MICRO-EPSILON

More Precision

scanCONTROL // 2D/3D laser scanner (laser profile sensors)

- *z-axis measuring range up to 265mm*
- *x-axis measuring range up to 143.5mm*
- *Profile frequency up to 2,000Hz*
- *Measuring rate up to 2,560,000 points/sec*
- *z-axis reference resolution from 1µm*
- *Resolution x-axis up to 1,280 points*
- *Also available with blue laser*

Compact design for precise measurement tasks
The design of the LLT29xx series is focussed on minimal size and low weight. The controller is integrated in the housing, simplifying cabling arrangements and mechanical integration. Due to its compact design and the high profile resolution, the 29xx series is especially suitable for static, 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 and GAP class sensors, the measurement data output can be carried out in 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.

Also available with blue laser
The Blue Laser technology uses a laser diode with a shorter wavelength of 405nm. The outstanding characteristics of this wavelength range enable reliable measurements to be made that to date have been difficult to achieve using red laser scanners. Its advantages can be seen particularly well on red-hot glowing metals, (semi-) transparent and organic materials.

Short measuring range
The laser line of only 10mm enables to reliably detect smallest details. The high profile resolution combined with the blue laser line allow for maximum precision destined for versatile applications, e.g. in the electronics production.

Article description structure

LLT	29	00	-25	/SI

Options
/SI = integrated laser switch-off
/PT = integrated pigtail cable 0.25 m
/3B = 3B laser class
/BL = Blue Laser (blue-violet laser line)

Measuring range
10mm (only Blue Laser)
25mm
50mm
100mm

Class
00=COMPACT
10=SMART
11=GAP
50=HIGHSPEED

Series
LLT29xx

Options*

/SI	Integrated laser switch-off	/PT	Pigtail cable
	Hardware switch-off of the laser line		0.25m long cable directly out of the sensor
/3B	**3B laser class**	**/BL**	**Blue laser line**
	Improved laser power (20mW) e.g. for dark surfaces		Blue laser line (405nm) for (semi-) transparent, red-hot glowing and organic materials

