

[Swing3D]

[User Manual]

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2. About this document

This document is for those new to the Swing3D. This document introduces the basic information required to use the Swing3D – Provides instructions for installing H/W and S/W.

API documentation and example project for programming requirements.

For more information, please visit Novitec Technical Support Cafe.

<https://cafe.naver.com/novitecsupport>

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3. Important Information

3.1. Instrument Safety Instructions

- We are not responsible for any damage caused by user negligence or the connection of other equipment.
- Please handle the swing3D carefully. Be careful of strong shocks, storage in inappropriate environments, etc.
- Do not use accessories that are not recommended because they may pose a risk.

3.2. Operational Considerations

3.2.1. Important Safety Precautions

- Please check the specifications for each product and use a power supply with the appropriate specifications.
- Use the product separately from heat sources such as radiators, heaters, stoves, or other products (amplifiers, etc.).
- Be careful not to allow flammable substances, water, or metal to enter the swing3D.
- Do not use the swing3D with the swing3D modified or the exterior cover removed.
- Don't use the swing3D in places where there is thunder or lightning.
- When using the swing3D outdoors, protect it from moisture (rain/snow, etc.).
- Board Level Precautions
 - Please take care to avoid electrical shocks such as ESD.
 - ◆ To avoid electrical shock, use ground (GND) etc.
 - ◆ Be careful not to contain plastic, vinyl, styrofoam, etc. in the circuit board.
 - ◆ Do not touch parts on the circuit board with hands or conductive devices.

3.2.2. Handling and Cleaning

- Do not attempt to disassemble the swing3D.
- When replacing or removing lenses or filters, be careful not to allow water or dust to enter.
- Use a blower or lens brush to remove dust from the lens or optical filter.
- Do not disassemble the front flange.
- Clean the case with a soft dry cloth.
- Do not use benzene, sour, alcohol, liquid, and spray type cleaners.

3.2.3. Installation

Avoid installing or storing the swing3D in the following locations.

- Environment that is directly exposed to sunlight, rain, or snow.
- Environment with flammable or corrosive gases.
- Excessive temperature or low temperature environment (recommended ambient temperature: 0 to 45 °C)
- Environment with humid or dusty.
- Environment subject to excessive vibration or shock.
- Environment exposed to strong electric or magnetic fields.
- Environment where the swing3D is installed facing the sun or other strong light sources.
- In case of unfavorable environment, be sure to inquire about the installation environment before installation.

3.2.4. Performance and Longevity

Please configure the environment that meets the swing3D operation specifications. If the ambient temperature is high, the service life may be shortened due to deterioration of the parts. In that case, you also need to consider the cooling system.

3.2.5. Connector

- When connecting I/O connectors, be careful with the connection so that the wires fit well.
- Make sure the power is turned off before connecting or disconnecting the I /O connector.
- To avoid damaging the connector, do not pull by holding the electric wire, etc.

4. Swing3D Introduction

Swing3D is a high-speed 3D sensor optimized for high-speed 3D inspection using Laser Triangulation. The Rotating Line Laser module enables 3D data acquisition in a stationary state.

Please refer to Chapter7 Appendix for swing3D specifications.



<Figure> 1. Swing3D

5. Quick Start

5.1. System Requirements

- OS: Microsoft Windows 10(64bit)

5.2. Download SDK

The SDK provided supports C++.

SDK can be downloaded from our website.

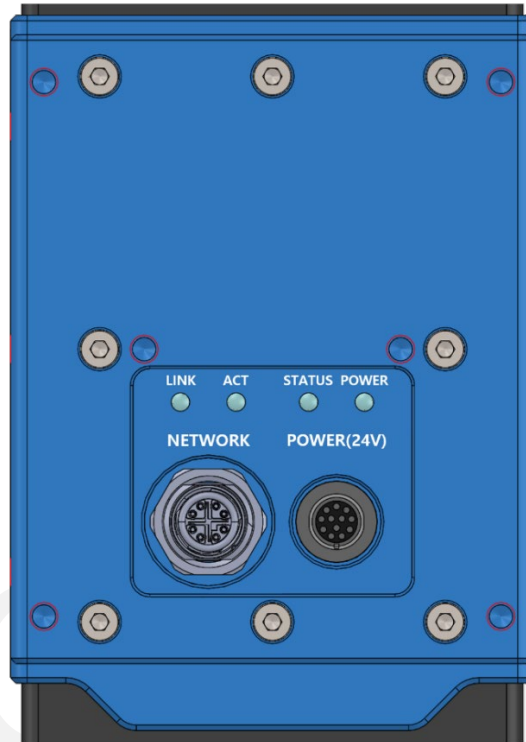
<https://www.novitec.co.kr/its/sub/support03.php?category=SDK>

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6. Swing3D Connection and Environment Configuration

6.1. Swing3D Connection

On the back of the swing3D, there is a power connector and a network connector as shown below.



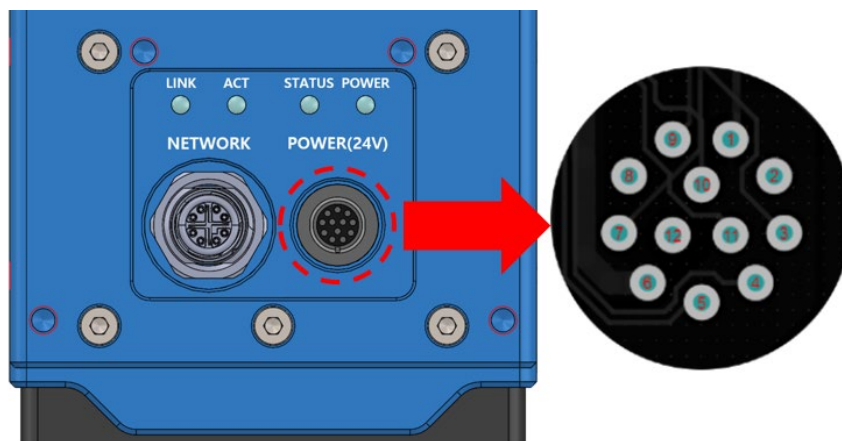
<Figure> 2. Swing3D Rear Port

6.1.1. Power

The swing3D uses 24V power.

Connect the power to the 12pin power cable, Connect the power cable to the swing3D.

Pin map of power cable of swing3D is as follows.



