

ESSTMAGS Product Datasheet

Magnetic linear position encoder

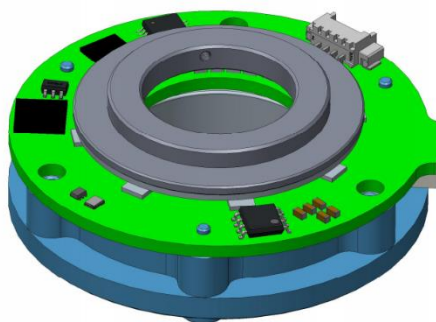
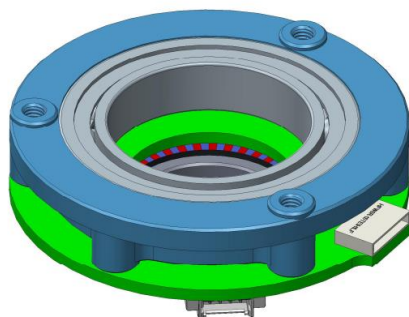
Product series: EAS-016

EAS-016A-G

Product part number: EAS-016B-G

EAS-016C-G

Version: Ver1.0.4



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1. Description

EAS series product is an absolute linear position detection magnetic encoder. The sensor can be used in a movement control system to detect the position, speed of the system.

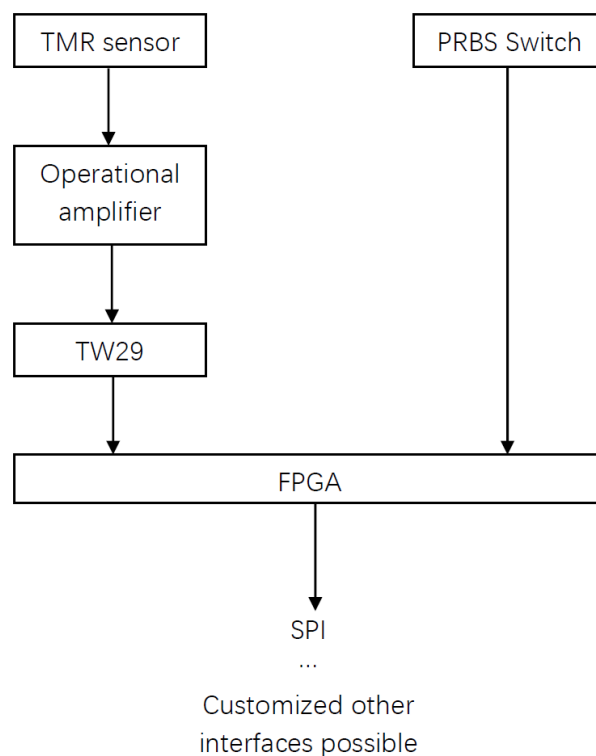
The sensor uses non-contact detection method based on TMR magnetic sensing technology. The magnetic scale has two magnetic tracks (incremental and absolute tracks).

The sensor has build-in signal processing circuit, and a digital output of BISS format.

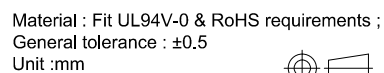
EAS series product has the following features:

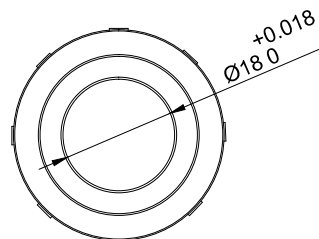
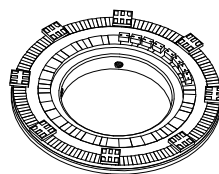
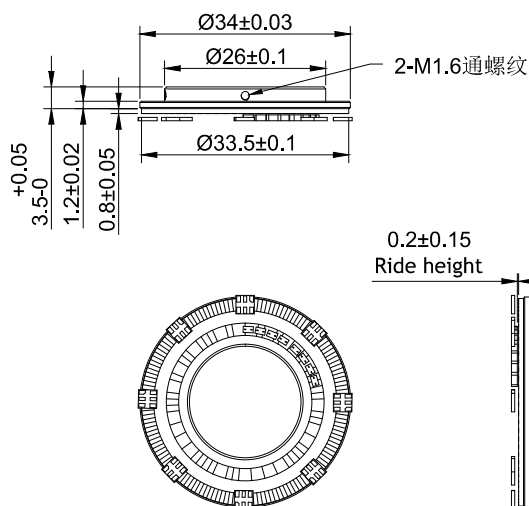
- True absolute value system
- Absolute position dual track system
- Customized sensor chips
- The system is self-calibrating
- Resolution up to 24 bits
- The repeatability is 7 arc seconds
- Absolute positioning accuracy 15 arc seconds
- SPI interface

