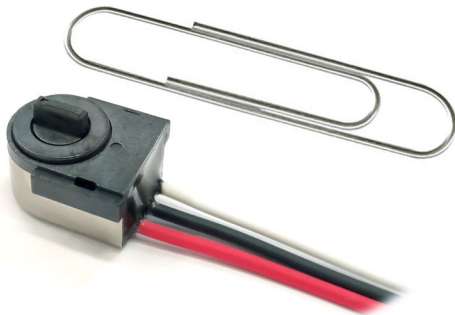


MSX-360

Miniature Joystick Position Sensor



DESCRIPTION

This joystick sensor packs pro-grade features into a tiny footprint (14.4mm x 16mm). Despite its lightweight build, it delivers precise control with a full 360-degree range (no dead zones!), 12-bit resolution for smooth response, and long-lasting durability. Plus, it's built to resist electromagnetic interference and electrostatic discharge for reliable operation.

Low profile and long life cost-effective alternative to contacting solutions based in printed carbon tracks or potentiometers that are prone to wear and tear during their lifespan.

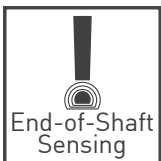
KEY FEATURES



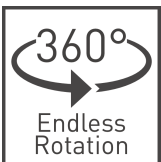
True, contactless operation
Without any gears or mechanical interfaces the sensor is easily assembled and calibrated and subject to limited wear and tear over lifetime.



Fits in the smallest of spaces
With a ultra small weight and packaging space, this rotary sensor can be used in even the most space-constraint application.



Integrated shaft
The magnet is securely fastened to the shaft and acts as only moving component in the sensor.



360 degree absolute position feedback
Endless mechanical rotational angle without dead band, keeps the position on power loss with programmable electrical angles from 90 to 360 degrees.

APPLICATIONS

- HMI interfaces
- Medical joysticks
- Industrial joysticks
- Radio remote control
- Throttle control
- Lever control arm
- Valve position

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MECHANICAL SPECIFICATIONS

Rotational life ¹	Up to 7,000,000 cycles
Mechanical range	360° (endless rotation)
Magnetic shielding	built-in
Shaft Diameter	5.9mm
Max. mounting torque	1Nm

¹ Higher rotational life upon request

ELECTRICAL SPECIFICATIONS

Linearity ^{1,2}	±1.5% absolute
Electrical angular range ¹	90°, 180°, 270°, 360°
Output protocol ¹	Analog (Ratiometric)
Output ³	Simple
Resolution	Up to 12 bit
Supply voltage ¹	5V ±10%
Supply current	Typ 12.6 mA
Voltage protection	+20V / -10V
Self-diagnostic features	yes

¹ Other specifications available

² Ferromagnetic materials close to the sensor (i.e. mounting surface) may affect the sensor's linearity.

³ If you need other output types please see the [MSC360](#) miniature position sensor.

ENVIRONMENTAL SPECIFICATIONS

Characteristic	Standard	Level
Operating and storage temperature ¹	n/a	-40° to +125°C
Shock	EN 60068-2-27	500 m/s ² , 11 ms, 3 axis 3 times (Room Temp.)
Vibration	EN 60068-2-6	200 m/s ² , 5 ~ 500 Hz 10 min, 3 axis 2 hours (Room Temp.)
Sealing	IEC 60529	IP67
EMS	ISO 11452-2, 3	100 V/m, 1 MHz ~ 1 GHz
ESD	IEC 61000-4-2	Contact discharge - case to each terminal: ±15kV Contact discharge - between each terminal: ±15kV

Check availability for other specifications

HOW TO ORDER (EXAMPLE: MSX360-1A-C004-ERA360-05K)

MSX360	-	—	-	C	—	-	ERA	—	-	05	K
Series	Type ¹	Output ²	Output function ³	Electric rotational angle ⁴	Voltage supply	Temperature range					
	1 = simple	A = analog	C0004 = 360° C0022 = 90° C0250 = 180° C0197 = 270°	ERA090 ERA180 ERA270 ERA360	05 = 5V ±10%	K = -40°C to +125°C					

¹ Redundant output: check the MSC360 miniature position sensor.

² The analog output is ratiometric, proportional to input supply voltage.

³ Other output functions available, please check availability.

