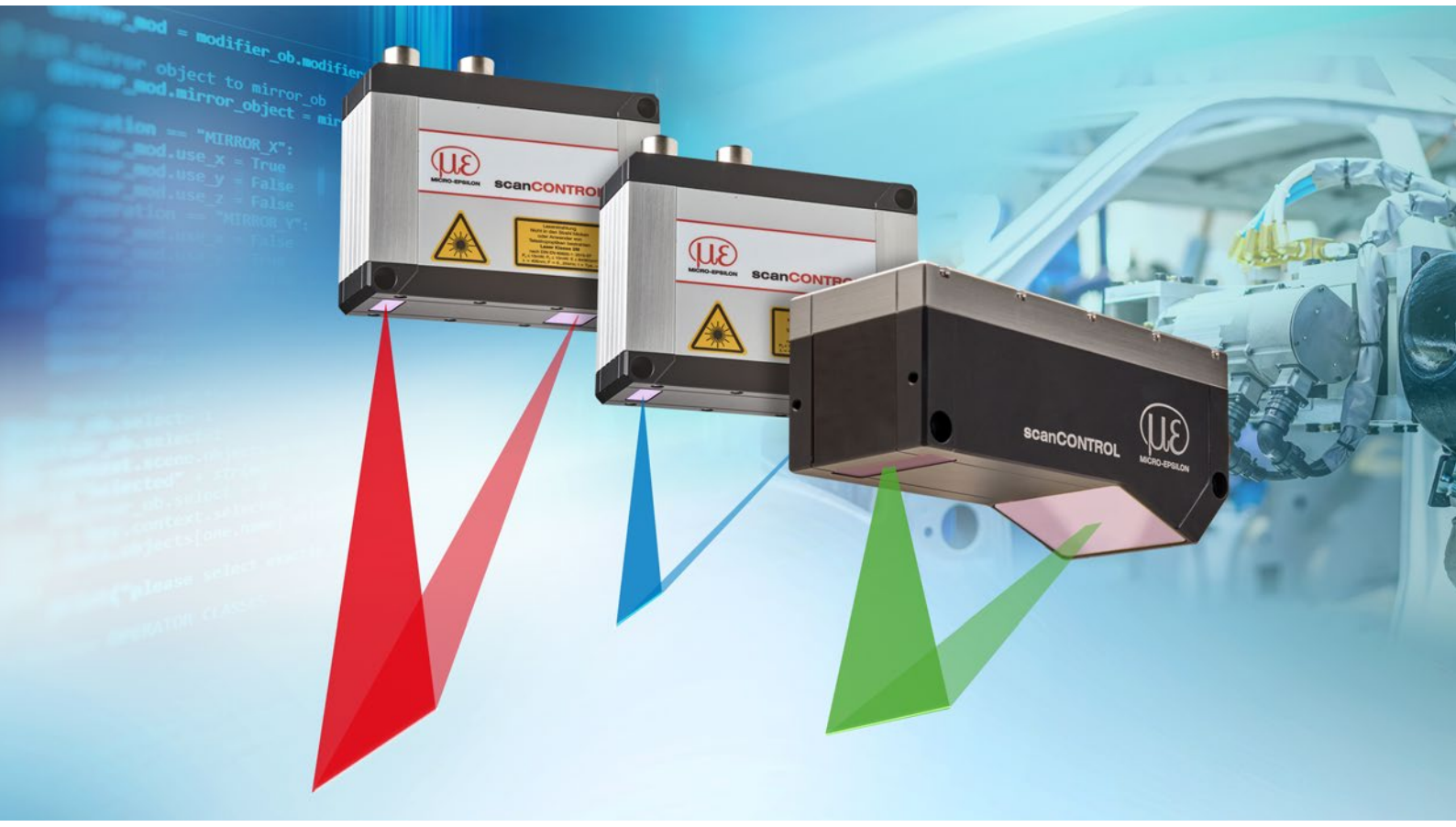
MICRO-EPSILON

# More Precision.

## scanCONTROL // 2D/3D Laser profile scanners



# High-performance 2D/3D laser scanners with maximum precision
# scanCONTROL 3000 / 3002

- High resolution in x- and z-axis for accurate profile measurement
- Profile frequency up to 10 kHz for monitoring dynamic processes
- Innovative exposure control
- For small and large measuring ranges
- Also available with patented Blue Laser Technology




### Precise 2D/3D profile measurement

The scanCONTROL 30x0 and 30x2 laser profile scanners provide calibrated profile data for demanding measurement and inspection tasks. They capture profiles with high accuracy and reliably measure, for example, angles, steps, gaps, distances, and circles.
With their high profile frequency and versatile application options, the scanners are suitable for static and dynamic applications, automated inspection processes and robotic applications.

### Performance levels for different requirements

The scanCONTROL 30x0 series is designed for very high data rates and delivers profile data at up to 9.6 million points per second. The scanCONTROL 30x2 series offers profile frequencies up to 10 kHz, resolutions up to 1,024 points, and data rates up to 7.9 million points per second. Depending on the application, different performance levels are available for precise and fast profile measurements.

### Available as PROFILE and SMART versions

The scanCONTROL 30xx series is available in PROFILE and SMART versions. In the PROFILE version, the scanners provide calibrated profile data that can be further processed using the customer's own software.

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. With the 3DInspect software, scanCONTROL sensors can also be used for 3D evaluations.

### Article designation

| LLT | 30 | xx | -25 | /SI |
|---|---|---|---|---|

**Options** – see below

**Measuring range**
25 mm
50 mm
100 mm
200 mm
430 mm
600 mm

**Class**
x0 class for demanding measurement tasks
x2 class for industrial measurement and integration tasks
0x = PROFILE
1x = SMART

**Model series**
LLT30xx

### Laser options *

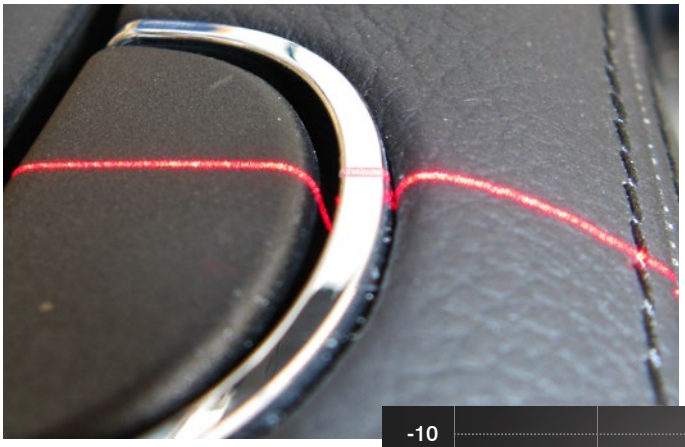
| | | |
|---|---|---|
|  | /SI | Hardware switch-off of the laser line |
| | /3R | Increased laser power (Class 3R) e.g., for dark surfaces |
| | /BL | Blue laser line (405 nm) for (semi-)transparent, red-hot glowing and organic materials (Measuring ranges 25–100 mm) |

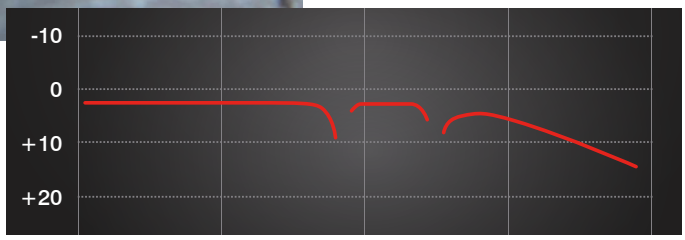
### Cable outlet options *

| | | |
|---|---|---|
|  | /RT | Cable outlet on the rear side ("Rear Tail") for space-saving installation, cable length 0.3 m, Sockets at the end of the cable (Measuring ranges 25–200 mm) |
|  | /PT | Cable directly out of the sensor ("Pigtail"). Available lengths: 0.3 / 0.6 / 1.00 m |

*Options can be combined

Accessories starting on page 50



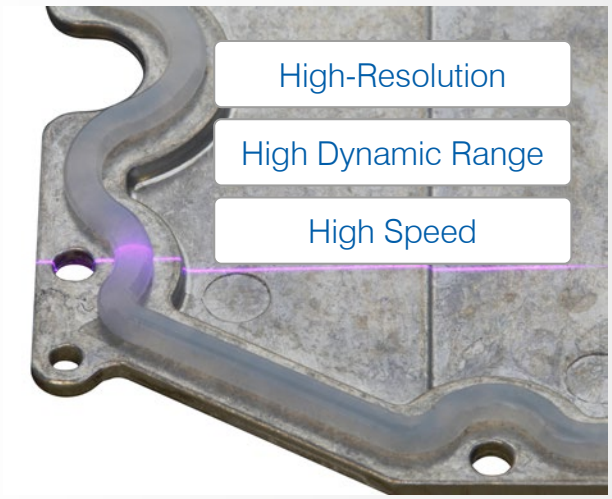



**Innovative exposure control to master challenging surfaces**
On inhomogeneous or dark surfaces, the HDR (High Dynamic Range) data acquisition mode and improved auto exposure optimize the measurement results.

The different exposures are acquired simultaneously in HDR mode, with no offset between the images. This enables reliable capture of moving objects. The areas for auto exposure can also be selected individually.

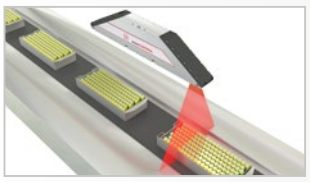
## Fast measurement results with operating modes

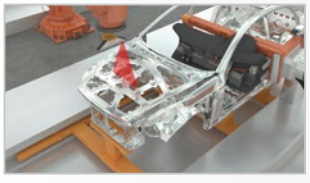
Choose from three predefined operating modes for your specific measurement task: “High-Resolution” for maximum precision, “High Dynamic Range” for optimal profile detection on difficult surfaces and “High Speed” for ultra-fast measurements.




