



# More Precision

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



# Powerful 2D/3D laser scanners with highest precision

## scanCONTROL 30x0

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



### Fast and precise 2D/3D profile measurements

The new LLT30x0 laser profile scanners provide calibrated profile data with up to 9.6 million points per second. Thanks to their high accuracy, high profile frequency and versatility, these powerful scanners are suitable for demanding measurement tasks. They measure and evaluate, e.g., angles, steps, gaps, distances and circles with high precision. These sensors also offer predefined operating modes that enable optimal results for various applications.

### Available as PROFILE and SMART versions

The scanCONTROL 30x0 series is available as PROFILE and SMART versions. The PROFILE scanners provide calibrated profile data that can be further processed on a PC with software evaluation provided by the customer. The 3DInspect software allows for the scanCONTROL sensors to be used also for 3D evaluations. SMART scanners operate autonomously and provide selected measurement values. The scanCONTROL 30x0 series supports all SMART functions and programs that are set in the scanCONTROL Configuration Tools software and directly stored in the internal controller.

### Article designation

LLT	30	x0	-25	/SI
Options - see below				
<b>Measuring range</b> 25 mm 50 mm 100 mm 200 mm 430 mm 600 mm				
<b>Class</b> 00 =PROFILE 10 =SMART				
<b>Series</b> 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 cable end (Measuring ranges 25 - 200 mm)
	/PT	Cable directly out of the sensor ("Pigtail") Available lengths: 0.3 / 0.6 / 1.00 m

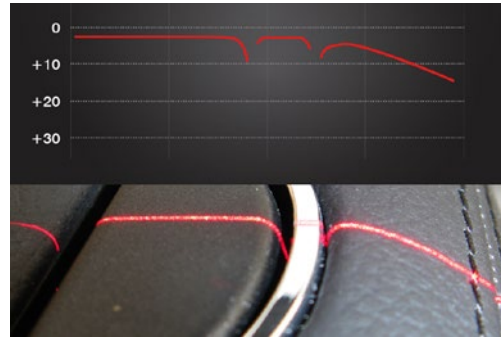
\*Options can be combined

Accessories from page 42

### Innovative exposure control to master difficult surfaces

On inhomogeneous or dark surfaces, the HDR (High Dynamic Range) data acquisition mode and the improved auto exposure optimizes the measurement results.

In HDR mode, the rows of the sensor matrix are exposed differently but at the same time which avoids time offsets between the recordings. This is how moving objects can be detected reliably. The areas for auto exposure can be selected individually.



High resolution

High dynamic range

High speed

### Fast measurement results with operation 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.

**NEW**

### Large measurement area up to 600 x 600 mm

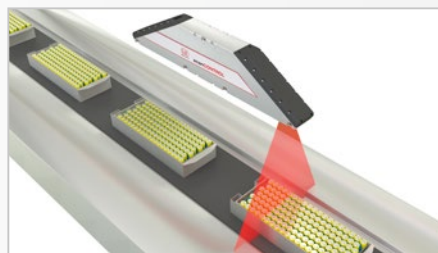
The scanCONTROL 30x2 laser scanners are now also available with a large measuring field up to 600 x 600 mm. This allows large measuring objects to be detected with high accuracy.



