

Date: 2005.10.26

Scanning Laser Range Finder URG-04LX

Specifications

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| Symbol | Amended Reason | | | Pages | Date | Corrector | Amendment No |
| Approved by | Checked by | Drawn by | Designed by | Title | <u>Scanning Laser Range Finder URG-04LX</u> Specifications | | |
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1. General

URG-04LX 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 240° semicircle with maximum radius 4000mm. Pitch angle is 0.36° and sensor outputs the distance measured at every point (683 steps). Laser beam diameter is less than 20mm at 2000mm with maximum divergence 40mm at 4000mm.

The 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 surface gloss.

URG-04LX is designed under JISC8201-5-2 and IEC60947-5-2 standards for industrial applications.

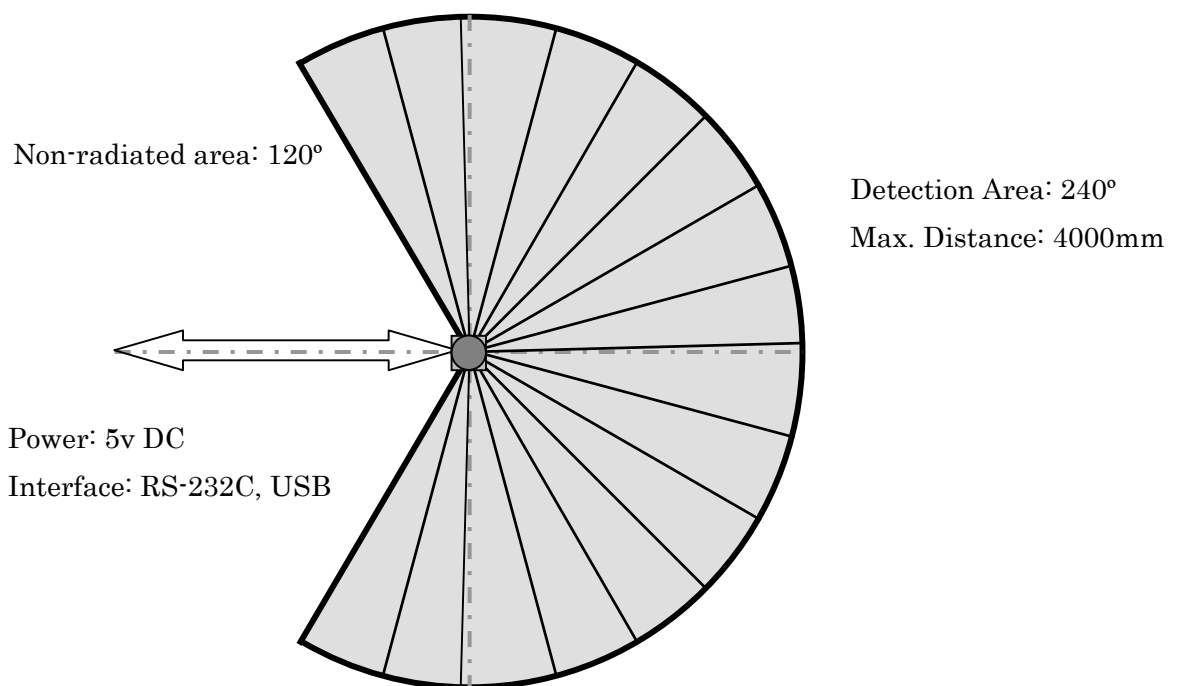


Figure 1

Note

Figure 1 shows the detectable area for white Kent sheet (70mm×70mm). 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.

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| Title | URG-04LX Specification | Drawing No | C-42-3319A | 2/5 |
|-------|------------------------|------------|------------|-----|

3. Specifications

| | |
|-----------------------------------|--|
| Product Name | Scanning Laser Range Finder |
| Model | URG-04LX |
| Light source | Semiconductor laser diode ($\lambda=785\text{nm}$), Laser safety Class 1 (IEC60825-1) |
| Power source | 5V DC $\pm 5\%$ |
| Current consumption | 500mA or less (Rush current 800mA) |
| Detection distance | 20mm ~ 4000mm* |
| Accuracy | Distance 20 ~ 1000mm: $\pm 10\text{mm}^*$ Distance 1000 ~ 4000mm: $\pm 1\%$ of measurement* |
| Resolution | 1 mm |
| Scan Angle | 240 ° |
| Angular Resolution | 0.36 ° |
| Scan Time | 100msec/scan |
| Interface | RS-232C (19.2, 57.6, 115.2 kbps) USB Version 2.0 FS mode (12Mbps) |
| Ambient (Temperature/Humidity) | -10 ~ 50°C / 85% or less (without dew and frost) |
| Preservation temperature | -25 ~ 75°C |
| Ambient Light Resistance | 10000Lx or less |
| Vibration Resistance | Double amplitude 1.5mm 10 ~ 55Hz, 2 hours each in X, Y and Z direction, and 98m/s ² 55Hz ~ 150Hz in 2 minutes sweep, 1 hours each in X, Y and Z direction |
| Impact Resistance | 196 m/s ² , 10 times each in X, Y and Z direction |
| Protective Structure | Optics : IP64 Case : IP40 |
| Insulation Resistance | 10M Ω for DC 500Vmegger |
| Weight | Approx. 160 g |
| Case | Polycarbonate |
| External dimension (W×D×H) | 50×50×70mm (Reference design sheet No. C-40-3362) |

