TLP300

INCLINATION SENSOR

Gyro-compensated Inclination Sensor in MEMS Technology

Top Sensors Manufacture

CHARACTERISTICS

- MEMS technology
- High protection level IP67 and wide temperature range from -40°C ... +85°C
- Stable accuracy over whole temperature range
- Resolution up to 0,01°
- Single axis 0° to 360°
- Double axes ± 1° to ± 60°
- Optional redundant output

ADVANTAGES

- Instantaneous Gyro-compensated measure
- Excellent accuracy
- Reliability and long service life for outdoor applications
- Very compact dimensions
- High shock/vibration resistance

IP67 — High protection level

Shock/vibration resistant

Redundancy output

Reverse polarity protection

-40...+85 °C — Wide range temperature

MEMS — MEMS sensors technology

X , Y — Horizontal version

Z — Vertical version

CANopen output

SIL2 PLd — Functional safety

RoHS compliant — Directive 2011/65/EU

CE — EU conformity

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PRODUCT DESCRIPTION

TLP300 is available with one or two measurement axes. The inclinometer working principle is based on a micro machined silicon capacitive transductor (developed with MEMS technology).

Utilizing gyro-compensated MEMS technology, the sensor position signal is instantaneous with no delays and has a static excellent linearity.

TLP300 is suited for applications (cranes, aerial platforms, drilling machines and excavators) in harsh environments which are exposed to motion, shock and vibration, especially for mobile machines.
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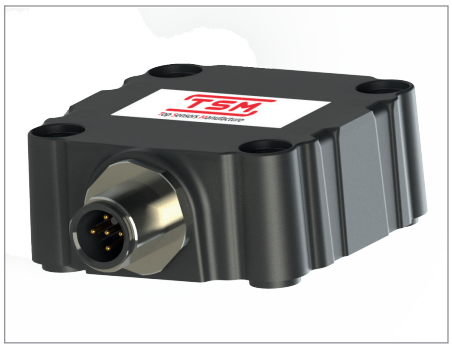

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PRODUCT CODE

TLP300. (a) 2 . (b) _ . (c) _ _ _ . (d) _ . (e) _ _ . (f) _

ORDER CODE

a	Power supply
2	= 9 ... 30 V DC

b	Measurement direction
O	= Dual axes
V	= Single axis

c	Range
XXX	= FS angle deg for single axis*
XXX	= ± angle deg. for double axes**

d	Output
6	= CANopen
28	= CANopen SIL2-Pld

e	Type of connection
1	= Male connector M12x5, PUR cable 30cm
2	= Male flange connector 1xM12, 5-pin

f	Version output
S	= Single
R	= Redundant

* = value of 360 means range 0° to 360°
** = value of 010 means range ±10°

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TECHNICAL SPECIFICATION

Measuring range	±1° to ±60° for horizontal version 0° to 360° for vertical version
Accuracy (+25 °C)	< ±0,3°
Resolution	0.01°
Temp. range compensation	-10°... +60° (custom on request)
Temperature coefficient	0,008 °/°C
Protection	IP67
Temperature range	-40°C ... +85°C [-40°F ...+185°F]
Material housing	PA6 + GF30%
Initialing time	<0,3 s after power on
Weight	approx. 100 g [3.53 oz]
Shock resistance	acc. to EN 60068-2-27 30 G, 11 ms
Vibration resistance	acc. to EN 60068-2-6 10 ... 500 Hz

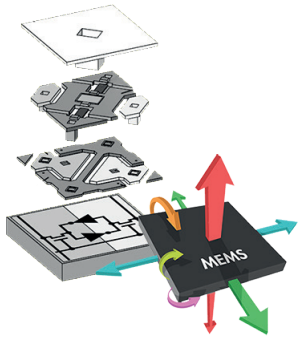
ELECTRICAL CHARACTERISTICS

Power supply	9 ... 30 V DC (STD)
Reverse polarity protection	YES
Electromagnetic compatibility	acc. to EN 61326-1, EN 61326-3-1
CE compliant	acc. to EMC guideline 2014/30/EU RoHS guideline 2011/65/EU

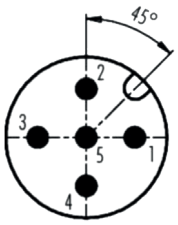
OPERATING PRINCIPLE

Operating principle

MEMS (acronym for Micro Electro Mechanical Systems) technology enables both electronic circuits and opto-mechanical devices to incorporate on the same silicon substrate, using manufacturing technologies similar to those used for the implementation of integrated circuits.