### Application examples



Planarity of coated battery film



Assembly monitoring of battery packs



Inline 3D inspection of tire geometry

# High performance laser scanner

## scanCONTROL 30x0

Model		LLT 30x0-25	LLT 30x0-50	LLT 30x0-100	LLT 30x0-200	
Available laser type		Red Laser Blue Laser	Red Laser Blue Laser	Red Laser Blue Laser	Red Laser	
z-axis	Measuring range	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	Start of measuring range	-	-	190 mm	160 mm
		End of measuring range	-	-	360 mm	460 mm
Line linearity <sup>1) 2)</sup>		1.5 µm	3 µm	9 µm	26 µm	
		±0.01 %	±0.0075 %	±0.006 %	±0.012 %	
x-axis	Measuring range	Start of measuring range	23.0 mm	43.3 mm	75.6 mm	130 mm
		Mid of measuring range	25.0 mm	50.0 mm	100 mm	200 mm
		End of measuring range	26.8 mm	56.5 mm	124.4 mm	270 mm
	Extended measuring range	Start of measuring range	-	-	72.1 mm	100 mm
		End of measuring range	-	-	131.1 mm	290 mm
	Resolution		2,048 points/profile			
Profile frequency		up to 10,000 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		Ethernet (UDP / Modbus TCP); RS422 (ASCII / Modbus RTU) analog <sup>4)</sup> ; switch signal <sup>4)</sup> PROFINET <sup>5)</sup> ; EtherCAT <sup>5)</sup> ; EtherNet/IP <sup>5)</sup>				
Control and display elements		3x color LEDs for laser, data and error				
Light source		≤ 10 mW			≤ 12 mW	
	Red Laser	Standard: laser class 2M, semiconductor laser 658 nm				
		≤ 30 mW		≤ 50 mW		
	Blue Laser	Option: laser class 3R, semiconductor laser 658 nm				
		≤ 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 ambient light (fluorescent light) <sup>1)</sup>		10,000 lx				
Protection class (DIN EN 60529)		IP67 (when connected)				
Vibration (DIN EN 60068-2-27)		2 g / 20 ... 500 Hz				
Shock (DIN EN 60068-2-6)		15 g / 6 ms				
Temperature range	Storage	-20 ... +70 °C				
	Operation	0 ... +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)				

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

<sup>2)</sup> According to a one-time averaging over the measuring field (2,048 points)

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

<sup>4)</sup> Only with 2D/3D Output Unit

<sup>5)</sup> Only with 2D/3D Gateway

Model		LLT 30x0-430	LLT 30x0-600	
Available laser type		Red Laser	Red Laser	
z-axis	Measuring range	Start of measuring range	330 mm	530 mm
		Mid of measuring range	515 mm	770 mm
		End of measuring range	700 mm	1010 mm
		Height of measuring range	370 mm	480 mm
	Extended measuring range	Start of measuring range	330 mm	450 mm
		End of measuring range	720 mm	1050 mm
	Line linearity <sup>1)2)</sup>		12 $\mu$ m	15 $\mu$ m
		$\pm 0.0032$ %	$\pm 0.0031$ %	
x-axis	Measuring range	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	Start of measuring range	324 mm	408 mm
		End of measuring range	560 mm	788 mm
Resolution		2,048 points/profile		
Profile frequency		up to 10,000 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		Ethernet (UDP / Modbus TCP); RS422 (ASCII / Modbus RTU) analog <sup>4)</sup> ; switch signal <sup>4)</sup> PROFINET <sup>5)</sup> ; EtherCAT <sup>5)</sup> ; EtherNet/IP <sup>5)</sup>		
Control and display elements		3x color LEDs for laser, data and error		
Light source	Red Laser		$\leq 26$ mW	
			Standard: laser class 2M, semiconductor laser 660 nm	
			$\leq 100$ mW	
	Laser switch-off		Option: laser class 3R, semiconductor laser 660 nm via software, hardware switch-off with /SI option	
Aperture angle of laser line		60 °		
Permissible ambient light (fluorescent light) <sup>1)</sup>		5,000 lx		
Protection class (DIN EN 60529)		IP67 (when connected)		
Vibration (DIN EN 60068-2-27)		2 g / 20 ... 500 Hz		
Shock (DIN EN 60068-2-6)		15 g / 6 ms		
Temperature range	Storage	-20 ... +70 °C		
	Operation	0 ... +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)		
Connections		Sockets, cable outlets on top (/PT)		

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

<sup>2)</sup> According to a one-time averaging over the measuring field (2,048 points)

