

Tilt Sensors

Dual Axis Inclinometer based on MEMS Technology



KEY FEATURES

- ▶ Reliable and wear-free MEMS technology
- ▶ Inclination range: $\pm 25^\circ$, $\pm 45^\circ$, $\pm 90^\circ$ or $\pm 180^\circ$
- ▶ Digital signal processing, filter algorithms
- ▶ Analog and CAN output
- ▶ Dual axis combined gyroscope and accelerometer
- ▶ Accuracy $< 0.5^\circ$ (-40°C to 85°C)
- ▶ Fully sealed (IP69K) for use in harsh environments
- ▶ Operating temperature from -40°C to $+85^\circ\text{C}$

DESCRIPTION

The tilt sensors of the TS family are reliable and precise sensors and ideal for applications where fast response and high accuracy is needed. Based on mechanics-free MEMS technology these inclinometers accurately measure inclination, tilt and angle in harsh environmental conditions. With its ability to measure angles up to 360° with an accuracy of $< 0.5^\circ$ over the full temperature range, it is perfect for use in heavy-duty applications such as load monitoring, leveling and boom angle monitoring.

Different outputs options and measurement ranges are configurable. Custom packaging is available on request.

APPLICATIONS

- ▶ Mobile and stationary cranes
- ▶ Lift platforms
- ▶ Autonomous Vehicles
- ▶ Conveyor systems
- ▶ Tip-over protection
- ▶ Bucket / chassis / boom angle
- ▶ Weighing systems
- ▶ Inclination-based engine management
- ▶ Solar trackers angle
- ▶ Wind turbines rotor angle
- ▶ Construction, mining and agriculture machines

SPECIFICATIONS

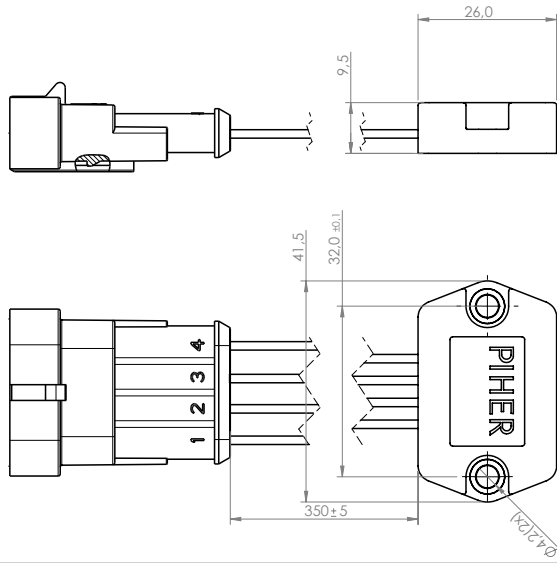
Parameter	Unit	Min.	Typ.	Max.
Supply voltage	V	8	12	36
Supply current	mA	15	-	45
Output voltage	V	0,5		4,5
Offset voltage	V		2,5	
Refresh rate	Hz		100	
Operating temperature	$^\circ\text{C}$	-40		+85
Typical error (at 25°C ; $V_{cc} = 12\text{V}$)	$^\circ$	-0,15		+0,15
Max. error (at -40°C to $+85^\circ\text{C}$; $V_{cc} = 12\text{V}$)	$^\circ$	-0,5		+0,5

Other specification on request

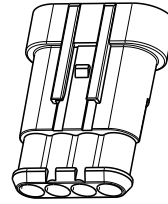
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DIMENSIONS (MM)



CONNECTOR (OPTIONAL)



AMP Superseal 1.5 Series 4pos
(282106-1)



PIN	Function	Description
1	Vcc	8 to 30 VDC supply input (+)
2	GND	Ground
3	Output X	0.5 to 4.5 V, X axis output
4	Output Y	0.5 to 4.5 V, Y axis output

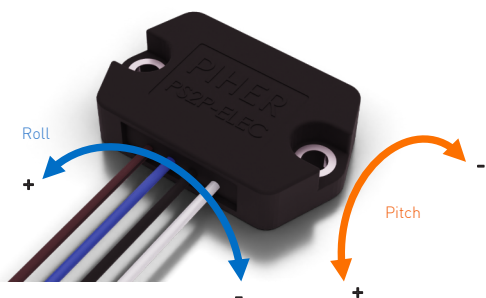
HOW TO ORDER

Example: TSDA-A-IR025-HM-W

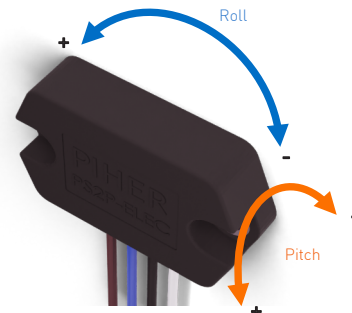
TSDA	-	-	-	-	-
Series	Output	Inclination range	Mounting	Connection	
	A = analog J = CAN J1939 O = CAN Open	IR025 = $\pm 25^\circ$ IR045 = $\pm 45^\circ$ IR090 = $\pm 90^\circ$	HM = horizontal mount VM = vertical mount	W = wire C = connector	

FUNCTION OVERVIEW

Horizontal Mount



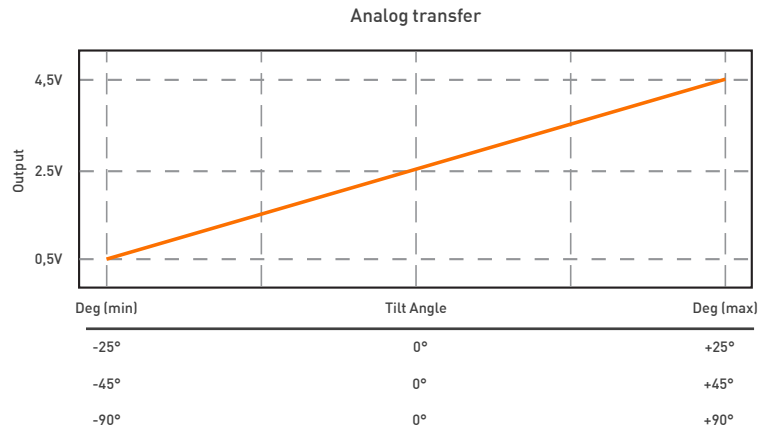
Vertical Mount



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TRANSFER OUTPUT



Please always use the latest updated datasheets published on our website www.piher.net

Disclaimer:

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