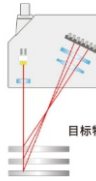


DK-G series



The measurement principle of triangulation is applied

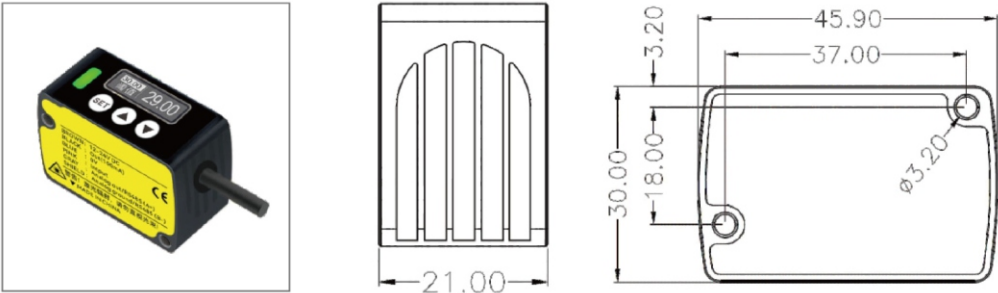
When the position of the object changes, the incoming light position on the CMOS will move. By detecting the position of the incoming light, the amount of change of the target object is determined.

Characteristics

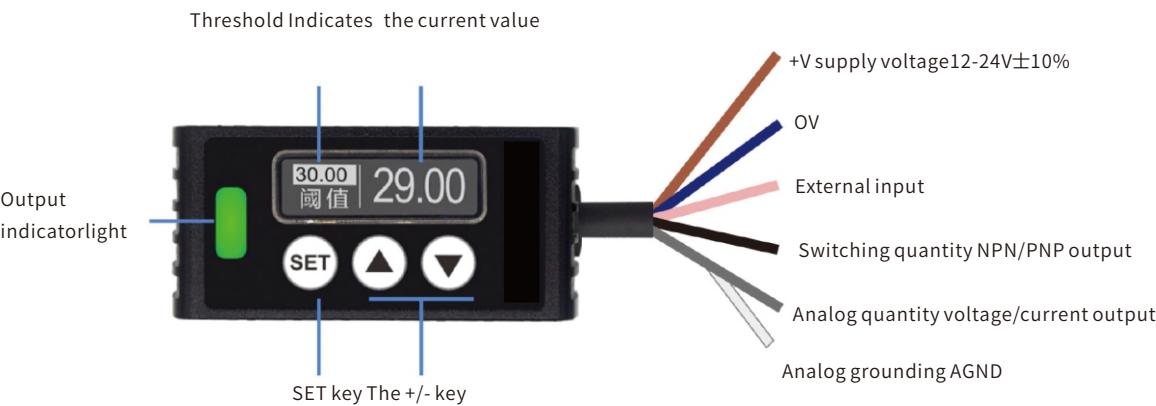
- Repeat accuracy 70μm
- High precision micro laser displacement sensor.
- Measuring center distance 100mm detection range ±35.
- Small size, small light point, a variety of detection modes, high precision.

The detection Angle should be perpendicular to the measured object within 90°±15° can not detect transparent objects, can not detect liquid, can not calculate the range from 0

