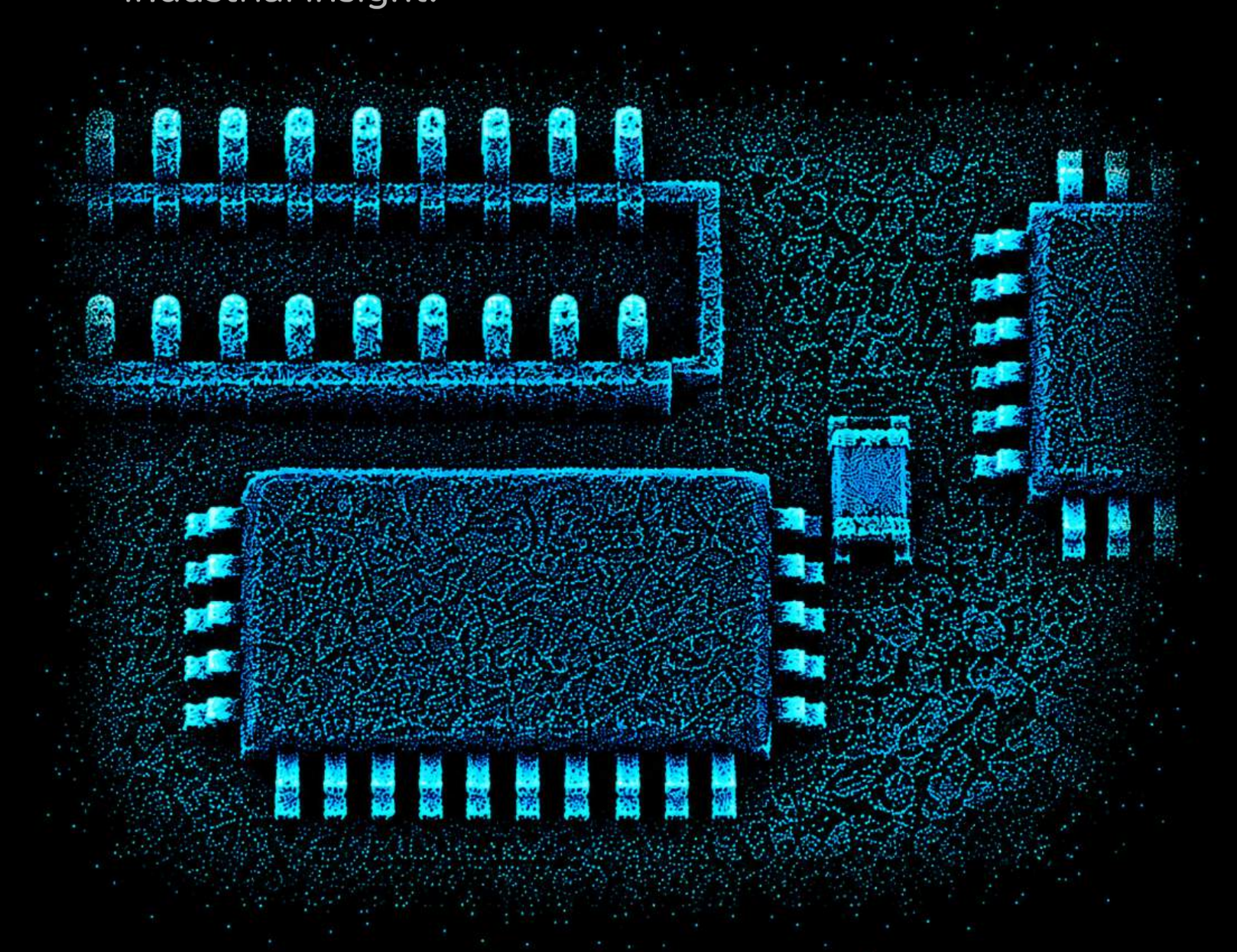
Litronics

PRODUCT PORTFOLIO

# 3D Measurement
## Industrial Inspection

Precision sensing.
Industrial insight.



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3D SENSING

Jiangsu Litronics Co., LTD.

# 3D sensing. Industrial insight.

Explore five product families for industrial measurement and automated inspection.

## LS20 Series

Line Laser Profile Sensor

## LS22 Series

High-Speed 3D Laser Profile Sensor

## Ring Laser

Inner Diameter Sensor

## MT/FT20 Series

Compact 3D laser profile sensor

## Multi-line Dispensing

Laser Sensor

# LS20 Series

## Line Laser Profile Sensor




The LS20 Series Line Laser Profile Sensor is an industrial-grade sensor designed for high-precision 3D measurement applications. It delivers high-resolution, real-time 3D point cloud data through integrated advanced processing algorithms and high-quality laser projection optics.

