

OSM40 High Precision Laser Distance Sensor

INSTRUCTION MANUAL

1. Product features

- ※ Short,medium and long distances are available.
- ※ Support switch output,NPN/PNP can be set.
- ※ Support analog output,current output/voltage output can be set.
- ※ Support laser light source control through external input.
- ※ Support ECO mode setting.
- ※ Four white digital tubes,clear and bright.
- ※ Full metal shell,sturdy and durable,better protection performance.
- ※ Small size, small spot, high precision.
- ※ Support multiple detection modes,multi-scene applications.



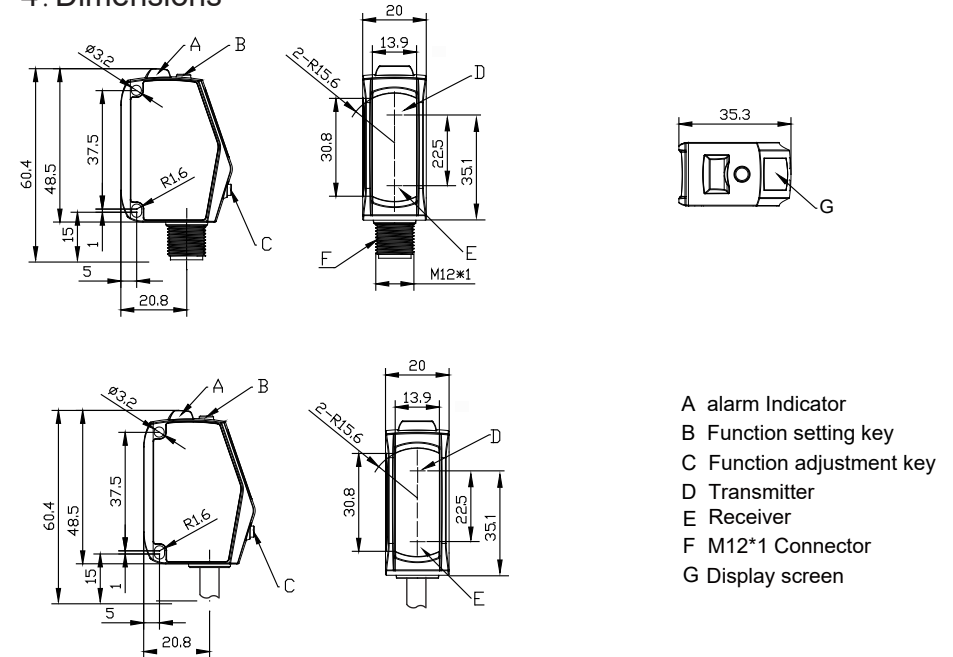
2. Model description

Type (connector)	OSM40-KL70CBLI6Q12.1 OSM40-KL70CBLU6Q12.1	OSM40-KL160CBLI6Q12.1 OSM40-KL160CBLU6Q12.1	OSM40-KL800CBLI6Q12.1 OSM40-KL800CBLU6Q12.1
Type (cable)	OSM40-KL70CBLI6 OSM40-KL70CBLU6	OSM40-KL160CBLI6 OSM40-KL160CBLU6	OSM40-KL800CBLI6 OSM40-KL800CBLU6
Measurement range	35mm~70mm	60mm~160mm	150mm~800mm
Measurement type	short distance	middle distance	long distance
Measurement center distance	50mm	100mm	400mm
Beam diameter	1mm	1mm	1mm@150mm 2mm@600mm
Repeatability	30μm	70μm	0.5mm (150mm~400mm) 1mm (400mm~600mm) 3mm (600mm~800mm)
Linearity	±0.1%F.S.	±0.1%F.S.	±0.2%F.S. (150mm~400mm) ±0.3%F.S. (400mm~600mm) ±0.5%F.S. (600mm~800mm)

3. Specifications

Power supply	10...30VDC	Ambient temperature	-20℃ ...60℃
Power Consumption	<1W	Ambient illuminance	under 3000lux
Light source	Red semiconductor laser 2 655nm	Protection	IP67
Control output	NPN/PNP	Housing material	316L
Analog output (voltage and current can be set)	current: 4~20mA (beyond,0mA) voltage: 0~5V (beyond,5.2V)	Windows material	GLASS
Response time	15ms/5ms/1.5ms	Connections	M12 Connector /Cable

4. Dimensions



*1: This is a laser product,it should be used after warming up for ten minutes.

