

Inductive high speed rotor position sensor



Piher's High Speed Inductive Position Sensor are used by hybrid/electric vehicles powertrain systems to feedback the angular position, direction and speed of the rotor shaft to optimize control of the motor inverter.

The position sensor can be mounted on the same shaft as the electric machine rotor and sensing its position accurately is critical in order to drive the motor optimally by the vehicle's control unit.

This solution provides high speed rotary motion sensing with a robust design against external magnetic interference fields generated from sources such as electric motors.

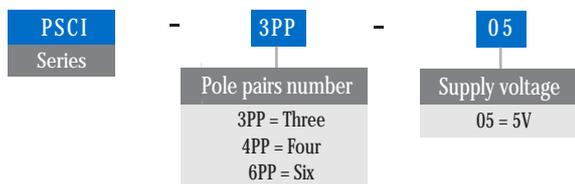
It uses the physical principles of induction in a wire loop and eddy currents to detect the position of a solid metallic structure that is sliding or rotating above a set of coils consisting of one transmitter coil and two receiver coils.

Custom product design packaging can be provided to meet any form, fit and function including the choice of wire harness and interface connector.

Applications

- High speed rotor position sensor
- Electric power steering
- Active suspension systems
- Transmission systems

How to order (example: PSCI-4PP-05)



For other configurations please check at sales@piher.net

Main features

- Standard pole numbers: 6, 8, 12. Others available upon request
 - AEC-Q100, Grade 0 automotive qualified IC
 - Wide operation temperature: -40°C to +150°C. Coil temperature can be >150°C
 - Supply voltage: 5V +/-10%
 - Overvoltage and reverse-polarity protection: max. -18 V to +18 V
 - Power or ground loss detection
 - Stray field immunity, no shielding required
 - ESD and short-circuit protection
 - Customised cable and connector interface
- Low speed models are available featuring analogue, PWM or SENT output with 10 and 12 bits resolution full scale

Main benefits

- Fast to Market: Off the shelf packages available and technical advise throughout all the design process
- Weight and size reduction compared to traditional resolver
- Magnet free solution robust against external stray fields
- Metallic target that can also be milled into the customer's application shaft
- Speed up to 600K (electrical) RPM (differential sine and cosine output)
- Different adaptable configurations such as through-shaft, end of shaft or arc design
- Up to 18 poles
- Up to 100x lighter and 10x slimmer than other technologies
- Ready for ASIL C (D) or ASIL D (D) with redundancy output
- Fully sealed suitable for harsh environments (shock, vibration)
- Robust against eccentricity and gap variation

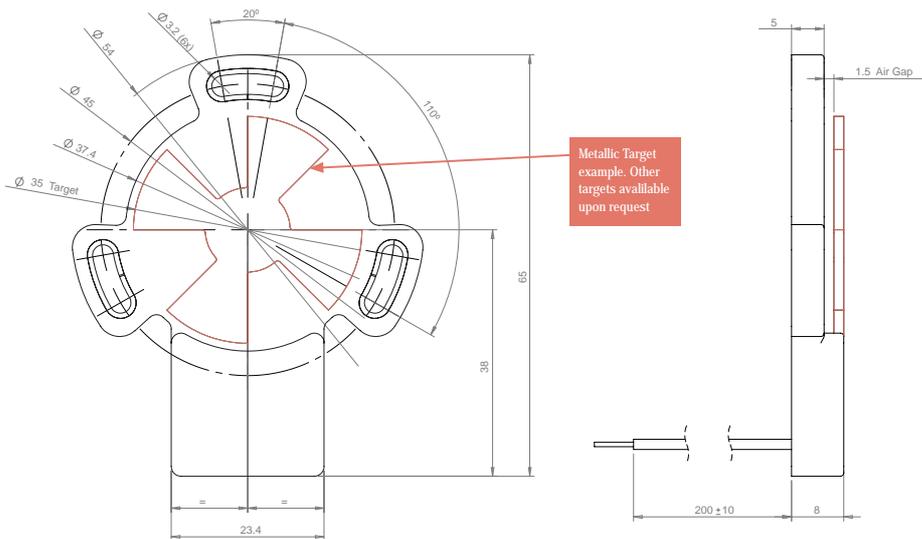
Technical specifications for the 6, 8 and 12 pole standard versions.

Signal output	analog differential sine/cosine (1.0V to 4.0V)
Resolution	infinite
Max. speed	200K rpm (6-pole version) 150K rpm (8-pole version) 100K rpm (12-pole version)
Sensing tolerance	±1° elec.
Propagation delay	max. 4,2µsec.
Rotational life	unlimited
Operating temperature	-40°C to 150°C
Supply voltage	5V±10%
Current	max. 15mAmp +18V over voltage protection -18V reverse voltave protection
Sealing	IP69K
Mounting torque	max. 2N.M
Target material	metal

Other technical specifications available. Check at sales@piher.net

Non-Contact Inductive Position Sensor

Dimensions (mm) - 8 pole standard version



3D Download the STEP file here:
<https://piher.net/piher/?p=830>

Connections scheme

- Blue = Ground
- Yellow = Sine (+)
- White = Sine (-)
- Red = Cosine (+)
- Black = Cosine (-)
- Brown = Vcc

Wires: 0.35mm² TXL SAE J1128



Our Advantage

- ✓ Value added proposition:
 - o Engineering design-in support
 - o Cable harness and connector assembly
 - o Output customization
 - o Manufacturing capabilities for high and low volume programs
- ✓ One-stop solution provider for different position sensing technologies (hall-effect, inductive, potentiometers and printed electronics)
- ✓ One-stop sensor provider not limited to Position sensors (Temperature, Gas & Moisture, Pressure etc) with diverse product portfolio of standard and customised products
- ✓ Piher Sensing Systems has a global footprint through Amphenol Sensors providing local customer support

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