More Precision

scanCONTROL // 2D/3D laser scanners (laser profile sensors)
Compact design for all measurement tasks
The design of the LLT 26xx series is focused on compact size and low weight. The controller is integrated in the housing, simplifying cabling arrangements and mechanical integration. Due to its compact design and the profile frequency of up to 4000 profiles/sec., the 26xx series is especially suitable for dynamic and robotic applications.

Interfaces for universal integration
The multi-function port can be used for power supply, as data output, for switching parameters, as trigger input or for synchronizing several scanCONTROL sensors. During synchronous operation, an integrated mode can be used to operate the sensors alternately compensating for overlapping laser lines. One scanner is measuring whilst the other laser line is switched off.

The scanners can be supplied via Ethernet if necessary. If Industrial Ethernet is used as data output, only one cable will remain that connects the sensor to the periphery.

For all SMART sensors, the measurement data output can be carried out in three different ways, e.g., via Ethernet UDP, Modbus TCP, or serial. Micro-Epsilon converters enable data transmission via analog signals, digital switching signals, PROFINET, Ethernet/IP, or EtherCAT.

Article designation

<table>
<thead>
<tr>
<th>LLT</th>
<th>26</th>
<th>00</th>
<th>-25 /SI</th>
</tr>
</thead>
</table>

Options - see below

Measuring range
- 25 mm
- 50 mm
- 100 mm

Class
- 00 = COMPACT
- 10 = SMART
- 50 = HIGH SPEED
- 60 = HIGH SPEED SMART

Series
LLT26xx

Laser options*

<table>
<thead>
<tr>
<th>/SI</th>
<th>Hardware switch-off of the laser line</th>
</tr>
</thead>
<tbody>
<tr>
<td>/3B</td>
<td>Improved laser power (class 3B, ≤20 mW), e.g., for dark surfaces</td>
</tr>
</tbody>
</table>

Cable output options*

<table>
<thead>
<tr>
<th>/PT</th>
<th>Cable directly out of the sensor (Pigtail) - Length 0.25m</th>
</tr>
</thead>
<tbody>
<tr>
<td>/VT</td>
<td>Cable directly out of the sensor (Variable Tail) - Length 0.1...1.0m (freely selectable)</td>
</tr>
<tr>
<td>/ST</td>
<td>1 cable directly out of the sensor (Single Tail) - multi-function port is omitted, Length 0.1...1.0m (freely selectable)</td>
</tr>
</tbody>
</table>

*Options can be combined

scanCONTROL 26x0

- Profile frequency up to 4,000 Hz, ideal for fast 2D/3D measurements
- Resolution (x-axis) up to 640 points
- High reference resolution for the detection of finest details
## Technical Data

### z-axis (height)

<table>
<thead>
<tr>
<th>Model</th>
<th>LLT26xx-25</th>
<th>LLT26xx-50</th>
<th>LLT26xx-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard measuring range</td>
<td>53.5 mm</td>
<td>70 mm</td>
<td>190 mm</td>
</tr>
<tr>
<td>Mid of measuring range</td>
<td>66 mm</td>
<td>95 mm</td>
<td>240 mm</td>
</tr>
<tr>
<td>End of measuring range</td>
<td>78.5 mm</td>
<td>120 mm</td>
<td>290 mm</td>
</tr>
<tr>
<td>Height of measuring range</td>
<td>25 mm</td>
<td>50 mm</td>
<td>100 mm</td>
</tr>
<tr>
<td>Extended measuring range</td>
<td>53 mm</td>
<td>65 mm</td>
<td>125 mm</td>
</tr>
<tr>
<td>Mid of measuring range</td>
<td>79 mm</td>
<td>125 mm</td>
<td>390 mm</td>
</tr>
<tr>
<td>End of measuring range</td>
<td>78.5 mm</td>
<td>120 mm</td>
<td>290 mm</td>
</tr>
<tr>
<td>Linearity 1) (2 sigma)</td>
<td>±0.10 % FSO</td>
<td>±0.10 % FSO</td>
<td>±0.13 % FSO</td>
</tr>
<tr>
<td>Reference resolution 2)</td>
<td>2 µm</td>
<td>4 µm</td>
<td>12 µm</td>
</tr>
</tbody>
</table>