## Large measuring field up to 600×600 mm

The scanCONTROL 30xx laser scanners are also available with a large measuring field that covers up to 600 × 600 mm. This enables even large measuring objects to be captured with high accuracy.


Assembly monitoring of battery packs


Assembly monitoring in body-in-white production


Inline 3D inspection of tire geometry



# High-performance laser scanner
# scanCONTROL 30x0

| Model | | LLT30x0-25 | LLT30x0-50 | LLT30x0-100 | LLT30x0-200 |
|---|---|---|---|---|---|
| Measuring range (z-axis) | Start of measuring range | 77.5 mm | 105 mm | 200 mm | 200 mm |
| | Mid of measuring range | 85 mm | 125 mm | 270 mm | 310 mm |
| | End of measuring range | 92.5 mm | 145 mm | 340 mm | 420 mm |
| | Height of measuring range | 15 mm | 40 mm | 140 mm | 220 mm |
| Extended measuring range (z-axis) | Start of measuring range | - | - | 190 mm | 160 mm |
| | End of measuring range | - | - | 360 mm | 460 mm |
| Linearity (z-axis) [1] [2] | | 1.5 µm | 3 µm | 9 µm | 26 µm |
| | | ±0.01 % | ±0.0075 % | ±0.006 % | ±0.012 % |
| Measuring range (x-axis) | Start of measuring range | 23 mm | 43.3 mm | 75.6 mm | 130 mm |
| | Mid of measuring range | 25 mm | 50 mm | 100 mm | 200 mm |
| | End of measuring range | 26.8 mm | 56.5 mm | 124.4 mm | 270 mm |
| Extended measuring range (x-axis) | Start of measuring range | - | - | 72.1 mm | 100 mm |
| | End of measuring range | - | - | 131.1 mm | 290 mm |
| Resolution (x-axis) | | 2,048 points/profile | | | |
| Profile frequency | | up to 10,000 Hz | | | |
| Interfaces | Ethernet GigE Vision | Output of measurement values<br>Sensor control<br>Profile data transmission | | | |
| | Digital inputs | Mode switching Encoder (counter) Trigger | | | |
| | RS422 (half-duplex) [3] | Output of measurement values<br>Sensor control<br>Trigger<br>Synchronization | | | |
| Output of measurement values [4] [5] | | 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 | ≤ 10 mW | | | ≤ 12 mW |
| | | Standard: laser class 2M, semiconductor laser 658 nm | | | Option: laser class 3R, semiconductor laser 660 nm |
| | | ≤ 30 mW | | ≤ 50 mW | |
| | | Option: laser class 3R, semiconductor laser 658 nm | | | |
| | Blue laser | ≤ 10 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 | | 23 ° | 28 ° | 30 ° | 45 ° |
| Permissible extraneous light | (fluorescent light) [1] | 10,000 lx | | | |
| Protection class (DIN EN 60529) | | IP67 (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 °C ... +70 °C | | | |
| | Operation | 0 °C … +45 °C | | | |
| Weight | | 415 g (without cable) | | | |
| Supply voltage | | 11 … 30 VDC, nominal value 24 V, 500 mA, IEEE 802.3af class 2, Power over Ethernet (PoE) | | | |

[1] Based on the measuring range; measuring object: Micro-Epsilon standard object
[2] According to a one-time averaging across the measuring field (2,048 points)
[3] RS422 interface, programmable either as serial interface or as input for triggering/synchronization
[4] Analog | switching signal: Only in conjunction with 2D/3D output unit
[5] PROFINET | EtherCAT | EtherNet/IP: Only in conjunction with 2D/3D gateway

| Model | | LLT30x0-430 | LLT30x0-600 |
|---|---|---|---|
| Measuring range (z-axis) | Start of measuring range | 330 mm | 530 mm |
| | Mid of measuring range | 515 mm | 770 mm |
| | End of measuring range | 700 mm | 1 010 mm |
| | Height of measuring range | 370 mm | 480 mm |
| Extended measuring range (z-axis) | Start of measuring range | 330 mm | 450 mm |
| | End of measuring range | 720 mm | 1 050 mm |
| Linearity (z-axis) [1] [2] | | 12 µm | 15 µm |
| | | ±0.0032 % | ±0.0031 % |
| Measuring range (x-axis) | Start of measuring range | 324 mm | 456 mm |
| | Mid of measuring range | 430 mm | 600 mm |
| | End of measuring range | 544 mm | 762 mm |
| Extended measuring range (x-axis) | Start of measuring range | 324 mm | 408 mm |
| | End of measuring range | 560 mm | 788 mm |
| Resolution (x-axis) | | 2,048 points/profile | |
| Profile frequency | | up to 10,000 Hz | |
| Interfaces | Ethernet GigE Vision | Output of measurement values<br>Sensor control<br>Profile data transmission | |
| | Digital inputs | Mode switching Encoder (counter) Trigger | |
| | RS422 (half-duplex) [3] | Output of measurement values<br>Sensor control<br>Trigger<br>Synchronization | |
| Output of measurement values [4] [5] | | 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 | ≤ 26 mW | |
| | | Standard: laser class 2M, semiconductor laser 660 nm | |
| | | ≤ 100 mW | |
| | | Option: laser class 3B, semiconductor laser 660 nm | |
| Laser switch-off | | via software, hardware switch-off with /SI option | |
| Aperture angle of laser line | | 60 ° | |
| Permissible extraneous light | (fluorescent light) [1] | 5,000 lx | |
| Protection class (DIN EN 60529) | | IP67 (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 °C ... +70 °C | |
| | Operation | 0 °C … +45 °C | |
| Weight | | 2630 g (without cable) | |
| Supply voltage | | 11 … 30 VDC, nominal value 24 V, 500 mA, IEEE 802.3af class 2, Power over Ethernet (PoE) | |

[1] Based on the measuring range; measuring object: Micro-Epsilon standard object
[2] According to a one-time averaging across the measuring field (2,048 points)
[3] RS422 interface, programmable either as serial interface or as input for triggering/synchronization
[4] Analog | switching signal: Only in conjunction with 2D/3D output unit
[5] PROFINET | EtherCAT | EtherNet/IP: Only in conjunction with 2D/3D gateway

# High-performance 2D/3D laser scanners
## scanCONTROL 30x2

| Model | | LLT30x2-25 | LLT30x2-50 | LLT30x2-100 | LLT30x2-200 |
|---|---|---|---|---|---|
| Measuring range (z-axis) | Start of measuring range | 77.5 mm | 105 mm | 200 mm | 200 mm |
| | Mid of measuring range | 85 mm | 125 mm | 270 mm | 310 mm |
| | End of measuring range | 92.5 mm | 145 mm | 340 mm | 420 mm |
| | Height of measuring range | 15 mm | 40 mm | 140 mm | 220 mm |
| Extended measuring range (z-axis) | Start of measuring range | - | - | 190 mm | 160 mm |
| | End of measuring range | - | - | 360 mm | 460 mm |
| Linearity (z-axis) [1] [2] | | 2 µm | 4 µm | 10 µm | 30 µm |
| | | ±0.013 % | ±0.01 % | ±0.007 % | ±0.014 % |
| Measuring range (x-axis) | Start of measuring range | 23 mm | 43.3 mm | 75.6 mm | 130 mm |
| | Mid of measuring range | 25 mm | 50 mm | 100 mm | 200 mm |
| | End of measuring range | 26.8 mm | 56.5 mm | 124.4 mm | 270 mm |
| Extended measuring range (x-axis) | Start of measuring range | - | - | 72.1 mm | 100 mm |
| | End of measuring range | - | - | 131.1 mm | 290 mm |
| Resolution (x-axis) | | 1,024 points/profile | | | |
| Profile frequency | | up to 10,000 Hz | | | |
| Interfaces | Ethernet GigE Vision | Output of measurement values<br>Sensor control<br>Profile data transmission | | | |
| | Digital inputs | Mode switching<br>Encoder (counter)<br>Trigger | | | |
| | RS422 (half-duplex) [3] | Output of measurement values<br>Sensor control<br>Trigger<br>Synchronization | | | |
| Output of measurement values [4] [5] | | 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 | ≤ 10 mW | | | ≤ 12 mW |
| | | Standard: laser class 2M, semiconductor laser 658 nm | | | Option: laser class 3R, semiconductor laser 660 nm |
| | | ≤ 30 mW | | ≤ 50 mW | |
| | | Option: laser class 3R, semiconductor laser 658 nm | | | |
| | Blue laser | ≤ 10 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 | | 23 ° | 28 ° | 30 ° | 45 ° |
| Permissible extraneous light | (fluorescent light) [1] | 10,000 lx | | | |
| Protection class (DIN EN 60529) | | IP67 (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 °C ... +70 °C | | | |
| | Operation | 0 °C … +45 °C | | | |
| Weight | | 415 g (without cable) | | | |
| Supply voltage | | 11 … 30 VDC, nominal value 24 V, 500 mA, IEEE 802.3af class 2, Power over Ethernet (PoE) | | | |

