

Scanning Laser Range Finder

Smart-URG Pro

UST-30LX

Specification

CE
RoHS

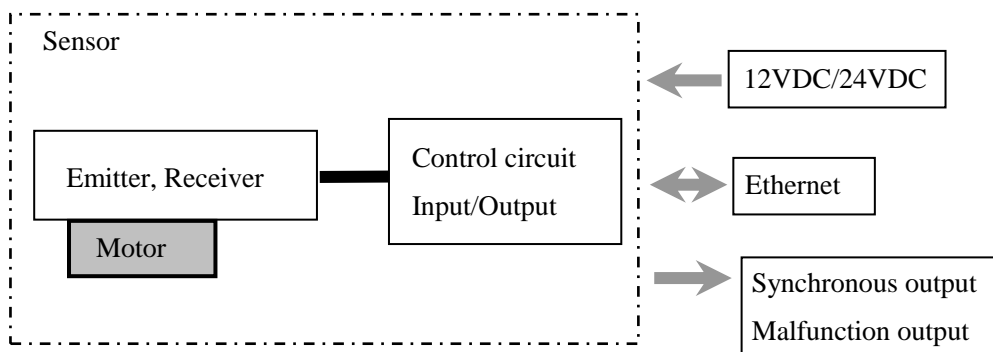
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| Symbol | Amended Reason | | | Pages | Date |
| Amended by | Amended Reason | | | Pages | Date |
| Approved by | Checked by | Drawn by | Designed by | Title | UST-30LX Specification |
| <i>M. Hino</i> | <i>A. Yamamoto</i> | <i>T. Kasahara</i> | <i>T. Kasahara</i> | Drawing No. | C-42-04412 |
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1. General

This sensor uses a laser source to scan 270° field of view. Positions of objects in the range are calculated with step angle and distance. Sensor outputs these data through communication channel.

2. Structure

2-1. Structure diagram

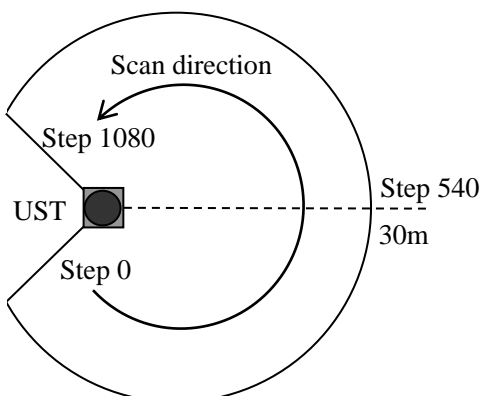


2-2. Laser scanning image

Measurement steps 1081

Detection angle 270°

Angular resolution 0.25°



3. Important notes

- (1) This sensor is not a safety device/tool.
- (2) This sensor cannot be used for human body detection as per the machinery directives.
- (3) Hokuyo products are not developed and manufactured for the use in weapons, equipments or related technologies intended for destroying human lives or causing mass destruction. If such possibilities or usages are revealed, the sales of Hokuyo products to those customers might be halted by the laws of Japan such as Foreign Exchange Law, Foreign Trade Law or Export Trade control order. In addition, Hokuyo products are for the purpose of maintaining the global peace and security in accordance with the above law of Japan.
- (4) Sensor emits laser for measurement. Sensor's operation may become unstable under the influence of strong interference light or when emitted lights are not reflected back from the object.
- (5) Sensor's operation may become unstable due to rain, snow and fog or due to dust pollution on the optical window.
- (6) Rules and regulations related to safety should be followed strictly when machine users and system designers operates the sensor.
- (7) Before using the sensor, please read carefully and understand this specification.

