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ESSTMAGS



MR - BASED MAGNETIC SENSORS

基于MR技术的磁性传感器

- 中空绝对式角度编码器
Hollow Absolute Angle Encoder
- 线性位移磁性编码器
Linear position magnetic encoder
- 在轴式角度编码器
On-axis angle encoder
- 磁场传感器
Magnetic field sensor



公司简介 COMPANY PROFILE

埃斯特磁科技有限公司专注于磁性传感器的研发与生产。基于团队30年在运动量传感器领域的应用经验和历史积累，公司致力于开发和生产高精度的角度、位移检测用磁性传感器。

公司的磁性传感器产品包括中空绝对式角度编码器、线性位移磁性编码器、在轴式角度编码器、磁场传感器等。这些产品的主要应用领域涵盖了机器人关节、仿生手、线性电机、伺服电机、消费电子以及汽车上的执行电机等。

WUXI ESSTMAGS CO., LTD focusing on the research, development and production of magnetic sensors. Based on 30 years of experience on the field of magnetic sensors, we develop and product high-precision magnetic sensors for angle and displacement detection.

Our magnetic sensor products include hollow absolute angle encoders, linear displacement magnetic encoders, on-axis angle encoders, and magnetic field sensors. These products are mainly used in robot joints, bionic hands, linear motors, servo motors, consumer electronics and executive motors in automobiles.

核心技术 CORE TECHNOLOGY

xMR (TMR, AMR, GMR) 技术

- 灵敏度高、噪声低
- 功耗低
- 抗环境干扰能力强
- 响应速度快

xMR (TMR, AMR, GMR) Technology

- High sensitivity and low noise
- Low power consumption
- Strong resistance to environmental interference
- Fast response time

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01

Hollow Absolute Magnetic Angle Encoders

(A) Integrated Encoder & (B) Separated Encoder

(A) 中空绝对式磁性角度编码器

—— 一体式编码器 (Integrated Encoder)

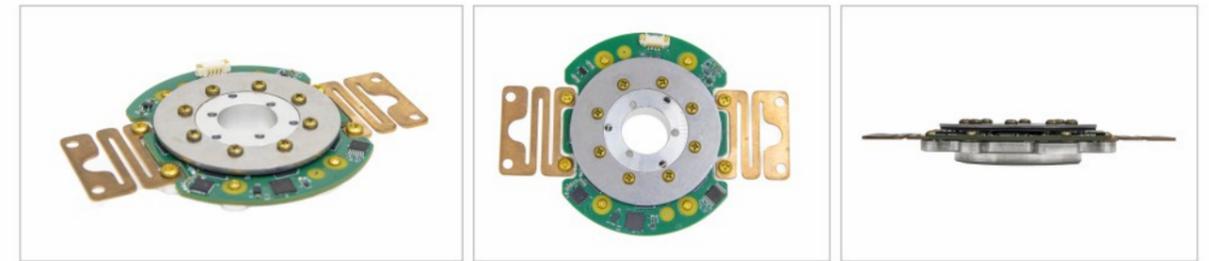
(B) 中空绝对式磁性角度编码器

—— 分体式编码器 (Separated Encoder)

Hollow Absolute Magnetic Angle Encoders (Integrated Encoder)

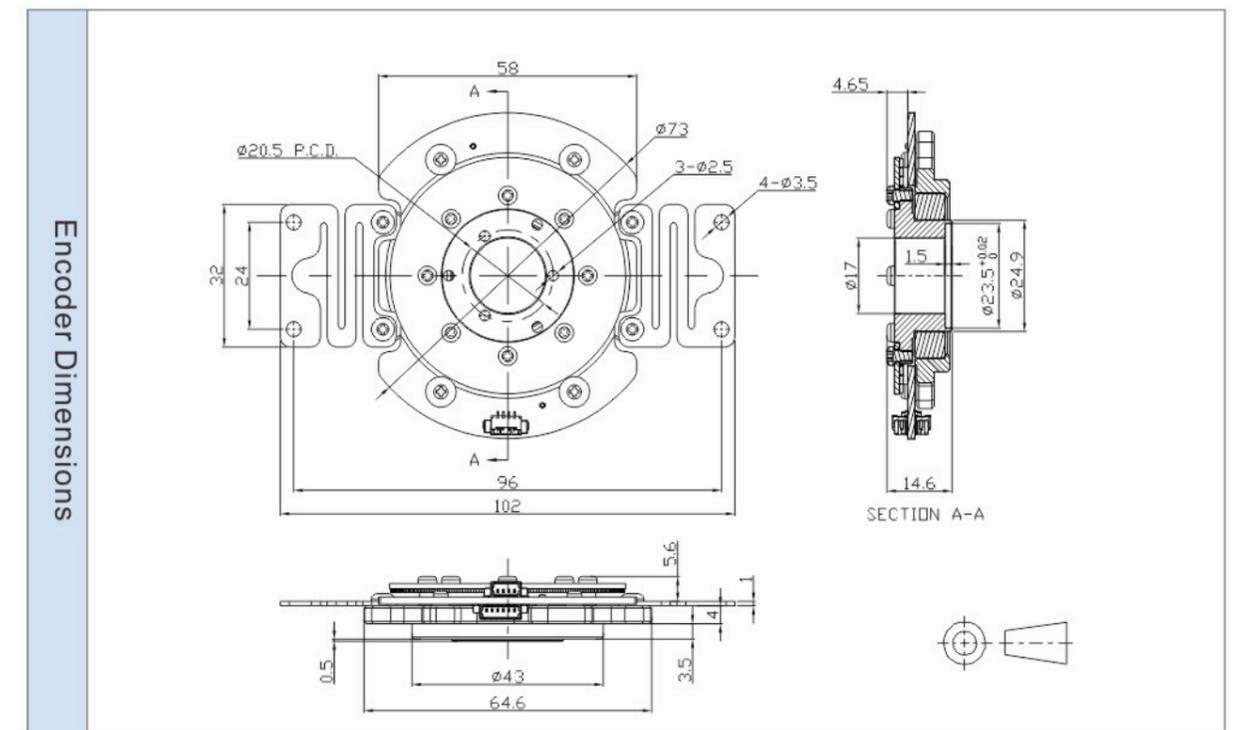
(A) 中空绝对式磁性角度编码器 (一体式)

EAS-006A (Integrated) Single-turn angle encoder



产品参数 Product Parameters

EAS-006A					
分辨率	Resolution (bit)	24	通讯协议	Communication protocol	RS485
重复精度	Repeatability (arcsec)	±3	编码速率	Position Refresh Rate (kHz)	18
定位精度	Accuracy (arcsec)	±10	码盘尺寸	Disc Size (mm)	Φ53*Φ30.04*1.96

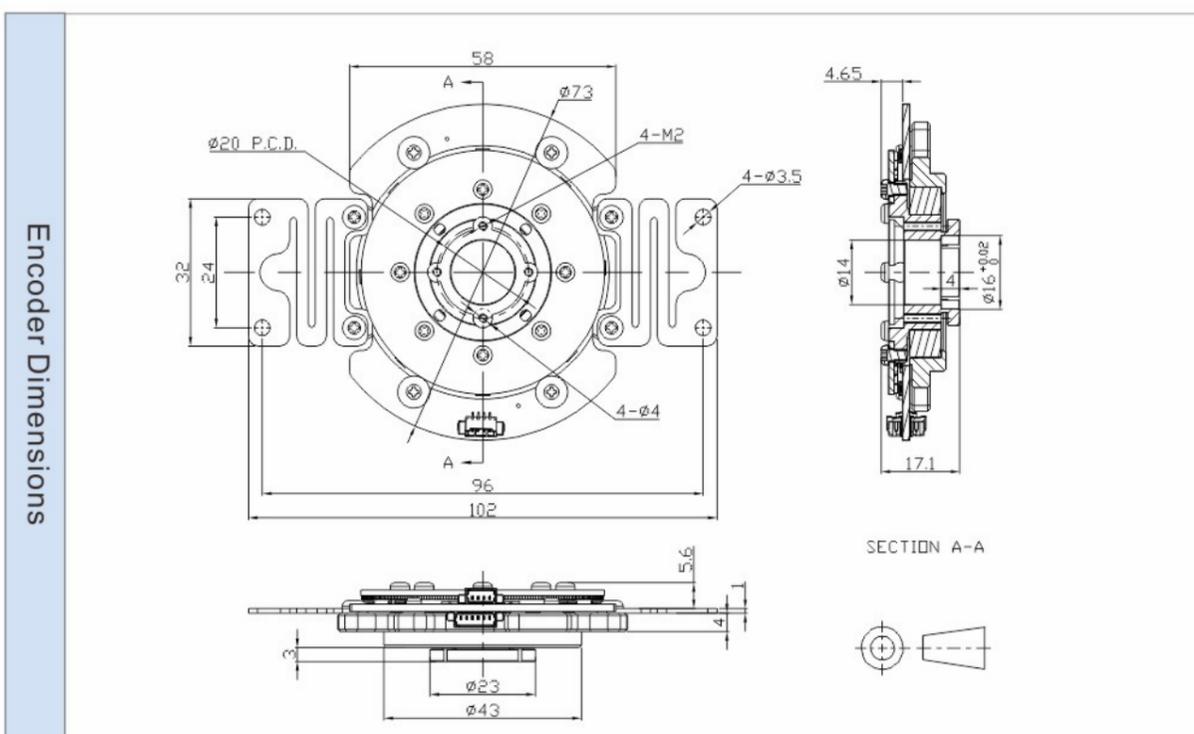


EAS-006B (Integrated) Single-turn angle encoder



产品参数 Product Parameters

EAS-006B					
分辨率	Resolution (bit)	24	通讯协议	Communication protocol	RS485
重复精度	Repeatability (arcsec)	±3	编码速率	Position Refresh Rate (kHz)	18
定位精度	Accuracy (arcsec)	±10	码盘尺寸	Disc Size (mm)	Φ53*Φ30.04*1.96

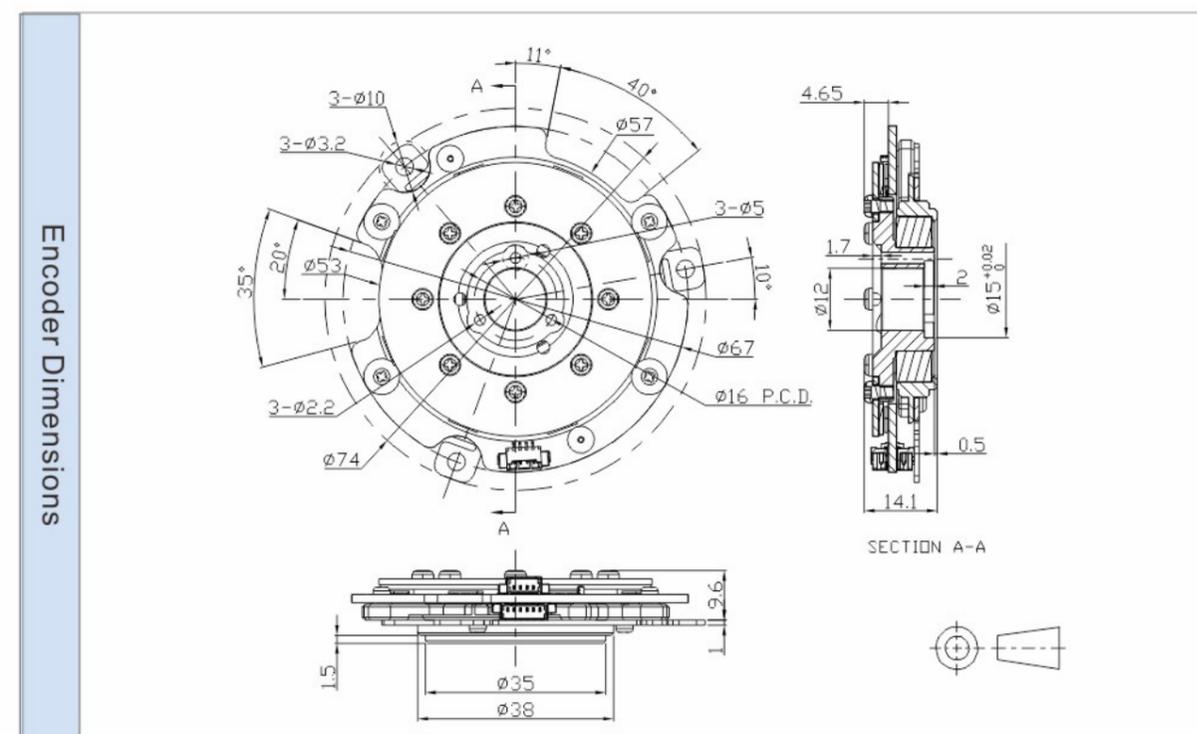


EAS-008A (Integrated) Single-turn angle encoder



产品参数 Product Parameters

EAS-008A					
分辨率	Resolution (bit)	24	通讯协议	Communication protocol	SSI
重复精度	Repeatability (arcsec)	±3	编码速率	Position Refresh Rate (kHz)	18
定位精度	Accuracy (arcsec)	±10	码盘尺寸	Disc Size (mm)	Φ53*Φ30.04*1.96