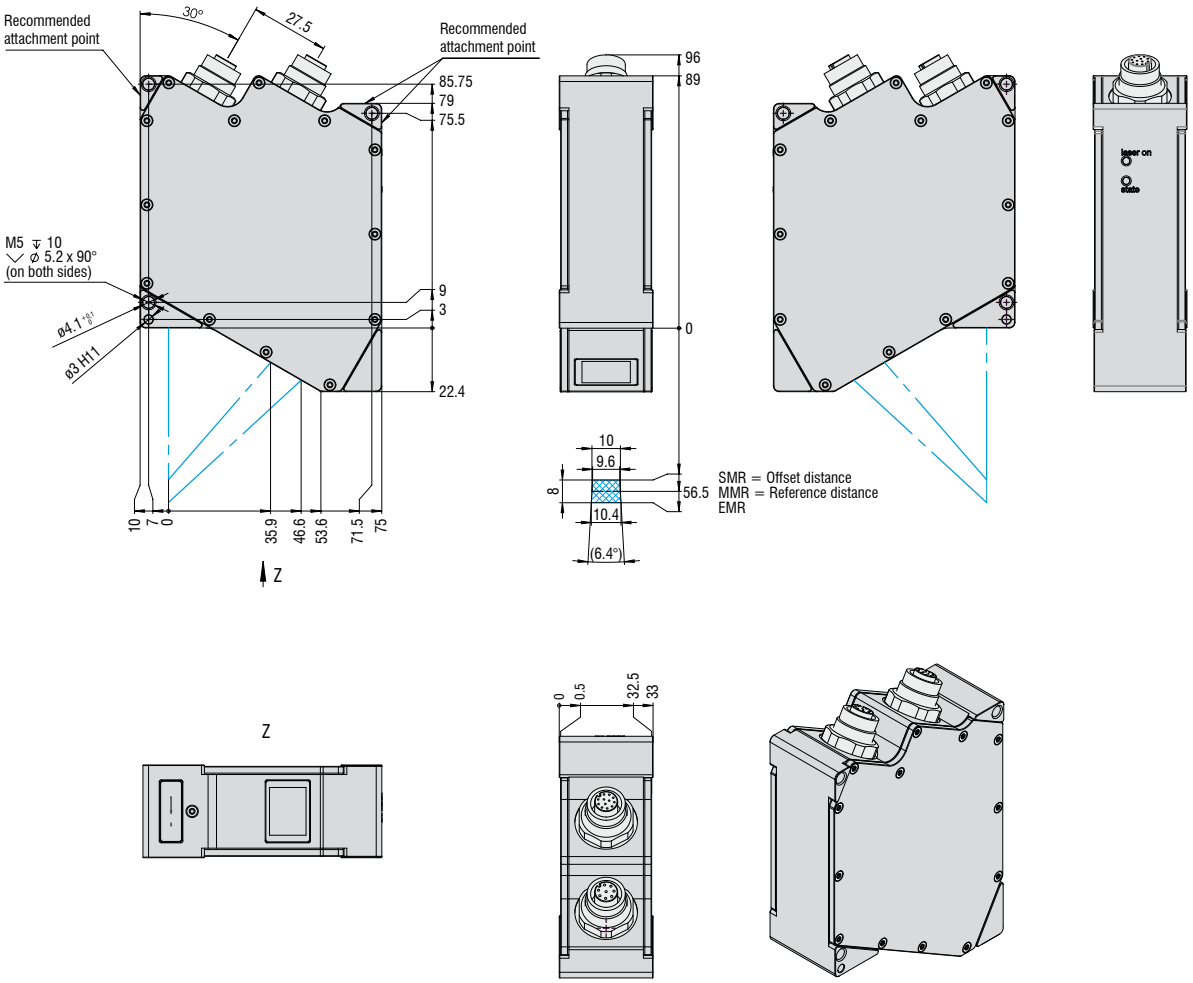
*Options can be combined

Accessories from page 18

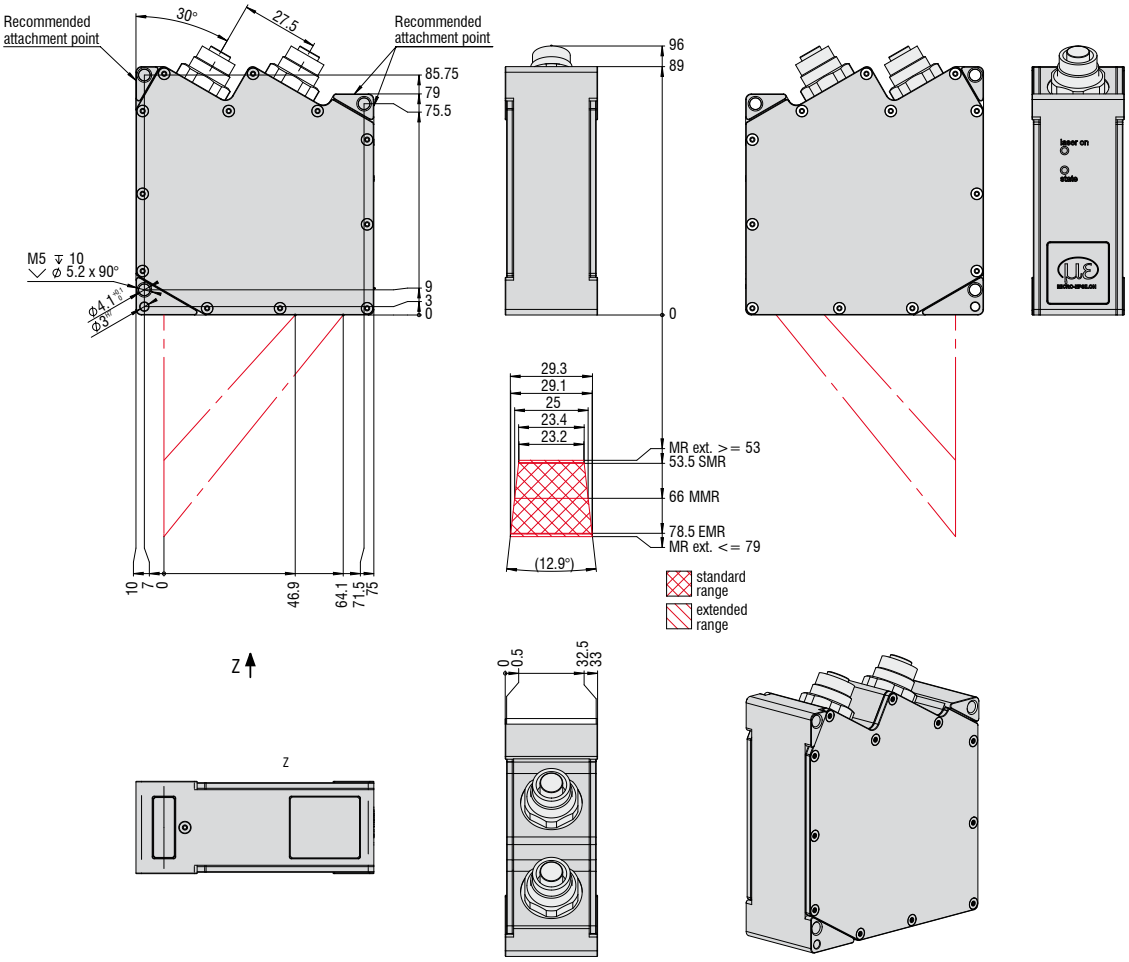
	Model		LLT	29xx-10/BL	29xx-25	29xx-50	29xx-100
z-axis (height)	Standard measuring range		Start of measuring range	52.5mm	53.5mm	70mm	190mm
			Midrange	56.5mm	66mm	95mm	240mm
			End of measuring range	60.5mm	78.5mm	120mm	290mm
			Height of measuring range	8mm	25mm	50mm	100mm
	Extended measuring range		Start of measuring range	-	53mm	65mm	125mm
			End of measuring range	-	79mm	125mm	390mm
	Linearity [1]		(2sigma)	±0.17% FSO	±0.10% FSO	±0.10% FSO	±0.10% FSO
	Reference resolution [2] [3]			1µm	2µm	4µm	12µm
x-axis (width)	Standard measuring range		Start of measuring range	9.4mm	23.4mm	42mm	83.1mm
			Midrange	10mm	25mm	50mm	100mm
			End of measuring range	10.7mm	29.1mm	58mm	120.8mm
	Extended measuring range		Start of measuring range	-	23.2mm	40mm	58.5mm
			End of measuring range	-	29.3mm	60mm	143.5mm
	Resolution x-axis			1,280 points/profile			
	Profile frequency		COMPACT / SMART / GAP	up to 300Hz			
			HIGHSPEED	up to 2,000Hz			
	Interfaces		Ethernet GigE-Vision	Output of measurement values Sensor control Profile data transmission			
		Multi function port	Digital inputs	Mode switching Encoder Trigger			
			RS422 (half-duplex) [4]	Output of measurement values Sensor control Trigger Synchronisation			