The LS20 Series is widely used in photovoltaic manufacturing, lithium battery production, 3C electronics, automotive manufacturing, and other industrial automation fields.

The sensor supports connection via dedicated host computer software. Users may also develop custom applications using the OEM-provided SDK for sensor control and high-speed data communication.

## Product Features

### Micrometer-level precision along the Z-axis

The system provides a 2K physical resolution along the X-axis, enabling clear visualization of the 3D profile of objects; The repeatability positioning accuracy along the Z-axis can reach up to 0.3 μm.

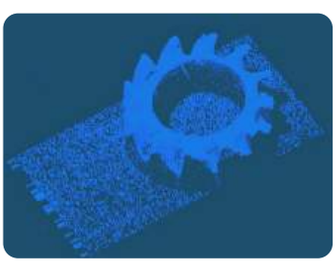
### High-speed scanning combined with real-time data processing

Each scan captures an entire profile, with greater efficiency than point-by-point laser scanning. FPGA-accelerated algorithms provide microsecond-level processing, with refresh rates up to 15,000 Hz.

### Non-contact precision detection

The testing process does not require physical contact with the object under evaluation (e.g., soft materials, precision electronic components), thereby preventing potential scratches or deformation; Suitable for measurement on complex surfaces, this system is capable of accurately capturing data from high-temperature objects, fragile materials, or dynamic targets.

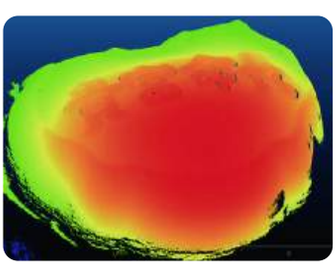
## Application Scenarios



**Industrial Parts 3D Inspection**




**PCB Industry Inspection**



**Jewelry Welding Guidance**

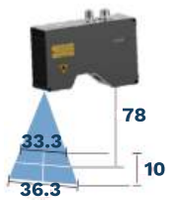
# Product Series

7 models

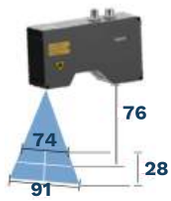
LS2010



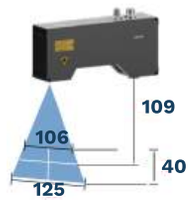

LS2003



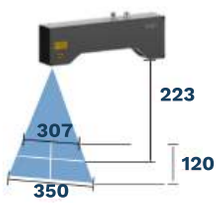

LS2008



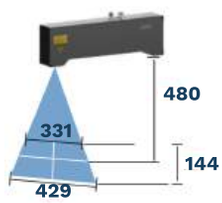

LS2012



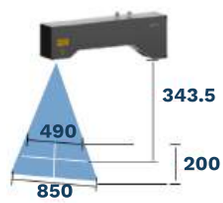

LS2030




LS2040




LS2070




# Technical Data

| Technical Data | LS2010 | LS2003 | LS2008 | LS2012 | LS2030 | LS2040 | LS2070 |
|---|---|---|---|---|---|---|---|
| **Measurement Range (Z-axis) (mm)** | ±2 | ±5 | ±14 | ±20 | ±60 | ±72 | ±100 |
| **FOV (Near \| Mid \| Far) (mm)** | 14<br>14.3<br>14.9 | 33.3<br>34.3<br>36.3 | 74<br>80<br>91 | 106<br>116<br>125 | 307<br>330<br>350 | 331<br>380<br>429 | 490<br>660<br>850 |
| **Lateral Resolution (X-axis) (µm)** | 6.8<br>6.9<br>7.2 | 16.2<br>16.7<br>17.7 | 36<br>39<br>44 | 51<br>56<br>61 | 149<br>161<br>170 | 161<br>185<br>209 | 239<br>322<br>415 |
| **Z-Repeatability (µm)** | 0.2 | 0.5 | 0.8 | 1 | 4 | 6 | 6 |
| **Z-Linearity (of F.S.)** | 0.015% | 0.012% | 0.012% | 0.010% | 0.010% | 0.012% | 0.010% |
| **Scan Rate (Hz)** | 229-1600 | | | | | | |
| **Laser Wavelength (nm)** | 405/650 | 405 | 405 | 405 | 650 | 405 | 650 |
| **Maximum Points (Pts)** | 2048 | | | | | | |
| **Working Distance (mm)** | 21 | 78 | 76 | 109 | 223 | 480 | 343.5 |
| **Weight (g)** | 610 | 720 | 795 | 894 | 1590 | 1230 | 1750 |
| **Size (L × W × T) (mm)** | 123.5×92×42.25 | 146×93×41.5 | 164×93.5×46.5 | 204.9×93.4×46.5 | 322×101.8×52 | 295×90×46.5 | 351×114.3×59 |
| **Enclosure Rating** | IP67, IEC 60529-2013 | | | | | | |
| **Shock (3 Axes)** | 15G, IEC 60068-2-27 | | | | | | |
| **Vibration** | 2G, 20-500 Hz, IEC 60068-2-6 | | | | | | |
| **Operating Temperature** | 0-45 °C | | | | | | |
| **Operating Humidity** | 10-85% RH | | | | | | |
| **Electrical Safety** | EN61010-1 | | | | | | |
| **Maximum Ambient Light** | 10,000 lx | | | | | | |

