Enabling the Electronics Revolution

PIHER sensing systems
an Amphenol® company

PSAI

Inductive Arc Position Sensor



Available with CAN

RARE EARTH FREE

Play resis+ant

Piher Sensing Systems' Inductive Arc Position Sensors are designed for heavy-duty applications such as tractors, excavators, and loaders.

Inductive sensors operate without magnets and detect the position of a solid metallic target, which can be easily integrated into existing machine structures. In addition to the sensors' excellent accuracy, IP67 and IP69K sealing and high temperature tolerance make these absolute position sensors an excellent choice for harsh environments typically found in transportation, industrial and off-highway applications.

The arc-shaped design allows for quick assembly and calibration during production, leading to additional cost savings during the production process.

Touchless sensor

True touchless operation
Without any internal or external gears or linkages the sensor is easily assembled and calibrated and free from wear and tear over lifetime.

Stray-field immune

Immune to magnetic stray fields
No shielding required as inductive technology is not affected by electromagnetic stray fields. Magnetic target not required to operate.

Virtually unlimited life

Unlimited mechanical life
The separation of electronics and metallic target allows for a virtually unlimited lifetime independent of number of revolutions.

Compact size

Compact and low profile package
The sensor target can be integrated into the existing application, and the sensor itself come in an exceptionally compact and low profile package.

Made for harsh environments
The rugged package protects the sensor from dust, moisture, vibration and extreme temperatures for usage in the most demanding environments.

Fully customizable

Adaptable to your requirements
Custom mechanical design, programmable transfer function and switch outputs as well as different output protocols and redundancy levels available.

POTENTIAL APPLICATIONS



Excavator Boom Arm Position



Articulated Vehicle Steering Position



Skid Steer Arm / Bucket Position

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Inductive Arc Position Sensor

MECHANICAL SPECIFICATIONS		
Life	Virtually unlimited	
Air gap	2 mm ±1 mm	

ELECTRICAL SPECIFICATIONS			
Linearity[1]	±1 % absolute (±0.5 % on request)		
Angular range[1]	150 degrees 100 degrees 45 degrees		
Output protocol[2]	Analog (Ratiometric) PWM SENT CAN Open / CAN SAE J1939		
Output function[1]	Standard Inverted Redundant	10% to 90% Vdc (CW) 90% to 10% Vdc (CCW) 10% to 90% Vdc (CW and CCW)	
Start-up time	‹10ms		
Resolution	Analog, CAN,PWM SENT	Up to 10 bit Up to 12 bit	
Max. output rate (updates per second)	Analog ramp PWM SENT CAN	10,000 2,000 1,235 10	
Supply voltage		5 V ±10%	7 V to 32 V
Typical current consumption	Simple Redundant CAN	12 mA 24 mA 68 mA	14 mA 28 mA 72 mA
Voltage protection		±10 V	±36 V
Self-diagnostic features		Yes	

1 Other specifications on request.
2 CAN protocol available for simple output versions only.

ENVIRONMENTAL SPECIFICATIONS		
Operating and storage temperature[1]	Analog, PWM, SENT CAN	-40° to +125°C -40° to +85°C
Shock		50g
Vibration		5-2,000 Hz; 20g; A_{max} 0.75 mm
Sealing		IP67, IP69K

HOW TO ORDER (Example: PSAI-A-150S-05)

PSAI	-	_	-	_ _ _		_	-	_ _
Series		Output protocol[1]		Electric rotational angle[2]		Output function		Voltage supply[3]
		A = analog P = PWM S = SENT J = CAN SAE J1939 O = CAN OPEN		150 100 045		S = standard / CW I = inverted / CCW R = redundant		05 = 5V ±10% RE = 7V-32V

1 The analog output is ratiometric, proportional:
- for supply voltage "5V" to input voltage;
- for supply voltage "RE" to 5V.
Default frequency for PWM versions is 200 Hz. Others on request.

2 Other electrical rotational angles on request.
3 CAN models are available in 7V-32V. For other voltages: check availability.

