

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 ISO11898 3V3 output
- ▶ Dual axis combined gyroscope and accelerometer
- ▶ Accuracy $< 0.5^\circ$
- ▶ 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

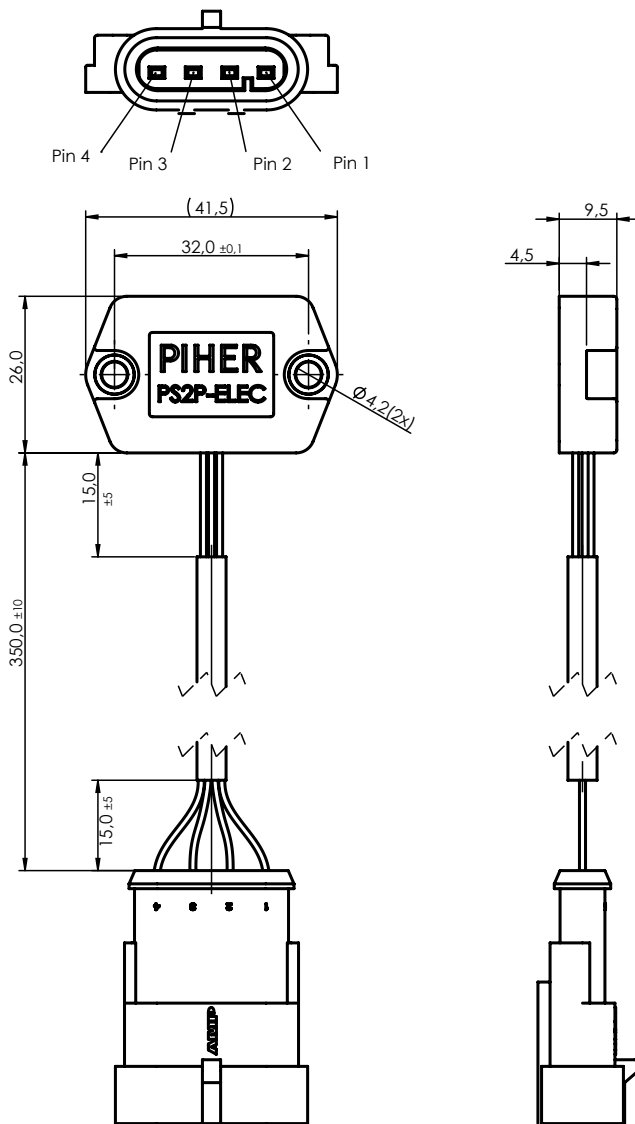
Parameter	Unit	Min.	Typ.	Max.
Supply voltage	V	8	12	36
Supply current	mA	8	12	20
Output voltage	V	0,5		4,5
Offset voltage	V		2,5	
Refresh rate	Hz		100	
Operating temperature	$^\circ\text{C}$	-40		+85
Typical error (at 25°C ; $V_{cc} = 12\text{V}$)	$^\circ$	-0,5		+0,5
Mounting torque	Nm			3

Other specification on request

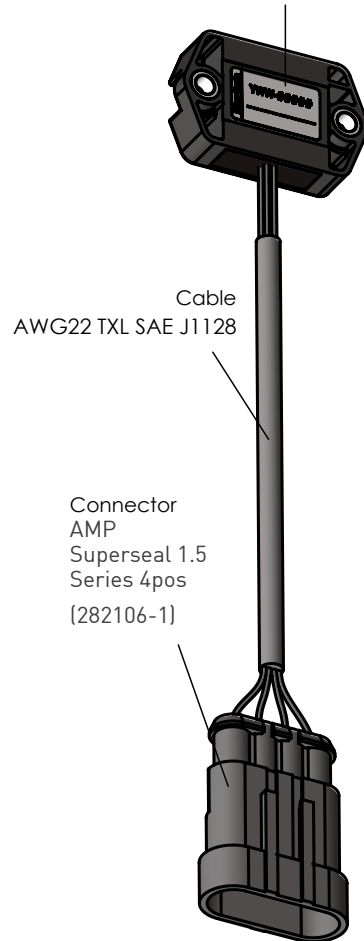
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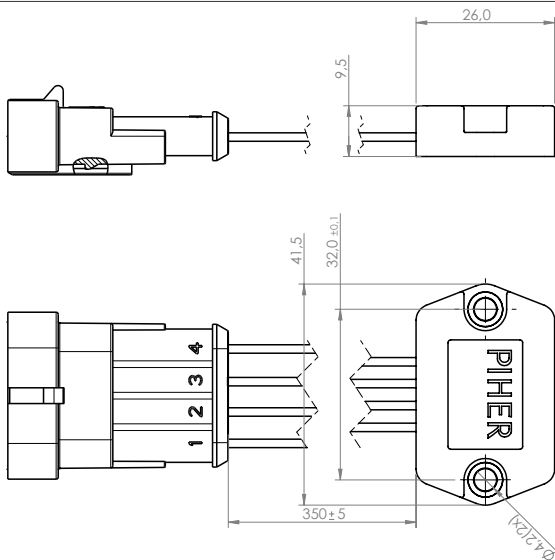
DIMENSIONS - VERSION WITH CONNECTOR [MM]



"Trazability number"
 YWW####
 Y:Year("O"=2024,"P"=2025,...)
 WW:Week
 ####:Sensor Number



DIMENSIONS (MM)



