









# More Precision

**scanCONTROL** // 2D/3D Laser profile sensors



# Compact laser scanner with high precision scanCONTROL 29x0

-  Ideal for precise 2D/3D measurements
-  Resolution x-axis: 1,280 points
-  High accuracy for the detection of finest details
-  Profile frequency up to 2,000 Hz
-  Also available with patented Blue Laser Technology
-  Compatible with **COGNEX®** VisionPro



## Compact design for precise measurements

scanCONTROL 29x0 laser scanners are designed for industrial measurement tasks where compact design and high accuracy are required. Thanks to their high resolution, versatility and excellent price-performance ratio, the scanners are particularly suitable for static and dynamic applications, e.g., on robots. They measure and evaluate, e.g., angles, steps, gaps, distances and extreme values.

## Available as PROFILE and SMART versions

The scanCONTROL 29x0 series is available as PROFILE and SMART versions. As PROFILE scanners, they provide calibrated profile data that can be further processed on a PC using software provided by the customer. The SMART scanners work independently and provide selected measurement values. All sensor parameters and the desired measurement programs are set in the scanCONTROL Configuration Tools software and saved directly in the internal controller.


## Short measuring range with high resolution

With a laser line of just 10 mm, the scanCONTROL 29x0-10/BL models recognize the finest of details and structures. The high profile resolution combined with the blue laser line allow for maximum precision in versatile applications, e.g., monitoring in electronics production.


## Article designation

|                         |    |    |     |     |
|-------------------------|----|----|-----|-----|
| LLT                     | 29 | 00 | -25 | /SI |
| Options - see below     |    |    |     |     |
| <b>Measuring range</b>  |    |    |     |     |
| 10 mm (only Blue Laser) |    |    |     |     |
| 25 mm                   |    |    |     |     |
| 50 mm                   |    |    |     |     |
| 100 mm                  |    |    |     |     |
| <b>Class</b>            |    |    |     |     |
| 00=PROFILE              |    |    |     |     |
| 10=SMART                |    |    |     |     |
| 50=HIGHSPEED            |    |    |     |     |
| 60=HIGHSPEED SMART      |    |    |     |     |
| <b>Series</b>           |    |    |     |     |
| LLT29x0                 |    |    |     |     |

## Laser options\*

|                                                                                     |     |                                                                                         |
|-------------------------------------------------------------------------------------|-----|-----------------------------------------------------------------------------------------|
|  | /SI | Hardware switch-off of the laser line                                                   |
|                                                                                     | /3B | Increased laser power (class 3B, ≤ 20 mW), e.g., for dark surfaces                      |
|                                                                                     | /BL | Blue laser line (405 nm) for (semi-) transparent, red-hot glowing and organic materials |

## Cable outlet options\*

|                                                                                      |     |                                                                                                |
|--------------------------------------------------------------------------------------|-----|------------------------------------------------------------------------------------------------|
|  | /PT | Cable directly out of the sensor ("Pigtail")<br>Length 0.3 m                                   |
|                                                                                      | /VT | Cable directly out of the sensor ("Variable Tail")<br>Length 0.1 ... 1.0 m (freely selectable) |

