

PSAI

Inductive Arc Position Sensors



Available with
CAN

KEY FEATURES



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

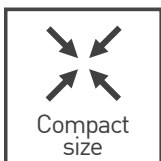
No shielding required as inductive technology is not affected by electromagnetic stray fields.



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.

DESCRIPTION

Piher Sensing Systems' Inductive Arc Position Sensors are conceived for heavy-duty applications such as tractors, excavators and loaders. Inductive sensors do not depend on magnets, but detect the position of a solid metallic target that can easily be integrated into the existing machinery structure.

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 off-highway applications.

The arc design enables a simple and fast assembly and calibration process at the manufacturing line, leading to additional cost savings during the production process.

APPLICATION EXAMPLES



Excavator Boom Arm Position



Articulated Vehicle Steering Position



Skid Steer Arm / Bucket Position

Inductive Arc Position Sensors

MECHANICAL SPECIFICATIONS

Life	Virtually unlimited
Air gap	2mm ±1mm

ELECTRICAL SPECIFICATIONS

Linearity ¹	±1% absolute (±0.5% upon 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, PWM SENT, CAN	Up to 10 bit Up to 12 bit	
Max. output rate (updates per second)	Analog ramp PWM SENT CAN	10000 2000 1235 10	
Supply voltage		5V ±10%	7V to 32V
Typical current consumption	Simple Redundant CAN	12 mA 24 mA 68mA	14 mA 28 mA 72mA
Voltage protection		±10V	±36V
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	-40° to +125°C
Shock	50g
Vibration	5-2000 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 = analogic 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.

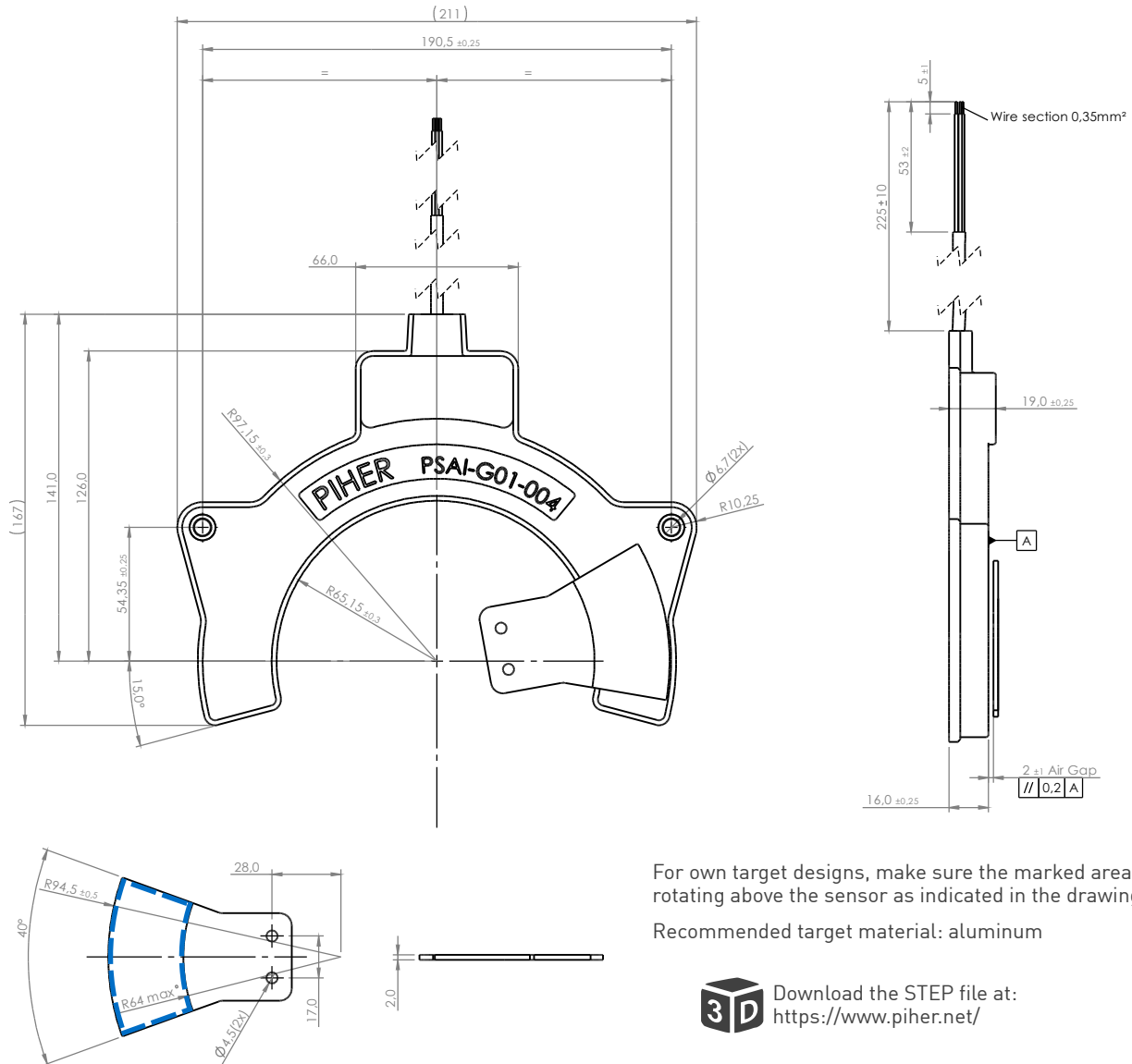
Default frequency for PWM versions is 200 Hz. Others on request.

