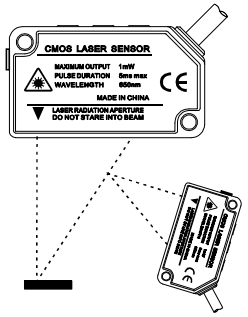
DADISICK®

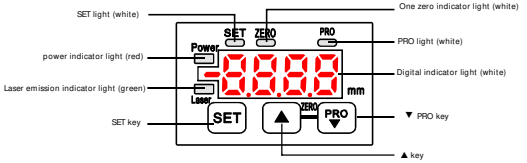
GFL Series CMOS laser displacement sensor operating instructions

warning

- Please read this instruction manual carefully and completely in order to use this product correctly and rationally.
- This product to the object of inspection (judgment, measurement), do not use this product to ensure safety, to prevent accidents will affect life and property.
- This product is dangerous, do not look directly at the laser or through lens observation optical system.

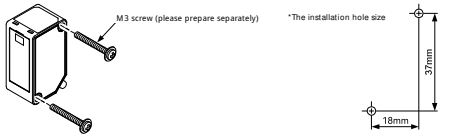


1 The name of each part



2 The installation

- When installing this product, please use M3 screws (please prepare separately). Please use a 0.5Nm twist torque.
- Use the sensor mounting bracket (sold separately) when installing this product, please also use 0.5Nm torque of lime.

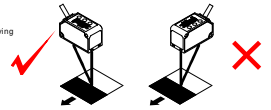


■ Mounting direction

*Relative to the direction of the moving body

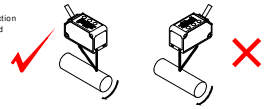
< material, color difference case >

When measuring, when the material and color of the moving measurement object are extremely different, the installation should be carried out in the direction as shown below,so that the measurement error can be controlled to the minimum.



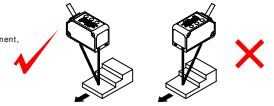
< Measure the rotating object >

.When measuring the rotating object, install it in the direction as shown below, so as to suppress the influence of up and down vibration and position deviation of the object.

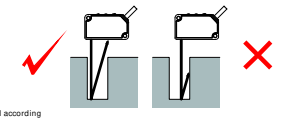


< In case of segment difference >

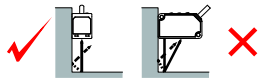
Mobile measurement object is the presence of poor segment, as shown in figure method for installation, which inhibits bad on the edge of the shadow



- Measuring in narrow places and sunken parts
* When measuring in narrow places and holes, please pay attention to avoid blocking the light path from the light emitting part to the light receiving part during installation.

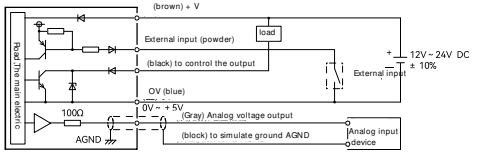


- Please install the sensor part to the wall according to the method shown below, so as to avoid the multiple reflected light generated by the wall will enter, light to the light receiving part. Additional, below the circumstance with higher reflectance of metope, if do not burnish instead black, can obtain good result.

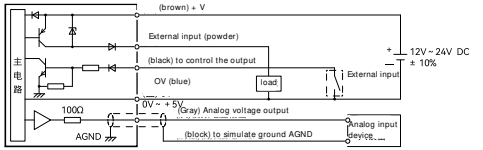


3 Input and output circuit diagram

*NPNOutput type



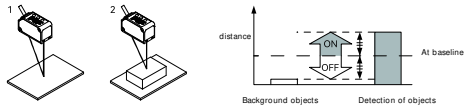
*PNP Output type



4 teach

■ 2 to teach

- Basic teaching methods



1. In the background object, press the SET key.

2. In object detection, press the SET key.

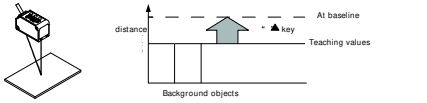
*But under the condition of stability testing

Can't stability test cases

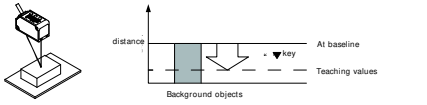
■ Limited teaching

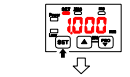
- This teaching method is very convenient when there are small objects and background objects.