\*Options can be combined

Accessories from page 39

| Model                                           |                                    | LLT29xx-10/BL                                                                                                       | LLT29xx-25                                           | LLT29xx-50    | LLT29xx-100   |
|-------------------------------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|---------------|---------------|
| Measuring range (z-axis)                        | Start of measuring range           | 52.5 mm                                                                                                             | 53.5 mm                                              | 70 mm         | 190 mm        |
|                                                 | Mid of measuring range             | 56.5 mm                                                                                                             | 66 mm                                                | 95 mm         | 240 mm        |
|                                                 | End of measuring range             | 60.5 mm                                                                                                             | 78.5 mm                                              | 120 mm        | 290 mm        |
|                                                 | Height of measuring range          | 8 mm                                                                                                                | 25 mm                                                | 50 mm         | 100 mm        |
| Extended measuring range (z-axis)               | Start of measuring range           | -                                                                                                                   | 53 mm                                                | 65 mm         | 125 mm        |
|                                                 | End of measuring range             | -                                                                                                                   | 79 mm                                                | 125 mm        | 390 mm        |
| Line linearity (z-axis) <sup>[1] [2]</sup>      |                                    | 1 $\mu$ m                                                                                                           | 2 $\mu$ m                                            | 4 $\mu$ m     | 12 $\mu$ m    |
|                                                 |                                    | $\pm 0.0125$ %                                                                                                      | $\pm 0.008$ %                                        | $\pm 0.008$ % | $\pm 0.012$ % |
| Measuring range (x-axis)                        | Start of measuring range           | 9.4 mm                                                                                                              | 23.4 mm                                              | 42 mm         | 83.1 mm       |
|                                                 | Mid of measuring range             | 10 mm                                                                                                               | 25 mm                                                | 50 mm         | 100 mm        |
|                                                 | End of measuring range             | 10.7 mm                                                                                                             | 29.1 mm                                              | 58 mm         | 120.8 mm      |
| Extended measuring range (x-axis)               | Start of measuring range           | -                                                                                                                   | 23.2 mm                                              | 40 mm         | 58.5 mm       |
|                                                 | End of measuring range             | -                                                                                                                   | 29.3 mm                                              | 60 mm         | 143.5 mm      |
| Resolution (x-axis)                             |                                    | 1,280 points/profile                                                                                                |                                                      |               |               |
| Profile frequency                               | Standard                           | up to 300 Hz                                                                                                        |                                                      |               |               |
|                                                 | High speed                         | up to 2,000 Hz                                                                                                      |                                                      |               |               |
| Interfaces                                      | Ethernet GigE Vision               | Output of measurement values Sensor control Profile data transmission                                               |                                                      |               |               |
|                                                 | Digital inputs                     | Mode switching Encoder (counter) Trigger                                                                            |                                                      |               |               |
|                                                 | RS422 (half-duplex) <sup>[3]</sup> | Output of measurement values Sensor control Trigger Synchronization                                                 |                                                      |               |               |
| Output of measurement values <sup>[4] [5]</sup> |                                    | Ethernet (UDP / Modbus TCP); RS422 (ASCII / Modbus RTU)<br>Analog; switch signal<br>PROFINET; EtherCAT; EtherNet/IP |                                                      |               |               |
| Control and indicator elements                  |                                    | 3x color LEDs for laser, data and error                                                                             |                                                      |               |               |
| Light source                                    | Red Laser                          | -                                                                                                                   | $\leq 8$ mW                                          |               |               |
|                                                 |                                    | -                                                                                                                   | Standard: laser class 2M, semiconductor laser 658 nm |               |               |
|                                                 |                                    | -                                                                                                                   | $\leq 20$ mW                                         |               |               |
|                                                 |                                    | -                                                                                                                   | Option: laser class 3B, semiconductor laser 658 nm   |               |               |
|                                                 | Blue laser                         | $\leq 8$ mW                                                                                                         |                                                      |               |               |
|                                                 |                                    | Standard: laser class 2M, semiconductor laser 405 nm                                                                |                                                      |               |               |
| Laser switch-off                                |                                    | via software, hardware switch-off with /SI option                                                                   |                                                      |               |               |
| Aperture angle of laser line                    |                                    | 10 °                                                                                                                | 20 °                                                 | 25 °          | 25 °          |
| Permissible ambient light                       | (fluorescent light) <sup>[1]</sup> | 10,000 lx                                                                                                           |                                                      |               |               |
| Protection class (DIN EN 60529)                 |                                    | IP65 (when connected)                                                                                               |                                                      |               |               |
| Vibration (DIN EN 60068-2-27)                   |                                    | 2g / 20 ... 500 Hz                                                                                                  |                                                      |               |               |
| Shock (DIN EN 60068-2-6)                        |                                    | 15g / 6 ms                                                                                                          |                                                      |               |               |
| Temperature range                               | Storage                            | -20 ... +70 °C                                                                                                      |                                                      |               |               |
|                                                 | Operation                          | 0 ... +45 °C                                                                                                        |                                                      |               |               |
| Weight                                          |                                    | 440 g (without cable)                                                                                               | 380 g (without cable)                                |               |               |
| Supply voltage                                  |                                    | 11 ... 30 VDC, nominal value 24 V, 500 mA, IEEE 802.3af class 2, Power over Ethernet (PoE)                          |                                                      |               |               |

<sup>[1]</sup> Based on the measuring range; measuring object: Micro-Epsilon standard object

<sup>[2]</sup> According to a one-time averaging across the measuring field (640 points)

<sup>[3]</sup> RS422 interface, programmable either as serial interface or as input for triggering/synchronization

<sup>[4]</sup> Analog | switching signal: Only in conjunction with 2D/3D output unit

