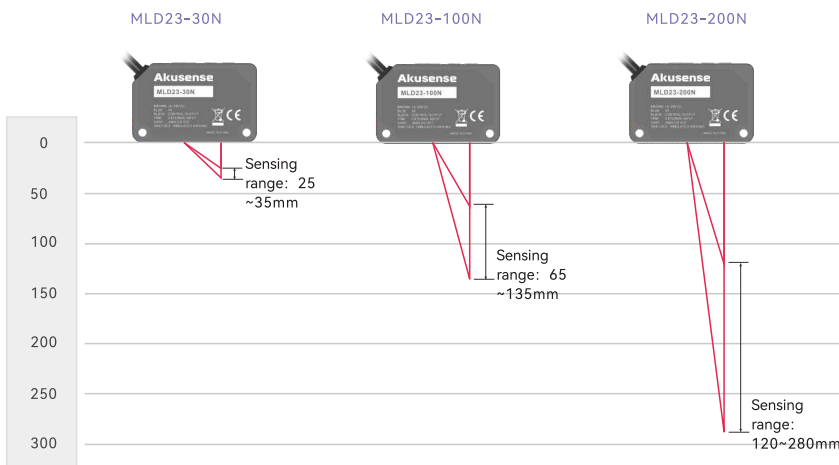
The new Akusense high-resolution lens design reduces pixel aberration and is assembled with precision.

The small spot of light at any angle can be imaged at the receiving section, resulting in a smaller waveform and higher measurement accuracy.

## Application



## Selection table



Model	MLD23-30N
Repeat accuracy	10μm
Linear accuracy	±0.1% F.S.
Base distance	30mm

Model	MLD23-100N
Repeat accuracy	70μm
Linear accuracy	±0.1% F.S.
Base distance	100mm

Model	MLD23-200N
Repeat accuracy	200μm
Linear accuracy	±0.2% F.S.
Base distance	200mm



Economical type

### Appearance

Principle	Diffuse reflection		
Center of sensing distance	30mm	100mm	200mm
Sensing distance	25~35mm	65~135mm	120~280mm
Repeat accuracy	10 μm	70 μm	200 μm
Light source	Medium, wavelength	Red semiconductor laser, wavelength: 655nm	
	Max. output power	1mW	
	Laser class	Class2	
Standard	EMC		
Temperature drift	± 0.03%/°C F.S.		
Spot size	≈ Φ0.05mm	≈ Φ0.15mm	≈ Φ0.3mm
Linearity	± 0.1% F.S.		± 0.2% F.S.
Supply voltage	12~24V DC ± 10%		
Current consumption	< 60 mA (24V DC), < 100mA (12V DC)		
Response time	1.5ms/5ms/50ms switchable		
Switch Output	NPN open-collector transistor, max. inflow current: 50mA; applied voltage: < 30V DC (between control output-0V), residual voltage: < 1.5V (inflow current < 50mA)		
Analog output	Voltage	Output range: 0V ~ 5V (when alarm: +5.2V), output impedance: 100 Ω	
	Current	Output range: 4mA ~ 20mA (when alarm: 0mA), load: less than 300 Ω	
External input	Input conditions Invalid: +8V ~ +V DC or open, valid: 0V ~ +1.2V DC; input impedance: about 10k Ω		
Ambient performance	Protection Degree	IP66	
	Ambient Temperature	-10°C~+45°C, No freezing	
	Ambient humidity	35%~85%RH, No condensation	
	Ambient light	Incandescent lamp: Illumination below 3000Lux on the light-receiving surface	
Cable	5-core 2M cable		
Material	Aluminum, acrylic		
Model	<b>MLD23-30N</b>	<b>MLD23-100N</b>	<b>MLD23-200N</b>

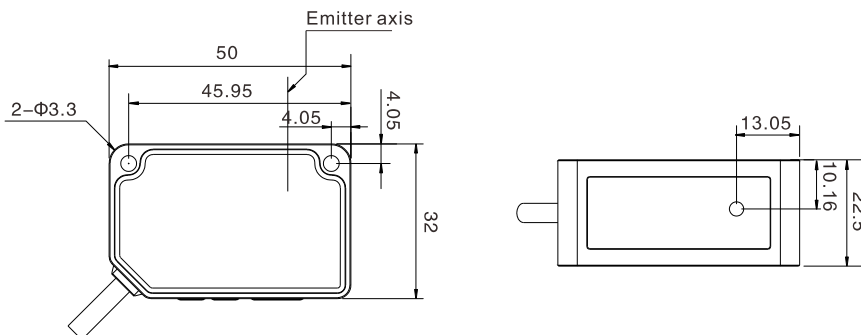
- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement**
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

### Guidance

- Displacement**
- Triangulation
- Linear measurement
- Magnetic displacement
- LIDAR Scanner
- Color confocal