< In the case of background object as reference >



< In case of checked object as benchmark >



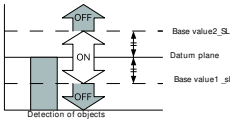


1. In the state of background object or detection object, press the SET key.

2. Background objects as a benchmark, after pressing "▲" key, set the benchmark in the sensor.Detection under the condition of an object as a benchmark to press the "▲" key after set the benchmark in the detected object.

automatic

* 1 point to teach (window comparison mode)Low for object datum and detection, when the distance between the implementation of 1 point to teach, and set the upper limit and lower limit method. Within the scope of the upper and lower the discriminant, use this feature.
* Low implementation 1 point to teach (window comparison mode), please in advance in the PRO mode detection output Settings set to [1 point teach (window comparison mode)]. About setting method, please refer to"PRO mode instructions.



1. In the case of detecting objects have, press SET key twice.(first: the SET mode, the second: teach)

automatic

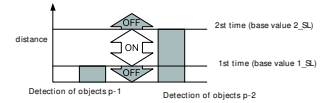
2. Teach end.

■ 2 points to teach (window comparison mode)

- Implement a 2-point teaching method to set a baseline value range.
- In the case of implementing 2-point instruction (window comparison mode), please set the detection output setting of PRO mode to [2-point instruction (window comparison mode)] in advance.

For setting method, please refer to 9"PRO mode operation instructions.

- When performing the instruction, please use detection objects with different distances (P-1,P-2).



1. Under the conditions of a test object P - 1, press the SET key. (1)

2. Under the conditions of test object P - 2, press the SET key. (2)

Under the condition of stability test

Can't stability test cases

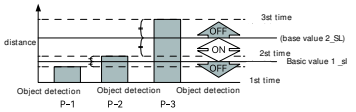
■ 3 points of instruction (Window comparison mode)

- Perform the method of 3 points (P-1, P-2, P-3) instruction, as shown in the figure below, setting the base value 1_SL between the first and second times and 2 SL between the second and third times, and setting the base value range.
- In the case of implementing 3-point instruction (window comparison mode), please set the detection output setting of PRO mode to [3-point instruction (window comparison mode)] in advance.

For setting method, please refer to "9 PRO Mode Operation Instructions".

When performing instruction, use detection objects with varying distances (P-1,P-2, P-3).

- After teaching,P-1, P-2 and P-3 will be arranged automatically in ascending order.



1. Press the SET key when p-1 is detected. (1st time)

2. Under the conditions of test object P - 2, press the SET key. (2)

3. Press the SET key when p-3 is detected. (3rd time)

Can be stable in case of detection

In the absence of stable detection

■ Span adjustment in ascending differential mode or descending differential mode

- Cancel the moderate determination value change, as long as the detection of sharp determination value change, please use.
- When using ascending differential mode or descending differential mode, please set the detection output of PRO mode to " ascending differential mode" or "descending differential mode" in advance.

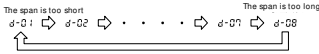
For setting method, please refer to "9 PRO Mode Operation Instructions".

- HLow value can be set using benchmarks for fine-tuning. Basic value about fine-tuning functionality, please refer to the "basic value 5 trimming function",

1. Press the SET key

2 press the "▲" key or "▼" key choice span,

The span is too short



The span is too long

3. Press the SET key to confirm.

5 Base value fine tuning function

- Fine tuning of reference value can be carried out in the measuring screen.
- After teaching can also fine tune the reference value.

< Normal detection mode, ascending differential mode or descending differential mode >

Press the"▲"/"▼"key

Press the"▲"/"▼"key

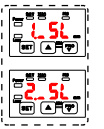
Press the SET key

< Window comparison mode >

- Low compare detection output SET to window mode, press the SET key, after 1 second "1_SL" and "2_SL" To switch the display.

Press SET key for 1 second

Determination of value changes



Measuring the picture

to the "1_SL" or "2_SL" the basic value of fine-tuning, press the "▲" key or "▼" button, displ 1_SL" or "2_SL", the basic value of fine -tuning.

