



## NM1-IP-4L-12E/24E-xxx-xx

### Single Axis Industrial Tilt Measuring System

- ▣ Supply voltage 10 ... 18 VDC or 18 ... 30 VDC
- ▣ Measuring range up to  $\pm 45^\circ$  or 0 ...  $90^\circ$
- ▣ Accuracy  $0.1^\circ$  (up to  $\pm 10^\circ$ ),  $0.4^\circ$  (beyond  $\pm 10^\circ$ )
- ▣ Analogue output 0...(±)10 V or 0(4) ... 20 mA (4-Wire-Technology)



The single axis industrial tilt measuring system exists by the combination of a non-contact working inclination sensor of the type AccuStar™ and an electronic-board, which is adapted to the sensor. The measurement system is designed for precise tilt measurement in x-axis and is planned for the side wall assembly. The inclination measuring range, that is to be acquired, can be, depending on version, in the area of  $\pm 3^\circ \dots \pm 45^\circ$  or  $0 \dots 30^\circ$  to  $0 \dots 90^\circ$ .

The electrical connection occurs in 4-wire technology. For further evaluation are several standard analogue output signals available. (See Order Description)

The tilt measuring system is built-in in a robust EMC-safe aluminium diecast enclosure (IP65), which is suited for the application in rough and industrial surroundings.

#### ▣ Technical Data

Number of measuring axis:	1	
Supply voltage:	10 ... 18 VDC (Version 12E)* 18 ... 30 VDC (Version 24E)*	Electronic protected against voltage reversal
Isolating proof voltage input to output:	200 V	Higher isolated proof voltage on request
Power consumption:	Approx. 3 W	
Analogue output:	0 ... 10 V, $\pm 10$ V 0 ... 20 mA, 4 ... 20 mA	max. 1 mA (short-period short-circuit proof) max. 500 $\Omega$
Frequency range (-3 dB):	0.5 Hz	
Preferred measuring range:	$\pm 3^\circ, \pm 5^\circ, \pm 10^\circ, \pm 15^\circ, \pm 20^\circ, \pm 30^\circ, \pm 45^\circ$ 0 ... $10^\circ, 0 \dots 30^\circ, 0 \dots 45^\circ, 0 \dots 60^\circ, 0 \dots 90^\circ$ Other ranges on request	
Accuracy at 23 °C:	Up to $\pm 10^\circ$ inclination $\pm 10^\circ$ up to $\pm 45^\circ$ inclination Inclination $>45^\circ$	$\pm 0.1^\circ$ $\pm 0.4^\circ$ on request
Enclosure:	EMC-safe aluminium-diecast enclosure	
Protection-class:	IP65	
Dimensions (W x H x D):	175 x 80 x 57 mm (without EMC-cable fittings)	
Weight:	1000 g	
Temperature, storage:	$-20^\circ\text{C} \dots +60^\circ\text{C}$	
Temperature, operating:	$-20^\circ\text{C} \dots +60^\circ\text{C}$	

\* **Notice:** To protect the electronic, an internal "Polyswitch- Resetable®" fuse that corresponds to the supply voltage, is available.

Further specifications see datasheet AccuStar™

## Order Description

**NM1-IP-4L...** Single axis industrial tilt measurement system (4-Wire-Technology)

**...-12E-...** Supply voltage: 10 ... 18 VDC

**...-24E-...** Supply voltage: 18 ... 30 VDC

**...-010-...** Analogue output: 0...10 V Zero-point at 5 V

**...-B10-...** Analogue output:  $\pm 10$  V Zero-point at 0 V

**...-020-...** Analogue output: 0...20 mA Zero-point at 10 mA

**...-420-...** Analogue output: 4...20 mA Zero-point at 12 mA

**...-XX-...** Tilt measuring range (see notice below)

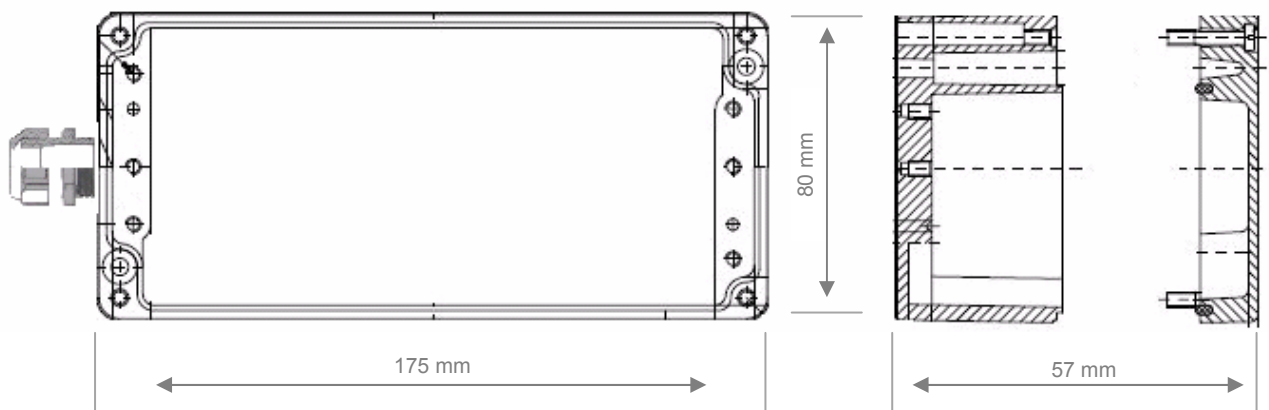
**...-V** Electronic and sensor are mould against humidity and vibrations

**Notice:** With order, the desired tilt measuring range as well as the desired analogue output range is to be given as the example shows below.

**Example:** Tilt measuring range  $\pm 45^\circ$ , analogue output range  $\pm 10$  V, Supply voltage 18...30 VDC  $\rightarrow$  NM1-IP-4L-24E-B10-B45

Tilt measuring range 0...60°, analogue output range 0...10 V, Supply voltage 10...18 VDC  $\rightarrow$  NM1-IP-4L-12E-010-060

## Enclosure Dimensions



## Terminal Wiring

Electrical connections are made via cable gland on terminal block located in the inside of the enclosure. The maximum cable cross section amounts 2.5 mm<sup>2</sup>. The clip numbering is located on the terminal block. By the electrical connection of the measuring amplifier about the EMC-cable glands to the internal terminal block, the EMC-assembly tips are to be followed.

Terminal	Description	Terminal	Description
1	Supply voltage	3	Analogue output
2	GND supply voltage	4	GND Analogue output

## Alignment/Calibration

A calibration with a traceable factory calibration certificate is possible on request and for an extra charge.

## Customized Requirements

Technical modification according customized requirement are possible on request. Moreover, we deliver customized special solutions for a lot of measuring tasks in the section pressure-, force-, distance - and tilt-measuring using our offered measuring transducer. Do not hesitate to contact us.

Our policy is to improve specification of our products continuously, so technical and production details can be changed without any notice.