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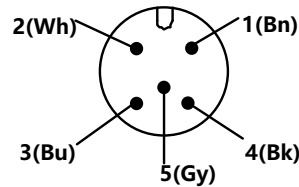
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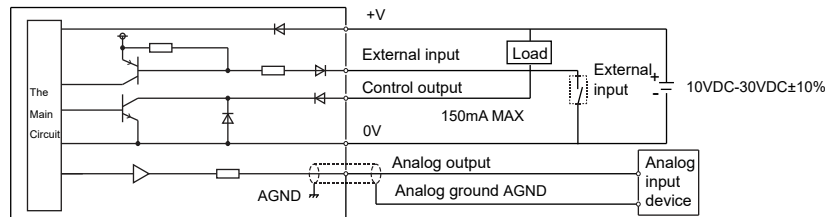
5. Interface definition and wiring diagram

	Function	Harness color Cabel	Harness color Connector
1	Positive power supply	Brown	Brown
2	Power negative	Blue	Blue
3	Current output	Gray	White
4	NPN/PNP	Black	Black
5	External input	Pink	Gray
6	AGND	Shielded wire	None

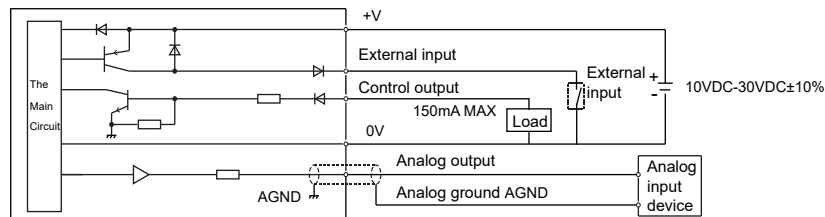
Wiring diagram



Wiring diagram (NPN)



Wiring diagram (PNP)



6. Teaching mode description

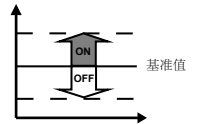
Teach

Detection mode setting description:

It is necessary to set the "Detection Mode Setting" in the menu to the corresponding function mode in advance.

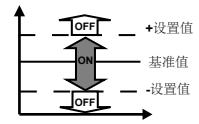
1. Normal detection mode

In the menu, select the "□" mode, automatically enter the detection interface; Select the target object(*) within the effective detection distance and press the TEACH key, and prompt "GOOD" to complete the setting. The location of the target object is the judgement distance.



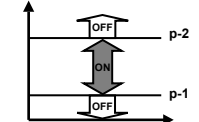
2. 1-point teaching window comparison mode

In the menu, select the "_N_1" mode, first enter the window size setting interface; The default setting value is 0.5mm, press UP/DOWN to adjust the window size setting value. Press the TEACH key to enter the measurement interface; within the effective measurement distance, select the target object(*), press TEACH key, prompt "GOOD", complete the setting. The position of the target object is the center, plus and minus setting value as window edge, and perform window mode judgement.



3. 2-point teaching window comparison mode

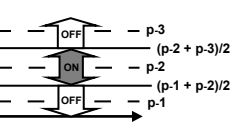
In the menu, select the "_N_2" mode, automatically enter the measurement interface. Select the target object 1(*) within the effective detection distance and press the TEACH key, and prompt "LP1" to complete p-1 setting. Select the target object 2(*) within the effective detection distance and press TEACH key, prompt "GOOD" to complete the p-2 setting. Use the distance between the location of target object 1 and target object 2 as the window to determine the window mode.



4. 3-point teaching window comparison mode

In the menu, select the "_N_3" mode, automatically enter the measurement interface. Select the target object 1(*) within the effective detection distance and press the TEACH key, and prompt "LP1" to complete p-1 setting. Select the target object 2(*) within the effective detection distance and press TEACH key, prompt "LP2" to complete the p-2 setting. Select the target object 3(*) within the effective detection distance and press TEACH key, prompt "GOOD" to complete the p-3 setting.

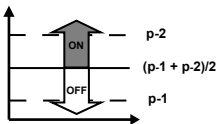
Take the middle distance between p-1 and p-2 as window edge 1, and the middle distance between p-2 and p-3 as window edge 2, and perform window mode judgement.



5. midpoint teaching mode

In the menu, select the "Mid" mode, automatically enter the measurement interface. Select the target object 1(*) within the effective detection distance and press the TEACH key, and prompt "LP1" to complete p-1 setting. Select the target object 2(*) within the effective detection distance and press TEACH key, prompt "GOOD" to complete the p-2 setting.

Take the middle distance between p-1 and p-2 as the judgement distance.



*Represents fine adjustment: After selecting the target object, you can fine-tune the distance of the target object with the UP/DOWN key, and then press the TEACH key to confirm.