<Figure> 3. Power Pin Map

Pin	signal	Description
1	Power	Power(24V)
2	Power	Power(24V)
3	Power	Power(24V)
4	Power	Power(24V)
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	-	-
10	-	-
11	-	-
12	-	-

<Table> 1. Power Pin Map

6.1.2. Network Cable Connection

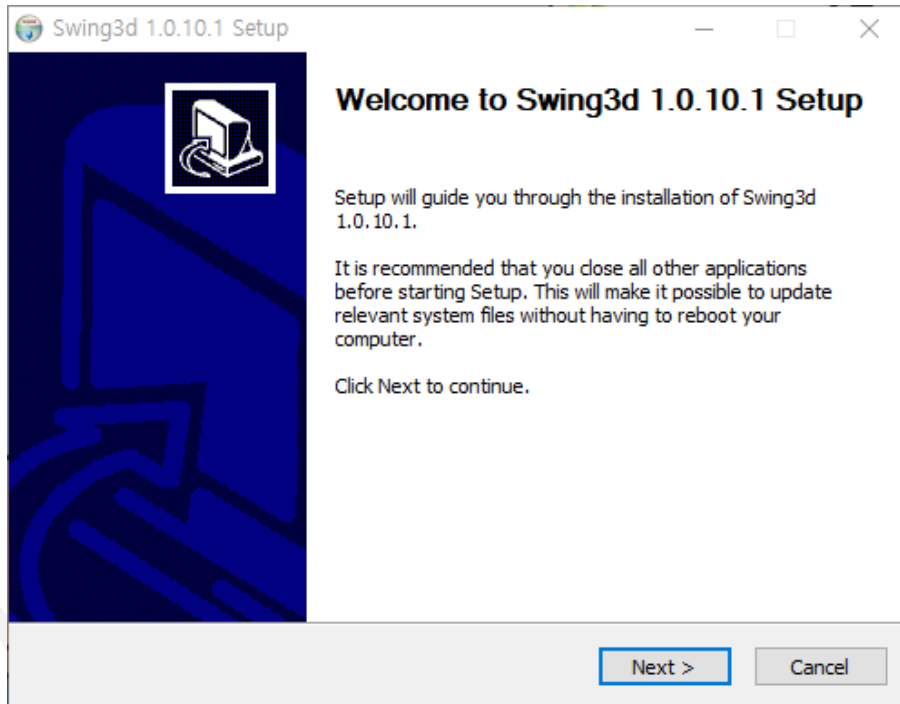
Connect the network cable to the swing3D and PC.

When using DHCP, connect the cable to the router/switch/hub connected to the network where the swing3D and DHCP server are located.

6.2. Install SDK

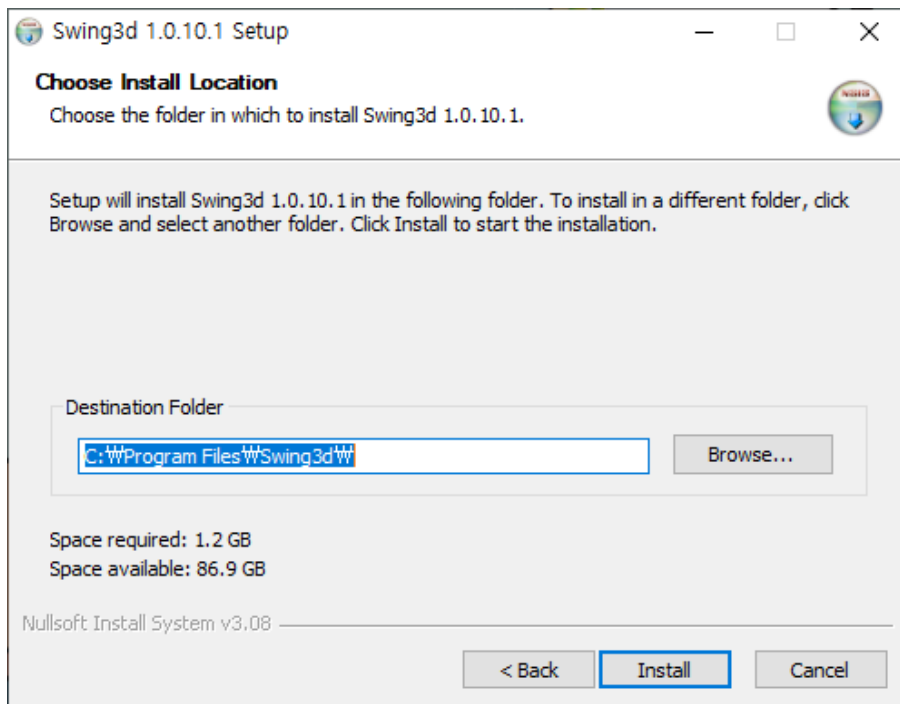
Execute the provided Swing3D Setup Installer to install the SDK.

6.2.1. Execute the Swing3D Setup Installer



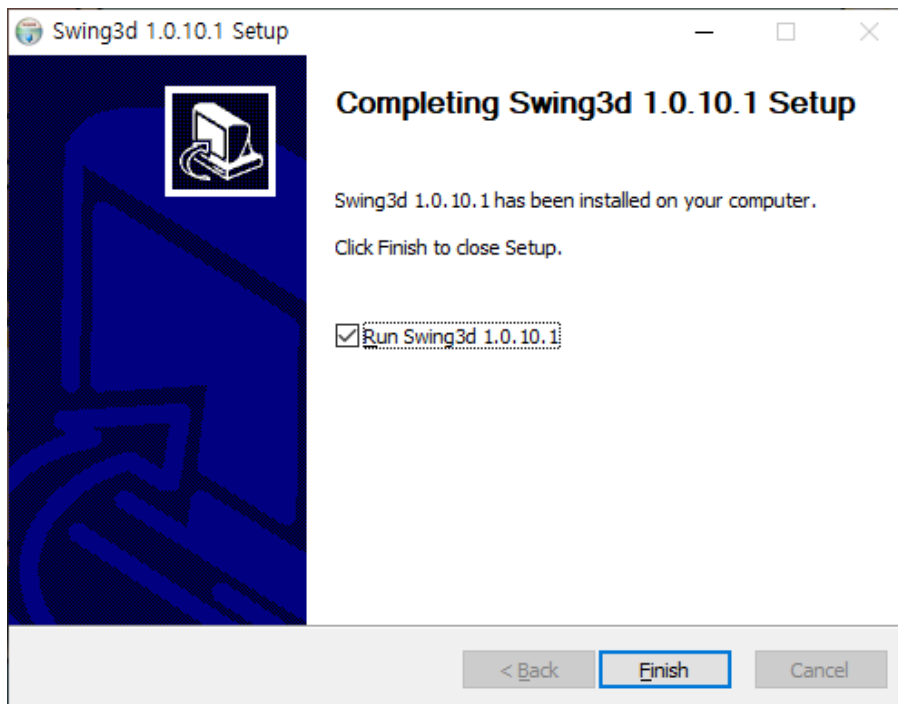
<Figure> 4. Execute Swing3D Setup Installer

6.2.2. Choose the Swing3D SDK install location



<Figure> 5. Choose the Swing3D SDK install location

6.2.3. Complete the Swing3D SDK install



<Figure> 6. Completed the Swing3D SDK install.

