

Instruction manual for YLM Web UI

The Web UI (User Interface) is provided for YLM-X001 (hereinafter referred to as YLM) setting. This UI is a tool for starting/stopping scan, setting/changing FOVs and other parameters.

The screenshot displays the HOKUYO YLM Web UI interface. At the top, there is a navigation bar with the HOKUYO logo, a 'Downloads' dropdown, and links for 'Software Update' and 'Restart Sensor Head'. The main content area is divided into three sections: 'System Status and Control', 'Diagnostic Log', and 'Preset Scan Parameters'. The 'System Status and Control' section shows the system is 'Energized' with buttons for 'Start Scan', 'Stop Scan', and 'Shutdown System'. The 'Diagnostic Log' section is currently empty. The 'Preset Scan Parameters' section offers various scan configurations like '90 degrees, 10 Hz' and 'Long range, 20 degrees, 2x2'. To the right of these parameters is a large green arrow pointing towards a small image of the YLM sensor head. Below the preset parameters is the 'Custom Parameters' section, which includes settings for 'Number FOVs' (set to 1), 'Integration Time Index', 'Pixel Binning Level', 'User Tag', 'Frame Averaging', 'SNR Threshold Filter', 'Power Index', 'FPS Multiple', 'NN Filter Level', and 'Max Unambiguous Range Index'. A range slider at the bottom of the custom parameters is set from -45° to 45°. An 'Apply Settings' button is located at the bottom of the custom parameters section. At the very bottom of the page, release and firmware information are provided.

HOKUYO Downloads Software Update Restart Sensor Head

System Status and Control

Energized

Start Scan Stop Scan

Shutdown System

Diagnostic Log

Preset Scan Parameters

90 degrees, 10 Hz 60 degrees, 15 Hz 20 degrees, 43.5 Hz

10 degrees, 83 Hz Long range, 20 degrees, 2x2 Long range, 20 degrees, 4x4

Long range, 20 degrees, plus ground High FPS center, 4x4 edges Long range center, 4x4 edges

Custom Parameters

Number FOVs 1 2 3

FOV 1 FOV 2 FOV 3

Integration Time Index	Frame Averaging	FPS Multiple
1	1	1
Pixel Binning Level	SNR Threshold Filter	NN Filter Level
2	1.25	0
User Tag	Power Index	Max Unambiguous Range Index
10	2	0