EAS-008B (Integrated) Single-turn angle encoder



产品参数 Product Parameters

EAS-008B					
分辨率	Resolution (bit)	24	通讯协议	Communication protocol	SSI
重复精度	Repeatability (arcsec)	±3	编码速率	Position Refresh Rate (kHz)	18
定位精度	Accuracy (arcsec)	±10	码盘尺寸	Disc Size (mm)	Φ53*Φ30.04*1.96

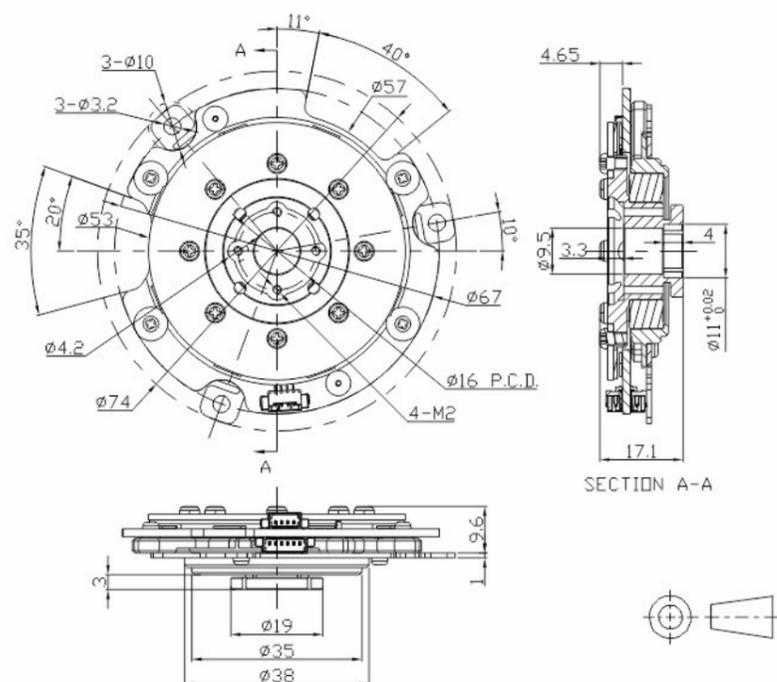
EAS-009 (Integrated) Single-turn angle encoder



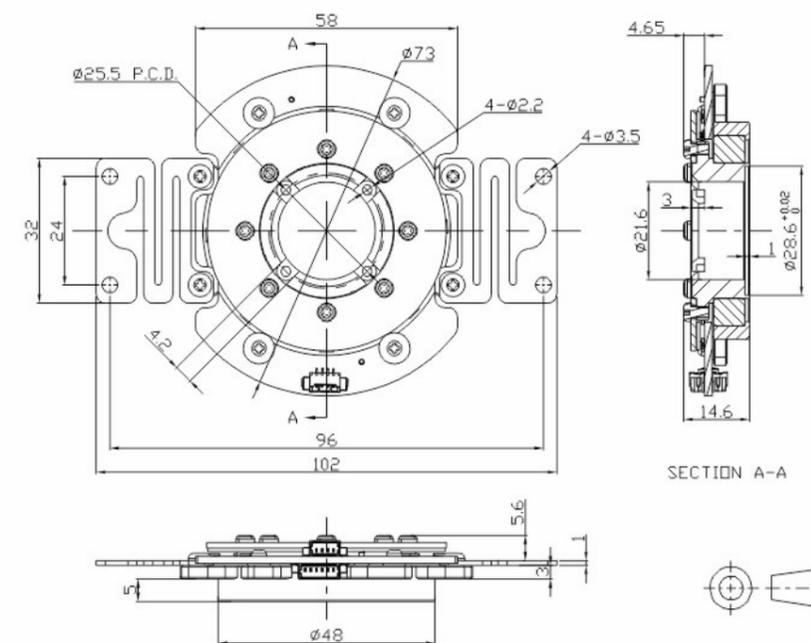
产品参数 Product Parameters

EAS-009					
分辨率	Resolution (bit)	24	通讯协议	Communication protocol	RS485
重复精度	Repeatability (arcsec)	±3	编码速率	Position Refresh Rate (kHz)	18
定位精度	Accuracy (arcsec)	±10	码盘尺寸	Disc Size (mm)	Φ53*Φ30.04*1.96

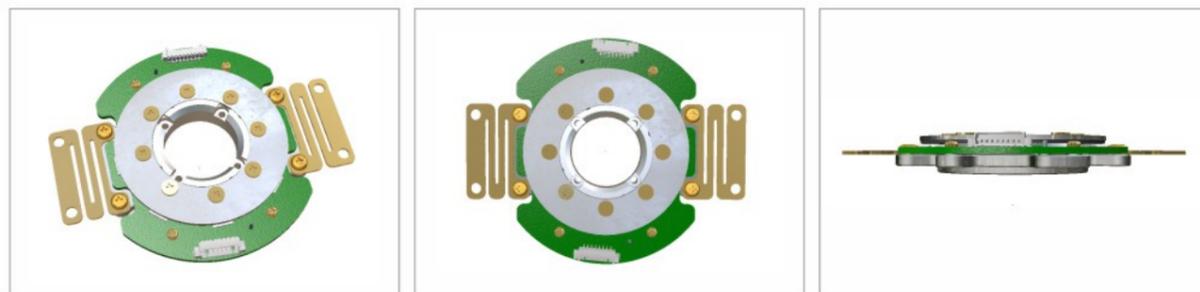
Encoder Dimensions



Encoder Dimensions

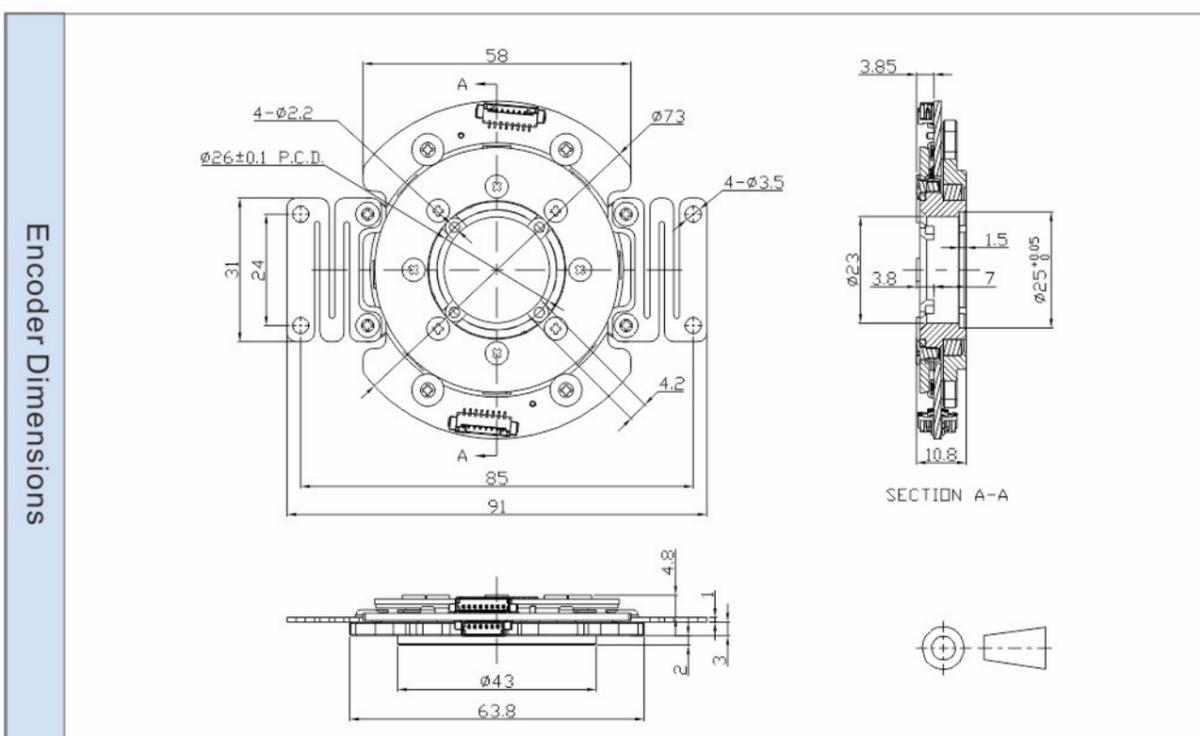


EAS-010B (Integrated) Single-turn angle encoder



产品参数 Product Parameters

EAS-010B					
分辨率	Resolution (bit)	24	通讯协议	Communication protocol	SSI
重复精度	Repeatability (arcsec)	±3	编码速率	Position Refresh Rate (kHz)	18
定位精度	Accuracy (arcsec)	±10	码盘尺寸	Disc Size (mm)	Φ53*Φ30.04*1.96

