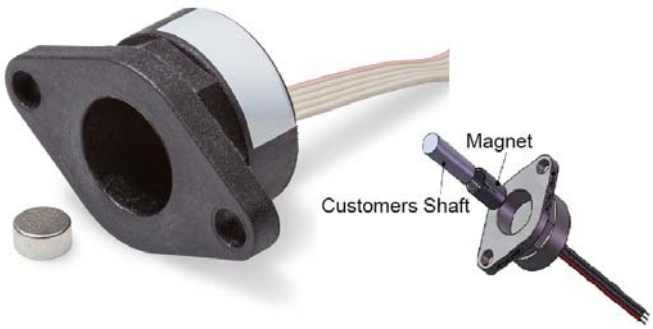
ERCK Series

Single Turn Hall Effect - Analog

P3 AMERICA
PRECISION SENSORS & JOYSTICKS



- Supplied magnet attaches to your shaft end
- Recessed housing fits over shaft/magnet
- True 360º measuring at up to 3000 rpm
- Analog voltage or current output
- IP65 protection grade
- > 100M shaft revolutions

The series ERCK is a frictionless angle sensor capable of true 360º measuring. A provided magnet attaches to your shaft end and housing simply mounts over the magnet. 12 bit resolution and simple interface with analog voltage or current outputs.

Electrical Data			
Effective electrical angle of rotation	360° (std) or any fraction. Minimum angle 20°		
Independent linearity	±0.5%		
Supply voltage	5V ±10%	9..30V	15..30V
Output signal	0-5V (ratiometric) or PWM	0-5V	0-5V, 0-10V, 0-20mA, 4-20mA
Output load	Voltage output: ≥ 5k Ohm	Current output: ≤ 500 Ohm	
Electrical Speed (Max)	1600 RPM		
Resolution	12 bit (4096 steps)		
Current consumption (no load)	< 16 mA		
Update rate	1 ms		
Insulation voltage	1000 VAC @ 50 Hz, 1 min.		
Insulation reistance	2 MOhm @ 500 VDC, 1 min.		

Mechanical and Environmental Data	
Mechanical angle of rotation	360º (continuous)
Maximum rotational speed	3000 rpm
Life expectancy	> 100M shaft revolutions
Protection class	IP65 (electronics and cable)
Operating temperature	-40ºC...+85ºC
Storage temperature	-40ºC...+90ºC
Vibration (IEC 68-2-6, Test Fc)	20 g (±1.5mm, 10 to 2000 Hz, 16 ycles , 3 axis, (3x4 h)
Shock (IEC 68-2-7, Test Ea)	50 g (11ms, 18x)
Housing material	Nylon 66 Glass Fiber Reinforced
Cable	3 core flat cable. 0.15 m AWG28
Weight	approx. 10 g

Note: Customers should test and verify device performance in any given application. Specifications subject to change without notice.

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7696 183A Toll Rd.
Unit 7B
Leander TX 78641