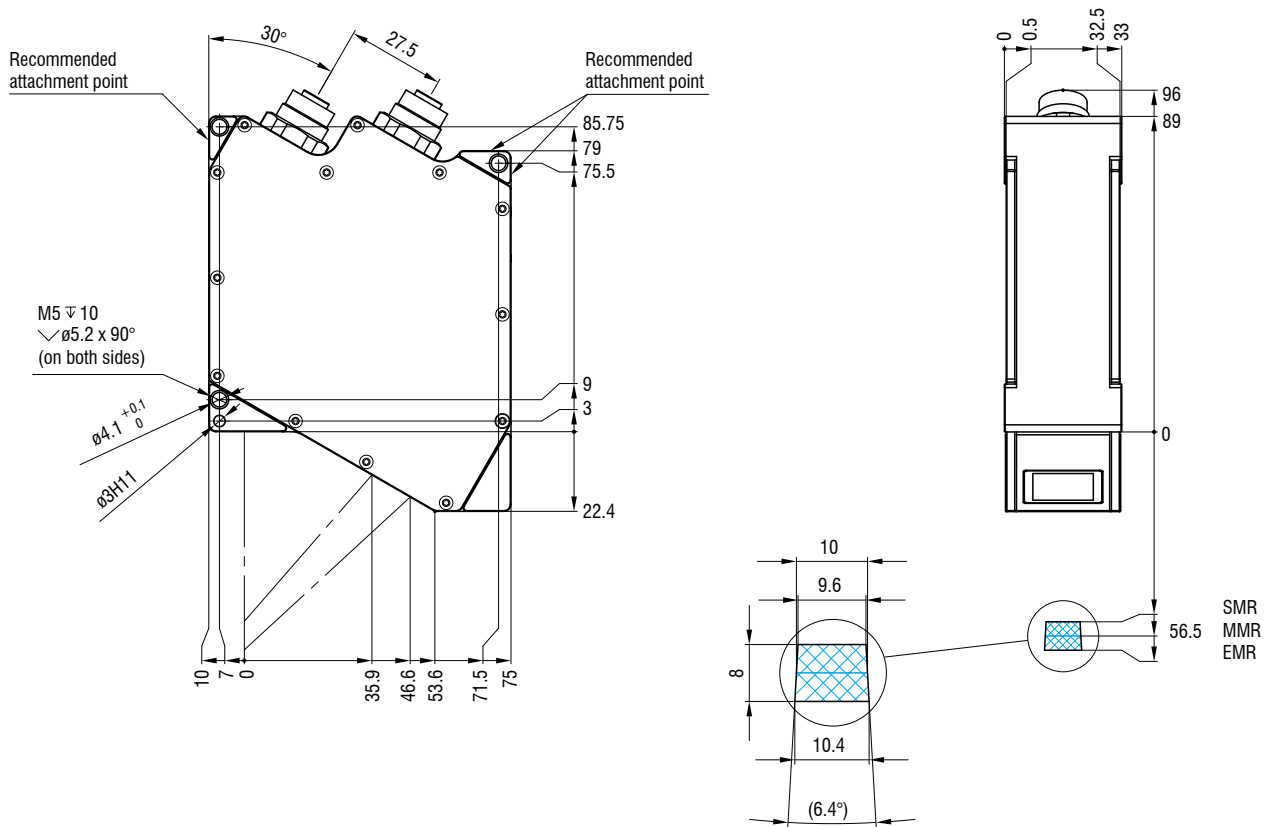
<sup>[5]</sup> PROFINET | EtherCAT | EtherNet/IP: Only in conjunction with 2D/3D gateway

# Dimensions and measuring ranges

## scanCONTROL

LLT29x0-10/BL

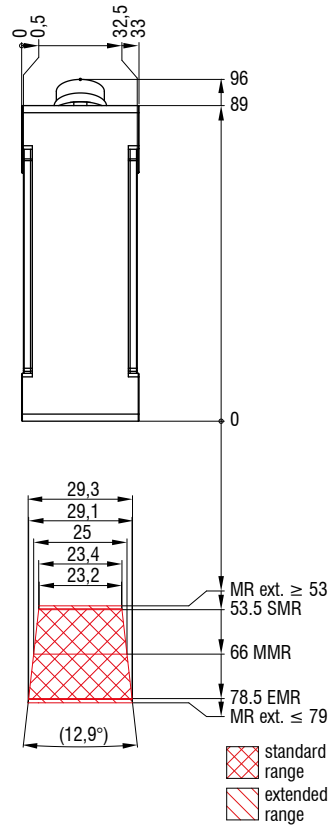
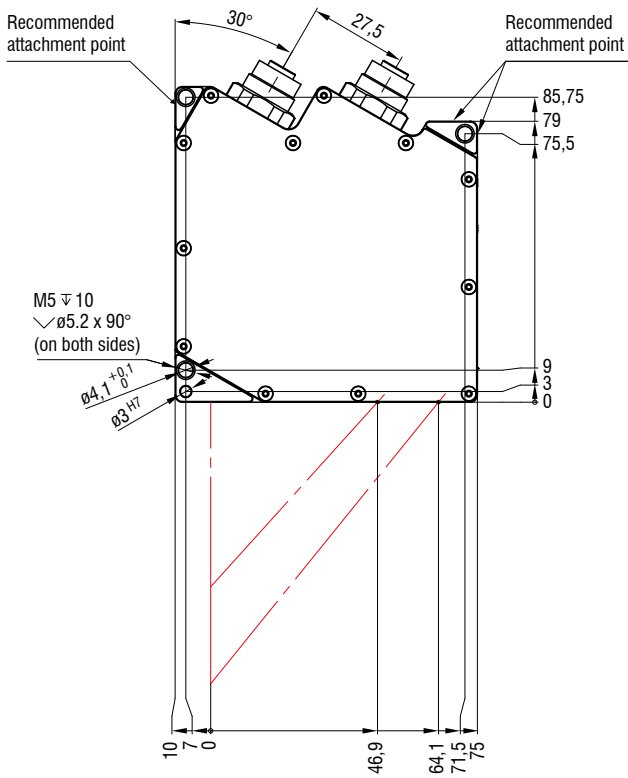
Blue Laser