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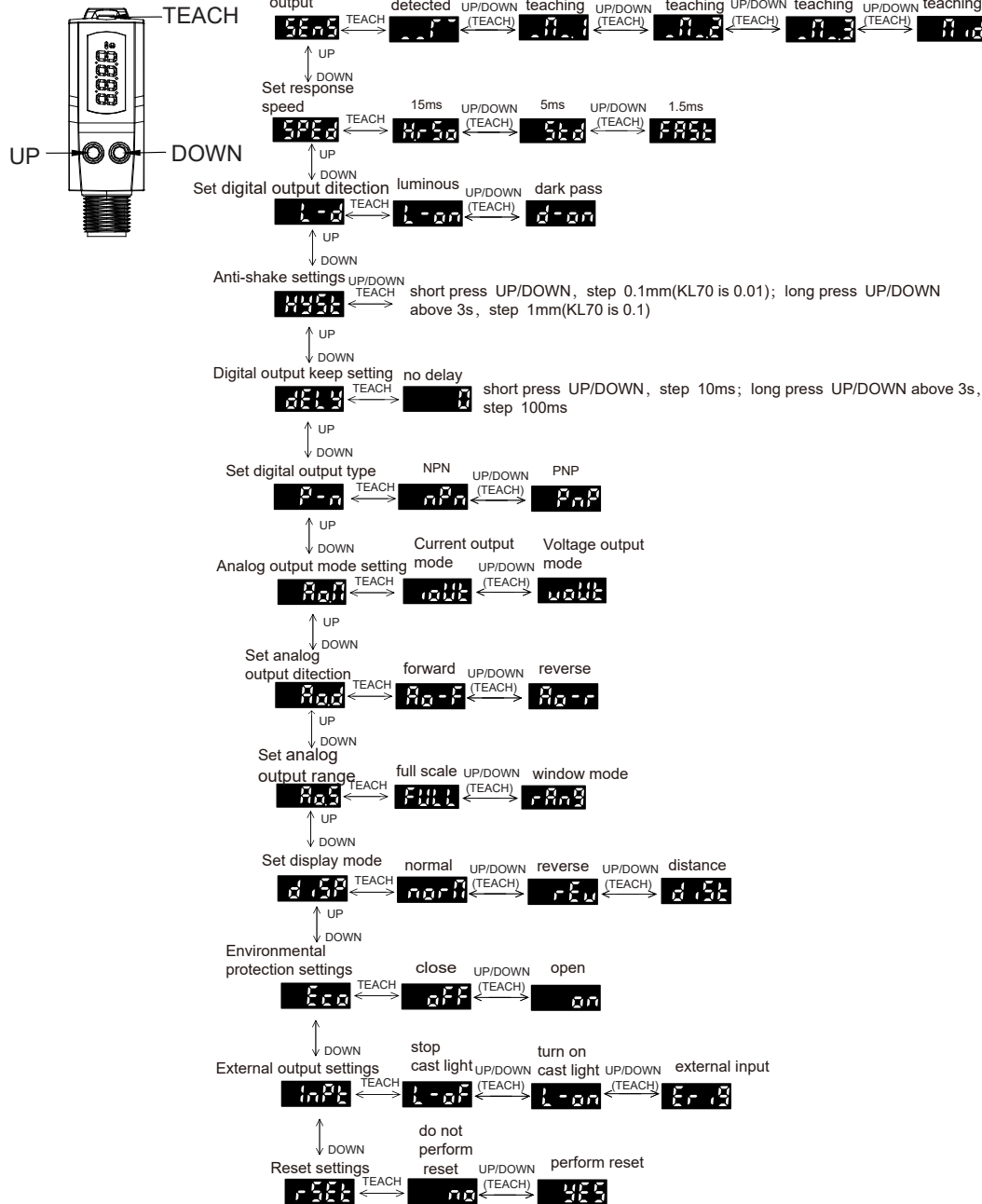
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7. OPERATION GUIDE

STEP



1. Ranging display

Measurement interface: Show actual measurement distance, resolution is 0.1mm(KL70 is 10μm), when the distance is out of detected distance, it displays "----".

Display description: Take the center distance as 0 point, the distance less than the center is positive, the distance greater than the center is negative, and the displayed value is the offset value.

2. Menu and key operation

2.1 Enter the menu: Long press TEACH above 3s when it is in the measurement interface, enter the menu interface;

Exit menu: Long press TEACH above 3s when it is in the menu interface, or no key operation for 20s, return to measurement interface.

2.2 Menu operation

Enter the menu interface, display the main menu, switch the menu options by pressing the up/down key.

