

# Distance Sensor M11

Laser Sensor up to 10 kHz  
Range 10 ... 150 mm

Triangulation digital

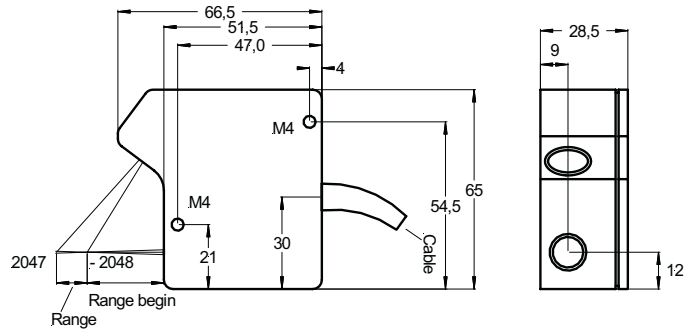


- digital distance sensor with high accuracy and resolution
- measurements on many different surfaces possible

• Measuring  
• Controlling  
• Monitoring

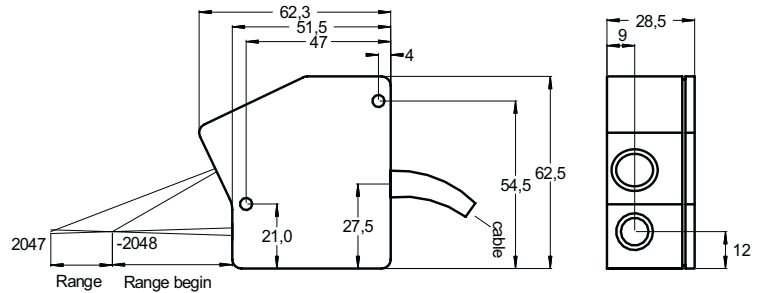
## Sensor head M11L/10

Weight 280 g, cable length 2 m



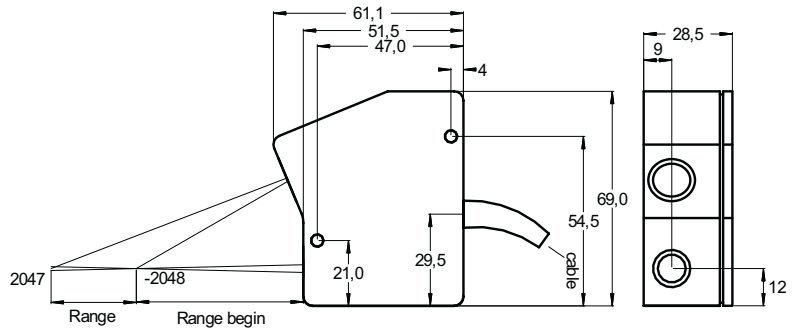
## Sensor head M11L/20

Weight 250 g, cable length 2 m



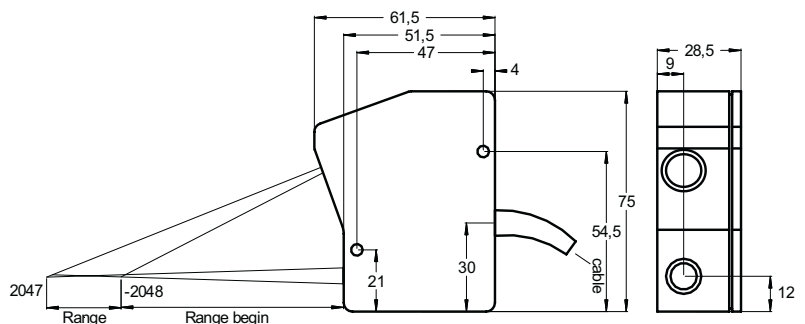
## Sensor head M11L/50

Weight 260 g, cable length 2 m



## Sensor head M11L/100

Weight 270 g, cable length 2 m



# Laser Sensor M11

| Sensor                   |  | M11L/<br>10  | M11L/<br>20 | M11L/<br>50 | M11L/<br>100 | M11L/<br>150*** |
|--------------------------|--|--|-------------|-------------|--------------|-----------------|
| Range [mm]               |  | 10   | 20          | 50          | 100          | 150             |
| Range begin [mm]         |  | 25   | 40          | 55          | 75           | 1350            |
| Linearity* ± [mm]        |  | 0,005  | 0,01        | 0,025       | 0,05         | 0,15            |
| Resolution* [mm]         |  | 0,0025   | 0,005       | 0,0125      | 0,025        | 0,04            |
| Light spot diameter [mm] |  | 0,8  | 0,9         | 1           | 1,1          | 2               |
| Laser protection class   |  | 2  | 2           | 2           | 2            | 3R              |
| Light source             | Laser, 670 nm, red visible   |  |             |             |              |                 |
| Sampling frequency       | 500 Hz up to 10 kHz  |  |             |             |              | 1 kHz           |
| Distance output          | ±10 V (optional 0 ... 10 V / 0 ... 5 V)<br>RS 232 / 4 ... 20 mA (optional 0 ... 20 mA) |  |             |             |              |                 |
| Impedance                | approx. 0 Ohm (10 mA max.)   |  |             |             |              |                 |
| Angle error              | with 30° of inclination (A-axis): approx. 0,5% on white surface                        |  |             |             |              |                 |
| Reaction time            | 200 µs   |  |             |             |              |                 |
| Bandwith                 | 0,5 x sampling frequency   |  |             |             |              |                 |