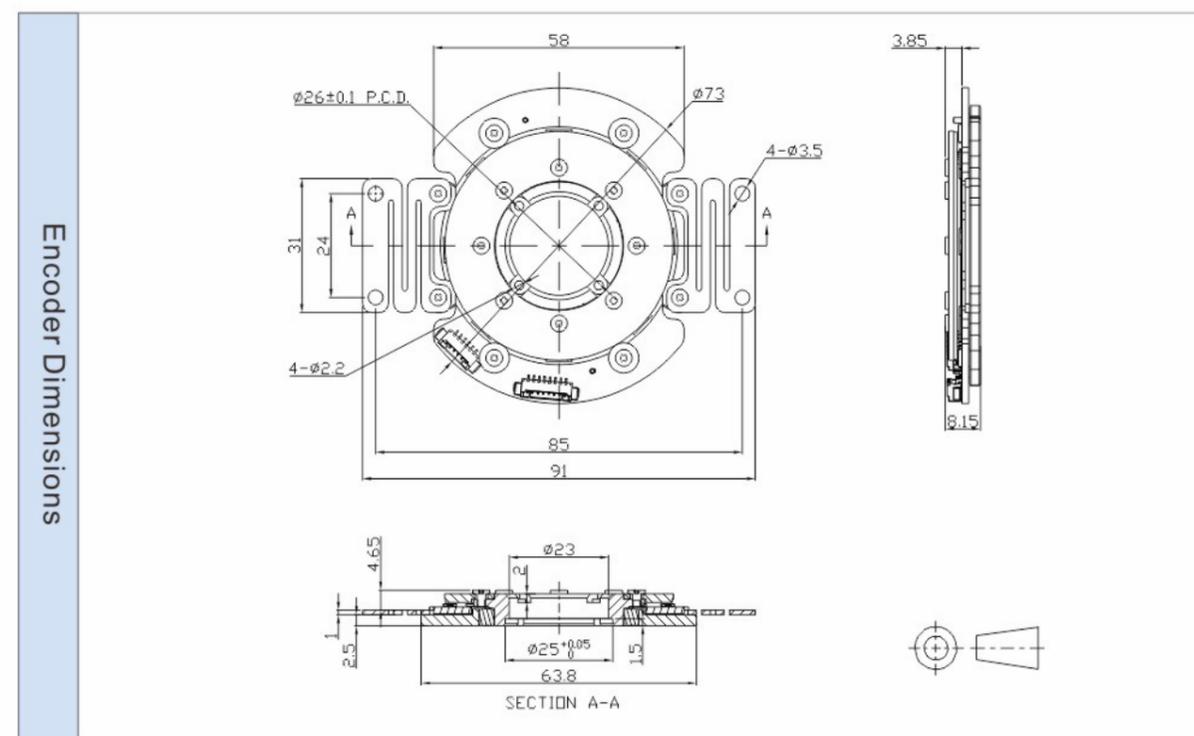


EAS-013A (Integrated) Single-turn angle encoder

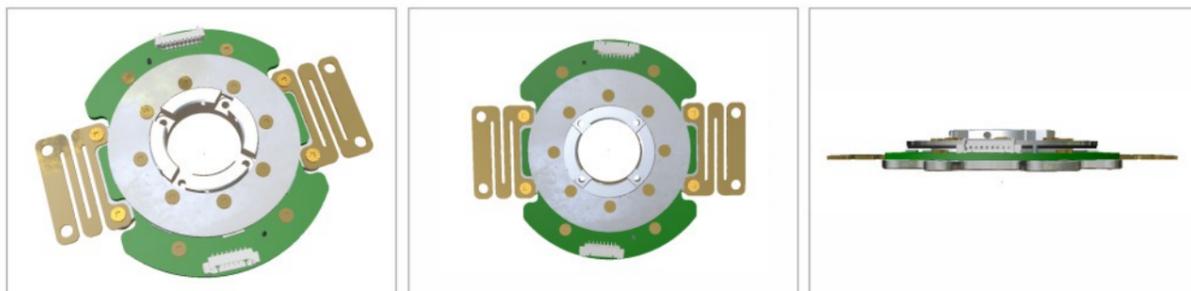


产品参数 Product Parameters

EAS-013A					
分辨率	Resolution (bit)	24	通讯协议	Communication protocol	Biss-C
重复精度	Repeatability (arcsec)	±3	编码速率	Position Refresh Rate (kHz)	18
定位精度	Accuracy (arcsec)	±10	码盘尺寸	Disc Size (mm)	Φ53*Φ30.04*1.96



EAS-013B (Integrated) Single-turn angle encoder



EAS-014A (Integrated) Single-turn angle encoder

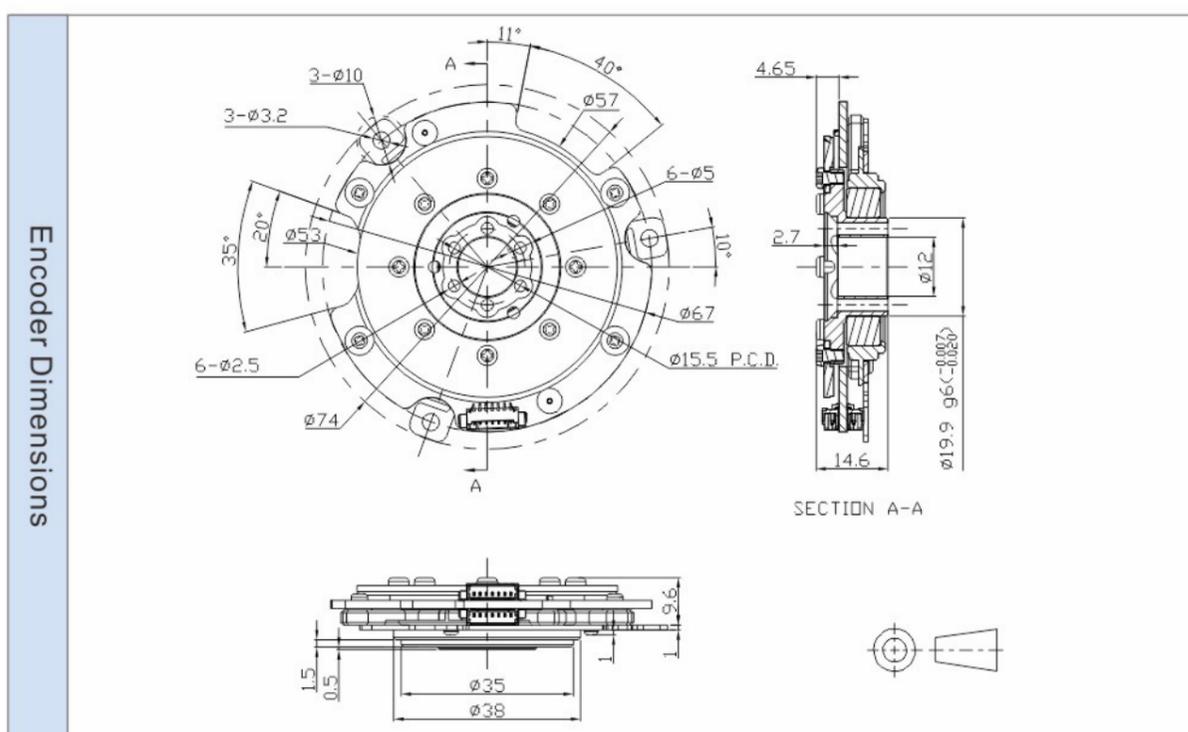
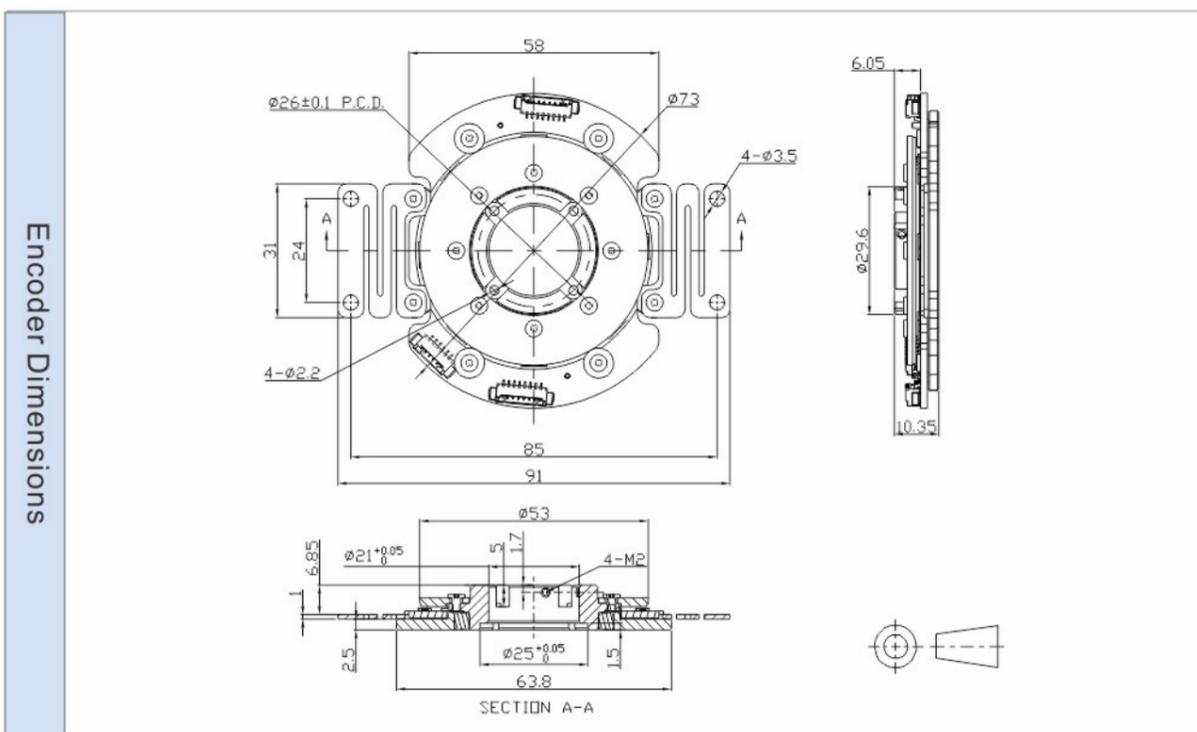


产品参数 Product Parameters

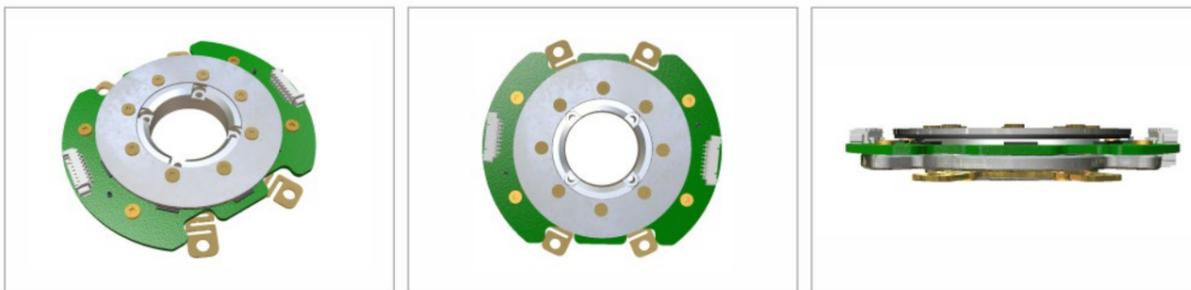
EAS-013B					
分辨率	Resolution (bit)	24	通讯协议	Communication protocol	Biss-C
重复精度	Repeatability (arcsec)	± 5	编码速率	Position Refresh Rate (kHz)	18
定位精度	Accuracy (arcsec)	± 10	码盘尺寸	Disc Size (mm)	Φ53*Φ30.04*1.96

产品参数 Product Parameters

EAS-014A					
分辨率	Resolution (bit)	24	通讯协议	Communication protocol	SSI
重复精度	Repeatability (arcsec)	± 3	编码速率	Position Refresh Rate (kHz)	18
定位精度	Accuracy (arcsec)	± 10	码盘尺寸	Disc Size (mm)	Φ53*Φ30.04*1.96



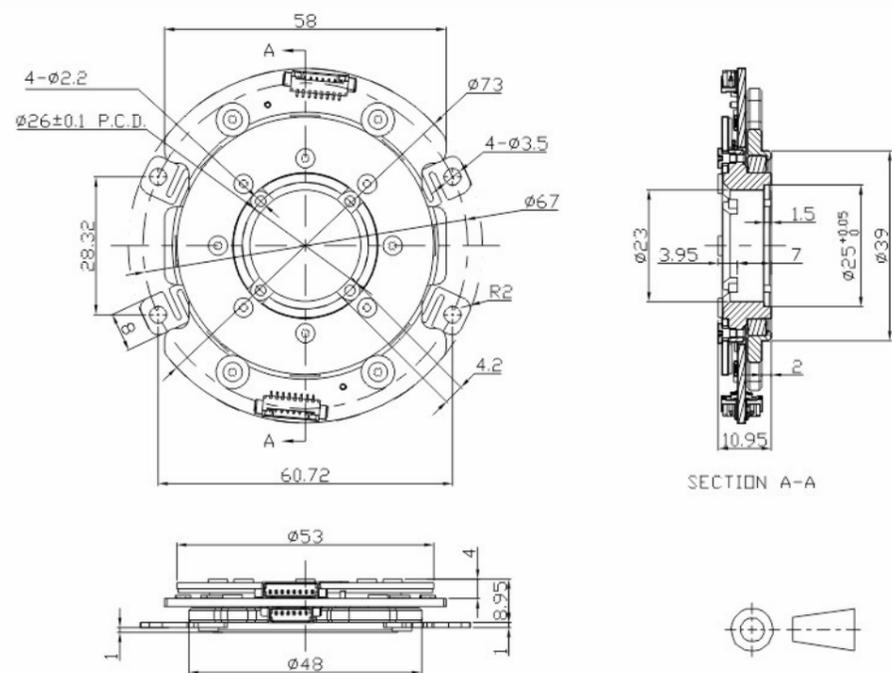
EAS-015 (Integrated) Single-turn angle encoder



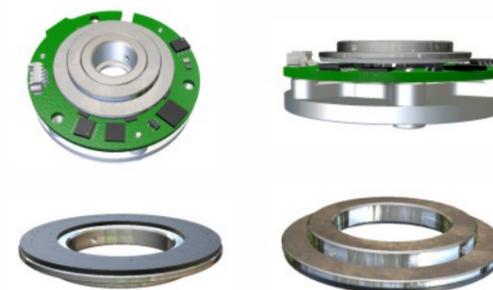
产品参数 Product Parameters

EAS-015					
分辨率	Resolution (bit)	24	通讯协议	Communication protocol	SSI
重复精度	Repeatability (arcsec)	±3	编码速率	Position Refresh Rate (kHz)	18
定位精度	Accuracy (arcsec)	±10	码盘尺寸	Disc Size (mm)	Φ52.5*Φ40.5*0.8

