ATO

Non-Contact Magnetic Rotary Angle Sensor

This product features a housing made of hard aluminum alloy. Utilizing Hall-effect contactless technology, this angle sensor offers the advantages of a non-contact angle sensor. It incorporates high-quality components, such as high-speed stainless steel bearings, which minimize friction during measurement. This design prevents a decline in measurement accuracy due to surface wear on the measuring components, resulting in a theoretically infinite service life.

With its compact structure, small size, high customization options, high resolution, smooth rotation, and low dynamic noise, this product is suitable for harsh industrial environments—including those involving water, oil, vibration, and shock—as long as there is no electromagnetic interference. It is a cost-effective non-contact angle sensor.

This product is a miniature non-contact angle sensor that operates on the principle of electromagnetic induction to convert angular displacement into an electrical signal. When the rotating object transmits its angular displacement to the sensor's rotary shaft, the angle sensor outputs an electrical signal that is directly proportional to the angle of rotation.

Features

Model：ATO-AS-CW360

- Better value for money than similar electromechanical knobs
- Hall effect, contactless, infinite rotation
- High isolation voltage: greater than 1000 V AC
- Compact size, maximum outer diameter: 22 mm
- 360° measurement with no blind spots
- Linearity: 0.2% F.S.
- Supply voltage: 3.3–5 V DC
- Output signal 0–VDD
- Very low damping
- All-aluminum alloy housing
- Easy to install
- Contactless

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Technical Specifications

Resolution	4096 bits (12 bits)
Effective rotation angle	90°, 180°, 270°, 360° optional
Linear accuracy	Standard grade: 0.2%
Update rate	10nS
Load resistance	>10KΩ
Input-output deviation	< 0.5%·VCC
Operating voltage	3.3- 5V±10%
Output signal	0~5V (ratio) (0-3.3V / 0-5V / 0-10V / 4-20mA optional
Operating current	<4.5 mA

Mechanical Properties

Casing	Aluminum alloy
Bearing	NSK
Shaft material	304 stainless steel
Output terminals	Gold-plated
Mechanical angle	terminals / No 360°
Protection level	(no detent) IP40
Operating temp	-30°C to +80°C
Storage temp	-60°C to +100°C
Torque	<5 mN·m
Mechanical life	>80 million revolutions
Weight	25g

Output Interface Definition

VCC	OUT	GND
Positive terminal	Signal output	Negative terminal

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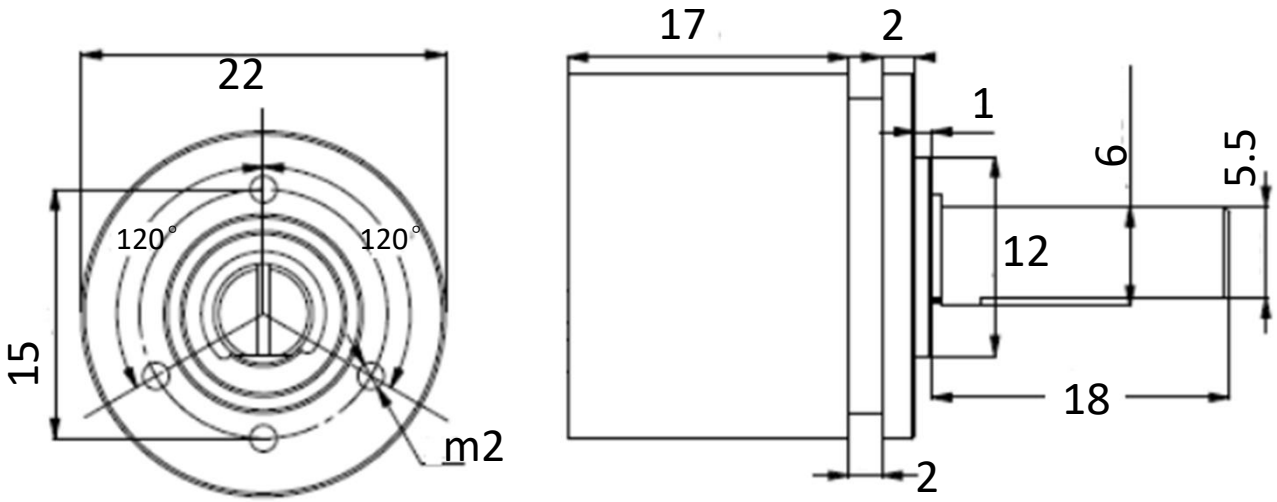
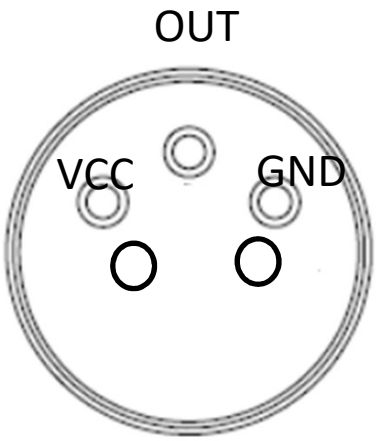
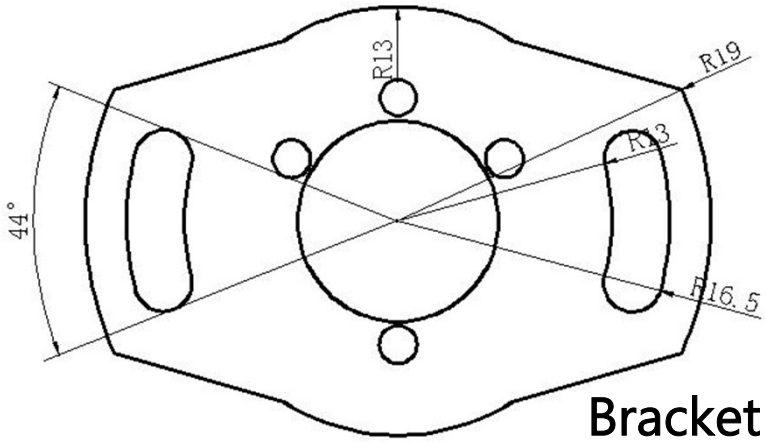
Dimensions (unit: mm)