6.3. Network Settings

The option to set the swing3D IP Address from the factory defaults to DHCP and Link Local Address. If the DHCP connection fails, the IP Address is set to the link-local address.

6.3.1. Setting Up a Network in a DHCP Environment

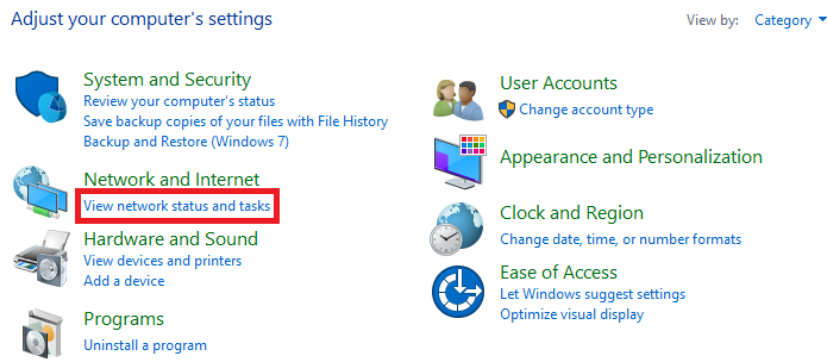
DHCP is set to default when the swing3D ships. No separate settings are required if the swing3D is connected to a network with a DHCP server on first use.

6.3.2. Static IP Settings

If you connect your swing3D directly to your PC, you will need the IP settings of your swing3D and PC network adapter.

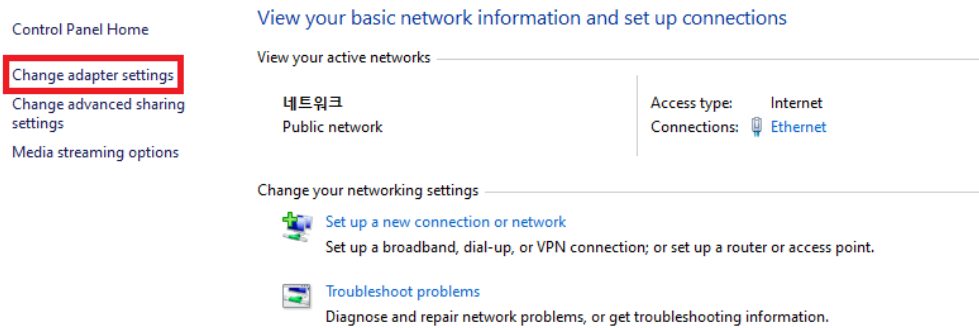
6.3.2.1. PC Network Adapter IP Settings

- ① Open control panel and click "View network status and tasks" below "Network and Internet"



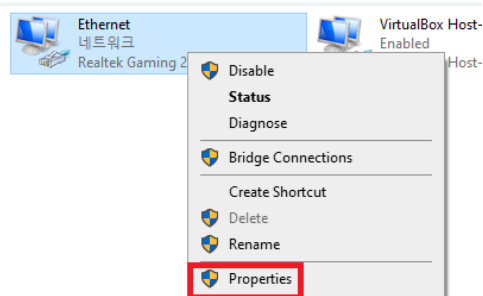
<Figure> 7. Control Panel

- Click "Change adapter settings" on the left side of the screen.



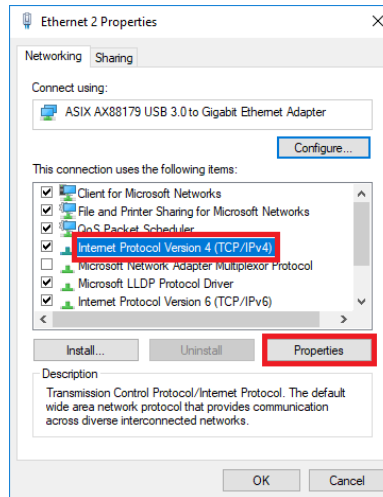
<Figure> 8. Control Panel – View network status and tasks

- Right Click on the network to which the swing3D is connected and select "Properties" from the menu.



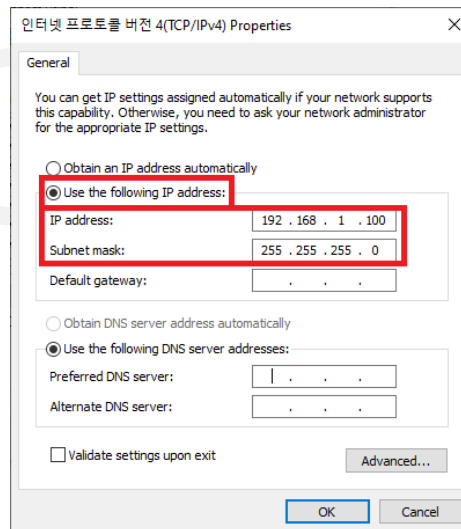
<Figure> 9. Network Right Click Menu

- When the Ethernet properties appears, select "Internet Protocol Version 4(TCP/IPv4)", and click "Properties"



<Figure> 10. Ethernet Properties

- ⑤ In the Internet Protocol Version 4(TCP/Ipv4) properties, click the "Use the following IP address" radio button and set the IP address and subnet mask that you want to use.
 When using static IP, usually use private IP address class C. The C class ranges from 192.168.0.0 to 192.168.255.255.