Encoder Dimensions



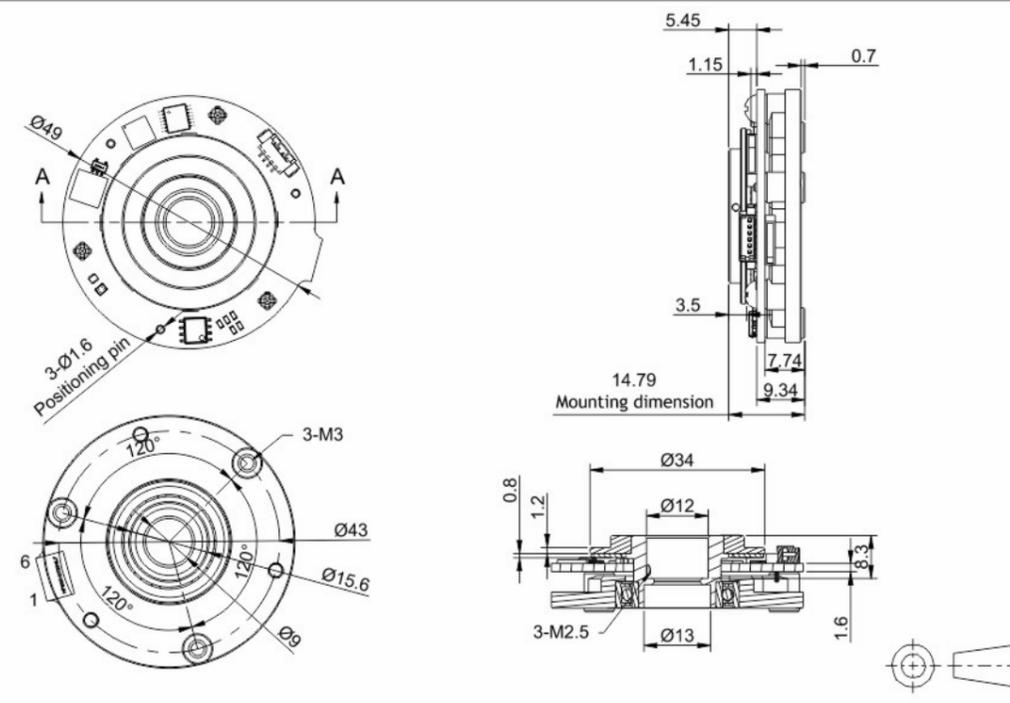
EAS-016A (Integrated) Single-turn angle encoder



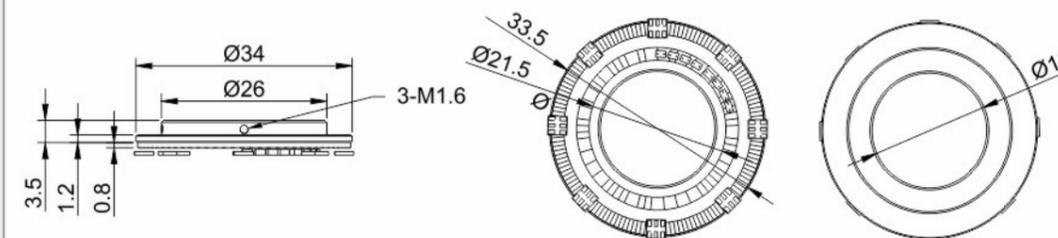
产品参数 Product Parameters

EAS-016A		
分辨率	Resolution (bit)	24
重复精度	Repeatability (arcsec)	±10
定位精度	Accuracy (arcsec)	±20
通讯协议	Communication protocol	SPI
编码速率	Position Refresh Rate (kHz)	18
码盘尺寸	Disc Size (mm)	Φ34*Φ18*4.3

Encoder Dimensions



Disc Dimensions



EAS-018 (Integrated) Single-turn angle encoder



产品参数 Product Parameters

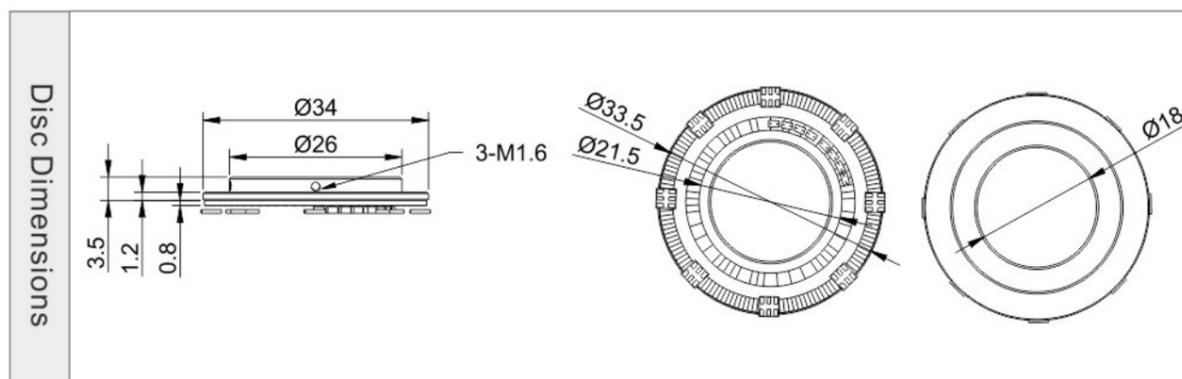
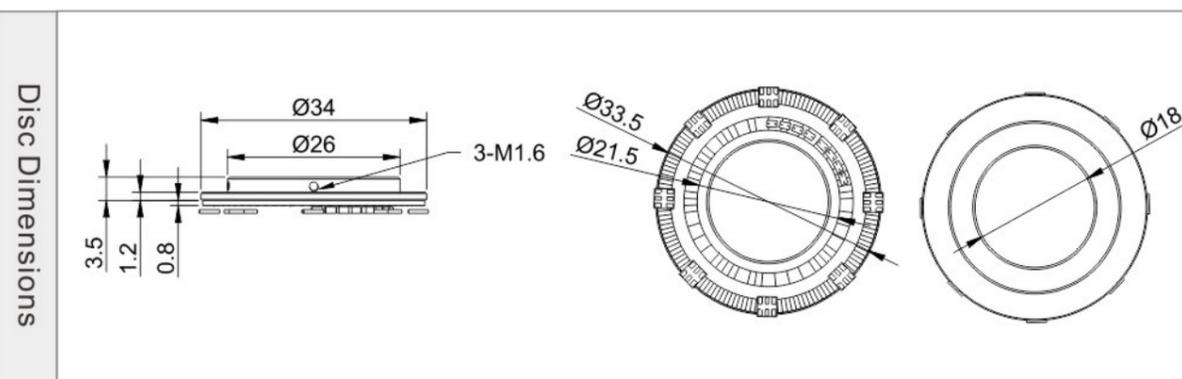
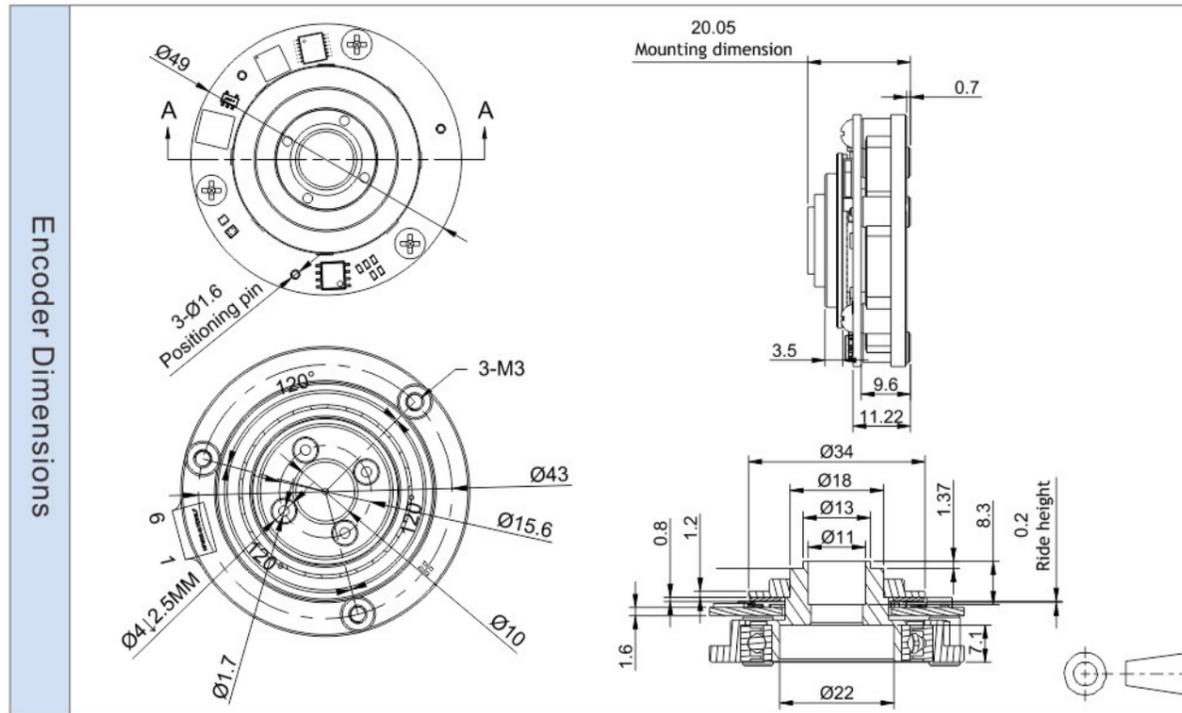
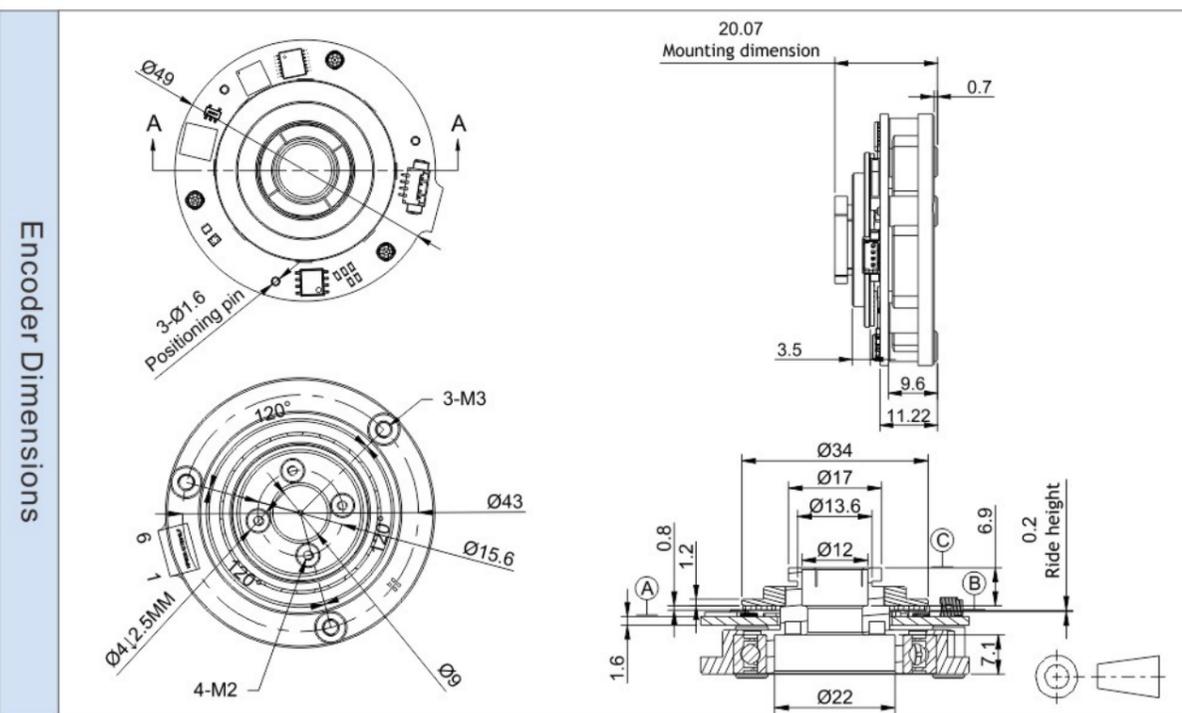
EAS-018		
分辨率	Resolution (bit)	24
重复精度	Repeatability (arcsec)	± 10
定位精度	Accuracy (arcsec)	± 20
通讯协议	Communication protocol	SPI
编码速率	Position Refresh Rate (kHz)	20
码盘尺寸	Disc Size (mm)	Φ 34*Φ 18*4.3

