

# ZXD-C LASER DISPLACEMENT SENSOR



## INSTRUCTION SHEET

Thank you for selecting INNO for your requirement.

This sheet describes the procedure and precautions required for installing and operating the product.

Kindly read this sheet before operating or installing the product. Store the sheet for future reference.

### CAUTION FOR SAFETY

- ⓘ Please keep this sheet for review before use of unit.
- ⓘ Please observe the following:

**⚠ WARNING**  
Serious injury may occur if instructions are not followed

**⚠ CAUTION**  
Product failure or injury can occur if instructions are not followed

### ⚠ WARNING

1. This is not a safety product and is not to be used with machinery that requires use of safety control.
2. Do not disassemble or modify this unit. It may lead to electric shock/fire.

Do not connect sensor to AC power supply.  
RISK OF EXPLOSION!

### ⚠ CAUTION

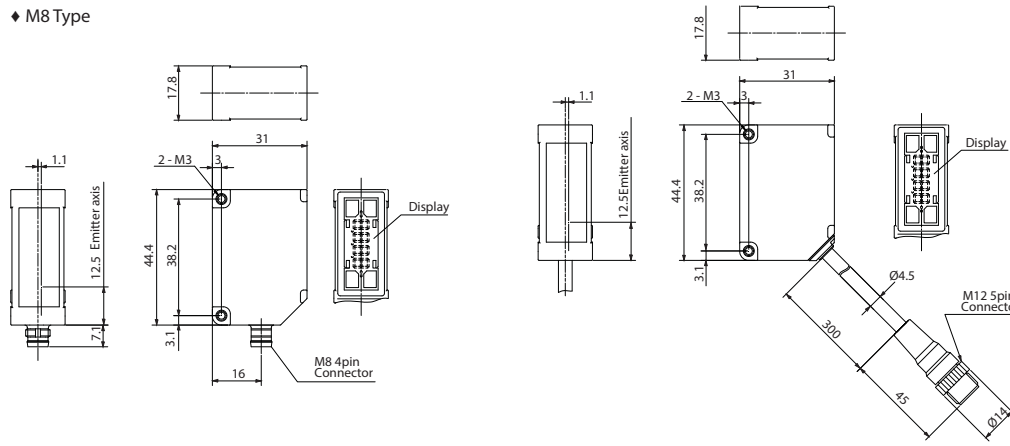
1. This unit shall not be used outdoors.
2. Do not use the unit in places where there is flammable or explosive gas.
3. Please observe the rated specifications in Instruction Sheet.
4. Do not use this unit beyond rated power and do not supply AC power at DC power type.
5. Please check the polarity of power and wrong wiring.
6. Do not use this unit in places where there is vibration or impact.
7. Do not use water or oil based detergent for cleaning the unit.
8. Do not use excessive force to tighten the unit and do not hammer the unit.
9. Please process it as industrial waste and dispose responsibly.

### SPECIFICATIONS

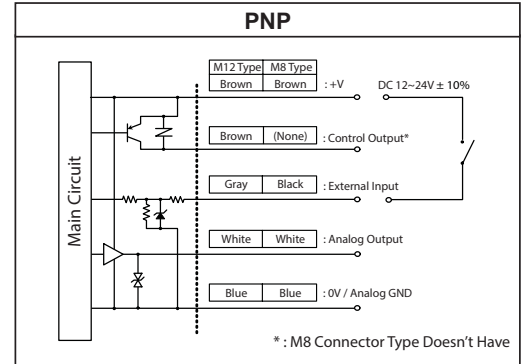
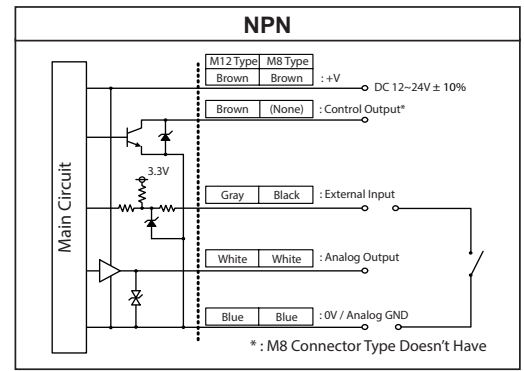
\*For details on Customized/ Special Models contact Seller

