



## NM1-IP-2L

### Single axis tilt measuring system

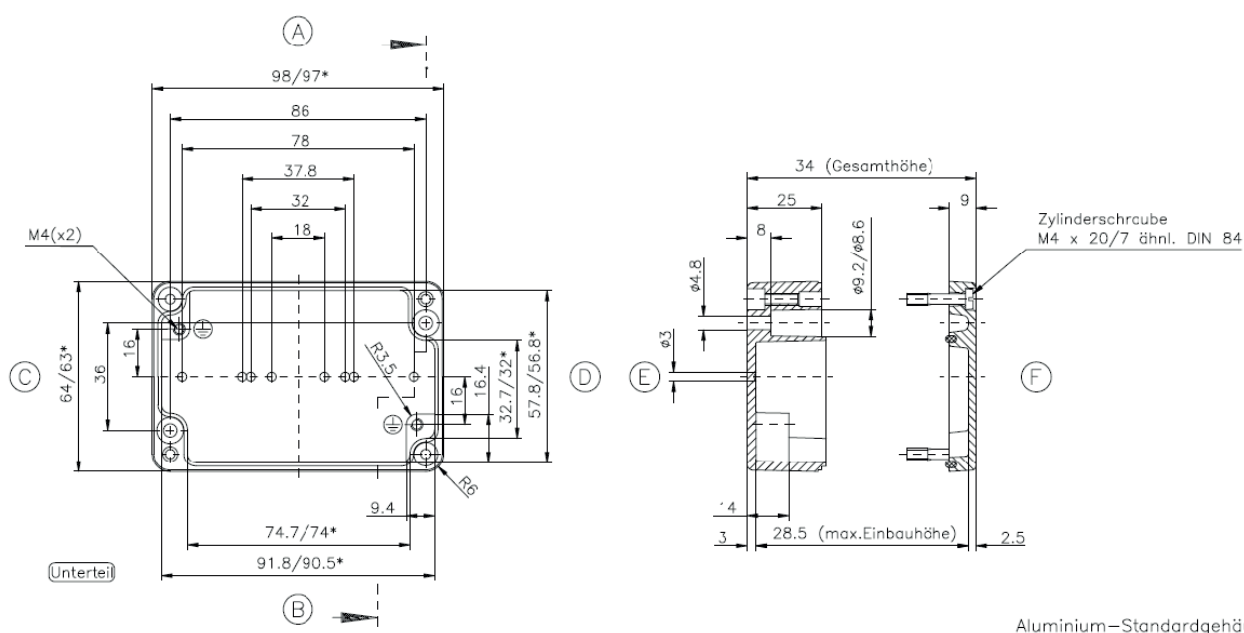
- Measuring range  $\pm 3^\circ$  up to  $\pm 60^\circ$  or  $0 \dots 90^\circ$
- Accuracy  $\pm 0,1^\circ$  (up to  $\pm 10^\circ$ ),  $\pm 0,2^\circ$  (up to  $\pm 30^\circ$ ),  $\pm 0,25^\circ$  (up to  $\pm 60^\circ$ )
- Analogue output  $4 \dots 20 \text{ mA}$  (2-wire-technology)
- Supply voltage  $18 \dots 28 \text{ VDC}$



### Description

The single axis industrial tilt measuring system NM1-IP-2L is the combination of a non-contact inclination sensor and sensor adapted electronics. The measuring system is designed for precise tilt measurement in one axis and intended for side assembly. Available tilt measuring ranges are  $\pm 3^\circ$  to  $\pm 60^\circ$  or  $0 \dots 10^\circ$  to  $0 \dots 90^\circ$ . The analogue output signal of  $4 \dots 20 \text{ mA}$  in 2-wire-technology is a standard signal and therefore a further analysis is easily feasible.

The tilt measuring system is built into a robust EMC-safe die-cast aluminium enclosure (IP68), which is well suited for applications in rough and industrial environments. Furthermore, the built-in electronics are protected against humidity and vibrations.



