Date⇑2008.2.01

Scanning Laser Range Finder
UBG-04LX-F01
-Rapid-URG-
Specifications

1	Revision				All	2007/01/19 Yamamoto	PR-5394
Symbol	Amended Reason				Pages	Date Corrector	Amendment No
Approved by	Checked by	Drawn by	Designed by	Title	Scanning Laser Range Finder UBG-04LX-F01 Specifications		
MAEJIMA	MAEDA	YAMAMOTO	MAEDA	Drawing No.	C-42-3539		1/5

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1. General

UBG-04LX-F01 is a laser sensor for area scanning. The light source of the sensor is infrared laser of wavelength 785nm with laser class 1 safety. Scan area is 240º semicircle with maximum radius 4000mm. Pitch angle is 0.36º and sensor outputs the distance measured at every point (682 steps). Laser beam diameter is less than 20mm at 2000mm with maximum divergence 40mm at 4000mm.

Principle of distance measurement is based on calculation of the phase difference, due to which it is possible to obtain stable measurement with minimum influence from object's color and reflectance.

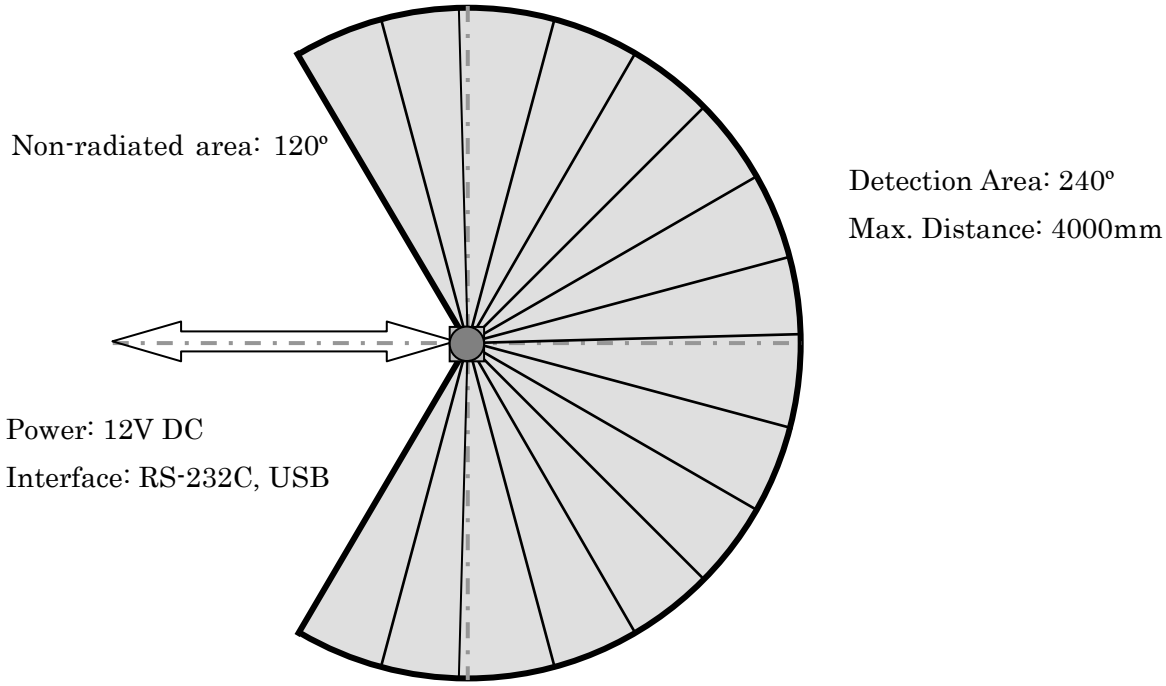


Figure 1

Note
Figure 1 shows the detectable area for white Kent sheet (80mm×80mm). Detection distance may vary with size and object.

2. Important Notice

This sensor is designed for indoor use only.
This sensor is not a safety device/tool
This sensor is not for use in military applications
Read specifications carefully before use.