(dimensions in mm, not to scale)

LLT25x0-25 / LLT29x0-25

Red Laser Blue Laser



(dimensions in mm, not to scale)

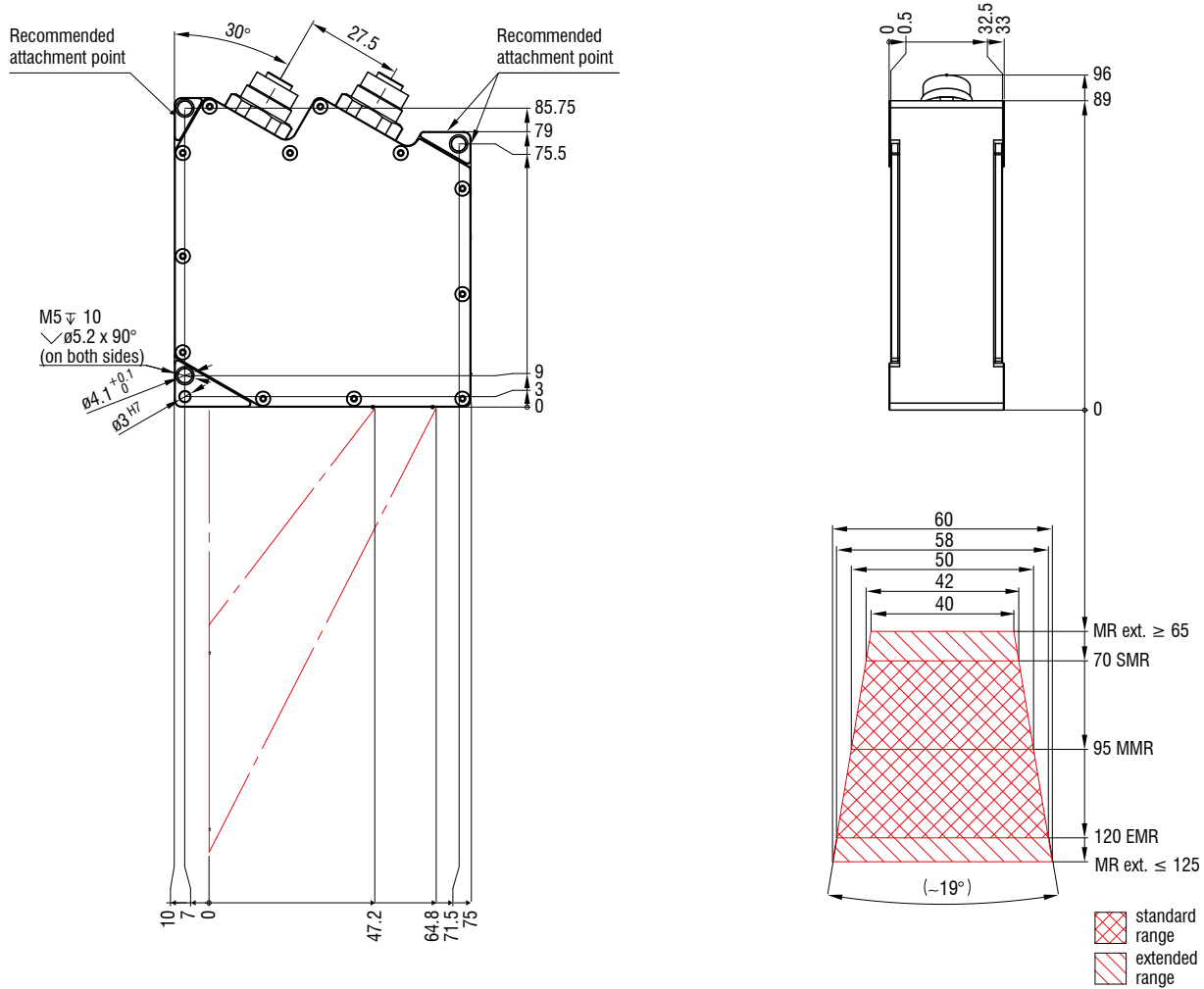
# Dimensions and measuring ranges

