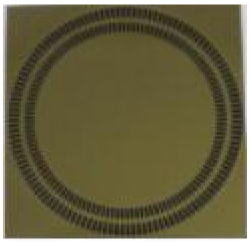
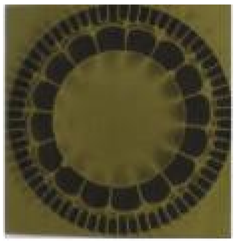
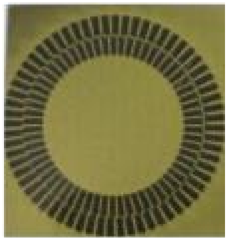
Magnetic Encoder Ring Introduction Manual

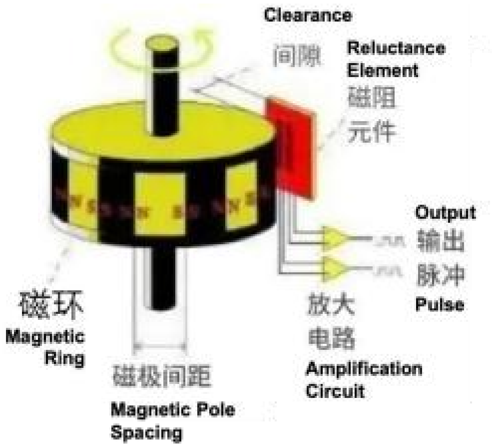






01 Introduction of Magnetic Encoder

Magnetic encoders have only recently gained widespread use. They utilize the principle of magnetic field measurement and consist of a magnetic field generator and magnetic sensors. Essentially, a magnet is mounted on the motor shaft, rotating with the shaft. A circuit board with a magnetic field sensing chip in the center is mounted on the rear end cover. This chip measures the angle of the magnetic field, thereby determining the motor shaft's rotational angle and angular velocity.



02 Features of Magnetic Encoder

1、High Precision and High Resolution

Magnetic ring encoders have the characteristics of high precision and high resolution. They can not only reflect the position of rotary motion, but also accurately locate small changes in rotary motion. This high precision and high resolution make magnetic ring encoders widely used in the field of mechanical control.

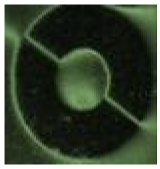
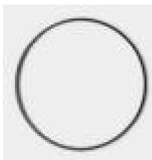
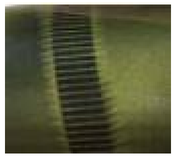
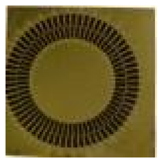
2、Good Repeatability and Stability

Since the encoding principle of the magnetic ring encoder is stable and reliable, its output signal is stable and has good repeatability and stability, which can ensure that the magnetic ring encoder can work stably and efficiently in a highly repeatable working environment.

3、Strong Adaptability

Magnetic ring encoders have strong adaptability and are widely used in machine tools, robots, automobiles, medical equipment, aerospace and other fields. They can measure physical quantities such as rotation angles or linear movement distances, meeting the requirements of detection accuracy in different fields.

03 Types of Magnetic Encoder Rings

Magnetic Ring Classification	Appearance of Magnetic Ring	Magnetic Pole Display
①Single-pole Magnetic Ring		
②Multi-pole Single-track Magnetic Ring		
③Radial Multi-pole Magnetic Ring		
④Multi-pole Dual-track Magnetic Ring		
⑤Triple-track Magnetic Ring		

04 Product Features of Magnetic Encoder Rings

Our company specializes in customizing multi-pole magnetic rings for Hall sensors and magnetic encoders. Welcome to consult!

1. Multiple Material Options

Supports materials such as injection molded ferrite, sintered ferrite, rubber magnet and bonded NdFeB to meet different application requirements.

2. Flexible Magnetization Direction

Axial, radial or planar magnetization can be selected to meet various design and installation requirements.