3. Specifications

Product Name	**Scanning Laser Range Finder**
Model	**UBG-04LX-F01**
Light source	Semiconductor laser diode (λ =785nm), Laser safety Class 1 (FDA) Laser Power: Less than0.67mW (Class 1 is satisfied by rotating scanner)
Power source	12V DC ±10%
Current consumption	370mA or less (Rush current 700mA)
Detection Distance Standard Object	Accuracy Range: 60~4,095mm Square Kent Sheet 80mm*
Accuracy	Refer Attached Data Sheet with the Product (Nominal Range 0.06~1m : ±10mm*, 1~4m : 1% of Distance)*
Resolution	1 mm
Scan Angle	240°
Angular Resolution	0.36°(360°/1024 steps)
Scan Time	28msec/scan
Interface	RS-232C (19.2, 57.6, 115.2,500,750kbps) USB 2.0 (Full Speed) OUTPUT (Synchronous, Malfunction)
Ambient (Temperature/Humidity)	- 10 ~ +50ºC, 85% or less (without dew and frost)
Preservation temperature	-25 ~ +75ºC
Ambient鮃Light Resistance	10000Lx or less
Vibration Resistance	Double amplitude 1.5mm 10 ~ 55Hz, 2 hours each in X, Y and Z direction, and 98m/s²~55Hz ~ 150Hz in 2 minutes sweep, 1 hours each in X, Y and Z direction
Impact Resistance	196 m/s², 10 times each in X, Y and Z direction
Protective Structure	IP40
Insulation Resistance	10MΩ for DC 500Vmegger
Weight	Approx. 185 g (260g with 1m cable)
Case	Front Case: Polycarbonate, Back: PBT
External dimension (W×D×H)	60×60×75mm (Reference design sheet No. MC-40-3150)

*Under standard test conditions

4. Quality reference value

	², 10Hz ~ 150Hz with 2 minutes sweep, 0.5 hours each in X, Y and Z direction
Operating Impact resistance	49 m/s², 10 times each in X, Y and Z direction
Angular Speed	360 deg/s
Angular Acceleration	π/2 rad/s²
Sound level	25db or less (at 300mm)
FDA	This product complies with 21 CFR parts 1040.10 and 1040.11. (Scheduled)

5. Interface

CN1 (8 Pins)

	Lead Color	UBG-04LX-F01
1	RED	OUTPUT COM-
2	WHITE	ERR OUTPUT (Malfunction)
3	BLACK	OUTPUT (SYNCHRONOUS)
4	PURPLE	GND (9pin Dsub 5p)
5	YELLOW	RxD (9pin Dsub 3p)
6	GREEN	TxD (9pin Dsub 2p)
7	BLUE	0V
8	BROWN	DC 12V

Note

1. GND and 0V are connected inside the sensor
2. OV and OUTPUT COM- are isolated.
3. Attachment connector PHR-8 (JST Mfg. Company) is for test purpose only. Do not use it for any other purposes.

CN1 USB-mini (5 Pin)

Cable is not included. Use commercially available compatible unit.

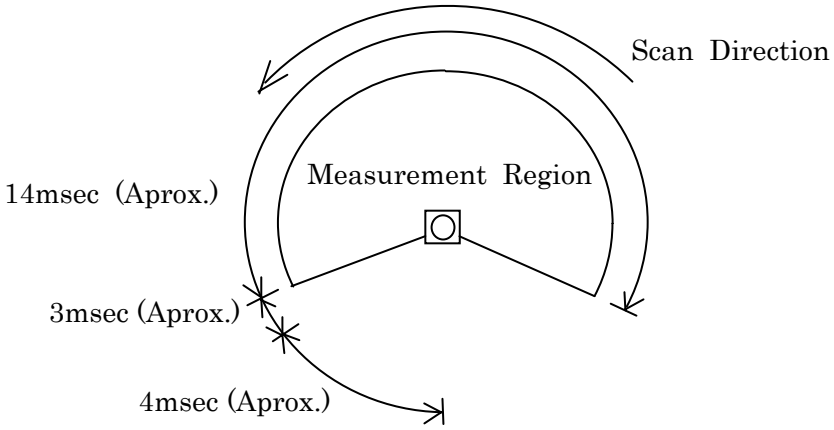
Note:

Communication Protocol: Refer document C-42-3320B

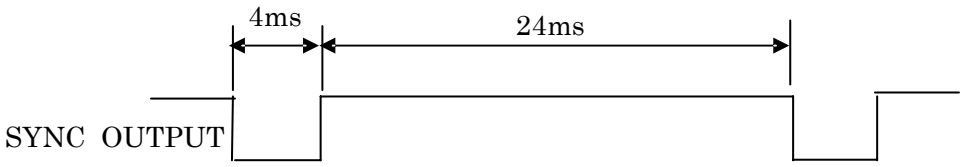
6. Signals

1. Synchronous signal:

Output one pulse in every scan for 4msec. See the figure below for the output timing.

