

# MV-DP2020-01P

## 3D Laser Profile Sensor



## Introduction

With built-in high-accuracy algorithm, image process algorithm of wide dynamic range, and data integration algorithm, MV-DP2020-01P 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.

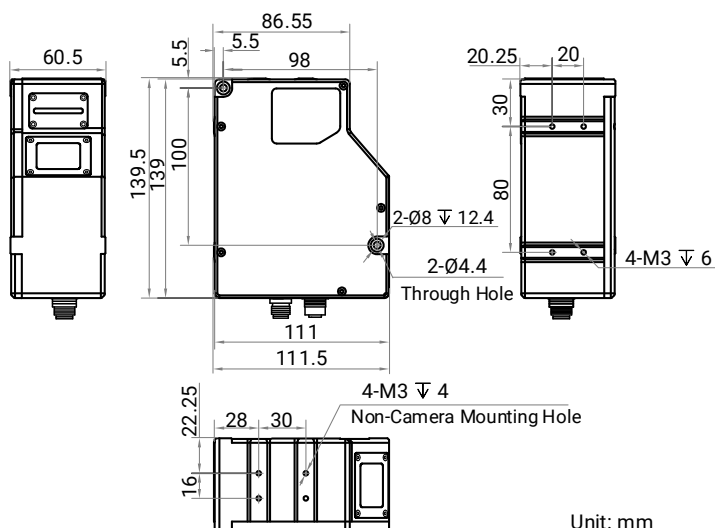
## Available Model

MV-DP2020-01P V2.0

## Applicable Industry

Consumer electronics, electronics manufacturing, automobile, etc.

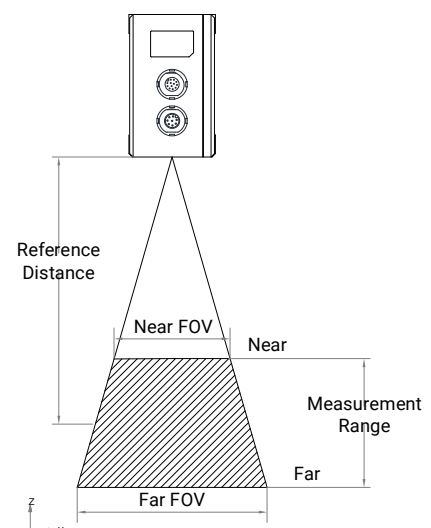
## Dimension



## Key Feature

- Built-in high-accuracy algorithm and accuracy is up to submicron level.
- Adopts high frame rate chip with 23.9 kHz scan frame rate.
- Supports multiple exposure modes with good robustness.
- Adopts multiple-frame integration technology to provide complete profiles.
- Provides multiple filter modes with stable data.
- Supports ROI selection and auto setting for easier operation.

## Measurement Range Diagram



## Specification

| Parameter                   | Model                                                                                                                                                              | MV-DP2020-01P           |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
|                             |                                                                                                                                                                    | 3D Laser Profile Sensor |
| Performance                 |                                                                                                                                                                    |                         |
| Data points/profile         | 3200                                                                                                                                                               |                         |
| Reference distance          | 21.4 mm                                                                                                                                                            |                         |
| Measurement range (Z-axis)  | 6.8 mm                                                                                                                                                             |                         |
| Measurement range (X-axis)  | 14 mm @ near field of view<br>14.3 mm @ reference distance<br>14.6 mm @ far field of view                                                                          |                         |
| Resolution (Z-axis)         | 0.71 μm to 0.78 μm                                                                                                                                                 |                         |
| Repeatability (Z-axis)*     | 0.22 μm @ data that sensor tests gauge block on optical platform                                                                                                   |                         |
| Linearity Z-axis (±% of MR) | 0.01                                                                                                                                                               |                         |
| Profile data interval       | 4.38 μm to 4.67 μm                                                                                                                                                 |                         |
| Scan frame rate             | 1.7 kHz to 23.9 kHz (high frame rate mode)                                                                                                                         |                         |
| Data output                 | Profile data, depth image, brightness 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 interface provides power and I/O, including opto-isolated input × 2 (Line 0/9), differential input × 2 (Line 3/6), and differential output × 1 (Line 1) |                         |
| Power supply                | 24 VDC                                                                                                                                                             |                         |
| Power consumption           | Typ. 15.2 W @ 24 VDC                                                                                                                                               |                         |
| Mechanical                  |                                                                                                                                                                    |                         |
| Dimension                   | 139.5 mm × 111.5 mm × 60.5 mm (5.5" × 4.4" × 2.4")                                                                                                                 |                         |
| Weight                      | Approx. 1075 g (2.4 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)                                                    |                         |
| Humidity                    | 20% RH to 85% RH (no condensation)                                                                                                                                 |                         |
| General                     |                                                                                                                                                                    |                         |
| Client software             | 3DMVS                                                                                                                                                              |                         |
| Operating system            | 32/64-bit Windows 7/10, 64-bit Windows 11<br>(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.