Oct.28th,'14

LASER RANGE FINDER
UXM-30LN-PW

SPECIFICATIONS

Corresponding to SI unit

Symbol	Amended reason	Pages	Date	Corrector	Amended No.
△4 × 1	Correction of disclaimers	2	Oct 28 '14	S.Yamamoto	RS-00492
△3 × 6	Specification changes due to function improvement; Additional information; Erasing quality reference data; Correcting wrong descriptions.	2, 3,5	Jun 01' 12	Setoguchi	RS-0076
△2 × 8	Postscripts and correction of errors	2, 3	Nov 25' 11	Tamaki	RS-0004
△1 × 1	Postscripts and correction of errors	5	Mar 18' 11	Utsugi	PR-6080

Approved by	Checked by	Drawn by	Designed by	Title	Laser Range Finder UXM-30LN-PW Specifications	
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HOKUYO AUTOMATIC CO.,LTD.

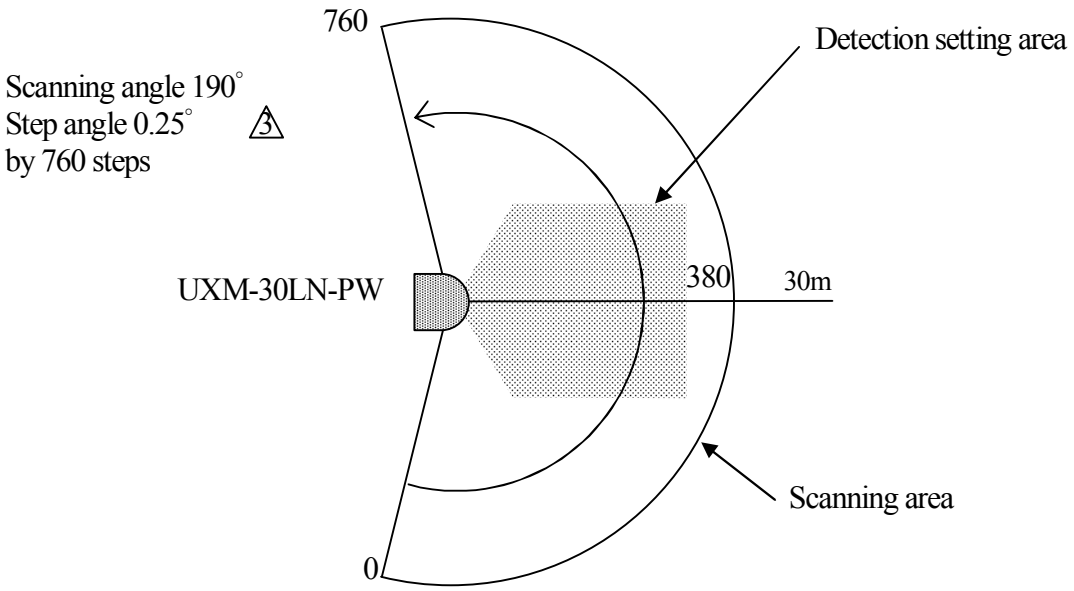
1. General

Operating principle

*This device uses laser source (λ = 905nm) to scan semicircular field. It measures distance to objects in the range and co-ordinates of those point calculated using the step angle and it detects an object in the setting area. △2

*Laser is Class 1.

2. Structure (Light scanning image)



3. Disclaimer △4

* This sensor is not certified for the functional safety.
* This sensor cannot be used for human body detection as per the machinery directives.
* 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.
* Sensor's operation may become unstable due to rain, snow and fog or due to dust pollution on the optical window.
* Rules and regulations related to safety should be strictly followed when operating the sensor.
* When there is a risk that this sensor is used for mass-destruction weapons, weapons and equipment aimed at killing human beings, and relevant technologies, etc., or when its usage for those purposes has become clear, sales may be prohibited in accordance with the Foreign Exchange and Foreign Trade Act, and the Export Trade Control Order (Japanese law). Moreover, regarding export of products, the formalities according to laws/Export Trade Control Order are implemented in order to maintain international peace and safety. △2
* Before using the sensor, please read this specification thoroughly.