EAS-019 (Integrated) Single-turn angle encoder



产品参数 Product Parameters

EAS-019		
分辨率	Resolution (bit)	24
重复精度	Repeatability (arcsec)	± 10
定位精度	Accuracy (arcsec)	± 20
通讯协议	Communication protocol	SPI
编码速率	Position Refresh Rate (kHz)	20
码盘尺寸	Disc Size (mm)	Φ 34*Φ 18*4.3



Hollow Absolute Magnetic Angle Encoders (Separated Encoder)

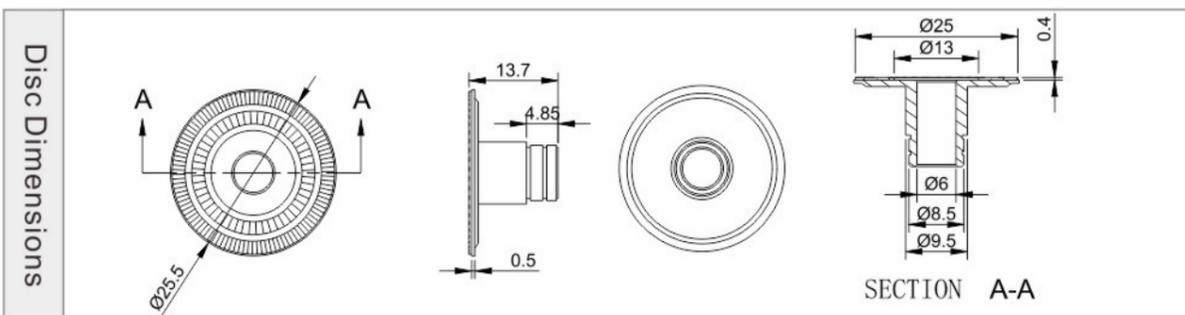
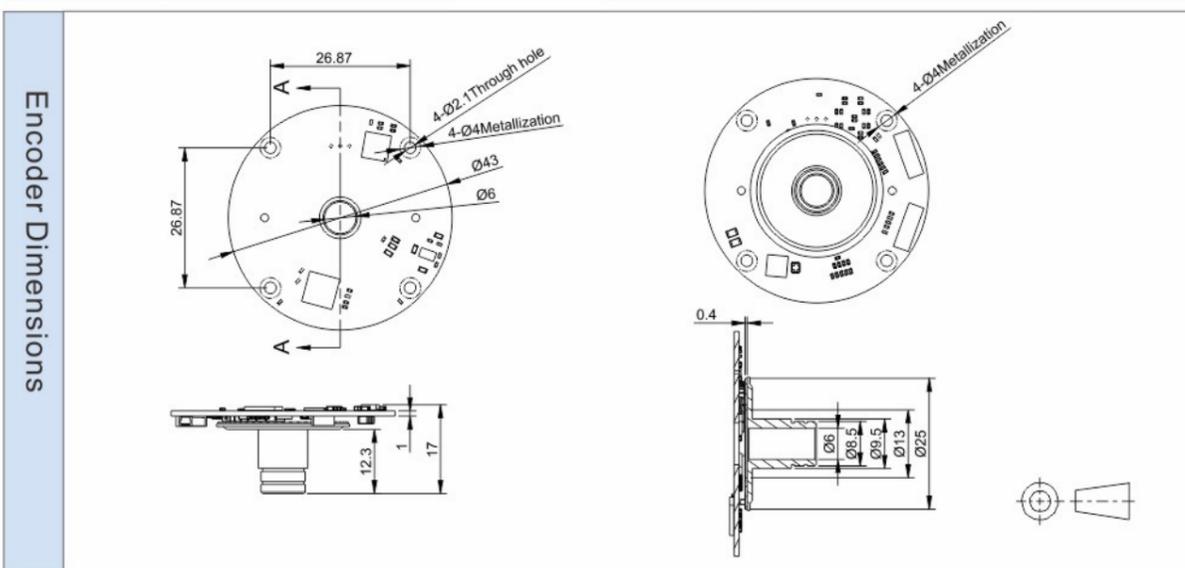
(B)中空绝对式磁性角度编码器(分体式)

EAS-012 (separated) Single-turn angle encoder



产品参数 Product Parameters

EAS-012					
分辨率	Resolution (bit)	24	通讯协议	Communication protocol	SPI
重复精度	Repeatability (arcsec)	±20	编码速率	Position Refresh Rate (kHz)	18
定位精度	Accuracy (arcsec)	±40	码盘尺寸	Disc Size (mm)	Φ25*Φ6*13.7

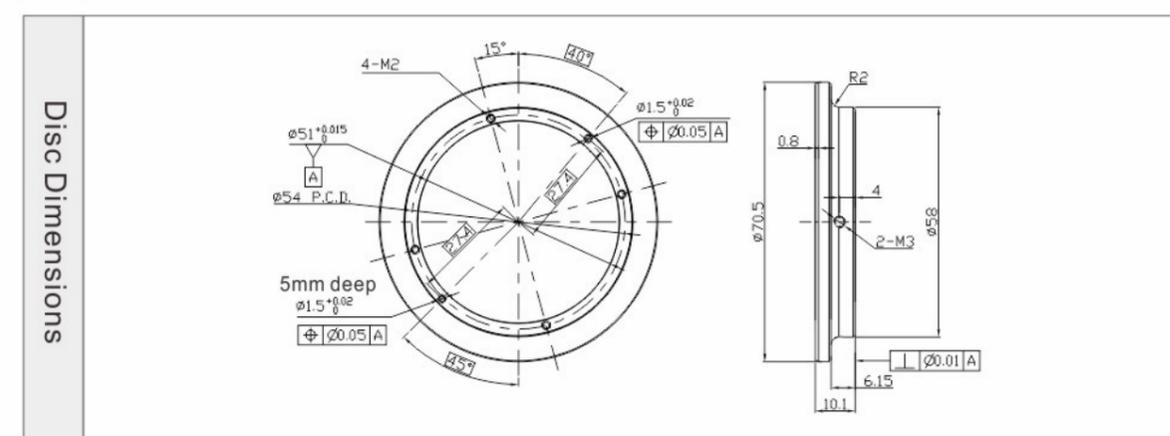
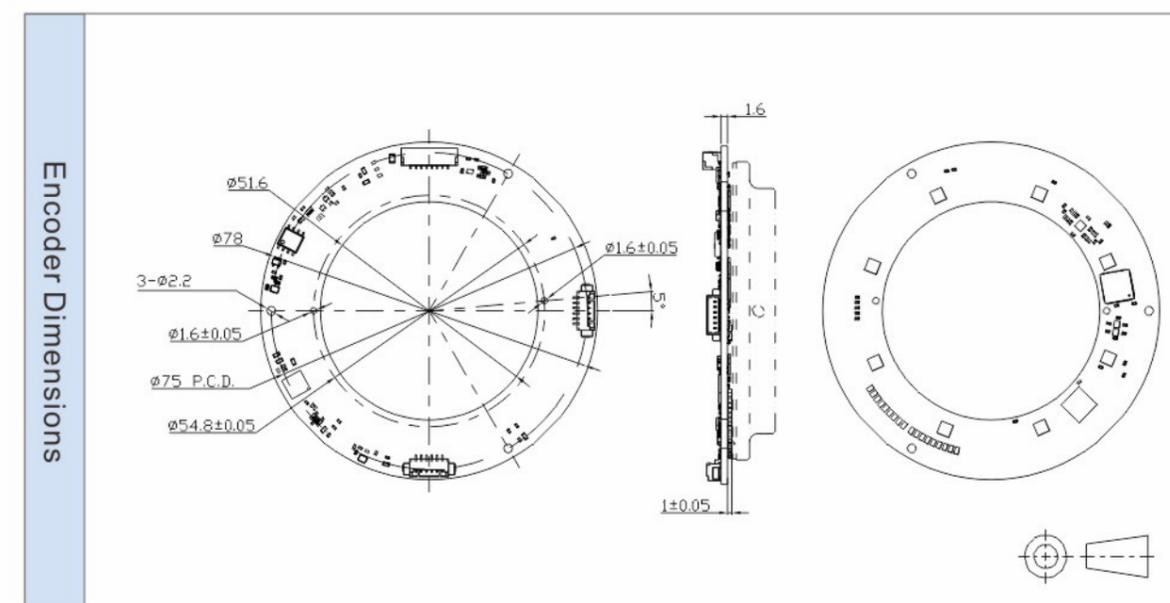


EAS-017 (separated) Multi-turn angle encoder



产品参数 Product Parameters

EAS-017		
分辨率	Effective Resolution (bit)	single-turn: 24 multi-turn: 20
重复精度	Repeatability (arcsec)	±5
定位精度	Accuracy (arcsec)	±10
通讯协议	Communication protocol	485, Biss-C
编码速率	Position Refresh Rate (kHz)	18
码盘尺寸	Disc Size (mm)	Φ70.5*Φ51*10.1



EAS-023 (separated) Single-turn angle encoder



产品图 Product Picture



快轴码盘 driving side 慢轴码盘 loading side

产品参数 Product Parameters

EAS-023		
分辨率	Resolution (bit)	24
重复精度 (快轴)	Repeatability (arcsec) (driving side)	± 5
重复精度 (慢轴)	Repeatability (arcsec) (loading side)	± 7
定位精度 (快轴)	Accuracy (arcsec) (driving side)	± 10
定位精度 (慢轴)	Accuracy (arcsec) (loading side)	± 15
通讯协议	Communication protocol	SPI
编码速率	Position Refresh Rate (kHz)	18
码盘尺寸 (快轴)	Disc Size (mm) (driving side)	Φ 68*Φ 21*9.29
码盘尺寸 (慢轴)	Disc Size (mm) (loading side)	Φ 50*Φ 22*27.45

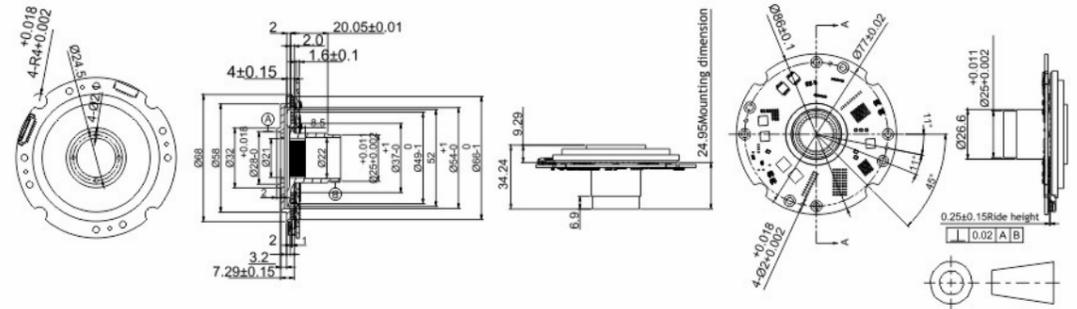
EAS-024 (separated) Single-turn angle encoder



