



## NM2-IP-4L

### ■ Dual axis tilt measuring system

- Measuring range  $\pm 3^\circ$  up to  $\pm 60^\circ$  or 0 ...  $90^\circ$  per axis
- Accuracy  $\pm 0,1^\circ$  (up to  $\pm 15^\circ$ ), 0,5% of measuring range (up to  $\pm 60^\circ$ )
- Analogue output 0 ... ( $\pm$ )10 V or 0(4) ... 20 mA (4-wire-technology)
- Supply voltage 10 ... 18 VDC or 18 ... 30 VDC



### ■ Description

The dual axis industrial tilt measuring system NM2-IP-4L is the combination of a non-contact inclination sensor AccuStar®-EA and sensor adapted electronics. The measuring system is designed for precise tilt measurement in X- and Y-axis and intended for ground assembly. Available tilt measuring ranges are  $\pm 3^\circ$  to  $\pm 60^\circ$ . The electrical wiring is realised in 4-wire-technology. For further evaluation of the measured inclination there are different standard analogue output signals per axis available, depending on the ordered type.

The tilt measuring system is built into a robust EMC-safe die-cast aluminium enclosure (IP66), which is well suited for applications in rough and industrial environments.

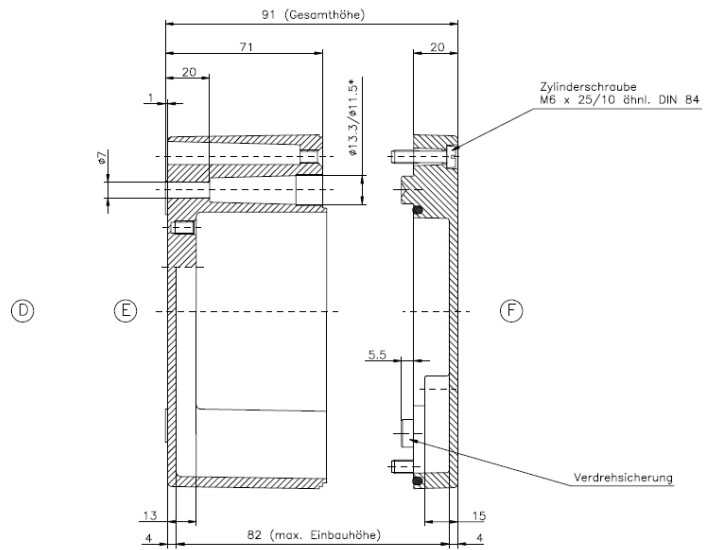
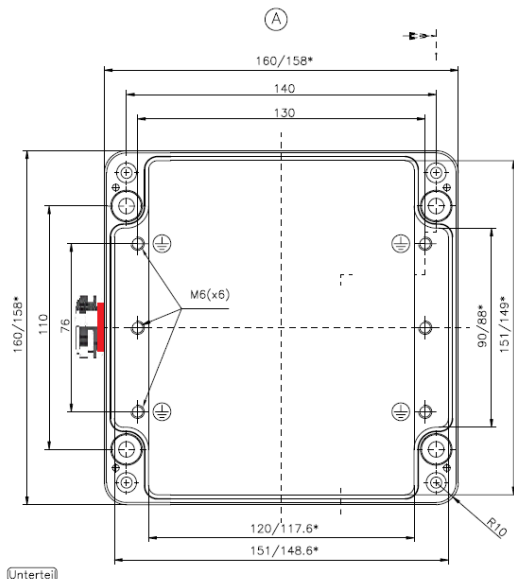
### ■ Specifications