# LS22 Series

## High-Speed 3D Laser Profile Sensor



A high-performance 3D laser profiler designed for industrial inline inspection, suitable for height, profile, step, gap, flushness, glue bead and weld seam inspection.

## Product Features

### High-Speed & High-Density Profile Output

Up to 8000 Hz scan rate and 2048 points per profile for high-speed inline inspection.

### Micron-Level Height Measurement

Z repeatability as fine as 0.2 μm for precise height, step, flatness and surface profile inspection.

### 405 nm Short-Wavelength Laser

405 nm short-wavelength laser delivers a fine laser line and sharper profile edges.

### Compact Industrial Design

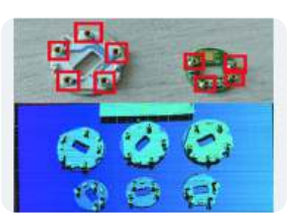
Compact industrial design for integration into robots, motion stages and automated inspection systems.

Inspection results can include profile curve, glue/weld cross-section with OK/NG, height map and point cloud display.

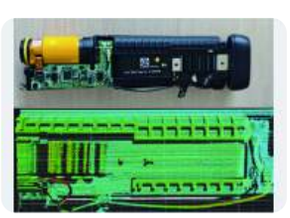
## Application Scenarios



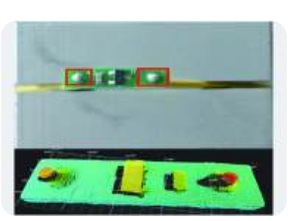
**Height & Flatness**



**Pin Height & Skew Detection**



**Welding Wire Inspection**

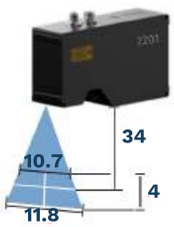


**PCB Height Detection**

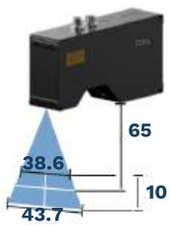
# Product Series

5 models

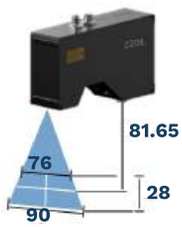
**LS2201**



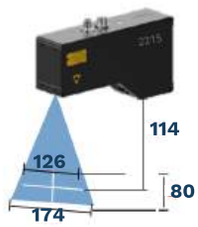

**LS2204**



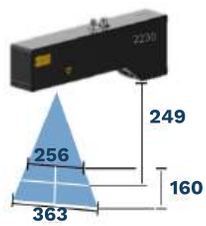

**LS2208**




**LS2215**




**LS2230**




# Technical Data

| Technical Data | LS2201 | LS2204 | LS2208 | LS2215 | LS2230 |
|---|---|---|---|---|---|
| **Measurement Range (Z-axis) (mm)** | ±2 | ±5 | ±14 | ±40 | ±80 |
| **FOV (Near \| Mid \| Far) (mm)** | 10.7<br>11.3<br>11.8 | 38.6<br>41.1<br>43.7 | 76<br>83<br>90 | 126<br>155<br>174 | 256<br>310<br>363 |
| **Lateral Resolution (X-axis) (μm)** | 5.2<br>5.5<br>5.7 | 18.8<br>20<br>21.3 | 37<br>40<br>43 | 61<br>75<br>84 | 125<br>151<br>177 |
| **Z-Repeatability (μm)** | 0.2 | 0.5 | 0.8 | 2.5 | 6 |
| **Z-Linearity (of F.S.)** | 0.015% | 0.012% | 0.018% | 0.012% | 0.013% |
| **Scan Rate (Hz)** | 1400-8000 | | | | |
| **Laser Wavelength (nm)** | 405 | | | | |
| **Maximum Points (Pts)** | 2048 | | | | |
| **Working Distance (mm)** | 34 | 65 | 81.65 | 114 | 249 |
| **Weight (g)** | 1130 | 1140 | 1180 | 1260 | 1350 |
| **Size (L × W × T) (mm)** | 175×100×52 | 200×105×52 | 187×108×52 | 200×106×52 | 320×106×52 |
| **Enclosure Rating** | IP67, IEC 60529-2013 | | | | |
| **Shock (3 Axes)** | 15G, IEC 60068-2-27 | | | | |
| **Vibration** | 2G, 20-500 Hz, IEC 60068-2-6 | | | | |
| **Operating Temperature** | 0-45 °C | | | | |
| **Operating Humidity** | 10-85% RH | | | | |
| **Electrical Safety** | EN61010-1 | | | | |
| **Maximum Ambient Light** | 10,000 lx | | | | |

Note: Scan rate depends on model, ROI, exposure time and output points. Full-point high-speed output should be confirmed by application testing.

**Data Output**

Profile Data
Point Cloud
16-bit TIFF / CSV

**Software SDK**

C++ / C# / LabVIEW SDK
HALCON / VisionPro

**Industrial Integration**

GigE Vision / GenICam