MSX-360

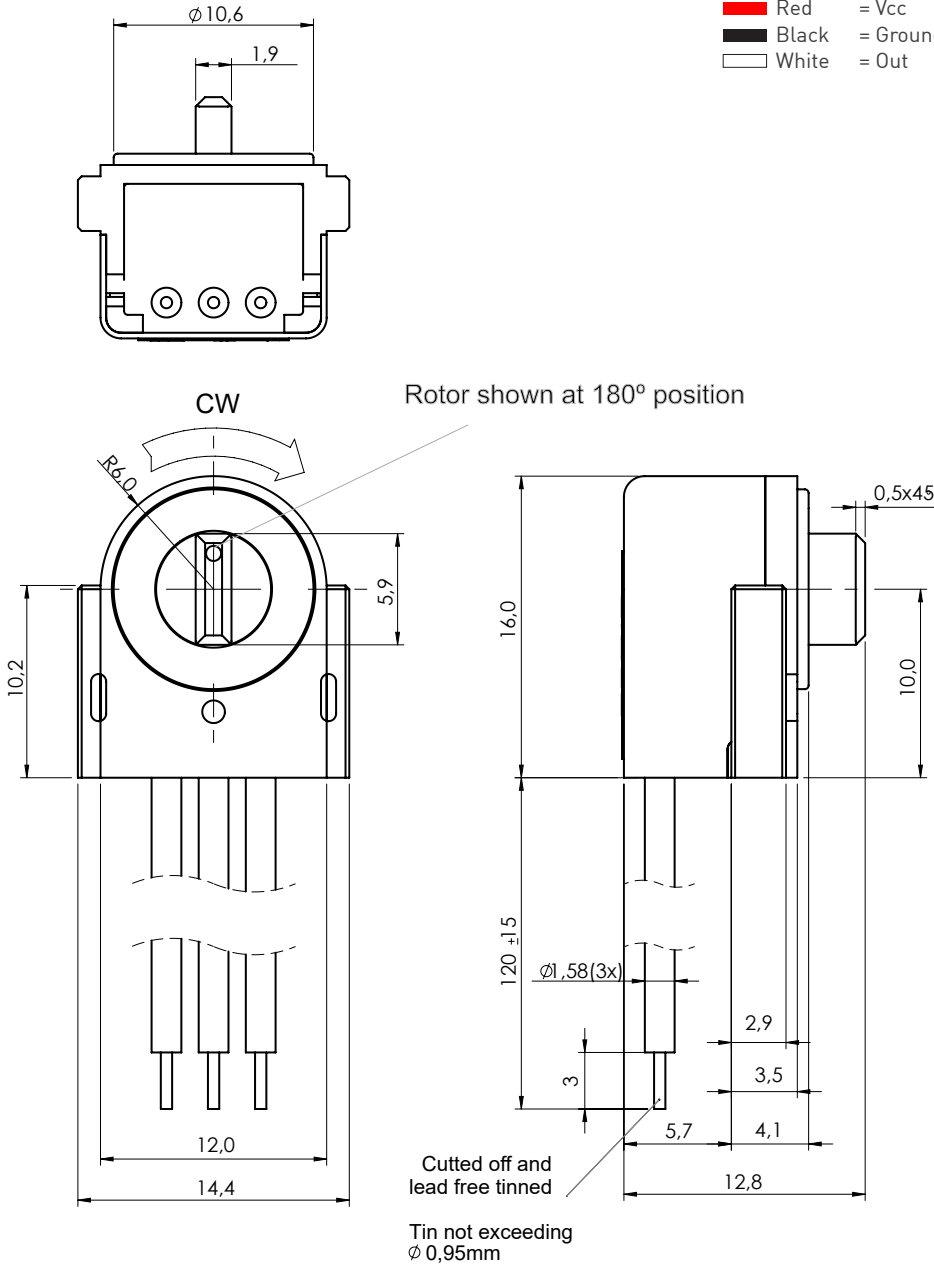
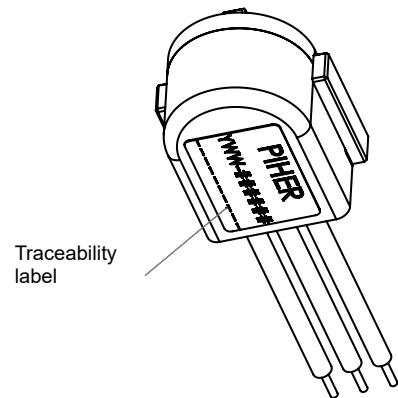
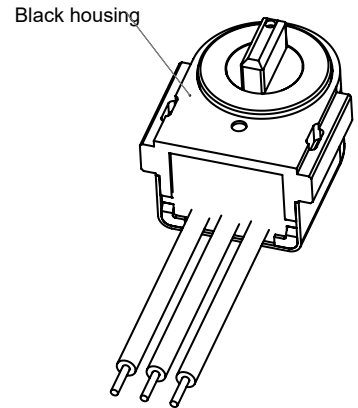
Miniature Joystick Position Sensor