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4. Specifications

| | |
|----------------------------------|--|
| Product name | Scanning Laser Range Finder |
| Model | UST-30LX |
| Supply voltage | 12VDC/24VDC (operation range 10 to 30V ripple within 10%) |
| Supply current(*1) | 150mA or less (when using DC24V) (during start up 450mA is necessary.) |
| Supply power | Less than 3.6 W(steady state) |
| Light source | Laser semiconductor (905nm) |
| Laser Safety | Class1 (IEC60825-1:2014) |
| Detection range and object | 0.05m to 30m(*2) (white kent sheet) 0.05m to 12m(*2) (diffuse reflectance 10%) Max. detection distance : 60m Min. detection size : 180mm(10m)、350mm(20m)、520mm(30m) |
| Accuracy | ±40mm (*2) |
| Repeated accuracy | $\sigma < 20\text{mm}$ (*2) |
| Scan angle | 270° |
| Scan speed | 25msec (motor speed 2400rpm) |
| Angular resolution | 0.25° |
| Start up time | Within 10 sec (start up time differs if malfunction is detected during start up) |
| Output | Malfunction Output, Synchronous Output, photo coupler open collector output MAX DC 30V 50mA. |
| Interface | Ethernet 100BASE-TX |
| LED display | Power supply LED display (blue): Blinks during start up and malfunction state. |
| Surrounding intensity | Less than 100,000lx Note : Avoid direct sunlight or other illumination sources as it may cause sensor malfunction |
| Ambient temperature and humidity | -30°C to +50°C, below 85%RH (without dew, frost) |
| Storage temperature and humidity | -30°C to +70°C, below 85%RH (without dew, frost) |
| Vibration resistance | 10 to 55Hz double amplitude of 1.5mm for 2hrs in each X, Y, and Z direction 55 to 200Hz 98m / s ² sweep of 2min for 1hr in each X,Y and Z direction |
| Shock resistance | 196m/s ² (20G) X,Y and Z direction each 10 times. |
| Insulation resistance | 10M Ω |
| EMC standards | (EMI) EN61326-1:2013 EN55011:2009 + A1:2010 (EMS) EN61326-1:2013 EN61000-4-2:2009 EN61000-4-3:2006 + A1:2008 + A2:2010 EN61000-4-4:2012 EN61000-4-6:2014 EN61000-4-8:2010 |
| RoHS | (EU)2015/863 |
| Protective Structure | IP67(*3) |
| Weight | 130g (excluding cable) |
| Material | Front case: Polycarbonate, Rear case: Aluminum |
| Dimensions (W×D×H) | 50×50×70mm (sensor only) |

(*1) Please use a power supply with enough current capacity.

(*2) Under the factory standard testing conditions using white kent sheet.

(*3)The protective structure of Ethernet and Power connector is not IP67.

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5. Measurement Data

| Distance Value (x) | Meaning |
|------------------------|---|
| $x < 10$ | Output numerical number “4” as Measurement error |
| $10 \leq x \leq 60000$ | Valid distance [mm] |
| $x > 60000$ | Output numerical number “65533” as Measurement error (object does not exists or object has low reflectivity) |

6. Connection

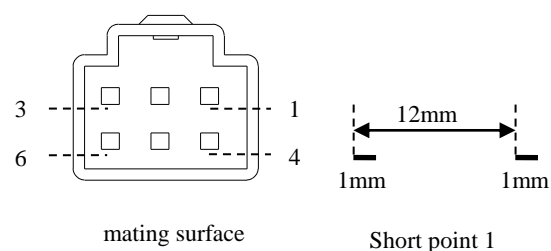
6-1. Power source, I/O cable

connector : DF62B-6EP-2.2C Hirose

Cable length: 1000mm

Keep the output wires open or connect to output “Com Output -” if not in use.

| Pin | Color | Signal |
|-----|-----------------------------|--------------------|
| 1 | Orange(red short point 1) | +VIN (12VDC/24VDC) |
| 2 | Orange(black short point 1) | -VIN |
| 3 | White(black short point 1) | Malfunction Output |
| 4 | Yellow(red short point 1) | Synchronous Output |
| 5 | Yellow(black short point 1) | COM Output - |
| 6 | NC | NC |



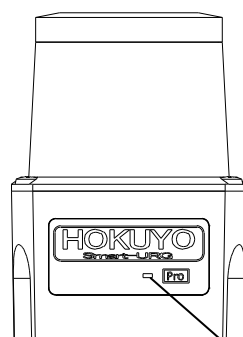
Note: Direction of Inputs and Outputs are mentioned from the sensor's side.

6-2. Ethernet cable

Cable length: 300mm

| Color | Signal |
|---------------|--------|
| White(Orange) | TX+ |
| Orange | TX- |
| White(Green) | RX+ |
| Green | RX- |

