

# MV-DP3120-01D

## 3D Laser Profile Sensor



### Introduction

With dual-mode image sensor, MV-DP3120-01D can eliminate blind area of FOV and suppress stray light. With built-in high-accuracy 3D algorithm, image process algorithm of wide dynamic range, and data integration algorithm, it can output high accurate 3D point cloud data in real time by combining high frame rate chip and accurate laser control. With compact structure, high integration, and easy operation, it is widely applied into consumer electronics, electronics manufacturing, automobile, etc. for 3D information acquisition.

### Available Model

- MV-DP3120-01D
- MV-DP3120-01D V2.0

### Applicable Industry

Consumer electronics, electronics manufacturing, automobile, etc.

### Key Features

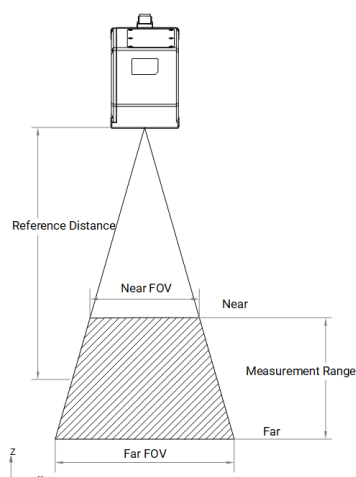
- Dual-mode image sensor to eliminate blind area of FOV and suppress stray light.
- Built-in high-accuracy 3D algorithm and accuracy is up to submicron level.
- Adopts high frame rate image chip up to 46.7 KHz scan frame rate.
- Supports multiple exposure modes with wider dynamic range.
- Adopts image integration algorithm technology to provide complete point cloud data.
- Provides multiple filter modes with stable point cloud data.

# Specification

| Model                       | MV-DP3120-01D                                                                                                                        | MV-DP3120-01D V2.0                                                                                                                                              |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameter                   | 3D Laser Profile Sensor                                                                                                              |                                                                                                                                                                 |
| Performance                 |                                                                                                                                      |                                                                                                                                                                 |
| Data points/profile         | 3200                                                                                                                                 |                                                                                                                                                                 |
| Reference distance          | 125 mm                                                                                                                               | 117 mm                                                                                                                                                          |
| Measurement range (Z-axis)  | 80 mm                                                                                                                                |                                                                                                                                                                 |
| Measurement range (X-axis)  | 61 mm @ near field of view<br>77.6 mm @ reference distance<br>94.2 mm @ far field of view                                            | 57 mm @ near field of view<br>74.2 mm @ reference distance<br>91.4 mm @ far field of view                                                                       |
| Resolution (Z-axis)         | 4.23 μm to 7.47 μm                                                                                                                   | 3.89 μm to 7.56 μm                                                                                                                                              |
| Repeatability (Z-axis)*     | 1.55 μm @ data that sensor tests gauge block on optical platform                                                                     | 1.48 μm @ data that sensor tests gauge block on optical platform                                                                                                |
| Linearity Z-axis (±% of MR) | 0.008                                                                                                                                |                                                                                                                                                                 |
| Profile data interval       | 19.4 μm to 31.4 μm                                                                                                                   | 18.1 μm to 29.8 μm                                                                                                                                              |
| Scan frame rate             | 1.3 kHz (within max. measurement range), max. 19 kHz (ROI mode)                                                                      | 3.4 kHz to 46.7 kHz (high frame rate mode)                                                                                                                      |
| Data output                 | Profile data, depth image, brightness image, width image                                                                             |                                                                                                                                                                 |
| Trigger mode                | Software trigger, hardware trigger (differential encoder)                                                                            |                                                                                                                                                                 |
| Laser safety class          | Class 3R                                                                                                                             |                                                                                                                                                                 |
| Wavelength                  | 405 nm                                                                                                                               |                                                                                                                                                                 |
| Electrical feature          |                                                                                                                                      |                                                                                                                                                                 |
| Data interface              | Gigabit Ethernet (1000 Mbit/s), compatible with Fast Ethernet (100 Mbit/s)                                                           |                                                                                                                                                                 |
| Digital I/O                 | 12-pin M12 connector power and I/O, including differential input × 3 (Line 0/3/6), differential output × 1 (Line 1), and RS-232 × 1. | 12-pin M12 connector provides power and I/O, including differential input × 2 (Line 3/6), opto-isolated input × 2 (Line 0/9), differential output × 1 (Line 1). |
| Power supply                | 24 VDC                                                                                                                               |                                                                                                                                                                 |
| Power consumption           | Typ. 21 W @ 24 VDC                                                                                                                   | Typ. 28 W @ 24 VDC                                                                                                                                              |
| Mechanical                  |                                                                                                                                      |                                                                                                                                                                 |
| Dimension                   | 258 mm × 96.5 mm × 66 mm (10.2" × 3.8" × 2.6")                                                                                       | 240 mm × 96.5 mm × 65 mm (9.4" × 3.8" × 2.6")                                                                                                                   |
| Weight                      | Approx. 1532 g (3.4 lb.)                                                                                                             | Approx. 1407 g (3.1 lb.)                                                                                                                                        |
| Ingress protection          | IP67                                                                                                                                 |                                                                                                                                                                 |
| Temperature                 | Working temperature: 0 °C to 45 °C (32 °F to 113 °F)<br>Storage temperature: -30 °C to 80 °C (-22 °F to 176 °F)                      | Working temperature: 0 °C to 40 °C (32 °F to 104 °F)<br>Storage temperature: -30 °C to 80 °C (-22 °F to 176 °F)                                                 |
| Humidity                    | 20% RH to 85% RH (no condensation)                                                                                                   |                                                                                                                                                                 |
| General                     |                                                                                                                                      |                                                                                                                                                                 |
| Client software             | 3DMVS, VM3D, or third-party 3D software                                                                                              |                                                                                                                                                                 |
| Operating system            | 32/64-bit Windows 7/10, 64-bit Windows 11 (8 GB memory and above, and i5 CPU recommended)                                            |                                                                                                                                                                 |

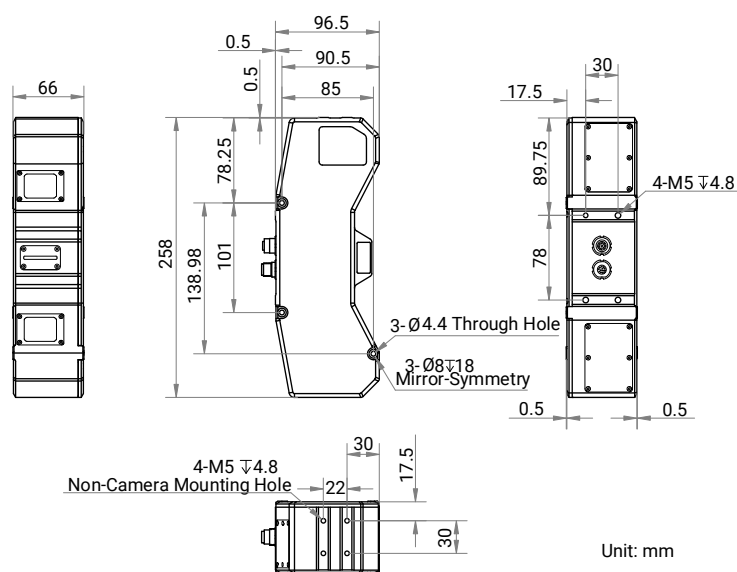
\*This data is obtained via testing gauge blocks in a laboratory, and it is an average from 4096 tests.

## Measurement Range Diagram



## Dimension

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