## scanCONTROL

LLT25x0-50 / LLT29x0-50

Red Laser

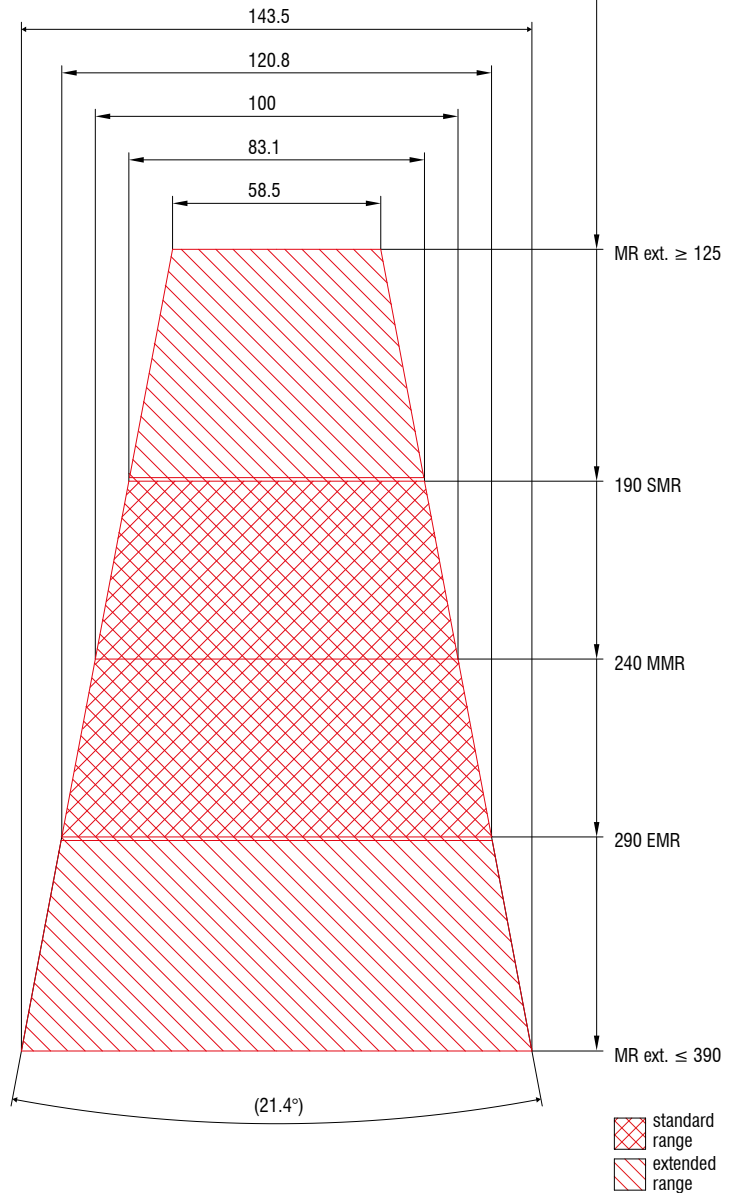
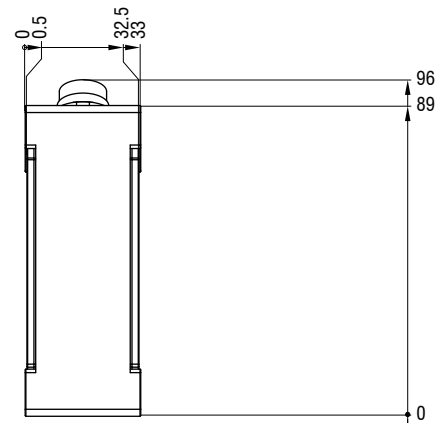
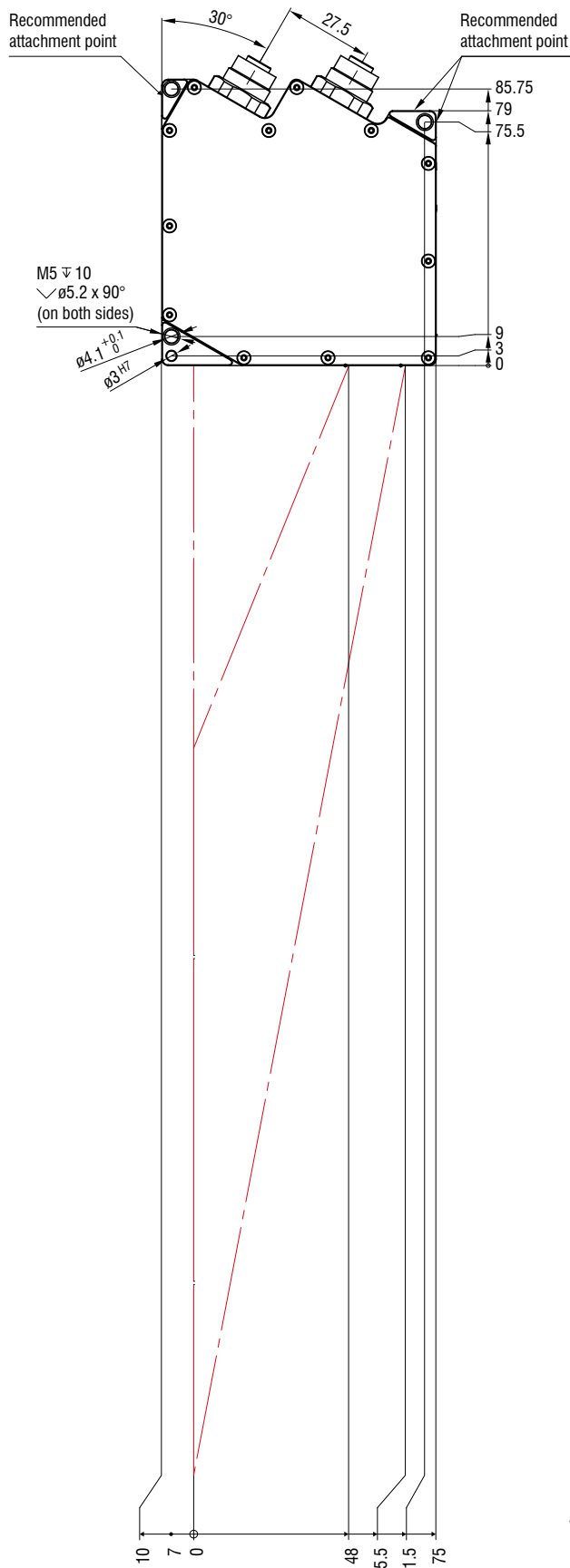
Blue Laser



