# Hokuyo UST-10LX

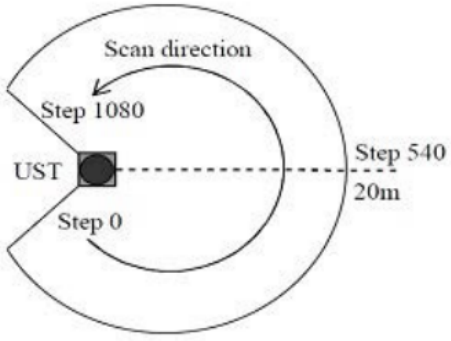

The Hokuyo UST-10LX scanning laser rangefinder is a small, accurate, high-speed device for obstacle detection and localization of autonomous robots and automated material handling systems. This model uses Ethernet interface for communication and can obtain measurement data in a wide field of view up to a distance of 10 meters with millimeter resolution. Due to its low power consumption, this scanner is able to be used on battery-operated platforms.

## Features

- The smallest and the lightest of its kind, 130g
- Mid-detection range 10m
- Wide detection angle 270
- Fast response 25msec
- High angular resolution 0.25°
- It is possible to detect size, position and the moving direction of objects.

## Laser scanning image

Measurement steps 1081
Detection angle 270°
Angular resolution 0.25°

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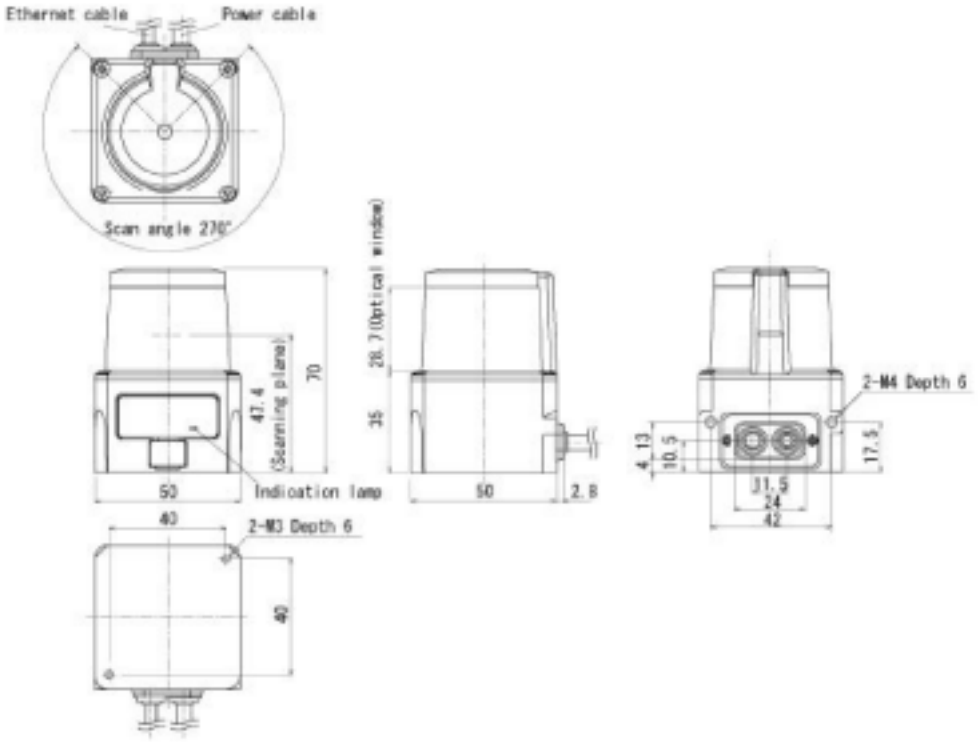
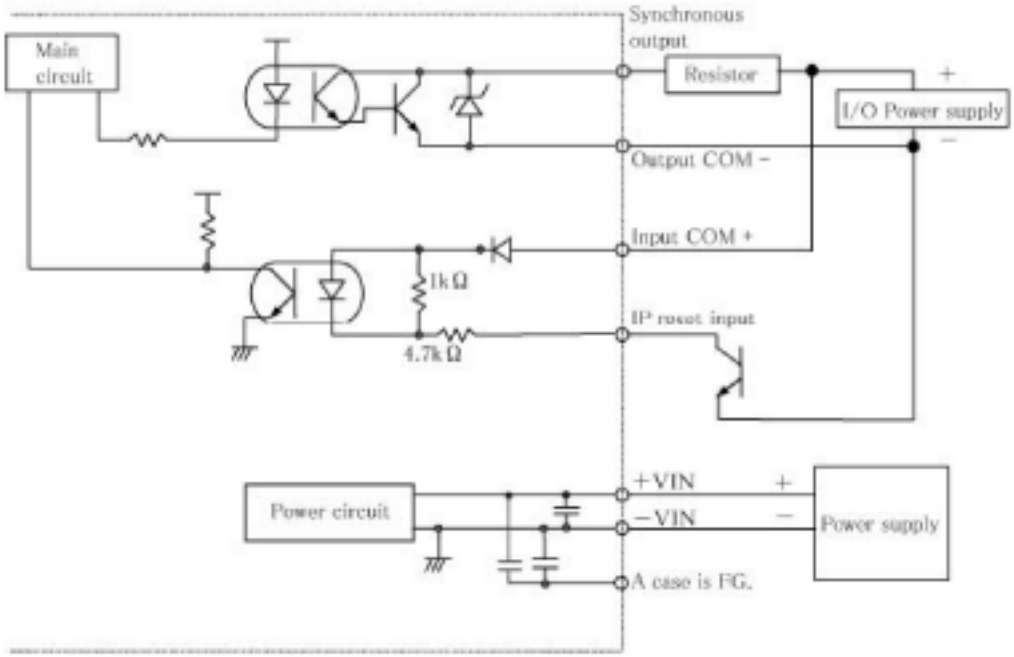
## External dimensions