3. High Pole Design

Magnetic rings with up to 400+ poles can be designed as needed to support complex magnetic field requirements and precise position detection.

4. Multiple Track Options

Single, dual, or triple channel configurations can be selected to meet the accuracy and resolution requirements of specific applications.

5. Adjustable Magnetic Strength

Depending on the selected magnet material and number of poles, magnetic strengths ranging from 0 to 100mT are available to meet the accuracy and sensitivity requirements of different applications.

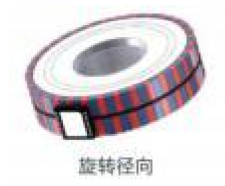
6. Diverse Magnet Forms

Including ring, disc, square and other special-shaped magnets to adapt to various installation spaces and mechanical layouts.

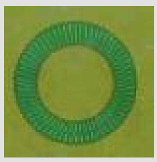
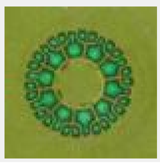
7. Widely Applicable Fields

It is mainly used in motors, encoders, Hall sensors, magnetic transmissions, magnetic wheels and other fields, providing accurate position and speed detection functions for various electronic and mechanical equipment.

05 Magnetic Encoder Ring Parameters (Customized Design)

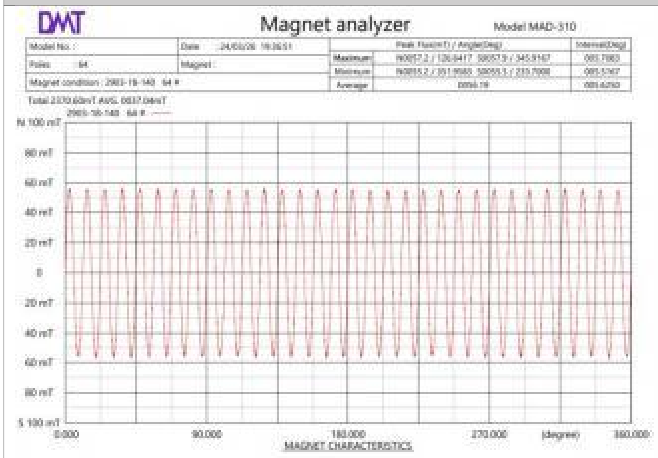
No.	Parameter	MTA (Axial Type)  Rotational Axial	MTR (Radial Type)  Rotational Radial	MTL (Linear Type)  Linear
1	Product Specifications	Customizable performance in any size		
2	Number of Poles	64/63 pole pairs; 32/31 pole pairs; 16/15 pole pairs, etc.		
3	Number of Tracks	Single/Dual/Triple		
4	Application Scope	Magnetic Encoder		Magnetic Scales
5	Limiting Speeds	Linear speed up to 16 m/s; Rotate speed up to 24,000 RPM @ 16 pole pairs Rotate speed up to 12,000 RPM @32 pole pairs; Rotate speed up to 6,000 RPM @ 64 pole pairs		
6	Operating Temperature Range	-40-110℃		
7	Material	Injection molded ferrite/sintered ferrite/rubber magnet/bonded NdFeB		
8	Magnetization Method	Axial Magnetization	Radial Magnetization	Planar Magnetization
9	Magnetic Strength	0-100mT		
10	Minimum Pole Spacing	0.1mm		
11	Maximum Number of Magnetization Poles	More than 400 poles		
12	Peak Deviation	±1%		
13	Interpolar Phase Deviation	±1%		