	Output of measurement values			Ethernet (UDP / Modbus TCP); RS422 (ASCII / Modbus RTU) Analog [5]; Switch signal [5] PROFINET [6]; EtherCAT [6]; EtherNet/IP [6]			
	Display (LED)			1x laser ON/OFF, 1x power/error/status			
	Light source		standard	Semiconductor laser 405nm (blue)	Semiconductor laser 658nm (red)		
			optional	-	Semiconductor laser 405nm (blue)		
	Aperture angle laser line			10°	20°	25°	25°
	Laser power		standard	≤ 8mW (2M laser class)			
			optional	-	≤ 20mw (3B laser class)		
	Integrated laser switch-off		optional	Safety interlock, hardware switch-off			
	Permissible ambient light (fluorescent light) [2]			10,000lx			
	Protection class (sensor)			IP 65			
	EMC			acc. EN 61326-1: 2006-10 DIN EN 55011: 2007-11 (group 1, B class) EN 61000-6-2: 2006-03			
	Vibration			2g / 20 ... 500Hz			
	Shock			15g / 6ms			
	Operating temperature			0°C to 45°C			
	Storage temperature			-20°C to 70°C			
	Dimensions			96 x 118.5 x 33mm	96 x 85 x 33mm		
	Weight sensor (without cable)			440g	380g		
	Supply			11-30VDC, 24V, 500mA, IEEE 802.3af class 2, Power over Ethernet			

[1] Standard measuring range
[2] Measuring 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 input for triggering / synchronisation
[5] Only with Output Unit
[6] Only with scanCONTROL Gateway
FSO = Full scale output

