Enabling the Electronics Revolution

PIHER sensing systems
an Amphenol® company

Tilt Sensors

Dual Axis Inclinometer based on MEMS Technology

KEY FEATURES

- Reliable and wear-free MEMS technology
- Inclination range: ±25°, ±45° or ±90°
- Digital signal processing, filter algorithms
- Analog and CAN ISO11898 3V3 output
- Dual axis combined gyroscope and accelerometer
- Accuracy ‹0.5°
- Fully sealed (IP69K) for use in harsh environments
- Operating temperature from -40°C to +85°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° 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.

The sensor can be ordered with an AMP Superseal 1.5-Series, 4-position housing with a built-in locking feature.

POTENTIAL 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

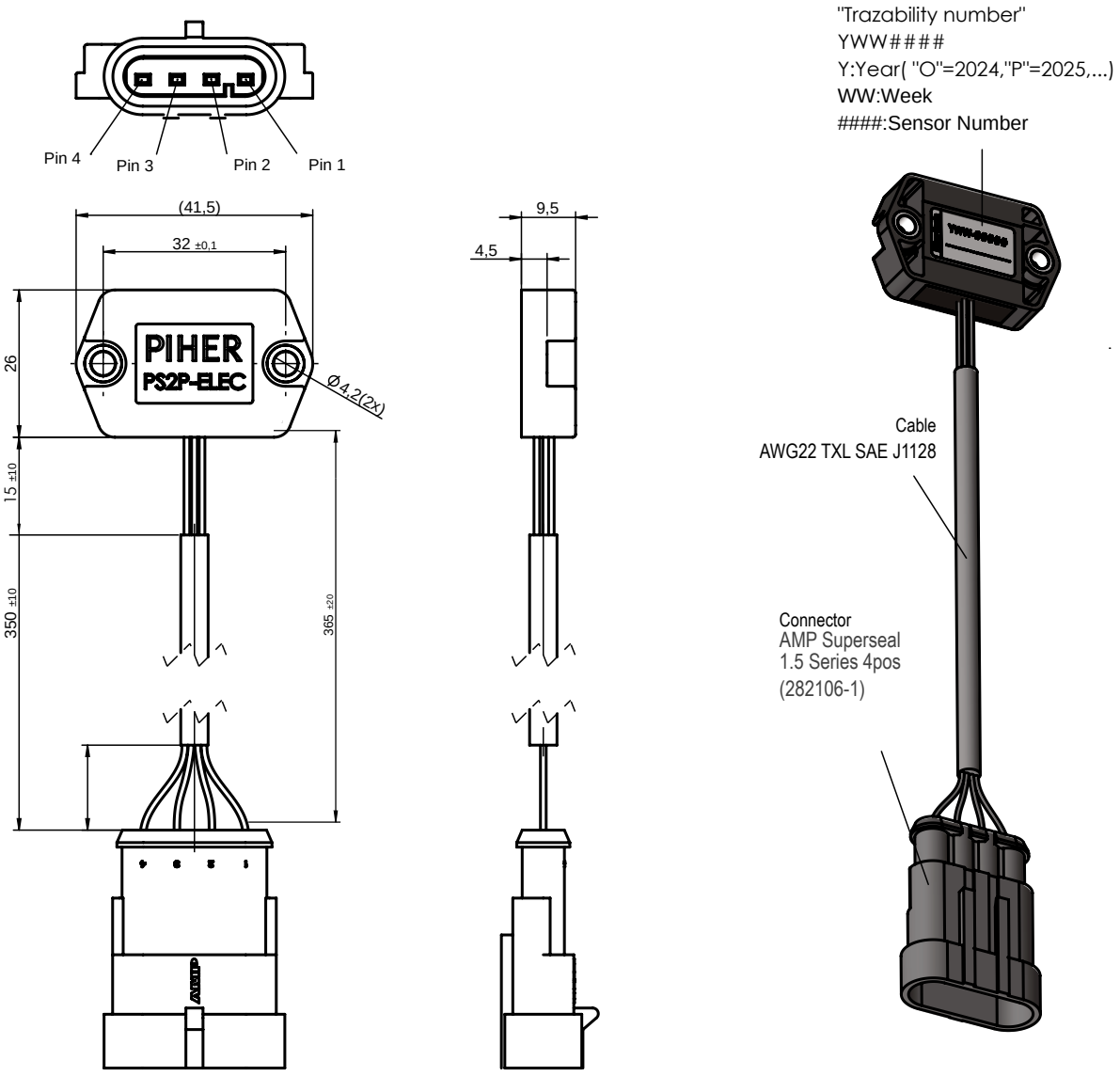
Parameter	Unit	Min.	Typ.	Max.
Supply voltage	V	8	12	36
Supply current	mA	8	12	20
Output voltage	V	0,5		4,5
Offset voltage	V		2,5	
Refresh rate	Hz		100	
Operating temperature	°C	-40		+85
Typical error (at 25°C; Vcc = 12V)	°	-0,5		+0,5
Mounting torque	Nm			3

Other specification on request

Tilt Sensors

Dual Axis Inclinometer based on MEMS Technology

DIMENSIONS - VERSION WITH CONNECTOR (MM)



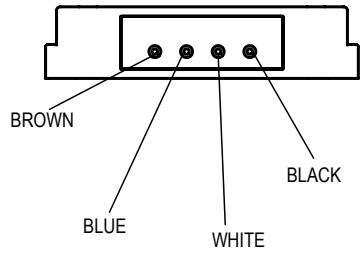
CONNECTOR SCHEME

PIN	Function	Description
1	Vcc	8 to 36 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