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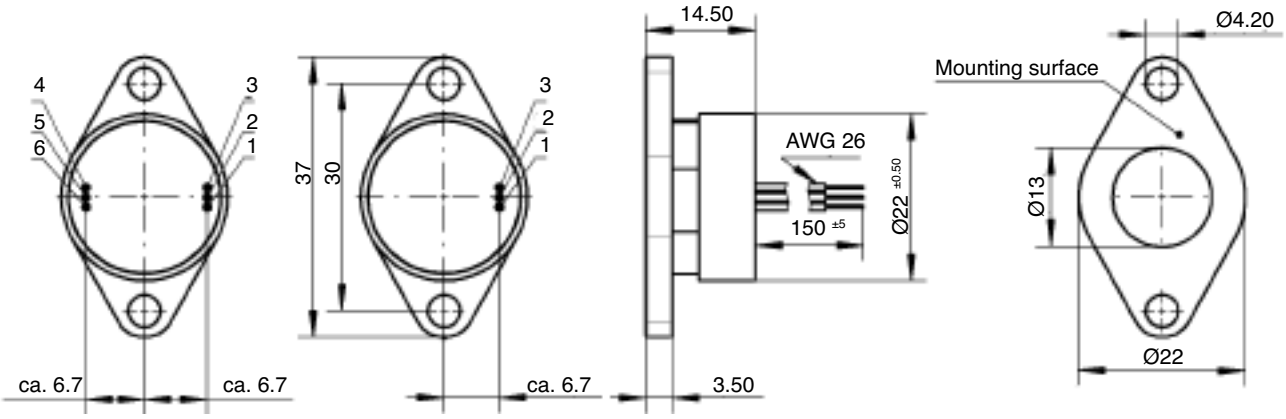
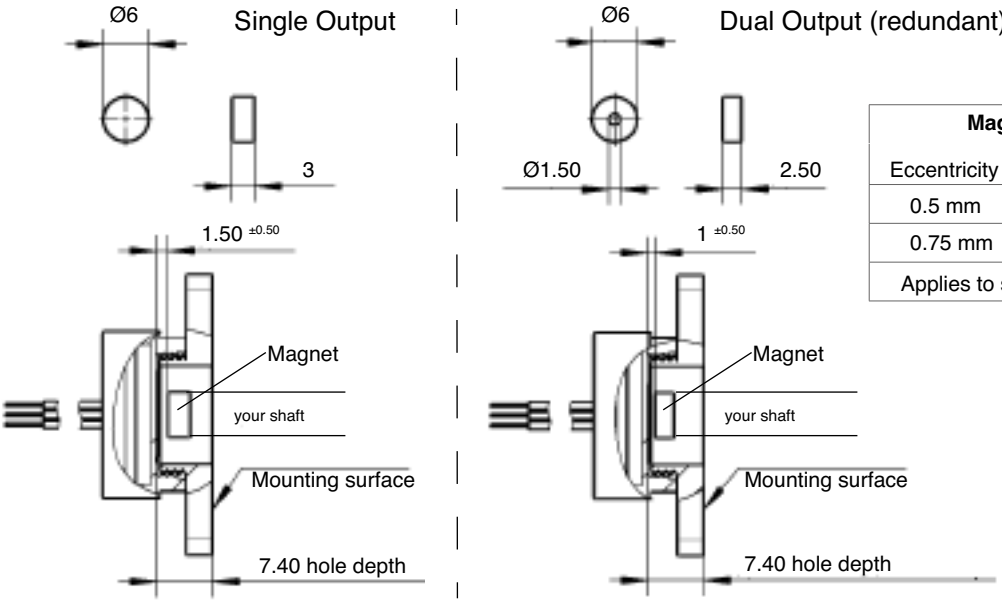
Dimensions (mm)



Cable Assignment		
VSUP 1	(Red)	1
OUT 1		2
GND 1		3
VSUP 2	(redundant option)	4
OUT 2	(redundant option)	5
GND 2	(redundant option)	6

Magnet Details for Single Output (standard) and Redundant Output (optional)



Magnet Eccentricity	
Eccentricity	Accuracy (360º)
0.5 mm	0.6º
0.75 mm	1.2º
Applies to single and dual output	

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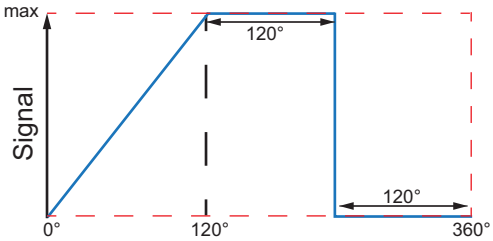
Electrical Output Characteristic Options For Analog ERC Series

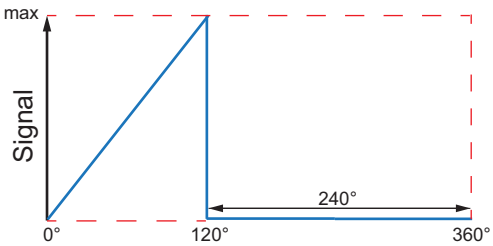
Non Effective Electrical Angle: Delta 1/2

When the effective electrical angle is programmed less than 360º (120º in example), the remaining non effective electrical angle (240º in example) is divided in two equal parts: high level & low level (Delta 1/2). Unless otherwise specified, this is the default output.



