

INSTRUCTION MANUAL

Laser Line Sensor Controller LD-C60

Thank you very much for using SUNX sensors. Please read this Instruction Manual carefully and thoroughly for the correct and optimum use of the sensor. Kindly keep this manual in a convenient place for quick reference.

! This product is not a safety sensor. Its use is not intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery. It is a normal object detection sensor.

1 OUTLINE

● This product is a controller which controls the sensor head to detect the edge of an inserted object and outputs sensing data.

2 SPECIFICATIONS

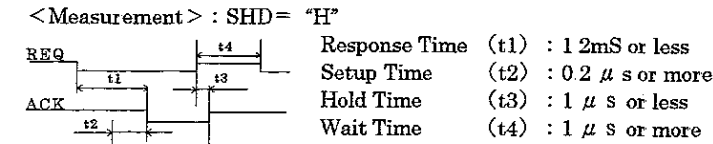
Type	Controller
Item Model No.	LD-C60
Applicable sensor head	LD-600, LD-601
sensed object	Opaque objects
Min. sensed object	φ 0.5 mm
Sensing method	Edge sensing, Width sensing (Dark, Light)
Measuring accuracy	± 2.2 μm (Edge sensing) ± 4.4 μm (Width sensing)
Supply voltage	24V DC ± 10% Ripple P-P ± 10% or less
Current consumption	250 mA or less (including supply current to sensor)
REQ / SHD input	Low : 1V or less High : 5V or more or open
ACK output	NPN open collector transistor Residual voltage : 1V or less (at 20mA sink current) Maximum sink current : 20mA Applied voltage : 30V or less
Output operation	ON when data is output
Short-circuit protection	—
Data output (D0 to D10)	NPN open collector transistor Residual voltage : 1V or less (at 20mA sink current) Maximum sink current : 20mA Applied voltage : 30V or less
Output operation	Binary output of pixel
Short-circuit protection	—
Response Time	1.2 ms or less
Power indicator	Red LED (lights up while the power is supplied)
REQ indicator	Red LED (lights up when REQ output is in Low state)
ACK indicator	Red LED (lights up when ACK output is activated)
Data display	Four digit LED display (Display resolution 10 μm) (*2)
Ambient temperature	0 to +40°C (No dew condensation or icing allowed), Storage : -10 to 60°C
Ambient humidity	35 to 85%RH, Storage : 35 to 85%RH
Earthing method	Capacitor earth between live parts and frame ground
Connection	Terminal : 3P (for power source) Connector : 25P (for data output)
Accessory	Input/Output connector (1 No.)
Weight	230 g approx.

(*1) : Refer to INSTRUCTION MANUAL of LD-600 or LD-601 for more details.
(*2) : Please note that the displayed value and the output value differs.

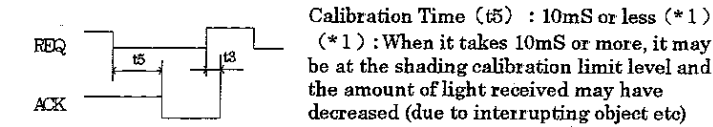
3 SELECTION OF MEASUREMENT / CALIBRATION

● Measurement / Calibration is selected by SHD input.
SHD = "H" : Normal measurement
SHD = "L" : Calibration ※ Calibration : Shading calibration

● Timing chart



< Calibration > : SHD = "L"



4 SETTING OF SENSING METHOD (MEASUREMENT MODE)

● Four sensing methods (measurement modes) are set by mode switch 1 and 2.

Switch1	Switch2	Measurement mode
OFF	OFF	Edge · Dark measurement Light Dark
OFF	ON	Edge · Light measurement Light Dark
ON	OFF	Width · Dark measurement Light Dark
ON	ON	Width · Light measurement Light Dark

※ Edge · Dark measurement mode is set on shipment.

