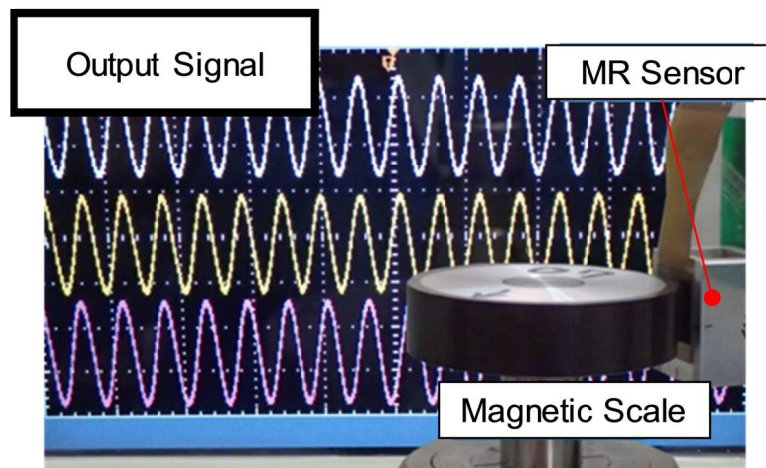
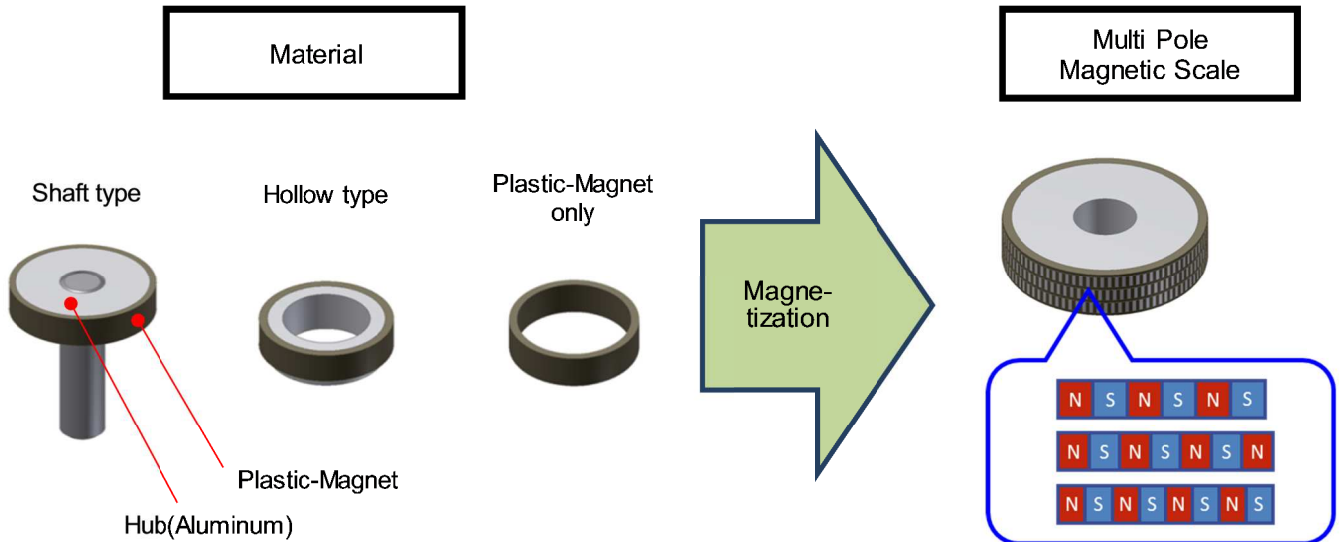


High Precision Multi Pole Magnetic Scale

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 ?