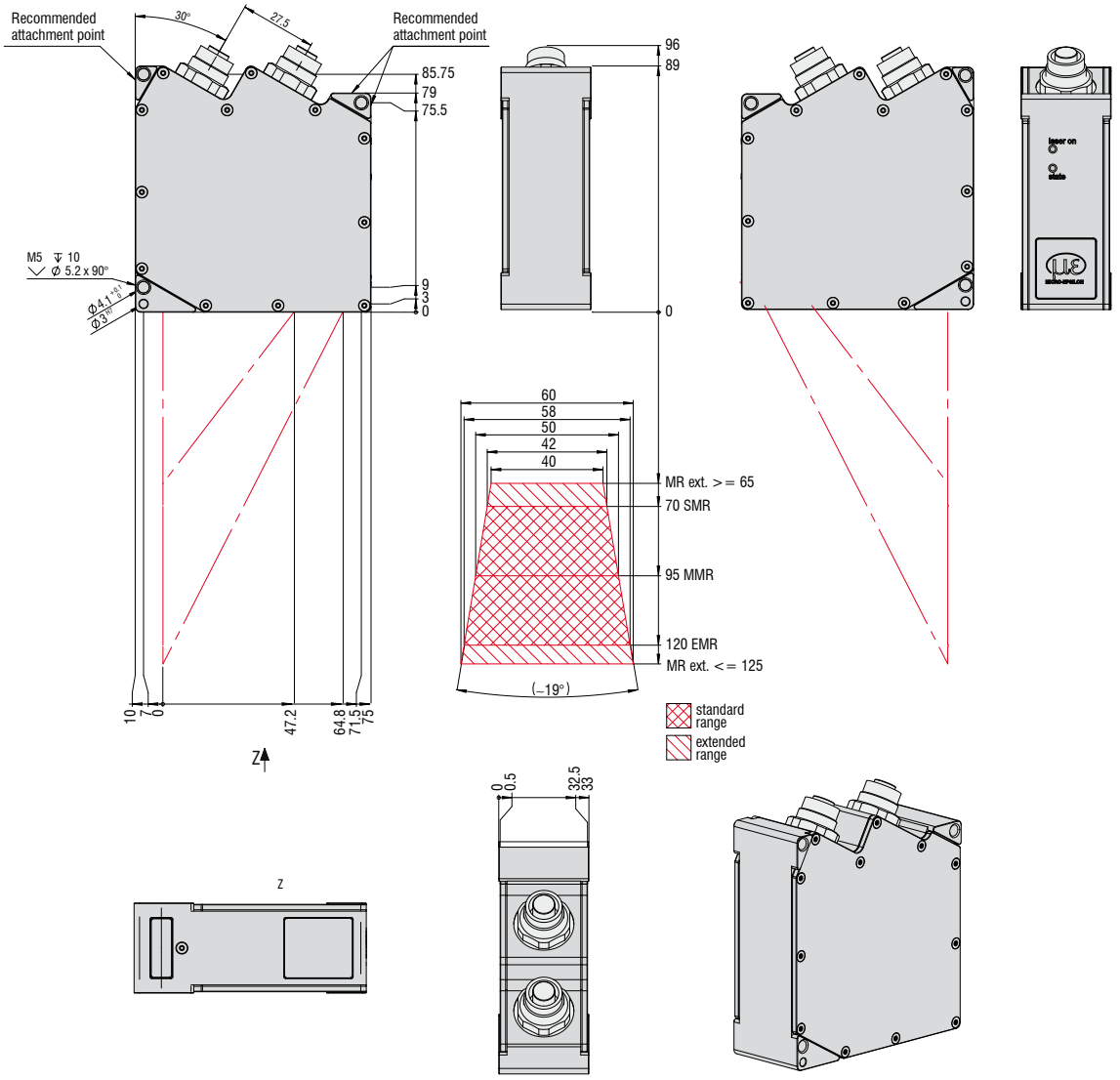
LLT29xx-10/BL



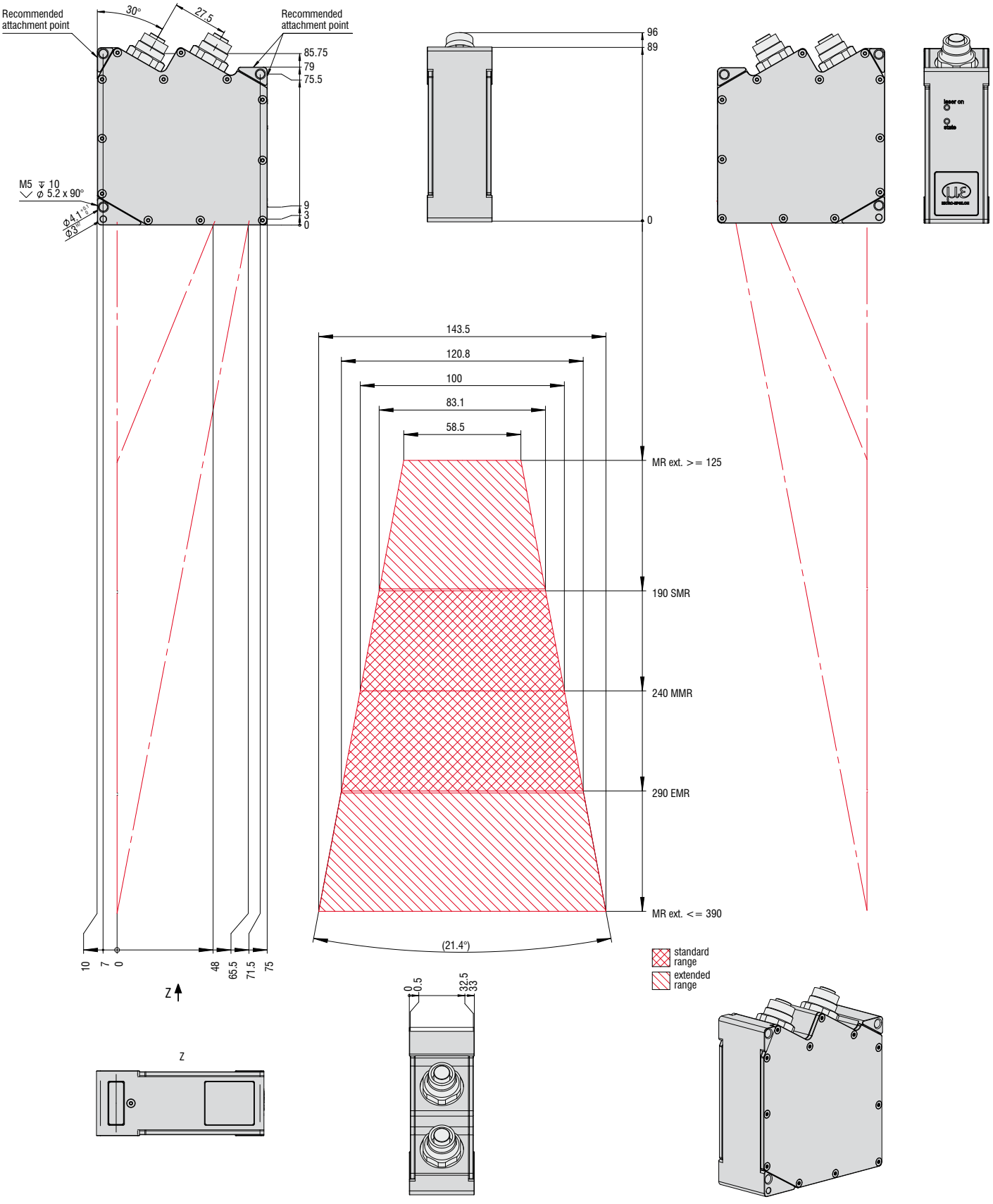
LLT26xx/29xx-25



LLT26xx/29xx-50



LLT26xx/29xx-100

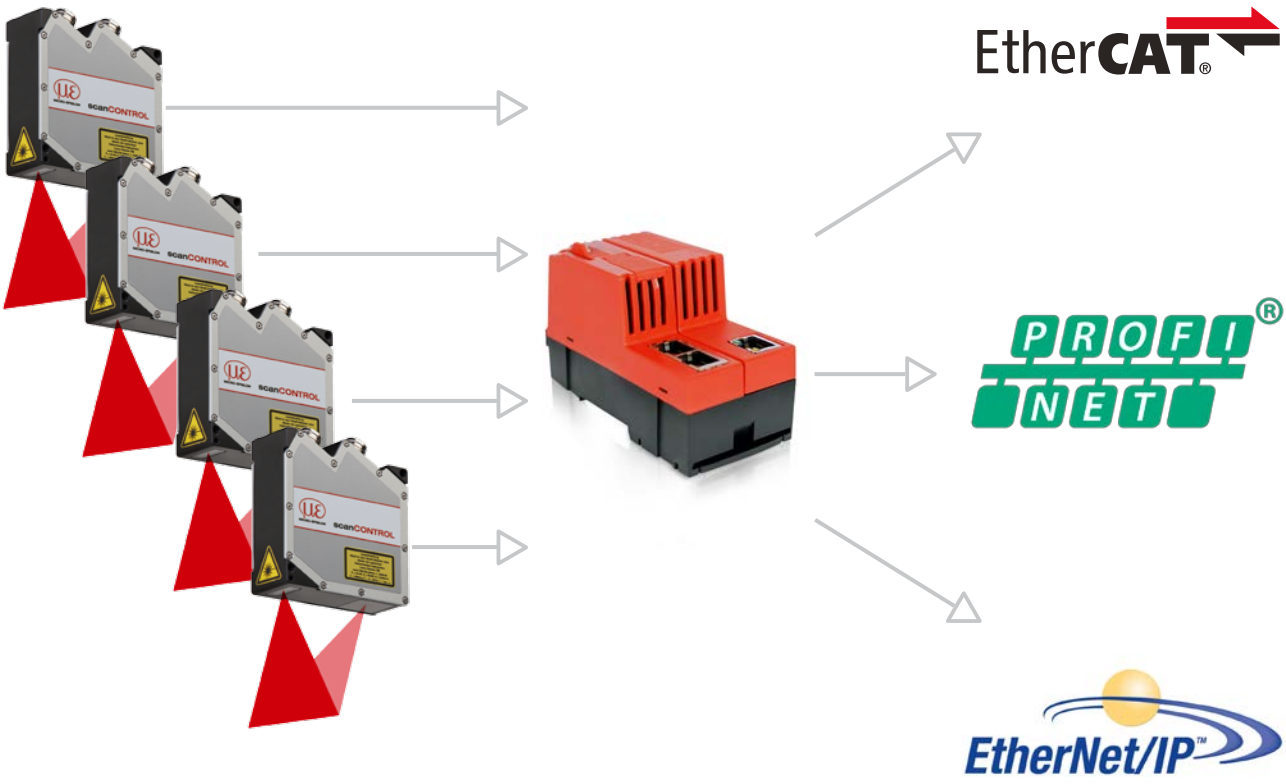


PROFINET / EtherCAT / EtherNet/IP – for all scanners of the SMART and GAP classes

Each scanCONTROL Gateway can be connected with up to 4 sensors. It communicates with the scanCONTROL SMART sensor or the gapCONTROL sensor via Ethernet Modbus. The resultant values are then converted to PROFINET, EtherCAT or EtherNet/IP. The customer carries out the parameter set up with a detailed instruction manual.

*operating more than one sensor requires a switch.