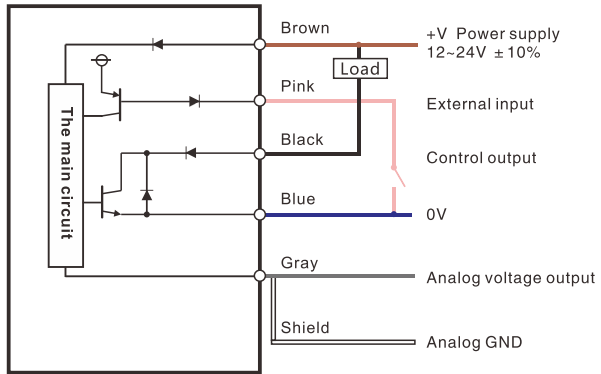
## Dimensions

Unit: mm



# Mini Digital Display

## Circuit Diagram



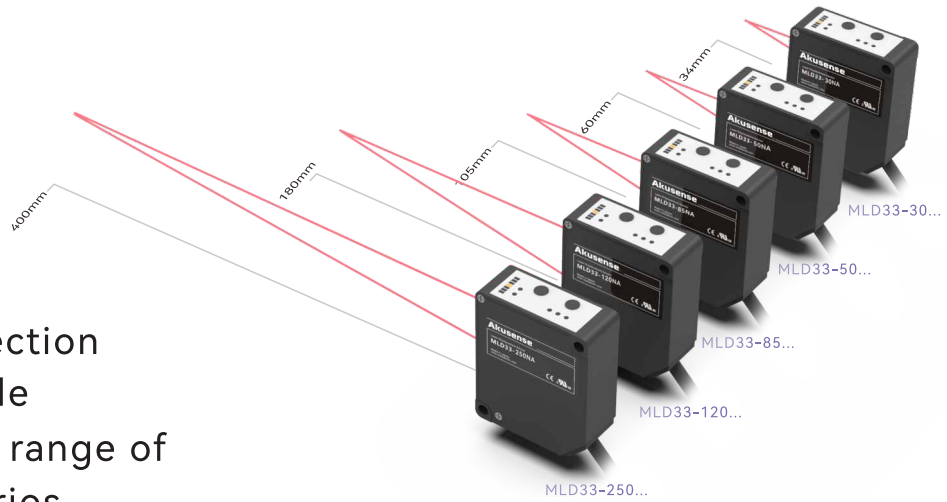
Displacement

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
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### Guidance

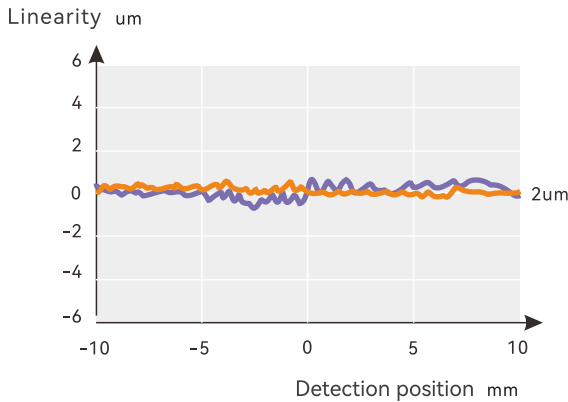
- Displacement**
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- Color confocal

26-400 mm detection distance available  
Meeting a wider range of detection scenarios

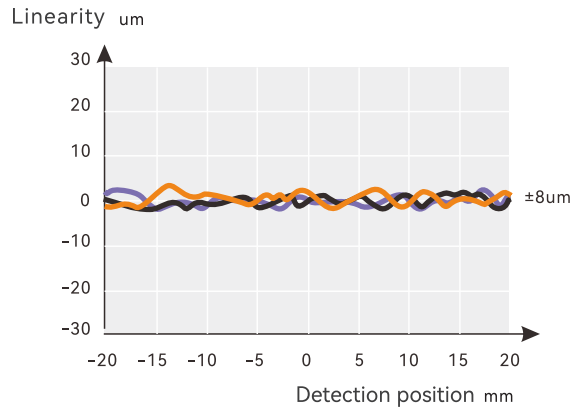


\*The maximum detection distances for the respective models are marked in the diagram.

### 2um ultra-high repeatability

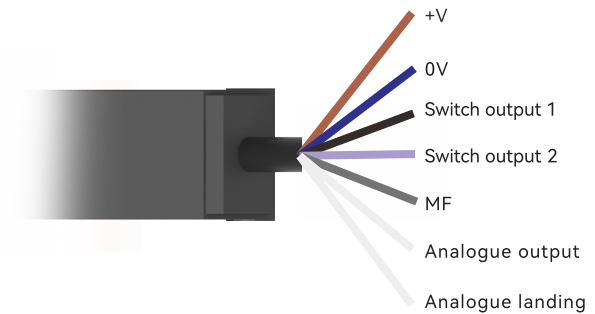
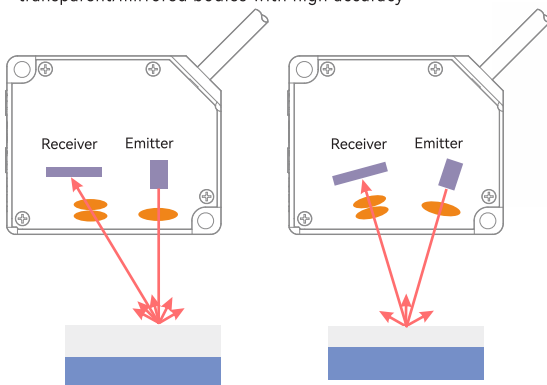


### ±8um linear accuracy, high precision measurement



### Suitable for the detection of highly reflective transparent objects

Positive reflection detection principle for transparent/mirrored bodies with high accuracy



Equipped with 2 switching outputs  
Independent operation without connection to a controller

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
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- Temperature
- Accessories

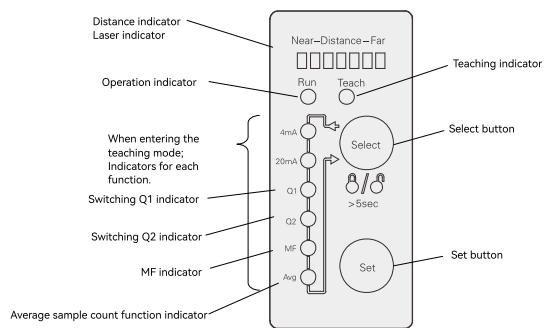
Guidance

- Displacement**
- Triangulation
- Linear measurement
- Magnetic displacement
- LIDAR Scanner
- Color confocal