| Temperature drift        | 0,01% of range / K   |  |             |             |              |                 |
| Intensity output**       | 0 ... 10 V   |  |             |             |              |                 |
| Switching outputs        | MIN  | +24 V, RB <sup>1</sup> < object < RB + 10% R <sup>2</sup> , LED yellow |             |             |              |                 |
|                          | OK   | +24 V, RB + 10% R < object < RE <sup>3</sup> - 10% R, LED green        |             |             |              |                 |
|                          | MAX  | +24 V, RE - 10% R < object < RE, LED orange                            |             |             |              |                 |
| Error output             | +24 V / 10 mA, LED red   |  |             |             |              |                 |
| Ambient light            | 20.000 Lux on measured object  |  |             |             |              |                 |
| Operation time           | 50.000 h for Laser diode   |  |             |             |              |                 |
| Isolation voltage        | 200 VDC, 0 V against case  |  |             |             |              |                 |
| max. Vibration           | 5 g up to 1 kHz  |  |             |             |              |                 |
| Operation temperature    | 0° ... +40°C   |  |             |             |              |                 |
| Storage temperature      | -20° ... +70°C   |  |             |             |              |                 |
| Humidity                 | up to 90% RH   |  |             |             |              |                 |
| Protection class         | IP 64  |  |             |             |              |                 |
| Supply                   | +24 VDC / 280 mA (10 ... 28 V)   |  |             |             |              |                 |

\* Measurement on object color white

\*\* Automatic adjustment of sampling frequency depending on object's light intensity

\*\*\* Technical drawing on request

1) RB: Range begin 2) R: Range 3) RE: Range end

## Delivery:

- Sensor with connection cable 2m
- Electronic unit
- 25 pin Sub-D connector for output soldering version
- Calibration report

## Options:

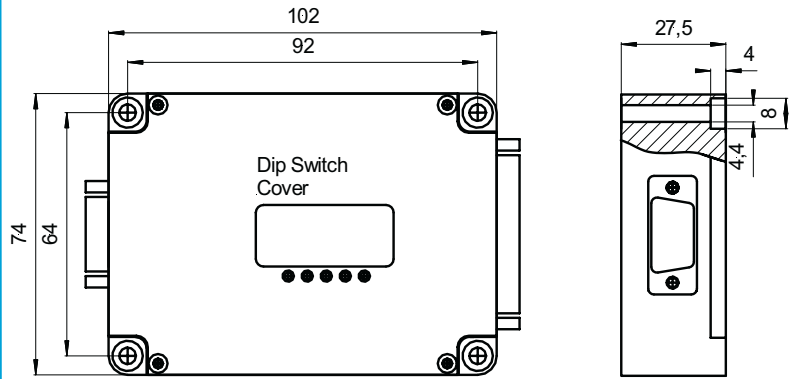
- Special cable length, max. 10 m
- Interference filter
- Sensor head with integrated protection window
- Sensor head vibration resistant

