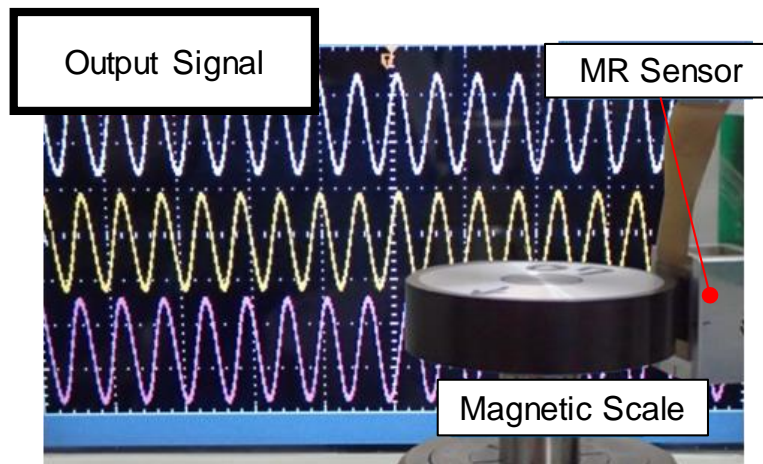
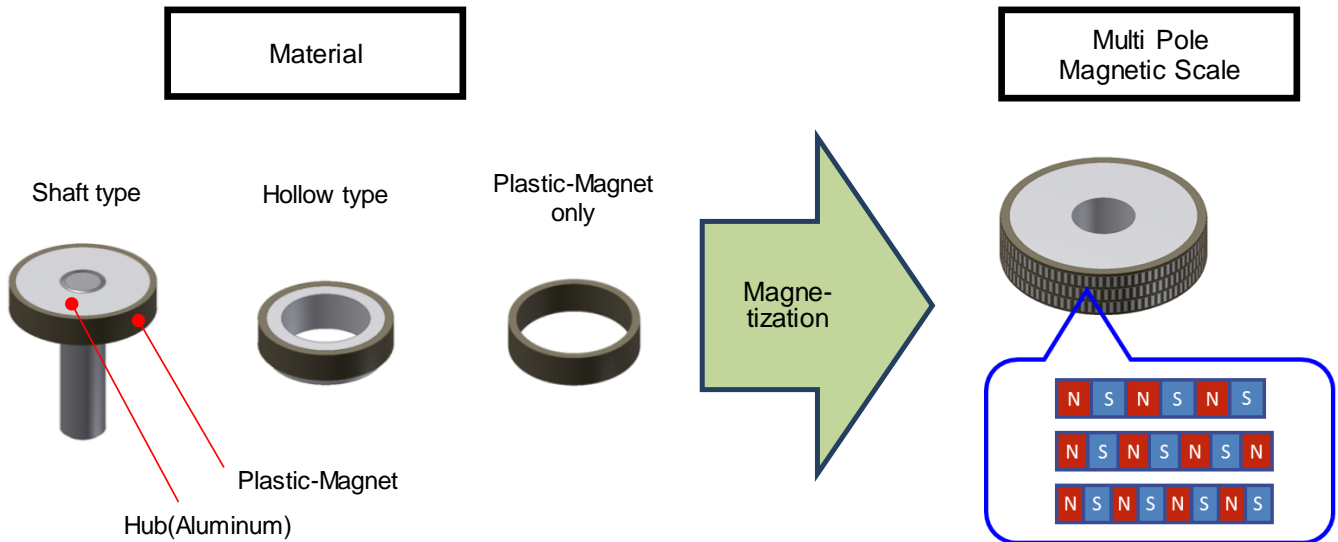


# High Precision Multi Pole Magnetic Scale

MIDORI has developed High Precision Multi Pole Magnetic Scale with our original magnetizing technology. This magnet has characteristics of High precision, Multi pole, Narrow pitch and Multi-track. In combination with MR-Sensor, output signals for Encoders (Absolute and Incremental) are generated.