PLC OK/NG

# Ring Laser

## Inner Diameter Sensor



The Ring Laser Inner Diameter Sensor is an industrial laser measurement system designed for high-precision internal cavity inspection. It provides reliable measurement data for production control systems and supports seamless integration into automated manufacturing lines.

Using 360° radial laser scanning technology, the system captures full cross-sectional profiles of internal cavities, enabling precise inspection of:

- Pipe inner diameters
- Weld seam geometry
- Inner profiles of holes and containers
- Wall thickness variations
- Deformation and bending

The sensor is particularly suited for steel pipe forming processes and weld quality control applications, delivering stable and repeatable inspection data to support industrial quality management systems.

## Product Features

**Measurement range** covers Φ60 mm to Φ1000 mm, with models for high-precision small-diameter components and large-diameter engineering pipelines.

**Real-time output** of inner-diameter values and point-cloud data supports ovality analysis, wall-thickness monitoring and quality-data traceability.

**220 Hz online refresh rate** supports continuous rolling, sizing, diameter expansion and finishing.

**Multiple communication protocols**: 1000 Mbps Ethernet, GigE Vision and GenICam, with C++ / C# / LabVIEW SDK support.

## Application Scenarios



**Weld Inspection of Inner Wall**



**3D Imaging of Steel Pipe Cavity**



**Cement Cavity Inspection**

# Basic Parameters

## SD20

| Basic Parameters | SD2009 | SD2012 | SD2018 | SD2030 |
|---|---|---|---|---|
| **Wall Thickness Detection (mm)** | 50~130 | 90~160 | 110~250 | 190~400 |
| **Repeatability (μm)** | ±50 | | | |
| **Circular resolution (points)** | 3700 (single camera) | | | |
| **Scanning frequency (Hz)** | 220 | | | |
| **Light source wavelength (nm)** | 650 | | | |
| **Supply voltage (V)** | 24 | | | |
| **Laser power (mW)** | 150 | | | |
| **Total power (W)** | 7 | | | |
| **Trigger mode** | Internal, I/O, Encoder | | | |
| **Communication interface** | GigE | | | |
| **Operating temperature (°C)** | 0~40 | | | |
| **Storage temperature (°C)** | -20~70 | | | |
| **Weight (g)** | 298 | 433 | 448 | 530 |
| **Size (mm)** | φ50 × 150 | φ50 × 154 | φ50 × 186 | φ50 × 244 |

## SD60

| Basic Parameters | SD6050 | SD6070 | SD6090 |
|---|---|---|---|
| **Wall Thickness Detection Range (mm)** | 350~650 | 600~900 | 800~1100 |
| **Repeatability (μm)** | ±100 | | |
| **Circular resolution (points)** | 6000 (four cameras) | | |
| **Scanning frequency (Hz)** | 350 | | |
| **Light source wavelength (nm)** | 405/650 | | |
| **Supply voltage (V)** | 24 | | |
| **Laser power (mW)** | 150 | | |
| **Total power (W)** | 9 | | |
| **Trigger mode** | Internal, I/O, Encoder | | |
| **Communication interface** | GigE | | |
| **Operating temperature (°C)** | 0~40 | | |
| **Storage temperature (°C)** | -20~70 | | |
| **Weight (g)** | 858 | 980 | 1200 |
| **Size (mm)** | φ170 × 200 | φ170 × 242 | φ170 × 260 |