[1] Based on the measuring range; measuring object: Micro-Epsilon standard object
[2] According to a one-time averaging across the measuring field (1,024 points)
[3] RS422 interface, programmable either as serial interface or as input for triggering/synchronization
[4] Analog | switching signal: Only in conjunction with 2D/3D output unit
[5] PROFINET | EtherCAT | EtherNet/IP: Only in conjunction with 2D/3D gateway

| Model | | LLT30x2-430 | LLT30x2-600 |
|---|---|---|---|
| Measuring range (z-axis) | Start of measuring range | 330 mm | 530 mm |
| | Mid of measuring range | 515 mm | 770 mm |
| | End of measuring range | 700 mm | 1 010 mm |
| | Height of measuring range | 370 mm | 480 mm |
| Extended measuring range (z-axis) | Start of measuring range | 330 mm | 450 mm |
| | End of measuring range | 720 mm | 1 050 mm |
| Linearity (z-axis) [1] [2] | | 15 µm | 22 µm |
| | | ±0.0041 % | ±0.0045 % |
| Measuring range (x-axis) | Start of measuring range | 324 mm | 456 mm |
| | Mid of measuring range | 430 mm | 600 mm |
| | End of measuring range | 544 mm | 762 mm |
| Extended measuring range (x-axis) | Start of measuring range | 324 mm | 408 mm |
| | End of measuring range | 560 mm | 788 mm |
| Resolution (x-axis) | | 1,024 points/profile | |
| Profile frequency | | up to 10,000 Hz | |
| Interfaces | Ethernet GigE Vision | Output of measurement values<br>Sensor control<br>Profile data transmission | |
| | Digital inputs | Mode switching<br>Encoder (counter)<br>Trigger | |
| | RS422 (half-duplex) [3] | Output of measurement values<br>Sensor control<br>Trigger<br>Synchronization | |
| Output of measurement values [4] [5] | | 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 | ≤ 26 mW | |
| | | Standard: laser class 2M, semiconductor laser 660 nm | |
| | | ≤ 100 mW | |
| | | Option: laser class 3B, semiconductor laser 660 nm | |
| Laser switch-off | | via software, hardware switch-off with /SI option | |
| Aperture angle of laser line | | 60 ° | |
| Permissible extraneous light | (fluorescent light) [1] | 5,000 lx | |
| Protection class (DIN EN 60529) | | IP67 (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 °C ... +70 °C | |
| | Operation | 0 °C … +45 °C | |
| Weight | | 2620 g (without cable) | |
| Supply voltage | | 11 … 30 VDC, nominal value 24 V, 500 mA, IEEE 802.3af class 2, Power over Ethernet (PoE) | |

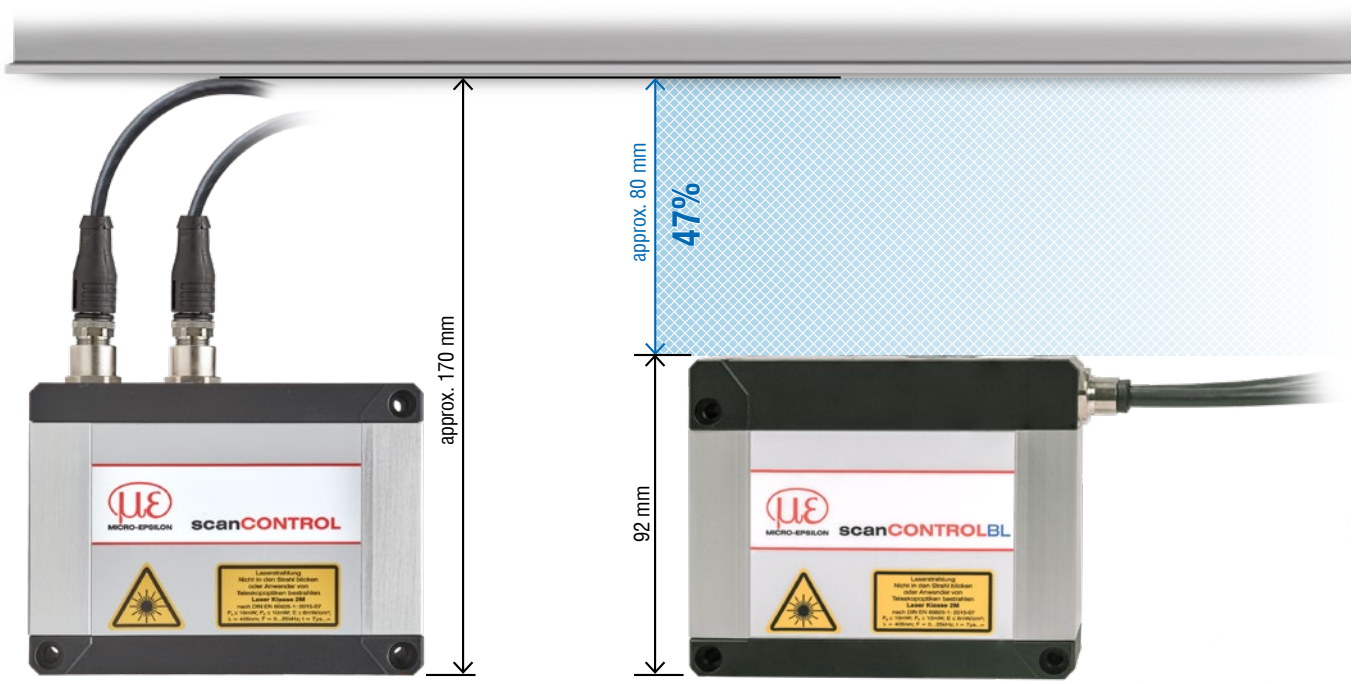
[1] Based on the measuring range; measuring object: Micro-Epsilon standard object
[2] According to a one-time averaging across the measuring field (1,024 points)
[3] RS422 interface, programmable either as serial interface or as input for triggering/synchronization
[4] Analog | switching signal: Only in conjunction with 2D/3D output unit
[5] PROFINET | EtherCAT | EtherNet/IP: Only in conjunction with 2D/3D gateway

# Options
# scanCONTROL 30xx

## Option /RT = “Rear Tail”

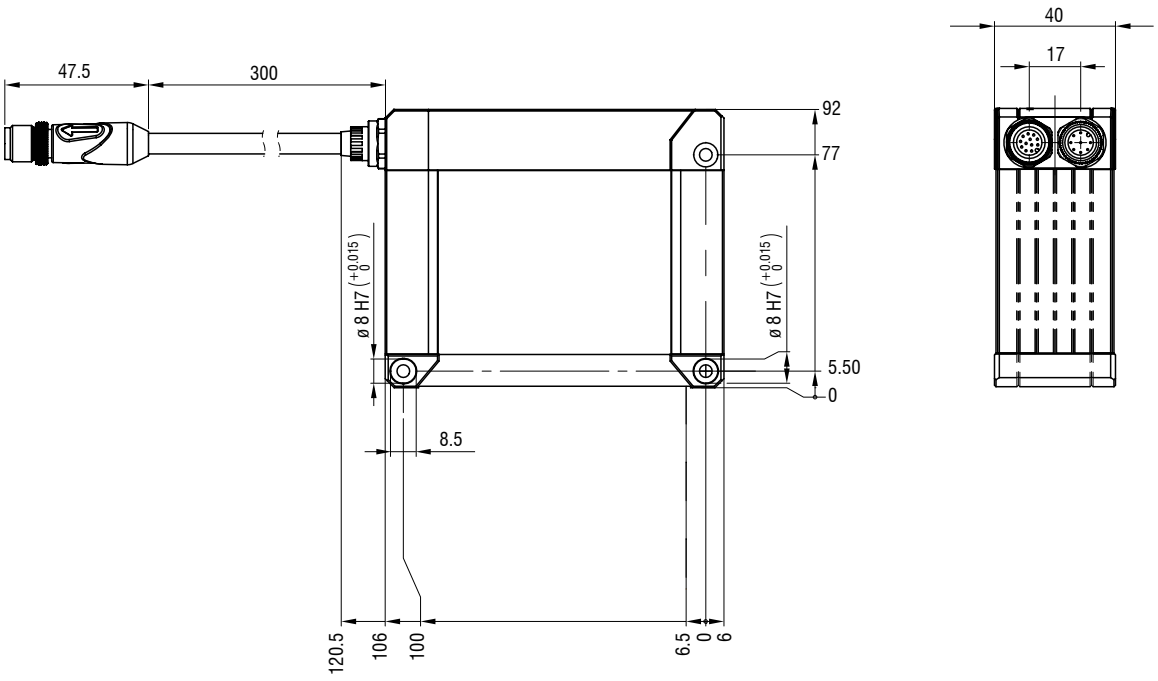
**Cable outlet on the rear side (“Rear Tail”) for space-saving installation**

- Available for the measuring ranges from 25 mm to 200 mm
- 30 cm pigtail
- Reduces the installation height by 47%