# Selection Guide

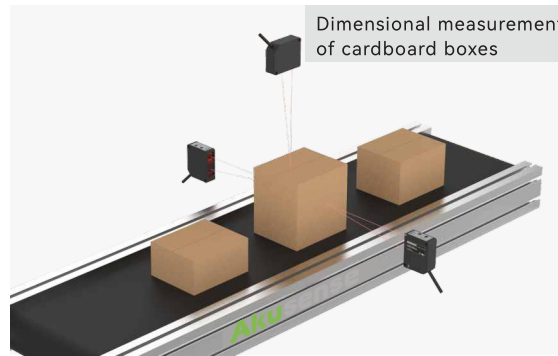
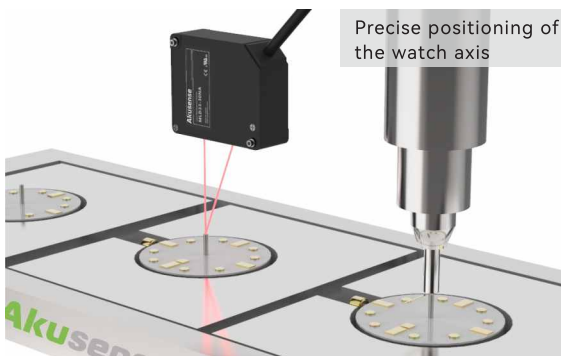
## Control panel indicator status display for easy commissioning

7 distance indicators, in order from far to near



LED Display	Detection State	Indicator State
Near-Distance-Far 	Beyond the detection range. Note) The indicator also shows this status when the object is within the detection range but the value of the light received is too high or too low	Red LEDs at the both ends on at the same time
	When the object is at the near end of the detection range	The near indicator on the left (red LED) on
	When the object is at the far end of the detection range	The far indicator at the right (red LED) on
	When the object is in a position close to the far end	Green LED next to the right end on
	When the object is in the centre	Orange LED in the middle on

## Application



## Selection Table



Model	MLD33-30...	MLD33-50...	MLD33-85...	MLD33-120...	MLD33-250...
Repeat accuracy	4µm(Fast mode) 2µm(Other mode)	8µm(Fast mode) 5µm(Other mode)	15µm(Fast mode) 10µm(Other mode)	45µm(Fast mode) 30µm(Other mode)	100µm(Fast mode) 75µm(Other mode)
Linear accuracy	±0.1%F.S	±0.1%F.S	±0.1%F.S	±0.1%F.S	±0.1%F.S
Base distance	30mm	50mm	85mm	120mm	250mm



Appearance					
Sensing type	Diffuse reflection				
Center of sensing distance	30mm	50mm	85mm	120mm	250mm
Sensing distance	26~34mm	40~60mm	65~105mm	60~180mm	100~400mm
F.S	8mm	20mm	40mm	120mm	300mm
Light source	Medium Wavelength	Red laser diode wavelength: 655nm			
	Max. output	1mW max			
Laser class	IEC/JIS	Class2			
	FDA	Class2			
Spot size	Short range	0.15*0.15mm	0.6*1.2mm	0.9*1.5mm	1.2*1.8mm
	Center	0.1*0.1mm	0.5*1.0mm	0.75*1.25mm	1.0*1.5mm
	Long range	0.15*0.15mm	0.4*0.9mm	0.6*1.0mm	0.5*0.8mm
Linearity	± 0.1% F.S				± 0.3% F.S
Repeat accuracy	Fast mode	4 μm	8 μm	15 μm	45 μm
	Others	2 μm	5 μm	10 μm	30 μm
Temperature drift	± 0.08%/°C F.S.				
Operating voltage	Switch/Current output: 12~24V DC(-5%, +10%), Voltage output: 18~24V DC(-5%, +10%)				
Current consumption	Switch/Voltage output: max.55mA(24V DC), Current output: max.85mA(24V DC)				
Output	Switch output	2 Channels output, NPN/PNP Open–connector output , ≤100/30V DC, Voltage drop≤1.8V			
	Analog output	Current output: 4~20mA; Voltage output: 0~10V			
Response time	Fast mode	max.5ms			
	Standard mode	max.12.5ms			
	High resolution mode	max.36.5ms			
	Sensitivity switch time	4ms max			
Indicator	Distance indicator	7 bar LEDs display			
	Output indicator	Q1 and Q2 LED lights up during output (orange)			
Ambient parameters	Degree of protection	IP67			
	Ambient temperature	-10°C~+45°C, No freezing			
	Ambient humidity	35%~85% RH, No condensation			
	Ambient brightness	Sunlight≤20000Lux, Incandescent lamp≤3000Lux			
	Vibration resistance	10~55Hz Double amplitude1.5mm, XYZ three directions, 2 hours each			
	Shock resistance	500m/s <sup>2</sup> (Approx.50G), XYZ three directions 3 times each			
Housing material	Housing: PBT,Front cover: PMMA				
Cable	Switch output: φ5mm 5core 2m cable; Analog output: φ5mm 6core 2m cable; Rs422 Cl: φ5mm 8core 2m cable; Max.extended length:10m				
Weight	Approx.65G(Not Including cable)				
2 switch output type (2CH)	<b>MLD33-30N/P</b>	<b>MLD33-50N/P</b>	<b>MLD33-85N/P</b>	<b>MLD33-120N/P</b>	<b>MLD33-250N/P</b>
2CH+Analog current 4~20mA	<b>MLD33-30NA/PA</b>	<b>MLD33-50NA/PA</b>	<b>MLD33-85NA/PA</b>	<b>MLD33-120NA/PA</b>	<b>MLD33-250NA/PA</b>
2CH+Analog voltage 0~10V	<b>MLD33-30NV/PV</b>	<b>MLD33-50NV/PV</b>	<b>MLD33-85NV/PV</b>	<b>MLD33-120NV/PV</b>	<b>MLD33-250NV/PV</b>
1CH+RS422 Cl	<b>MLD33-30N/P-422</b>	<b>MLD33-50N/P-422</b>	<b>MLD33-85N/P-422</b>	<b>MLD33-120N/P-422</b>	<b>MLD33-250N/P-422</b>
Remarks	N:NPN output; P:PNP output				