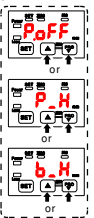
press "▲"/"▼" key

press "▲"/"▼" key

6 Peak and valley value holding function

Press the SET key and "▲" key for 3 seconds at the same time

press "▲"/"▼" key



choose

Press SET key

Sure

Digital display	name	function
PoFF	Unhold function	Remove keep fit, the measured value of the output current
P_H	Peak keep	keep it max
b_H	Valley value keep	Number of measurements Keep measured value of the minimum

7 Zero function

● Zero adjustment function is the function of forcing the measured value to "zero".

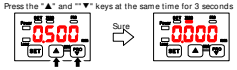
● When setting zero, zero indicator light (red) lights up.

● When the function of maintaining peak value and valley value is effective, once the function of zero adjustment is performed, the measured value maintained will be reset.

● Indicates that when setting offset, the zero setting function cannot be set.

< Set to zero >

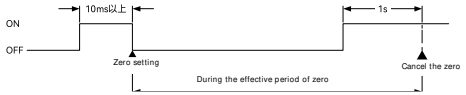
Press the "▲" and "▼" keys at the same time for 3 seconds



< remove zero >

Press the "▲" and "▼" keys at the same time for 6 seconds

● When setting/removing the reset function through external input, the action is as shown in the figure below.



● Through the external input setting zero setting, such as re-energized, remove the setting.
The zero adjustment cannot be saved at this time
● Even if the sensor body has been set to zero function, it can still be set/removed by external input.
However, the reset set by the sensor body will be displayed when the power is re-energized.
(※) When saving to sensor body through external input setting, save effectively through "External input Setting" set in 9 PRO mode.

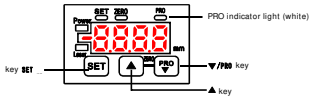
8 The key lock function

● Key lock function means that the key operation is not accepted, so as not to change the setting conditions under the setting mode incorrectly.
● After setting the key lock, if the key operation, the digital display part will appear "Loc display.

< Set key lock >
Press the SET key and " ▼ " key at the same time for 3 seconds

Press the SET key and " ▼ " key at the same time for 3 seconds

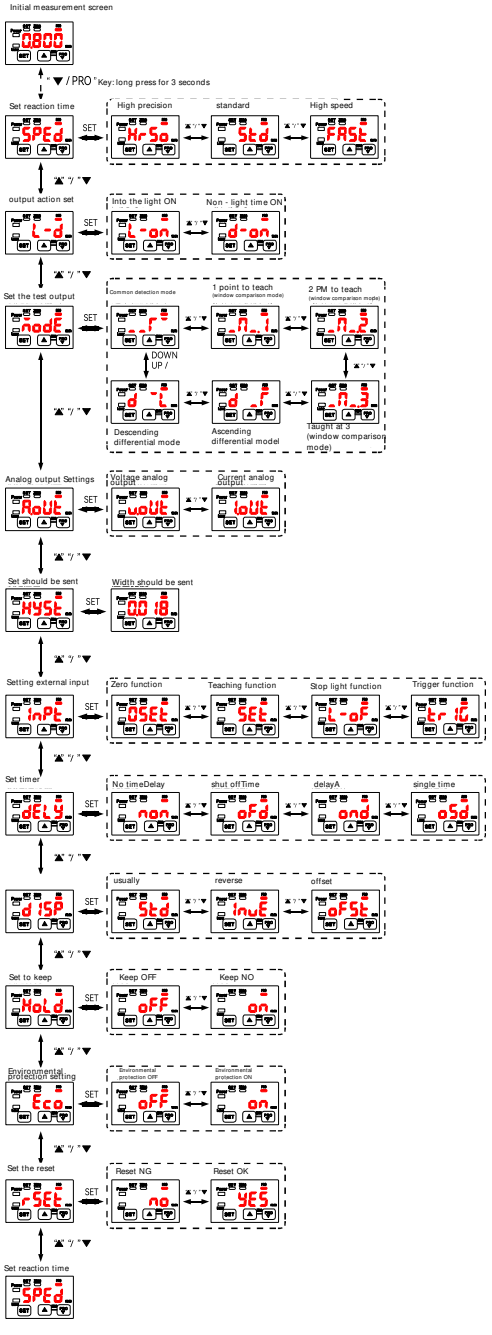
9 PRO mode setting



● When setting PRO mode,PRO indicator light (red) is on
● In the process of setting PRO mode, if the " ▼ " button is pressed for more than 3 seconds, it will return to the measurement screen.