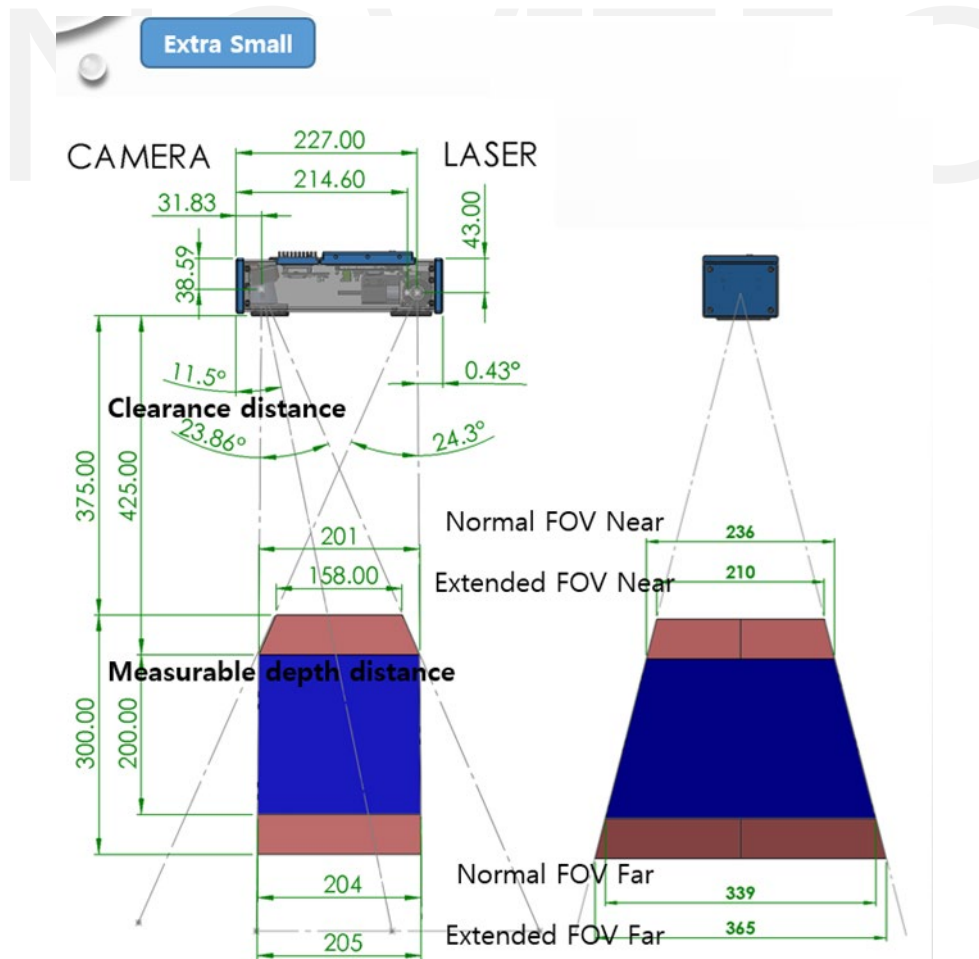
<Figure> 11. IPv4 Settings

7. Appendix

7.1. Swing3D – XS Specifications

Laser Wavelength	450 nm
Laser Output Power	0~200 mW
Normal Mode - Clearance distance	405 mm
Normal Mode - Measurable depth distance	225 mm
Normal Mode - FOV	Near: 201 x 236 mm
	Far: 204 x 339 mm
Extended Mode - Clearance distance	375 mm
Extended Mode - Measurable depth distance	>300 mm
Extended Mode - FOV	Near: 158 x 210 mm
	Far: 205 x 365 mm
3D acquisition time	<1000mSec
Dimension / Weight	94 x 80 x 307 mm / 1.7kg
Baseline	195 mm
Interface	Gigabit Ethernet