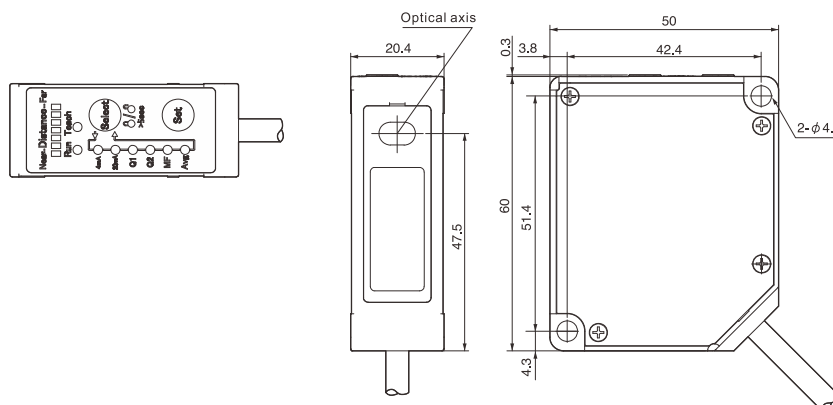
- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
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- Temperature
- Accessories

### Guidance

### Displacement

- Triangulation**
- Linear measurement
- Magnetic displacement
- LIDAR Scanner
- Color confocal

## Dimensions



Unit: mm

# Built-in Controller

## MLD33 Series

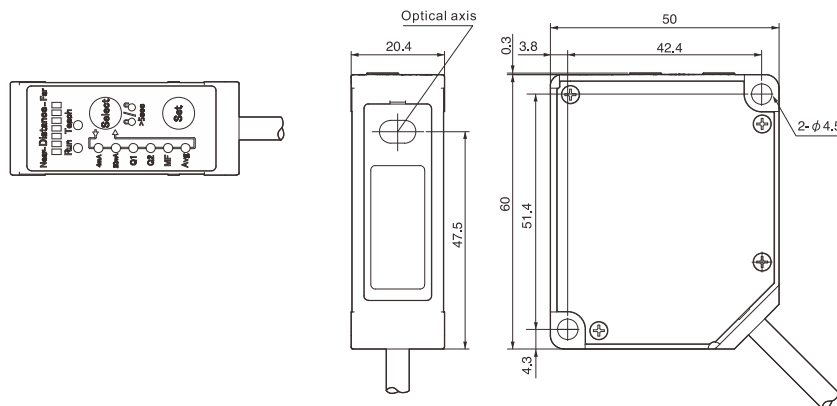


Appearance

Sensing type		Regular Reflection		
Center of sensing distance		26.3mm	47.3mm	82.9mm
Sensing distance		24.3~28.3mm	42.3~52.3mm	72.9~92.9mm
F.S		4mm	10mm	20mm
Light source	Medium Wavelength	Red laser diode wavelength: 655nm		
	Max. output	1mW max		
Laser class	IEC/JIS	Class 2		
	FDA	Class 2		
Spot size	Short range	0.15*0.15mm		
	Center	0.1*0.1mm		
	Long range	0.15*0.15mm		
Linearity		±0.2% F.S		
Repeat accuracy	Fast mode	.....		
	Others	1 μm	2.5 μm	5 μm
Temperature drift		±0.08% F.S./°C		
Supply voltage		Switch/Current output: 12~24V DC(-5%, +10%), Voltage output: 18~24V DC(-5%, +10%)		
Current consumption		Switch/Voltage output: max.55mA(24V DC), Current output: max.85mA(24V DC)		
Output	Switch output	Dual outputs, NPN/PNP Open--connector output, ≤100/30V DC, Voltage drop≤1.8V		
	Analog output	Current output: 4~20mA; Voltage output: 0~10V		
Response time	Fast mode	max.5ms		
	Standard mode	max.12.5ms		
	High resolution mode	max.36.5ms		
	Sensitivity switch time	4ms max		
Indicator	Distance indicator	Strip shaped LED display (7 units)		
	Output indicator	ON state: Orange Q1/Q2 indicator(Orange)on		
Ambient parameters	Degree of protection	IP67		
	Ambient temperature	-10°C~+45°C, No freezing		
	Ambient humidity	35%~85% RH, No condensation		
	Ambient brightness	Sunlight≤20000Lux, Incandescent lamp≤3000Lux		
	Vibration resistance	10~55Hz Double amplitude1.5mm, XYZ three directions, 2 hours each		
	Shock resistance	500m/s <sup>2</sup> (Approx.50G), XYZ three directions 3 times each		
Housing material		Housing: PBT,Front cover: PMMA		
Cable		Switch output: φ5mm 5core 2m cable; Analog output: φ5mm 6core 2m cable; Rs422 CI: φ5mm 8core 2m cable; Max.extended length:10m		
Weight		Approx.65g ( Including cable )		
2CH+Analog current 4~20mA		MLD33-L30NA/PA	MLD33-L50NA/PA	MLD33-L85NA/PA
2CH+Analog voltage 0~10V		MLD33-L30NV/PV	MLD33-L50NV/PV	MLD33-L85NV/PV
1CH+RS422 CI		MLD33-L30N/P-422	MLD33-L50N/P-422	MLD33-L85N/P-422
Remarks		N: NPN output P: PNP output		