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

<sup>4)</sup> Only with 2D/3D Output Unit

<sup>5)</sup> Only with 2D/3D Gateway

# Options

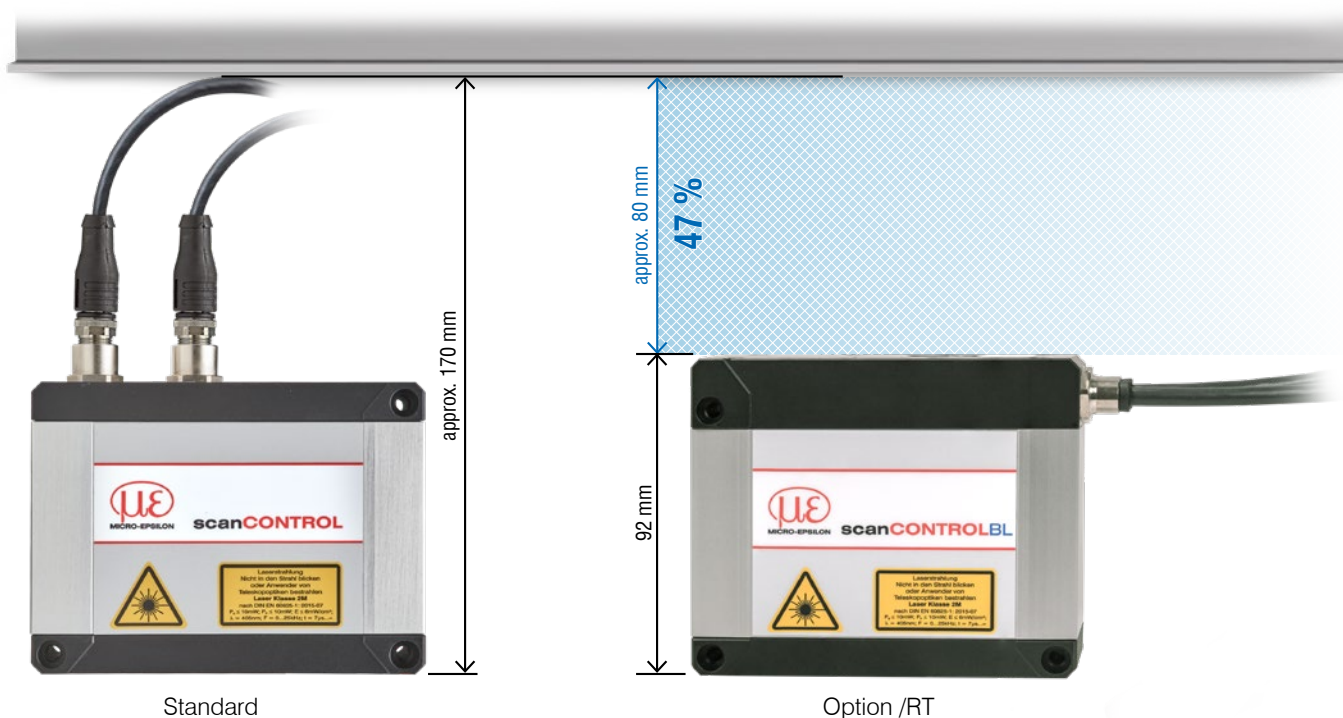
## scanCONTROL 30xx

**NEW**

### Option /RT = "Rear Tail"

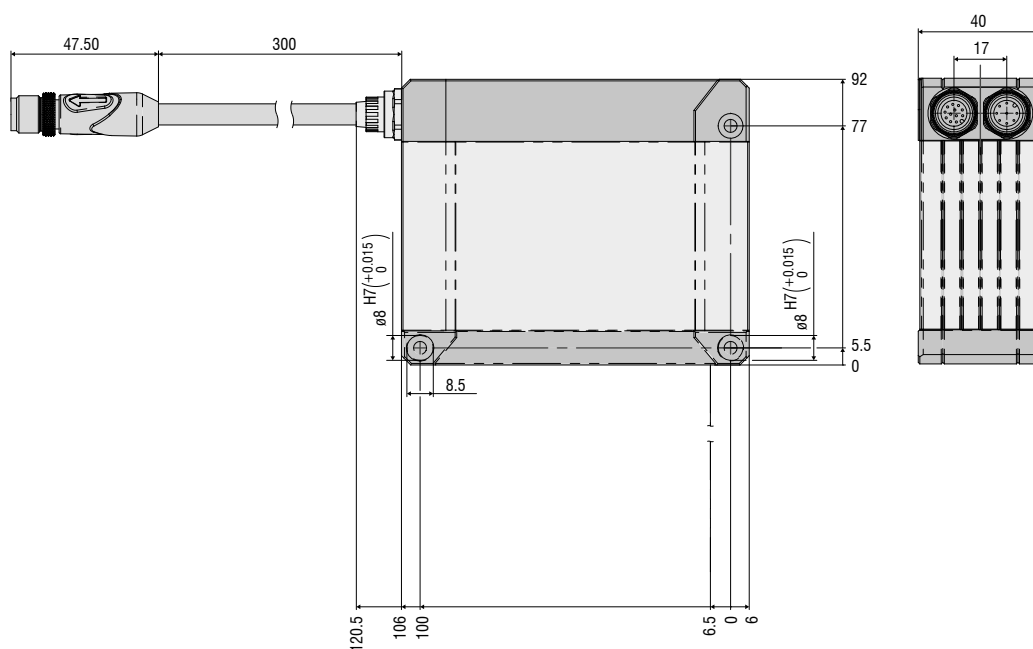
Cable outlet on the rear side ("Rear Tail") for space-saving installation