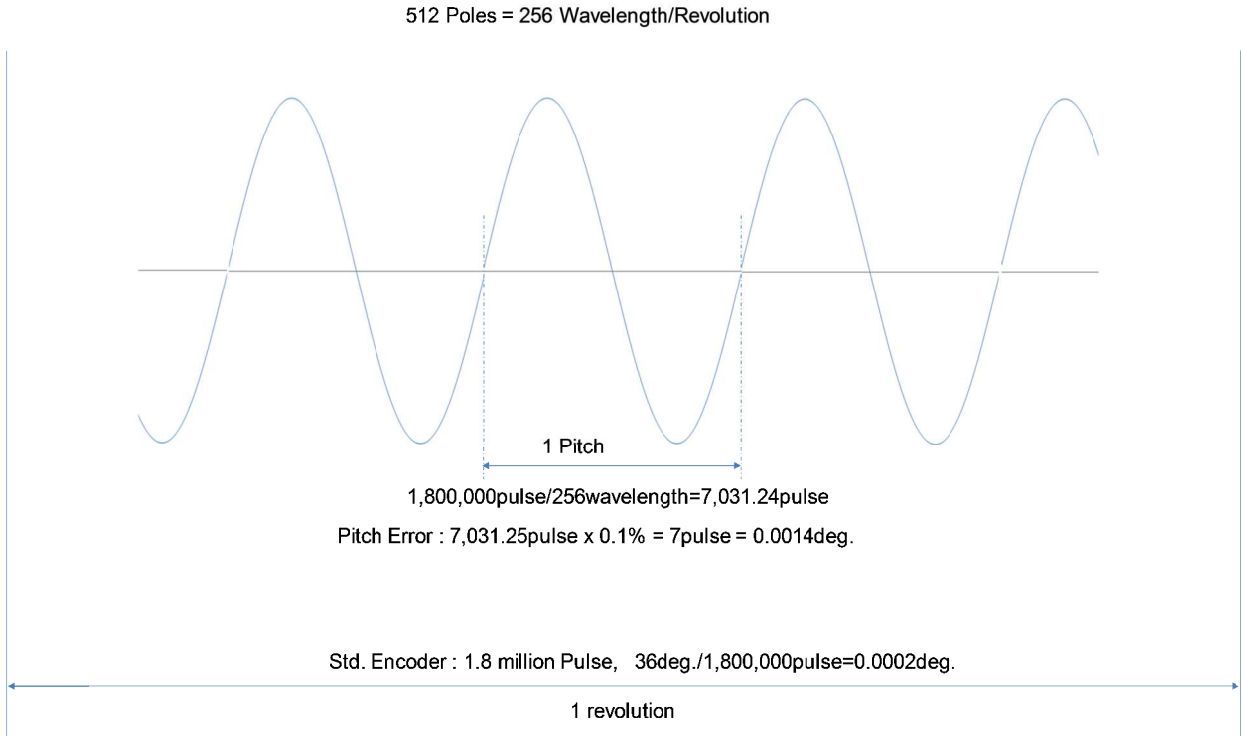
| | |
|---------------------------|---|
| Maximum work size | dia.200mm x t.20mm |
| Magnetizing pitch | 100 μ m~1,000 μ m |
| Single pitch error | < 0.1% |
| Cumulative pitch error | < 0.4% |
| Total Harmonic distortion | < 2% (2 th ~7 th) |
| Application | Magnetizing Multi tracks and mixed pitches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