## Dimensions

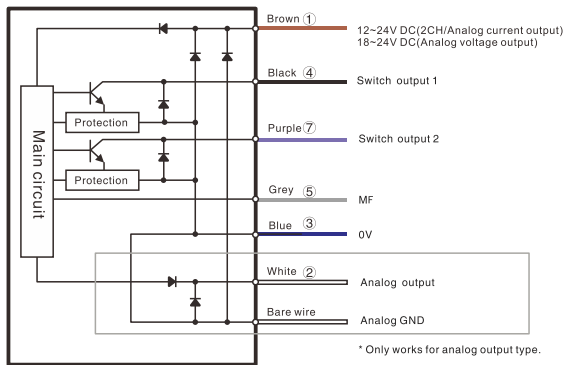
Unit: mm



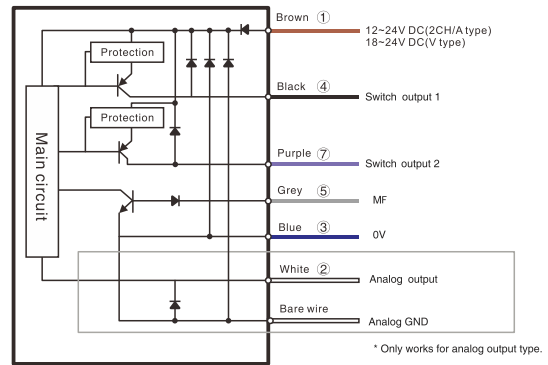


### Switch output/Analog output

#### NPN

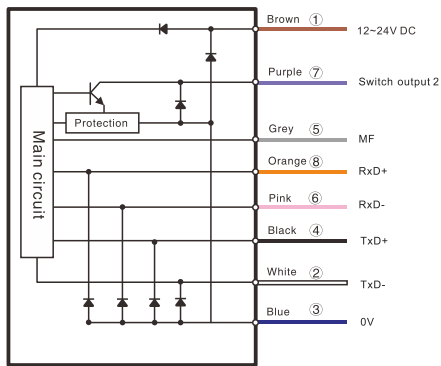


#### PNP

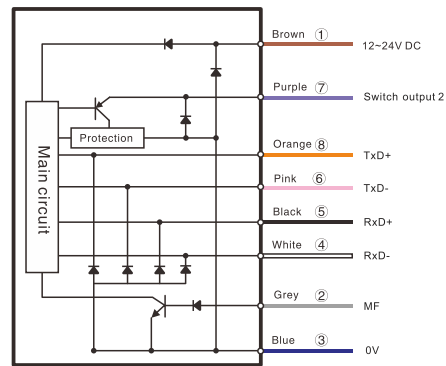


### RS422

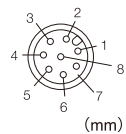
#### NPN



#### PNP



### Connector pin line



- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement**
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

#### Guidance

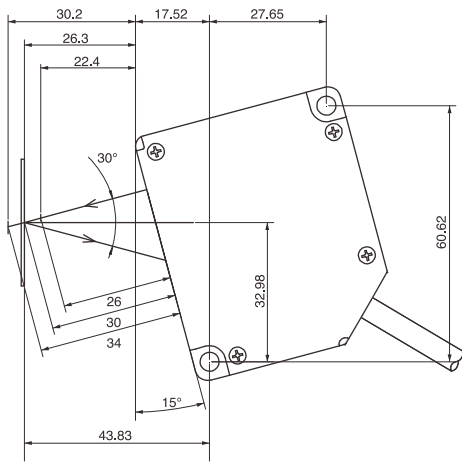
#### Displacement

- Triangulation
- Linear measurement
- Magnetic displacement
- LIDAR Scanner
- Color confocal