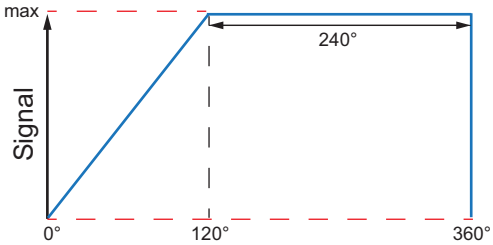
Non Effective Electrical Angle: Low Level

When the effective electrical angle is programmed less than 360º (120º in example), the remaining non effective electrical angle (240º in example) will remain low. Unless this option is specified during ordering, non effective electrical angle will be Delta 1/2 as described above.



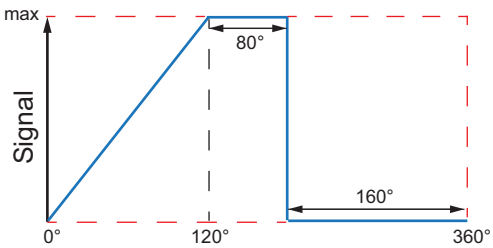
Non Effective Electrical Angle: High Level

When the effective electrical angle is programmed less than 360º (120º in example), the remaining non effective electrical angle (240º in example) will remain high. Unless this option is specified during ordering, non effective electrical angle will be Delta 1/2 as described above.



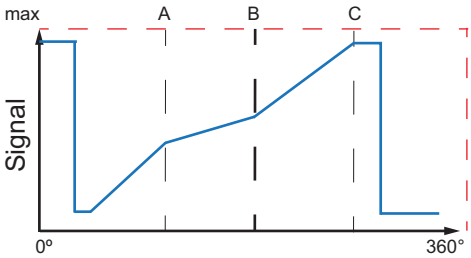
Non Effective Electrical Angle: Variable

When the effective electrical angle is programmed less than 360º (120º in example), the remaining non effective electrical angle (240º in example) can be divided into high and low level in any ratio according to customer request. (80º high and 160º low in example). Unless this option is specified during ordering, non effective electrical angle will be Delta 1/2 as described above.



Multi Point Programming

3 to 6 rising or falling linear segements are possible. Minimum and maximum levels can be specified. First and last linear segments are always horizontal.
1 to 3 settable calibration points.



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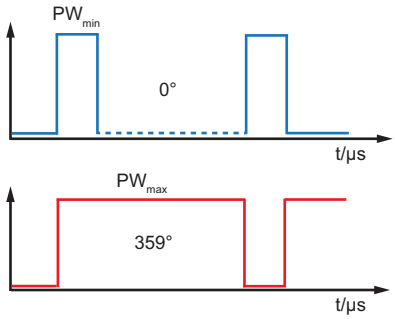
Electrical Output Characteristic Options For Analog ERC Series

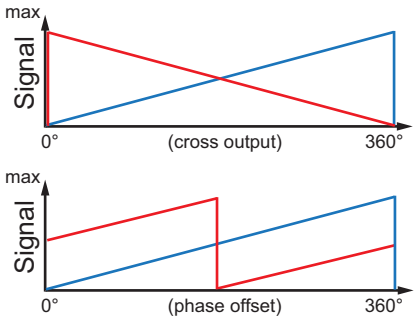
Pulse Width Modulation (PWM)

PWM provides a constant carrier frequency which defines high to low ratio. The ration between high and low corresponds to the signal characteristics. It is in a fixed relation to the angle. Generally, for further signal processing, no A/D converter is required because many micro-controllers already have PWM input. Note: PWM output is only possible with ERC version that are 5V supply, 0-5V output (0505 types).



Redundant Output (2 channel)

True redundancy is realized by 2 galvanically seperated sensing elements on the sensor chip. A single magnet provides a magnetic field simultaneuously for both elements. Both elements can be programmed identically or channel 2 can be programmed independently from channel 1. In the example, a cross output is shown and a parallel offset is shown with offset programming on channel 2.



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