

# Inclinometers

MEMS 1-Axis Analog

91 -1 XXXX



Inclination sensors offer an easy and efficient way of monitoring spatial orientation without the need for mechanical linkages – a real advantage for design engineers.

- MEMS Micro Electro Mechanical Systems
- High Accuracy of 0.1° and Resolution of 0.01°
- Measurement range: 360° (1- axis)
- Analog output: Current or Voltage output

Temperature Range	High Protection Level	Magnetic Field Proof	Short-circuit Protection	Reverse Polarity Protection	Seawater-resistant version on request

## Highlight:

- Small design, minimal space requirement
- Current or voltage output
- IP69K Rated for Harsh Environments
- Optional metal housing or PBT housing
- Programmable Measuring Range via RS232
- Having a cable outlet and M12 plug connection

Mechanical characteristics	
Weight	200 g
Protection Class	IP 68 / IP 69K
Work temperature	- 40 C° ... 80 C°
Storage temperature	- 40 C° ... 85 C°
Housing material	Aluminum or PBT
Shock Resistance(EN 60068-2-27)	100 g, 6ms
Vibration resistance	1.5 mm (10 Hz – 58 Hz) ≤ 20 g (58 Hz to 2000 Hz)
MTTF	300 year

Interface characteristics	
Current output	4 ... 20 mA
Max. resistive loads	270 Ω (at 10 V DC ) 500 Ω (at 15 V DC )
Voltage output	0 ... 5 V , 0 ... 10 V
Resistive loads	10 kΩ(at 12 VDC)
RS232 interface	
Transmission rate	Max. 115200 Baud (Default 9600 Baud)

Electrical characteristics	
Power supply	10 ... 30 VDC
Consumption(no load)	20 mA (at 24 VDC)
Measurement	1 Axis (Z)
Measurement range	90°, 120°, 180°, 270°, 360°,
Accuracy	0.1°
Resolution	0.01°
Linearity	± 0.02 %
Temperature gradient	0.004°/ K
Sensor Response Time	125 ms
Teach in	Zero, Direction and Measuring range <sup>1)</sup>
Reverse Polarity Protection	Yes
Short Circuit Protection	Yes
Electrical Lifetime	>100000h
Conforms to CE requirements	EN 61000-6-2: 2005; acc. to EN 61000-6-4: 2007-09
RoHS acc.to	2011/65/EU

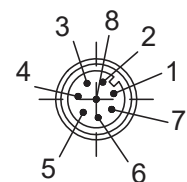
1) Some features can be programmed via RS232 communication, specific mode of operation refer to the operating manual.

## Terminal assignment

Signal	Ub	RxD	TxD	0V	Z Output	SET 1	-	SET 2
Cable	RD	GY	PK	YE	GN	BN	BU	WH
M12 8 pin (male)	1	2	3	4	5	6	7	8

Setting the input function can be set via RS232 communication programming change can also be factory-set, specific issues, please contact our technical service department.

SET 1 set zero, when SET 1 high, output is zero  
SET 2 set direction, when SET 2 low, the direction is default

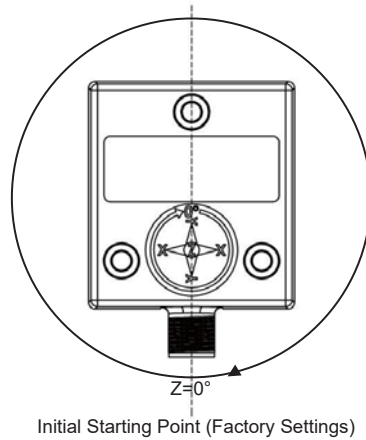


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Measurement Axes



Order code	91 - 1 X X X X				
	Type	a	b	c	d
<b>a</b> Measuring range	<b>b</b> Output circuit / Power supply	<b>d</b> Type of connection			
1 = 90°	1 = 4 ... 20 mA output + RS232/ 10 ... 30 VDC	1 = cable			
2 = 120°	2 = 0 ... 5 V output + RS232/ 10 ... 30 VDC	2 = M12 8 pin (without mating connector)			
3 = 180°	3 = 0 ... 10 V output + RS232/ 10 ... 30 VDC				
4 = 270°	(Other output circuit on request)				
6 = 360°	<b>c</b> Housing Material				
	1 = PBT				
	2 = Aluminum				

## Accessories

Connector

M12 Connectors, self-assembly (Female)

E1-1208-0101

## Dimensions

PBT, Type of Connection 2

Aluminum, Type of connection 2