Standard

Option /RT

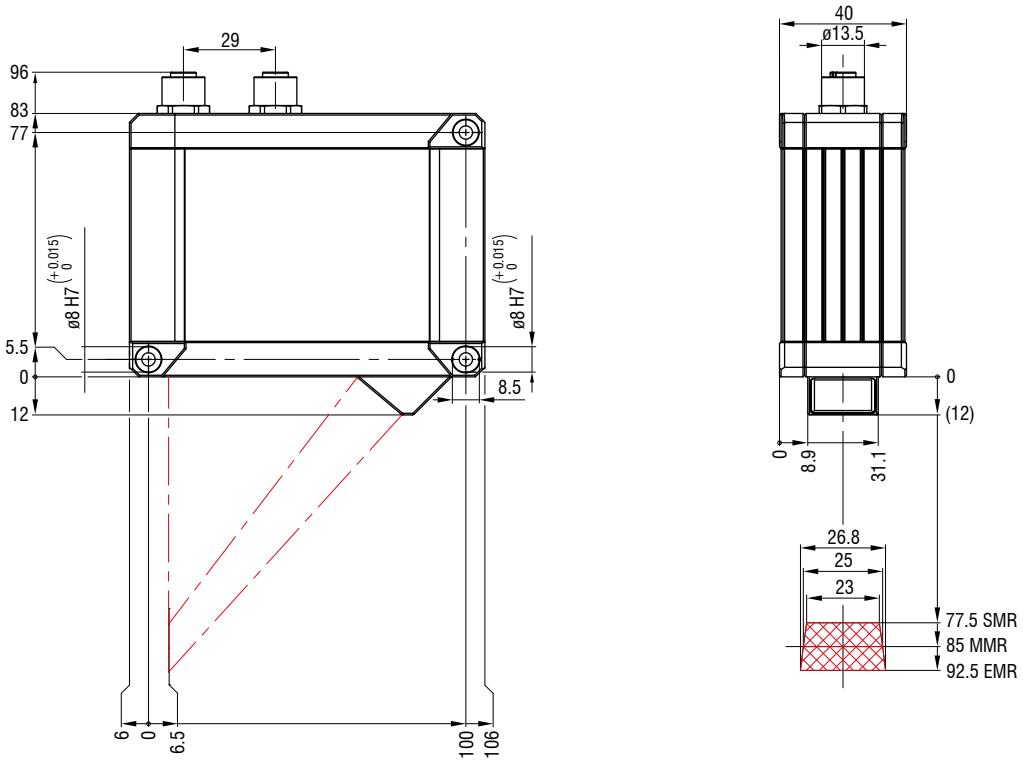



(dimensions in mm, not to scale)

# Dimensions and measuring ranges
# scanCONTROL 30xx

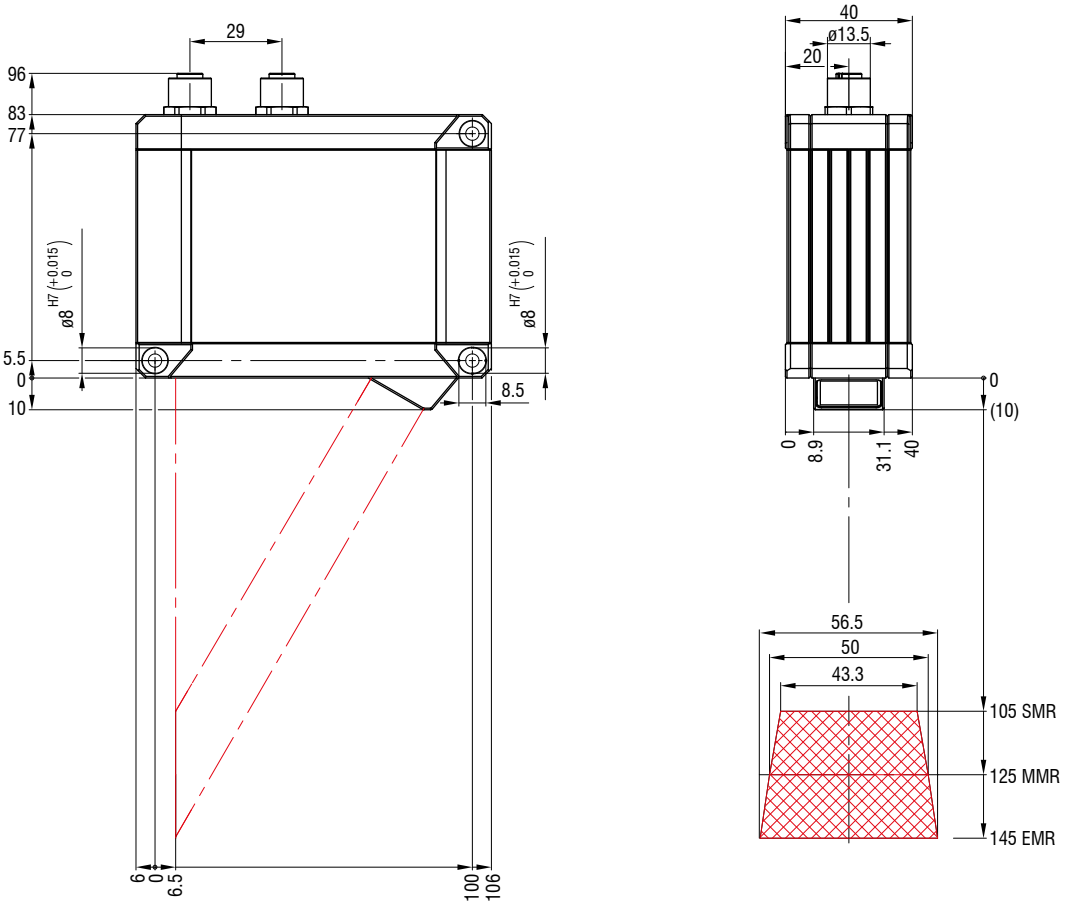
## LLT30xx-25

Red Laser | Blue Laser




## LLT30xx-50

Red Laser | Blue Laser

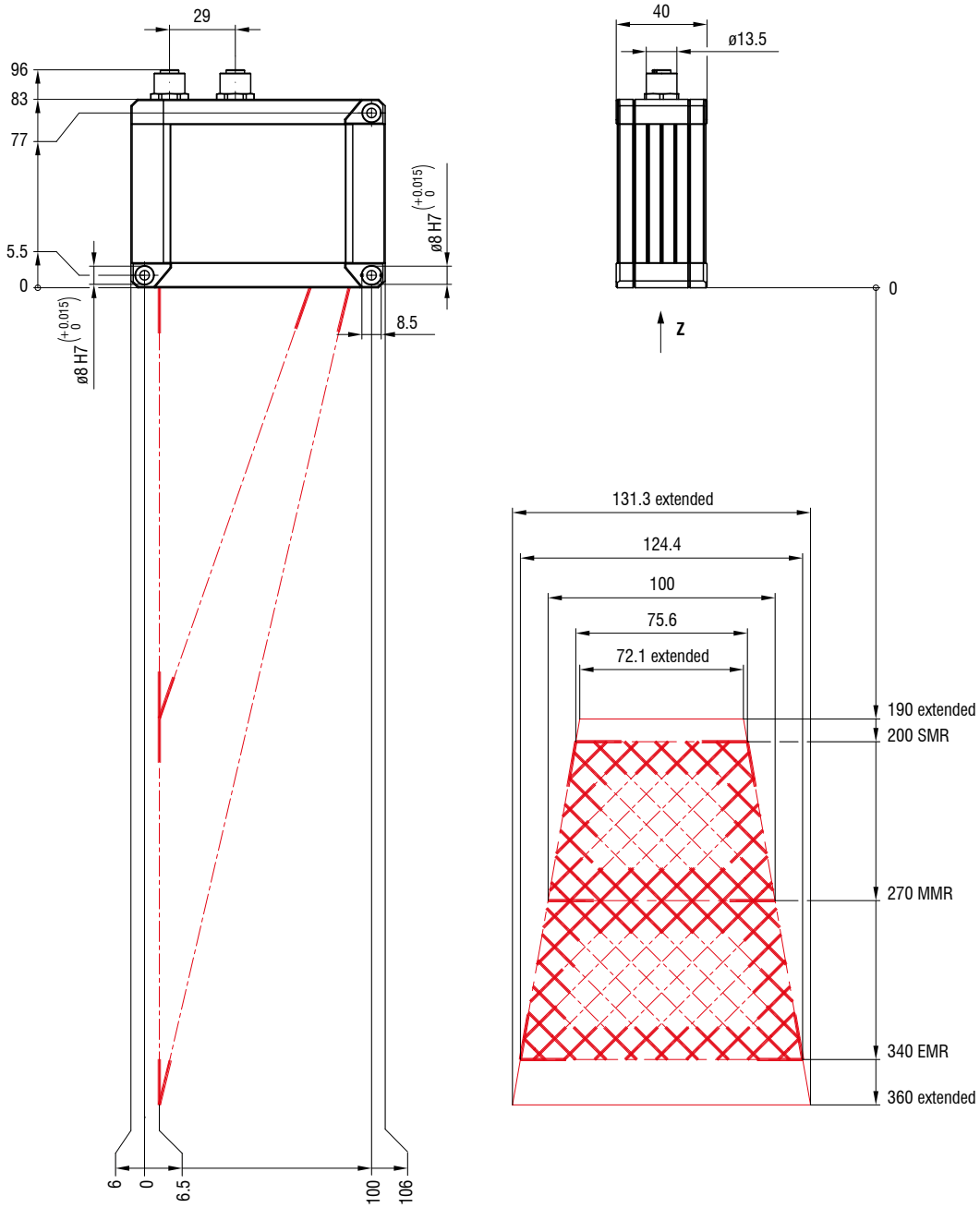



(dimensions in mm, not to scale)