Project	Initial state	Content
Set reaction speed	HrSo	Set the reaction time. "HrSo":High accuracy 10ms, " Std": Standard 5ms "FASt":High speed 1.5ms
Output action setting	L-on	Select the action mode of control output. "L-on": On when entering light, "d-on": On when not in light
Set detection output	--r-	Set the detection output. "--r-": Normal detection mode "-n_1": 1-point instruction (window comparison mode) "-n_2": 2-point teaching (window comparison mode) "-n_3": 3-point teaching (window comparison mode) "d_r": Ascending differential mode "d_L": Descending differential mode
Analog output settings	uoUt	Analog output settings "uoUt":Voltage analog output "ioUt":Current analog output
Set assignment	<GFL-030> 005 <GFL-050> 003 <GFL-100> 005 <GFL-200> 02 <GFL-400> 08	Expected width. GFL-030 : 0.001mm ~ 5.00mm GFL-050 : 0.01mm ~ 15.00mm GFL-100 : 0.02mm ~ 35.00mm GFL-200 : 0.1mm ~ 80.0mm GFL-400 : 0.2mm ~ 200.0mm
Set external input	0SEt	Set external input. "0SEt": Zero adjustment function, " SEt ": teach "L-oF": Stop lighting function, "tr IG": Trigger function
Set timer	non	Set the action of timer.The timing time is fixed at 5ms. " non":No timing, " oFd": Delayed disconnection " ond":Delay action, " oSd": Single timing
Set display	Std	The display of measured values can be switched. " Std"usually, " inuE":reversal, "oFSt": deviation
Set hold	oFF	Set the control output and analog output action in case of measurement error (insufficient light, light saturation, out of the measurement range). " oFF": Keep off, " on": Keep on
Environmental protection setting	oFF	If the key is not operated within 30 seconds, part of the digital display can be turned off. Controllable consumption current. " oFF": Environmental protection OFF, " on": ON
Reset setting	no	Restore to the original state (factory state). " no":Reset NG, " YES": Reset OK

steps



10 Error display

● Error should take the following measures:

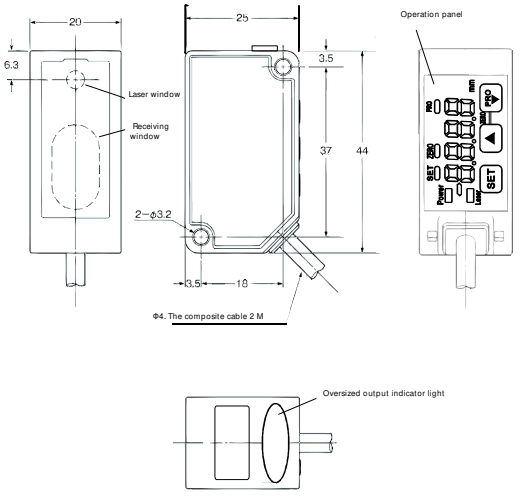
Error display	content	To deal with
< keep OFF > - - - - < keep ON> measured value flickers.	The reflected light is enough, detecting objects beyond range.	Please confirm whether the detected object is within the measurement range.Adjust the installation Angle of the sensor.
E01:	The flash memory is damaged or has reached the end of its useful life.	Please consult our company.
E01:	Detect excessive current caused by short circuit of output load.	Please cut off power supply to confirm the load.
E02:	The semiconductor laser has been damaged or has reached the end of its useful life.	Please consult our company.
E03:	* Failed to measure normally when setting zero. * due to the display setting is set to offset, so you can't use zero functions.	* Please confirm whether the detection distance is within the specification range. * please to set the display content is set to offset.
E04:	Failure to measure properly when performing instruction.	Please confirm whether the detection distance is within the specification range.