CONNECTOR SCHEME

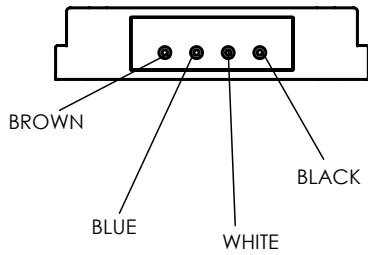
PIN	Function	Description
1	Vcc	8 to 30 VDC supply input (+)
2	GND	Ground
3	Output 1	0.5 to 4.5 V, Y axis output / CAN -H
4	Output 2	0.5 to 4.5 V, X axis output / CAN -L



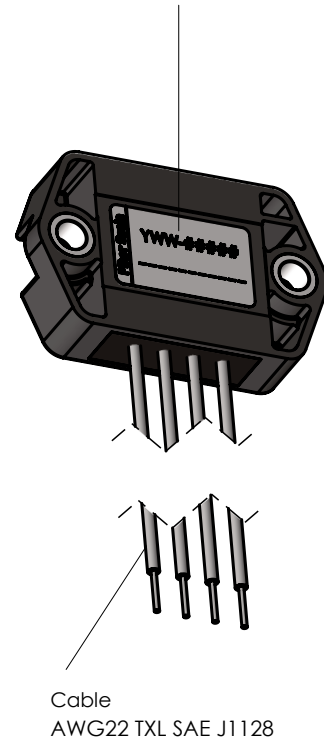
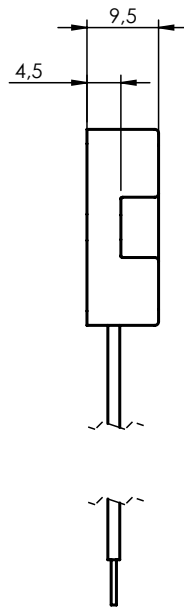
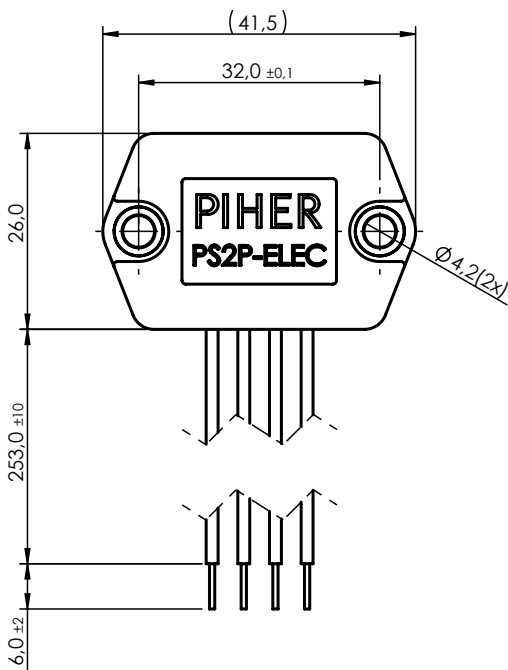
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DIMENSIONS (MM)



"Trazability number"
 YWW####
 Y:Year("O"=2024,"P"=2025,...)
 WW:Week
 ####:Sensor Number



WIRING SCHEME

Color	Function	Description
Brown	Vcc	8 to 30 VDC supply input (+)
Blue	GND	Ground
Black	Output 1	0.5 to 4.5 V, X axis output / CAN -H
White	Output 2	0.5 to 4.5 V, Y axis output / CAN -L



STEP file download

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 = ±25° IR045 = ±45° IR090 = ±90°	HM = horizontal mount VM = vertical mount	W = wire C = connector			

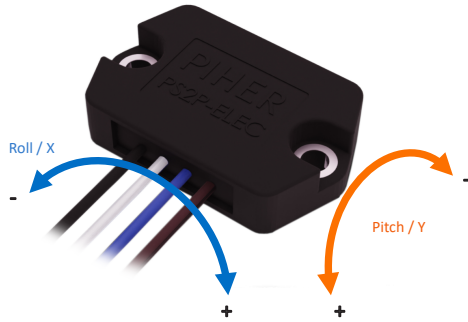
* CAN versions: see the protocol code in the product specification sheet in the [product's website](#).

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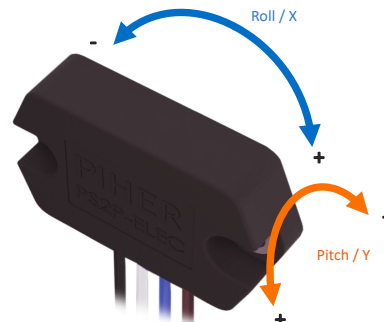
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FUNCTION OVERVIEW

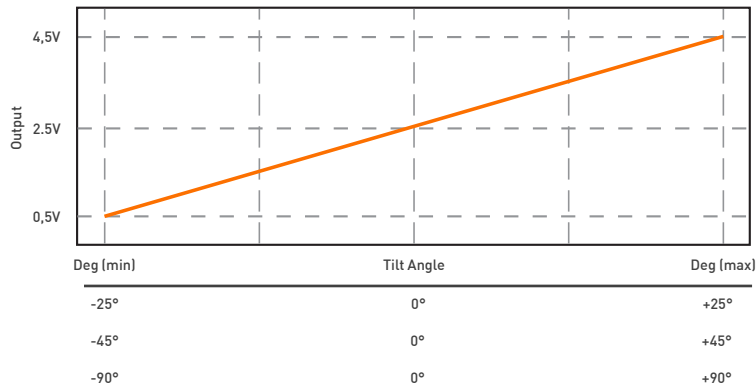
Horizontal Mount



Vertical Mount



ANALOG OUTPUT



CAN versions: see the protocol code in the product specification sheet in the [product's website](#).



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

Disclaimer:

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