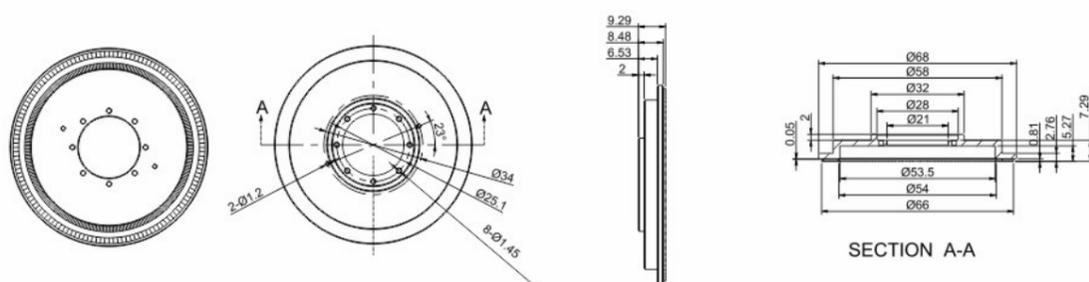
产品参数 Product Parameters

EAS-024		
分辨率	Resolution (bit)	24
重复精度 (快轴)	Repeatability (arcsec) (driving side)	± 9
重复精度 (慢轴)	Repeatability (arcsec) (loading side)	± 14
定位精度 (快轴)	Accuracy (arcsec) (driving side)	± 18
定位精度 (慢轴)	Accuracy (arcsec) (loading side)	± 28
通讯协议	Communication protocol	Biss-C
编码速率	Position Refresh Rate (kHz)	18
码盘尺寸 (快轴)	Disc Size (mm) (driving side)	Φ 40.5*Φ 20*12.6
码盘尺寸 (慢轴)	Disc Size (mm) (loading side)	Φ 28.3*Φ 16*5

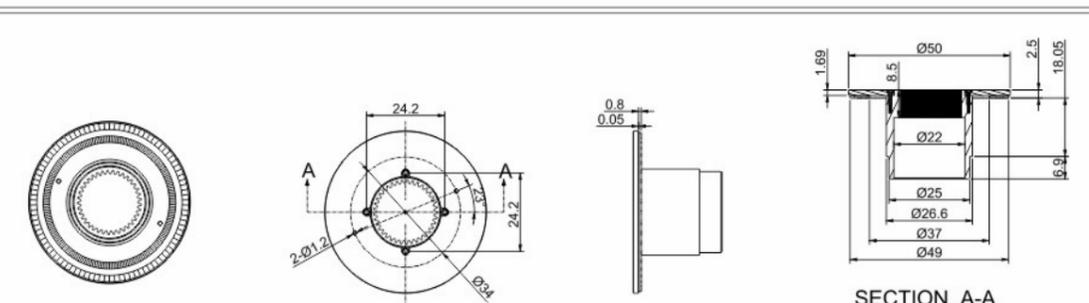
Encoder Dimensions



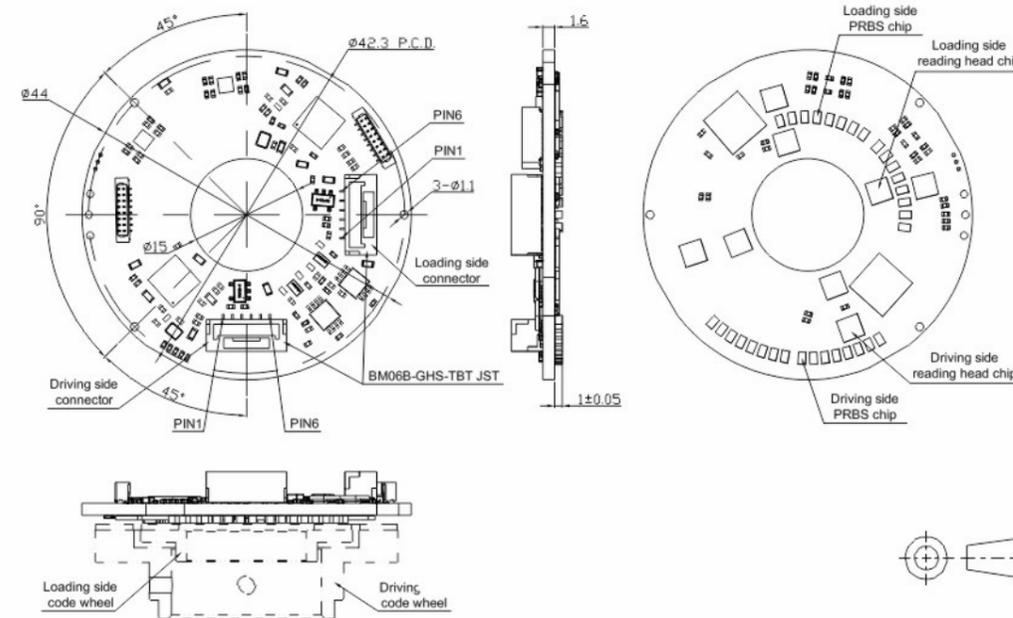
driving side



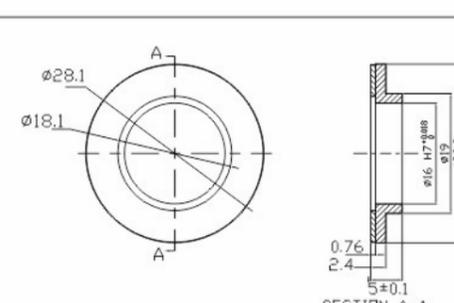
loading side



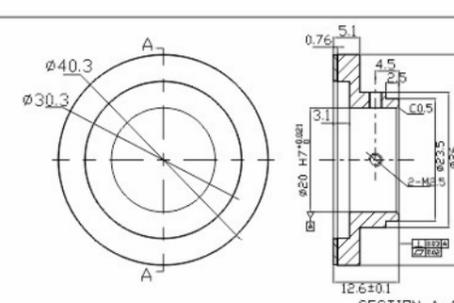
Encoder Dimensions



loading side

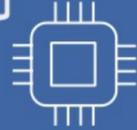


driving side



Linear Position Magnetic Encoder Series

线性位移磁性编码器系列



Linear Position Magnetic Encoder Series

线性位移磁性编码器系列

ELS-001

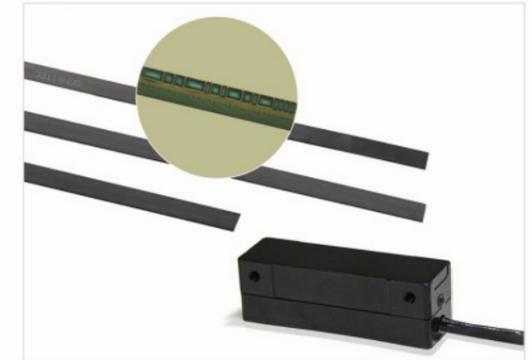
产品特点

- 线性绝对位移检测
- 极低的输出延时
- 分辨率 $0.1 \mu\text{m}$, 噪声 $0.2 \mu\text{m}$
- 往返重复精度小于 $1 \mu\text{m}$
- 绝对精度小于 $30 \mu\text{m}$
- 检测行程 8 米(可扩展)
- 速度可达 7 m/s
- SSI, SPI, Biss-C, 485 通讯协议

Key Features

- Linear absolute displacement detection
- Very low output delay
- Resolution $0.1 \mu\text{m}$, noise $0.2 \mu\text{m}$
- Round trip repeatability $1 \mu\text{m}$
- Absolute accuracy $10 \mu\text{m}$
- Measuring stroke 8 meters (extendable)
- Speed up to 7 m/s
- SSI, SPI, Biss-C, 485 communication protocols

线性位移编码器 ELS-001

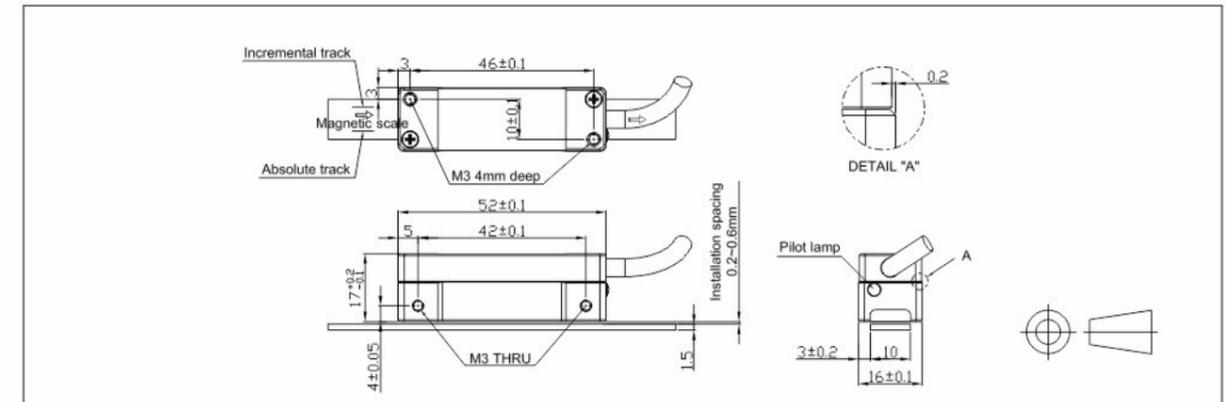


产品应用

- 直线电机
- 环形生产线

Typical Application

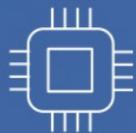
- Linear motor
- Circular production line



OR

On-axis angle encoder Magnetic Encoder Series

在轴式角度编码器系列



On-axis angle encoder Magnetic Encoder Series

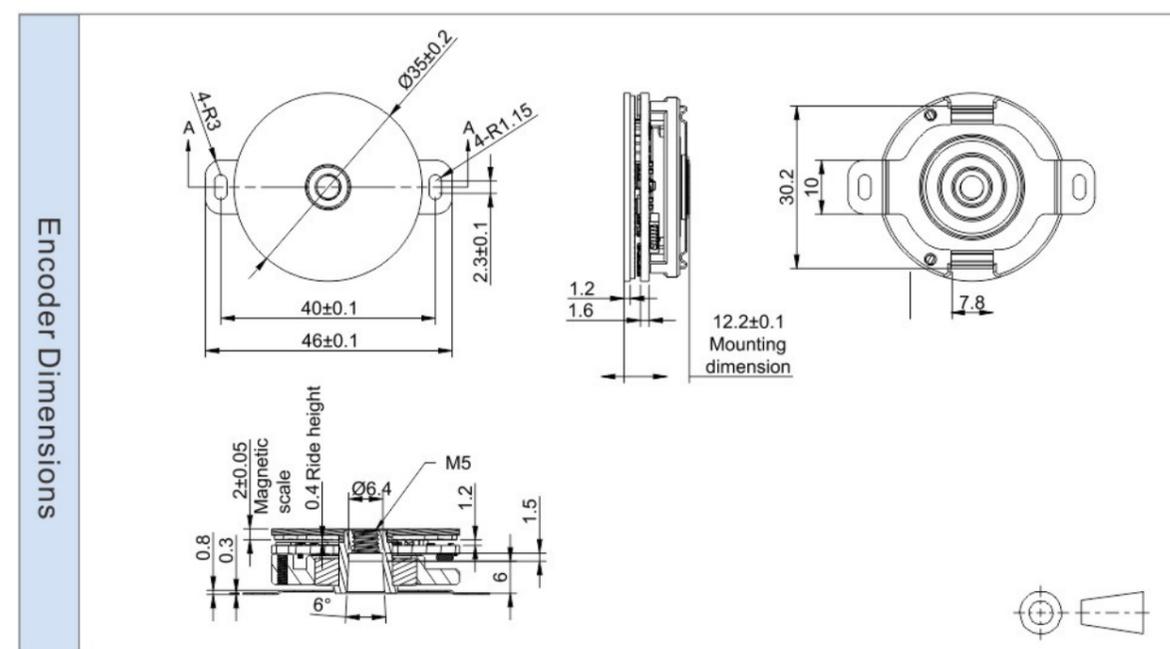
在轴式角度编码器系列

EAS-033 (Integrated)



产品参数 Product Parameters

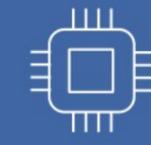
EAS-033					
分辨率	Resolution (bit)	24	通讯协议	Communication protocol	RS485
重复精度	Repeatability (arcsec)	±12	编码速率	Position Refresh Rate (kHz)	16
定位精度	Accuracy (arcsec)	±22	码盘尺寸	Disc Size (mm)	Φ34



