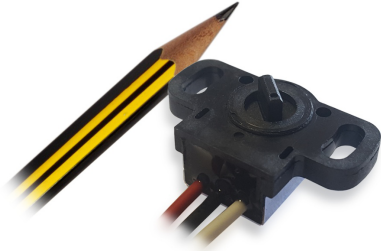


# MSC-360

## Miniature Hall-Effect Rotary Position Sensor



### DESCRIPTION

This rotary sensor provides a perfect fit for preferential use in space constraint applications. Despite its lightweight and miniature size of only 28mm x 17mm, this hall effect sensor delivers high performance with up to 360° electrical angle (without dead zone), 12bit resolution, extended life and EMI & ESD protection.

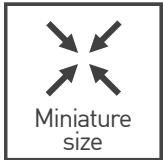
The MSC-360 can easily be tailored to customers' needs providing high price-performance ratio even for the most demanding environments.

### 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.



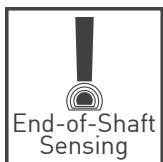
#### Fits in the smallest of spaces

With a packaging space of less than 28 x 17 x 13 mm and less than 7g this rotary sensor can be used in even the most space-constraint application.



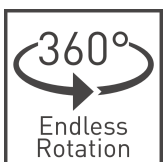
#### Made for harsh environments

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



#### 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.



#### Adaptable to your requirements

Programmable transfer function as well as different output protocols and redundancy levels available.

### APPLICATIONS

#### Industrial

- ▶ Instrumentation
- ▶ Autonomous warehouse robotics
- ▶ Robotics and automation feedback
- ▶ Hand controls
- ▶ Float level sensor

#### Home and Building Automation

- ▶ HVAC systems
- ▶ Valve monitoring

#### Transportation

- ▶ EGR valve
- ▶ Gear position sensor
- ▶ Autonomous steering
- ▶ Joystick controls
- ▶ Hand throttle position

# MSC-360

## Miniature Hall-Effect Rotary Position Sensor

### MECHANICAL SPECIFICATIONS

Rotational life <sup>1</sup>	Up to 7,000,000 cycles
Mechanical range	360° (endless rotation)
Magnetic shielding	Yes, models without shielding also available
Shaft Diameter	5.9mm

<sup>1</sup> Higher rotational life upon request

### ELECTRICAL SPECIFICATIONS

Linearity <sup>1,2</sup>	±1.5% absolute
Electrical angular range <sup>1</sup>	Programmable from 90° to 360°
Output protocols	Analog (Ratiometric), PWM
Output	Simple Redundant
Resolution	Analog, PWM Up to 12 bit
Supply voltage <sup>1</sup>	5V ±10%
Supply current	Simple output Typ 12.6 mA
Voltage protection	+20V / -10V
Self-diagnostic features	yes

<sup>1</sup> Other specifications available

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

### ENVIRONMENTAL SPECIFICATIONS

Characteristic	Standard	Level
Operating and storage temperature <sup>1</sup>	n/a	-40° to +125°C
Shock	EN 60068-2-27	500 m/s <sup>2</sup> , 11 ms, 3 axis 3 times (Room Temp.)
Vibration	EN 60068-2-6	200 m/s <sup>2</sup> , 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: MSC360-1A-C004-ERA360-05K)

#### Simple Output - Analogic and PWM

MSC360	-	-	-	-	C _____	-	ERA ____	-	05		K	-	_____
Series	Type	Output <sup>1</sup>	Output function <sup>2</sup>	Electric rotational angle <sup>4</sup>	Voltage supply	Temperature range	PWM Frequency Hz <sup>5</sup>						
	1 = simple 2 = redundant	A = analogic P = PWM	C0004 C0005 C0021 C0022	ERA090 ERA091 ... ERA360	05 = 5V ±10%	K = -40°C to +125°C	[...]/ F2K5 = 2.5kHz F156 = 156.25Hz F312 = 312.5Hz F625 = 625Hz F1K2 = 1.25kHz F05K = 5kHz F10K = 10kHz F20K = 20kHz						

<sup>1</sup> The analog output is ratiometric, proportional to input supply voltage.