² Other electrical rotational angles on request.

PSAI

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DIMENSIONS (MM)



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

Recommended target material: aluminum



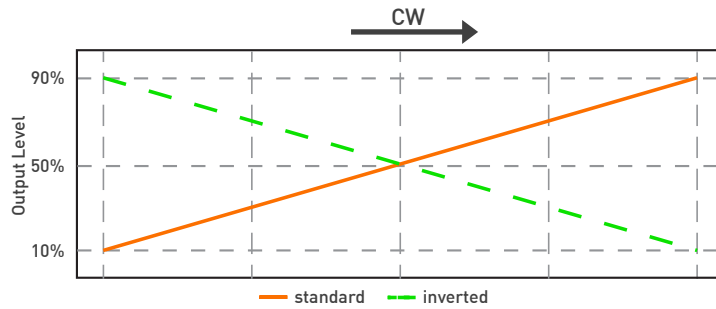
Download the STEP file at: <https://www.piher.net/>

CONNECTION SCHEME

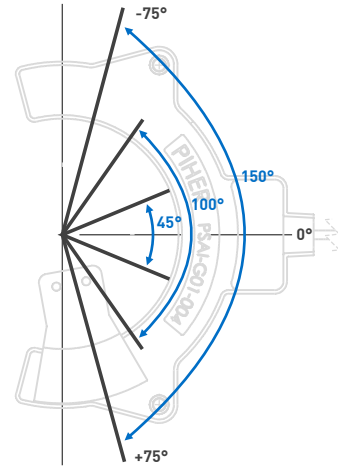
Color	Simple output		Redundant output		CAN
	5V	7V to 32V	5V	7V to 32V	
Brown	Power supply	Power supply	Power supply	Power supply	Power supply
Blue	Ground	Ground	Ground	Ground	Ground
Black	Signal output	Signal output	Signal output 1	Signal output 1	CAN High
White	Not used	Not used	Signal output 2	Signal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

Connector assembly available on request.

OUTPUT CURVE



ERA	Mechanical Rotational Angle		
150° →	-75°	0°	+75°
100° →	-50°	0°	+50°
45° →	-22.5°	0°	+22.5°



Custom output functions available on request.

OUR ADVANTAGE

- ▶ Leading-edge innovative position sensing solutions
 - ▷ Contactless (Hall-effect and Inductive Technology)
 - ▷ Contacting (Potentiometers, Printed Electronics)
- ▶ Engineering design-in support
- ▶ All our products can be customized to fit target application and customer requirement
- ▶ Capability to move seamlessly from development to true high-volume production
- ▶ A global footprint with global engineering and commercial support
- ▶ One-stop shop not limited to position sensors (temperature, pressure, gas,...) through group collaboration
- ▶ Flexibility and entrepreneurship of a medium-sized company with the backing of Amphenol Corporation



Please always use the latest updated datasheets and 3D models published on our website.

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