-45° 45°

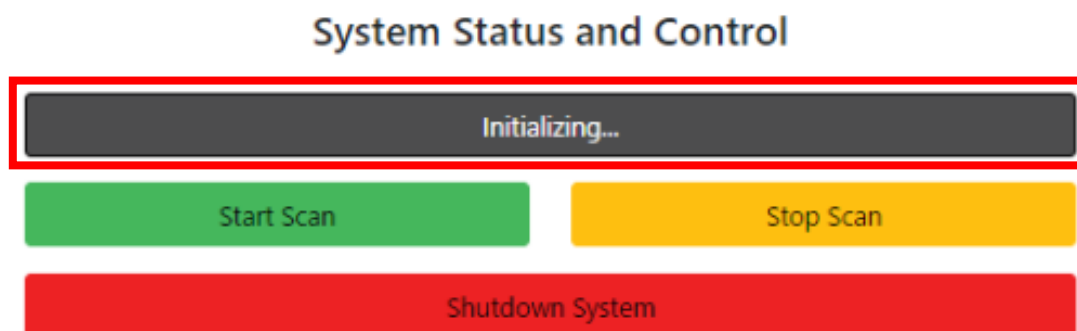
Apply Settings

Release: 5.0.0_RC5--M5; Firmware: AUTOINC+4bdce52fcf; Manifest: 2b1f28c1d76fc61293428f1ca23d6e88d2c561f0; OS: 6079dacd2f36e887d3435117a20e18ea0ce9b01d
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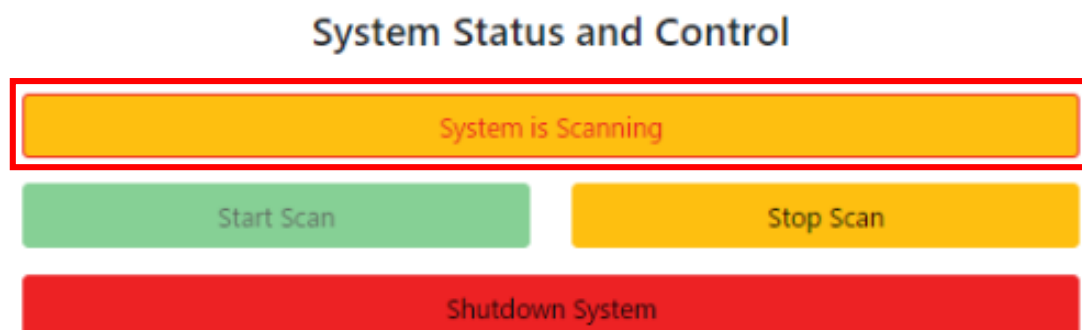
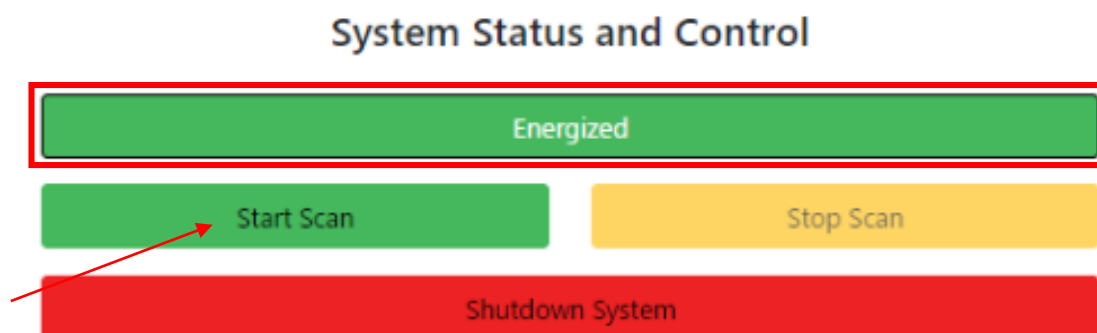
Whole image of Web UI

How to open Web UI

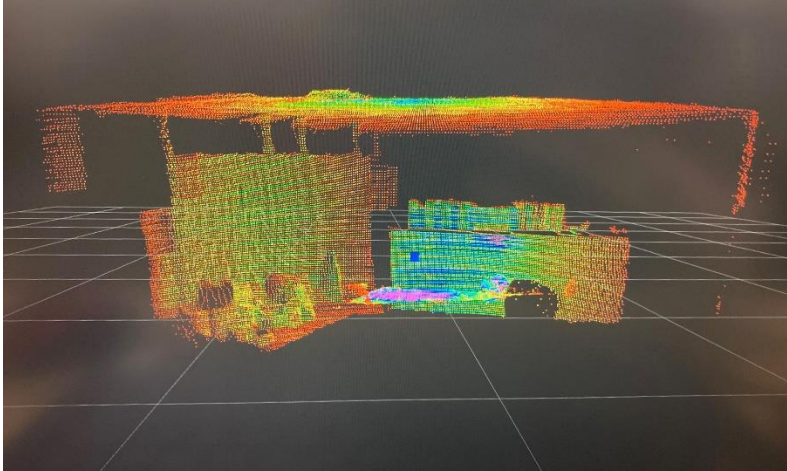
- ① Connect the power connector and the Ethernet connector to PC and YLM, and turn on the DC power.
- ② Open the browser and type “192.16.0.10”. Then Web UI will open.
- ③ After Web UI opens, “Initializing...” in System Status and Control flashes in gray as below.



- ④ After “Energized” turns green, push “Start Scan”. Then “System is scanning” blinks yellow and red, which shows scanning started.



The point cloud data example with Rviz



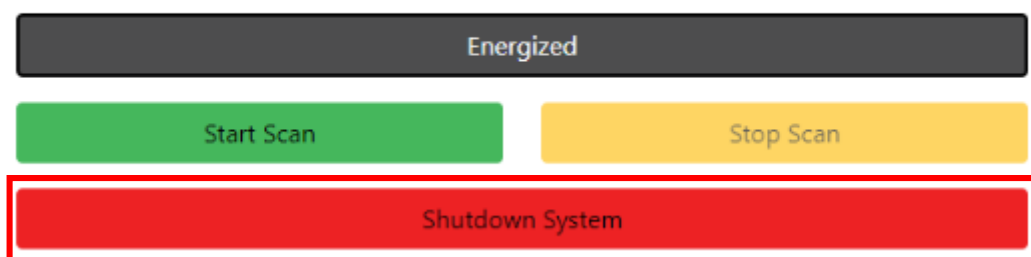
How to stop

①Click “Stop Scan” in System Status and Control and then make sure that the status will change from “System is scanning” to “Ready”.