# MT/FT20 Series

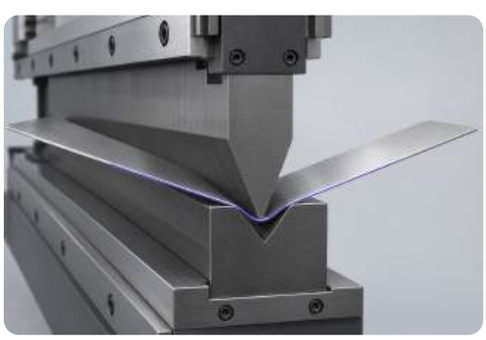
## Compact 3D laser profile sensor



The MT/FT20 Series uses laser triangulation to capture 2D profiles and 3D point clouds. Its compact, integrated design requires no external controller and fits confined spaces in automated equipment.

Non-contact measurement captures the X-direction profile and height of the workpiece for inline inspection of steps, gaps, flatness, grooves and surface defects, particularly on precision small parts.

## Product Features



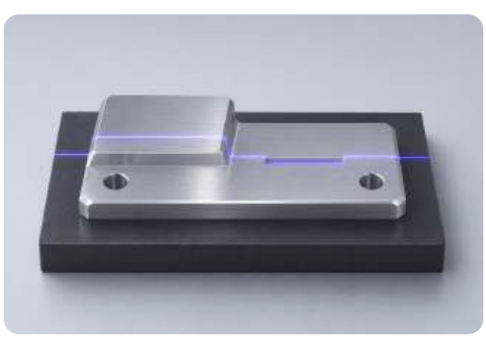
Press-brake measurement concept

### Compact installation

Small housings fit confined mounting spaces and robot end effectors.

### Integrated design

Sensor and processing functions are integrated in one unit, without an external controller.



Small-part profile inspection

### Non-contact profile capture

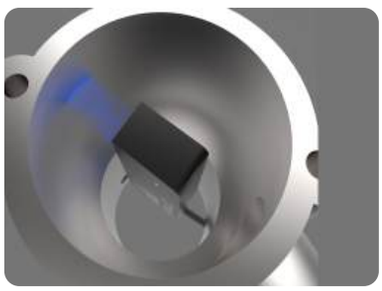
Capture profiles and point clouds to inspect steps, gaps, flatness and grooves.

### 405 nm violet laser

Supports contrast on matte and dark surfaces; suitability depends on the material.

**GigE interface** for straightforward integration and flexible industrial cabling.

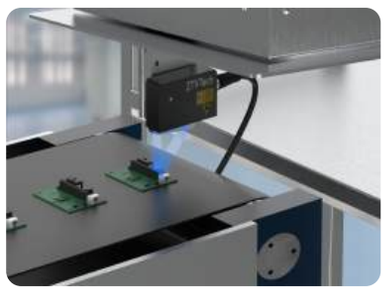
# Application Scenarios



In-enclosure inline measurement



Robot EOAT profile scanning, edge/seam tracking



PCB/PV/Battery

# Product Parameters

| Product | MT2005 | MT2006 | FT2003 | FT2005 | FT2009 | FT2015 |
|---|---|---|---|---|---|---|
| **Typical Field of View (Near \| Mid \| Far) (mm)** | 42/53/73 | 46/60/85 | 25/29/35 | 40/50/65 | 74/92/164 | 93/148/324 |
| **Measurement Range (Z-axis) (mm)** | +20/-40 | +25/-46 | +16/-23 | +22/-36 | +60/-134 | +87/-327 |
| **Reference Working Distance (mm)** | 60 | 75 | 89 | 86 | 165 | 187 |
| **Maximum Points / 3D profile (points)** | 2048 | | | | | |
| **Lateral Resolution (X-axis) (μm)** | 21/26/36 | 22/29/42 | 12/14/17 | 19/24/31 | 36/45/80 | 45/72/158 |
| **Z-Linearity (of F.S.)** | 0.012% | 0.015% | 0.012% | 0.015% | 0.015% | 0.012% |
| **Z-Repeatability (μm)** | 5 | 3 | 3 | 5 | 6 | 15 |
| **Laser Wavelength (nm)** | 405 | | | | | |
| **Weight (g)** | 240 | 240 | 290 | 290 | 290 | 290 |
| **Size (L x W x H) (mm)** | 86×44.5×27 | 86×44.5×27 | 92×54×36 | 92×54×36 | 92×54×36 | 92×54×36 |