<sup>2</sup> Other output functions available, please check availability. Enter CXXXX as long as the new output function is not defined.

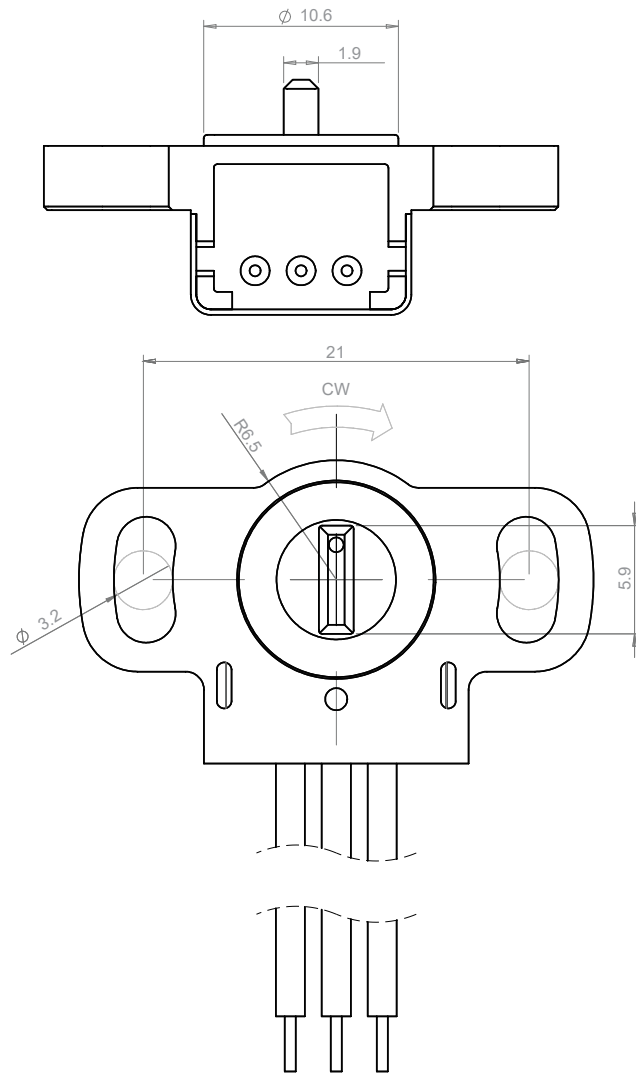
<sup>3</sup> Leave empty if not applicable. Default frequency is 2.5kHz