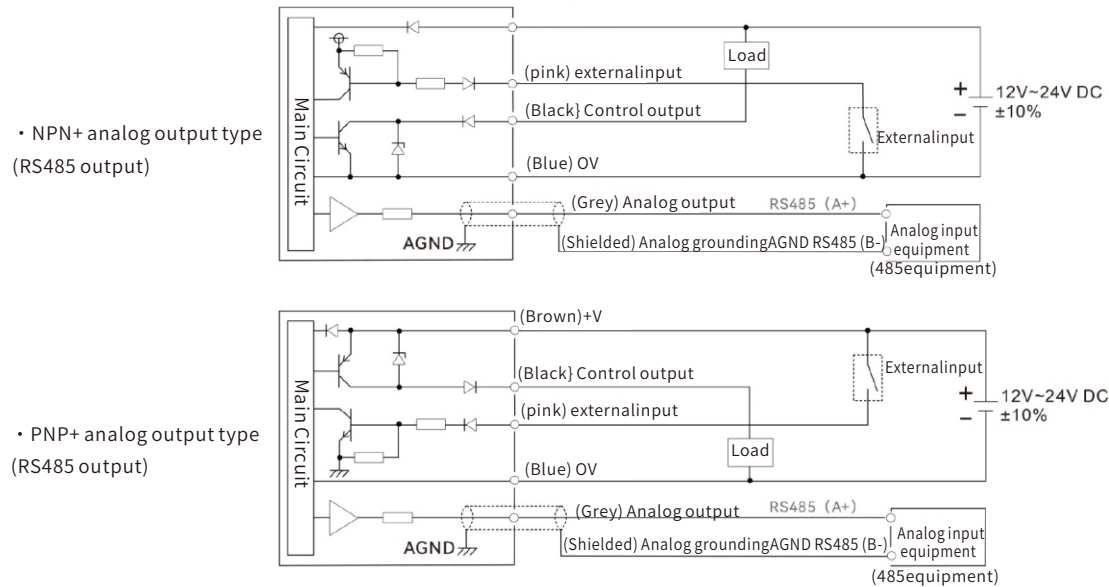
outline dimensional drawing



circuit interconnect pattern

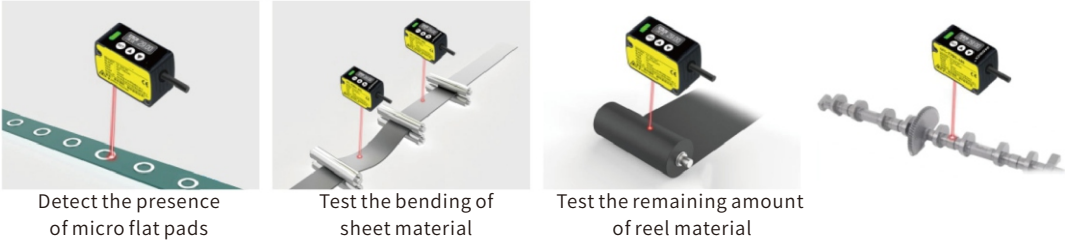


Power-on displays the threshold and current detection value. Red indicator for output, green for power