# Multi-line Dispensing

## Laser Sensor



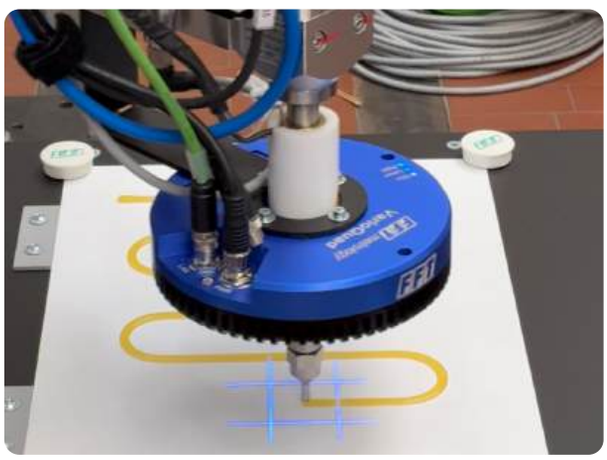

The quality of dispensing and assembly not only affects the reliability of the entire production process and the waterproof performance of the products, the Quad sensor can be quickly integrated into your process without any additional modifications to the production line.

It is specifically designed for adhesive application and can be easily installed around the adhesive, sealant or adhesive nozzles, and communicates seamlessly with the glue gun and robot system. It can detect in real time parameters such as the height, width and volume of the adhesive strip in the gluing process, achieving non-contact automated measurement. It can detect glue breakage and overflow defects, and can also estimate the weight of the adhesive.

## Product Features

- **Four high-speed 3D sensors**, the Quad delivers full-range 3D strip scans at 200 Hz;
- Monitor the **width, height, volume and position** of the strip in real time;
- The sensor features portable installation, a compact structure and a lightweight design of **merely 1.1 kg**, facilitating quick online dispensing;
- **No blind spots**, and unaffected by variations in component color and ambient light;
- **IP67 protection rating.**

# Application Scenarios



Adhesive Bead Inspection

**Four high-speed 3D sensors**

**200** Hz or **500** mm

full-range 3D strip scans per second

**1.1 kg**

**IP67**

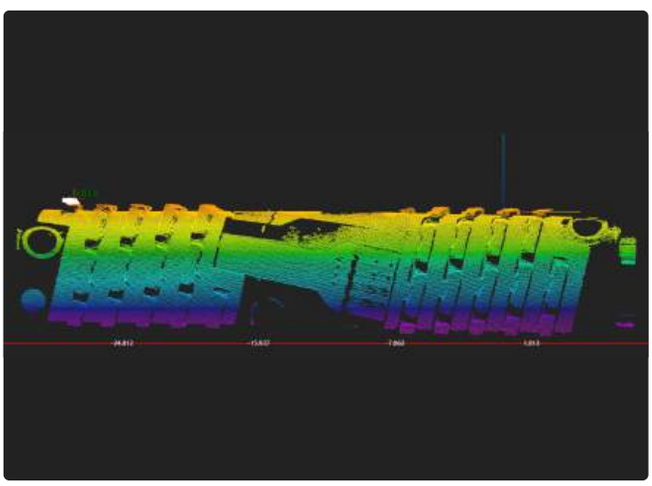
# Product Parameters

| Model | LQ2004 | LQ2010 | LQ2018 |
|---|---|---|---|
| **Working Distance** | 40 mm | 100 mm | 180 mm |
| **X-axis Testing Range** | 20 mm | 76 mm | 80 mm |
| **X-axis Resolution** | 10 μm | 38 μm | 40 μm |
| **Z-axis Testing Range** | ±15 mm | ±40 mm | ±40 mm |
| **Scanning Speed** | 200-500 Hz | | |
| **Laser Wavelength** | 405 nm (optional 660 nm) | | |
| **Z-axis Repeatability** | 1 μm | 2 μm | 2 μm |
| **Mechanical Dimension** | φ100 mm×45 mm | φ170 mm×39 mm | φ210 mm×39 mm |
| **Operating Temperature** | 0~50 °C | | |
| **Storage Temperature** | -20 °C~70 °C | | |
| **Enclosure Rating** | IP67 | | |
| **IO Interface** | M12A, 5-pin male connector | | |
| **Network Interface** | M12X, 8-pin female connector | | |
| **Communication Method** | GigE | | |