*Models	Current	ZXD-C-155C- _	ZXD-C-355C- _	ZXD-C-1005C- _
	Voltage	ZXD-C-155V- _	ZXD-C-355V- _	ZXD-C-1005V- _
Sensing Distance		15mm	35mm	100mm
Measurement Range		±5mm	±15mm	±50mm
Full Scale		10mm	30mm	100mm
Connection	ZXD-C- _ _ _ M12J3 - M12 Junction Connector with 0.3m Cable Extension; ZXD-C- _ _ _ M8C - M8 Connector;			
Light Source	Class II Red Laser Diode (wavelength 650nm)			
Spot Size		0.5 x 0.7mm	0.45 x 0.8mm	0.6 x 0.7mm
Linearity		± 0.1% F.S.		
Temperature Drift		± 0.02% F.S./ C°	± 0.02% F.S./ C°	± 0.05% F.S./ C°
Sampling Period	500 μs / 1000 μs / 2000 μs / 4000 μs / Auto			
Repeatability		1μm	6μm	20μm
Supply Voltage	18 - 24 VDC (Ripple Max 10%)			
Current Consumption	Control Output: max. 75mA (24 VDC); Analog Output: max. 80mA (24 VDC)			
Control Output	NPN or PNP open collector output (selectable)			
Control Output Rating	Load Voltage: max. 30 VDC; Load Current: max 100mA (residual voltage max. 1.8V)			
Analog Output	4-20mA; 0-10 V			
Operation Indications	Laser Indication: Green LED; Output Indication: Orange (ON); Zero Reset / Mode Indication: Red			
Shock Resistance	50 G; Vibration: 10-55Hz at 1.5mm, 2 hrs for X, Y, Z axes			
Environmental Illuminance	Lamp: mxs. 3,000 lux			
Ambient Temperature	Operation: -10° ~ 50°C; Storage: -20° ~ 60°C (non-freezing; non-condensing)			
Ambient Humidity	Operation: 35 ~ 85% RH; Storage: 35 ~ 95% RH (non-condensing)			
Protection Class	IP67			
Weight	Cable Type: aprox. 60g (Junction Connector with cable); Connector Type: aprox. 40g			
Material	Housing: Aluminum, Lens: PPSU, Display: PET			

### DIMENSION DIAGRAM

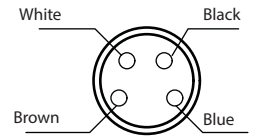


### CONTROL OUTPUT DIAGRAM

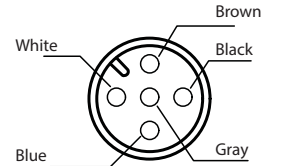


### CONNECTION DIAGRAM

#### ◆ M8 Connector



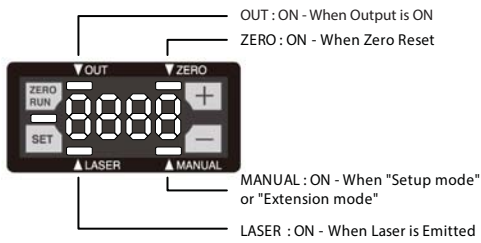
#### ◆ M12 Connector



#### Represented by:

Intech Systems Chennai Pvt. Ltd.  
S-2, Guindy Industrial Estate  
Chennai - 32. Ph: 044 4353 8888  
Email: info@intechchennai.com

