

M7LL

Laser Distance Sensor

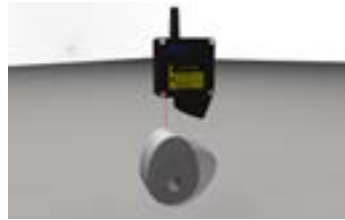
for automated manufacturing
with Ethernet interface
to connect with PLC



- Ethernet interface
- Analog output
- Ranges 0,5 mm up to 200 mm
- Measuring frequency 10 kHz
- Low noise
- Reliable results also with white/black transition
- Replacable protection glasses

The analog sensors of series M7LL use a PSD for their receiver optics. This assures a continuous position measurement at very fast movements. Replacable protection glasses and a robust casing allow the use even in dirty environments.

Applications:



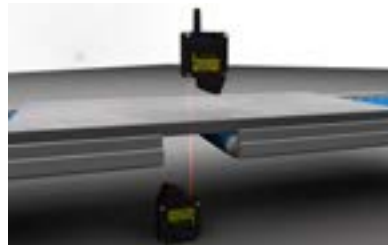
Roundness Measurement:

The sensor is mounted in a defined distance to the rotating object. Even smallest deviations from roundness are recognized due to a continuous displacement measurement.



IC check:

To avoid error during placement the ICs are detected by a M7LL laser sensor. Bent or absent pins are realised and can be signaled to the machine control. Thus waste will be recognised immediately and the appropriate corrective action can be initiated without delay.



Thickness Measurement:

Two sensors are measuring onto the top and the bottom side of the target. The thickness of the object results from the measured distance values.



Vibration Measurement:

The M7LL measures the deflection of a membrane at vibrations up to 10 kHz.

Specifications

Sensor M7LL/		0.5	2	4	10	20	50	100	200
Measuring range	[mm]	0.5	2	4	10	20	50	100	200
Range begin	[mm]	23.75	23	22	40	55	115	170	240
Linearity ±	[μm]	1	4	8	20	40	100	200	400
Resolution ¹	[μm]	0.3	1.3	2.6	6.5	13	32.5	65	200
Resolution ²	[μm]	0.02	0.1	0.2	0.5	1	2.5	6	20
Light spot diameter	[mm]	0.1	0.2	0.3	0.6	0.9	1.5	1.5	2
Laser class	class 2 according to DIN EN 60825-1:2001-11, optionally enhanced laser power								
Light source	Laser, wave length 650 ... 670 nm, red visible								
Measurement rate	54 kHz								
Interface	Ethernet								
Distance output	4-20 mA; ±10 V (optional 0-20 mA, 0-10 V, 0-5 V, ±5 V)								
Impedance	approx. 0 Ohm (10 mA max.)								
Output rate	10 kHz (-3 db)								
Temperature drift	0.02% of range / K								
Light intensity output	0-10 V								
MIN	+24 V / 10 mA when lower than MIN, LED yellow								
OK	+24 V / 10 mA when higher than MIN and lower than MAX, LED green								
MAX	+24 V / 10 mA when higher than MAX, LED orange								
Error output	+24 V / 10 mA, LED red								
Switching hysteresis	approx. 0.5% of range								
Ambient light	20,000 Lux								
Operation time	50,000 h for laser diode								
Isolation voltage	200 VDC, 0 V against casing								
Max. vibration	5 g up to 1 kHz								
Operation temperature	0° ... +50°C								
Storage temperature	-20° ... +70°C								
Humidity	up to 90% RH, non condensing								
Protection class	Sensor head: IP 64, electronic unit: IP 40								
Power supply	+24 VDC / 250 mA (10 ... 30 V)								