4. Specifications

Kind	Laser Range Finder
Model No.	UXM-30LN-PW
Light source	Semiconductor laser (λ=905nm), Laser safety class 1 (FDA)
Supply voltage	10 to 30VDC
Supply current	Regular current: 600mA or less (at 10VDC and 12VDC) △3 250mA or less (at 24VDC) Start-up current: 2A or less (at 10VDC), 1.5A or less (at 12VDC), 0.75A or less (at 24VDC)
Power consumption	6W or less (at Regular)
Detection Range and object	Guaranteed range : 0.1～30m*2 (500mm×500mm of Black objects with 10% reflectance) Max. detection range : 100m (limit value) △2 Min. objects :65mm (at 5m),130mm (at 10m),400mm (at 30m) △2 △3
Distance Accuracy	3,000lux or less :±50mm*1 : (black objects with 10% reflectance up to 10m and white paper up to 30m) △2 100,000lux or less*2 :±100mm*1 : (black objects with 10% reflectance up to 10m and white paper up to 30m) △2
Measuring Resolution/repeatability	1mm 3,000lux or less : σ <50mm (black objects with 10% reflectance up to 10m and white paper up to 30m) △2 100,000lux or less : σ<100mm (black objects with 10% reflectance up to 10m and white paper up to 30m) △2
Scanning angle	190°
Angular resolution	Approx.0.25° (360° /1,440 steps)
Detection area setting	It is available settings in 0.1 to 30m range by points or input the coordinate value
Scanning speed	50msec (Motor rotating number 1200rpm)
Interface	USB Ver. 2.0 FS <full speed> mode (12Mbps) for Area setting
Output	4 output signal : Error output, Output 1, 2 and 3
Input	4 input signal : Area changeover input 1, 2, 3 and 4 (Max. 16 patterns)
Response time	100ms or less (However it varies depending on the setting condition)
Start up time	in 30 seconds from power on (However it might beyond 30 seconds depending on the condition)
Indication lamp	Power (Green), Operation/Error (Orange) : Operating (ON), Error (blink)
Connection	Power and input/output : wire cable USB: connector (Binder brand : model number 09-0431-87-04)
Ambient temperature/ humidity	-10 to +50℃, 85%RH or less (Not condensing and icing)
Environmental effect	Measured distance will be shorter than the actual distance under rain, snow and sunlight*2.
Vibration resistance	10～55Hz, double amplitude 1.5mm Each 2 hour in X, Y and Z directions 55～200Hz, 19.6 m/s^2 sweep of 2min Each 1 hour in X, Y and Z directions △3
Impact resistance	196m/s^2 Each 10 time in X, Y and Z directions
Protective structure	IP67
Insulation resistance	10MΩ
Weight	800g
Material	Front case : Polycarbonate, rear case : Aluminum
Dimensions(W×D×H)	124mm×126mm×150mm (excluding connector) △3

*1 Accuracy can not be guaranteed under direct sunlight.
*2 Make sure of the sensor functions under operating environment.

5. Connection

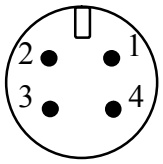
5-1. Power cable specification

16 cores cable with 2m

Colors	Functions	Colors	Functions
Brown	Power + (10 to 30V)	White	Output 2
Blue	Power 0V	White/Blue	Output 3
Green	Area input 1	Red	+COM for Input/Output
Yellow	Area input 2	Gray	-COM for output
Purple	Area input 3	Yellow/Red	NC
White/Yellow	Area input 4	Yellow/Green	NC
Orange	Error output	Yellow/Black	NC
Black	Output 1	White/Purple	NC

Note) Unused input line should be opened or connected to +COM (Red).
Unused output line should be opened or connected to -COM (Gray).

5-2. Connector ⚠1



Manufacturer : Binder
Model No. 09-0431-87-04

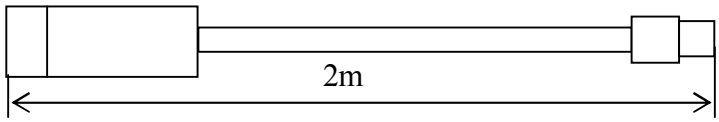
The connector for USB (Binder model number 99-0430-10-04)

Pin No.	Function	Wire color
1	VBUS	Red
2	-D	White
3	+D	Green
4	SG	Black

5.3. USB cable

Note 1)
SG for communication and GND are connected inside (Isolated with Input -VIN).
Therefore, please isolate the device from any connections which generate the electric noise when you work the device kept the USB cable connecting.