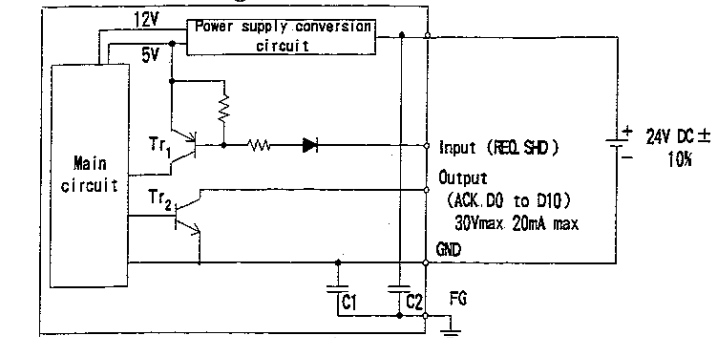
5 CAUTIONS

- This product has been designed to meet the specifications when it is used along with the optional sensor heads. If it is used along with a sensor head other than these optional sensor heads, not only the specifications may not be met, but this may also cause a malfunction or breakdown. Hence, please ensure to use this product along with the optional sensor heads.
- When the sensor is installed (or changed) please ensure to perform Calibration. If Calibration is not performed, correct measurement cannot be done.
- Avoid using this product for 1sec approx. of transient duration immediately after power supply is switched on.
- Always make power ON/OFF with input signal (REQ, SHD) in the open (or "H" level) state.

- Always use an insulated transformer as DC power supply. If an auto-transformer is used, power supply or internal circuit may be damaged.
- If a surge arises out of the power supply, connect a surge absorber to the source.
- Verify that the supply voltage ripple is within the rating.
- Do not run the sensor cable a long any high-voltage or power cable or put then in the same raceway. It may cause a malfunction due to induction.
- Do not supply power while wiring.
- Make the cable length as short as possible to lessen the trouble of picking up noise.
- In this product, capacitor earth is used between live parts and F.G. to enhance the noise characteristics.
- Where some device generating noise such as switching regulator or an inverter motor is placed near the sensor, ground the F.G. terminal.
- Avoid places where the sensor will be directly exposed to fluorescent lights with rapid starters or high frequency starters.
- Avoid dust, dirt, and steam. Do not place it in an area where it may be directly exposed to water.
- Make sure that the sensor is not exposed to chemical agents such as thinner or organic solvent.
- This product is not a measuring instrument. Hence, the company does not offer any calibration services.

6 CONNECTION

● I/O circuit diagram

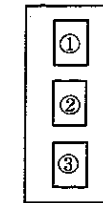


(*1) : Do not supply power while wiring

Symbol ●●● Tr1 : PNP input transistor
Tr2 : NPN output transistor
C1, C2 : Capacitor

● Terminal pin position

Power source terminal (3P)

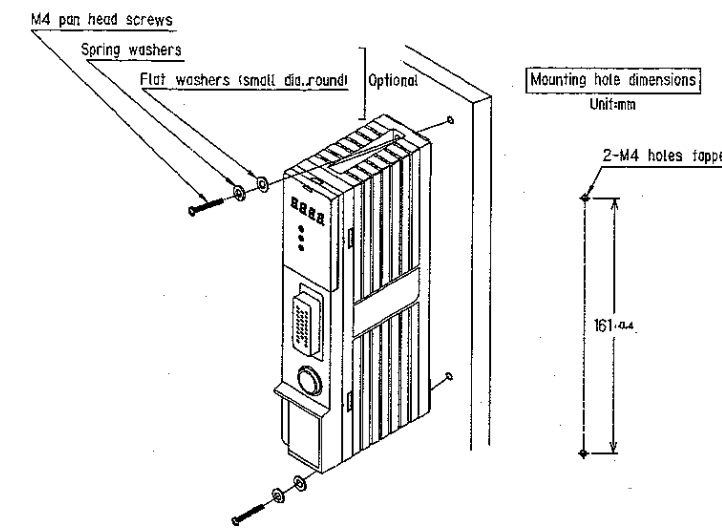


No.	Symbol	Description
1	+	+24V DC
2	-	0V DC
3	F.G.	Frame ground

I/O data terminals (25P)

