

ERC Series

Single Turn Hall Effect - Analog



- Economical - Threaded Bushing Mount
- Ø22mm Robust Plastic Housing
- Hall CMOS Technology
- Analog Output - Current/Voltage or PWM
- Shock and Vibration Proof
- Alternative to Precision Potentiometers

The series ERC allows the simple replacement of potentiometers with bushing. High reliable hall effect technology provides a constant signal quality over the whole life cycles, For panel setting applications there are options like increased torque and/or mechanical stops.

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 resistance	2 MOhm @ 500 VDC, 1 min.		

Mechanical and Environmental Data	
Mechanical angle of rotation	360° (continuous)
Maximum rotational speed	800 RPM (brass bearing) 3000 RPM (optional polymer bearing)
Life expectancy	> 10M turns (brass bearing) / > 15M turns (polymer bearing)
Starting torque	0.5 ~ 1Ncm
Maximum radial load	1 N
Sleeve Bearing	Sintered bronze bearing (std.) or optional polymer bearing
Protection class	IP65 (electronics and cable)
Operating temperature	-40°C...+85°C
Storage temperature	-40°C...+90°C
Vibration (IEC 68-2-6, Test Fc)	20 g (±1.5mm, 10 to 2000 Hz, 16 cycles, 3 axis, (3x4 h)
Shock (IEC 68-2-7, Test Ea)	50 g (11ms, 18x)
Housing material	Nylon 66 Glass Fiber Reinforced
Shaft material	Stainless steel
Cable	3 core flat cable. 0.15 m (AWG28)
Weight	approx. 25 g

Note: Customers should test and verify device performance in any given application. Shaft modifications are possible, please consult us. Specifications subject to change without notice.

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Mechanical and Environmental Data (continued) Series ERC

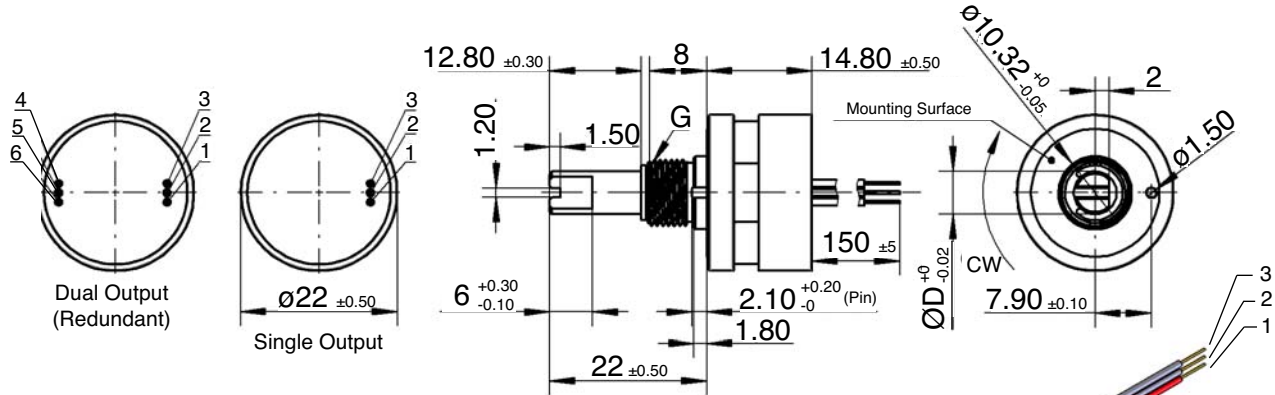
Max. radial load	1 N
Mass	Approx. 24 g
Fastening parts included in delivery	Hex nut and tooth washer
Fastening torque mounting nut	≤ 1 Nm
Material shaft	Stainless steel
Material housing	Plastic

Emission / Immunity

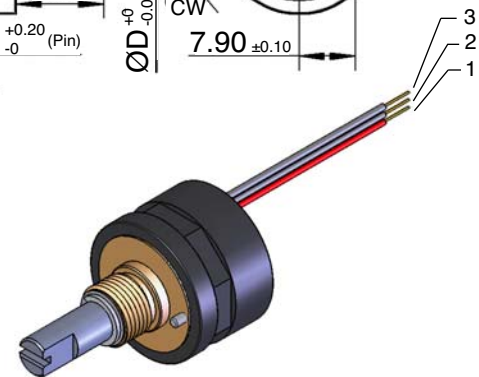
EN 55011 Emission AC/DC power	Class B
EN 55011 Emission housing	Class B
EN 61000-4-2 Immunity housing ESD	Class B
EN 61000-4-3 Immunity RF sine wave	Class A
EN 61000-4-4 Immunity DC power, I/O cable: Burst	Class B
EN 61000-4-5 Immunity DC power, I/O cable: Surge	Class B
EN 61000-4-6 Immunity DC power, I/O cable: Conducted sine wave	Class A

