

ROTA Measurement System

ADVANCED TWO-AXIS ROTATING PROBE STATION
FOR SPINTRONICS & THIN FILM CHARACTERIZATION

PRICE
€100 000
incl. electromagnet

1 T

MAGNETIC FIELD, IP /
OOP

DC-24 GHz

BANDWIDTH

1×10^{-4}

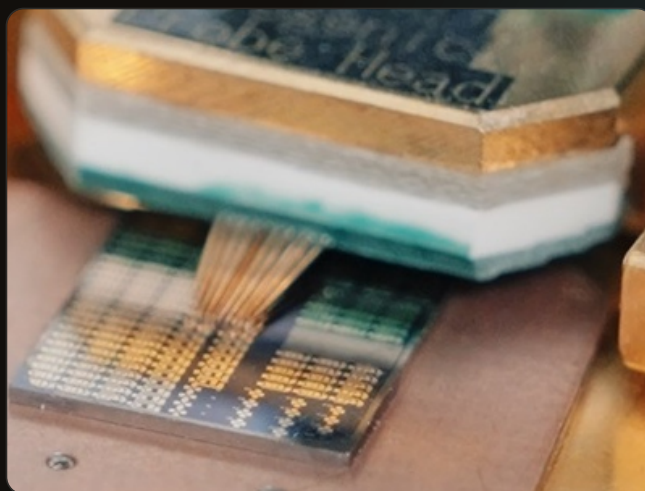
MR RESOLUTION

60 s

MEASUREMENT CYCLE

PRODUCT OVERVIEW

The **ROTA Measurement System** is a state-of-the-art automated rotating probe station engineered specifically for high-precision characterization of thin films, magnetic materials and cutting-edge electronic prototypes. ROTA bridges the gap between a single-use laboratory setup and an industrial R&D system: it provides automated, precise sample rotation under customizable magnetic field orientation, enabling detailed characterization of magnetotransport and spin dynamics properties.



MULTI-TIP DC/RF PROBE ON A PREPATTERNED SAMPLE

TECHNICAL SPECIFICATIONS

PARAMETER	SPECIFICATION / RANGE
Magnetic field	Up to 1 T (in-plane, out-of-plane)
Electrode configuration	Two-point, four-point (longitudinal, transverse)
Bandwidth	DC – 24 GHz
Resistance measurement range	10 Ω – 100 k Ω
Magnetoresistance resolution	Down to 1×10^{-4}
Complete measurement cycle	Down to 60 s
Sample interface	Multi-tip DC/RF, bonding-free

AUTOMATED MEASUREMENT MODES

ROTA is fully designed and automated for a comprehensive suite of magnetotransport measurements:

- **Magnetoresistance (MR):** high-precision detection of AMR, SMR, GMR and TMR with an exceptional resolution down to 1×10^{-4} .
- **Hall effects:** full characterization capabilities for conventional Hall, Anomalous Hall Effect (AHE) and Spin Hall Effect (SHE).
- **Magnetization dynamics:** integrated high-frequency measurement: spin-diode, spin-wave dynamics, radio-frequency rectification effects.
- **Harmonic Hall voltages:** advanced, precise phase-sensitive measurement topologies for decoupling spin-orbit coupling parameters.
- **Spin-transfer torque (STT) and spin-orbit torque (SOT):** specialized characterization layouts of switching dynamics for next-generation MRAM devices.

KEY TECHNICAL CAPABILITIES

01

Dual-axis sample rotation

Fully automated control to rotate the sample along two axes within an arbitrary magnetic field vector — crucial for extracting precise angular dependencies.

02

Optimized sample interface

A standard 200 μm pitch electrode system serving both quasi-static and dynamic measurements up to 24 GHz, compatible with available prepatterned substrates.

03

Integrated software ecosystem

Powerful, reliable and automated instrument-control software with an advanced analytics module for automated extraction of sample parameters.

Complete your setup

Combine ROTA with Microspin **prepatterned chips** for bonding-free, cleanroom-free prototype testing.

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