7. LED display

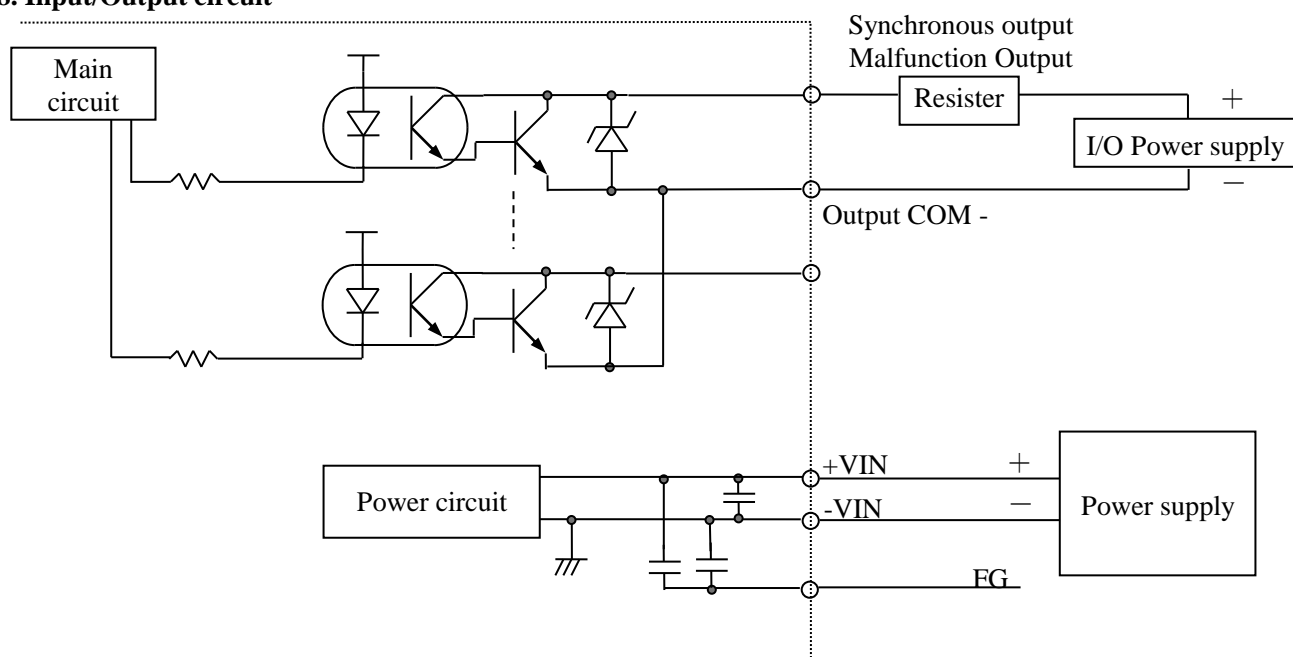


Power supply display

(Blinks during start up and malfunction state)

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8. Input/Output circuit

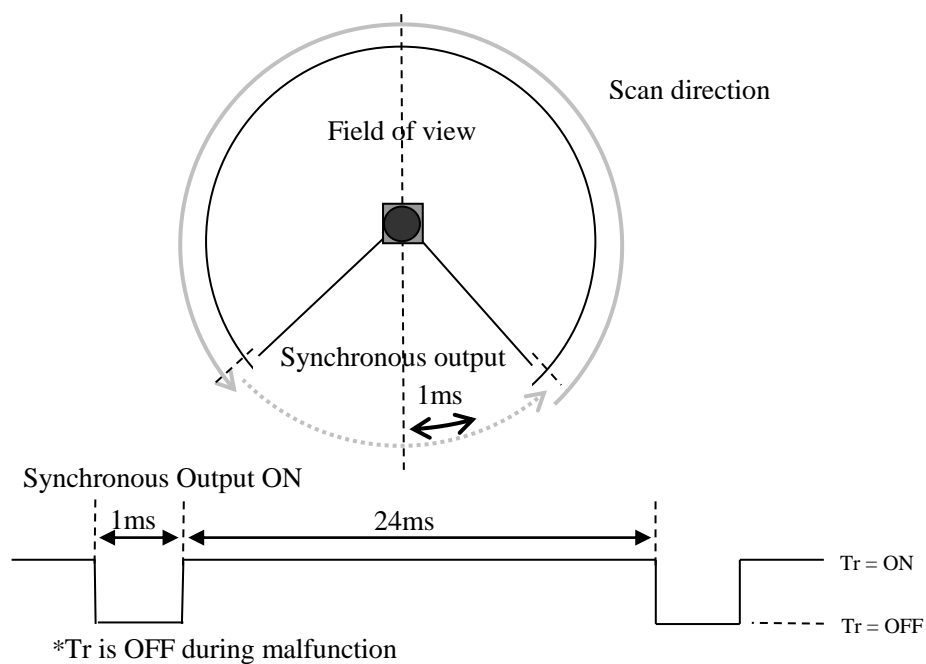


Note: Mounting plate is used as frame ground (FG). Mount the sensor on a stable structure..

9. Control signal

9-1. Synchronous output

1 pulse is approximately 1ms. Output signal synchronization timing chart is shown as below.



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10. Ethernet Setting

1. The setting value is as below.

IP Initial value :192.168.0.10

Port number :10940

2. About changing IP address

It is possible to change and reset the IP address using a specialized application (IP Discovery).

For details on installation and operation of IP Discovery, Please refer to IP discovery manual. (C-41-02603)

11. Cautions for operation

This sensor uses high speed processing components that generate heat during operation.

The heat is concentrated at the bottom of the unit. When mounting, please attach the bottom of the unit to a good heat sink. A 200mm x 200mm x 2mm aluminum plate is recommended as a heat sink.

If multiple sensors are installed side by side, a sensor might mistake the laser pulses of other units as its own and the detection error occurs. When it happens, usually the error lasts for one or two steps of measurement. Please use software filters to handle this type of error.

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