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



Standard

Option /RT



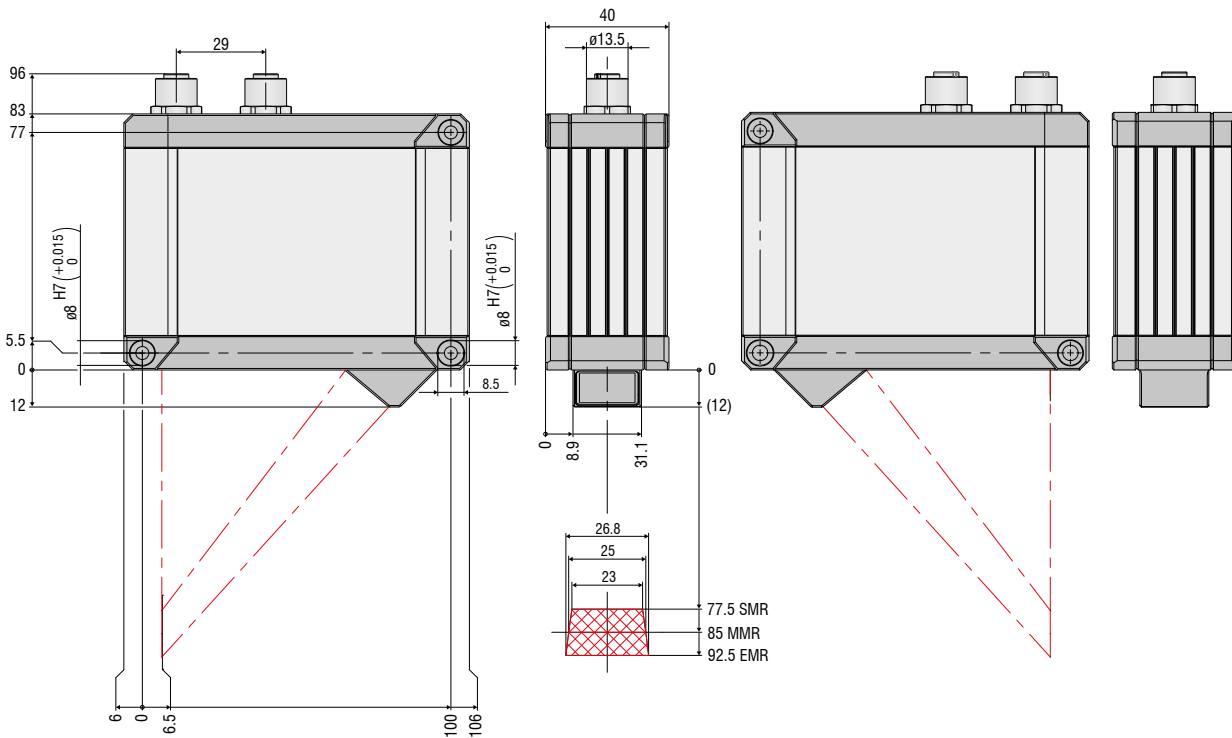
# Dimensions and measuring