(dimensions in mm, not to scale)

LLT25x0-100 / LLT29x0-100

Red Laser Blue Laser



(dimensions in mm, not to scale)

# Accessories

## scanCONTROL

### 2D/3D Gateway

PROFINET / EtherCAT / EtherNet/IP for all **SMART** scanners

One 2D/3D Gateway is connectable with up to 4 sensors. Operation of more than one sensor requires a switch. The 2D/3D Gateway communicates with the scanCONTROL SMART sensor via Ethernet Modbus.

The resultant values are then converted to PROFINET, EtherCAT or EtherNet/IP. The customer carries out the parameter setup with a detailed instruction manual. The gateway can also be parameterized in advance at the factory.

#### Models

6414142 2D/3D Gateway

Fieldbus coupler, configurable for PROFINET, EtherNet/IP and EtherCAT

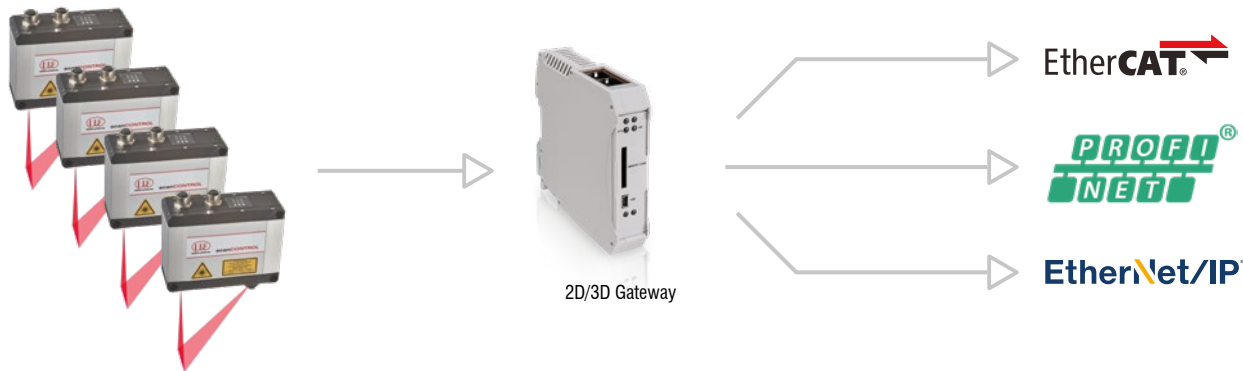
6414142.001 2D/3D Gateway, pre-parameterized,

Pre-parameterized to customer log and IP addresses

| Number of sensors on the gateway | Maximum measurement frequency |
|----------------------------------|-------------------------------|
| 1                                | 500 Hz                        |
| 2                                | 500 Hz                        |
| 3                                | 330 Hz                        |
| 4                                | 250 Hz                        |

**NEW**

Higher measurement frequencies are also possible with the 30xx series due to the Modbus bundling option.