scanCONTROL Gateway



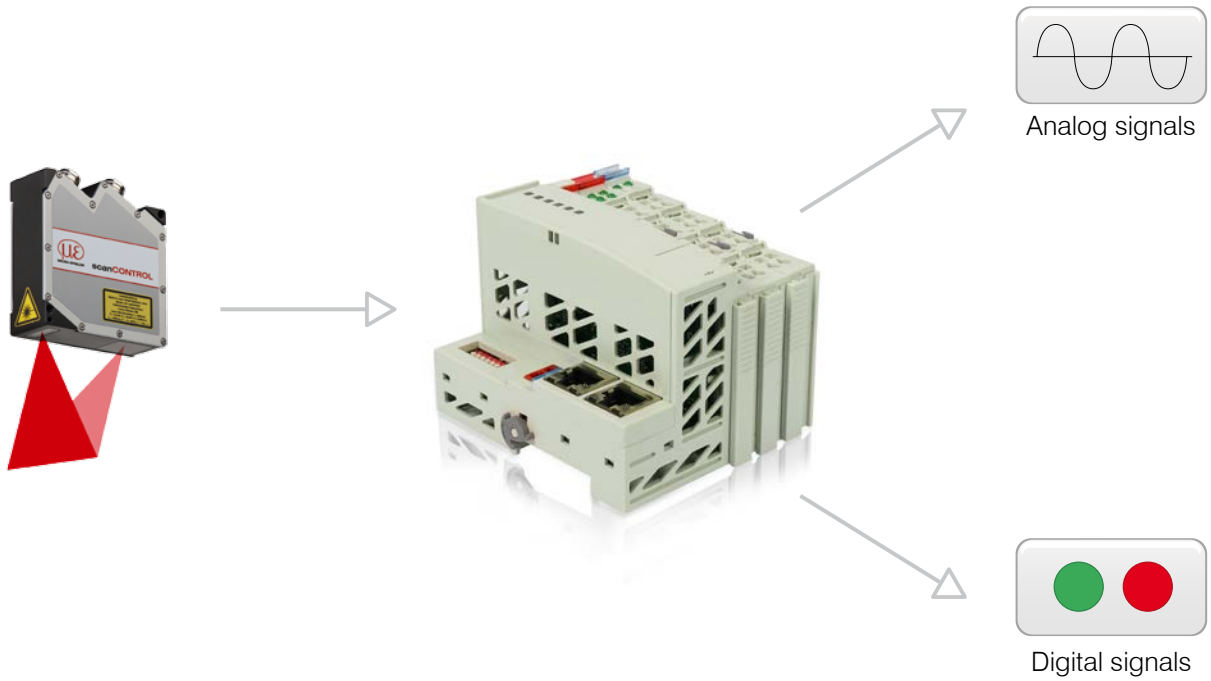
Gateway

6414129	scanCONTROL Gateway	Fieldbus coupler, configurable for PROFINET, EtherNet/IP and EtherCAT
6411168	scanCONTROL SPU Switch, 5 ports	Industrial Ethernet Switch (unmanaged) for mounting rail, 10/100/1000 Mbit/s, 5 ports
6411167	scanCONTROL SPU Switch, 8 ports	Industrial Ethernet Switch (unmanaged) for mounting rail, 10/100/1000 Mbit/s, 8 ports

Sensors on the gateway	Max. measurement frequency
1	450Hz
2	240Hz
3	160Hz
4	120Hz

Analog signals / digital switching signals – for all scanners of the SMART and GAP classes
The scanCONTROL Output Unit is addressed via Ethernet and outputs analog and digital signals.
Different output terminals can be connected to the fieldbus coupler.

scanCONTROL Output Unit



Output Unit

6414073	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 24V; 0.5A; negative switching;
0325115	OU-DigitalOut/8-channel/DC24V/0.5A/positive	8-channel digital output terminal; DC 24V; 0.5A; positive switching
0325116	OU-AnalogOut/4-channel/±10V	4-channel analog output terminal; ±10V
0325135	OU-AnalogOut/4-channel/0-10V	4-channel analog output terminal; 0-10V
0325132	OU-AnalogOut/4-channel/0-20mA	4-channel analog output terminal; 0-20mA
0325133	OU-AnalogOut/4-channel/4-20mA	4-channel analog output terminal; 4-20mA

Further terminals are available on request.

Connection cable

Multi-function cable

For power supply, digital inputs (TTL or HTL), RS422 (half-duplex)

PC	2600/2900	-5
		Cable length in metres
	Sensor type	

PC = Multi-function cable qualified for drag chain use
PCR = Multi-function cable suitable for use with robots

Ethernet connection cable

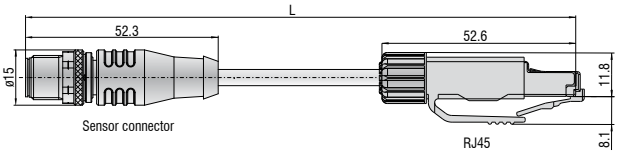
For parameter set up, value and profile transmission

SC	2600/2900	-5
		Cable length in metres
	Sensor type	

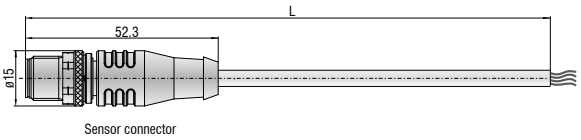
SC= Ethernet connection cable qualified for drag chain use
SCR = Ethernet connection cable suitable for use with robots

Accessories

Art. No.	Model	Description
0323478	Connector/12-pol/LLT2600-2900/PS/RS422/DigIN	Connector multi-function port for scanCONTROL series LLT26xx and 29xx
0323479	Connector/8-pol/LLT2600-2900/Ethernet	Connector for Ethernet socket for scanCONTROL series LLT26xx and 29xx
2420067	PS2600/2900	Power supply unit for scanCONTROL 2600/2900
0254072	Suitcase scanCONTROL 26/27/29 MR 10-100	Transport suitcase for scanCONTROL sensors, incl. measuring stand