## Accessories:

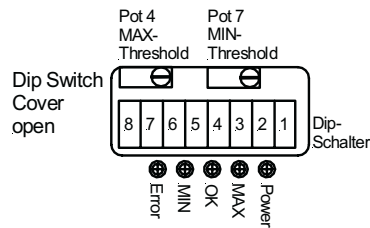
- Thickness measuring system
- Increased laser capacity
- Supply output cable for RS 232
- Extension cable 2m
- Industrial power supply
- Power supply for wall socket
- Digital display (display in mm)
- More accessories on request

- Special type M11LS for mirror surfaces on request

# Electronic unit M11

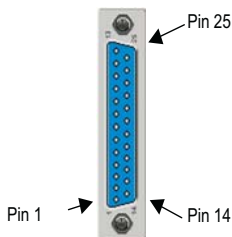


weight 300g



## Pin assignment 25 pin SUB-D connector:

| Pin |                            |
|-----|----------------------------|
| 1   | Distance output $\pm 10$ V |
| 2   | Error +24 V / 10 mA        |
| 3   | Laser OFF, 0V              |
| 4   | TXD                        |
| 5   | Range OK, +24 V / 10 mA    |
| 6   | 4 ... 20 mA                |
| 7   | RXD                        |
| 8   | 0V supply                  |
| 14  | Analog GND                 |
| 16  | MAX, +24 V / 10 mA         |
| 17  | Input Sensor 2             |
| 18  | RTS                        |
| 19  | MIN, +24 V / 10 mA         |
| 20  | Intensity 0 ... 10 V       |
| 21  | +24 V supply               |



## Dip switch settings:

| SW1 | SW2 | SW3 | adjustment intensity in % of saturation (sampling frequency) |
|-----|-----|-----|--|
| off | off | off | Laser off / adjustment off                                   |
| off | off | on  | adjustment off (sampling frequency 1 kHz)                    |
| off | on  | off | adjustment off (sampling frequency 5 kHz)                    |
| off | on  | on  | adjustment off (sampling frequency 10 kHz)                   |
| on  | off | off | 20%  |
| on  | off | on  | 30%  |
| on  | on  | off | 40%  |
| on  | on  | on  | 60%  |

| SW4 | SW5 | Filter                        |
|-----|-----|-------------------------------|
| off | off | Integration off               |
| off | on  | Integration of 2 measurements |
| on  | off | Integration of 4 measurements |
| on  | on  | Integration of 8 measurements |

| SW6 | SW7 | plausibility test (deviation of last measured value) |
|-----|-----|--|
| off | off | plausibility test off                                |
| off | on  | plausibility test 1 ( $\pm 1\%$ of range)            |
| on  | off | plausibility test 2 ( $\pm 5\%$ of range)            |
| on  | on  | plausibility test 3 ( $\pm 10\%$ of range)           |

| SW8 |                            |
|-----|----------------------------|
| off | control by dip switches *) |
| on  | control by PC (RS 232)     |

\*) default setting (do not change!)

RS 232-protocol (115,2 kBaud):

| F2  | F1  | Status |
|-----|-----|--------|
| off | off | OK     |
| off | on  | MIN    |
| on  | off | MAX    |
| on  | on  | Fehler |

| Data bits | 7   | 6    | 5    | 4   | 3   | 2   | 1   | 0   |
|-----------|-----|------|------|-----|-----|-----|-----|-----|
| Lowbyte   | off | DB6  | DB5  | DB4 | DB3 | DB2 | DB1 | DB0 |
| Highbyte  | on  | DB11 | DB10 | DB9 | DB8 | DB7 | F2  | F1  |

DB 0 - 11 = signed data bits; DB0 = LSB; DB11 = MSB