*Under standard test conditions with white Kent sheet 70mm×70mm

4. Quality reference value

| | |
|--------------------------------|--|
| Operating Vibration resistance | 19.6m/s ² , 10Hz ~ 150Hz with 2 minutes sweep, 0.5 hours each in X, Y and Z direction |
| Operating Impact resistance | 49 m/s ² , 10 times each in X, Y and Z direction |
| Angular Speed | 360 deg/s |
| Angular Acceleration | $\pi/2$ rad/s ² |
| Life | 5 years (Varies depending upon the operating conditions) |
| Sound level | 25db or less (at 300mm) |
| FDA | This product complies with 21 CFR parts 1040.10 and 1040.11. (Registration Number 0521258) |

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|-------|------------------------|------------|------------|-----|
| Title | URG-04LX Specification | Drawing No | C-42-3319A | 3/5 |
|-------|------------------------|------------|------------|-----|

5. Interface

CN1 (8 Pins)

| | URG-04LX | Lead Color |
|---|----------------------|------------|
| 1 | NC | |
| 2 | NC | |
| 3 | OUTPUT (SYNCHRONOUS) | BLACK |
| 4 | GND (9pin Dsub 5p) | |
| 5 | RxD (9pin Dsub 3p) | |
| 6 | TxD (9pin Dsub 2p) | |
| 7 | 0V | BLUE |
| 8 | DC 5V | BROWN |

Note

GND and 0V are connected inside the sensor

A standard unit consists of power supply cable and 9-pin D-sub communication connector

CN2 USB-mini (5 Pin)

Cable is not included. Use commercially available compatible unit.

Note:

Refer specifications number C-42-3320 for communication protocol.

Synchronous output will supply one pulse/scan for 12.5msec (Figure 2).

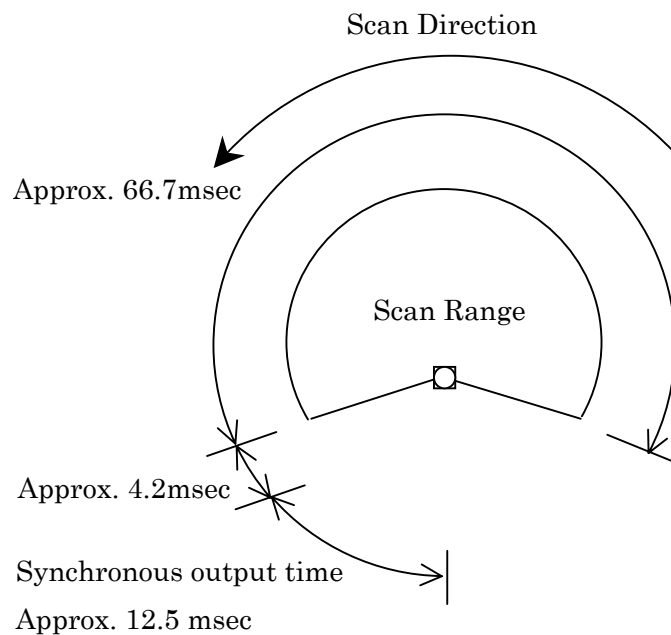


Figure 2

| | | | | |
|-------|------------------------|------------|------------|-----|
| Title | URG-04LX Specification | Drawing No | C-42-3319A | 4/5 |
|-------|------------------------|------------|------------|-----|

6. Output Circuit:

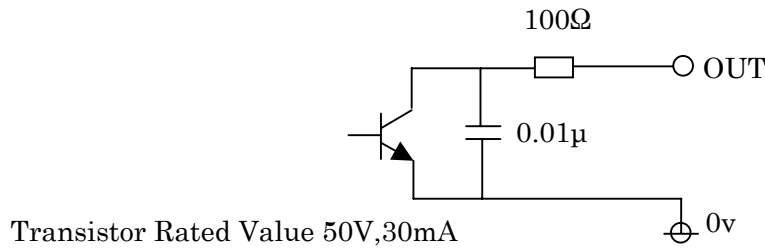


Figure 3

7. Notice:

Supply voltage is DC 5Volts. Sensor will damage if high voltage is supplied.

Sensor will not operate with USB bus power. Use stable power supply with 1.5Amperes or more

The maximum data step is 683 points. Sensor's angular resolution is 0.3515625° ($360^\circ / 1024$ steps) and angular range is 239.765625° ($(683-1) \times 360/1024$)

Angular resolution can be specified form the host. Read communication protocol specification (No C-42-3320) for details.

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 COM port with the same utility.

Plug and play function is not supported.

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|-------|------------------------|------------|------------|-----|
| Title | URG-04LX Specification | Drawing No | C-42-3319A | 5/5 |
|-------|------------------------|------------|------------|-----|