On the main menu interface, enter the submenu options by short pressing TEACH key. Under the submenu, short press up/down to select the parameter. Short press the TEACH key to confirm and return to the previous main menu.

1) Teaching output

The main menu shows "SEnS", press TEACH to enter the submenu;

Submenu items: "usually detected mode (default)"; "_N_1" 1-point teaching window comparison mode;

"_N_2" 2-point teaching window comparison mode; "_N_3" 3-point teaching window comparison mode. "nid" midpoint teaching mode.

The above teaching modes are detailed in 6. Teaching mode description.

2) Set response speed:

The main menu shows "SPED", press TEACH to enter the submenu;

Submenu items: "H.rSo" high precision 15ms; "Std" standard 5ms (default); "FAST" high speed 1.5ms;

3) Set digital output direction

The main menu shows "L-d", press TEACH to enter the submenu;

Submenu items: "L-on" luminous (default); "d-on" dark pass;

4) Anti-shake settings

The main menu shows "HYSt", press TEACH to enter the submenu;

Submenu initial display "0.1", 0.1mm is hysteresis distance, short press UP/DOWN, step 0.1mm (KL70 is 0.01mm); long press UP/DOWN above 3s, step 1mm (KL70 is 0.1mm). Setting range is 0~5mm, initial value is 1mm (KL70 is 0.1mm).

5) Digital output keep setting

The main menu shows "dELy", press TEACH to enter the submenu;

Submenu initial display "0", no delay, short press UP/DOWN, step 10ms; long press UP/DOWN above 3s, step 100ms.

Setting range is 0~1000ms, initial value is 0ms.

6) Set digital output type

The main menu shows "P-n", press TEACH to enter the submenu;

Submenu items: "nPn" NPN output mode (default); "PnP" PNP output mode.

7) Analog output mode setting

The main menu shows "Ao.N", press TEACH to enter the submenu;

Submenu items: "ioUt" current output mode (default); "voUt" voltage output mode.

8) Set analog output direction

The main menu shows "Ao.d", press TEACH to enter the submenu;

Submenu items: "Ao-F" forward (default); "Ao-r" reverse.

Forward direction: short distance corresponds to small current/voltage, long distance corresponds to large current/voltage. The reverse is the opposite.

9) Set analog output range

The main menu shows "Ao.S", press TEACH to enter the submenu;

Submenu items: "FULL" full scale mode (default); "rAng" window mode.

When set to window mode, the analog output range can be set through the two-point teaching mode.

10) Set display mode

The main menu shows "diSP", press TEACH to enter the submenu;

Submenu items: "norN" normal displacement mode (default); "rEv" reverse displacement mode; "dist" distance mode.

11) Environmental protection settings

The main menu shows "Eco", press TEACH to enter the submenu;

Environmental protection function note: After the function is turned on, the LED will automatically turn off the display in 30s without any button.

12) External output settings

The main menu shows "InPt", press TEACH to enter the submenu;

Submenu items: "L-oF" stop cast light; "L-on" turn on cast light; "ErIg" external input (default);

External input note: When the external input is low, stop cast light, no external input, default turn on cast light.

13) Reset settings

The main menu shows "rSEt", press TEACH to enter the submenu;

Submenu items: "no" do not perform reset; "yES" perform reset, restore default settings.

2.3 Key lock function

Turn on key lock: In the measurement interface, press the UP and DOWN keys at the same time for more than 3s, the interface displays "Lc.on", and the menu function is invalid at this time.

Turn off the key lock: After the key lock is turned on, press the UP and DOWN keys at the same time for more than 3s, the interface displays "Lc.FA", press the UP and DOWN keys at the same time for more than 3s again, the interface displays "Lc.oF" and the key function are restored.