# Surface. Height. Detail.

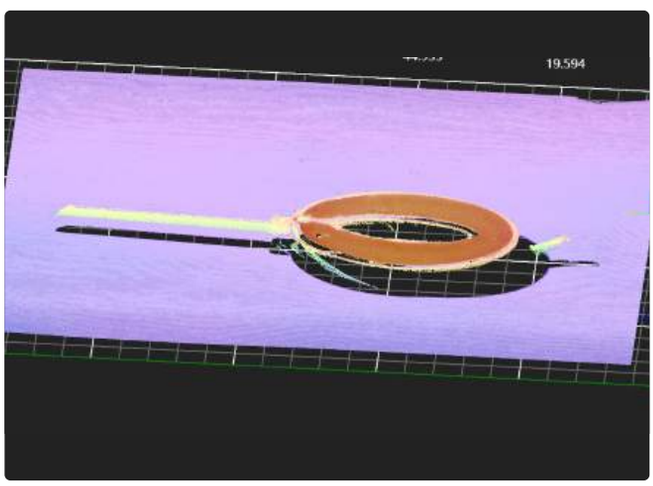
Surface geometry, component height and assembly inspection.

## Flexible PCB LED solder defect detection



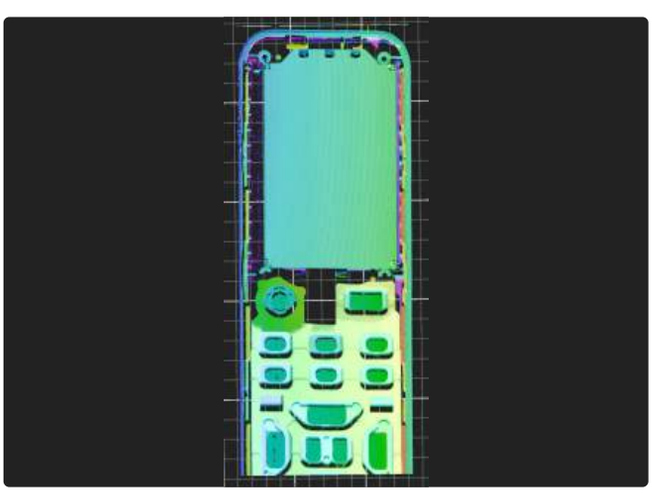
Inspect LED mounting height on flexible PCBs for signs of poor solder joints.

## Candle inspection



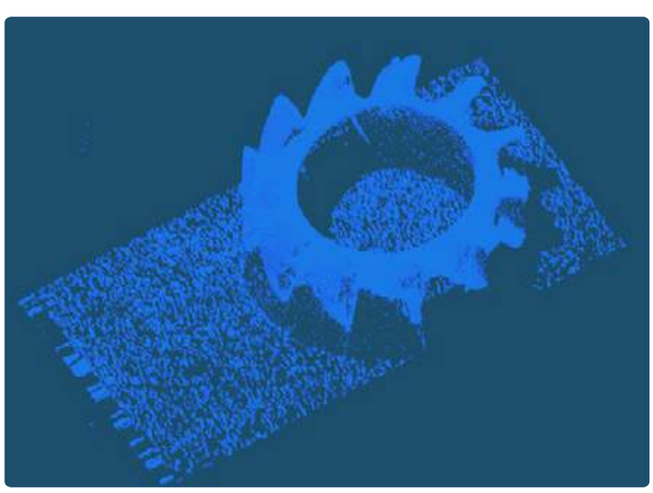

Inspect surface flatness and the step height between selected regions.

## Automated remote control inspection



Inspect remote-control assembly geometry using 3D point clouds.

## Industrial parts 3D inspection

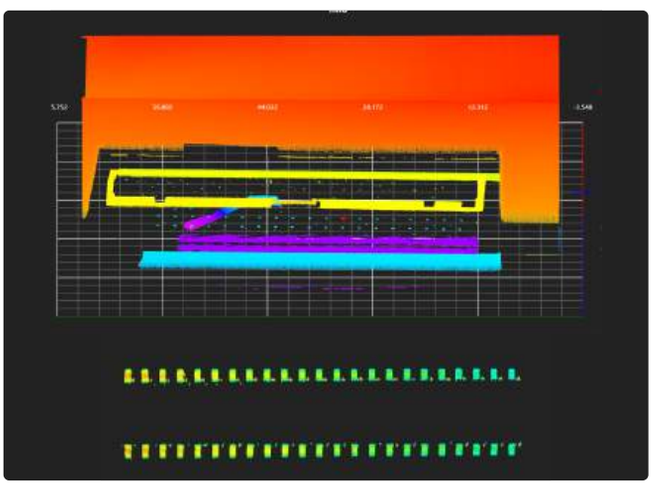


Capture the three-dimensional geometry of industrial components.