06 Magnetic Encoder Ring Case Display (Part of it)

No.	Product Name	Appearance	Magnetic Pole Display	Specification	Number of poles	Material	Intensity of Surface Magnetic Field
1	MTAD-64-63 High Precision Dual-track 128 Poles Magnetic Encoder Ring			φ56*φ41*1.5mm	128/126	Injection Molded Ferrite	80mT
				φ65*φ51*2.4mm		Injection Molded Ferrite	75mT
2	MTAD-32-31 High Precision Dual-track 64 Poles Magnetic Encoder Ring			φ44.5*φ29*1.4mm	64/62	Sintered Ferrite	/
				φ34*φ20.4*2mm			95mT
				φ42*φ27*1.45mm			85mT
3	MTAD-15-5 High Precision Dual-track 30 Poles Magnetic Encoder Ring			φ26*φ13.2*2mm	30/10	Ferrite	/
4	MTAT-45-40-35 High Precision Triple-track 90 Poles Magnetic Encoder Ring			φ56*φ41*1.5mm	70/80/90	Ferrite	55mT/60mT/65mT

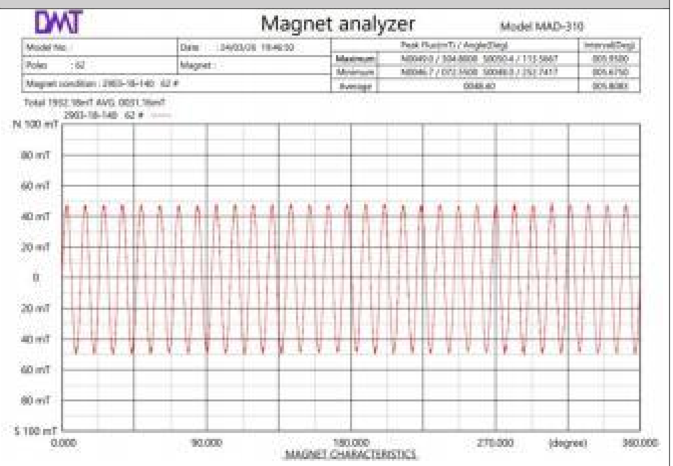
07 Case Presentation on Surface Magnetic Field Detection Waveform of Multi-pole Magnetic Ring

Dual-track 64/62 Poles



Number of Poles: 64 Poles (Outer Track)

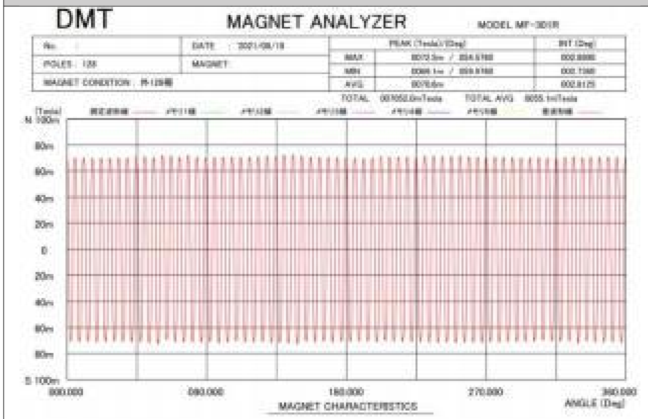
Peak Value: 56 mT



Number of Poles: 62 Poles (Internal Track)

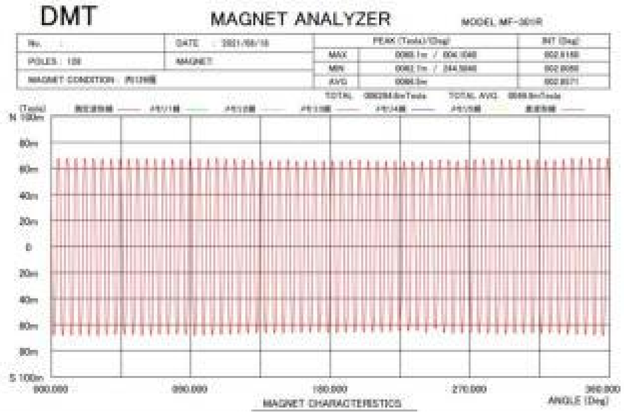
Peak Value: 48 mT

Dual-track 128/126 Poles



Number of Poles: 128 Poles (Outer Track)

Peak Value: 70 mT



Number of Poles: 126 Poles (Internal Track)

Peak Value: 66.5 mT

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