11 specifications

type		Dual output type	Switching value	Dual output type	Switching value
Model name	NPN output	GFL-050MN	GFL-050N	GFL-400MN	GFL-400N
	PNP output	GFL-050MP	GFL-050P	GFL-400MP	GFL-400P
Measuring center distance		50mm		400mm	
measuring range		±15mm		±200mm	
Repetition accuracy		50μm		400um(Measuring distance200mm-400mm) 800um (Measuring distance400mm-600mm)	
Linearity		±0.3%F.S.		03%FS.(Measuring distance200mm-400mm) +0.3%FS.(Measuring distance400mm-600m)	
temperature characteristic		0.03%F.S./℃			
light source		Class 2 maximum output of red semiconductor laser:1mW、Luminous beam wavelength:655nm			
Beam diameter		about Φ50μm		about Φ500μm	
supply voltage		12V~24VDC±10% pulsation P-P10%			
Consumed current		40mA以下(When the power supply voltage is 24VDC)、60mA以下(when the power supply voltage is			
Control output		<NPNoutput type > NPN open collector transistor •Maximum inflow current: 50mA •Applied voltage: below 30VDC •(control output -0v) •Residual voltage: below 1.5V (under the inflow current of 50mA) •Leakage current: below 0.1mA		<PNP output type > PNP open collector transistor •Maximum source current: 50mA •Applied voltage: below 30VDC (between control output - +v) •Residual voltage: below 1.5V (under the outflow current of 50mA) •Leakage current: below 0.1mA	
Output action		When entering light ONNon incoming light ON Switchable			
Short circuit protection		Equipped (automatic recovery type)			
Analog quantity output	Voltage analog output (When alarm.+5.2V)	Output range: 0~5v output impedance: 1000		Output range: 0~5v output impedance: 1000	
	Current analog output (When alarm:0mA)	Output range: 4~20ma negative cut-off impedance: 300 or less		Output range: 4~20ma negative cut-off impedance: 300 or less	
reaction time		1.5ms/5ms/10ms Switchable			
External input		NPN/PNPcontact input is valid:0V~+1.2VDCInput impedance: approx 10kΩ			
Protective structure		IP67 (IEC)			
Degree of soiling		2			
Operating ambient temperature		-10°C~+40°C(Be careful not to condense or freeze)、When saving:-20°C~+60°C			
Ambient humidity		35%~85%RH、When saving:35%~85%RH			
Ambient illumination		Incandescent lamp: illuminance of light receiving surface3,000 following			
Use elevation		2,000m following			
Cable		With 0.15mm Φ 5-core composite cable 2M			
texture of material		Body shell: aluminum casting, front cover plate: propylene base			
weight		About 35g (excluding cable), about 85g (including cable)			
Applicable specifications		Compliance with EMC directives			

(note): when the measurement conditions are not specified, the use conditions are as follows: power supply voltage: 24VDC, ambient temperature: +20c, reaction time: 10ms, analog output value of measurement center distance. Object: white paper.

12 Size



13 Security considerations

· Isolate sensor cable from power line or high voltage line.
· Do not use sensors outdoors.
· To prevent interference or use of commercial switching voltage regulator, ensure grounding terminals and grounding terminals of the chassis,
·to extend the amplifier cable, cable used cross-sectional area shall not be less than 0.3 was, length shall not exceed 10 m.
· Memory write life is about ten thousand times. "ON" : use memory to save valid, please pay attention to the write life.
· Although it varies by type, light from fast-start and high-frequency fluorescent lamps, as well as solar energy, may interfere with detection, so please avoid direct exposure to light.
· Do not expose the product to light or substances such as water, oil, fingerprints, etc. which may cause light refraction, or substances such as dust and garbage, etc. which may block light. If it has been attached, wipe it with a dust-free soft cloth or lens paper.

14 Product warranty

1. Shelf life
Guarantee period is one year, from the product sent to the purchase and the date of the designated place.

2.,the warranty scope
The following conditions are not covered by the warranty.
Failure caused by incorrect operation or improper use in the condition or environment not in accordance with the requirements specified in the user manual or user technical manual.
· Faults caused by modification or repair by the purchaser's personnel.
.Due to fire, earthquake, flood and other natural disasters, or abnormal voltage and other external factors caused by the fault, our company is not responsible for warranty.

3, in order to improve product performance upgrade the product, such as the contents of this manual may be modified, without prior notice.