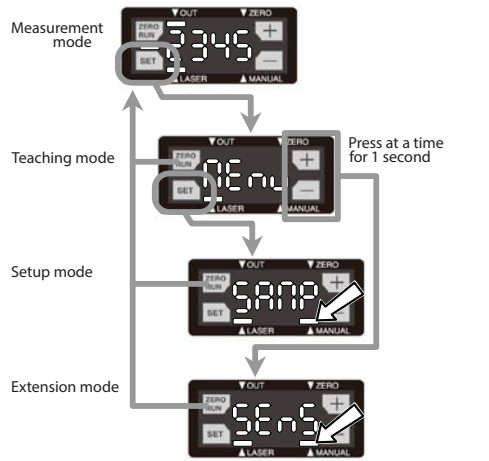
### NOMENCLATURE



### SETUP FUNCTION

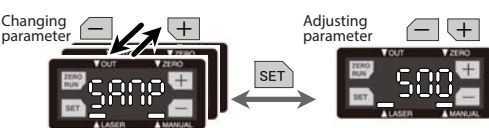
#### • Changing Mode

While it's "Teach mode", "Setup mode" or "Extension mode", you can change the mode to "Measurement mode" by pressing "ZERO/RUN" button. While it's "Setup mode" or "Extension mode", the LED "MANUAL" is lit



#### • Changing Parameters

You can choose and adjust the parameters by pressing "+" and "-" buttons. The mode will be changed to "Measurement mode" by pressing "ZERO/RUN" button.



### TEACH MODE

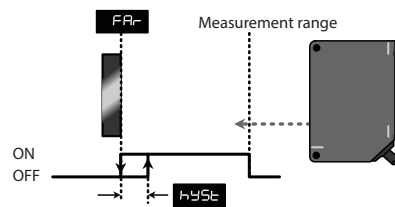
- 1: Setup mode  
Menu → To Setup mode
- 2: Teaching mode  
Mode → 1Pt 1 point Teaching, FGS2 FGS2, 2Pt 2 point Teaching
- 3: FGS2 threshold  
FGS2 → tch Teaching current position
- 4: Near side threshold  
nEAR → tch Teaching current position
- 5: 1 point Teaching - Far side threshold  
fAR → tch Teaching current position

### MEASUREMENT MODE

ZXD-C has 3 measurement mode. The mode is chosen by "Teach mode". Output can be reversed by setting "Output polarity" [Reb.]. Following output shows its ON/OFF status as "Light ON".

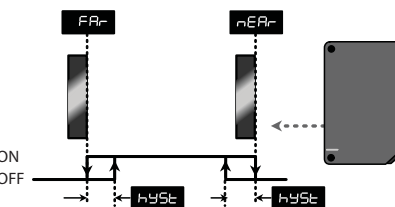
#### ■ 1 point Teaching

Teaching is done at a position. When the measurement distance is closer than that position, the output will be ON.



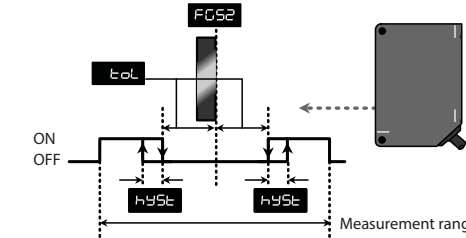
#### ■ 2 point Teaching

Teaching is done at 2 positions. While the measurement distance is between those positions, the output will be ON.



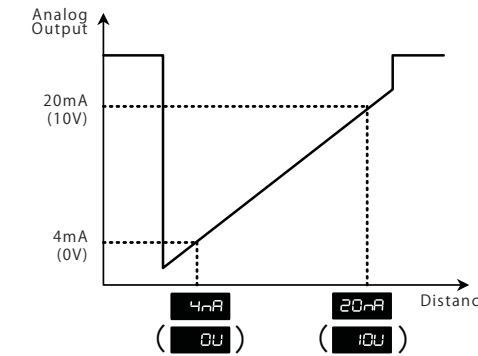
### FGS2

Teaching is done at a position. When the measurement distance is closer than the distance set by "Hysteresis" [hyst.] from the position that Teaching is done, the output will be ON. It works as FGS sensor



### ANALOG OUTPUT

Analog Current or Analog Voltage type outputs Analog output according to the measurement distance. The distance range for Analog output is set in Teaching mode or Setup mode.