# Dimensions and measuring ranges
# scanCONTROL 3000 / 3002

### LLT30xx-100

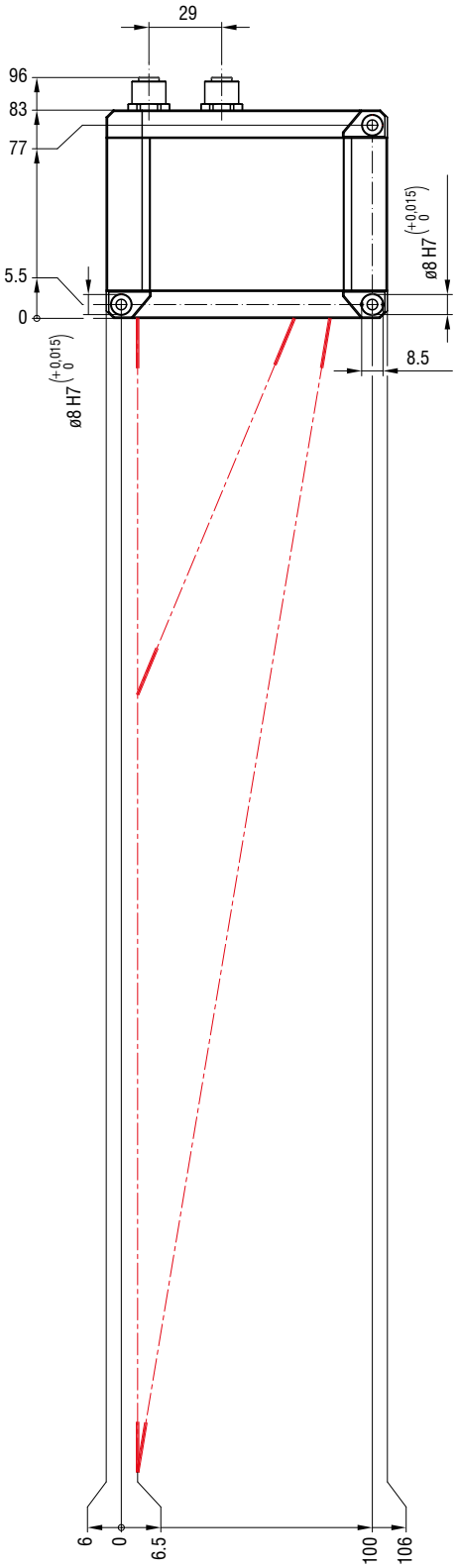
Red Laser | Blue Laser

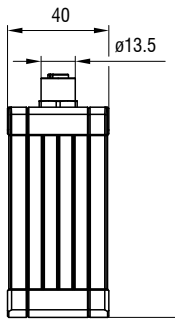


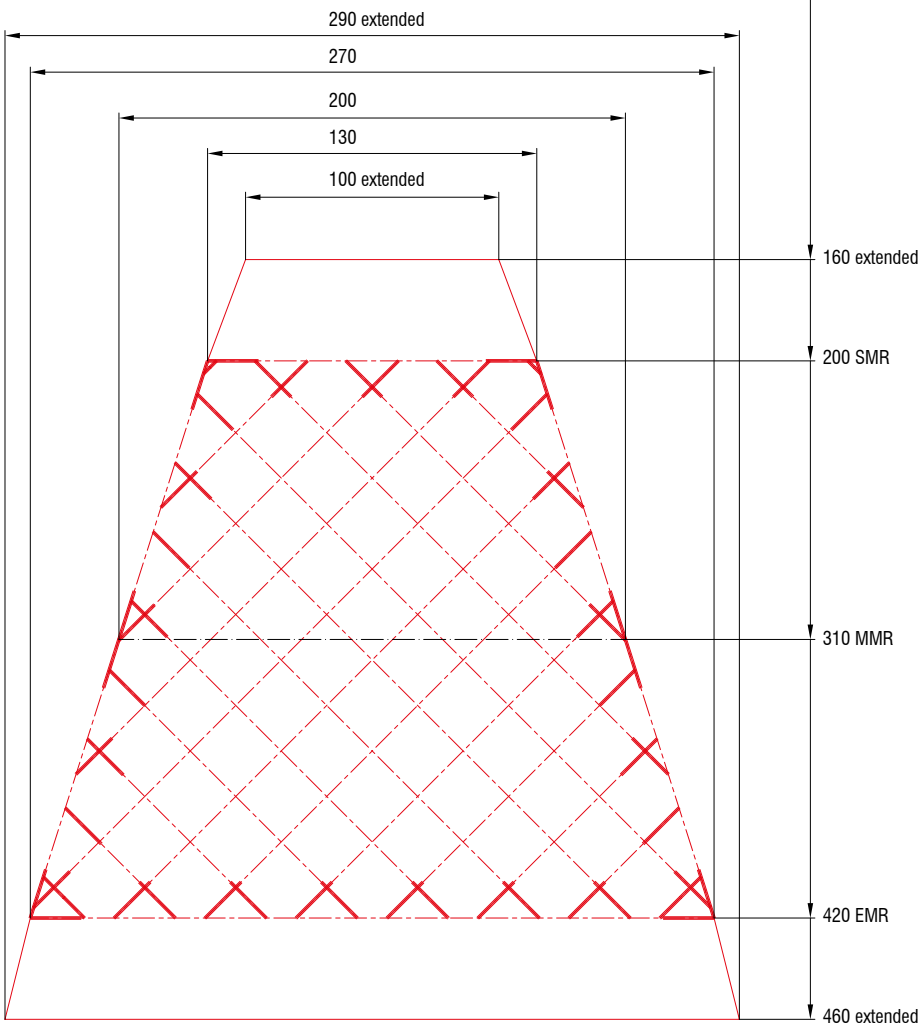

(dimensions in mm, not to scale)

## LLT30xx-200

Red Laser



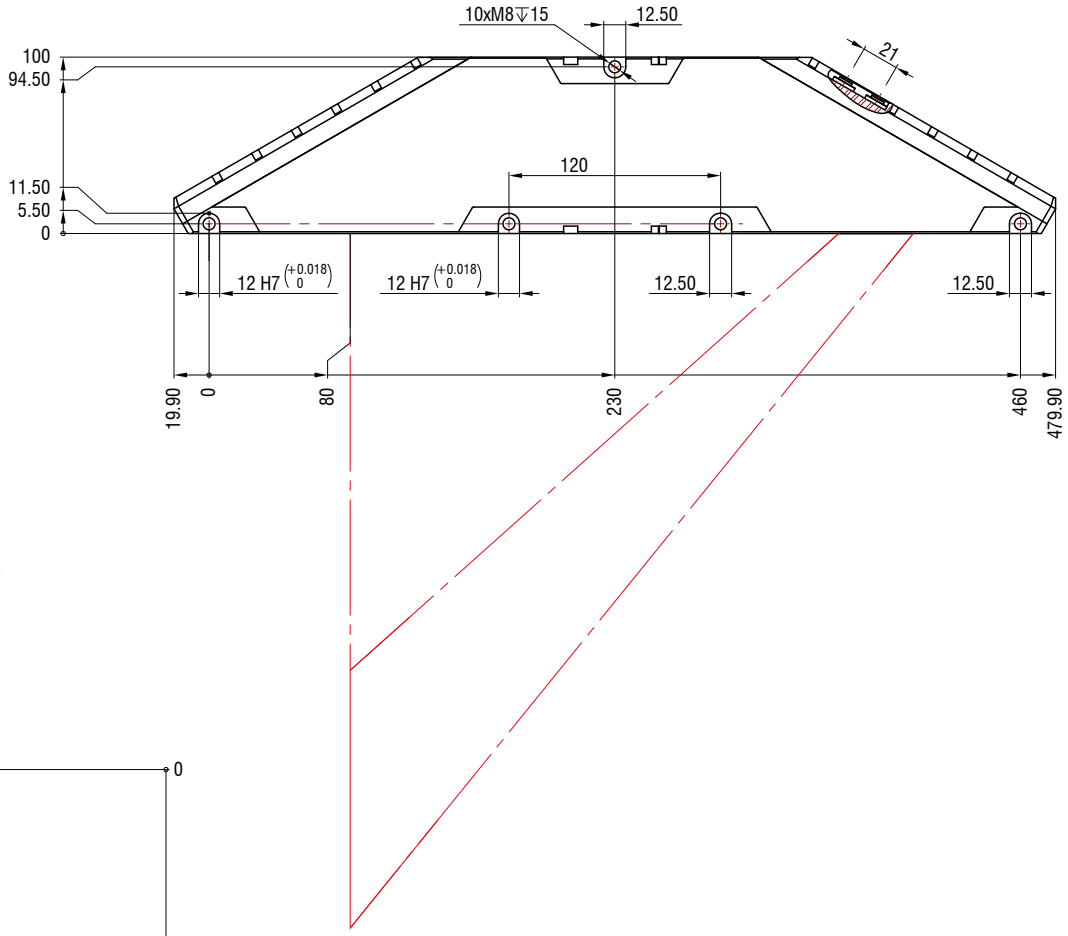




(dimensions in mm, not to scale)