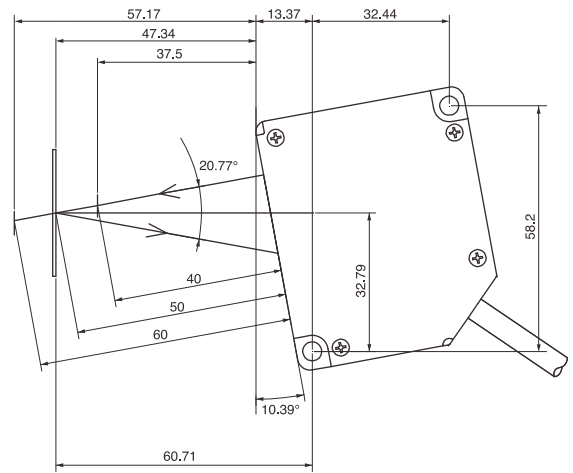
# Built-in Controller

## Mounting-Reflection Type(Unit:mm)

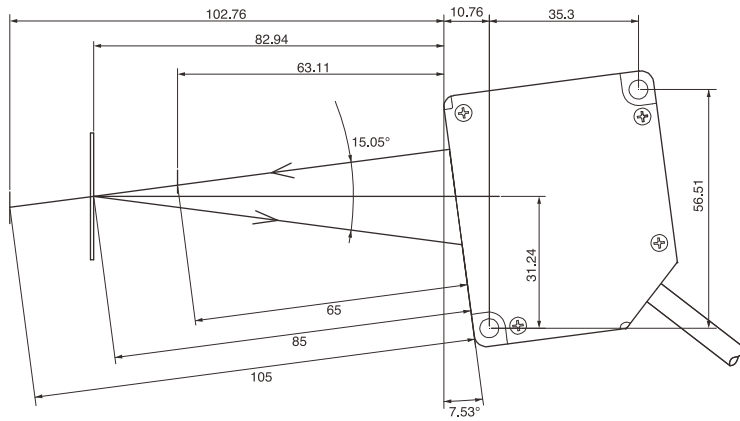
MLD33-L30



MLD33-L50



MLD33-L85



Displacement

Fiber Optic

Slot Sensors

Photoelectric

Laser

Proximity

Displacement

Magnetic

Contact

Area

Ultrasonic

Vision

Code Readers

Vibration

Temperature

Accessories

Guidance

Displacement

Triangulation

Linear measurement

Magnetic displacement

LiDAR Scanner

Color confocal



### Appearance

Sensing type	Diffuse reflection					
Sensing distance	20~30mm	20~45mm	30~80mm	55~155mm	65~315mm	105~605mm
F.S	10mm	25mm	50mm	100mm	250mm	500mm
Light source	Red semiconductor laser wavelength: 660nm, blue semiconductor laser wavelength: 405nm					
Medium. Wave length	≤1mW					
Max. output power	Class2					
IEC/JIS	Class2					
Linearity	±0.05%			±0.1%		
Repeat accuracy	0.01%			0.02%		
Sampling period	9400Hz					
Temperature drift	0.02% F.S./°C					
Output	Analog current: Output 4 ~ 20mA, allowable load resistance 500 Ω					
	Analog voltage: 0~10v output, output resistance 100 Ω					
Digital output	RS232orRS485					
Operating voltage	9~36V					
Power consumption	2W					
Synchronous input	2.4~24V					
Logic output	Programming function, NPN:100mA Max, 40V Max					
Ambient parameters	Degree of protection: IP67					
	Ambient temperature: -10°C~+60°C, No freezing					
	Ambient humidity: 5%~95%RH, No condensation					
	Ambient illuminance: 10000Lux					
	Vibration resistance: 20g/10~1000Hz, 6 hours in each direction of XYZ					
	Shock resistance: 30g/6ms					
Material	Housing: aluminum					
Weight	≈40g					
485 Voltage output	<b>MLD17-10V-485</b>	<b>MLD17-25V-485</b>	<b>MLD17-50V-485</b>	<b>MLD17-100V-485</b>	<b>MLD17-250V-485</b>	<b>MLD17-500V-485</b>
232 Voltage output	<b>MLD17-10V-232</b>	<b>MLD17-25V-232</b>	<b>MLD17-50V-232</b>	<b>MLD17-100V-232</b>	<b>MLD17-250V-232</b>	<b>MLD17-500V-232</b>
485 Current output	<b>MLD17-10I-485</b>	<b>MLD17-25I-485</b>	<b>MLD17-50I-485</b>	<b>MLD17-100I-485</b>	<b>MLD17-250I-485</b>	<b>MLD17-500I-485</b>
232 Current output	<b>MLD17-10I-232</b>	<b>MLD17-25I-232</b>	<b>MLD17-50I-232</b>	<b>MLD17-100I-232</b>	<b>MLD17-250I-232</b>	<b>MLD17-500I-232</b>

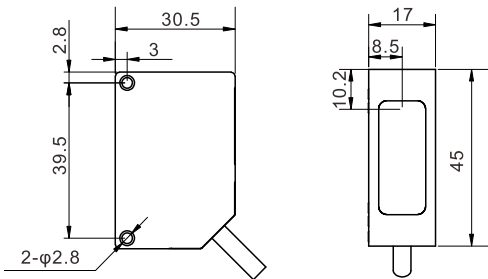
- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement**
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

### Guidance

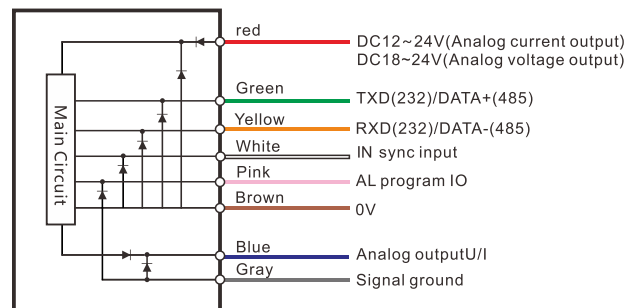
- Displacement**
- Triangulation
- Linear measurement
- Magnetic displacement
- LIDAR Scanner
- Color confocal