### 2D/3D Output Unit

Analog signals / digital switch signals for all **SMART** scanners

The 2D/3D Output Unit is addressed via Ethernet and outputs analog and digital signals. Different output terminals can be configured to the fieldbus coupler.

#### Models

6414073 2D/3D Output Unit Basic/ET

Fieldbus coupler with filter module and bus end terminal

0325131 OU-DigitalOut/8-channel/DC24V/0.5A/negative

8-channel digital output terminal; DC 24 V; 0.5 A; negative switching

0325115 OU-DigitalOut/8-channel/DC24V/0.5A/positive

8-channel digital output terminal; DC 24 V; 0.5 A; positive switching

0325116 OU-AnalogOut/4-channel/±10 V

4-channel analog output terminal; ±10 V

0325135 OU-AnalogOut/4-channel/0-10 V

4-channel analog output terminal; 0-10 V

0325132 OU-AnalogOut/4-channel/0-20 mA

4-channel analog output terminal; 0-20 mA

0325133 OU-AnalogOut/4-channel/4-20 mA

4-channel analog output terminal; 4-20 mA

Other terminals available on request.





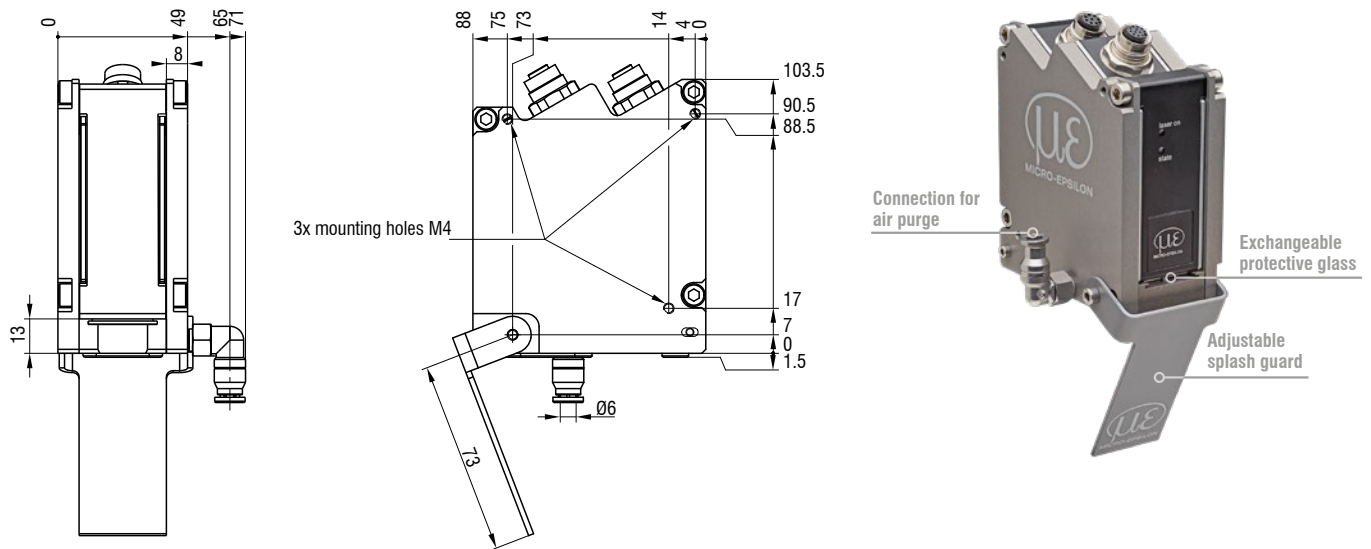
# Accessories

## scanCONTROL

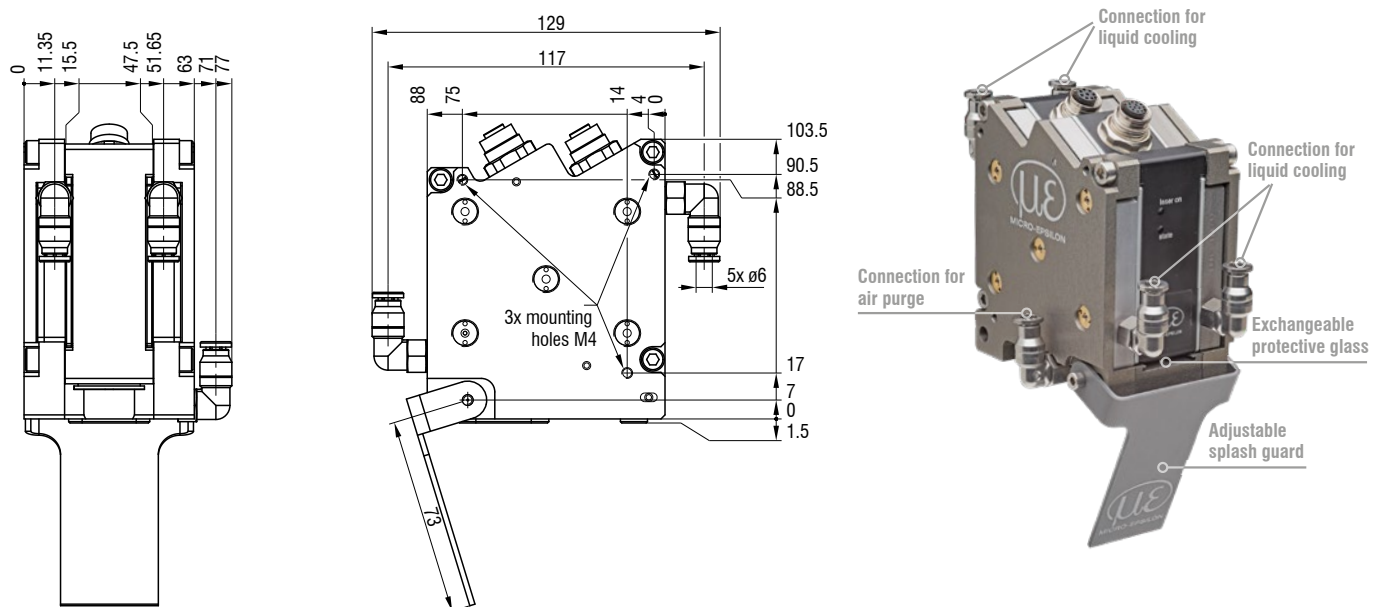
### Housings for protection and cooling for LLT25x0 and 29xx

(Not available for scanCONTROL 29xx-10/BL)

#### Protective housing with blow-out system



#### Protective housing with blow-out system and water cooling



#### Art. no. Model

|         |                                                       |
|---------|-------------------------------------------------------|
| 2105058 | Protective housing for LLT25/LLT29                    |
| 2105059 | Protective cooling housing LLT25/LLT29                |
| 0755075 | Exchangeable glass for protective housing LLT25/LLT29 |

#### Description

|                                                                                    |