CANOPEN ELECTRICAL CONNECTION M12 X 5 PINS



Pinout

	Single axis	Dual axes
1	CAN-GND	CAN-GND
2	+Vin	+Vin
3	GND	GND
4	CAN-H	CAN-H
5	CAN-L	CAN-L

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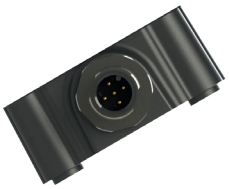
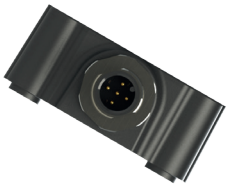
DIRECTION AXES

Dual axes

TSM dual axes TLP300 inclination sensor

The 2-dimensional inclination sensor must be mounted with the base plate in horizontal position, i.e. parallel to the horizontal line.
The sensor can be inclined both towards the X and Y axis at the same time.
For each axis a separate measured value is provided.

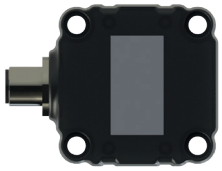
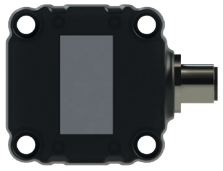
+X	-X	+Y	-Y
			

Single axis

TSM single axis TLP300 inclination sensor

The 1-dimensional inclination sensor must be installed with its Z-axis in line with the force of gravity, as illustrated below.

The 1-dimensional sensor defaul t position is 0° as shown in the following illustration.

Z = 0°	Z = 90°	Z = 180°	Z = 270°
			

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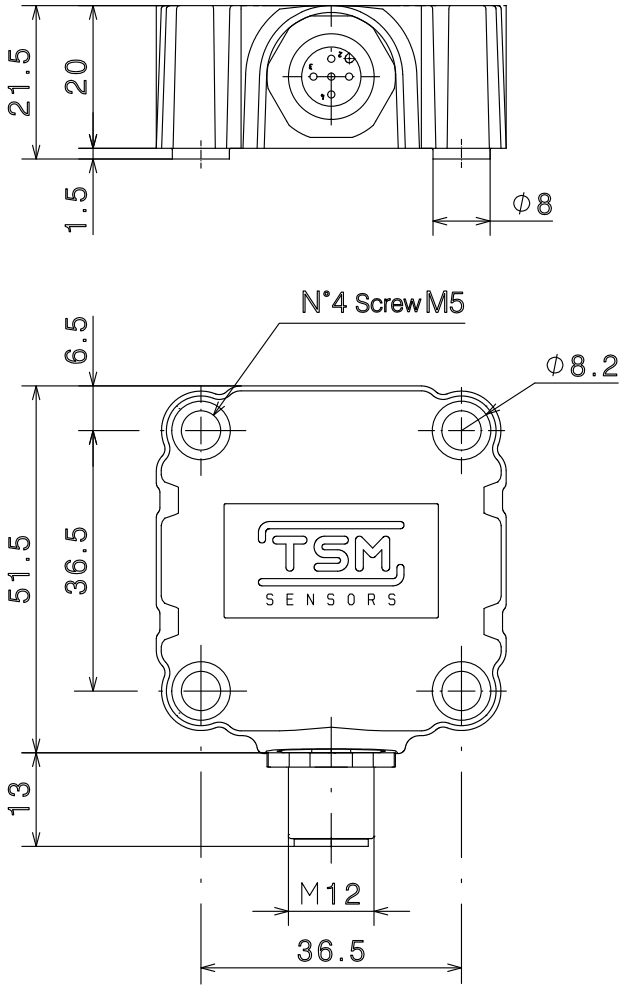
DIMENSIONS [mm]



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