<Table> 2. Swing3D - XS Specification

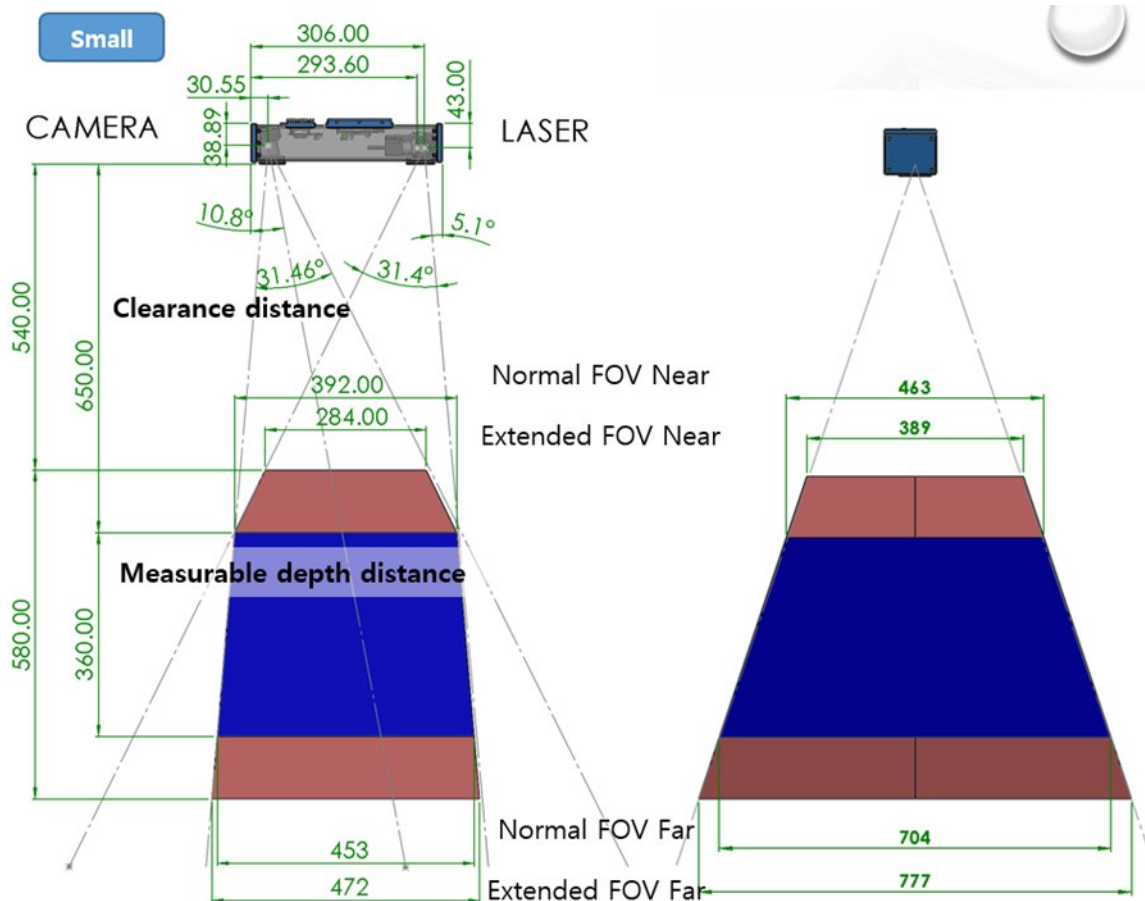


<Figure> 12. Swing3D – XS FOV

7.2. Swing3D – S Specifications

Laser Wavelength	450 nm
Laser Output Power	0~200 mW
Normal Mode - Clearance distance	650 mm
Normal Mode - Measurable depth distance	>360 mm
Normal Mode - FOV	Near: 392 x 463 mm
	Far: 453 x 704 mm
Extended Mode - Clearance distance	540 mm
Extended Mode - Measurable depth distance	>580 mm
Extended Mode - FOV	Near: 284 x 389 mm
	Far: 472 x 777 mm
3D acquisition time	<1000mSec
Dimension / Weight	94 x 80 x 338 mm / 1.7kg
Baseline	275 mm
Interface	Gigabit Ethernet

<Table> 3. Swing3D - S Specification

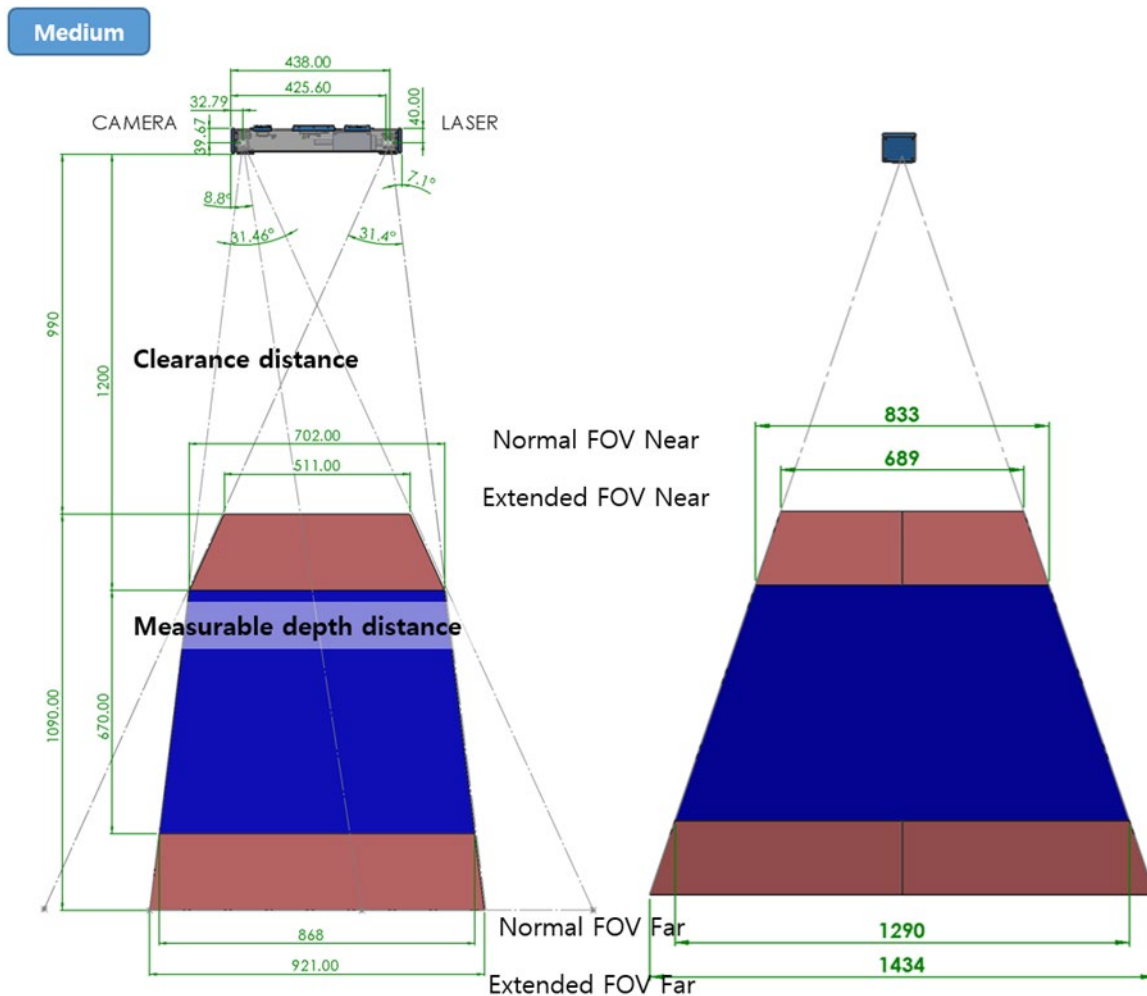


<Figure> 13. Swing3D – S FOV

7.3. Swing3D – M Specifications

Laser Wavelength	450 nm
Laser Output Power	0~1000 mW
Normal Mode - Clearance distance	1200 mm
Normal Mode - Measurable depth distance	>670 mm
Normal Mode - FOV	Near: 702 x 833 mm
	Far: 868 x 1290 mm
Extended Mode - Clearance distance	990 mm
Extended Mode - Measurable depth distance	>1090 mm
Extended Mode - FOV	Near: 511 x 689 mm
	Far: 921 x 1434 mm
3D acquisition time	<1000mSec
Dimension / Weight	94 x 80 x 470 mm / 2.4kg
Baseline	405 mm
Interface	Gigabit Ethernet