All specifications are valid for measurements on matt white objects

¹ Measuring rate 10 kHz ² Measuring rate 20 Hz

Pin assignment 25 pin SUB-D

Pin	Signal	Level	Pin	Signal	Level
1	Distance output	±10 V	14	Analog GND	0 V
2	Error output	0 / 24 V	15	n.c.	
3	n.c.		16	Digital output	0 / 24 V
4	n.c.			MAX	
5	Digital output OK	0 / 24 V	17	Distance input	±10 V
6	Distance output	4 ... 20 mA	18	Digital GND	0 V
7	n.c.		19	Digital output MIN	0 / 24 V
8	GND power supply	0 V	20	Intensity output	0 ... 10 V
9	n.c.		21	Supply voltage	+24 V
10	n.c.		22	n.c.	
11	n.c.		23	n.c.	
12	n.c.		24	n.c.	
13	n.c.		25	n.c.	
			Housing	EMV	

Dip switch settings

Output rate	S1	S2	S3	S4	S5	S6
10 kHz	–	–	–	–	–	–
7 kHz	x	–	–	–	–	–
4 kHz	–	x	–	–	–	–
1 kHz	–	x	x	–	–	–
250 Hz	–	–	–	x	–	–
100 Hz	–	–	–	–	x	–
25 Hz	–	–	x	x	–	x
20 Hz	x	x	x	x	x	x

bold text: factory settings

Error and technical modification reserved

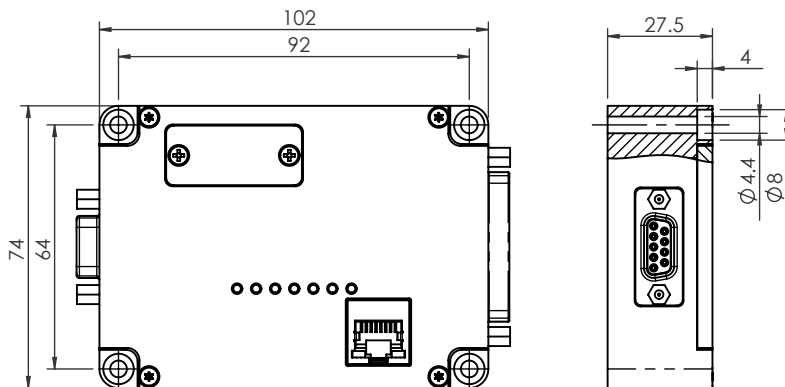
DB-M7LL_5-04-E

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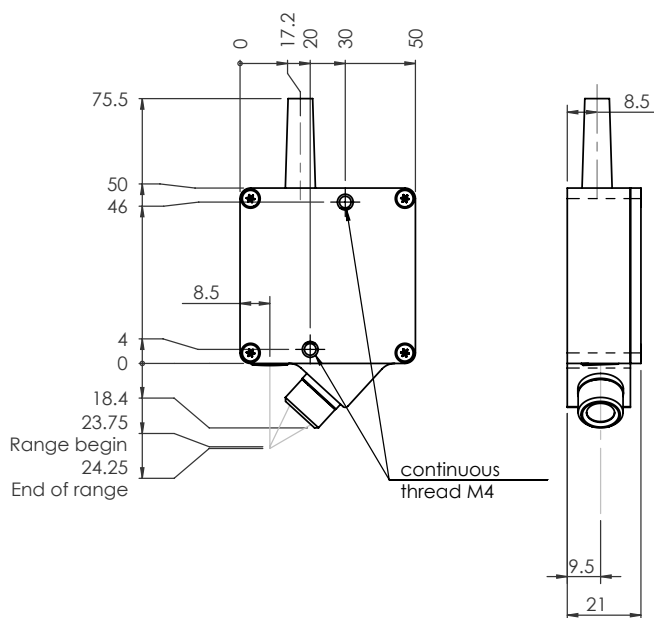
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M7LL - Electronic unit