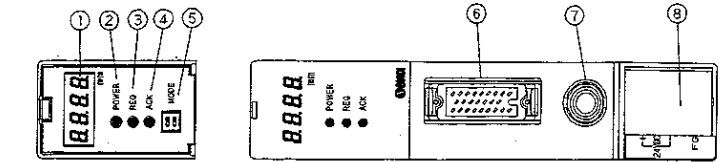
No.	Symbol	Input/Output	Description	No.	Symbol	Input/Output	Description
1	REQ	Input	Data output request	14	D4	Output	Data (2 ⁴)
2	ACK	Output	Data output processing	15	D5	Output	Data (2 ⁵)
3	SHD	Input	Shading calibration	16	D6	Output	Data (2 ⁶)
4			Not connected	17	D7	Output	Data (2 ⁷)
5			Not connected	18	D8	Output	Data (2 ⁸)
6			Not connected	19	D9	Output	Data (2 ⁹)
7			Not connected	20	D10	Output	Data (2 ¹⁰)
8	G	Output	0V	21			Not connected
9	G	Output	0V	22			Not connected
10	D0	Output	Data (2 ⁰)	23			Not connected
11	D1	Output	Data (2 ¹)	24	G		0V
12	D2	Output	Data (2 ²)	25	G		0V
13	D3	Output	Data (2 ³)				

7 MOUNTING



● The controller should be mounted with 2 Nos. M4 pan head

8 FUNCTIONAL DESCRIPTION

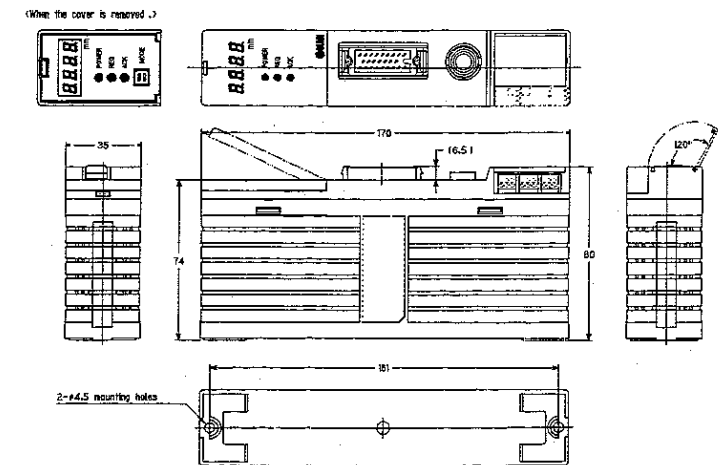


(When the cover is removed.)

No.	Description	Function
①	Data display (Four digit LED display)	During measurement: Measured value is display in mm (Display resolution : 10 μm) During calibration: If calibration is OK, some number is displayed. If calibration is NG, (-) is displayed (*1)
②	Power indicator (Red LED)	Lights up when the power is supplied
③	REQ indicator (Red LED)	Lights up when REQ output is in Low state.
④	ACK indicator (Red LED)	Lights up when ACK output is activated
⑤	Mode switch	Sensing method (measurement mode) is selected by the mode switch 1,2. On shipment, the switch is set to OFF (Edge · Dark measurement).
⑥	I/O data terminals	REQ, ACK, SHD, DATA (D0~D10) input/output signals are input or output
⑦	Sensor head terminals	Sensor head LD-600(/ LD-601) is connected by a connector.
⑧	Power supply terminals	+24V GND and F.G. are connected

(*1) : If calibration is NG, it is possible that dust or dirt may be sticking to the glass portion of emitter / receiver of the sensor head. Hence, please clean the glass with a clean soft cloth or a lens paper

9 DIMENSIONS (Unit : mm)



SUNX Limited <http://www.sunx.co.jp/>

Head Office
2431-1 Ushiyama-cho, Kasugai-shi, Aichi, 486-0901, Japan
Phone: +81-(0)568-33-7211 FAX: +81-(0)568-33-2631
Overseas Sales Dept.
Phone: +81-(0)568-33-7861 FAX: +81-(0)568-33-8591