# Dimensions and measuring ranges
# scanCONTROL 3000 / 3002

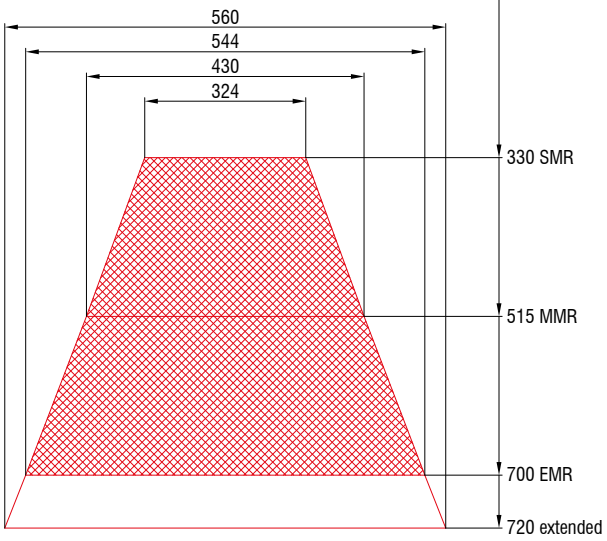
## LLT30xx-430

Red Laser





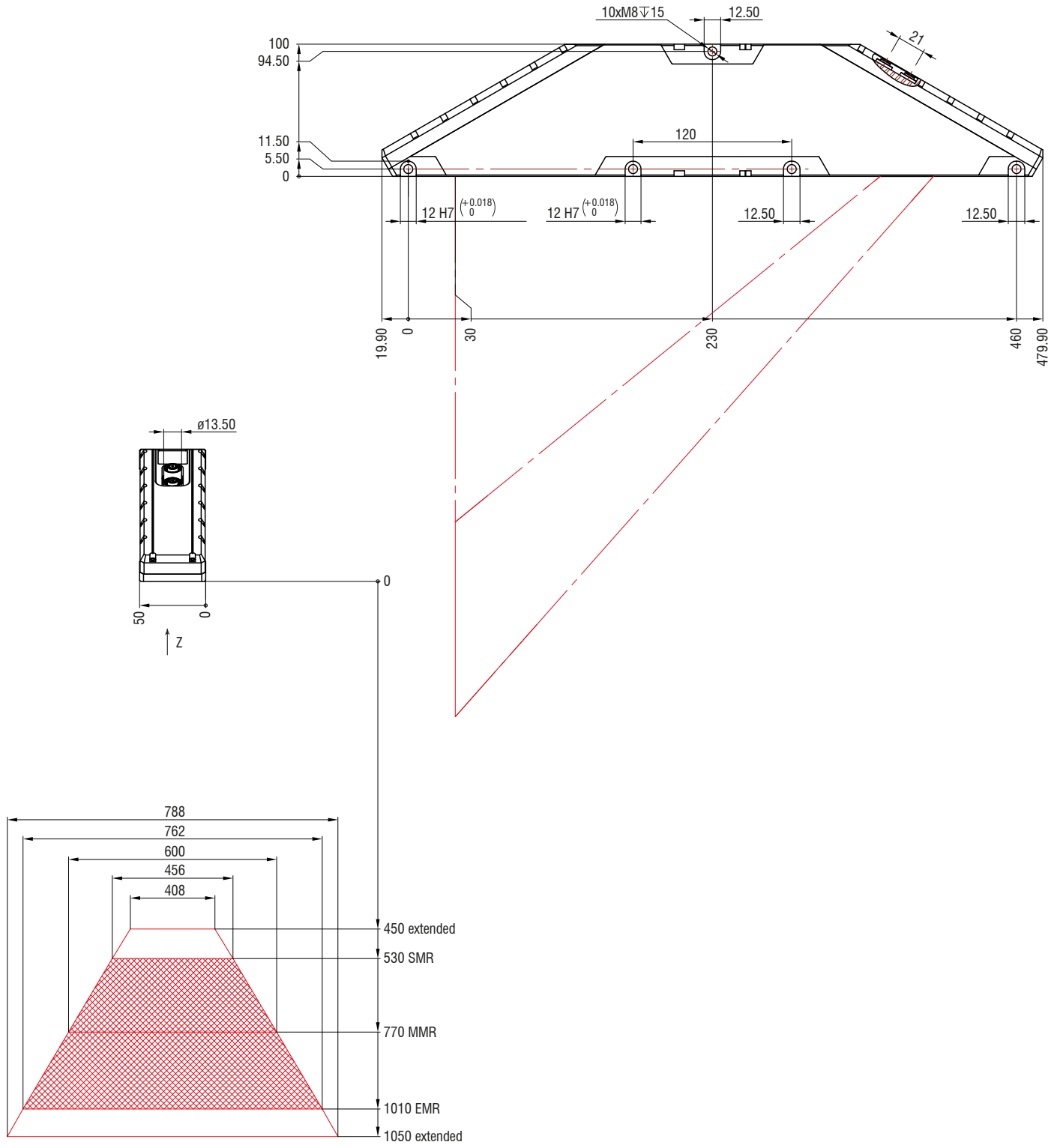





(dimensions in mm, not to scale)

## LLT30xx-600

Red Laser




(dimensions in mm, not to scale)

# Software for surface inspection and 3D measurement
# 3DInspect

More information




**3DInspect: powerful software for 3D measurement and inspection tasks**

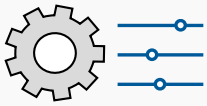
3DInspect is powerful software for industrial measurement and inspection tasks. The 3D measurement data generated by the sensor are processed, evaluated, and automatically assessed in the software based on defined criteria. Measurement results can be visualized, logged and, if required, output directly to a machine or line PLC. In addition, both the measurement results and the complete 3D data can be saved for documentation and later analysis.

**Fast & intuitive path to a high-precision 3D solution**

The 3D sensors are parameterized directly in 3DInspect. This enables quick configuration of the optimal sensor settings for the specific measurement task. The captured 3D data are preprocessed and optimized. For example, the part position is aligned automatically to enable repeatable evaluation of the point cloud independent of the workpiece orientation. In addition, functions are available for filtering, smoothing, cropping, creating cross-sections, and highlighting relevant features.

3DInspect offers over 80 powerful measurement programs for data evaluation. This enables reliable localization and measurement of features such as edges, spheres, or bores. In addition to evaluating the complete 3D data, cross-sections can also be evaluated. All 2D and 3D objects can be related to one another to determine, for example, distances between a sphere and a plane or the angle between two edges. All determined values and performed evaluations can be output as measurement results.

## End-to-end workflow from parameterization to output



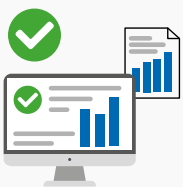
**Parameterization**
- Optimal sensor parameters for the application
- Save and reuse parameter sets
- Select measuring ranges



**Data preprocessing**
- Align and position the point cloud
- Set filters and cross-sections
- Highlight features, remove interference



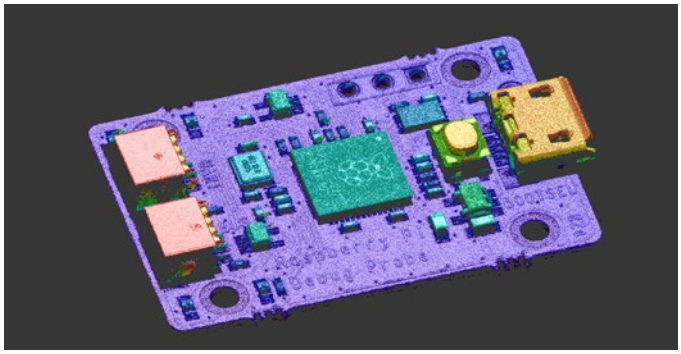
**Data evaluation**
- Over 80 measurement programs
- Combination of multiple programs
- Evaluation of cross-sections or 3D areas



**Evaluation & output**
- Evaluation of results (OK/NOK)
- Output via digital outputs, fieldbus or Ethernet
- Logging and export of measurement values and 3D data

**3DInspect with scanCONTROL**

The 3DInspect software supports the scanCONTROL 30xx and scanCONTROL 8x00 models. The scanCONTROL 8x00 series can execute 3DInspect evaluation programs directly on the sensor. The scanCONTROL sensors of the 30xx series require an external computing unit for this.



## All benefits at a glance

- User-friendly interface – easy creation of measurement programs
- Inline operation – stand-alone operation of the measurement programs directly on the SMART sensors
- Wide range of predefined programs for 2D & 3D geometry measurements and surface inspection
- Logging and storage of 3D data directly in the software
- Valid3D – Real 3D instead of only 2.5D enables a true representation of the measuring object without data loss
- Parameterization of fieldbus integration via the automation interface

**Functional extensions**

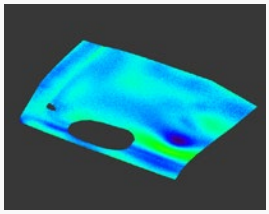
Optional functional extensions allow the functionality to be tailored specifically to the application. The following functional extensions are available for scanCONTROL:

**Functional extension: Automation**

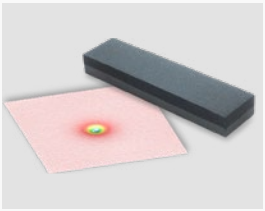
The *Automation* extension enables the base software to be controlled via the PLC. Data and measurement results can be exchanged bidirectionally between the software and the control system. For the scanCONTROL 8x00 models, the SMART Automation license already includes the Automation functional extension.

**Functional extension: Surface inspection**

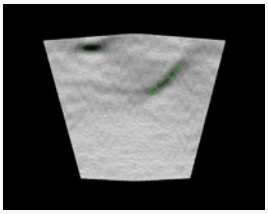
The *Surface inspection* extension enables reliable detection of deviations from a homogeneous surface. Tools such as Digital Stone, Digital Master, and defect detection with sorting and counting options are available from 3DInspect 3.1 onwards.



**Digital Master:**
Objective target/actual comparison with good parts (including variance taken into account)

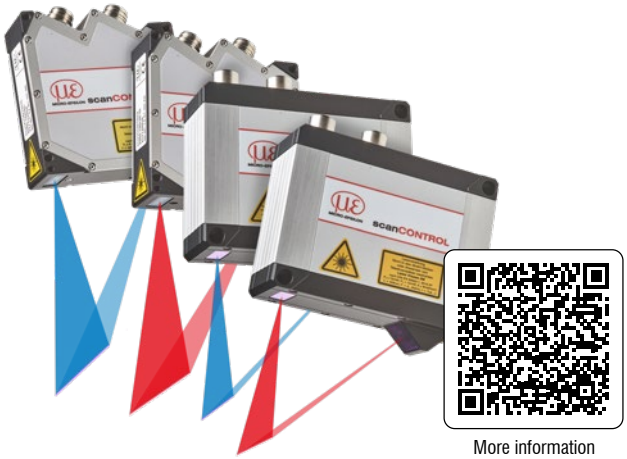


**Digital Stone:**
Simulates a physical whetstone. High precision with high repeatability



**Defect detection with sorting and counting function:**
Automatic defect detection and height evaluation

# Connectivity options
# scanCONTROL 2xx0 / 30xx



More information

## Flexible solutions for measurement values or profile data

Depending on the variant, the 2xx0/30xx models provide a direct path to the output of measurement values or flexible integration of profile data.