DK-G series

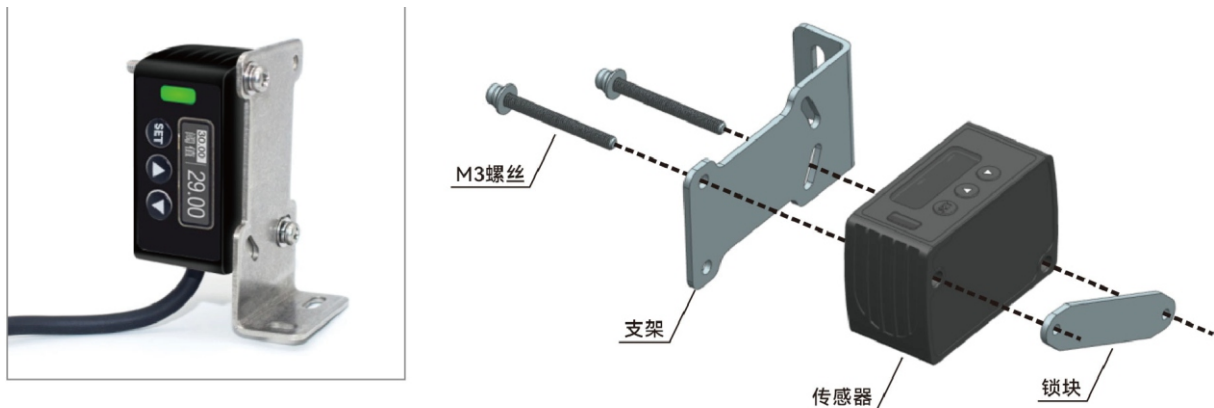
application case



product category

species		Measuring center 30mm type	Measuring center 50mm type	Measuring center 100mm type	200mm model	Measuring center 400mm type
Model name	NPN Output		DK-G50N	DK-G100N	DK-G200N	DK-G400N
	analog output	DK-G30NM	DK-G50M	DK-G100NM	DK-G200NM	DK-G400NM
	Rs485 output	DK-G30N-RS485	DK-G50N-RS485	DK-G100N-RS485	DK-G200N-RS485	DK-G400N-RS485
Measuring center distance		30mm	50mm	100mm	200mm	400mm
Measuring range		±5mm	±15mm	±35mm	±80mm	±200mm
repeatability		10μm	30μm	70μm	200μm	400μm (measuring distance 200~400mm) 80μm (measuring distance 400~600mm)
Straightness		±0.1%FS.			±0.2%FS	±0.2%FS. (measuring distance 200~400mm) ±0.2%FS. (measuring distance 400~600mm)
Temperature characteristics		0.03%F.S./°C				
illuminant		Red semiconductor laser type 2 maximum output: 1mW, luminous beam wavelength: 655nm				
Beam diameter		About Φ50μm	About Φ70μm	About Φ200μm	About Φ300μm	About Φ500μm
supply voltage		12-24VDC±10%, pulsation P-P10%				
Current consumption		Less than 40mA (when the supply voltage is 24VDC), less than 60mA (when the supply voltage is 12VDC)				
Control output		<NPN output type>> NPN open collector transistor • Maximum incoming current: 50mA • Applied voltage: 30VDC below (between control output -OV) • Residual voltage: below 1.5V (inflow current 50mA) • Leakage current: below 0.1mA				
Output action		ON during incoming light/ON during non-incoming light can be switched				
Short circuit protection		Equipped automatic recovery type)				
Analog output	Voltage analog output (when alert: +5.2V)	Output range: 0~5V Output impedance: 100Ω		Output range: 0~5V Output impedance: 100Ω		Output range: 0~5V Output impedance: 100Ω
	Nakatsu Tsutomu Esayama (alert 0mA)	Output range: 4 to 20mA Load impedance: 300Ω or less		Output range: 4 to 20mA Load impedance: 300Ω or less		Output range: 4 to 20mA Load impedance: 300Ω or less
Reaction time		1.5ms/5ms/10ms can be switched				
External input		NPN No contact input valid : 0V~+12VDC Input impedance: about 10kΩ				
Protection construction		Ip60				
Degree of fouling		2				
Use ambient temperature		Use -10°C~+40°C (pay attention not to condensation, freezing), store: -20°C~+60°C				
ambient humidity		35%~85%RH, when stored: 35%~85%RH				
Use elevation		Incandescent lamp: the illumination degree of the illuminated surface is less than 3000lx				
cable material		Under 2000m with 0.15mm ²				
for ambient		5-core composite cable 2ml				
illumination		Body shell: aluminum casting front cover plate: acrylic base				
Weight		Approx 35g (without cable), approx 85g (with cable)				
Applicable specifications		Comply with EMC instructions				

(Note): When the measurement conditions are not specified, the use conditions are as follows: power supply voltage : 24VDC, ambient temperature : +20 °C, reaction time : 10ms, analog output value of the measurement center distance. Object Object: White paper.

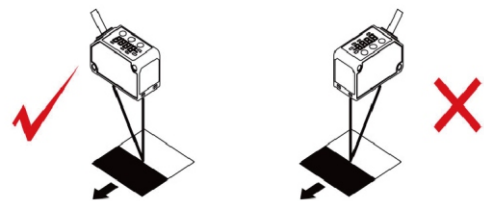


installation direction

Relative to the direction of movement

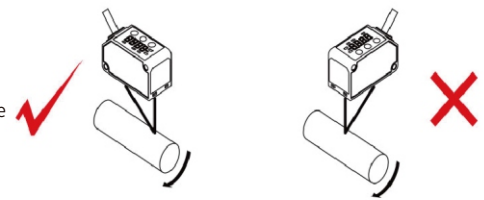
<Material,in case of color difference >

• When measuring, if the material and color of the moving measuring object are extremely different, install it according to the direction shown in the following figure, so that the measurement error can be controlled to a minimum.



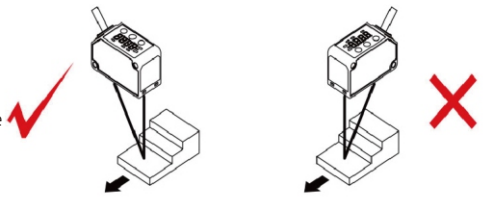
<Measure the rotating object >

• When measuring the rotating object, install it in the direction shown in the figure below, which can inhibit the effect of up and down vibration and position deviation of the object.



