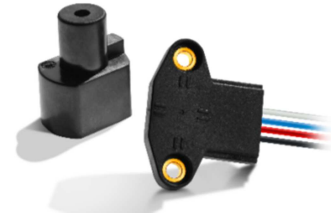


# Angle Position Sensors

## ANG Sensors

Thin, programmable, non-contact magnetic position sensors capable of continuous rotation, with dual outputs available.



### Description

The ANG Series sensors are non-contact, intrinsically linear position sensors with one or two independent (redundant) outputs. The sensors operate through the use of Hall Effect technology with magnetic fields generated by permanent magnets. They provide a linear change in voltage output (ratiometric to the input voltage) corresponding to an angular rotation of the input shaft.

Actuator magnet part number AS500106 is required to assure proper operation (ordered separately).

### Features

- Angular position sensor with high tolerance for misalignment
- Non-contact angular position sensing and full 360° rotation
- Custom programming available for: angle range, slope, PWM output – contact factory
- No mechanical interface means no parts to wear out or jam
- Comes with 20 AWG 305 mm (12") discrete wire leads
- RoHS Compliant
- IP68\*
- Maximum air gap of 6 mm (0.24")
- Compliant to industrial/automotive EMC/EMI/ESD directives

### Typical Applications

- Hydraulic valves
- Hydraulic controls
- Electric drives
- Pneumatic controls
- Zero-contact encoder alternative
- Gear selection / shifting position
- Lifting / ride height position
- Throttle / pedal position
- Steering wheel position

### Environmental Specifications

Operating Temperature	-40 °C to 140 °C (-40 °F to 284 °F)
Ingress Protection	IP68*

\*Contact ZF for details on testing conditions

### Electrical Specifications

Input	<u>Supply Voltage</u> 5.0 VDC ± 10%	<u>Maximum Overvoltage</u> 16 VDC	<u>Reverse Battery Protection</u> 12 VDC
Output Signal	0.5 – 4.5 VDC (with 5 VDC input)		
Input Current	Single output	8 mA typ., 10 mA max.	
	Dual output	16 mA typ., 20 mA max.	
Resolution	12 bit		
Accuracy, overall	Programmed angle sensing range 35° < 65° : ± 2.5% Full scale Programmed angle sensing range: 65° < 360° : ± 2.0% Full scale		
Output Linearity	Programmed angle sensing range 35° < 65° : ± 2.5% Full scale Programmed angle sensing range: 65° < 360° : ± 1.0% Full scale		

### Mechanical Specifications

Measuring Range	0° to 360°, customizable (see graph)
Air Gap	1 mm to 6 mm (application dependent); 2.5 mm typ.
Eccentricity	± 2 mm (0.08")

[www.switches-sensors.zf.com](http://www.switches-sensors.zf.com) ZF Electronics Systems Pleasant Prairie, LLC ("ZF") acquired the rights to the CHERRY branded switches and sensors in 2008. Although ZF divested its interest in the CHERRY name in 2015, the switches and sensors remain unchanged and are now sold under the ZF brand.