ranges

## scanCONTROL 30xx

LLT30x2-25 / LLT30x0-25

Red Laser

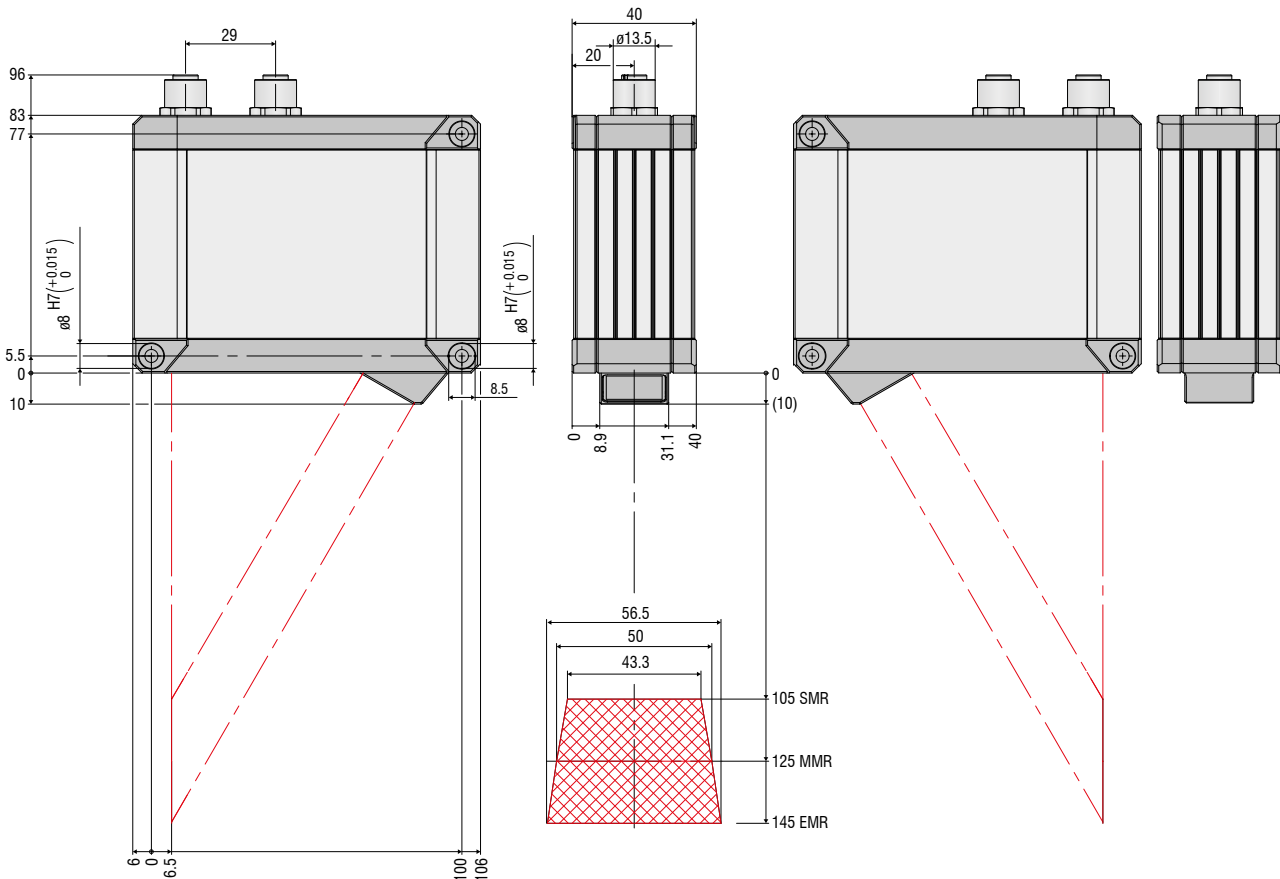
Blue Laser



LLT30x2-50 / LLT30x0-50