### Dimensions

Unit: mm



### Circuit diagram



# Built-in Controller

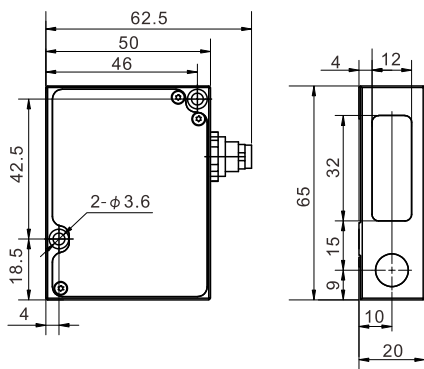
## MLD27 Series



Appearance

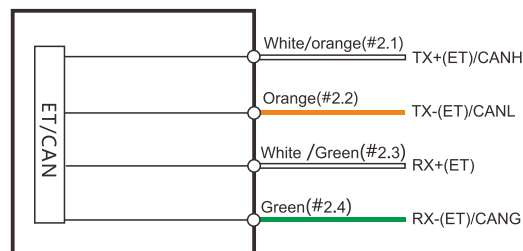
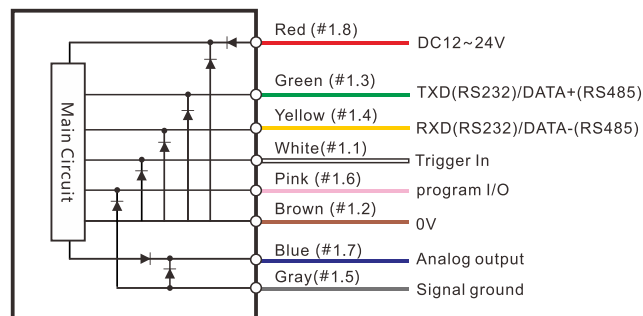
Sensing type	Diffuse reflection					
Sensing distance	15~20mm	30~45mm	55~85mm	90~190mm	125~625mm	245~1245mm
F.S	5mm	15mm	30mm	100mm	500mm	1000mm
Light source	Medium. Wave length Max. output power Red semiconductor laser wavelength: 660nm, blue semiconductor laser wavelength: 405nm ≤0.95mw ( Low power ) , ≤5mw, ≤20mw ( High power )					
IEC/JIS	class2 ( Low power ) , class3R, class3B ( High power )					
Linearity	±0.05%					±0.1%
Repeat accuracy	0.01%					0.02%
Sampling period	9400Hz					
Temperature drift	0.02% F.S./°C					
Output	Analog current	Output 4 ~ 20mA, allowable load resistance 500 Ω				
	Analog voltage	0~10v output, output resistance 100 Ω				
Digital output	RS232orRS485					
Operating voltage	9~36V					
Power consumption	1.5~2W					
Synchronous input	2.4~24V					
Logic output	Programming function,NPN:100mA Max,40V Max					
Ambient parameters	Degree of protection	IP67				
	Ambient temperature	-10°C~+60°C, No freezing				
	Ambient humidity	5%~95%RH, No condensation				
	Ambient illuminance	10000Lux ( Low power ) , 30000lux, >30000lux ( High power )				
	Vibration resistance	20g/10~1000Hz, 6 hours in each direction of XYZ				
Shock resistance	30g/6ms					
Material	Housing: aluminum					
Weight	≈ 100g					
485 Voltage output	<b>MLD27-5V-485</b>	<b>MLD27-15V-485</b>	<b>MLD27-30V-485</b>	<b>MLD27-100V-485</b>	<b>MLD27-500V-485</b>	<b>MLD27-1000V-485</b>
232 Voltage output	<b>MLD27-5V-232</b>	<b>MLD27-15V-232</b>	<b>MLD27-30V-232</b>	<b>MLD27-100V-232</b>	<b>MLD27-500V-232</b>	<b>MLD27-1000V-232</b>
485 Current output	<b>MLD27-5I-485</b>	<b>MLD27-15I-485</b>	<b>MLD27-30I-485</b>	<b>MLD27-100I-485</b>	<b>MLD27-500I-485</b>	<b>MLD27-1000I-485</b>
232 Current output	<b>MLD27-5I-232</b>	<b>MLD27-15I-232</b>	<b>MLD27-30I-232</b>	<b>MLD27-100I-232</b>	<b>MLD27-500I-232</b>	<b>MLD27-1000I-232</b>

### Dimensions



Unit: mm

### Circuit diagram



connector #1



connector #2(optional)





### Appearance

Sensing type	Diffuse reflection					
Sensing distance	15~20mm	30~45mm	55~85mm	65~115mm	90~190mm	80~330mm
F.S	5mm	15mm	30mm	50mm	100mm	250mm
Light source	Red semiconductor laser wavelength (default) : 660nm, blue semiconductor laser wavelength: 405nm					
Medium. Wave length	≤4.8mW					
Max. output power	≤20mW					
IEC/JIS	3R			3B		
Linearity	±0.1 (60 kHz); ±0.2 (120 kHz); ±0.3 (180 kHz)					
Repeat accuracy	0.01 (60 kHz); 0.02 (120 kHz); 0.03 (180 kHz)					
Sampling period	60 or 120 or 180 kHz ( default 60K )					
Temperature drift	0.02 %F.S./°C					
Output	Output 0 ~ 10V, output impedance 100 Ω					
Digital output	Parameters: RS232 or 485, data transmission: Ethernet (UDP)					
Operating voltage	9~36V					
Power consumption	4.8W					
Synchronous input	2.4~5V(CMOS, TTL)					
Logic output	Programming function, NPN:100mA Max, 40V Max					
Degree of protection	IP67					
Ambient temperature	-10°C~+60°C, No freezing					
Ambient humidity	5%~95%RH, No condensation					
Ambient illuminance	30000Lux					
Vibration resistance	20g/10~1000Hz, 6 hours in each direction of XYZ					
Shock resistance	30g/6ms					
Material	Housing: aluminum					
Weight	110g					
485 output	MLD27-H5V-485	MLD27-H15V-485	MLD27-H30V-485	MLD27-H50V-485	MLD27-H100V-485	MLD27-H250V-485
232 output	MLD27-H5V-232	MLD27-H15V-232	MLD27-H30V-232	MLD27-H50V-232	MLD27-H100V-232	MLD27-H250V-232

- Fiber Optic
- Slot Sensors
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- Displacement**
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- Vibration
- Temperature
- Accessories