## Output circuit

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## Connection

Power source I/O cable
Cable length: 1,000 mm flying lead cable (AWG28)

| Color | Signal |
|---|---|
| Red | COM input+ |
| Gray | COM output- |
| Light blue | IP reset input |
| Orange | Synchronous output |
| Brown | +VIN (12 VDC / 24 VDC) |
| Blue | -VIN |

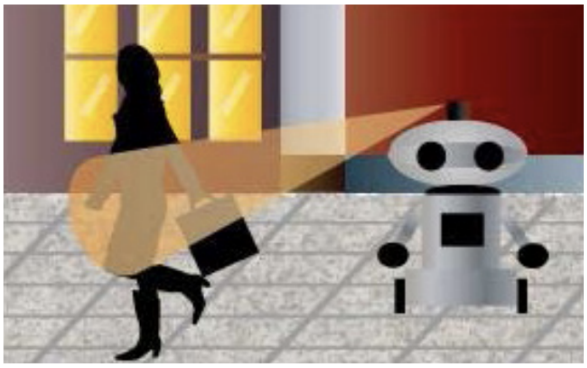
## Ethernet cable

Cable length: 300 mm

| Color | Signal |
|---|---|
| Blue | TX+ |
| White | TX- |
| Orange | RX+ |
| Yellow | RX- |

# Applications

**Autonomous robots**



Evironmental recognition

**Unmanned aerial vehicle**

Small and light enough to mount on UAVs for environmental recognition

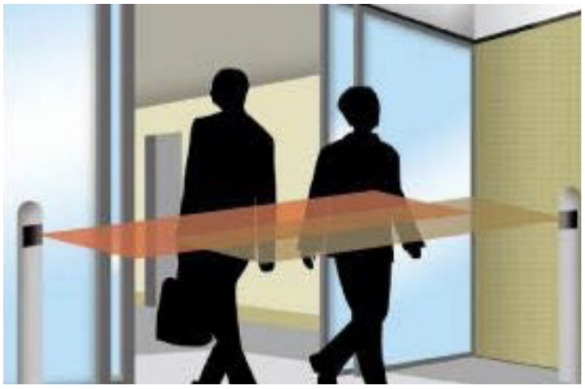
**Air touch panel**


Projecting image linked with hands' motion

**Interactive exhibit**

Interactive attraction

**People counting**



Counting the number of visitors at public facilities for marketing purposes

**Analysis of human movement patterns**

Adjusting air-conditioning and lighting depending on the density of people forenergy saving

# Specifications

| Product name | Scanning Laser Range Finder | |
|---|---|---|
| Model | UST-10LX | UTS-20LX |
| Supply voltage | DC 12V / DC 24V (operation range 10 to 30 V ripple within 10%) | |
| Supply current | 150 mA or less (during start up 450 mA is necessary) | |
| Light source | Laser semiconductor (905 nm), laser class 1 (IEC60825-1:2007) | |
| Detection range | 0.06 m to 10 m (white Kent sheet)<br>0.06 m to 4 m (diffuse reflectance 10%)<br>Max. detection distance: 30 m | 0.06 m to 20 m (white Kent sheet)<br>0.06 m to 8 m (diffuse reflectance 10%)<br>Max. detection distance: 60 m |
| Accuracy | ± 40 mm *1 | |
| Repeated accuracy | σ < 30 mm *1 | |
| Scan angle | 270° | |
| Scan speed | 25 ms (motor speed 2,400 rpm) | |
| Angular resolution | 0.25° | |
| Start up time | Within 10 sec (start up time differs if malfunction is detected during start up) | |
| Input | IP reset input, photo-coupler input (current 4 mA at ON) | |
| Output | Synchronous output, photo coupler open collector output 30 VDC 50 mA MAX | |
| Interface | Ethernet 100BASE-TX | |
| LED display | Power supply LED display (blue): Blinks during start up and malfunction state | |
| Surrounding intensity | Less than 15,000 lx<br>Note: Avoid direct sunlight or other illumination sources as it may cause sensor malfunction | |
| Ambient temperature and humidity | -10° 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 55 Hz double amplitude of 1.5 mm for 2 hrs in each X, Y and Z direction<br>55 to 200 Hz 98 m/s² sweep of 4 min for 1 hr in each X, Y and Z direction | |
| Vibration resistance (operating) | 55 to 150 Hz 19.6 m/s² sweep of 2 min for 30 min in each X, Y and Z direction | |
| Shock resistance | 196 m/s² (20G) X, Y and Z direction 10 times | |
| EMC standards | (EMI)<br>EN61326-1 : 2013<br>EN55011 : 2009 + A1 : 2010<br>(EMS)<br>EN61326-1:2013<br>EN61000-4-2:2009<br>EN61000-4-3:2006 + A1 : 2008 + A2 : 2010<br>EN61000-4-4:2012<br>EN61000-4-6:2009<br>EN61000-4-8:2010 | |
| Protective structure | IP65 | |
| Weight | 130 g (excluding cable) | |
| Material | Front case: polycarbonate; Rear case: aluminum | |
| Dimensions (W × D × H) | 50 × 50 × 70 mm (sensor only) | |

***1. Under the factory standard testing conditions using white Kent sheet**