High Precision Multi Pole Magnetic Scale

Definition of characteristics of Magnetic scale

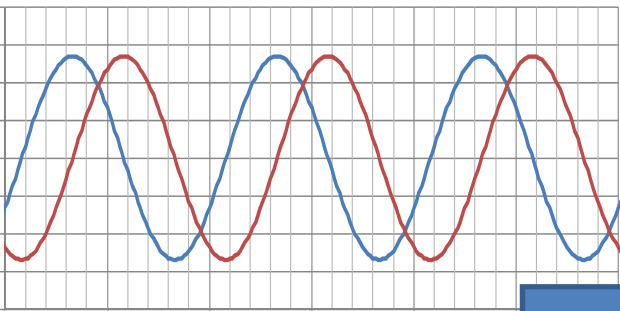
Single Pitch Error

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

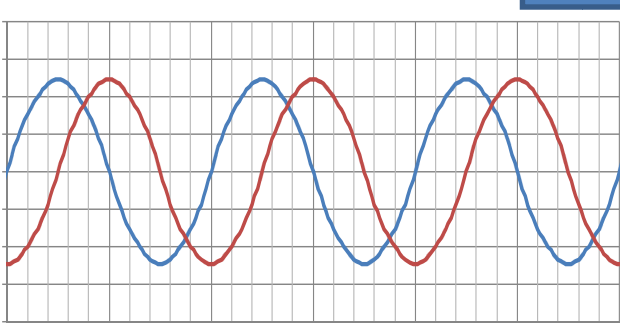


Total Harmonic Distortion

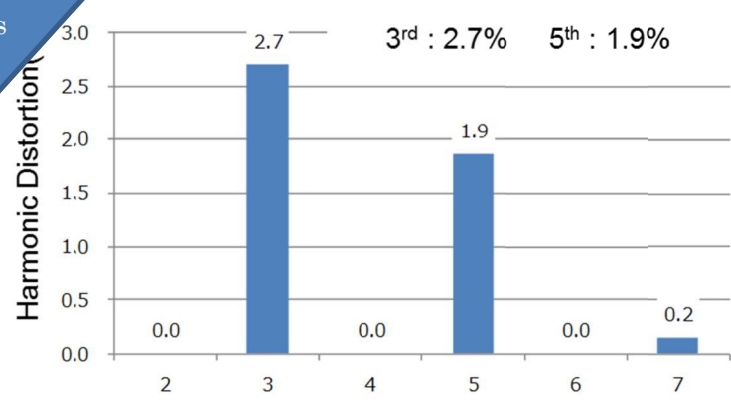
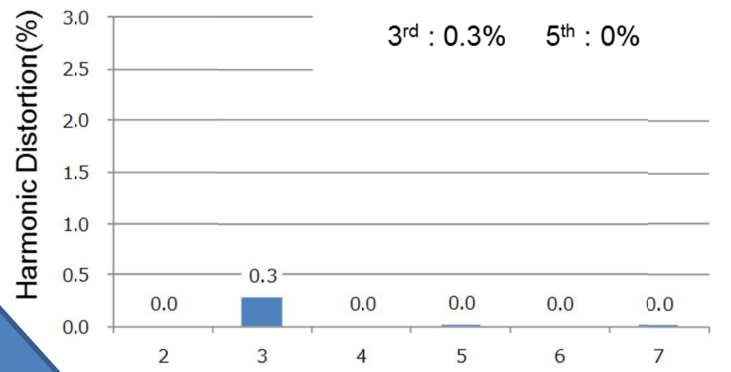
Output Signal - 1



Output Signal - 2



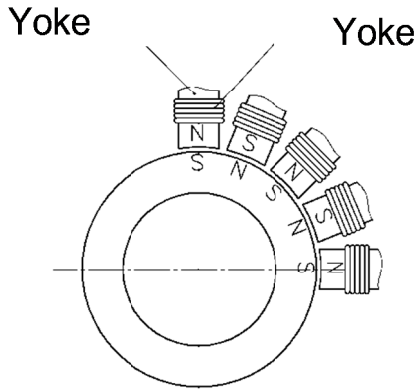
FFT
Analysis



High Precision Multi Pole Magnetic Scale

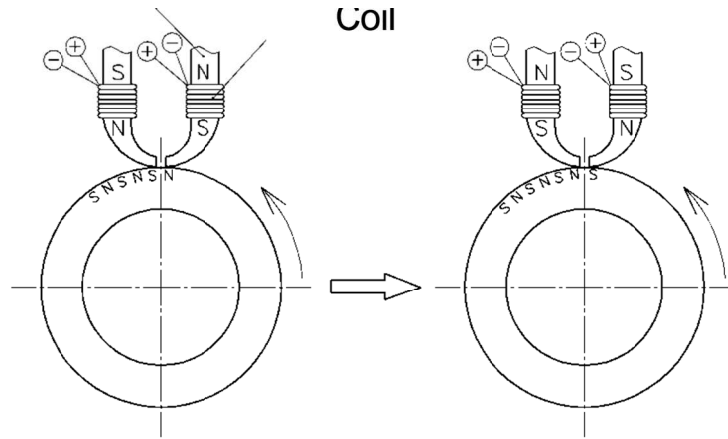
Magnetization Method

Fixed Magnetization Yoke



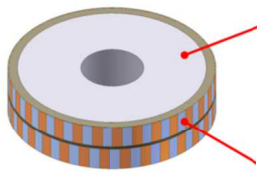
MIDORI PRECISIONS

Rotational Magnetization



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 ³) | 2.2 | 16.2 |
| Magnetic Powder | Ferrite | Ferrite |
| Binder resin | PPS | Nylon6 |
| Density (g/cm ³) | 3.1 | 3.7 |
| Operating Temperature | -40~100°C | -30~80°C |