04

Magnetic field sensor series

磁场传感器系列

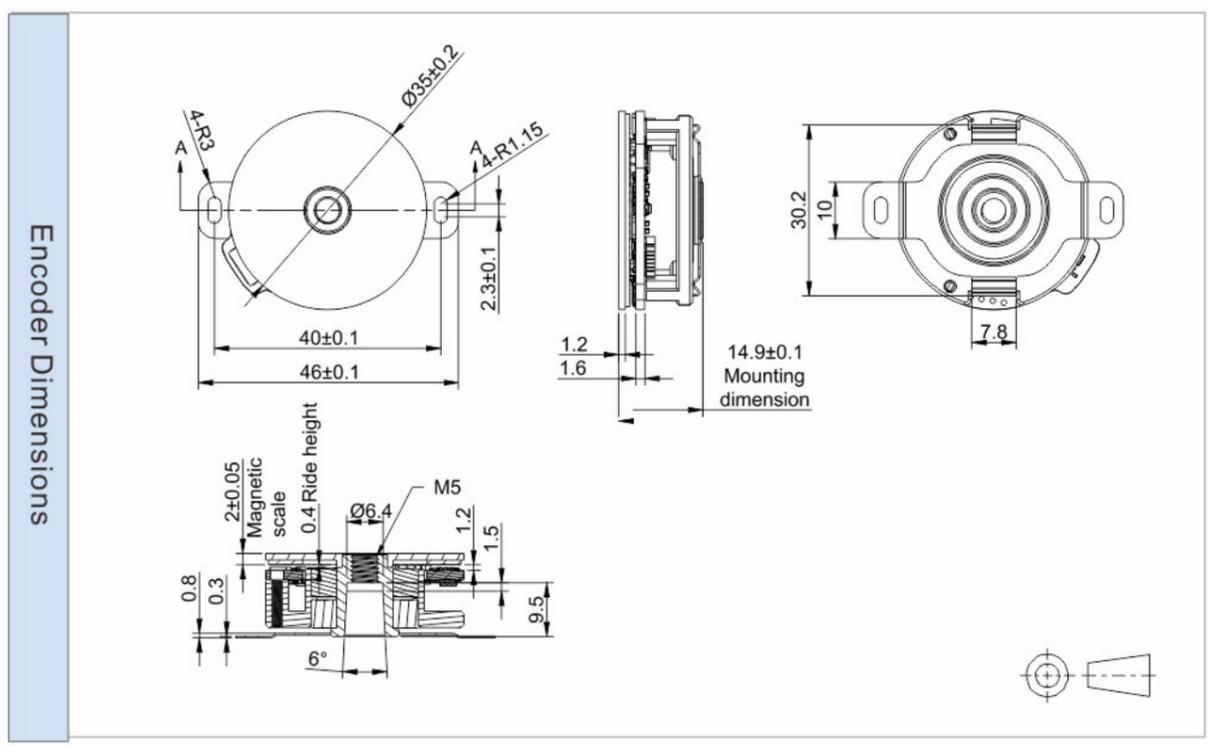


EAS-034 (Integrated)



产品参数 Product Parameters

EAS-034					
分辨率	Resolution (bit)	24	通讯协议	Communication protocol	RS485
重复精度	Repeatability (arcsec)	± 12	编码速率	Position Refresh Rate (kHz)	16
定位精度	Accuracy (arcsec)	± 22	码盘尺寸	Disc Size (mm)	φ34



Magnetic field sensor series

磁场传感器系列

BBT-A903P8-D & BBT-A903TS8

产品特点

- 采用MR效应的磁性角度传感器
- 低磁滞
- 卓越的温度稳定性
- 正弦和余弦输出

Key Features

- Magnetic angle sensor, employing the MR effect
- Low hysteresis
- Good temperature stability
- Sine and Cosine Outputs

产品应用

- 绝对旋转角度传感器
- 踏板位置传感器
- EPS电机轴角度传感器
- 节气门位置传感器
- 方向盘角度传感器
- 雨刮器角度传感器

Typical Application

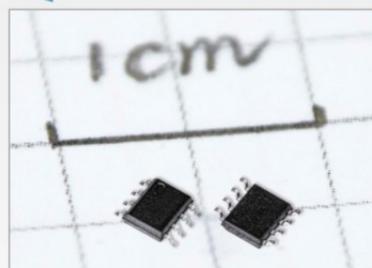
- Absolute rotary angle feedback
- Pedal position feedback
- EPS motor-shaft angle feedback
- Throttle position feedback
- Steering wheel angle feedback
- Wiper angle feedback



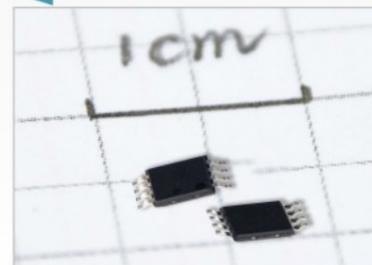
产品参数 Product Parameters

BBT-A903P8-D			BBT-A903TS8		
精度	Accuracy(°)	0.6°	精度	Accuracy(°)	0.6°
信号输出	Output	Single-ended sin/cos	信号输出	Output	Single-ended sin/cos
工作磁场	Magnetic field (mT)	20 ~ 130	工作磁场	Magnetic field (mT)	20 ~ 130
工作温度	Operating temperature (°C)	-40 °C ~ 150 °C	工作温度	Operating temperature (°C)	-40 °C ~ 150 °C
芯片尺寸	Dimensions (mm)	6*4.9*1.75	芯片尺寸	Dimensions (mm)	6.25*2.9*1.2

BBT-A903P8-D (SOP8)



BBT-A903TS8 (TSSOP8)



FFA-020xxx Series

产品特点

- 采用MR效应的磁性传感器
- 电源范围较宽
- 磁滞低
- 模拟输出
- 频率响应快
- 出色的温度稳定性

Key Features

- Magnetic MR sensor, employing the MR effect
- Wide power supply range
- Low hysteresis
- Analog output
- Fast frequency response
- Excellent temperature stability

产品应用

- 磁轴键盘
- 磁场传感器
- 磁体位置检测
- 电流检测

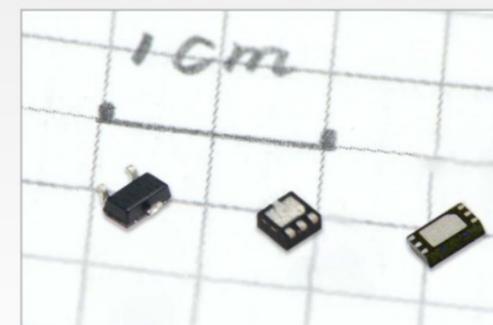
Typical Application

- Magnetic axis keyboards
- Magnetic field detection
- Magnet position feedback
- Current detection

产品参数 Product Parameters

参数	PARAMETERS	FFA-020D2A (DFN6)	FFA-020HS23L5 (SOT23-3L)	FFA-006HD16T54P (DFN4)	FFA-020HD16L5VT2 (DFN4)
饱和场	Saturation Field	1000	1000	1000	1000
灵敏度	Sensitivity @ ±25 Gs (mV/V/Gs)	2	2	2	2
感应方式	Induction method	In-plane	In-plane	In-plane	In-plane
电桥电阻	Bridge Resistor (Kohm)	20	20	20	20
芯片尺寸	Dimensions (mm)	3*2*0.75	2.9*2.8*1.45	1.6*1.6*0.55	1.6*1.6*0.55

FFA-020xxx Series



FFE-006D16

产品特点

- 采用MR 效应的磁性传感器
- 内置高精度、低功耗运算放大器
- 可通过外置电阻调整放大倍数
- 输出信号为模拟输出
- 低功率、低磁滞、高频响应
- 低输出噪声保证了传感器的优良分辨率

Key Features

- Magnetic MR sensor, employing the MR effect
- Built-in high-precision, low-power operational amplifier
- External resistor to adjust the amplification
- Output signal is analog output
- Low power, low hysteresis, high frequency response
- Low output noise ensures excellent sensor resolution

产品应用

- 摇杆
- 磁轴键盘
- 磁场传感器
- 磁铁位置检测
- 运动检测

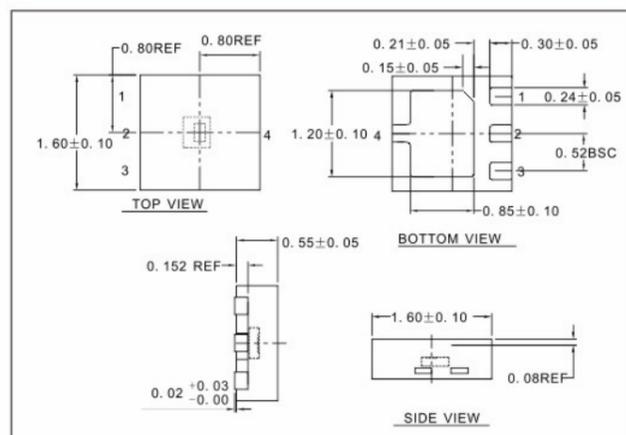
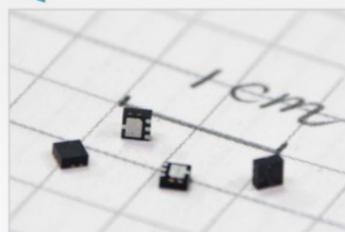
Typical Application

- Joystick
- Magnetic axis keyboards
- Magnetic field detection
- Magnet position detection
- Motion detection

产品参数 Product Parameters

FFE-006D16		
允许磁场强度	Magnetic Field (Gs)	± 2000
灵敏度	Sensitivity (mV/V/Gs)	0.6
感应方式	Induction method	In-plane
供应电流	Supplied current (μA)	20

FFE-006D16



FFZ-001F58T59

产品特点

- 采用MR 效应的磁性传感器
- 兼容多种电源电压
- 卓越的温度稳定性
- 1 个全桥，采用 DFN0805-4L 封装
- 高输出信号

Key Features

- Magnetic MR sensor, employing the MR effect
- Compatible with a wide range of supply voltages
- Superior temperature stability
- 1 full bridge in DFN0805-4L package
- High output signal

产品应用

- 移动模块中的磁场强度检测
- 摄像头模块的位置传感

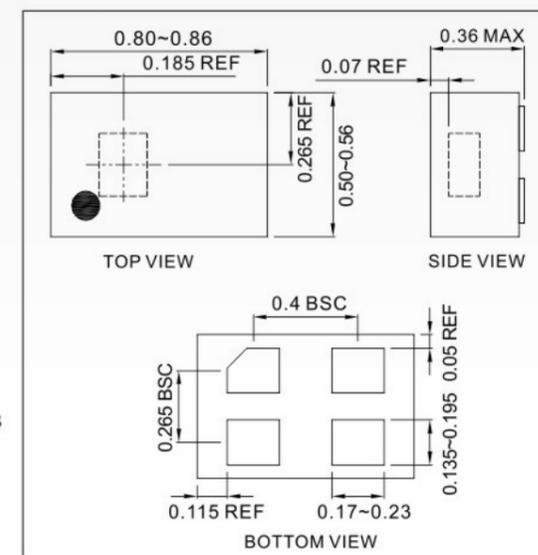
Typical Application

- Magnetic field strength detection in mobile modules
- Position sensing for camera module

产品参数 Product Parameters

FFZ-001F58T59		
磁场范围 (Z)	Magnetic field Range Z (mT)	±150
磁场范围 (Y)	Magnetic field Range Y (mT)	0 ~ 150
磁场范围 (X)	Magnetic field Range X (mT)	0 ~ 50
灵敏度	Sensitivity (mV/V/Gs)	-0.1
感应方式	Induction method	In-plane

FFZ-001F58T59



BBT-ATA907F0805

产品特点

- 采用MR 效应的磁性传感器
- 兼容多种电源电压
- 卓越的温度稳定性
- 1个全桥 (+sin/-sin 模拟输出)，采用 DFN0805-4L 封装
- 高输出信号

Key Features

- Magnetic MR sensor, employing the MR effect
- Compatible with a wide range of supply voltages
- Good temperature stability
- 1 full bridge (+sin/-sin analogue output) in DFN0805-4L package
- High output signal

