

## DS1000 3D DISPLACEMENT SENSOR

The DS1000 3D sensor optimizes product quality by providing three-dimensional inspection of your products. Industrially designed even for the harshest factory environment, it includes industry-leading Cognex vision software with a powerful new 3D toolset.

- Complete 2D and 3D machine vision solution
- Factory-calibrated with results in real world units, micron-level accuracy
- Field calibration for removal of mounting and motion inaccuracies
- Tools for inspection include height, tilt, plane-fitting, volume and cross-section
- Industrial IP65 laser and camera

Unlike traditional 2D machine vision, the DS1000 3D laser displacement sensor provides a topological representation of your part from which you can measure 3D features such as length, width, height, tilt or volume relative to any surface. It also simplifies challenging OCR or presence/absence applications by creating contrast from height changes, independent of color.

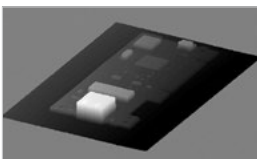
### Calibrated 3D Vision from Cognex

The factory-calibrated DS1000 provides results in real units of measurement with micron-level accuracy, making 3D applications easier to use and quicker to deploy.

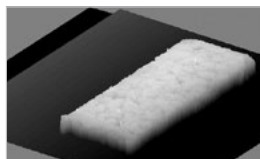
Correction of mounting and motion errors is simple using Cognex field calibration techniques, allowing preservation of accuracy even with relaxed mechanical configurations. Field calibration also enables multiple DS1000 sensors to be used in combination across wide production lines to generate single high resolution 3D images.

Application examples include:

- Reading embossed or raised characters such as those on automobile tires
- Detecting missing objects in boxes or packages by height inspection
- Identifying surface defects and chips
- Measuring heights and tilts of components to determine misalignment
- Verify the correct volume for portion control



Measure heights



Verify volumes



Determine presence/absence



Identify surface defects



### Benefits

#### Complete 2D and 3D machine vision solution

- Expanded range of sensor options
- Bundled with VC5 Controller
- Easy deployment with Cognex Designer™ software

#### Measurements provided in real-world units

- Calibrated 3D system
- Micron-level accuracy

#### Easy-to-use field calibration

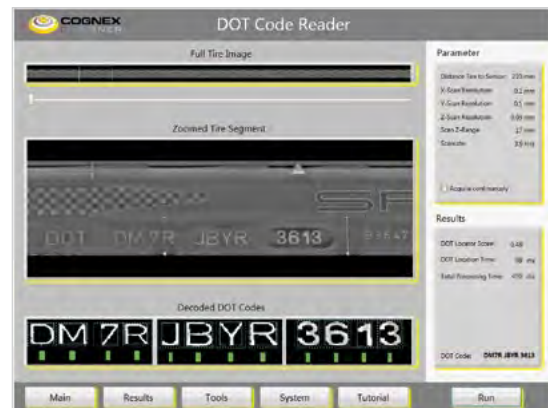
- Protection against misalignment and motion errors
- Consistent results across production lines
- 3D image stitching
- Higher resolution and wider fields of view
- Simplifies multi-head analysis

#### Contrast independent inspection

- Dark object on dark background
- Independent of color
- Concurrent intensity data
- Spatially-aligned 3D and 2D vision
- Enhanced textured 3D visualization
- Ability to combine 3D and 2D cameras
- Many applications require both
- World-class 3D and 2D vision tools
- Height, volume, plane-fitting, and tilt tools
- PatMax®, IDMax® and OCRMax™ algorithms
- Industrial IP65 Housing
- IP69K enclosure option for food and beverage applications


For a simplified overview of how it works, watch the demonstration video at [www.cognex.com/ds1000](http://www.cognex.com/ds1000).

Cognex Designer makes it easy to set up a professional looking graphical user interface such as the DOT Code Reader interface displayed below.