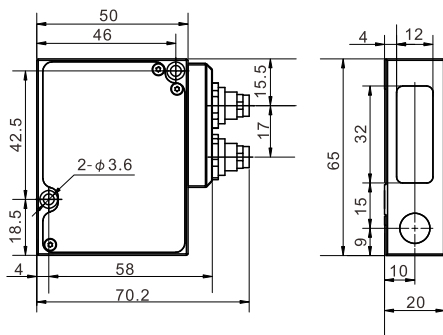
### Guidance

### Displacement

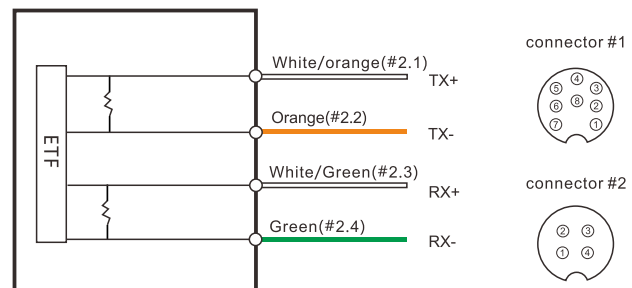
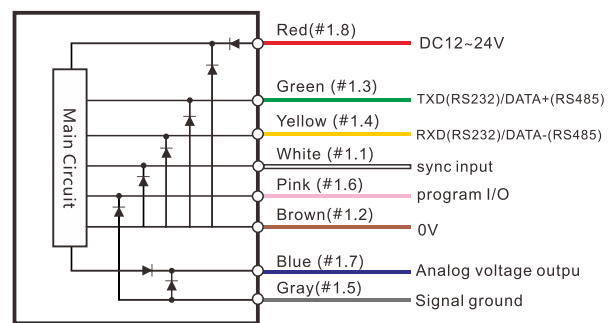
- Triangulation**
- Linear measurement
- Magnetic displacement
- LIDAR Scanner
- Color confocal

### Dimensions

Unit: mm



### Circuit diagram



connector #1

connector #2





Housing		
Principle	Triangle measurement	
Sensing range	120~280mm	
Setting distance	±80mm	
Repeat accuracy	Min. 1μm	
Light source	Wavelength	655nm
	Max. Output	1mW
	Laser class	Class2
Applicable specification	EMC directive	
Temperature characteristics	±0.03%/°C F.S.	
Light diameter	About Φ300μm	
Linearity	±0.1% F.S.	
Temperature characteristics	0.03% F.S./°C	
Operating voltage	12~24V DC ± 10%, Pulse below P-P10%	
Consumption current	Below 40mA at 24V DC, Below 65mA at 12V DC	
Output	<NPN> NPN open collector transistor • Max. current: 50mA • Applied output: below 30V DC • Residual output: below 1.5V(when current is 50mA) • Leakage output: below 0.1mA	<PNP> PNP open collector transistor Max. current: 50mA Applied output: below 30V DC Residual output: below 1.5V(when current is 50mA) Leakage output: below 0.1mA
	Output method	Light on/dark on switchable
Short circuit protection	Yes	
Response time	1.5ms / 5ms / 10ms for option	
External output	<NPN> NPN non-contact input Enter conditions Invalid: +8~+V DC or open circuit Valid: 0~+1.2V DC Input impedance: about 10kΩ	<PNP> PNP non-contact input Enter conditions Invalid: 0~+0.6V DC or open circuit Valid: +4~+V DC Input impedance: about 10kΩ
	Pollution degree	2
Environment data	Usage altitude	Below 2,000m
	Protection degree	IP67(IEC)
	Operating temperature	-10~+45°C(no freezing) Storage: -20~+60°C
	Operating humidity	35%RH~85%RH Storage: 35%RH~85%RH
	Operating ambience	below 3,000 lx
	Vibration resistance	10~55Hz double amplitude 1.5mm, 2 hours each for XYZ direction
	Shock resistance	Durable 500m/s <sup>2</sup> (about 50G) 3 times in each direction of XYZ
Cable	Length: 2m	
Material	Housing: Die-cast aluminum Cover: PC	
Model name	<div style="display: flex; justify-content: space-between;"> <span><b>MLD25-200NV</b></span> <span><b>MLD25-200PV</b></span> </div>	

- Fiber Optic
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- Temperature
- Accessories

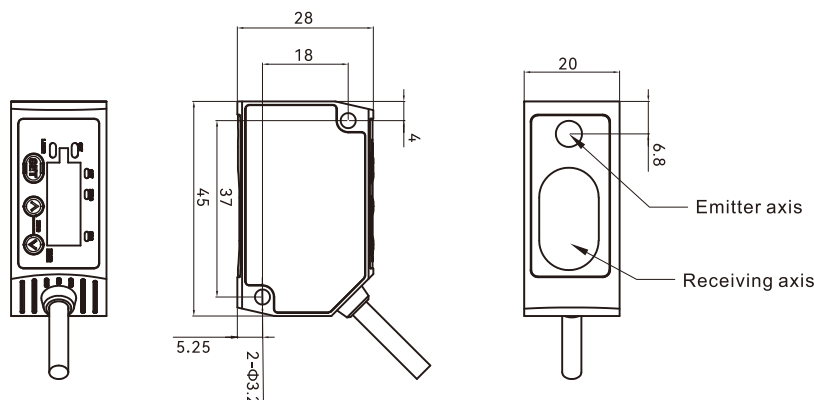
Guidance

Displacement

- Triangulation
- Linear measurement
- Magnetic displacement
- LIDAR Scanner
- Color confocal

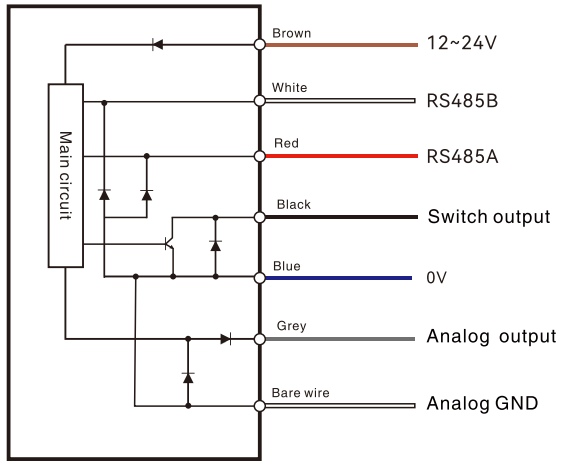
Dimensions

Unit: mm



# Triangulation

## Circuit Diagram



Fiber Optic

Slot Sensors

Photoelectric

Laser

Proximity

**Displacement**

Magnetic

Contact

Area

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Color confocal