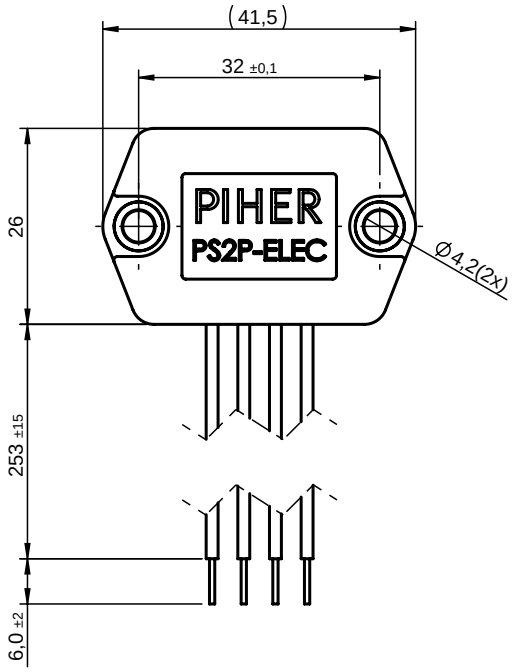
Tilt Sensors

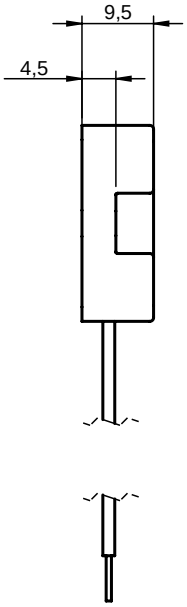
Dual Axis Inclinometer based on MEMS Technology

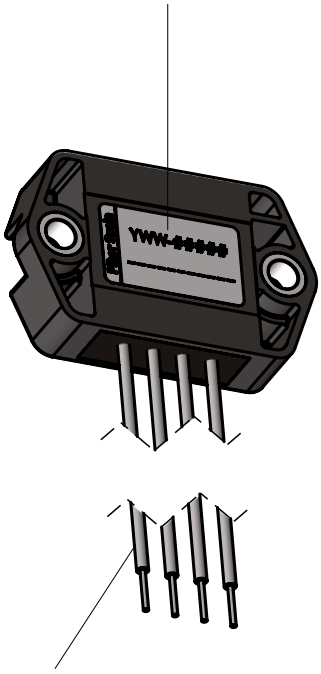
DIMENSIONS (MM)



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







Cable
AWG22 TXL SAE J1128

WIRING SCHEME

Color	Function	Description
Brown	Vcc	8 to 36 VDC supply input (+)
Blue	GND	Ground
Black	Output 1	0.5 to 4.5 V, Y axis output / CAN -H
White	Output 2	0.5 to 4.5 V, X axis output / CAN -L

3D model 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. Check availability for other specifications.

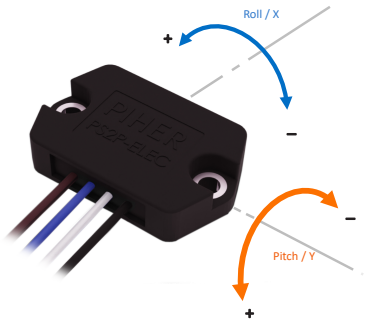
check inventory

Tilt Sensors

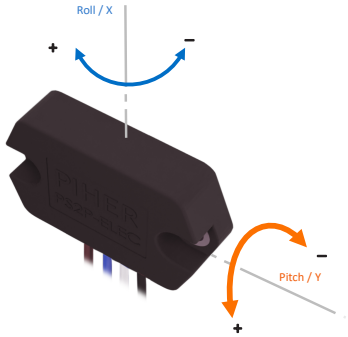
Dual Axis Inclinometer based on MEMS Technology

FUNCTION OVERVIEW / ANALOG

Horizontal Mount

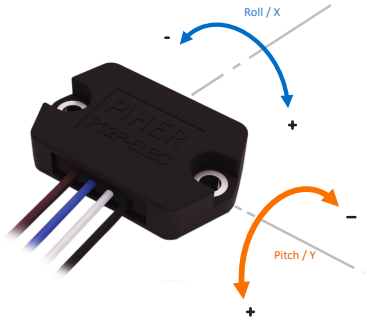


Vertical Mount

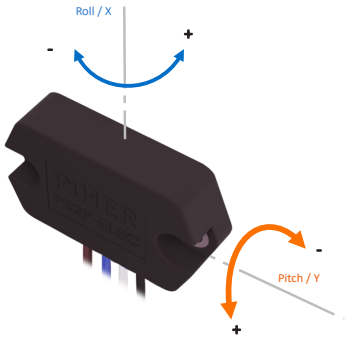


FUNCTION OVERVIEW / CAN

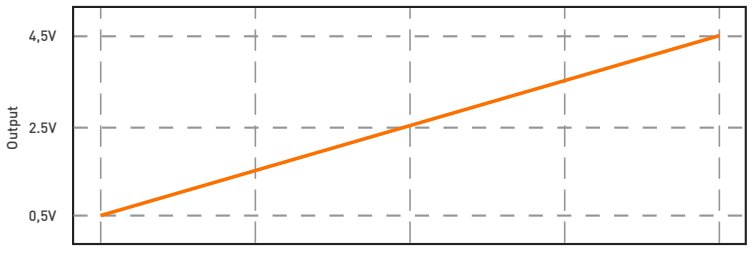
Horizontal Mount



Vertical Mount



ANALOG OUTPUT



Deg (min)	Tilt Angle	Deg (max)
-25°	0°	+25°
-45°	0°	+45°
-90°	0°	+90°

CAN protocol information is available in the product's website.

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

ANNIVERSARY 1950/2025

CONTACT

Piher Sensing Systems
Polígono Industrial Municipal
Vial T2, Nº22
31500 Tudela, Spain

sales@piher.net

+34 948 820 450