- 1.) According IEC 60393
- 2.) Determined by climatic conditions according to IEC 68-1, para. 5.3.1 without load collectives

Dimensions (mm)



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

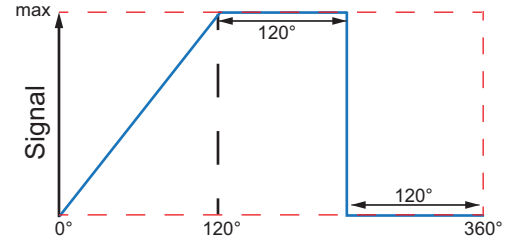


Bushing	Dimension D	Dimension G
ERC 1	6mm	M10
ERC 3	1/4"	3/8 - 32

Electrical Output Characteristic Options For Analog ERC Series

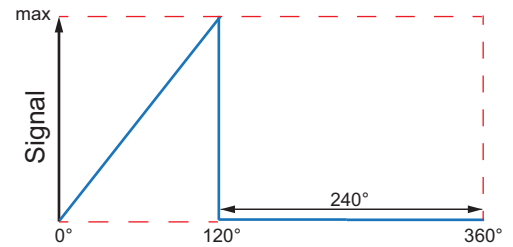
Non Effective Electrical Angle: Delta 1/2

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



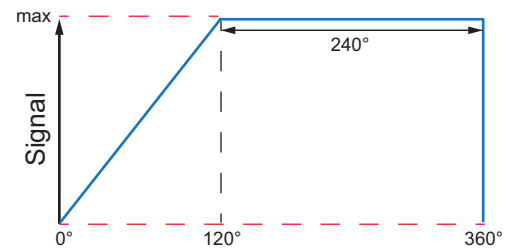
Non Effective Electrical Angle: Low Level

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



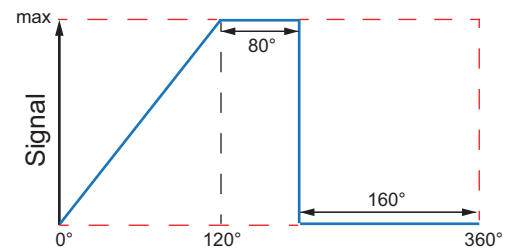
Non Effective Electrical Angle: High Level

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



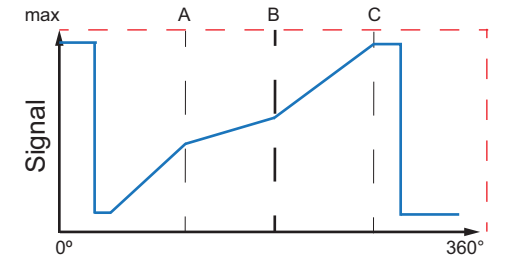
Non Effective Electrical Angle: Variable

When the effective electrical angle is programmed less than 360° (120° in example), the remaining non effective electrical angle (240° in example) can be divided into high and low level in any ratio according to customer request. (80° high and 160° 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 segments 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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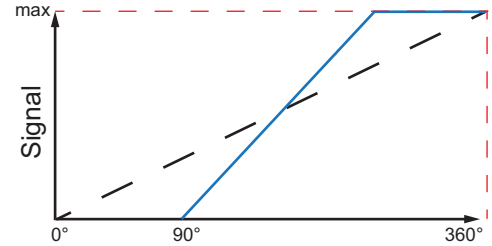
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Electrical Output Characteristic Options For Analog ERC Series

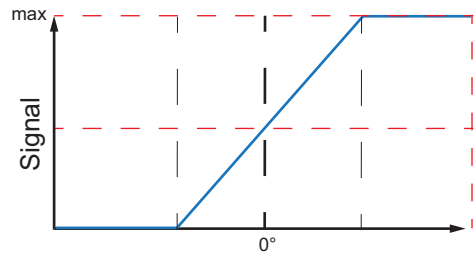
Zero Point Programming

Mechanical zero point is aligned with marking on the sensor housing. Electrical zero point can be aligned to mechanical zero point or any offset (90° offset shown in example). Option must be specified when ordering.



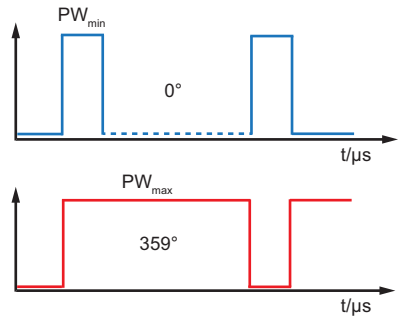
Center Point Programming

Mechanical zero point is aligned with marking on sensor housing. When aligned the effective electrical angle is at 50% output.



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 simultaneously 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.