|------------------------------------------------------------------------------------|
| Adaptive protective housing for LLT25/LLT29                                        |
| Adaptive protective and cooling housing for LLT25/LLT29                            |
| Exchangeable glass for protection / cooling concept LLT25/LLT29, pack of 50 pieces |

### Connection cables

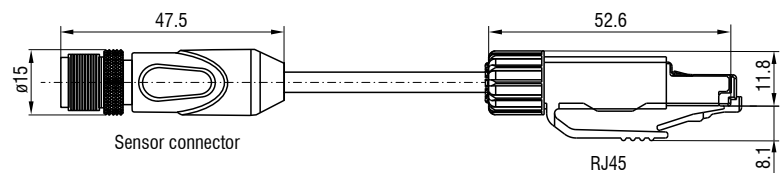
#### PCR3000-x Multi-function cable

Cable for power supply, digital inputs (TTL or HTL), RS422 (half-duplex); suitable for drag chains and robots  
Cable length (m): 2 / 5 / 10 / 15 / 20 / 25 / 35



#### SCR3000A-x Ethernet connection cable

Cable for parameter setting, value and profile transmission; suitable for drag chains and robots  
Cable length (m): 0.5 / 2 / 5 / 10 / 15 / 20 / 25 / 35



### Other accessories

#### Art. no. Model

0323478 Connector/12-pin/Multifunction for LLT25/29/30 series  
0323479 Connector/8-pin/Ethernet for LLT25/29/30 series  
2420067 PS25/29/30  
0254111 Case for LLT25/29/30 (up to MR 200)  
0254153 Case for LLT30 series, MR 430/600  
2960097 Measuring stand for LLT25/26/29/30 series  
2960115 Measuring stand for LLT30 series, MR 430/600

#### Description

Plug for multifunction port  
Plug for Ethernet socket  
Power supply unit for scanCONTROL  
Transport case for scanCONTROL sensors incl. measuring stand  
Transport case for scanCONTROL sensors incl. measuring stand  
Measuring stand with sensor adapter board, flexible rod and clamp base  
Measuring stand with sensor adapter board, flexible rod and clamp base

## Sensors and Systems from Micro-Epsilon



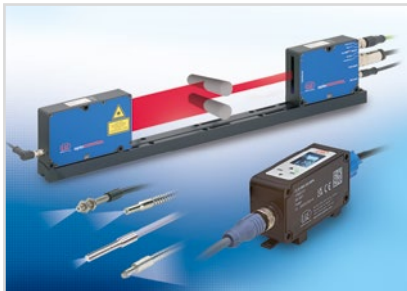
Sensors and systems for displacement, distance and position



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