## Products

### Part Number

### Output

### Interface

ANG-11HAW1

Analog single

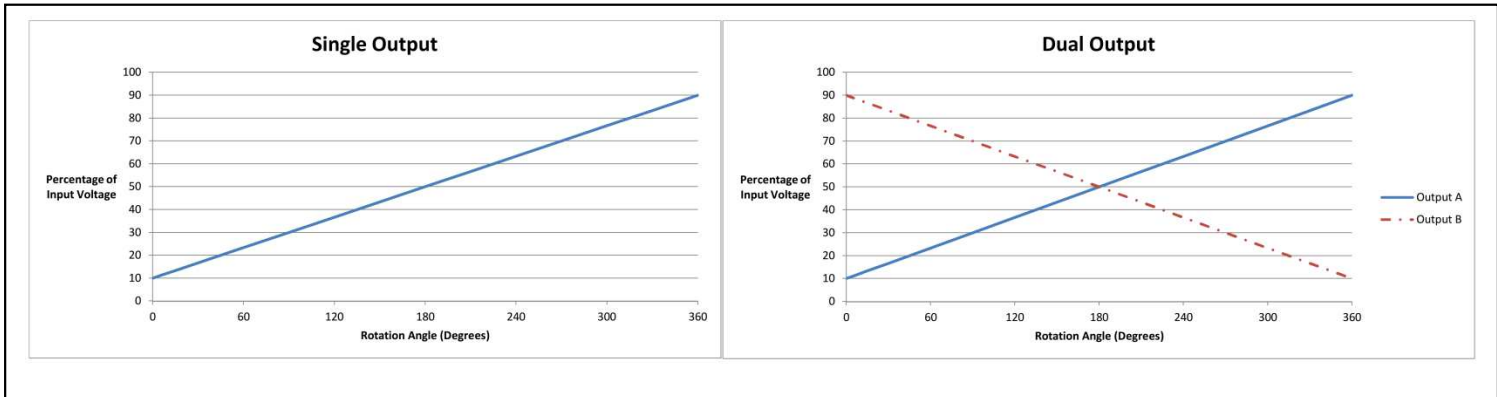
20 AWG x 305 mm (12") discrete wires

ANG-21HAW1

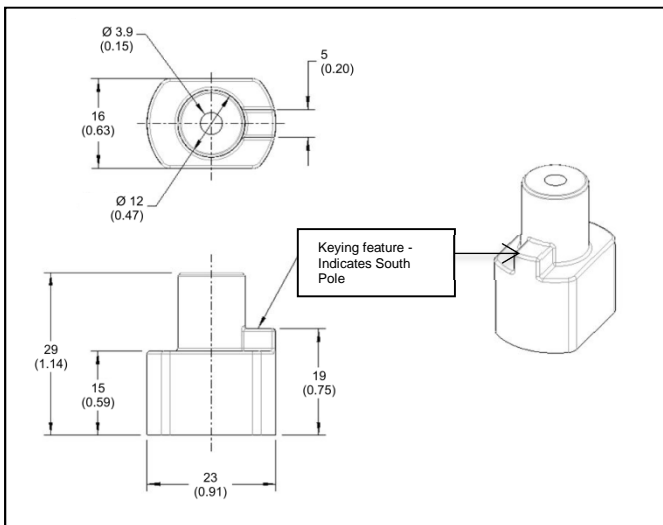
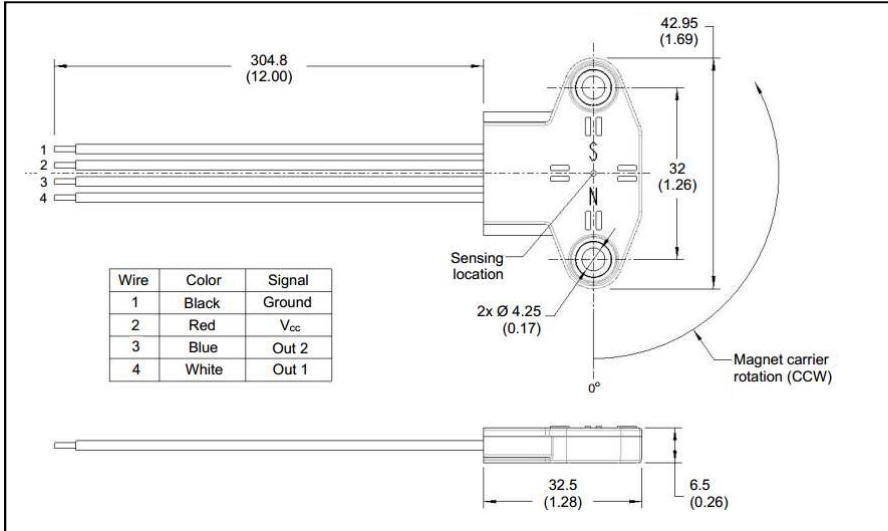
Analog dual

20 AWG x 305 mm (12") discrete wires

## Typical Output vs. Angular Rotation (as percentage of input)



## Dimensions mm (inches)



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