## ■ Specifications

Number of measuring axis:	1
Supply voltage:	18 ... 28 VDC, electronic is protected against voltage reversal
Power consumption:	Max. 1 W
Analogue output / burden:	4 ... 20 mA (2-wire), max burden depending on supply voltage
Frequency range (-3dB):	0,5Hz
Preferred measuring range:	±3°, ±5°, ±10°, ±15°, ±20°, ±30°, ±45°, ±60° 0 ... 10°, 0 ... 30°, 0 ... 45°, 0 ... 60°, 0 ... 90° other measuring ranges on request
Accuracy at 23°C:	Up to ±10°: ±0,1° Up to ±30°: ±0,2° Up to ±60°: ±0,25°
Electrical connection:	3 m cable 2 x 0,25 mm <sup>2</sup> (AWG20) Optional: cable length according to customer requirements or connector M12
Enclosure:	EMC-safe aluminium die-cast enclosure
Protection class:	IP 68
Dimensions (W x H x D):	98 x 63 x 38 mm (without EMC cable gland)
Weight:	Approx. 550g (Version with 3 m cable)
Temperature, storage:	-35 ... +75 °C
Temperature, operating:	-20 ... +60 °C

## ■ Dimensions of enclosure

Standard version



## ■ Terminal wiring

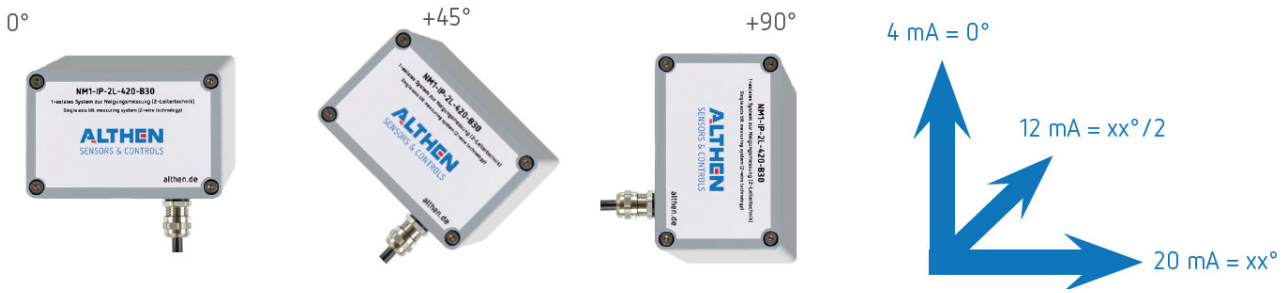
Electrical connections are made via a connecting cable (AWG20). The cable screen is connected to the enclosure. Optional a version (-STV) with M12 connector is deliverable.

### Standard version NM1-IP-2L-24-420-xx:

Description	Wire colour
18 ... 28 VDC	red
Signal	black

### Version NM1-IP-2L-24-420-xx-STV:

Pin	Description
1	18 ... 28 VDC
2	n. c.
3	Signal
4	n. c.



**Version 0 ... Rxx°**

(The example shows an inclination from 0 to 90° and the systems output)



**Version 0 ... Bxx°**

(The example shows an inclination -45 ... 0 ... 45° and the systems output)

**Ordering information**

NM1-IP-2L-24-420...	Single axis tilt measuring system in 2-wire-technology
...-Bxx-...	Bidirectional, xx=tilt measuring range, fe. B45 = ±45 °
...-Lxx-...	Left-turning, xx=tilt measuring range, fe. L30 = 0 ... -30°
...-Rxx-...	Right-turning, xx=tilt measuring range, fe. R30 = 0 ... 30°
...-STV	Option STV: With M12 connector and 5 m cable
...-y	Option: Cable length according to customer requirements

**Note:** When placing an order, please fill in placeholder „xx“ with the wanted tilt measuring range.

**Example:** Measuring range ±45°      → NM1-IP-2L-24-420-B45

**Alignment/Calibration**

A calibration with a traceable factory calibration certificate (with 3 measuring points) is included in the scope of supply

**Customized Requirements**

Technical modifications according to customer requirements are available on request. Moreover, we deliver customized special solutions for a lot of measuring tasks in the section pressure, force, position and tilt measuring using our measuring transducers. Do not hesitate to contact us.

We reserve the right to do technical changes without prior notice.

Version 04.2021

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