Bracket

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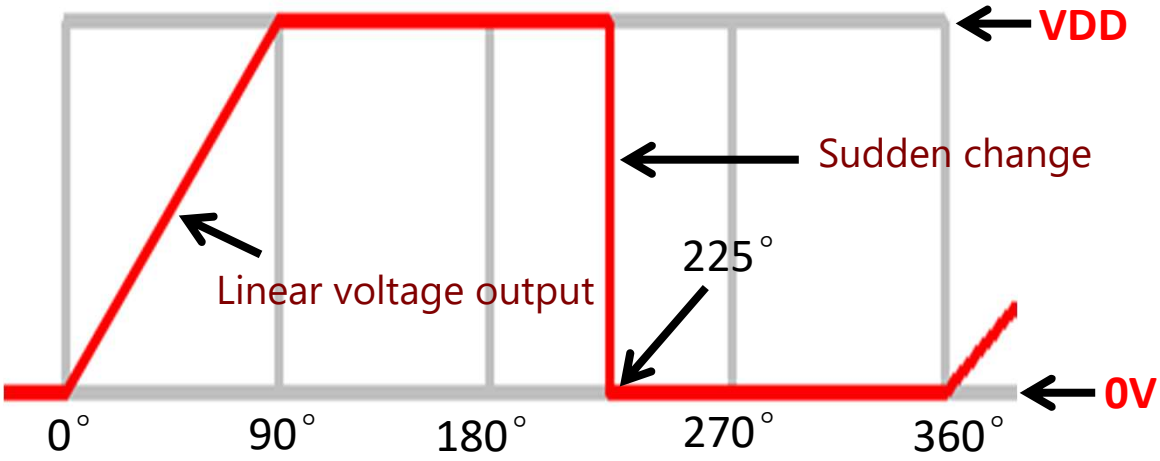
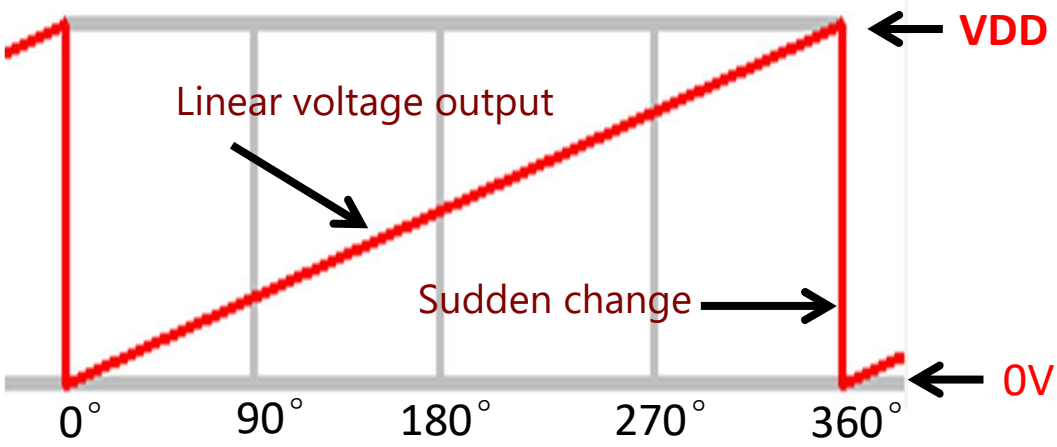


Example: Description of the sensor's operation from 0° to 90°: Suppose the sensor starts rotating clockwise at a constant speed from the 0° position. The output voltage begins at 0V and rises; when it reaches 90°, the voltage rises to VDD (equal to the supply voltage). If rotation continues, the output voltage remains at VDD between 90° and 225°. Beyond 225°, the voltage suddenly drops to 0V. If rotation continues further, the voltage remains at 0V between 225° and a point infinitely close to 360°. This process repeats indefinitely without a stop position, allowing for continuous rotation for N revolutions. (As shown in the figure above; other angles are similar to the figure.)



Example: Description of the operating process for a 0°–360° sensor: Suppose the sensor rotates clockwise at a constant speed starting from the 0° position. The output voltage rises from 0 V. As it approaches 360°, the voltage rises to VDD (equal to the supply voltage). If rotation continues, the output voltage suddenly drops to 0 V. This process repeats indefinitely without a stop position, allowing for continuous rotation for N revolutions; different angles correspond to unique output voltages. (As shown in the figure above)