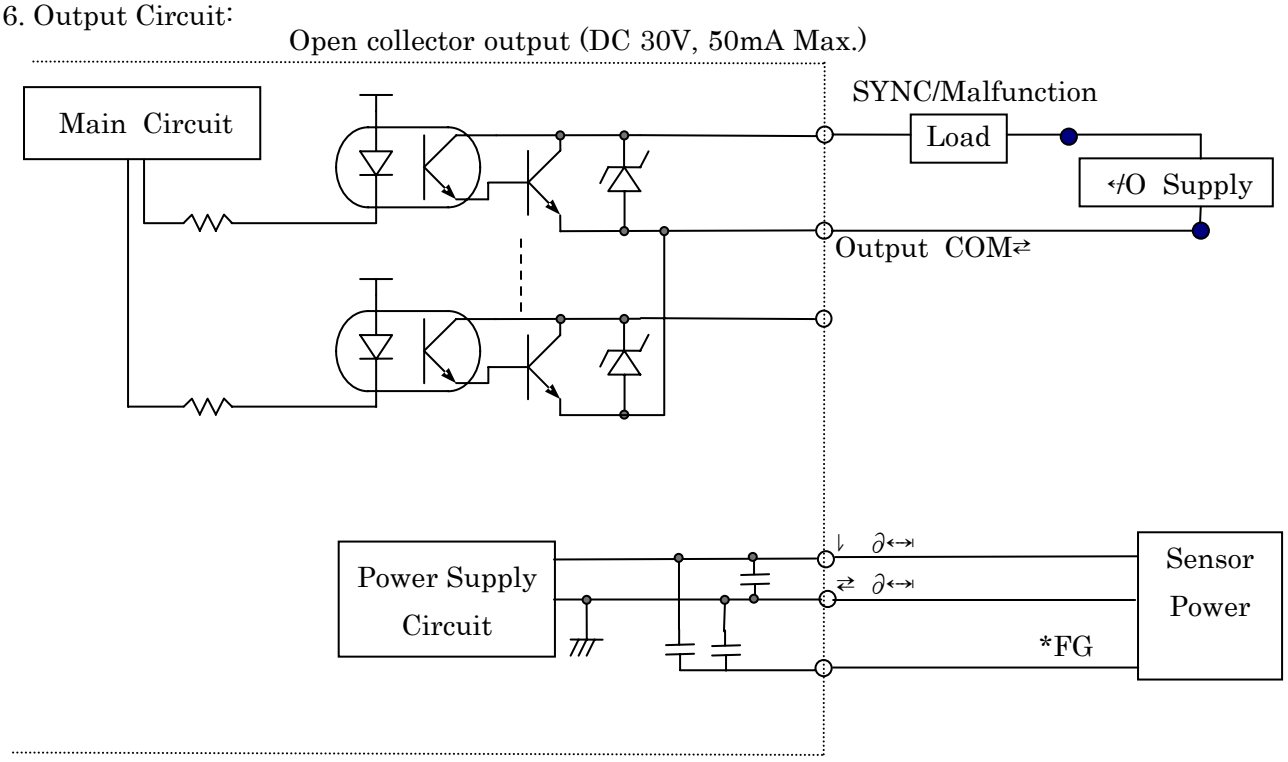


SYNC OUTPUT ON Duration



2. Error Signal:
All output signals are switched off in case of malfunction. Malfunction details can be checked with communication.

6. Output Circuit:



*Connect FG to case housing.
(If signal is affected by noise connect it to supply GND)

8. Notice:

- Supply voltage is DC 12Volts. Sensor will damage if high voltage is supplied.
- The maximum data step is 682points. Sensor's angular resolution is 0.3515625º (360º /1024 steps) and angular range is 239.765625º ((682-1)*360/1024)
- Angular range and resolution can be specified form the host. Read communication protocol specification for details.
- Sensor scans anticlockwise from top view.
- When RS232S connection is used, communication may not establish due to circuit or host incompatibility if baud rate is setting is more than 500Kbps.
- USB driver is communication device class (CDC) supported by standard operating system. The device is connected as a RS232C port with the same utility.

Firmware Update History

Firmware Version	Details