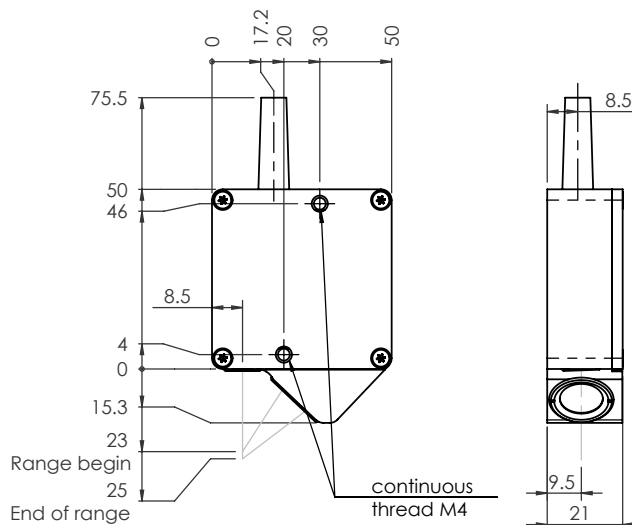


Sensor head M7LL/0.5



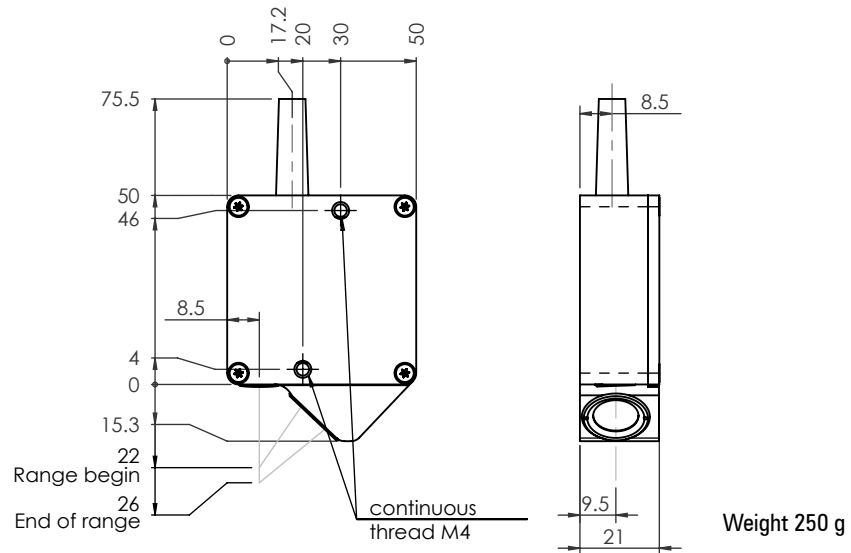
Weight 250 g

Sensor head M7LL/2

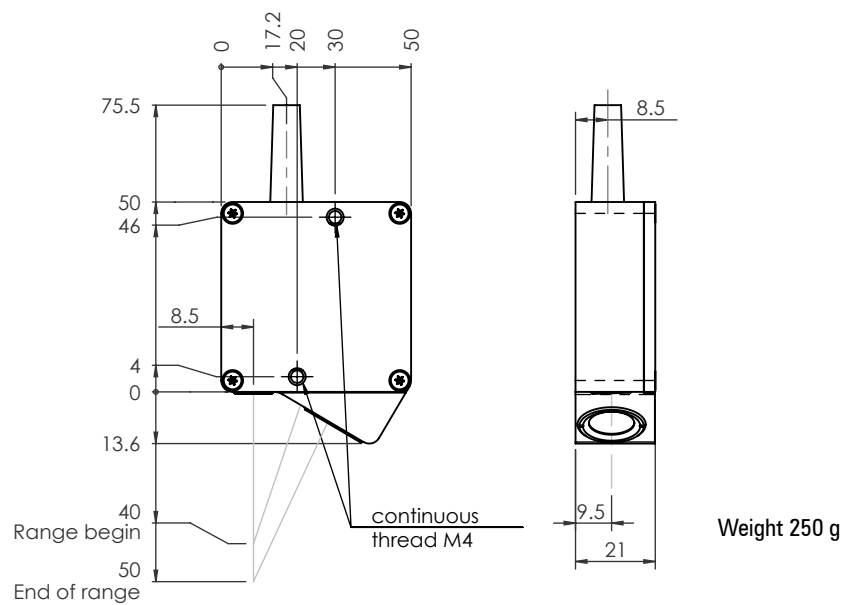