## What's Magnetic Scale ?



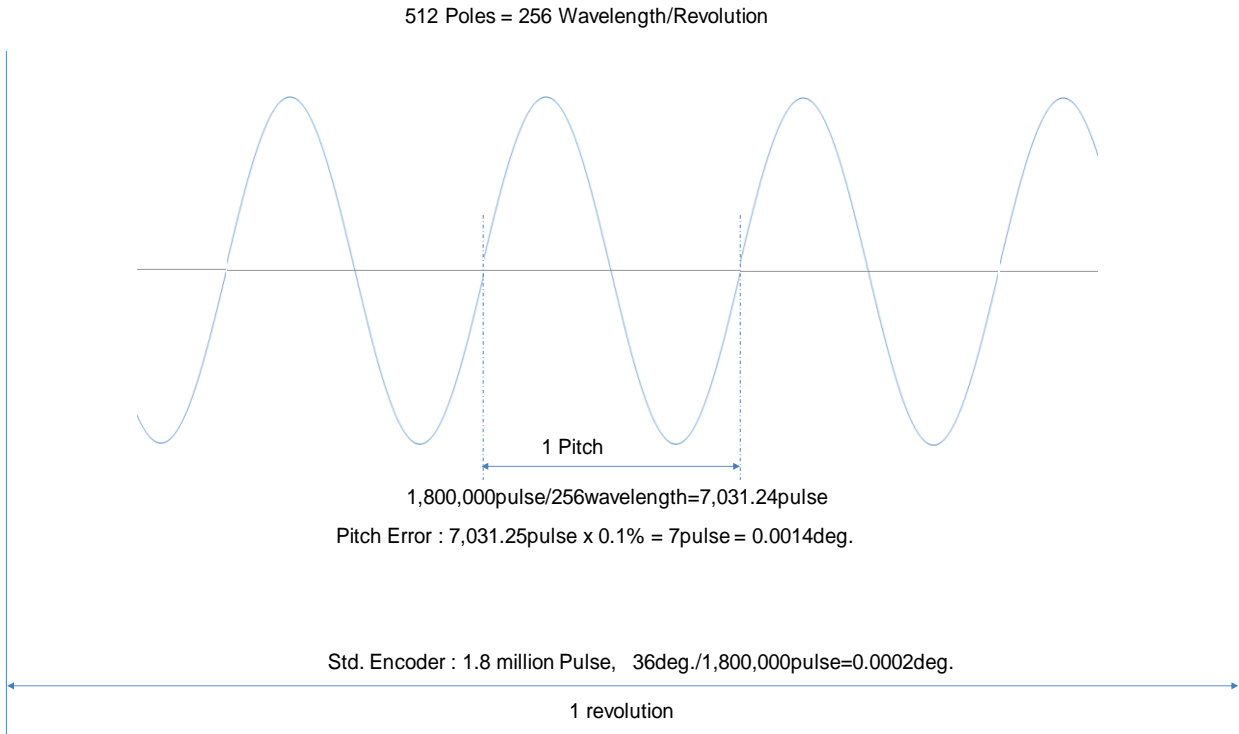
Maximum work size	dia.200mm x t.20mm
Magnetizing pitch	100 $\mu$ m~1,000 $\mu$ m
Single pitch error	< 0.1%
Cumulative pitch error	< 0.4%
Total Harmonic distortion	< 2% (2 <sup>th</sup> ~7 <sup>th</sup> )
Application	Magnetizing Multi tracks and mixed pitches in track are available

# High Precision Multi Pole Magnetic Scale

## Definition of characteristics of Magnetic scale

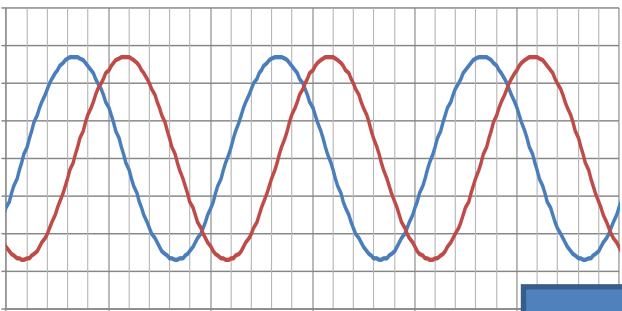
### Single Pitch Error

Example) 512 poles / Revolution, Pitch Error 0.1% is 0.0014 deg..