Binder No. 99-0430-10-04 USB connector (Type A)



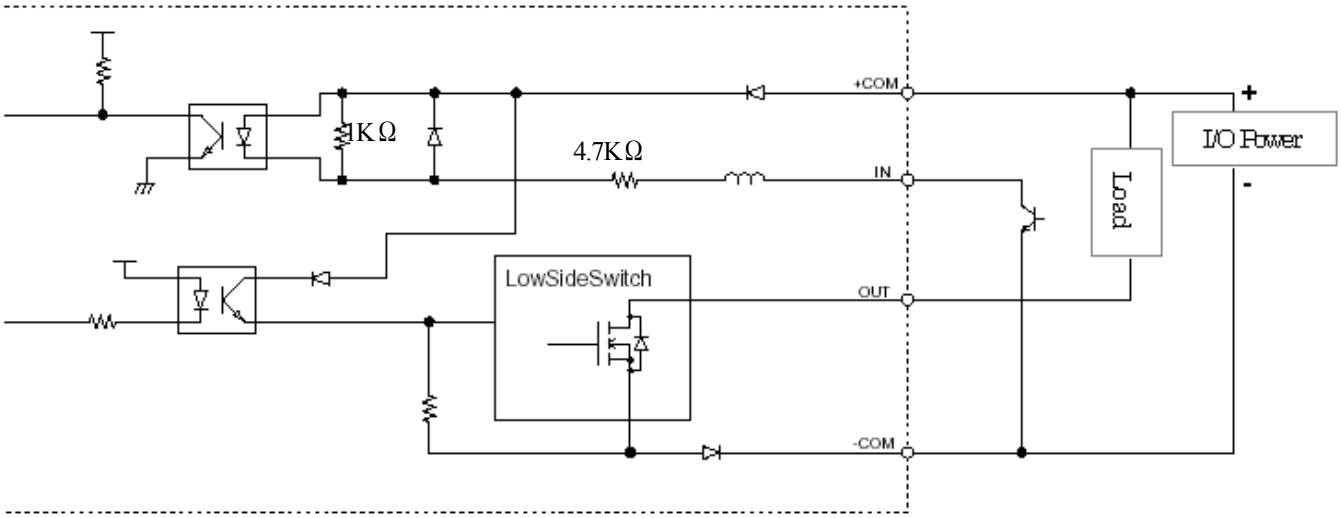
5.4. Input/Output circuit

Input : Photo-coupler input (Anode common, ON current 2mA for each input)
Output : Nch Open drain output

Items	Specifications
Max. output current	100mA
Max. applied voltage	30V
Output residual voltage	1V or less
+COM Power supply range	10 to 30 V

△3

Example



6. Control signal

6.1. Error Detection output

(a) Laser error : When laser is not emitting and laser strength exceeds class 1
(b) Motor error : When the motor speed is differ from the default speed of 1200 rpm

When the error, output signal will be OFF, laser will stop transmitting and motor will stop rotating.
Error details can be obtain using the application software or through the communication

6.2. Input and selection of setting detecting areas

It can set three areas (for Output 1, 2 and 3) per area pattern.
Set area No. by [Input 1], [Input 2], [Input 3] and [Input 4]
(OFF : H level input, ON : L level input)
Input response time : 100msec (2-scan time)

[Input 1]	[Input 2]	[Input 3]	[Input 4]	Area patterns
OFF	OFF	OFF	OFF	Area 1
ON	OFF	OFF	OFF	Area 2
OFF	ON	OFF	OFF	Area 3
ON	ON	OFF	OFF	Area 4
OFF	OFF	ON	OFF	Area 5
ON	OFF	ON	OFF	Area 6
OFF	ON	ON	OFF	Area 7
ON	ON	ON	OFF	Area 8
OFF	OFF	OFF	ON	Area 9
ON	OFF	OFF	ON	Area 10
OFF	ON	OFF	ON	Area 11
ON	ON	OFF	ON	Area 12
OFF	OFF	ON	ON	Area 13
ON	OFF	ON	ON	Area 14
OFF	ON	ON	ON	Area 15
ON	ON	ON	ON	Area 16

6.3 Example for the output

Obstacle position	Output 1	Output 2	Output 3
A	OFF	ON	ON
B	ON	OFF	OFF
C	OFF	OFF	OFF