Weight 250 g

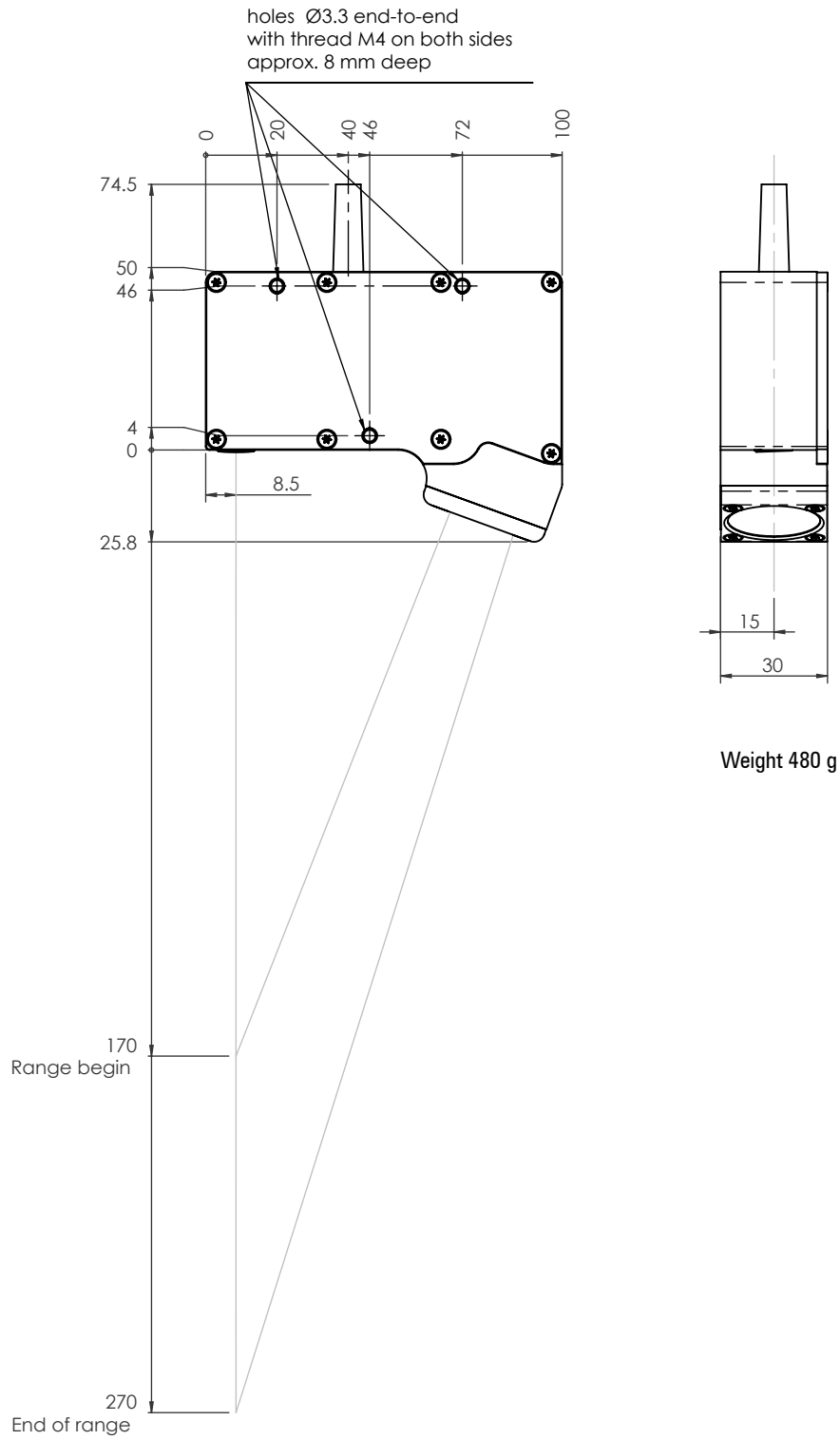
Sensor head M7LL/4



Sensor head M7LL/10



Sensor head M7LL/100



Sensor head M7LL/200