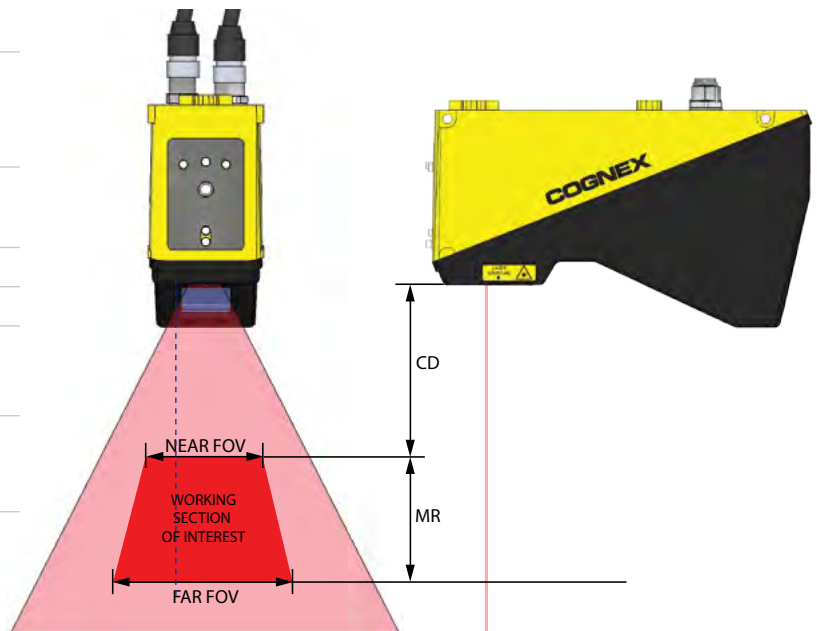
Optical Character Recognition (OCR)

## Specifications

<b>Dimensions</b>	93.3 mm to 115.2 mm (H) x 50 mm (W) x 167.06 mm (L)
<b>Weight</b>	700 g
<b>Operating Temperature</b>	0°C to 50°C (32°F to 113°F)
<b>Storage Temperature</b>	-10°C to 60°C (-14°F to 140°F)
<b>Maximum Humidity</b>	85% (non-condensing)
<b>Housing</b>	IP65 (with Cognex recommended IP65 Ethernet and power I/O cables)
<b>Shock</b>	50 gs (11 ms half-Sine pulse)
<b>Vibration</b>	8 gs (10–500 Hz for 30 minutes)
<b>Discrete I/O Operating Limits</b>	Trigger input voltage limits: -24 VDC – +24 VDC Input ON: > 10 VDC (>6 mA) Input OFF: < 2 VDC (<1.5 mA)
<b>Encoder Input Specifications</b>	Differential: A+/B+: 5-24V (50 kHz max) A-/B-: Inverted (A+/B+) Single-ended: A+/B+: 5-24V (50 kHz max) A-/B-: +0VDC=½(A+/B+)
<b>Power Supply</b>	Voltage: +24 VDC (22-26 VDC) Current: 500 mA max
<b>Scan Rate</b>	Up to 10 kHz
<b>Software</b>	Cognex Designer software
<b>Ethernet</b>	Gigabit Ethernet interface Integrated link and traffic LEDs Standard M12-8 female connector
<b>Certifications</b>	
<b>Accessories</b>	Ethernet cable: 5m, IP65-rated Power: + I/O + Encoder cable, IP65-rated Mounting bracket Stainless steel enclosure, IP69K-rated for the food industry
<b>VC5 Controller</b>	Intel i5 processor Precision I/O Real Time Communication 207 mm (H) 132.6 mm (W) x 229.5 (L)

## Model Comparison

Specifications	DS1050	DS1101	DS1300
<b>Near Field of View (mm)</b>	43	64	90
<b>Far Field of View (mm)</b>	79	162	410
<b>Clearance Distance (mm)</b>	87	135	180
<b>Measurement Range (mm)</b>	76	220	725
<b>Laser Class</b>	2M	2M	2M
<b>Resolution X (mm)</b>	0.059–0.090	0.079–0.181	0.101–0.457
<b>Resolution Z (mm)</b>	0.004–0.014	0.010–0.052	0.016–0.265



**LASER LIGHT**  
DO NOT STARE INTO BEAM  
OR VIEW DIRECTLY WITH  
OPTICAL INSTRUMENTS  
CLASS 2M LASER PRODUCT  
650nm <1mW  
Classified per IEC 60825-1:2007  
Complies with FDA performance  
standards for laser products  
except for deviations pursuant  
to Laser Notice No. 60, dated  
June 24, 2007

# COGNEX

Companies around the world rely on Cognex vision and ID to optimize quality, drive down costs and control traceability.

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