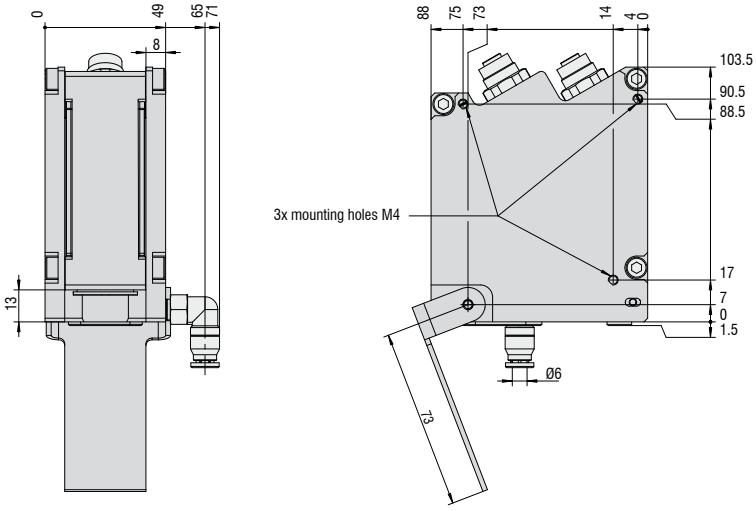
Ethernet connection cable



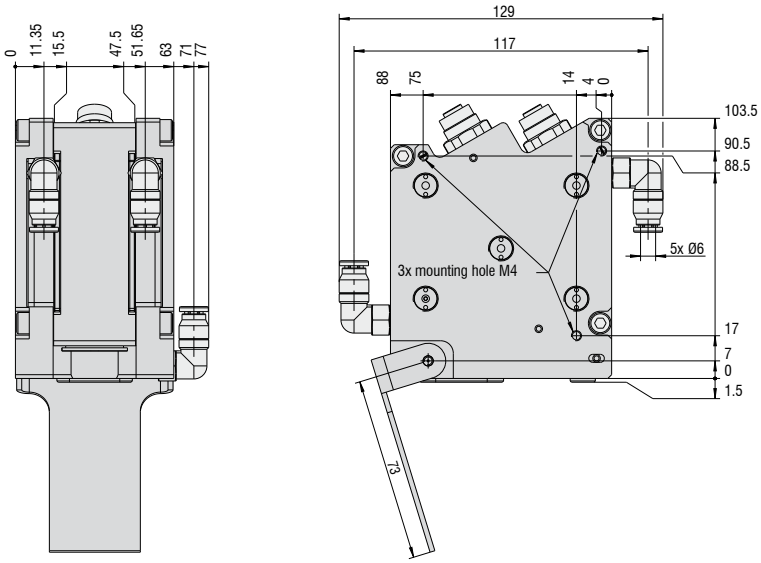
Multi-function cable

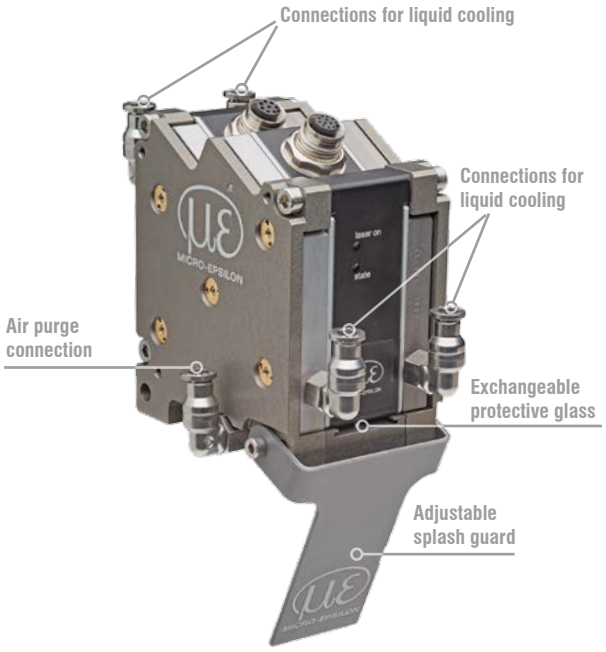
Protection and cooling housing for LLT26xx and 29xx

Protection housing including blow-out system



Protection housing including blow-out system and water cooling





Art. No.	Model	Description
2105058	scanCONTROL LLT26/29 protection housing	Adaptive protection housing for scanCONTROL 26xx/29xx
2105059	Protective scanCONTROL LLT26/29 cooling housing	Adaptive protection and cooling housing for scanCONTROL 26xx/29xx
0755075	Exchangeable glass for protection housing	Exchangeable glass for protection/cooling concept LLT 26/29, pack. with 50 pcs

High performance sensors made by Micro-Epsilon

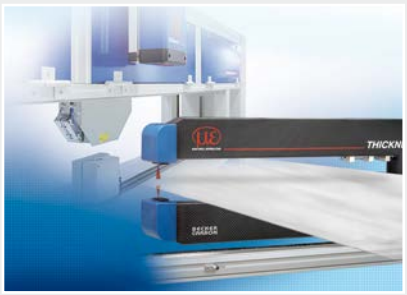
Sensors and systems for displacement and position

Sensors and measurement devices for non-contact temperature measurement

2D/3D profile sensors (laser scanner)

Optical micrometers, fiber optic sensors and fiber optics

Color recognition sensors, LED analyzers and color online spectrometer



Measurement and inspection systems

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