②Push “Shutdown System”.

*Please be sure to push “Shutdown System” in order to shut down the system properly. Otherwise, the malfunction of the file system and the NCB memory degradation may occur.

System Status and Control



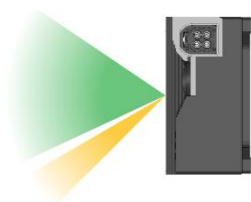
③Switch off the DC power and close Web UI.

How to set vertical FOV

Example) Set 2 FOVs. FOV1 is set wider to detect the travelling direction and FOV2 is set narrower to detect road surface conditions such as holes and steps.

*Note

Horizontal FOV: 120 degrees fixed. Vertical FOV: 90 degrees dynamically changeable.



The following describes how to set multiple FOVs.

①Click “2” of Number FOVs in Custom Parameters.

This number (1, 2, or 3) is the parameter to select how many FOVs to set.

Custom Parameters

Number FOVs	1	2	3
Integration Time Index	FOV 1	FOV 2	FOV 3
Frame Averaging			
FPS Multiple			

②To begin, click “FOV1” to set 1st FOV. In case of setting FOV1 to -20~+35 degrees, move the bottom bar to the corresponding values.

Custom Parameters

Number FOVs	1	2	3
	FOV 1	FOV 2	FOV 3
Integration Time Index	Frame Averaging	FPS Multiple	
1	1	1	
Pixel Binning Level	SNR Threshold Filter	NN Filter Level	
2	1.25	0	
User Tag	Power Index	Max Unambiguous Range Index	
10	1	2	
-45° 45°			

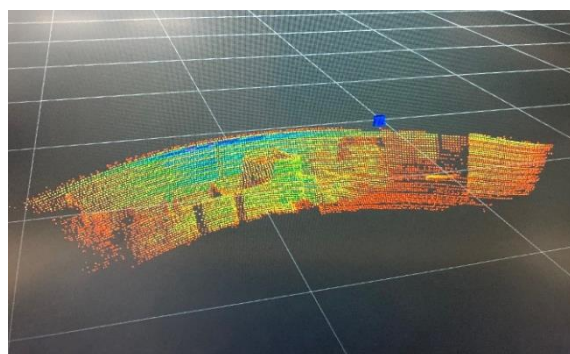
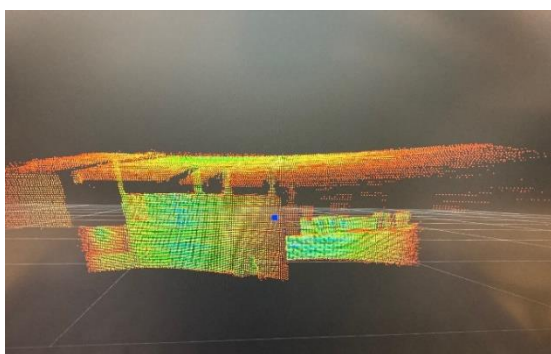
③Click “FOV2” to set 2nd FOV. In case of setting FOV2 to -45~-30 degrees, move the bottom bar to the corresponding values in the same procedure as above.

Custom Parameters

Number FOVs		
1	2	3
FOV 1	FOV 2	FOV 3
Integration Time Index <div>1 ▼</div>	Frame Averaging <div>1</div>	FPS Multiple <div>1</div>
Pixel Binning Level <div>2 ▼</div>	SNR Threshold Filter <div>1.25</div>	NN Filter Level <div>0 ▼</div>
User Tag <div>20</div>	Power Index <div>2 ▼</div>	Max Unambiguous Range Index <div>0 ▼</div>
<div style="border: 2px solid red; padding: 5px; margin-top: 10px;"><div style="display: flex; justify-content: space-between;">-45°-30°</div><div style="height: 10px; background: linear-gradient(to right, yellow, orange, red); width: 100%;"></div></div>		

④Push “Apply Settings”, then the setting will be applied.

