Date: 2014.6.12

# Scanning Laser Range Finder Smart-URG mini UST-10LX (UUST003) Specification

# C € RoHS

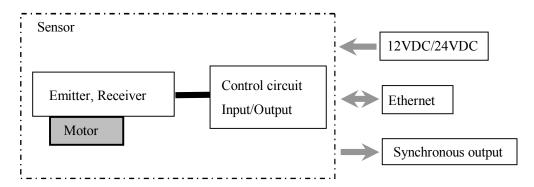
Symbol	Amended Reason			Pages	Date	Amended by	Ref.No
Approved by	Checked by	Drawn by	Designed by	Title	UST-10LX (UUST003) Specification		
Kamitani	Utsugi	Kamon	Yamamoto	Drawing No.			1/6

#### 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.

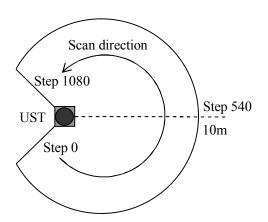
#### 2. Structure

#### 2-1.Strucure 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.

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# 4. Specifications

. Specifications			
Product name	Scanning Laser Range Finder		
Model	UST-10LX		
Supply voltage	12VDC/24VDC (Operation range 10 to 30V ripple within 10%)		
Supply current	150mA or less (during start up 450mA is necessary.)		
Light source	Laser semiconductor (905nm) Laser class 1 (IEC60825-1:2007)		
	0.06m to 10m (white Kent sheet)		
Detection range	0.06m to 4m (diffuse reflectance 10%)		
	Max. detection distance : 30m		
Accuracy	±40mm (*1)		
Repeated accuracy	σ< 30mm (*1)		
Scan angle	270°		
Scan speed	25ms (Motor speed 2400rpm)		
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 4mA at ON)		
Output	Synchronous Output, photo coupler open collector output 30VDC 50mA MAX.		
Interface	Ethernet 100BASE-TX		
LED display	Power supply LED display (Blue): Blinks during start up and malfunction state.		
	Less than 15,000lx		
Surrounding intensity	Note: Avoid direct sunlight or other illumination sources as it may cause sensor		
	malfunction		
Ambient temperature	-10°C to +50°C, below 85%RH (without dew, frost)		
and humidity	-10 C to +30 C, below 85/6KH (without dew, Host)		
Storage temperature	-30°C to +70°C, below 85%RH (without dew, frost)		
and humidity	· · · · · · · · · · · · · · · · · · ·		
Vibration resistance	10 to 55Hz double amplitude of 1.5mm for 2hrs in each X, Y, and Z direction		
	55 to 200Hz 98m/s <sup>2</sup> sweep of 2min for 1hr in each X,Y and Z direction		
Vibration resistance (Operating)	55 to 150Hz $19.6$ m/s <sup>2</sup> sweep of 2min for 30min in each X,Y and Z direction		
Shock resistance	196m/s <sup>2</sup> (20G) X,Y and Z direction 10 times.		
	(EMI)		
	EN61326-1:2013		
	EN55011:2009 + A1:2010		
	(EMS)		
	EN61326-1:2013		
EMC standards	EN61000-4-2:2009		
	EN61000-4-2:2009 EN61000-4-3:2006 + A1:2008 + A2:2010		
	EN61000-4-3.2000   A1.2008   A2.2010   EN61000-4-4:2012		
	EN61000-4-6:2009		
B i i G	EN61000-4-8:2010		
Protective Structure	IP65		
Weight	130g (Excluding cable)		
Material	Front case: Polycarbonate, Rear case: Aluminum		
Dimensions	50×50×70mm (sensor only)		
$(W\times D\times H)$			

<sup>(\*1)</sup> Under the factory standard testing conditions using white Kent sheet.

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#### 5. Measurement Data

Distance Value (x)	Meaning
x < 21	Output numerical number "4" as Measurement error
$21 \leq x \leq 30000$	Valid distance [mm]
x > 30000	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

Cable length: 1000mm Flying lead cable (AWG28)

Color	Signal
Red	COM Input +
Gray	COM Output -
Light Blue	IP Reset Input
Orange	Synchronous Output
Brown	+VIN (12VDC/24VDC)
Blue	-VIN

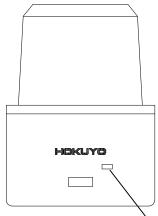
Note: Direction of Inputs and Outputs are mentioned from the sensor's side.

# 6-2. Ethernet cable

Cable length: 300mm

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

# 7. LED display

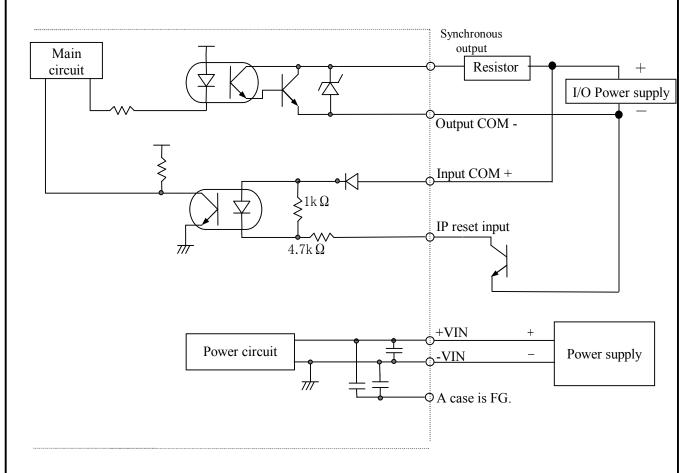


Power supply display

(Blinks during start up and malfunction state)

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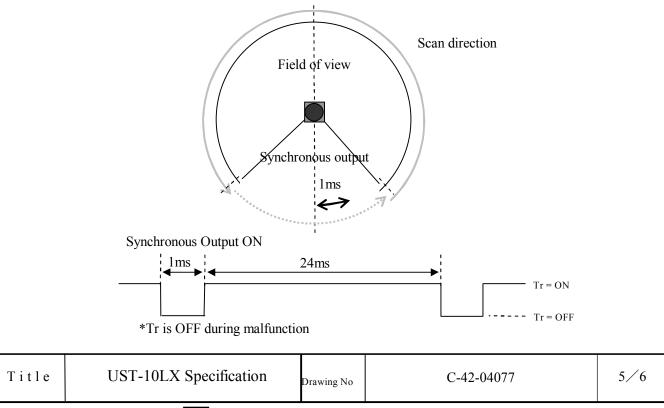
# 8. Output circuit



# 9. Control signal

# 9-1. Synchronous output

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



#### 10. Ethernet Setting

1. The setting value is as below.

IP Initial value :192.168.0.10

Port number :10940

#### 2. About Initialization of IP address

To reset IP address to the factory default value, connect IP RESET LINE to COM- for more than 2 sec. After IP RESET LINE disconnected from COM- or opened, the sensor LED blinks and the sensor start to reboot.

### 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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