Number of measuring axis:	2
Supply voltage:	10 ... 18 VDC*, 18 ... 30 VDC*, electronic is protected against voltage reversal
Voltage insulation between supply voltage and analogue output:	Galvanic isolation between supply voltage and analogue output, 200 V, higher voltage insulation on request
Power consumption:	ca. 4 W
Analogue output / burden:	0 ... 10 V / $\pm 10$ V, max. 1 mA (short-time short-circuit proof) 0 ... 20 mA, 4 ... 20 mA, max. 500 $\Omega$
Frequency range (-3 dB):	2 Hz
Preferred measuring range:	$\pm 3^\circ, \pm 5^\circ, \pm 10^\circ, \pm 15^\circ, \pm 20^\circ, \pm 30^\circ, \pm 45^\circ, \pm 60^\circ$ other measuring ranges on request
Accuracy at 23°C:	Up to $\pm 15^\circ$ : $\pm 0,1^\circ$ Up to $\pm 60^\circ$ : 0,5% of measuring range Up to $\pm 65^\circ$ : on request
Cross-sensitivity:	< 1% up to $\pm 60^\circ$
Electrical connection:	M16 x 1,5 EMC cable glands on internal spring-cage terminal blocks
Enclosure:	EMC-safe aluminium die-cast enclosure
Protection class:	IP66
Dimensions (W x H x D):	160 x 91 x 160 mm (without EMC cable glands)
Weight:	2.300 g
Temperature, storage:	-20 ... +60 °C
Temperature, operating:	-20 ... +60 °C

**\*Note:** A internal self-restoring „Polyswitch-Resetable“®- fuse, according to the supply voltage, is used to protect the electronics. It is recommended to use a power supply with at least 10 Watt and a slow current limit.

For further specifications see datasheet AccuStar®-EA

## ■ Dimensions of enclosure



Aluminium-Standardgehäuse

## ■ Terminal wiring

Electrical connections are made via the EMC cable glands to the internal spring-cage terminal blocks. The maximal connection cross section is 2,5 mm<sup>2</sup>. Although this system is designed with a high degree of immunity to electromagnetic interferences (EMI), proper installation and wiring methods must be followed to ensure compatibility in each application.

Terminal	Description	Terminal	Description
1	Supply voltage	4	Ground analogue output
2	Ground supply voltage	5	Analogue output X-axis
3	Analogue output Y-axis	6	Ground analogue output

## ■ Ordering information

<b>NM2-IP-4L...</b>	Dual axis tilt measuring system in 4-wire-technology	
<b>...-12E-...</b>	Supply voltage: 10 ... 18 VDC	
<b>...-24E-...</b>	Supply voltage: 18 ... 30 VDC	
<b>...-010-...</b>	Analogue output: 0 ... 10 V,	zero point at 5 V
<b>...-B10-...</b>	Analogue output: ±10 V,	zero point at 0 V
<b>...-020-...</b>	Analogue output: 0 ... 20 mA,	zero point at 10 mA
<b>...-420-...</b>	Analogue output: 4 ... 20 mA,	zero point at 12 mA
<b>...-xx-...</b>	Measuring range (see note below)	
<b>...-V</b>	Electronic is potted and protected against humidity and vibrations	

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

**Example:** Measuring range ±45°, Analogue output ±10 V, Supply voltage 18 ... 30 VDC → NM1-IP-4L-24E-B10-B45

## ■ 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.

**Germany | Switzerland | Austria**  
ALTHEN GmbH Mess- & Sensortechnik  
Dieselstr. 2  
65779 Kelkheim, Deutschland  
Tel: + 49 (0)6195 - 70060  
sales@althen.de

**Netherlands | Belgium | Luxembourg**  
ALThERIS bv Sensors & Controls  
Vlietweg 17a  
2266 KA Leidschendam, The Netherlands  
Tel: +31 (0)70 392 4421  
sales@altheris.nl

**France**  
ALThERIS Sensors & Controls  
26, avenue de la Méditerranée  
34110 Frontignan, France  
Tél : 0033 (0)4 67 78 61 66  
dbi@altheris.fr

**USA | Canada**  
ALThERIS Inc Sensors & Controls  
2375 Woodacre Drive  
Oceanside CA 92056, USA  
Tel: +1 858-633-3572  
sales@altheris.com

Version 07.2018

**Other Countries**  
For our international sales partners please contact us by email at sales@althen.de  
www.althen.de