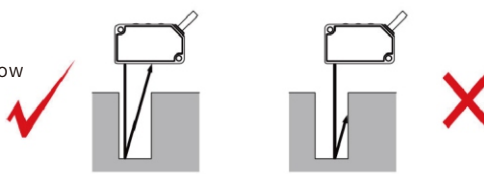
<In case of segmental difference >

• When the moving measuring object has a segment difference, install it according to the method shown in the following figure, so that the influence of the segment difference edge can be suppressed.



<Measurement in narrow Spaces and depressed sections >

• Measurement in narrow places and depressed parts Measurement in narrow places and holes In the case of the installation, please take care to avoid blocking the light path from the cast part to the received part.



<In the case of mounting the sensor part to the wall>

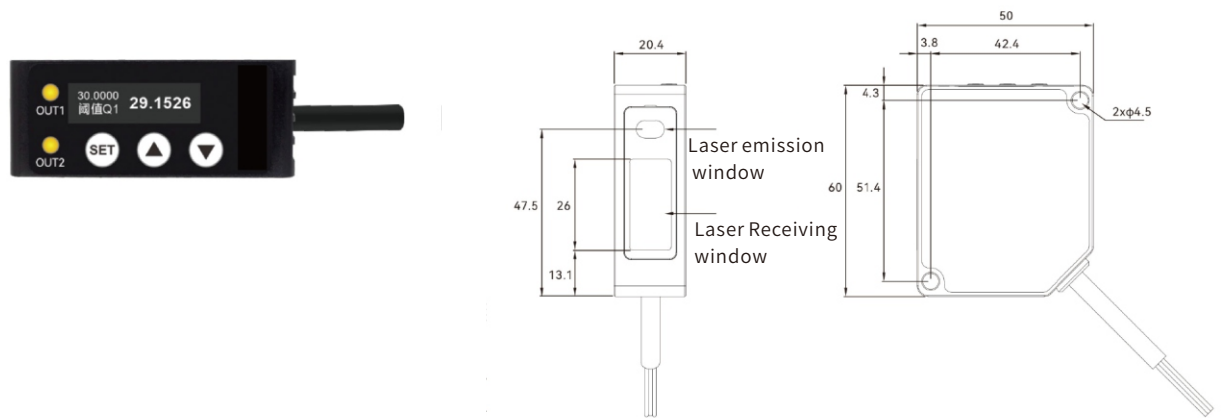
• Please follow the method shown in the following figure to install, so that the multiple reflected light generated by the wall will not enter the light into the light receiving part. In addition, if the reflectivity of the wall is high, you can get a good effect if you change the color to dull black.



Features

- ※Resolution 2μm.
- ※High precision laser displacement sensor.
- ※Measuring center distance 85mm Detection range +20mm.
- ※Small size, small spot, a variety of detection modes, high precision

dimension parameter



Output specification

Model number		Analog current output type	Analog voltage output type	Rs485 communication type
		GDK-①	GDK-②	GDK-③
Power supply voltage		DC12~24V(+10%/-5%)	DC18~24V(+10%/-5%)	DC12~24V(+10%/-5%)
Consumed current		max.60mA includes analog output value	max.40mA	
Output	Switching output 1	NPN/PNP max.100mA/DC30VResidual voltage 1.8V		—
	switch quantity output	NPN/PNP max.100mA/DC30V		
	Analog output	4~20mA load impedance: below 300Ω	0~10V output impedance: 100Ω	—
communication		—		Rs485
Connection type	Cable type *3	With 5 6 core 2 m long cable (PVC) AWG24		Φ5 8 core 2 m long cable(PVC)AWG24