<Table> 4. Swing3D - M Specification

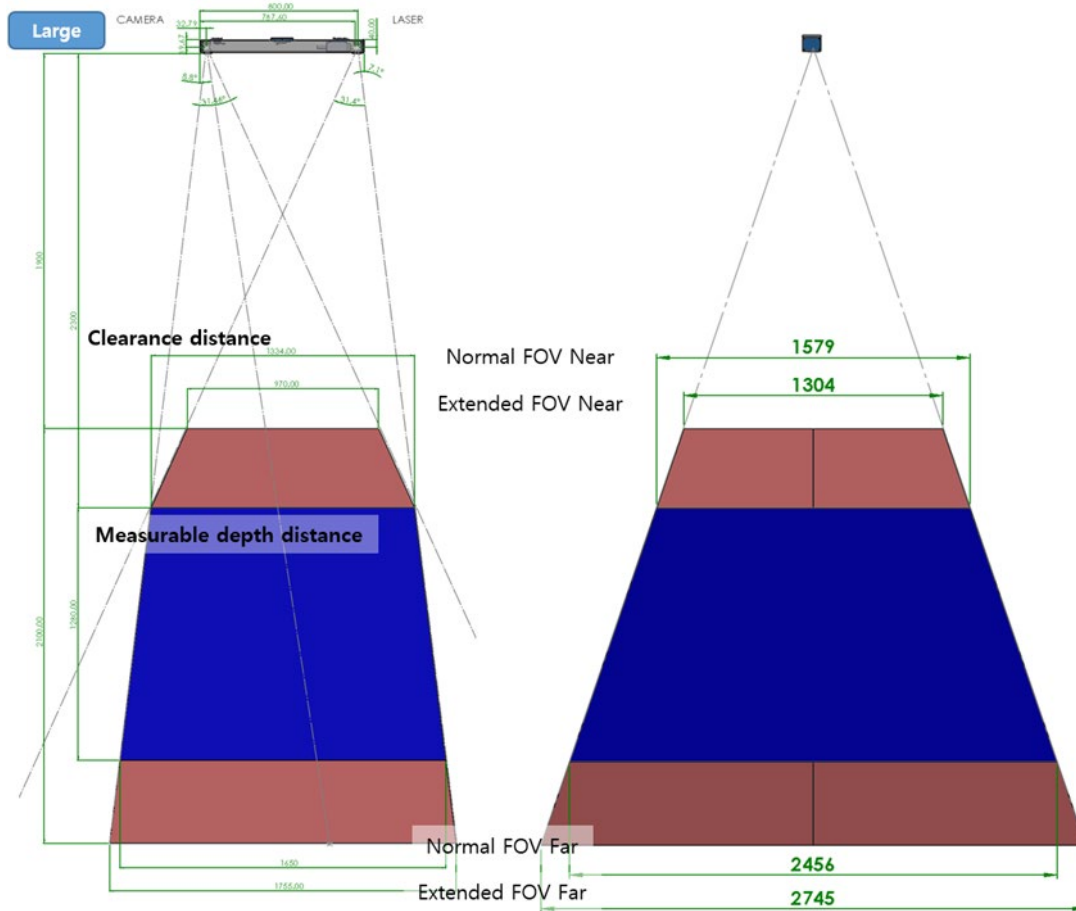


<Figure> 14. Swing3D – M FOV

7.4. Swing3D – L Specifications

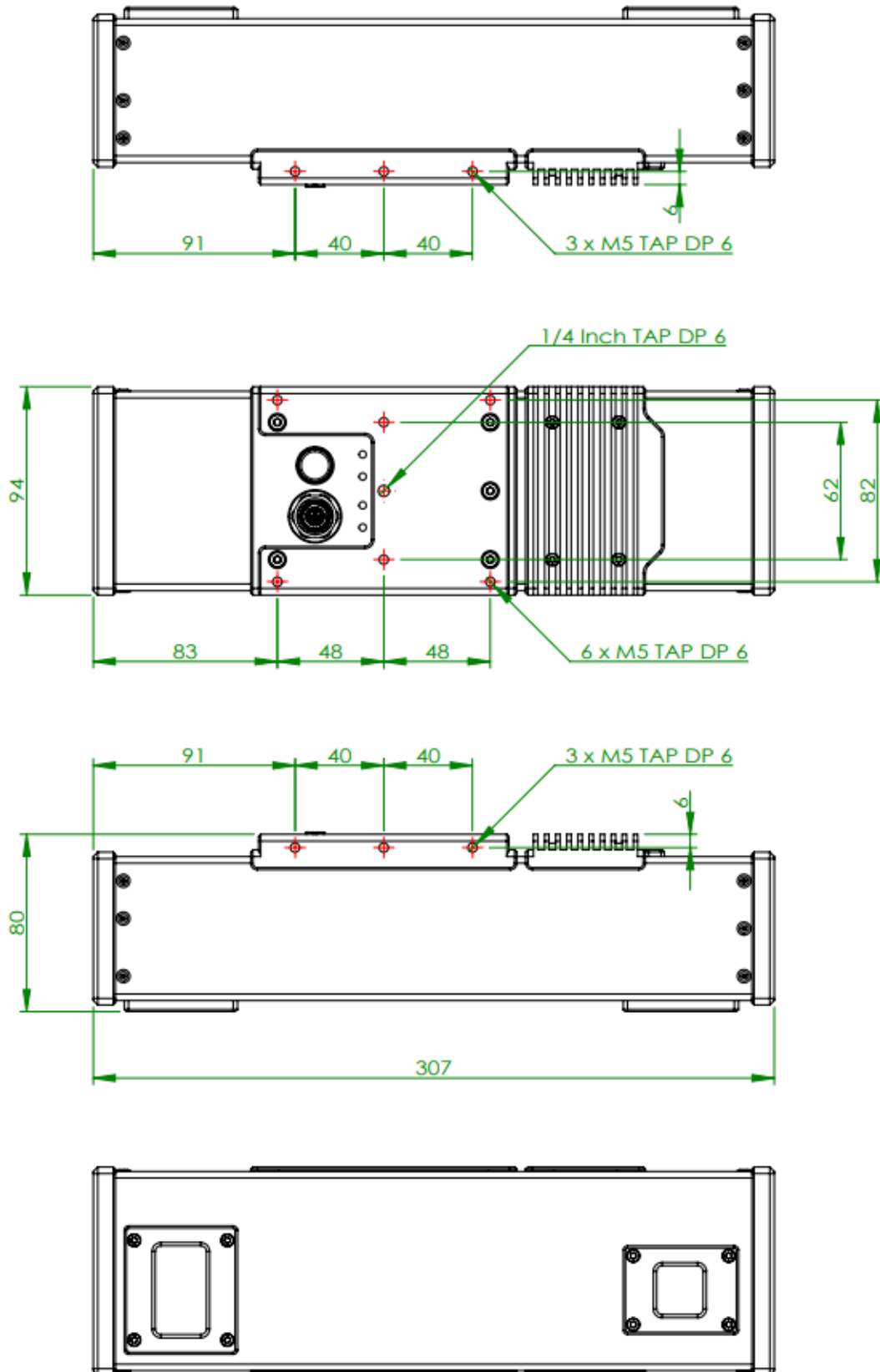
Laser Wavelength	450 nm
Laser Output Power	0~1000 mW
Normal Mode - Clearance distance	2300 mm
Normal Mode - Measurable depth distance	>1280 mm
Normal Mode - FOV	Near: 1334 x 1579 mm
	Far: 1650 x 2456 mm
Extended Mode - Clearance distance	1900 mm
Extended Mode - Measurable depth distance	>2100 mm
Extended Mode - FOV	Near: 970 x 1304 mm
	Far: 1755 x 2745 mm
3D acquisition time	<1000mSec
Dimension / Weight	94 x 80 x 832 mm / 2.8kg
Baseline	767 mm
Interface	Gigabit Ethernet