### x-axis (width)

<table>
<thead>
<tr>
<th>Model</th>
<th>LLT26xx-25</th>
<th>LLT26xx-50</th>
<th>LLT26xx-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard measuring range</td>
<td>23.4 mm</td>
<td>42 mm</td>
<td>83.1 mm</td>
</tr>
<tr>
<td>Mid of measuring range</td>
<td>25 mm</td>
<td>50 mm</td>
<td>100 mm</td>
</tr>
<tr>
<td>End of measuring range</td>
<td>29.1 mm</td>
<td>58 mm</td>
<td>120.8 mm</td>
</tr>
<tr>
<td>Extended measuring range</td>
<td>23.2 mm</td>
<td>40 mm</td>
<td>58.5 mm</td>
</tr>
<tr>
<td>Start of measuring range</td>
<td>29.3 mm</td>
<td>60 mm</td>
<td>143.5 mm</td>
</tr>
<tr>
<td>End of measuring range</td>
<td>29.3 mm</td>
<td>60 mm</td>
<td>143.5 mm</td>
</tr>
<tr>
<td>Resolution (x-axis)</td>
<td>640 points/profile</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Profile frequency

<table>
<thead>
<tr>
<th>Standard</th>
<th>up to 300 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGHSPEED</td>
<td>up to 4,000 Hz</td>
</tr>
</tbody>
</table>

### Interfaces

<table>
<thead>
<tr>
<th>Ethernet GigE Vision</th>
<th>Output of measurement values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital inputs</td>
<td>Sensor control</td>
</tr>
<tr>
<td>RS422 (half-duplex)</td>
<td>Profile data transmission</td>
</tr>
</tbody>
</table>

### Output of measurement values

| Ethernet (UDP / Modbus TCP); RS422 (ASCII / Modbus RTU) analog 4) | switch signal 5) | PROFINET 6); EtherCAT 6); EtherNet/IP 6) |

### Display (LED)

1x laser ON/OFF, 1x power/error/status

### Light source

Semiconductor laser 658 nm (red)

### Aperture angle of laser line

20° 25° 25°

### Laser power

Standard ≤ 8 mW (laser class 2M)

optional ≤ 20 mW (laser class 3B)

### Laser switch-off

optional Hardware safety switch-off

### Permissible ambient light (fluorescent light)

10,000 lx

### Protection class (sensor)

IP65

### EMC requirements

according to: EN 61326-1: 2006-10
DIN EN 55011: 2007-11 (group 1, B class)
EN 61000-6-2: 2006-03

### Vibration

2 g / 20 ... 500 Hz

### Shock

15 g / 6 ms

### Operating temperature

0 °C ... +45 °C

### Storage temperature

-20 °C ... +70 °C

### Dimensions

96 x 85 x 33 mm

### Sensor weight (without cable)

380 g

### Supply

11 … 30 VDC, nominal value 24 V, 500 mA, IEEE 802.3af class 2, Power over Ethernet

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1) Measuring range (standard)
2) Measurement object: Micro-Epsilon standard object (metallic, diffusely reflecting material)
3) According to a one-time averaging across the measuring field (640 points)
4) RS422 interface, programmable either as serial interface or as input for triggering/synchronization
5) Only with Output Unit
6) Only with scanCONTROL Gateway

FSO = Full Scale Output
Dimensions and measuring range

LLT25x0/LLT26x0/29x0-50

- Recommended attachment point

- Standard range
- Extended range

- MR ext. >= 65
- 70 SMR
- 95 MMR
- 120 EMR
- MR ext. <= 125

- Recommended attachment point

- Standard range
- Extended range
Sensors and Systems from Micro-Epsilon

Sensors and systems for displacement, distance and position

Sensors and measurement devices for non-contact temperature measurement

Measuring and inspection systems for metal strips, plastics and rubber

Optical micrometers and fiber optics, measuring and test amplifiers

Color recognition sensors, LED analyzers and inline color spectrometers

3D measurement technology for dimensional testing and surface inspection