Technical parameters

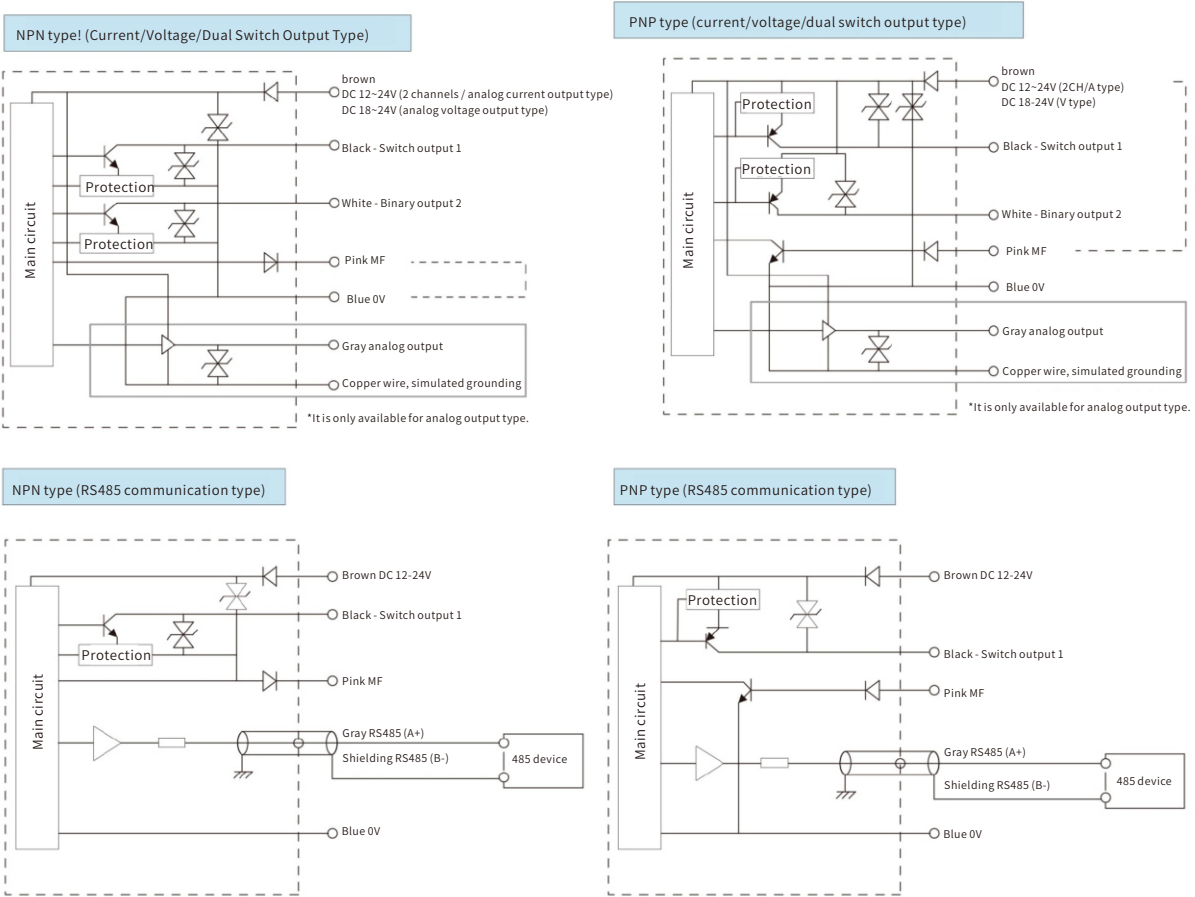
Modelnumbe	Analog quantity	GDK-30N(P)M	GDK-50N(P)M	GDK-85N(P)	GDK-120N(P)M	GDK-250N(P)M
	Rs485 communication type	GDK-30N(P)-485	GDK-50N(P)-485	GDK-85N(P)-485	GDK-120N(P)-485	GDK-250N(P)-485
Detection distance		30mm	50mm	85mm	120mm	250mm
Detection Range (f.s.)		±4mm	±10mm	±20mm	±60mm	±150mm
Light Source		Red semiconductor laser				
		(Wavelength: 655nm Maximum output power: 1mw)				
Typesof laser	IEC/JIS	class2				
	FDA	classII				
Spotsize*1	Close range	0.15x0.15mm	0.6x1.2mm	0.9x1.5mm	1.2x1.8mm	1.5x2.5mm
	Center position	0.1x0.1mm	0.5x1.0mm	0.75x1.25mm	1.0x1.5mm	1.75x3.5mm
	Long distance	0.15x0.15mm	0.4x0.9mm	0.6x1.0mm	0.5x0.8mm	2.0x4.5mm
Linear accuracy		±0.1%f.s. (f.s.=8mm)	±0.1%f.5. (f.s.=20mm)	±0.1%f.8. (f.s.=40mm)	±0.1%f.s. (f.s.=120mm)	±0.3%f.s. (f.s.=300mm)
Resolution		2um (4μm in fast mode)	5um (8μm in fast mode)	10um (15μm in fast mode)	30um (45μm in fast mode)	75um (150μm in fast mode)
Response time *2	Fast mode	max.2ms: Average samplingtimes 1 (1ms)+ Sensitivity switching time (max.1ms)				max.2.5ms
	standardmode	max.11.5ms: Average sampling times 16 (8.5ms)+ Sensitivity switching time (max.3ms)				max.15.5ms
	High resolution mode	Max.36.5 ms; Average sampling 64 times (32.5ms) + sensitivity switching time (max.4ms)				max.48.5ms
Sampling period		※ Factory value: 500μs (250mm model :750μs)				
temperature drift characteristics		±0.08%F.S./°C				
IndicatorLight	Range indicator	led light display on the operation panel				
	Output indicator	ON: Q1,Q2 indicator (orange) on				
MF Input (Multifunction input)		Select from the menu external input: Zero, Teach, Stop laser.				
		NPN Model: Grey MF wire connected to the negative (0v) of the power supply after more than 20ms disconnected for triggering once				
		PNP model: Gray M line connected to the positive terminal of the power supply (24v) is more than 20ms and disconnected fortriggering once.				
Protection circuit		Reverse connection protection, overcurrent protection				
Level of protection		IP64				
Use ambient temperature/humidity		-10 to +45 °C (no freezing) /35 to 85RH (no frost)				
Storage ambient temperature/humidity		-20 to 60°C(no freezing)/35 to 95RH(no frost)				
Ambient illumination		Sunlight; incandescent lamps below 10,000lx; Up to 3,000l x				
Vibration resistance		10~55hz double amplitude 1.5mm,x,y,2 hours in all directions				
Impact resistance		About 50G(500m/s2) XY,Z 3 times in each direction				
Internal circuit stabilization time		About 1.5s				
Preheat time		max. 15 minutes				
Material		Case: Aluminum lens: PMMA				
Weight	Cable type	65g(without cable)				
	plug-type	90g				