2. Product part number

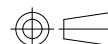


A 3D perspective view of a custom PCB assembly. The assembly consists of a green PCB mounted on a blue base. The PCB features a central grey circular component, likely a sensor or actuator, surrounded by various electronic components including resistors, capacitors, and integrated circuits. A multi-pin connector is visible on the right side of the PCB.

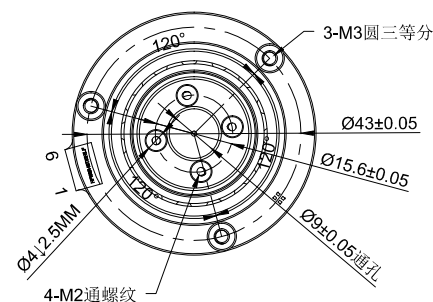
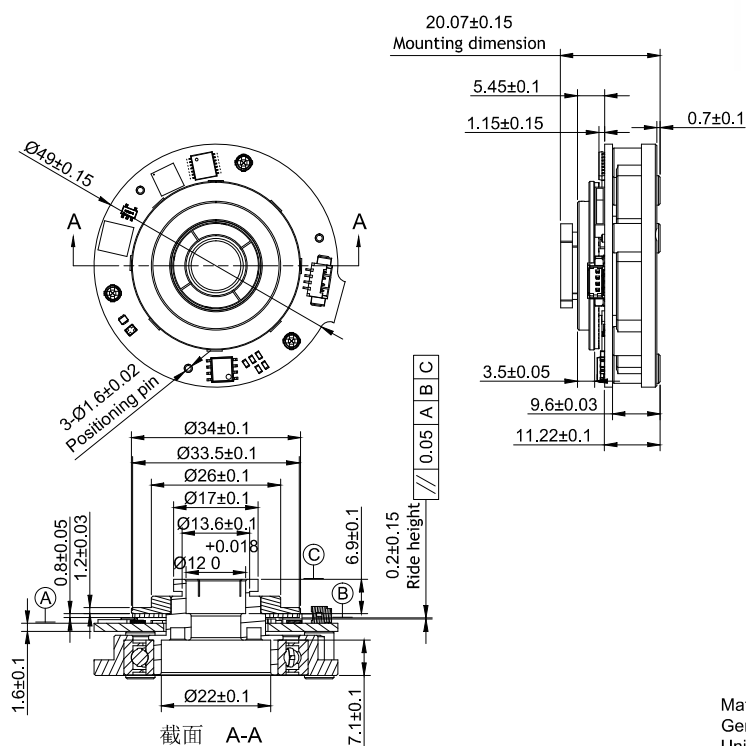
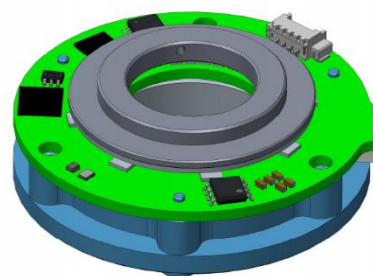




Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ± 0.5
Unit : mm



4. EAS-016B-G Dimensions

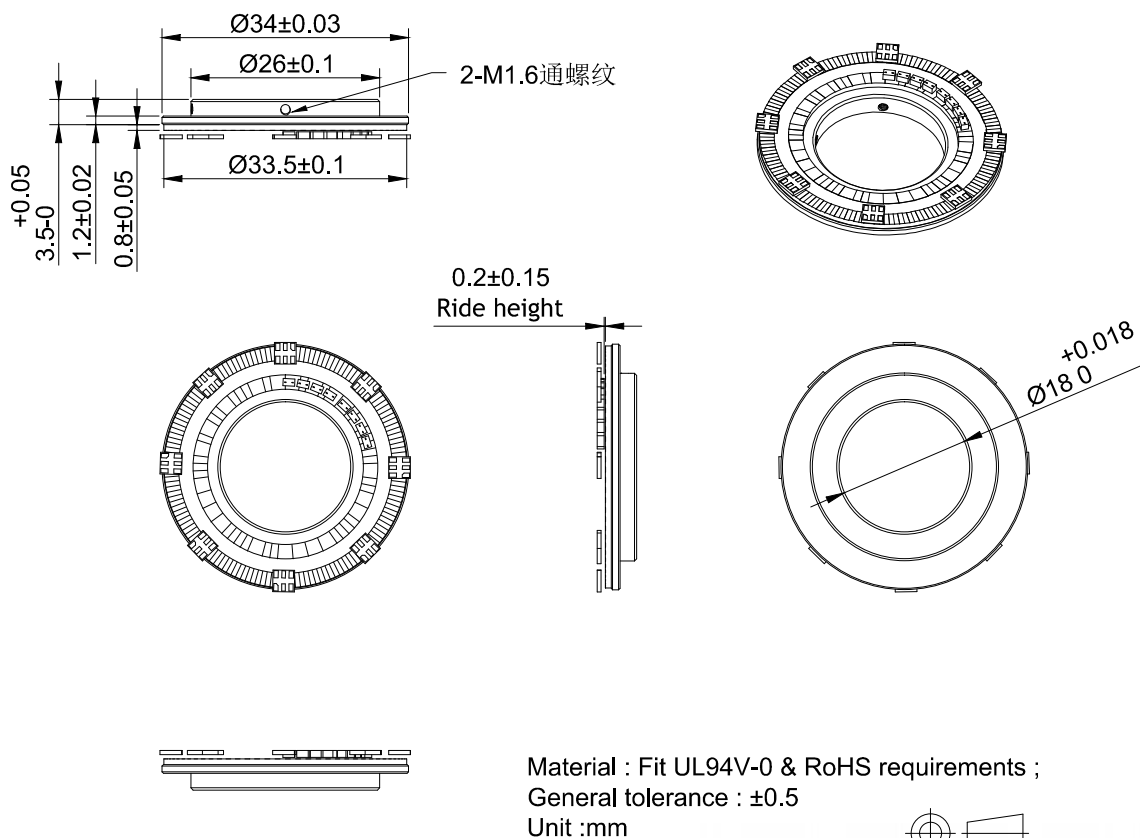


Terminals:

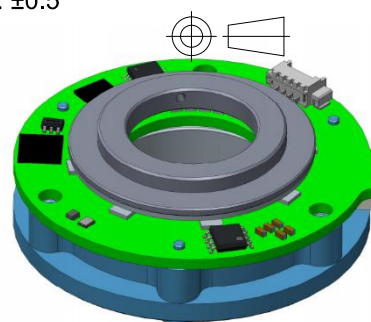
Pin 1	GND
Pin 2	SPICS_N
Pin 3	SPISCLK
Pin 4	SPISOMI
Pin 5	SPISIMO
Pin 6	+5V