**SMART**

**Fast and intuitive path to a precise 2D solution**

**PROFILE**

**Performance with maximum integration flexibility**

### Direct output of measurement values

**For PLCs and automation**

- Transfer measurement values directly to the PLC
- Sensor control via standard protocols
- OK/NOK result evaluation and output via digital outputs or fieldbus

**Recommended tools**

Configuration Tools, scanCONTROL Modbus Tool, UDP Tool, Result Monitor

EtherCAT, EtherNet/IP, PROFINET, Modbus, UDP

### Integration into image processing

**For vision systems and software**

- Standardized interfaces: GenICam / GigE Vision
- Direct connection to compatible vision software
- Output of profile or 3D data depending on the sensor series

**Compatible interfaces & software**

COGNEX VisionPro, HALCON a product of MVTec, GENICAM, GiGE VISION

### Integration into customer software

**For developers and OEMs**

- SDKs and LLT.DLL for C/C++ or C#/.NET
- LabVIEW drivers and example programs
- Developer Tool with sample code
- Documentation and support

**Supported environments**

scanCONTROL SDK, Developer Tool

C/C++, C#/.NET, Linux, LabVIEW, python

For custom workflows, advanced integrations or special requirements, we will be happy to help you select the right solution.

# Connection options
## scanCONTROL



LLT8x00

Supply and output cable (see accessories)

SMART

3D DATA

3D DATA



LLT30xx

Supply and output cable (see accessories)

SMART



2D/3D Gateway

SMART

PROFILE



Industrial Performance Unit (IPU)

SMART

PROFILE

PROFILE



LLT2xx0

Supply and output cable (see accessories)

SMART



2D/3D Gateway

SMART

PROFILE

PROFINET, EtherCAT, EtherNet/IP, Modbus TCP, UDP

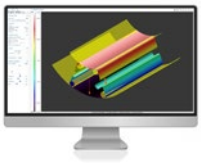


PLC

GigE Vision

3DInspect

GigE Vision



Third-party software

PROFINET, EtherCAT, EtherNet/IP

Modbus TCP, UDP

PROFINET, EtherNet/IP, EtherCAT, Modbus TCP

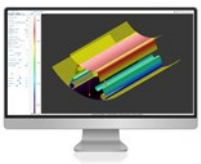


PLC

GigE Vision

3DInspect

GigE Vision



Third-party software

PROFINET, EtherCAT, EtherNet/IP

Modbus TCP, UDP



PLC

GigE Vision




Third-party software

# System for multi-scanner applications
# 3D Profile Unit

More information

- Profile stitching of up to 8 laser scanners
- Integration in GigE Vision as raw data supplier
- Industrial Ethernet connection for control and transfer of measurement values
- Evaluation of composite 2D sections or 3D point clouds
- Automatic registration thanks to Micro-Epsilon registration targets
- Compatible with all scanCONTROL 30xx sensors



SMART PROFILE 3D DATA

PROFINET EtherCAT EtherNet/IP Modbus

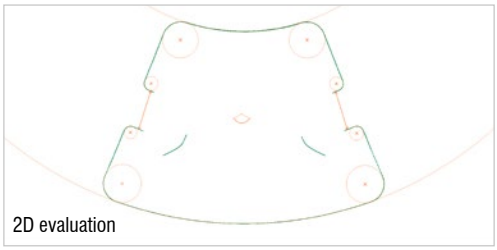
The 3D Profile Unit (3DPU) is a high-performance computing platform for profile stitching and the calculation of up to eight individual profiles from scanCONTROL 30xx sensors in a common coordinate system. This enables the generation of composite 2D profiles or 3D point clouds to capture different geometries, extend measuring ranges, or perform thickness measurements. The sensors are assigned via registration, which is performed either automatically using an arrangement-specific Micro-Epsilon registration target or manually.

The system can be parameterized and the acquired data evaluated using 3DInspect. The 3D Profile Unit controller in the 3DPU-X/IE version also features integrated 3D evaluation with result output via Industrial Ethernet, enabling the application to be controlled and measurement values to be transferred to a PLC. The industrial-grade, passively cooled hardware enables flexible, space-saving integration into a control cabinet or directly into the machine. An external PC can be easily connected for parameterization.

**Stitching**

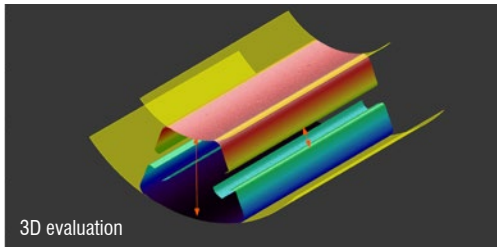
The 3D Profile Unit calculates the profiles from multiple scanCONTROL sensors in a common coordinate system.

**3D view of stitched profile sequences**

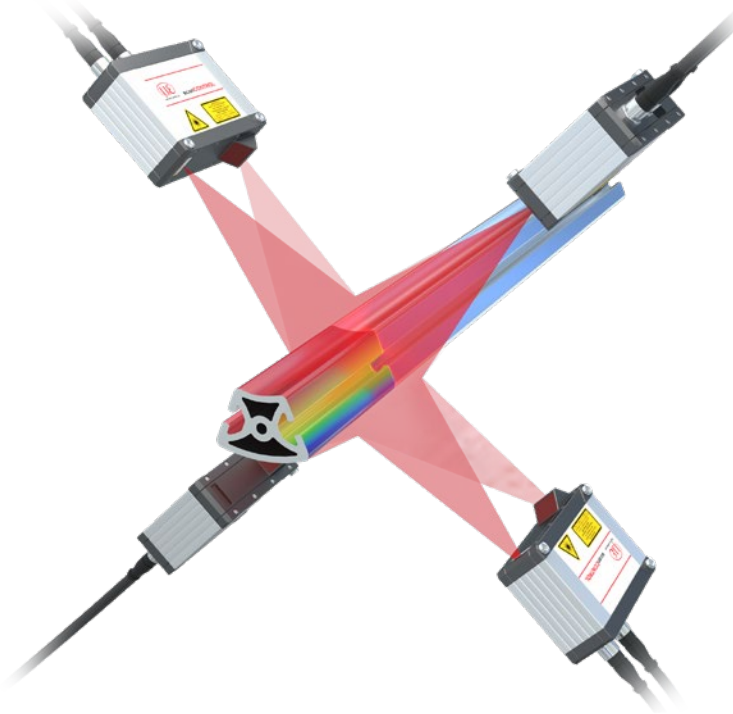


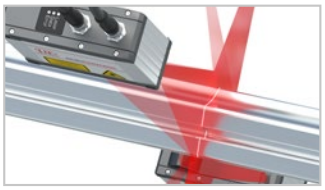
2D evaluation

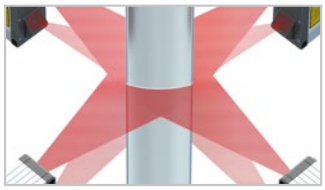
**Composite profiles:**



3D evaluation





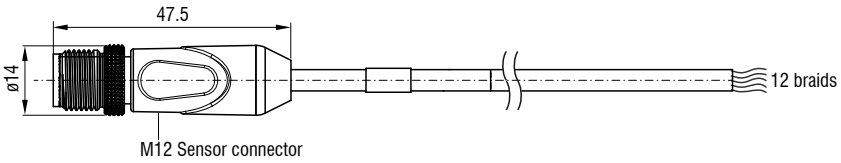


## Connection cables

### For LLT30xx / LLT29x0 / LLT25x0

**Multifunction cable PCR3000-x**

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

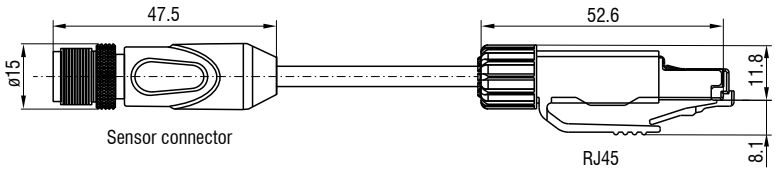



| Article no. | Model |
|---|---|
| 29011241 | PCR3000-2 |
| 29011242 | PCR3000-5 |
| 29011243 | PCR3000-10 |
| 29011244 | PCR3000-15 |

| Article no. | Model |
|---|---|
| 29011245 | PCR3000-20 |
| 29011246 | PCR3000-25 |
| 29011247 | PCR3000-35 |

**Ethernet connection cable SCR3000A-x**

Cable for parameter setting, measurement value and profile transmission; suitable for drag chains and robots
Cable length in meters: 0,5 / 2 / 5 / 10 / 15 / 20 / 25 / 35




| Article no. | Model |
|---|---|
| 29011232 | SCR3000A-0.5 |
| 29011233 | SCR3000A-2 |
| 29011234 | SCR3000A-5 |
| 29011235 | SCR3000A-10 |

| Article no. | Model |
|---|---|
| 29011236 | SCR3000A-15 |
| 29011237 | SCR3000A-20 |
| 29011238 | SCR3000A-25 |
| 29011240 | SCR3000A-35 |

## Other accessories

| Article no. | Model | Description |
|---|---|---|
| 0323478 | Connector/12-pin/Multifunction for scanCONTROL series 25/29/30 | Connector for multifunction port |
| 0323479 | Connector/8-pin/Ethernet for scanCONTROL series 25/29/30 | Connector for Ethernet socket |
| 2420067 | PS25/29/30 | Power supply unit for scanCONTROL |
| 2960118.01 | LLT30xx adjustment bracket | Mounting bracket for LLT30xx for precise laser line alignment |