The left picture shows FOV1 and the right picture shows FOV2.



Please refer to the following description for details of Custom Parameters.

Parameter	Min	Max	Description
Integration Time Index	0	2	Set the accumulation time of the reflected light on the pixel for each direction of laser irradiation. 0 : 10 μ s 1 : 15 μ s 2 : 20 μ s
Frame Averaging	0	31	Set the number of moving averaging process in time to reduce noise. Frames are still emitted over the network at the nominal frame rate but each is an average of the previous N frames. A value of 0 and 1 both results in no frame averaging.
FPS Multiple	1	63	Set the frame rate ratio for multiple FOVs. Can be set in one degree increments.
Pixel Binning Level	1	4	Set the binning of the light-receiving pixels. The following settings are available. 1 : without binning (VGA) 2 : 2 \times 2 binning (QVGA) 4 : 4 \times 4 binning (QQVGA)
SNR (Signal to Noise ratio) Threshold Filter	0	511.87	Set the SNR threshold value. Pixels with an SNR lower than this value are assumed to be pixels that could not be measured correctly and the distance is set to 0.
NN (Nearest Neighbor) Filter Level	0	5	Set NN filter (nearest neighbor filter). Noise can be excluded by activating the filter, but the resolution will be reduced. The following settings are available. 0 : No filtering. 1 : Requires 3 neighbors in 3 \times 3 pixel window. 2 : Requires 5 neighbors in 5 \times 5 pixel window. 3 : Requires 5 neighbors in 6 \times 6 pixel window. 4 : Requires 7 neighbors in 7 \times 7 pixel window. 5 : Requires 11 neighbors in 9 \times 9 pixel window.
User Tag	0	4095	Identifier attached to the Type D header. When changing a parameter during scanning, this can be used to determine whether the received measurement data is the data after the parameter change. Refer to the communication specifications for data acquisition for Type D header.

Power Index	0	2	Set the output laser power. The maximum output is 100%. 0: 50% 1: 75% 2: 100%
Max Unambiguous Range Index	0	1	Set the measurable maximum distance. If an object farther than this maximum distance is measured, incorrect distance values will be output. 0: 25.2m 1: 32.4m *2

*1 Please refer to the communication specifications for data acquisition for Type D header.

*2 YLM-X001 is not compatible with 32.4m due to prototype.

Preset Scan Parameters

9 preset scan parameters are provided as follows. By pressing one of the following, the specified parameter can be set.

Preset Scan Parameters

90 degrees, 10 Hz	60 degrees, 15 Hz	20 degrees, 43.5 Hz
10 degrees, 83 Hz	Long range, 20 degrees, 2x2	Long range, 20 degrees, 4x4
Long range, 20 degrees, plus ground	High FPS center, 4x4 edges	Long range center, 4x4 edges

Detailed information of Preset Scan Parameters

FOV 90 deg (-45~+45 deg) Frame rate 10Hz	FOV 60 deg (-30~+30 deg) Frame rate 15Hz	FOV 20 deg (-10~+10 deg) Frame rate 43.5Hz
FOV 10 deg (-5~+5 deg) Frame rate 83Hz	Frame Averaging 6 FOV 20 deg Pixel binning level 2	Frame Averaging 6 FOV 20 deg Pixel binning level 4
<div>FOV1</div> Frame Averaging 6 FPS Multiple 6 Center FOV 20 deg (-10~+10 deg) Pixel binning level 2 <div>FOV2</div> (Frame Averaging 1) (FPS Multiple 1) Ground FOV 35 deg (-45~-10 deg) Pixel binning level 4	<div>FOV2</div> FPS Multiple 10 Center FOV 10 deg (-5~+5 deg) Pixel binning level 2 <div>FOV1, FOV3</div> (FPS Multiple 1) Upper/lower FOV each 25 deg (-30~-5, +5~+30 deg) Pixel binning level 4	<div>FOV2</div> Frame Averaging 6 FPS Multiple 6 Center FOV 10 deg (-5~+5 deg) Pixel binning level 2 <div>FOV1, FOV3</div> (Frame Averaging 1) (FPS Multiple 1) Upper/lower FOV each 25 deg (-30~-5, +5~+30 deg) Pixel binning level 4