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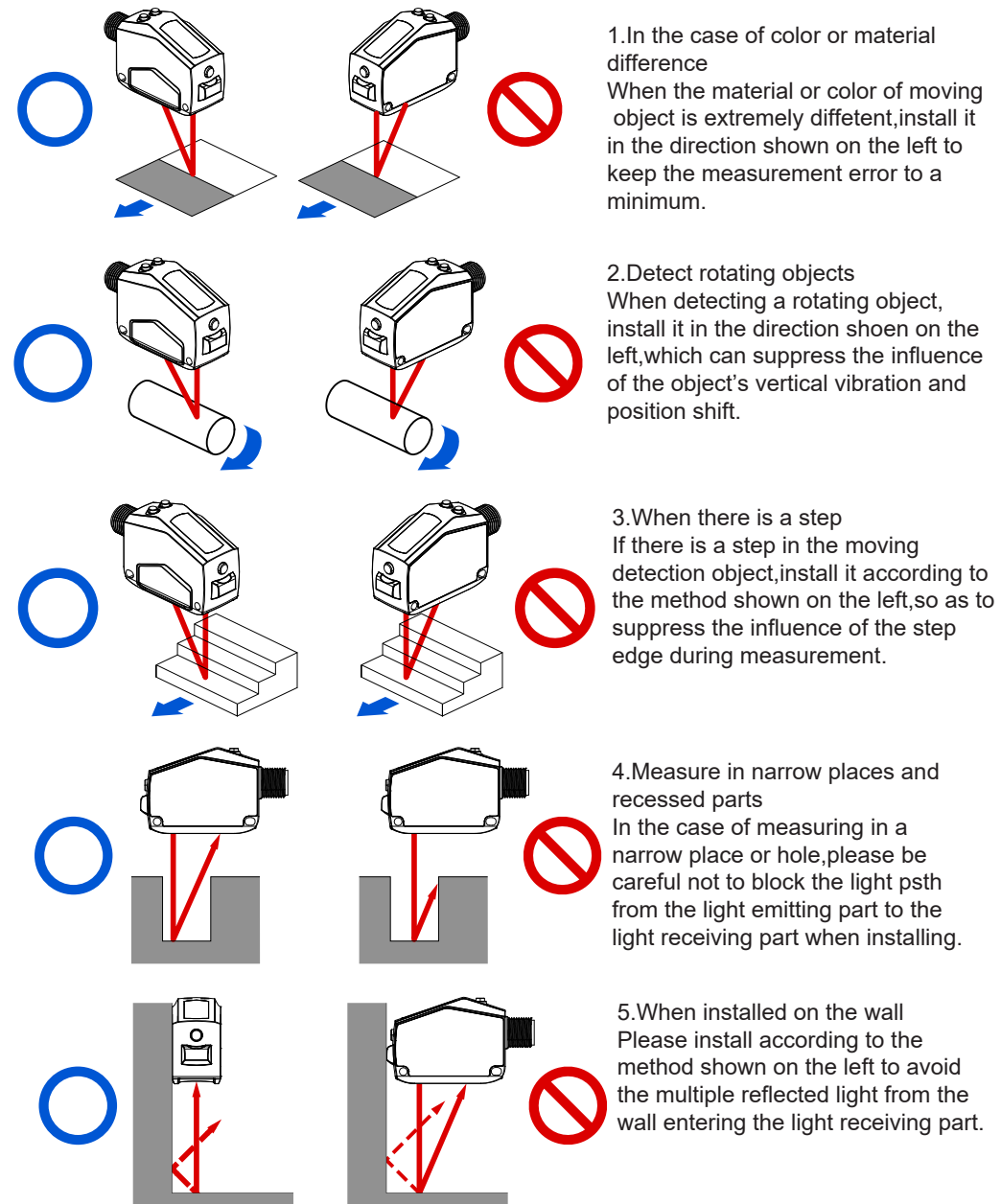
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8. Digital tube display interpretation

SEN5	sens	teaching output
__F__	__m	usually detected
_n_1	_m_1	1-point teaching
_n_2	_m_2	2-point teaching
_n_3	_m_3	3-point teaching
_n_mid	_mid	midpoint teaching
SPED	sped	set response speed
Hr50	h.ros	high precision 15ms
5td	std	standard 5ms
FAST	fast	high speed 1.5ms
L-d	l-d	set switch output detection
L-on	l-on	luminous
d-on	d-on	dark pass
HYST	hyst	anti-shake settings
dELY	dely	switch output keep settings
0	0	no delay
P-n	p-n	set switch output
nPN	nPN	NPN
PnP	pnp	PNP
RoM	rom	set analog output mode
iOUT	iout	current output mode
vOUT	vout	voltage output mode
RoD	rod	set analog output direction
ao-f	ao-f	reverse
ao-r	ao-r	forward
aoS	aos	set analog output range
FULL	full	full scale
rAnG	rang	window mode(corresponding to two-point teaching mode)
dISP	disp	set display mode
norm	norm	normal displacement mode
rev	rev	reverse displacement mode
dist	dist	distance mode
eco	eco	environmental protection settings
off	off	environmental protection close
on	on	environmental protection open
inPt	inpt	external output settings
L-of	l-of	stop cast light(turn off the laser)
L-on	l-on	turn on cast light(turn on the laser)
Erig	erig	external input
rest	rest	Reset settings
no	no	do not perform reset
YES	yes	perform reset

9. Installaton diagram



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