DMVS

3D Vision and Verification for the Smart Factory

This system is part of the FARO® Early Adopter Program

Inline assembly verification and fast recognition of defects are key to ship correct assemblies, improve quality, reduce rework and scrap, and increase productivity.

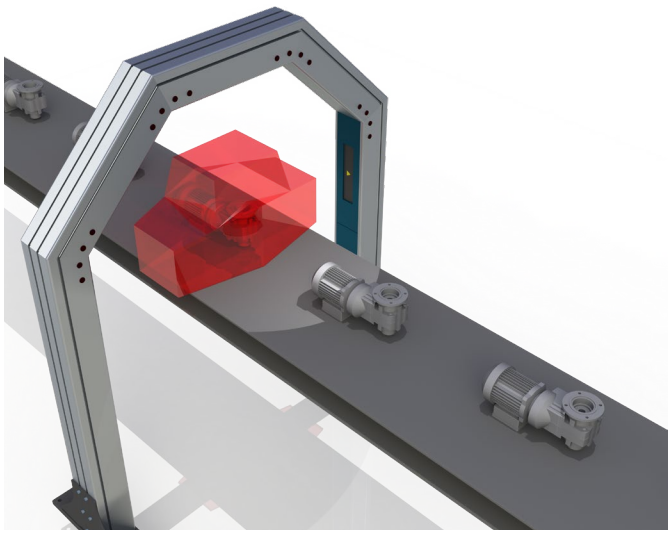
The FARO Dynamic Machine Vision Sensor (FARO DMVS), is a new high speed 3D/2D vision system, that enables a tight integration of verification capabilities in production lines based on its ability to dynamically capture detailed 3D data. Due to its high frequency point cloud measurement rate of 70Hz, real time HDR capability, and dynamic structured light technology, the DMVS represents a breakthrough in 3D sensor technology.

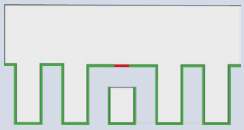
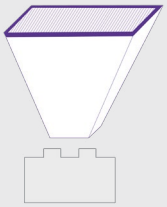
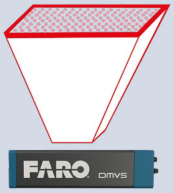
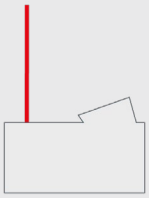
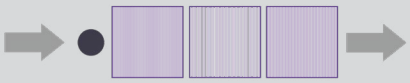
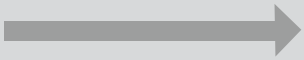
The DMVS can be mounted on a robot or a linear axis for applications where the sensor moves for data capture or can easily be integrated into gate-like solutions where parts and assemblies are moved along the production line.

Designed to function in lighting conditions where traditional sensors struggle and to survive in the most demanding environments, its advanced hybrid measurement technology makes the FARO DMVS an essential, versatile building block in systems integration whenever solutions require a fast, automated verification of assemblies or detection of quality defects.

FARO DMVS Benefits

- **Easily inspect and verify complex or large assemblies**
  Challenging features and deep geometries such as holes or pockets can be identified and positioned based on unique geometry.
- **Inspect parts without stopping or slowing down production**
  The sensor´s 70 Hz frame rate and its ability to capture 3D data in motion guarantees fast data acquisition, processing and evaluation.
- **Combine 3D point clouds with 2D imaging**
  The FARO DMVS combines the benefits of a calibrated 2D stereo camera for stereo, grayscale infrared images and highspeed 3D HDR capabilities for 3D point cloud data in one single sensor.
- **Optimized for the factory floor**
  Does not require laser safety measures, barriers, special mounting or protective systems to control the environment due to the sensor´s robust and eye safe design and its ability to operate even in bright light.



Sensor Type	CONVENTIONAL STRUCTURED LIGHT SCANNER	FARO DMVS	LASER LINE PROBE
Feature Coverage and Blind Spots			
Measurement Pattern	Area 	Area 	Line 
Acquisition Mode	 Move – Stop – Scan – Scan – Scan – Move	 Scan during movement	 Scan during movement

Comparison of feature coverage and blind spots for data captured from one angle, with one single sensor in a single movement.

Specifications

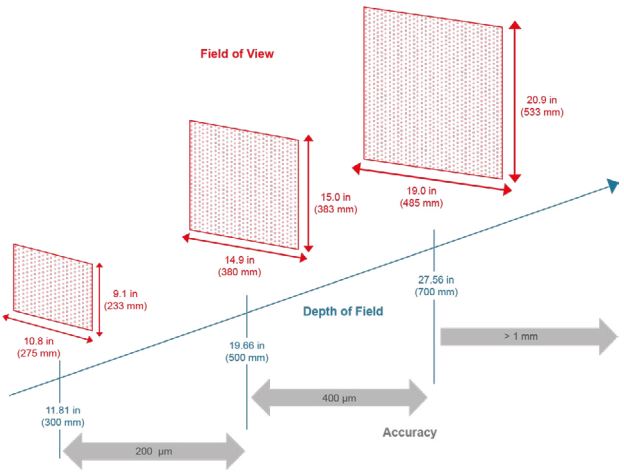
3D Performance Data	
Output	3D point cloud data of features and surfaces for objects with multiple challenging surface characteristics including reflective, bright, dark, transparent and translucent materials.
Frame Rate	70 Hz
Single Frame Speed	100 µs – 2.45 ms
3D Measurement Acquisition Rate	Up to 480,000 points per second
2D Performance Data	
Output	2D stereo grayscale images with integrated IR illumination and fast image processing for edge and feature detection or barcode reading.
Resolution	1.3 MP
Bit Range	8bit
Frame Rate	25Hz
Hardware Specifications and Environmental	
Dimensions (L x W x H)	15.16 in x 3.86 in x 2.95 in (385 mm x 98 mm x 75 mm)
Weight	5.00 lb (2.27 kg)
Protection	IP67 rating
Connectivity	Industrial M12 connectors: 1 power and trigger IN/ OUT, 2 GigE Ethernet, 1 100MBit Ethernet
Operating Temperature	32 - 107.6 °F (0 - 40 °C), passive cooling
Laser Specifications	
Laser Class	Class 1 Laser in accordance with IEC 60825-1:2014 (ed. 3)
Laser Wavelength	798 - 821 nm, infrared

All specifications are subject to change without prior notice.

FARO DMVS Field of View, Depth of Field and Accuracies

The continuous data capture, while either the part or sensor is in motion, combined with the sensor´s field of view enables shadow free 3D measurement to see behind components such as wires and brackets, something traditional technologies cannot do efficiently.

In addition, based on its large depth of field (11.81 in – 27.56 in), the FARO DMVS captures comprehensive and detailed 3D information with fewer sensors and positions compared to commonly used systems.



Accuracies are stated as 2 sigma values, measured during FARO calibration on a reference plate.

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