#### ■ Default value of each Analog output type

Current (Voltage)	ZXD-C-155- _	ZXD-C-355- _	ZXD-C-1005- _
4mA (0V)	- 5.000	- 15.000	- 50.00
20mA (10V)	5.000	15.000	50.00

### EXTERNAL INPUT

Multiple function can be set at external input. When it's set as "Teaching" or "Zero reset", The function varies by input period as follows.

#### ■ Teaching

Input period (sec.)	What to teach (Teaching current position)
0 to 0.5 sec.	Do nothing
0.5 to 1.5 sec.	Current output type : 4mA/ Voltage output type 0V
1.5 to 2.5 sec.	Current output type : 20mA/ Voltage output type 10V
2.5 to 3.5 sec.	Near side threshold
3.5 to 4.5 sec.	Far side threshold
over 4.5 sec.	FGS2 threshold

#### ■ Zero Reset

Input (Sampling)	Function
0 to 1,999	Zero Reset
over 2,000	Release Zero Reset

### SETUP MODE

Setup mode is chosen by pressing "SET" button from "Menu". (\* means default value)

#### ■ 1 : Analog output setup (various by type)

- Voltage type
  - 10V → 0.123 Set the value
  - 0V → 0.123 Set the value
- Current type
  - 20mA → 0.123 Set the value
  - 4mA → 0.123 Set the value
- RS-485 type - no setup stage

#### ■ 2 : Near side threshold

- nEAR → 0.123 Set the value
- Default: [ZXD-C-155- \_ : -1.000, ZXD-C-355- \_ : -03.00, ZXD-C-1005- \_ : -10.00]

#### ■ 3 : 1 point Teaching - Far side threshold

- fAR → 0.123 Set the value
- Default: [ZXD-C-155- \_ : 1.000, ZXD-C-355- \_ : 03.00, ZXD-C-1005- \_ : 10.00]

#### ■ 4 : FGS2 threshold

- FGS2 → 0.123 Set the value
- Default: [ZXD-C-155- \_ : 0.000, ZXD-C-355- \_ : 00.00, ZXD-C-1005- \_ : 00.00]

#### ■ 5 : Teaching mode

- Mode → 1Pt 1 point Teaching, FGS2 FGS2, 2Pt 2 point Teaching \*

#### ■ 6 : FGS2 hysteresis

- tOL → 0.123 Set the value
- Default: [ZXD-C-155- \_ : 1.000, ZXD-C-355- \_ : 03.00, ZXD-C-1005- \_ : 10.00]

■ 7: External Input Function

<b>inp</b>	<b>off</b>	MF OFF: Disable external input *
	<b>LSr</b>	Laser OFF: Kill laser power when input is ON
	<b>tch</b>	Teaching: Set current value as threshold
	<b>SH</b>	Sample hold: Keep the level when input is ON
	<b>one</b>	One shot: Active when input is ON
	<b>Zero</b>	Zero reset: Set current position as "0"

■ 8: Sampling Period

<b>SAMP</b>	<b>500</b>	500µs (2kHz) *
	<b>1000</b>	1000µs (1kHz)
	<b>2000</b>	2000µs (500Hz)
	<b>4000</b>	4000µs (250Hz)
	<b>Auto</b>	AUTO (Sensor will optimize automatically)

■ 9: Output Polarity

<b>Act</b>	<b>Lon</b>	Light ON: ON when exceeds the threshold *
	<b>d on</b>	Dark ON: ON when less than the threshold

■ 10: NPN/PNP Selection

<b>n_p</b>	<b>nPn</b>	Set input/output as NPN *
	<b>PnP</b>	Set input/output as PNP

This parameter won't be change by reset

■ 11: Averaging Number

<b>AUG</b>	<b>1</b>	Once
	<b>8</b>	8 Times
	<b>64</b>	64 Times *
	<b>512</b>	512 Times

■ 12: Alarm Setting

<b>ALM</b>	<b>CLAMP</b>	Clamp: Display "9999" *
	<b>hold</b>	Hold: Keep Previous Value

■ 12-2: Alarm - Hold and Clamp

**hdct** → **0000** Set Sampling Number to Hold

When Alarm is set as **hold** measurement data will be as follows for Alarm.