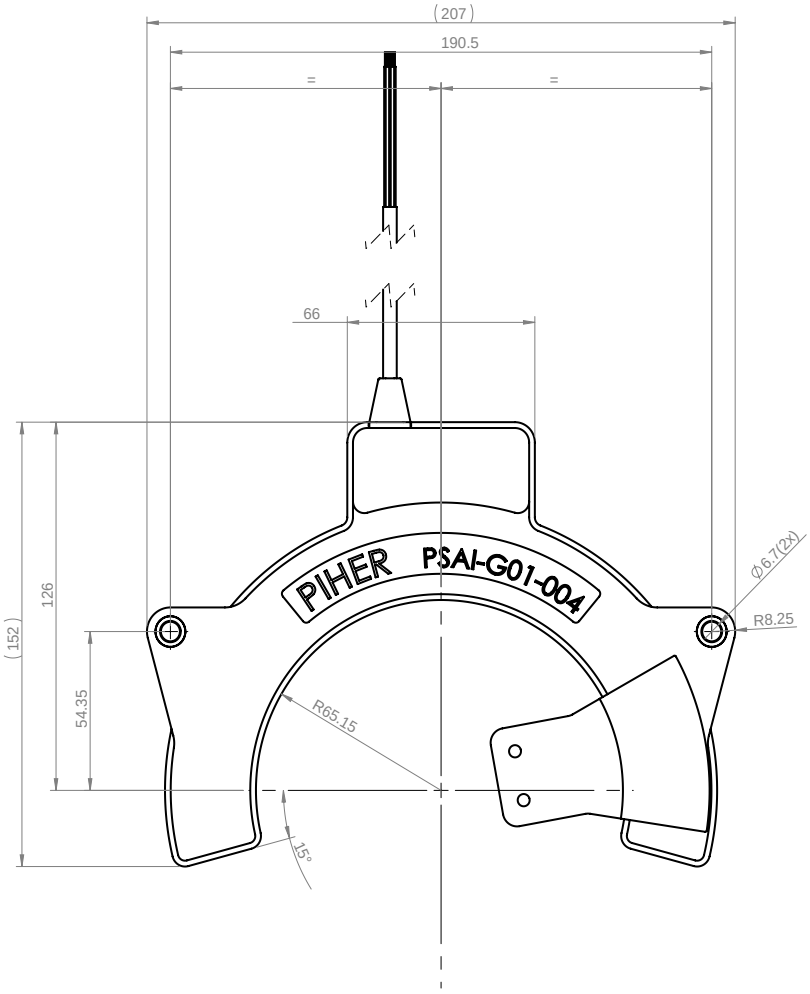
check inventory

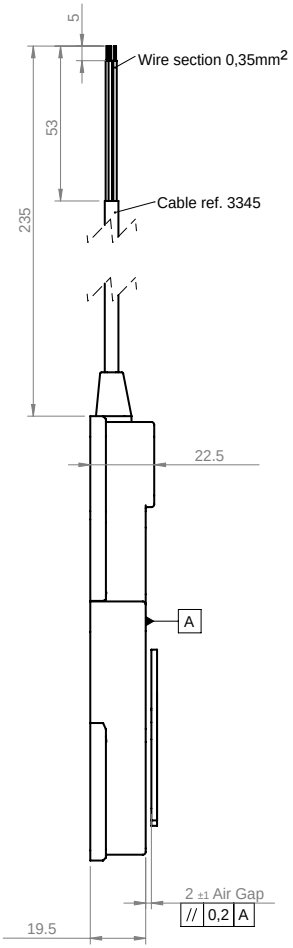
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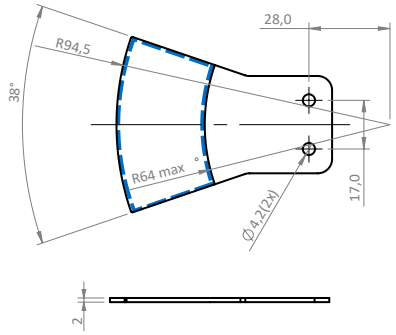
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DIMENSIONS (MM)