<test condition>

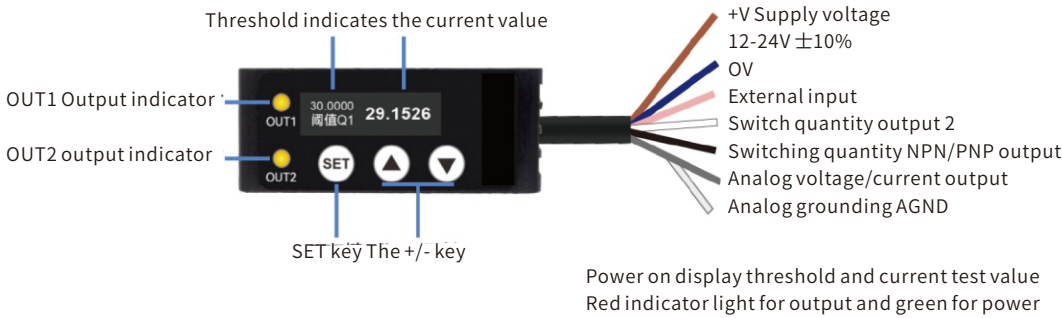
No specially specified test conditions are, the use of ambient temperature: 23'C (normal temperature), power supply voltage: Dc24V, response time: high resolution mode, sampling period: 550 us, detection distance: central position, testarget: 50 x50mm white ceramic.

*1 is defined by 1/e2(13.5%) of the center beam intensity. False detection is possiblewhen there is light leakage outside the defined spot size range, or when there is an object around the beam with a higherreflectivity than the object being measured.

outgoing circuit



Connection mode



Mfinput (multifunction input)

Select from the menu external input: Zero, Teach, Stop Laser.

NPN Model: Grey MF wire connected to the negative (0v ofthe power supply after more than 20ms disconnected for triggering once.

PNP model: The grey MF line connected to the positive (24V) ofthe power supply is disconnected after more than 20ms for triggering once.

Note 1. Please confirm that the wiring is correct before connectingthe power supply.

In particular, note that the white wire (analog output wire) should not touch other wires.

Note 2. The blue wire (0V) and the shielded wire (analog ground) are connected in the internal circuit.

But please use the blue wire (0v) to connect the negative terminal ofthe power supply, and the shielded wire (analog ground) is used for analog output