# Assembly inspection.

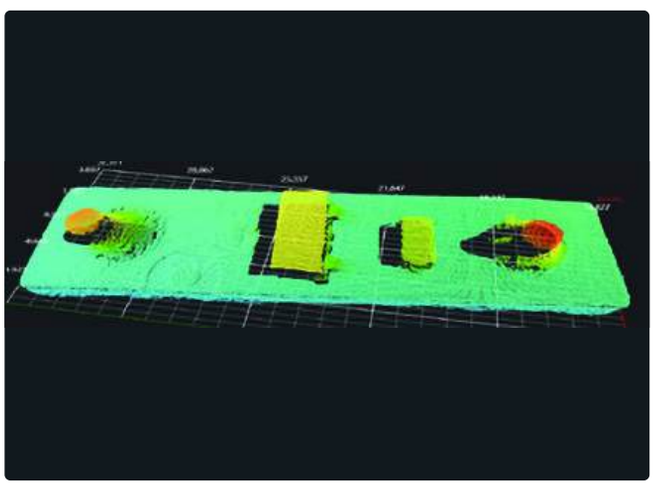
Inspection examples for electronics and battery assemblies.

## Pin retraction and skew detection



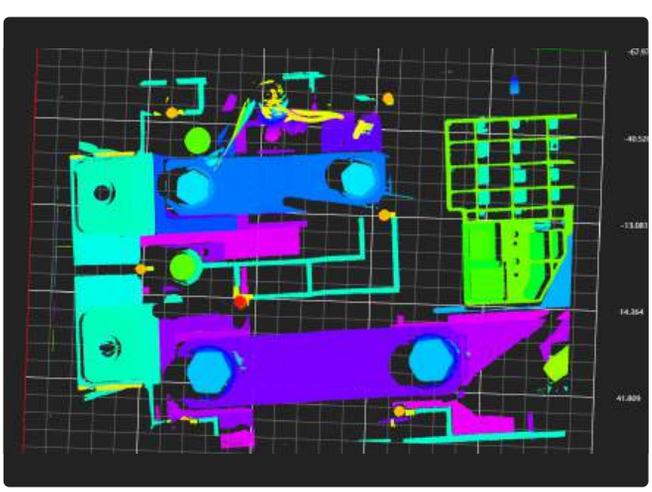
Inspect pin height and alignment for retraction and skew.

## PCB height detection



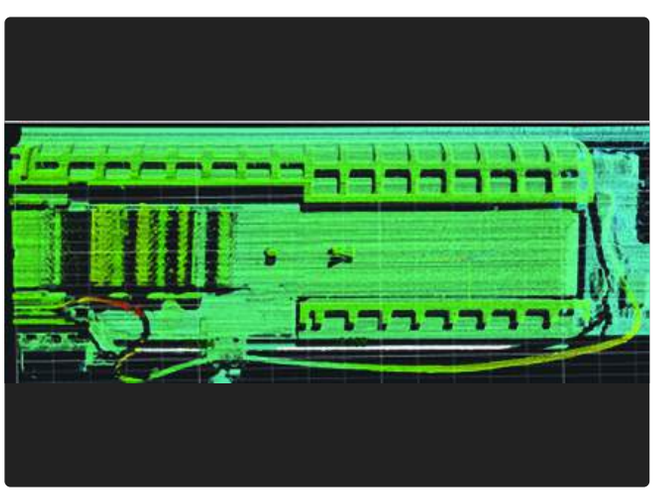
Inspect component heights and surface profiles on a PCB.

## Battery tray height inspection



Inspect rivet post and screw heights on the battery tray assembly.

## Welding wire inspection



Inspect the 3D profile of welding wires within the assembly.

Litronics

3D MEASUREMENT

# Precision sensing. Industrial insight.

Laser profile sensing, inner diameter measurement and adhesive path inspection for industrial automation.

**PROFILE**

Surface geometry

**MEASURE**

Dimensions and height

**INSPECT**

Parts and assemblies

## Tell us what you need to measure.


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