<Table> 5. Swing3D - L Specification



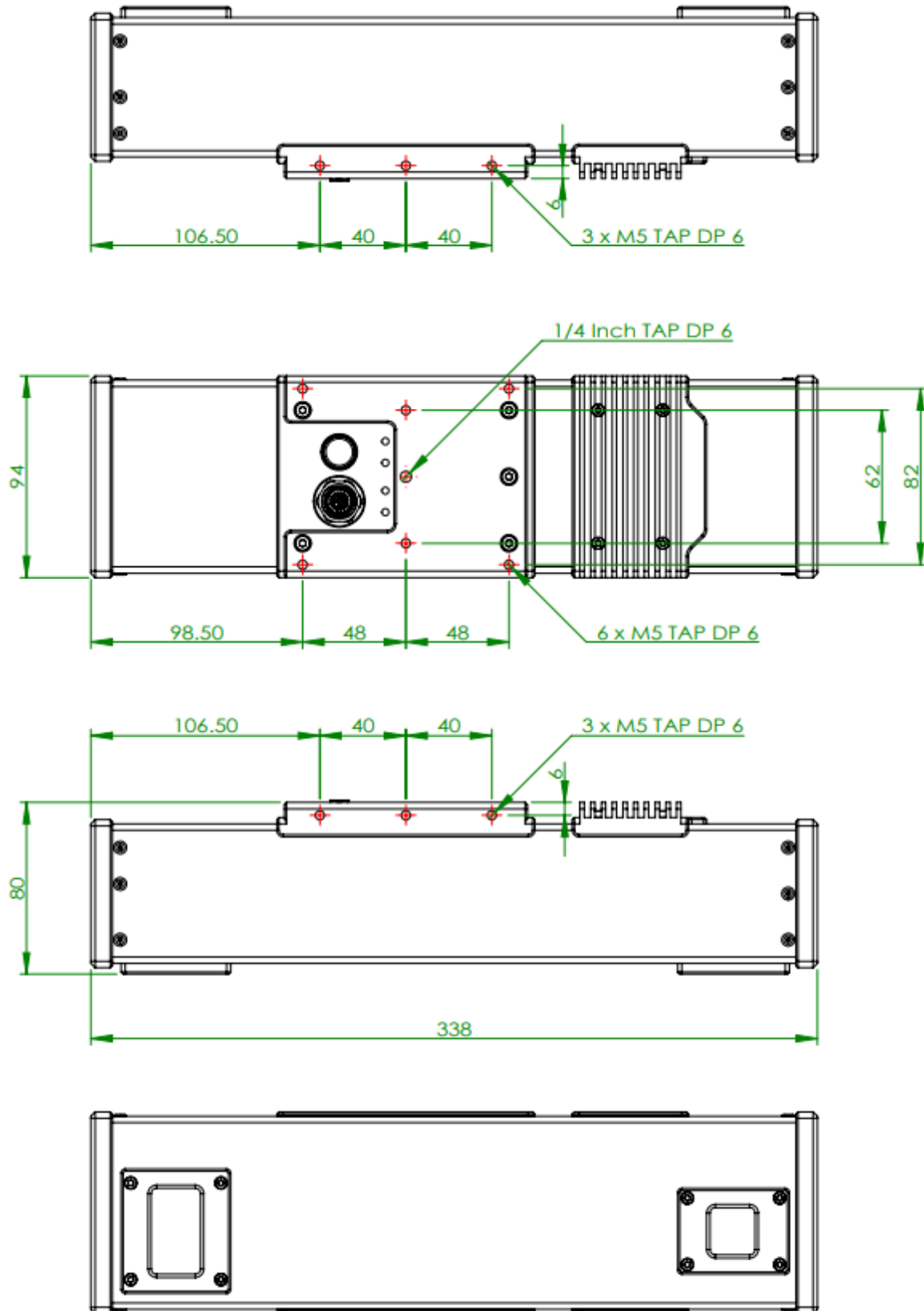
<Figure> 15. Swing3D – L FOV

7.5. Swing3D – XS Dimensions



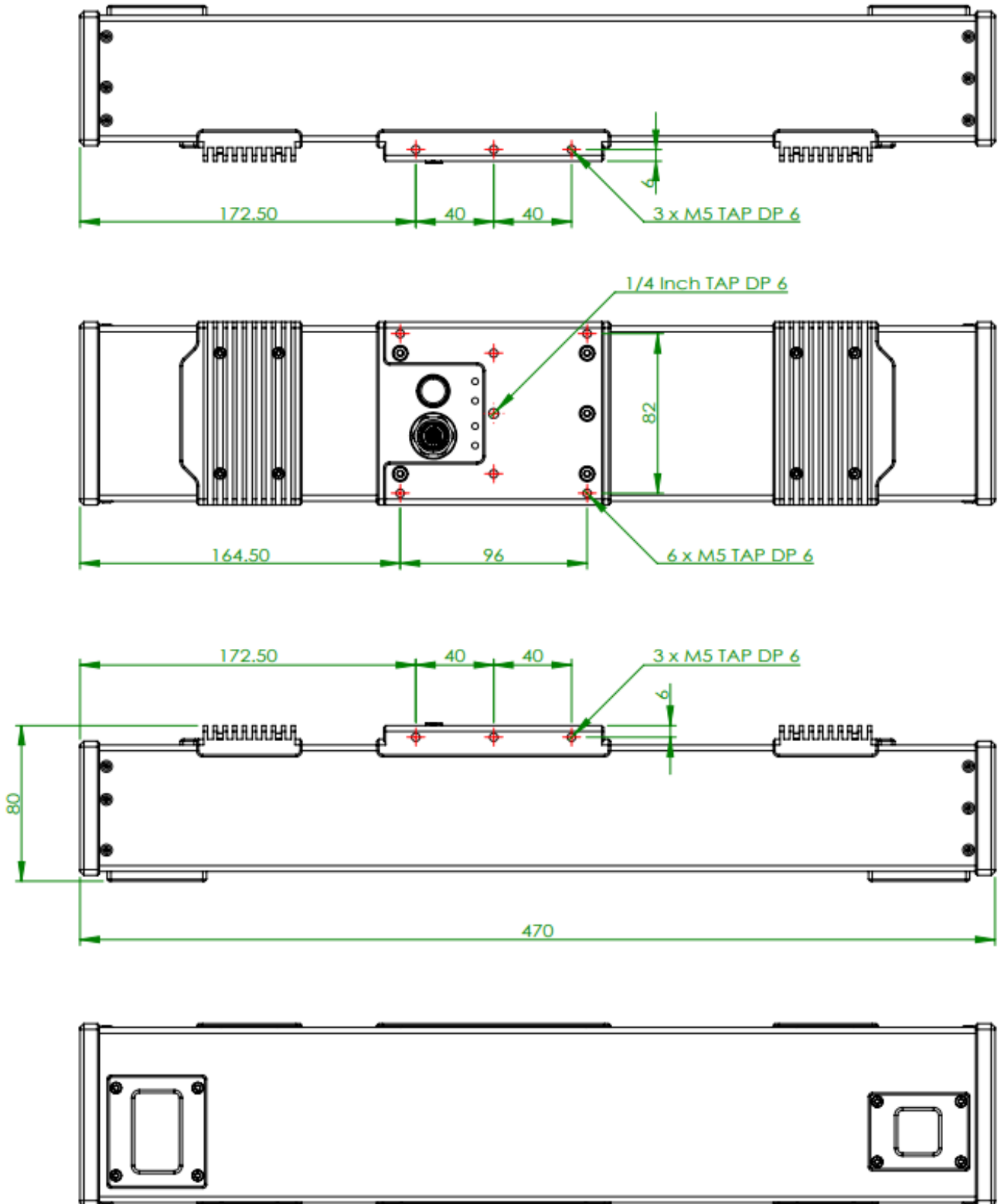
<Figure> 16. Swing3D – XS Dimensions

7.6. Swing3D – S Dimensions



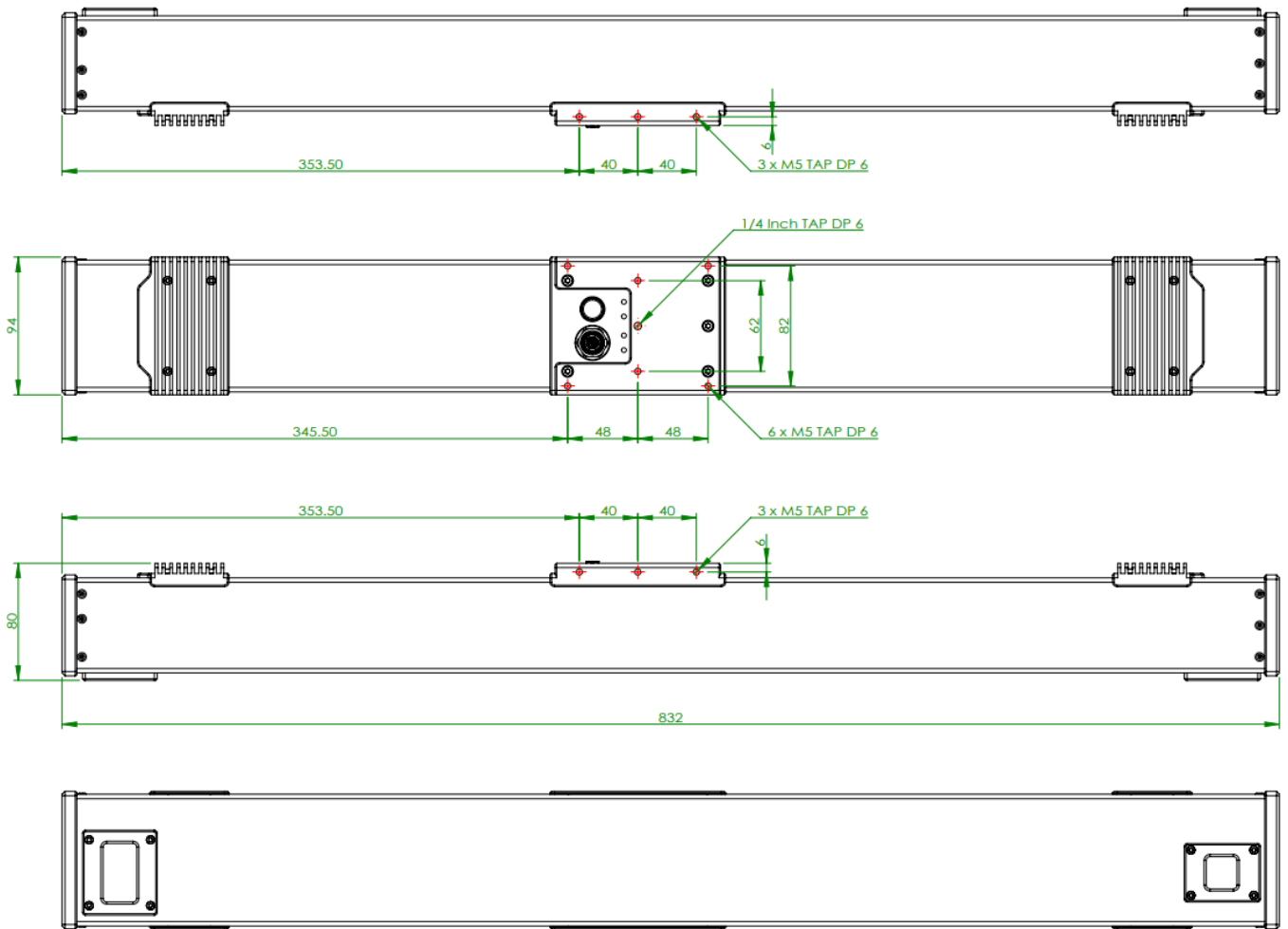
<Figure> 17. Swing3D – S Dimensions

7.7. Swing3D – M Dimensions



<Figure> 18. Swing3D – M Dimensions

7.8. Swing3D – L Dimensions



<Figure> 19. Swing3D – L Dimensions

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10. Revision history

Date	Version	Description	Note
2023.03.28	V1.0	Initial Release	
2023.10.25	V1.1	Specification Table (Appendix 7) update	

<Table> 6. Revision History Table

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