DIMENSIONS (MM)

CONNECTION SCHEME

 Red	= Vcc
 Black	= Ground
 White	= Out

Wires: 3x 22 AWG
TXL SAE J1128



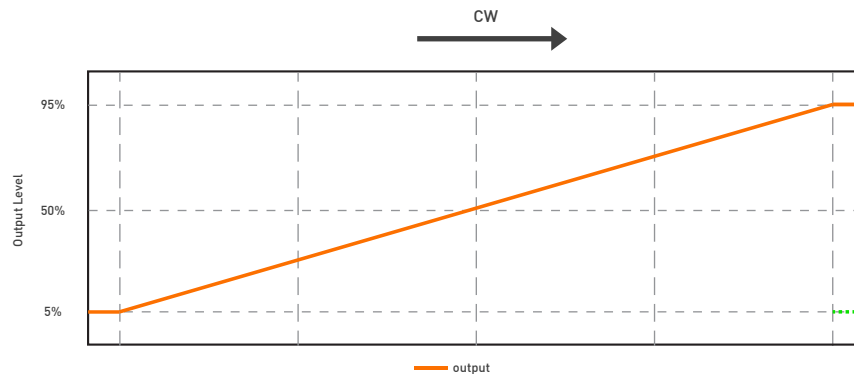
Rotor is shown at 180° position. Sensor is delivered at random position
 Customer to build a fitting space in the joystick plastic housing to fix the sensor.
 If you need a sensor with mounting flanges please see the [MSC360](#) miniature position sensor.
 Drawings may not be to scale.

 Download the STEP file at www.pihernet.net

MSX-360

Miniature Joystick Position Sensor

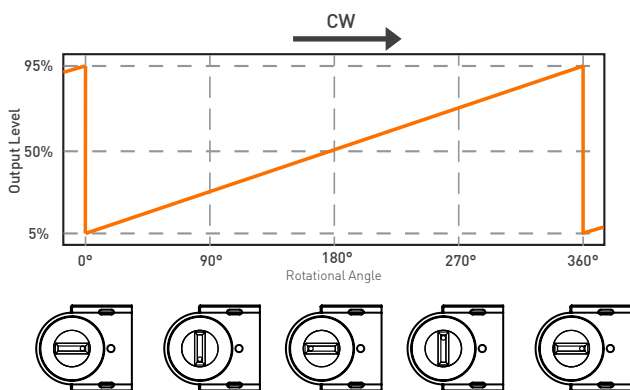
OUTPUT FUNCTIONS



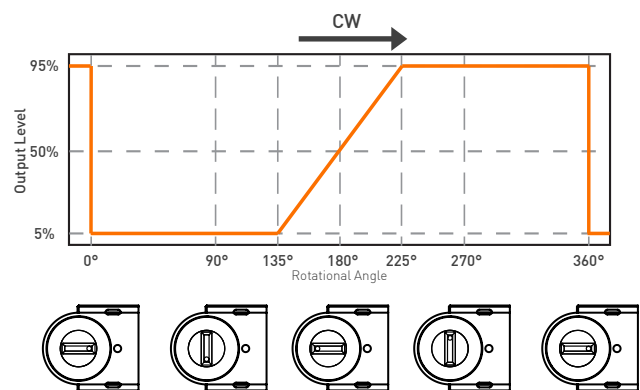
ERA	Mechanical Rotational Angle
360 →	0° 180° 360°
270 →	45° 180° 315°
180 →	90° 180° 270°
090 →	135° 180° 225°

OUTPUT VOLTAGE DEPENDING ON SHAFT POSITION - EXAMPLES

MSX360-1A-C0004-ERA360-05K



MSX360-1A-C0022-ERA090-05K



Custom output functions with positive and negative slopes on request. Ferromagnetic parts close to the sensor environment may modify the sensor performance. No external magnetic perturbations are considered on the application where the PIHER sensor is mounted. If so, the amplitude and direction or flux density generator type and characteristics (magnet, cable, motor...) must be notified to PIHER for a magnetic simulation analysis update.



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

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CONTACT

Piher Sensing Systems
 Polígono Industrial Municipal
 Vial T2, N°22
 31500 Tudela
 Spain

sales@piher.net

Europe: +34 948 820 450

Americas: +1 636 251 0855

Asia Pacific: +65 9641 8886

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