# Accessories
# scanCONTROL

## Interface modules

(Except scanCONTROL 8x00 models)

### 2D/3D Gateway

**PROFINET / EtherCAT / EtherNet/IP for all scanners in the SMART class**

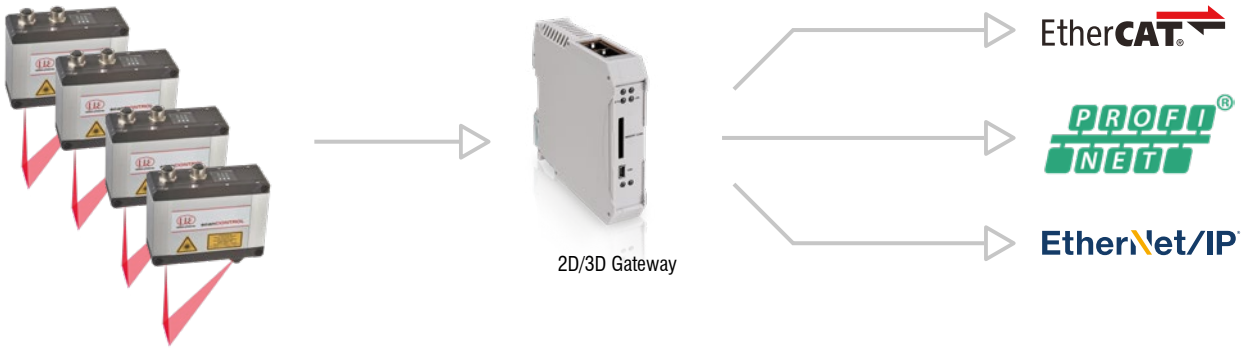
Up to four sensors can be connected to a single 2D/3D Gateway. When using more than one sensor, a switch is required. The 2D/3D Gateway communicates with the scanCONTROL SMART sensor via Modbus TCP and converts the resultant values to PROFINET, EtherCAT or EtherNet/IP. The customer carries out the parameterization using the detailed instruction manual. The gateway can optionally be preconfigured at the factory.

**Model overview**

| | | |
|---|---|---|
| 6414142 | 2D/3D Gateway | Fieldbus coupler, configurable for PROFINET, EtherNet/IP and EtherCAT |
| 6414142.001 | 2D/3D Gateway, preconfigured | Preconfigured for the customer's protocol and IP addresses |

| Number of sensors at the gateway | Maximum measuring rate* |
|---|---|
| 1 | 500 Hz |
| 2 | 500 Hz |
| 3 | 330 Hz |
| 4 | 250 Hz |

For 30xx series sensors, the Modbus bundling option also enables higher measuring rates.




### 2D/3D Output Unit

**Analog signals / digital switch signals for all scanners in the SMART class**

The 2D/3D Output Unit is addressed via Modbus TCP and outputs analog and digital signals.
Various output terminals can be connected to the fieldbus coupler.

**Model overview**

| | | |
|---|---|---|
| 6414073 | 2D/3D Output Unit Basic/ET | Fieldbus coupler with filter module and bus end terminal |
| 0325131 | OU-DigitalOut/8-channel/DC24V/0.5 A/negative | 8-channel digital output terminal; DC 24 V; 0.5 A; negative switching |
| 0325115 | OU-DigitalOut/8-channel/DC24V/0.5 A/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 |

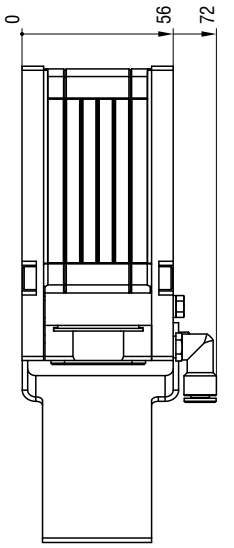
Additional terminals available on request.

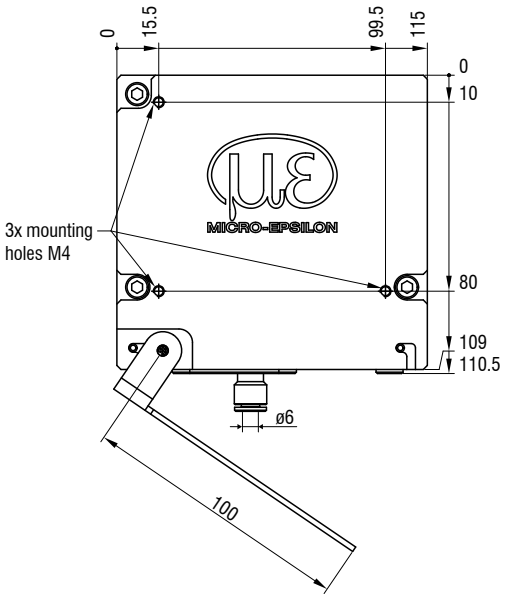


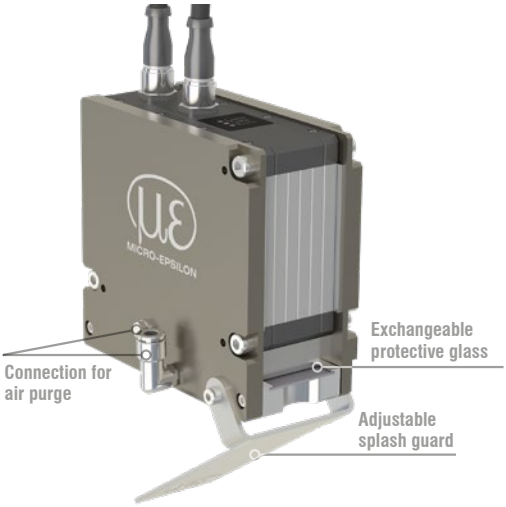
## Protection and cooling housings for LLT30xx

for the measuring ranges 25–200 mm

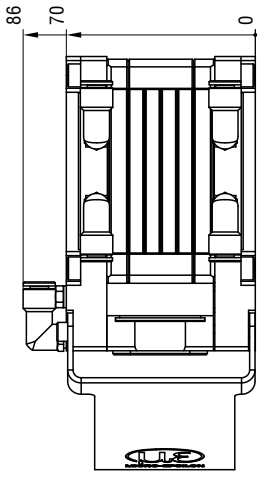
### Protective housing with blow-out system

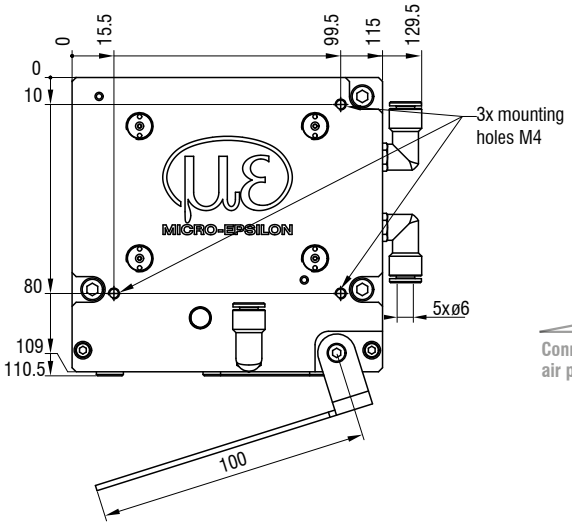


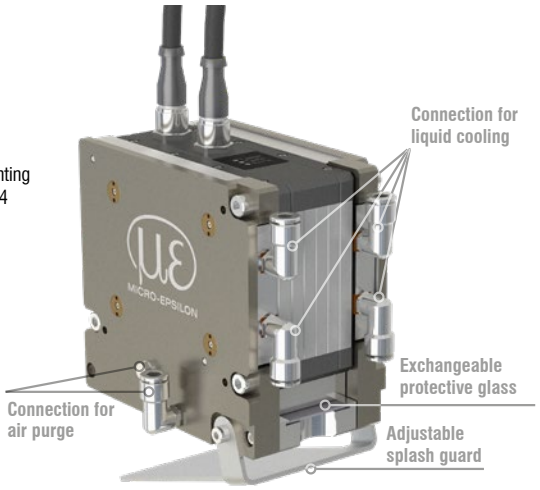




### Protective housing with blow-out system and water cooling




| Article no. | Model | Description |
|---|---|---|
| 2105076 | Protective housing for LLT30 | Adaptive protective housing for LLT30 |
| 2105077 | Protective cooling housing for LLT30 | Adaptive protective and cooling housing for LLT30 |
| 0755083 | Exchangeable glass for protective housing LLT30 | Exchangeable glass for protection / cooling concept LLT30, pack of 30 pieces |

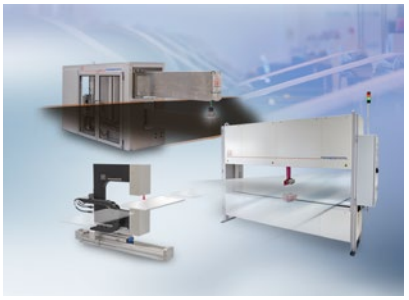
## Sensors and Systems from Micro-Epsilon



Sensors and systems for displacement, distance and position



Sensors and measurement devices for non-contact temperature measurement



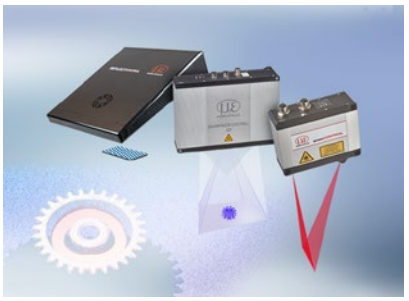
Measuring and inspection systems for metal strips, plastics and rubber



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

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