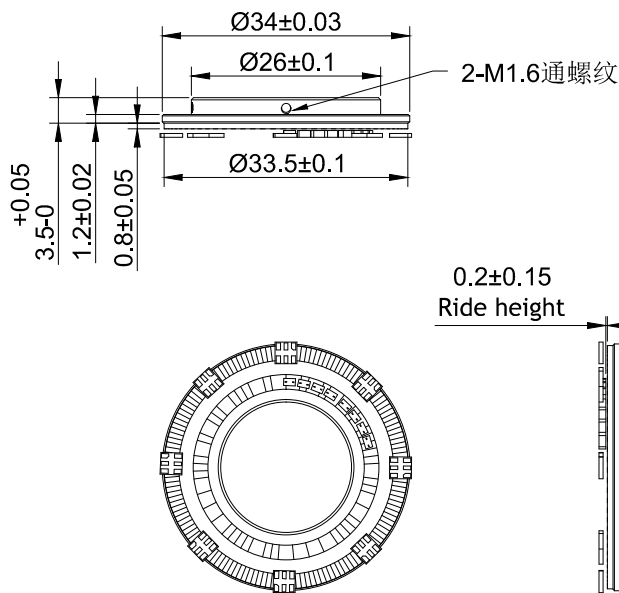
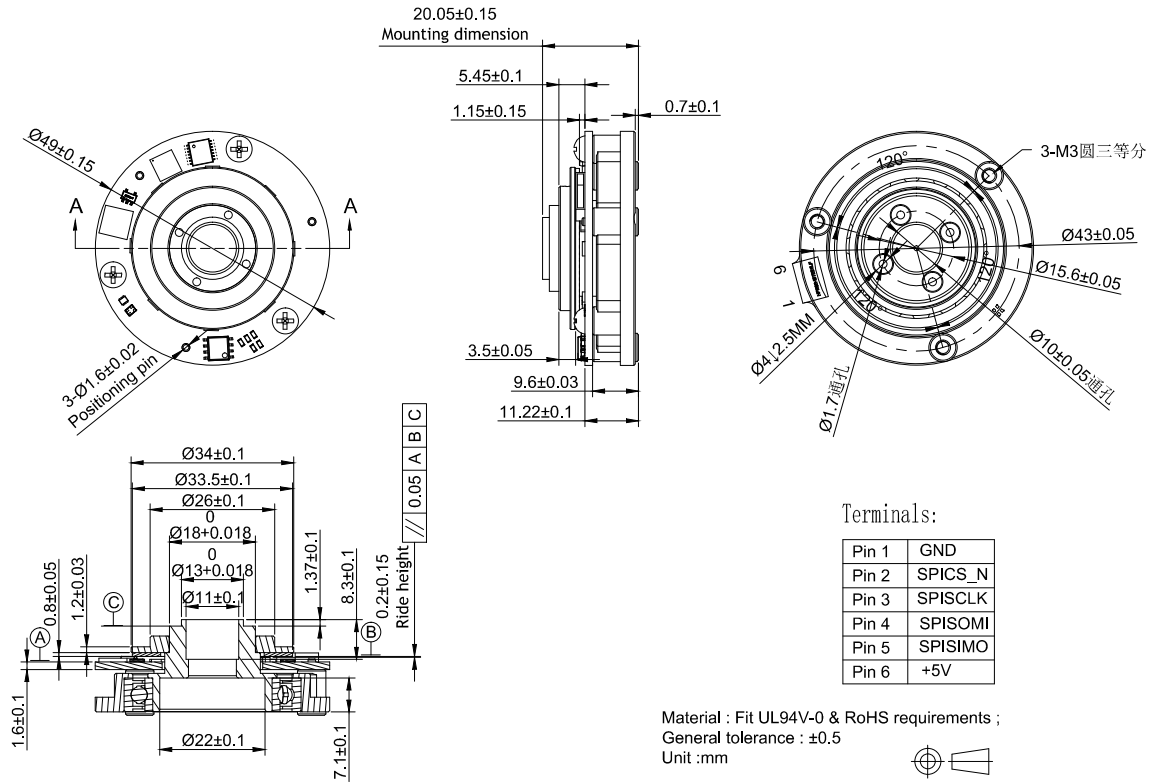
Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ± 0.5
Unit : mm





5. EAS-016C-G Dimensions





6. Electrical characteristic

6.1 Electrical connection

Lead	NAME
1	GND
2	SPICS_N
3	SPISCLK
4	SPISOMI
5	SPISIMO
6	+5V

6.2 General parameter

Operating and storage temperature	−40°C to +105°C (Note: The operating temperature of the diode on the encoder is -40°C to +85°C)
Humidity	70%Rh
External magnetic field (thickness direction)	±100 mT
Shock (dependent on installation)	100 g
Vibration (dependent on installation)	80 g

6.3 Environmental parameter

Supply voltage	4.75V~5.25V
Current	100 mA~150 mA
Connector	6-pin
Start-up time	100 ms
ESD (HBM)	HBM, Class 2, ±2 kV

6.4 System parameter

Parameter	Unit	Min	Typ	Max	Comment
Resolution	bit		24		
Maximum speed	RPM		10000		
Repeatability	arcsec		±7		
Absolute position error	arcsec		±15		
Input bandwidth	kHz			18	
Noise	°		±0.0005		

7. SPI protocol interface

SPI timing diagram



1、Using SPI MODE0 communication mode, the upper computer sends 48 SCLK;

2、BIT1~BIT8: Obligate

3、BIT9~BIT16: Encoder status bits

BIT9: Obligate

BIT10: Obligate

BIT11: Obligate

BIT12:flash_crc_error

BIT13:magic_error

BIT14:temp_alarm

BIT15:chip_fflt

BIT16: prbs_error

4、BIT17~BIT40: Encoder data bits

5、BIT41~BIT48: CRC check bit, XOR value for the first 5 bytes

Communication parameters

Parameter	Symbol	Min	Max
Clock cycles	t_{CL}	400 ns	
Clock frequency	f_{CL}		2.5 MHz

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