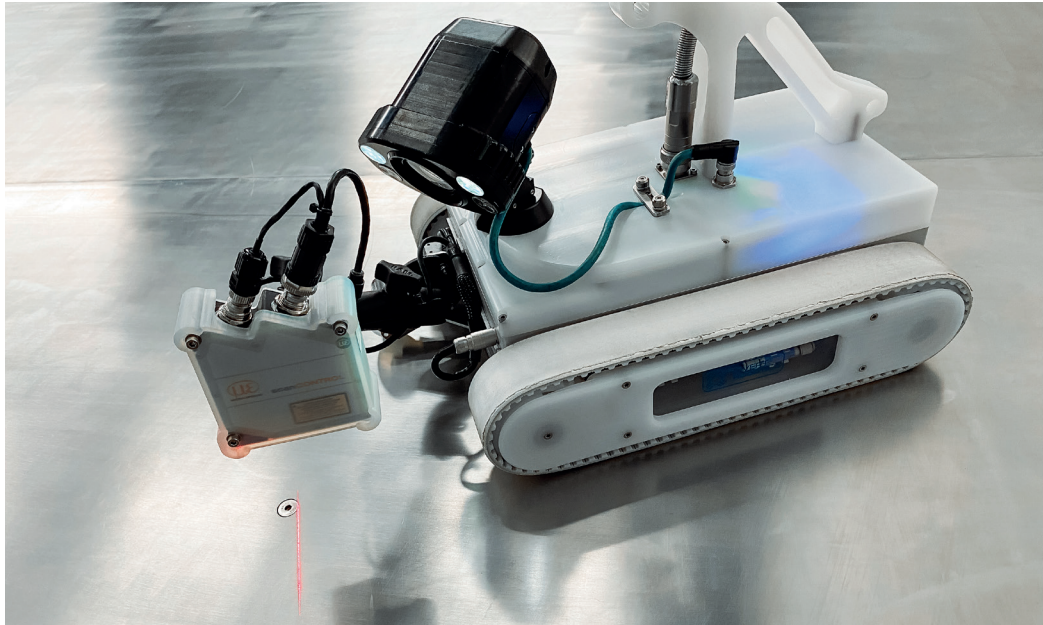




## LASER SURFACE MAPPING PRODUCT SHEET

# Laser Surface Mapping



**Accurately assess and size defects such as denting, scratches or pitting detected during visual inspection of assets, using innovative 2D scanning technology.**

Using a high-resolution 2D scanner, we use the mobility of the robot and its encoders to generate a 3D surface profile of the defect. This comprehensive 3D visualization of the inspected surface provides you with real-time, highly accurate and repeatable results, all without the need for human entry into assets.



### Dimensioning the defect

This technology uniquely helps you accurately dimension the defect mechanism by defining the exact character and dimensions on the surface. Assess in real time whether immediate repair is necessary, or use the comprehensive mapping data for future asset integrity assessment and maintenance.

- Highly accurate measurements (reference resolution depth: 4  $\mu\text{m}$ )
- Software algorithms simplify surface profile measurements
- Real-time 3D visualisation



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### 3 reasons for using laser surface mapping to check asset integrity

#### Minimize human entry into assets

No need for human entry into assets: as dimensioning the defect after detecting normally required human entry, with in-situ measurements the robotic crawler does all the work. Real-time measurements of the defect helps determine whether findings require follow up actions.

#### Cut back inspection costs

Immediately size any defect and determine if it is a potential threat to the integrity of your production asset. No need to call in specialists to determine the nature of any findings after visual inspection.

#### Cut back maintenance costs

A 3D point cloud enables the exact measurement of defects and helps determine the nature and size. Learn over time how the defect is developing with repeated measurements and plan asset maintenance accordingly: if and when needed.

Scanner		
Information	Micro Epsilon	
Model:	scanCONTROL 2500-50	
Line linearity:	4 µm	
Pixels/Profile:	640	
Measuring speed:	up to 2000 Hz	
Profile interface:	Ethernet	
Options:	Hardware switch-off of laser line Pigtail cable Laser class 3B	
Output interface:	Ethernet (UDP / Modbus TCP) RS422 (ASCII / Modbus RTU) Analog Digital	
Measuring range	Z-Axis	X-Axis
Start of measuring range	70 mm	42 mm
Mid of measuring range	95 mm	50 mm
End of measuring range	120 mm	58 mm
Height of measuring range	50 mm	-
Extended measuring range	Z-Axis	X-Axis
Start of measuring range	65 mm	40 mm
End of measuring range	125 mm	60 mm
Max. deviation of a single point		
2 sigma	±0.10 %	-
Line linearity	4 µm	-
Line linearity	±0.008 %	-

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Scanner	
<b>Resolution &amp; Frequency</b>	
Resolution	640 points/profile
Profile frequency	up to 2,000 Hz
<b>Interfaces</b>	
Ethernet GigE Vison	Output of measurement values Sensor control Profile data transmission
Digital inputs	Mode switching Encoder (counter) Trigger
RS422 (half-duplex)	Output of measurement values Sensor control Trigger Synchronization
Output of measurement values	Ethernet (UDP / Modbus TCP); RS422 (ASCII / Modbus RTU) analog; switch signal PROFINET; EtherCAT; EtherNet/IP
<b>Light Source</b>	
Red Laser	3x color LEDs for laser, data and error $\leq 8$ mW Standard: laser class 2M, semiconductor laser 658 nm $\leq 20$ mW
Laser Class	2M
Laser switch-off	via software, hardware switch-off with /SI option
Aperture angle of laser line	25°
Permissible ambient light (fluorescent light)	10,000 lx
<b>Temperature</b>	
Storage	-20 ... +70 °C
Operation	0 ... +45 °C
<b>Dimensions (mm)</b>	
Height	96
Width	33
Length	85
Weigh (without cable)	380 gramm
<b>Supply Voltage</b>	
Power supply	11 - 30 VDC, 500 mA (Power over Ethernet available)



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Scanner	
<b>Supply Voltage</b>	
Power supply	11 - 30 VDC, 500 mA (Power over Ethernet available)
<b>Certifications</b>	
Protection class (DIN EN 60529)	IP65 (when connected)
Vibration (DIN EN 60068-2-27)	2 g / 20 ... 500 Hz
Shock (DIN EN 60068-2-6)	15 g / 6 ms
<b>Source</b>	
<a href="https://www.micro-epsilon.com/2D_3D/laser-scanner/scanCONTROL-2500/">https://www.micro-epsilon.com/2D_3D/laser-scanner/scanCONTROL-2500/</a>	

### Payload Mount

Universal 'RAM' ball joint couplings  
Servo controlled Encoder Wheel (raise and lower)  
Ethernet and 12 Volt supply via robot payload connector