Red Laser

Blue Laser



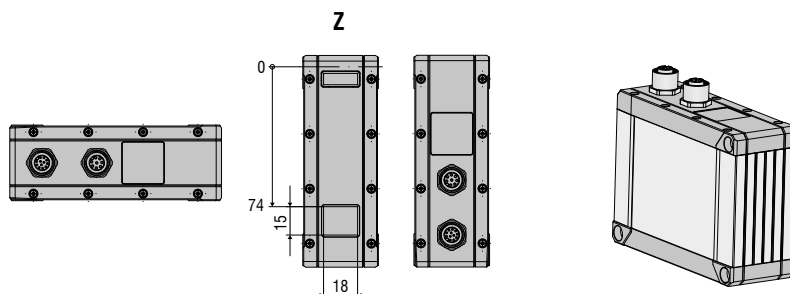
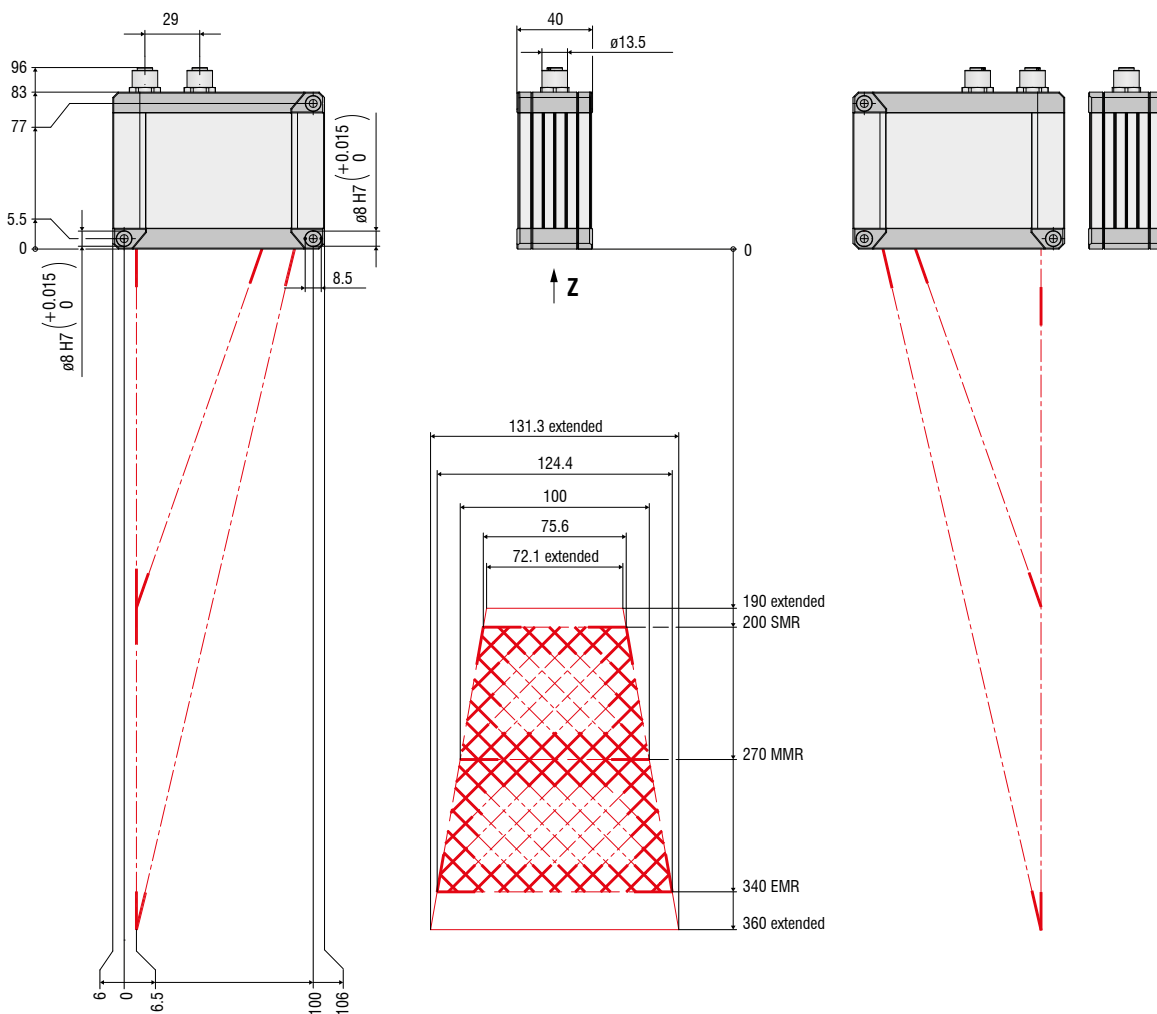
# Dimensions and measuring ranges