# MSC-360

## Miniature Hall-Effect Rotary Position Sensor

### DIMENSIONS (MM)

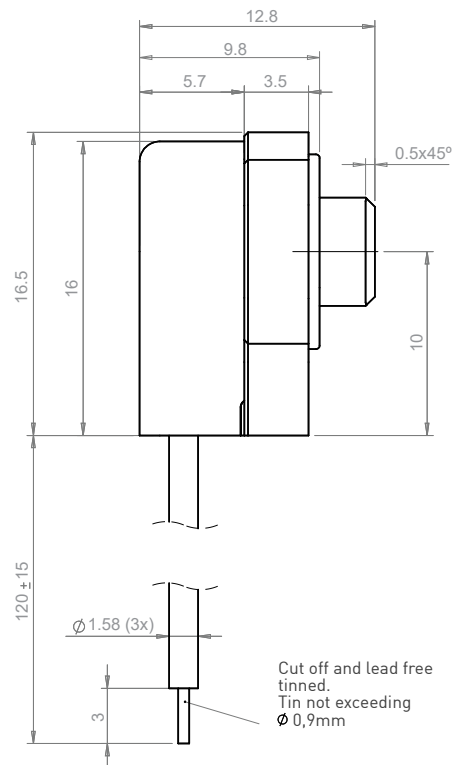
Simple output model with shielding




### 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

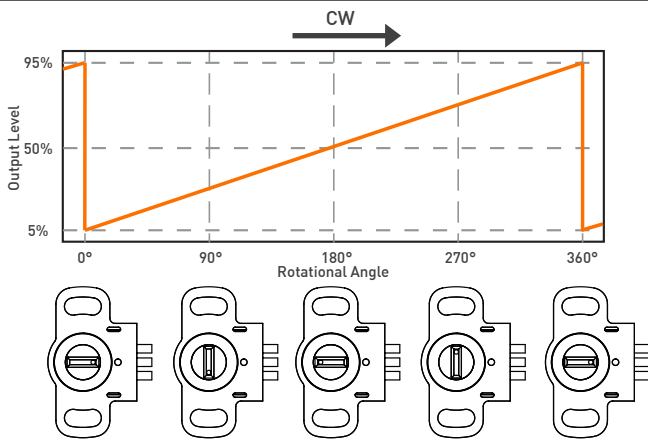
 Download the STEP file here:  
[www.piher.net](http://www.piher.net)

# MSC-360

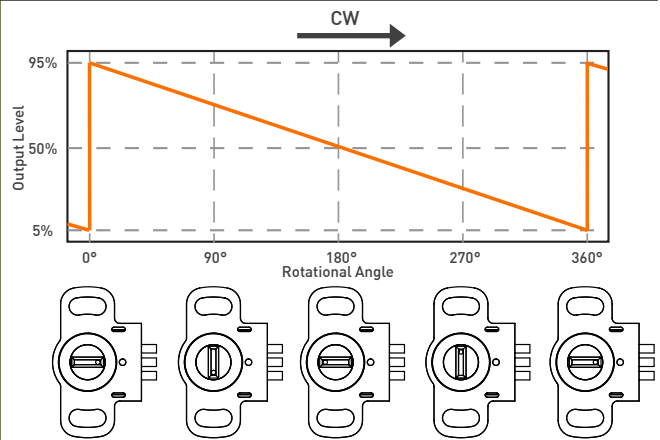
## Miniature Hall-Effect Rotary Position Sensor

### OUTPUT VOLTAGE DEPENDING ON SHAFT POSITION

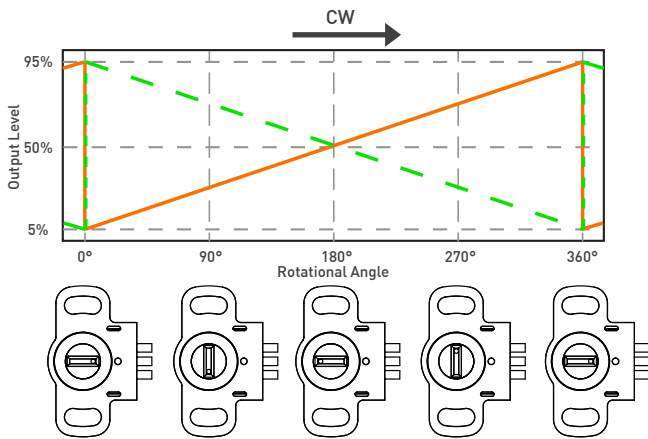
MSC360-1A-C0004-ERA360-05K



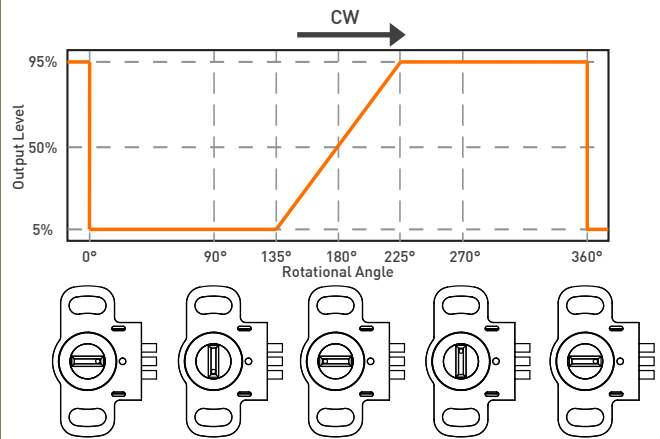
MSC360-1A-C0005-ERA360-05K



MSC360-2A-C0021-ERA360-05K



MSC360-1A-C0022-ERA090-05K



Custom output functions with positive and negative slopes 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.

#### Disclaimer:

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