典型应用

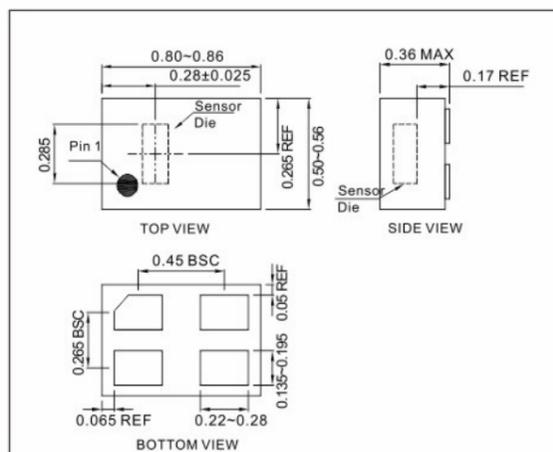
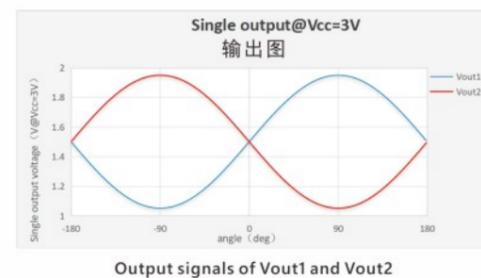
- 移动设备中的旋转角度检测
- 摇杆旋转角度检测

Typical Application

- Rotary angle detection in mobile device
- Joystick rotation angle feedback

产品参数 Product Parameters

BBT-ATA907F0805		
磁场	Magnetic field (mT)	20 ~ 80
电压	Supply voltage (V)	5.5
外磁场强度	External magnetic field strength (mT)	200
电阻	Between Vcc and GND resistance (kOhm)	10



BBT-ATA907F0805



BBT-TA908F0805

产品特点

- 采用MR 效应的磁角度传感器
- 兼容多种电源电压
- 卓越的温度稳定性
- 1个全桥 (sin/cos 模拟输出)，采用 DFN0805-4L 封装
- 高输出信号

Key Features

- Magnetic angle sensor, employing the MR technology
- Compatible with a wide range of supply voltages
- Good temperature stability
- 1 full bridge(sin/cos analogue output) in DFN0805-4L package
- High output signal

典型应用

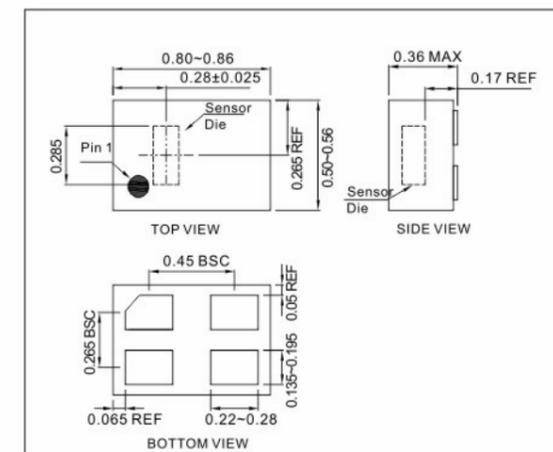
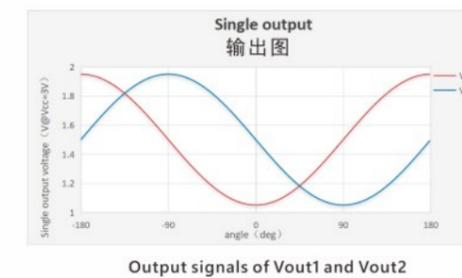
- 移动设备中的旋转角度检测
- 摇杆旋转角度检测

Typical Application

- Rotary angle detection in mobile device
- Joystick rotation angle feedback

产品参数 Product Parameters

BBT-TA908F0805		
磁场	Magnetic field (mT)	20 ~ 80
电压	Supply voltage (V)	5.5
外磁场强度	External magnetic field strength (mT)	200
电阻	Between Vcc and GND resistance (kOhm)	10



BBT-TA908F0805



BBE-005C

产品特点

- 采用MR 效应的磁性传感器
- 极小的封装: 1.3*0.66*0.31 mm
- 磁栅尺寸1*2*0.55mm可定制尺寸
- 定制化检测行程
- 分辨率~0.05 μm, 重复精度~0.5 μm

Key Features

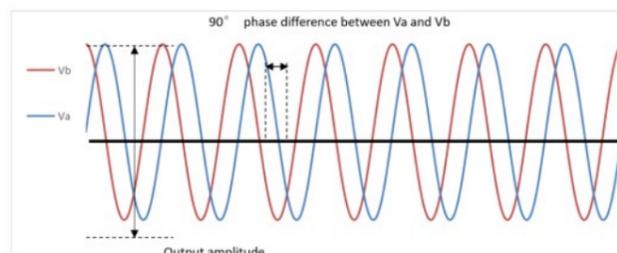
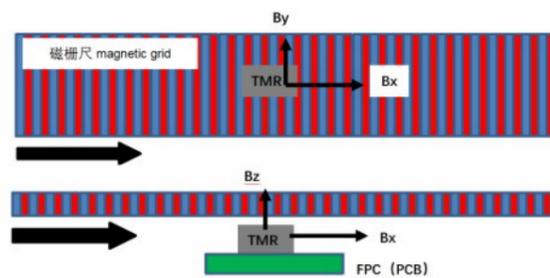
- Magnetic MR sensor, employing the MR effect
- Extremely small package: 1.3*0.66*0.31 mm
- 1*0.5 mm miniature magnetic grid
- Customized inspection stroke
- Resolution ~0.05 μm, repeatability ~0.5 μm

典型应用

- 用于机器人手指关节动作检测
- 用于镜头位移的检测
- 用于鼠标、智能手表等消费电子产品

Typical Application

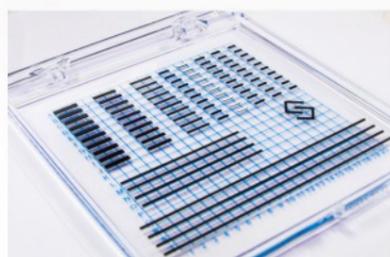
- For robotic finger joint motion detection
- Lens shift detection
- For consumer electronics such as mice and smartwatches



BBE-005C (chip & magnetic grid)



SML magnetic grid series



EAS-003

产品特点

- 离轴式的角度传感器
- 体积小、重量轻
- 可集成于有限空间内
- 精度可达±0.5°
- 工作温度范围: -40°C~125°C

Key Features

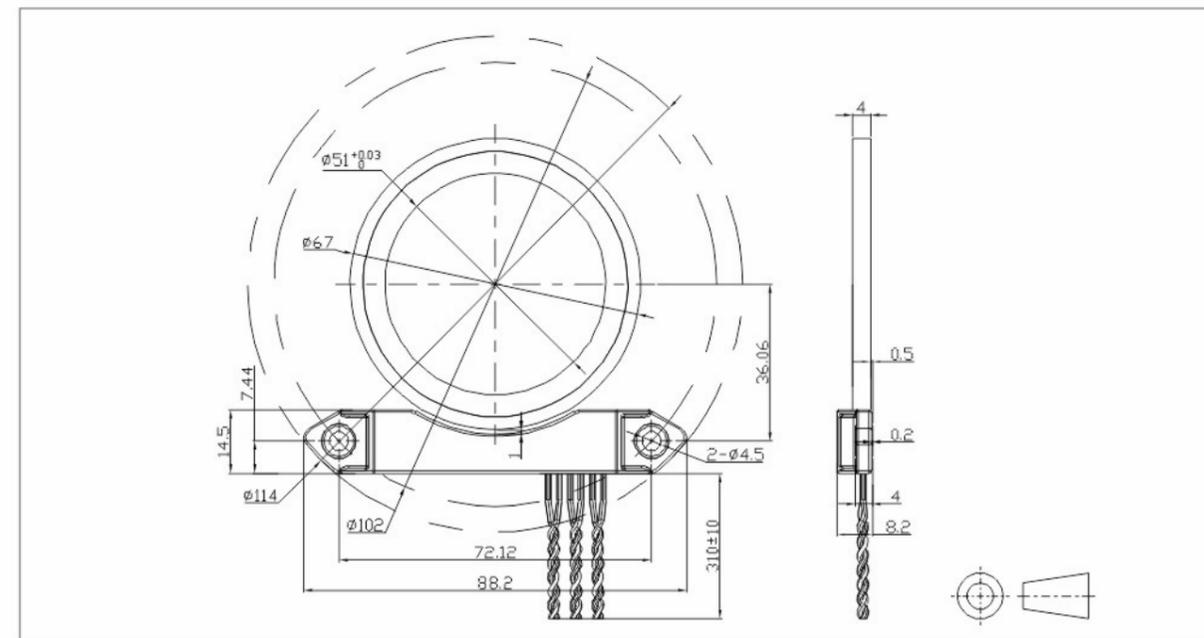
- Off-axis angle sensor
- Compact and lightweight
- Can be integrated in limited spaces
- Accuracy of ±0.5°
- Operating temperature range: -40°C~125°C

典型应用

- 电动车驱动电机

Typical Application

- Electric Vehicle Drive Motor



产品参数 Product Parameters

EAS-003		
噪声	Noise	0.015°
定位精度	Accuracy	0.5°
信号输出	Output	Single-ended sin/cos

EAS-004

产品特点

- 在轴式的角度传感器
- 体积小、重量轻
- 可集成于有限空间内
- 精度可达 $\pm 0.5^\circ$
- 工作温度范围： $-40^\circ\text{C}\sim 125^\circ\text{C}$

Key Features

- On-axis angle sensor
- Compact and lightweight
- Can be integrated in limited spaces
- Accuracy of $\pm 0.5^\circ$
- Operating temperature range: $-40^\circ\text{C}\sim 125^\circ\text{C}$

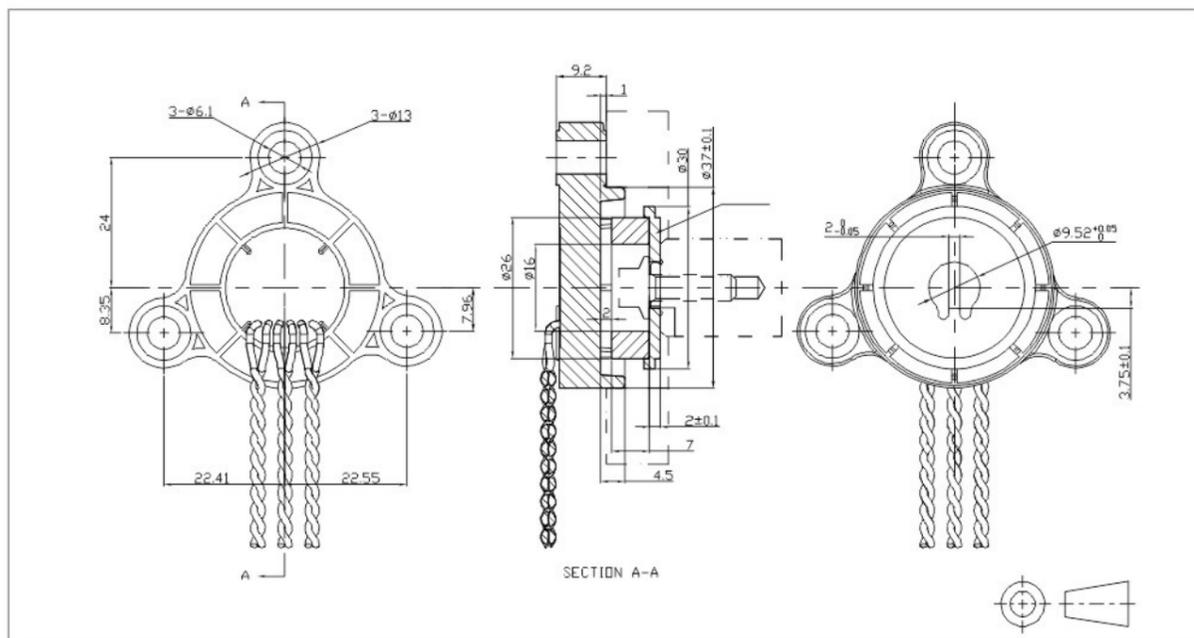


典型应用

- 电动车驱动电机

Typical Application

- Electric Vehicle Drive Motor



产品参数 Product Parameters

EAS-004		
噪声	Noise	0.015°
定位精度	Accuracy	1°
信号输出	Output	Single-ended sin/cos

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