■ "Hold and Clamp" is Active  
Keep the previous data for the period and clamp to "9999" after that.

■ "Hold and Clamp" is not Active - Its Set "0000"  
Keep the previous data while it is Alarm status.

■ 13: Reset (Initializing)

<b>rest</b>	<b>YES</b>	Initialize the parameters to default setting
	<b>no</b>	Do nothing

■ 14: Display Setting

<b>di SP</b>	<b>on</b>	Activate the display while "Key Lock"
	<b>off</b>	Disable the display while "Key Lock"

■ SETUP MODE

Extension mode is chosen by pressing "+" and "-" buttons at a time for 1 second. Parameters in Extension mode must be set correctly otherwise it might not work correctly. Please use with default setting when changing parameters is not needed. ("\*" means default setting)

■ 1: Hysteresis

<b>hyst</b>	<b>0.123</b>	Set the value
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Default:  
 ZXDC-155\_.. : 0.050  
 ZXDC-355\_.. : 00.15  
 ZXDC-100S\_.. : 00.50

■ 2: Measurement Point

<b>ptop</b>	<b>MAX</b>	MAX: Maximum Distance *
	<b>Pt5</b>	Pt5: 5th point from Sensor side
	<b>Pt4</b>	Pt4: 4th point from Sensor side
	<b>Pt3</b>	Pt3: 3rd point from Sensor side
	<b>Pt2</b>	Pt2: 2nd point from Sensor side
	<b>Pt1</b>	Pt1: Closest point from Sensor side

Choose measurement point when it receives multiple reflection from the object.

■ 3: Threshold

<b>thre</b>	<b>base</b>	Base: Set threshold to lowest level *
	<b>P400</b>	P400: Set threshold to upper level
	<b>P200</b>	P200: Set threshold to middle level
	<b>P100</b>	P100: Set threshold to lower level

Set threshold level to recognize as measurement point.

■ 4: Time Out

<b>tout</b>	<b>off</b>	Disable Time out *
	<b>1000</b>	Time out in 100ms
	<b>SAMP</b>	Time out in sampling period

This is only for communication type. Set Time out period.

■ 5: External Input Filter

<b>inct</b>	<b>1</b>	Once *
	<b>256</b>	256 Times

Set filtering number for external input. The unit is sampling times.

■ 6: Zero Shift

<b>zero</b>	<b>0.123</b>	Set the value
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■ 7: Sensitivity

<b>SENS</b>	<b>Auto</b>	Auto: Adjust automatically *
	<b>n_6</b>	6: Maximum Sensitivity
	<b>n_1</b>	1: Minimum Sensitivity

Set sensitivity of the sensor

■ ZERO RESET FUNCTION

• Set Zero Reset

While it's measurement mode, press **ZERO RUN** for 2 seconds. Then, **0000** will be shown. The position of decimal point varies by sensor type.

When setting Zero reset, the red indicator LED "ZERO" will be ON.

• Release Zero Reset

While it's measurement mode, press **ZERO RUN** for 4 seconds. to release Zero reset.

■ KEY LOCK FUNCTION

• Activate Key Lock

While it's measurement mode, press **+** **+** at a time for 1 second. Then **Loc** will be shown. While **Loc** is shown, any access except "Releasing Key Lock" will be neglected.

• Release Key Lock

While key lock is activated, it will be released by pressing **+** **-** at a time for 3 seconds. Then, **uLoc** will be shown.

After this process, every access will be accepted.

**WARNING**  
 Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death. These sensors do not include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

**INSTALLATION NOTES**

Represented by:  
 Inno  
 www.inno.sg  
 Inno Systems Chennai Pvt. Ltd.  
 S-2, Guindy Industrial Estate  
 Chennai - 32. Ph: 044 4353 8888  
 Email: info@intechchennai.com  
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