## scanCONTROL 30xx

LLT30x2-100 / LLT30x0-100

Red Laser

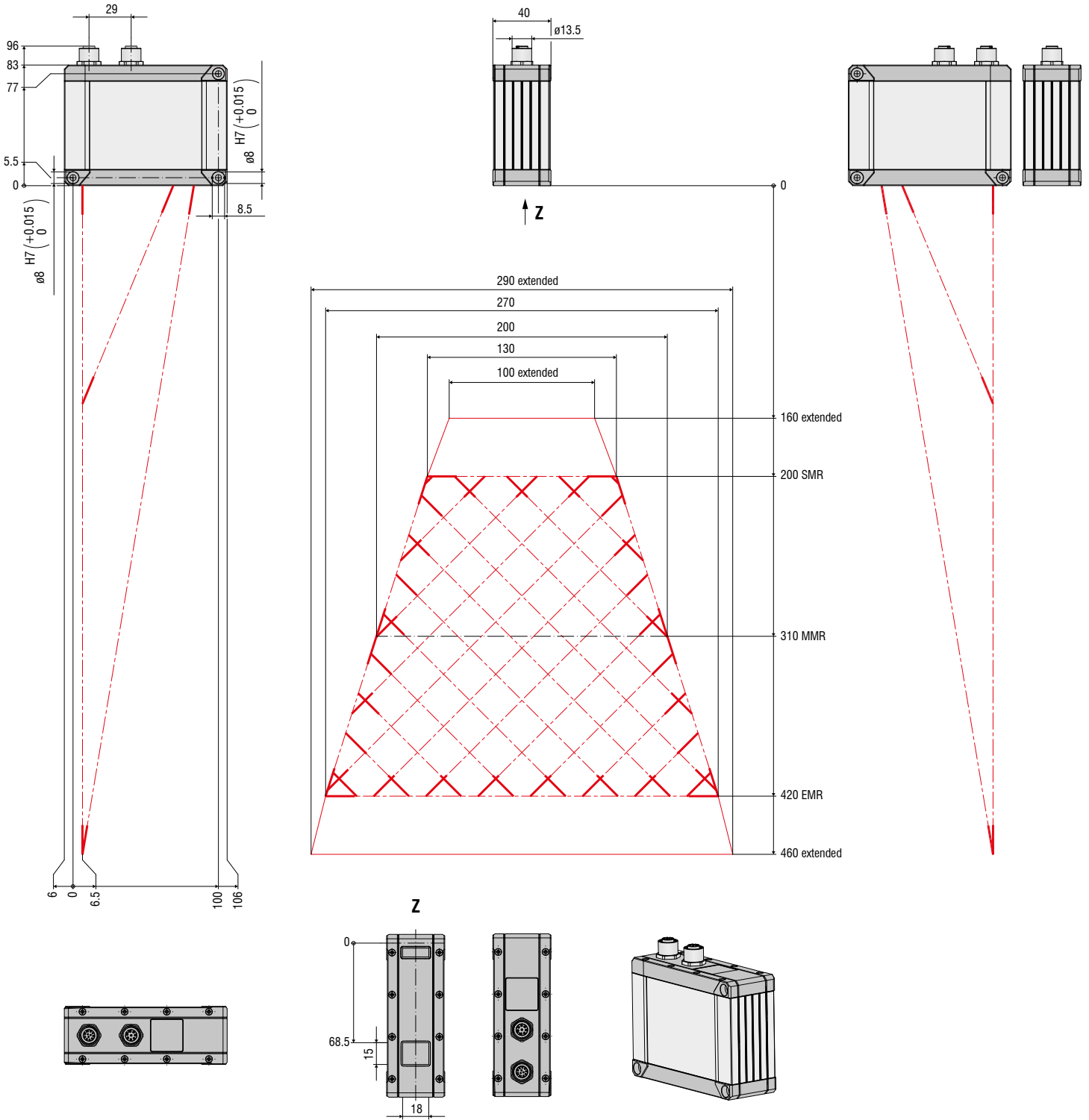
Blue Laser





LLT30x2-200 / LLT30x0-200

Red Laser



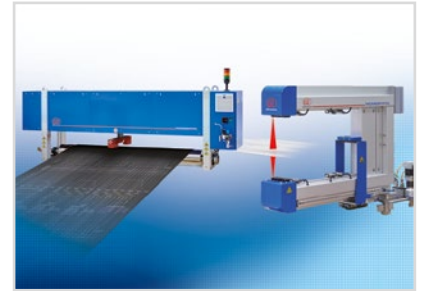
## Sensors and Systems from Micro-Epsilon



Sensors and systems for displacement, position and dimension



Sensors and measurement devices for non-contact temperature measurement



Measuring and inspection systems for quality assurance



Optical micrometers, fiber optics, measuring and test amplifiers



Color recognition sensors, LED Analyzers and inline color spectrometers



3D measurement technology for dimensional testing and surface inspection