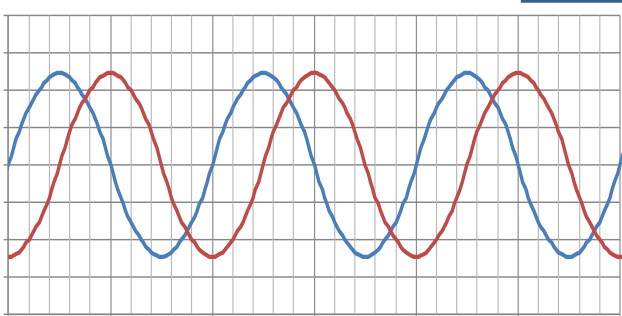


### Total Harmonic Distortion

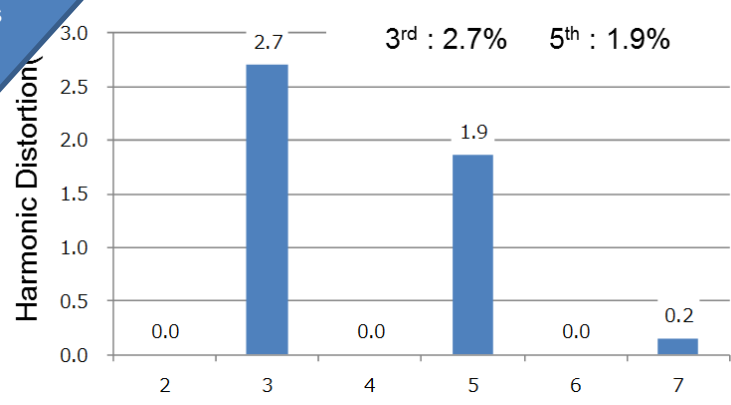
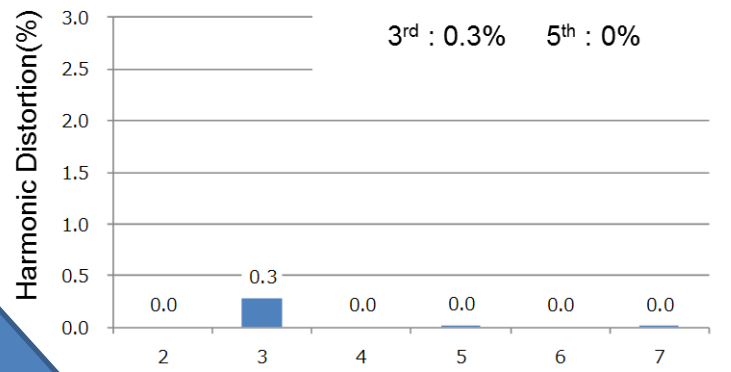
Output Signal - 1



Output Signal - 2

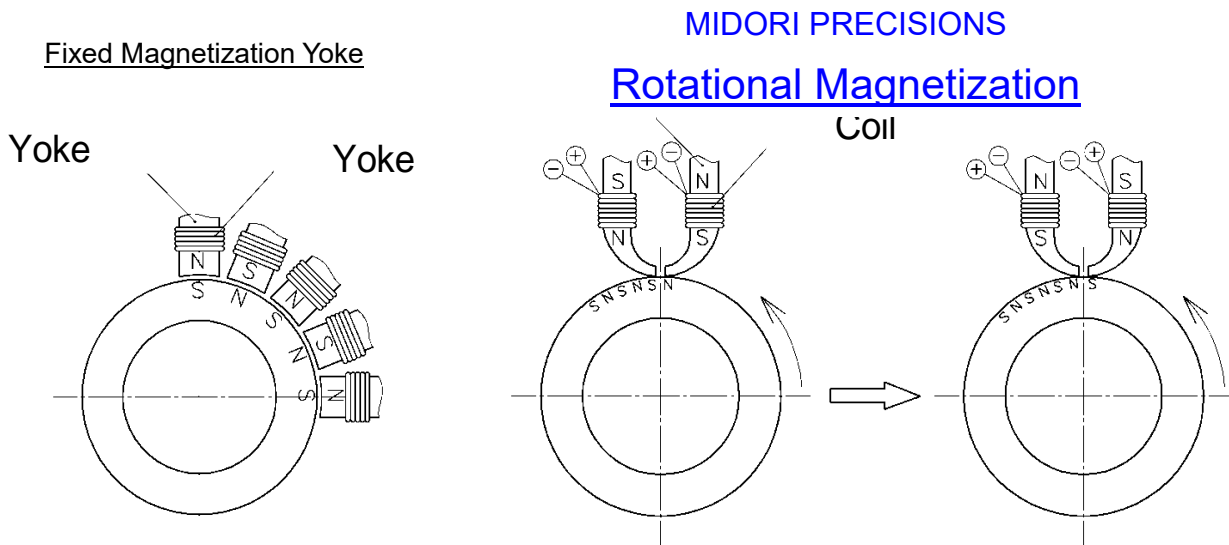


FFT  
Analysis



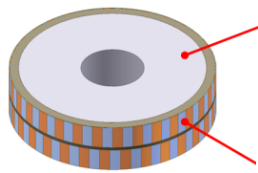
# High Precision Multi Pole Magnetic Scale

## Magnetization Method



High Accuracy and Narrow Pitch possible

## Material of Magnetic Scale



Hub

Aluminum or Iron-based

Plastic Magnet

Magnetic Powder : Ferrite (Isotropic, Anisotropy)

Binder resin : PPS, Nylon

## Magnetic Properties

Magnetic Properties	Isotropic	Anisotropy
Residual magnetic flux density Br (mT)	112	286
Holding Force Hcb (k A/m)	76	183
Holding Force Hc j (k A/m)	167	210
Maximum Energy Product BHmax (kJ/m <sup>3</sup> )	2.2	16.2
Magnetic Powder	Ferrite	Ferrite
Binder resin	PPS	Nylon6
Density (g/c m <sup>3</sup> )	3.1	3.7
Operating Temperature	-40~100°C	-30~80°C