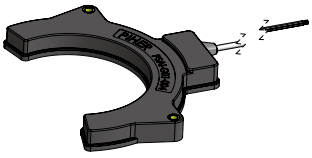




Recommended target designs

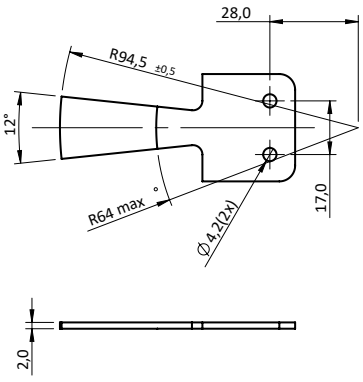
Recommended target material: Aluminium

For custom target designs, make sure the blue marked area is rotating above the sensor as indicated in the provided drawing.

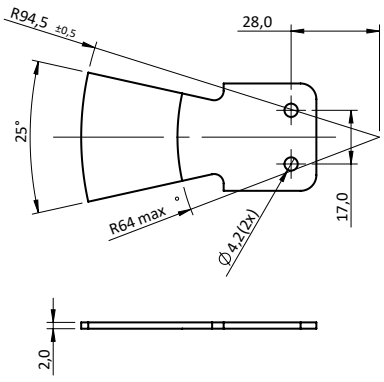


Request the 3D model at:
www.piher.net

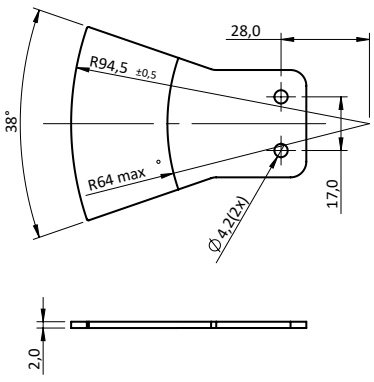
45°



100°



150°



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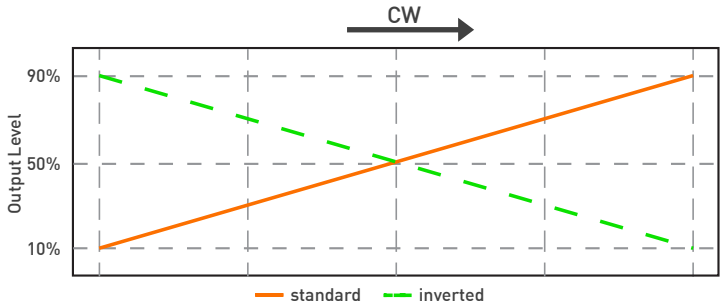
Inductive Arc Position Sensor

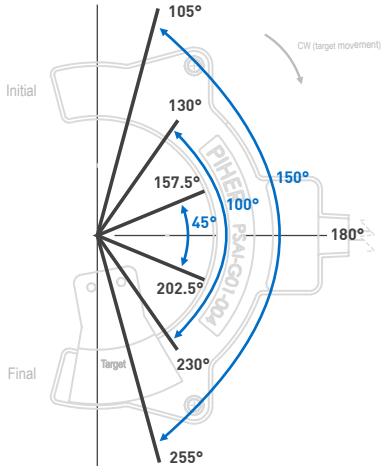
CONNECTION SCHEME

Color	Simple output		Redundant output		CAN
	5V	7V to 32V	5V	7V to 32V	
Brown	Power supply	Power supply	Power supply	Power supply	Power supply
Blue	Ground	Ground	Ground	Ground	Ground
Black	Signal output	Signal output	Signal output 1	Signal output 1	CAN High
White	Not used	Not used	Signal output 2	Signal output 2	CAN Low
Grey	Not used	Not used	Not used	Not used	Not used
Yellow	-	-	-	-	Not used
Green	-	-	-	-	Not used

Connector assemblies available upon request.

OUTPUT CURVE





ERA	Initial	Mechanical Rotational Angle	Final
150° →	105°	180°	255°
100° →	130°	180°	230°
45° →	157.5°	180°	202.5°

ERA: Electrical Rotational Angle. Custom output functions available on request.

All our products are customizable to meet your specific requirements.
Please always use the latest updated datasheets and 3D models published on our website.

ANNIVERSARY 1950/2025

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