

0-3 TESLA SOLENOID MAGNET FOR VARIABLE FIELD RELAXOMETRY



MODEL: 2G-NMRD VAR-3T

The 3T-2G is an evolution in high-uniformity, cryogen-free superconducting solenoids. Utilising 2nd-generation ReBCO technology, it delivers a uniform 3 tesla field in a compact, energy-efficient package.

An integrated air-cooled cryocooler and automated vacuum management eliminates complex cryogen handling, bringing high-precision magnetic fields to any standard laboratory.

- **High-Uniformity Design:** Better than 50 ppm uniformity across the full range, optimized for precision metrology and resonance studies.
- **Maintenance-Free Cooling:** Integrated compact cryocooler is fully air-cooled, requiring no facility water lines and minimal scheduled maintenance.
- **Automated Vacuum System:** Includes an integrated vacuum pump with automated operation for simplified commissioning and long-term reliability.
- **Advanced Protection & Safety:** Integrated protection electronics and an energy dump circuit ensure magnet safety during all operating conditions.
- **Modern Interface:** Touchpad operation for real-time monitoring and control.



Collaboratively designed for NMRD (Nuclear Magnetic Relaxation Dispersion) using Variable Field Relaxometry with industry partner Stelar.



Available operated by a PC-NMR workstation or with the SPINMASTER or SMARtracer™ systems.

Generated fields are suited to:

- Probe Calibration: Platform for Hall-effect and NMR teslameter calibration.
- Transport Studies: Precision field control for material characterization.
- ESR/FMR: Versatile environment for high-frequency resonance and spintronics.

0 - 3 TESLA
VARIABLE FIELD RANGE

< 50 PPM
Ø5 MM X 20 MM ZONE

SINGLE PHASE
< 600 W POWER USAGE

CRYOGEN-FREE
NO LIQUID HELIUM



HTS-110's global client base includes tier-one data storage companies; manufacturers; universities; and national research institutes including ALBA, ANL, ANSTO, BNL, CAS, FZJ, HZB, ILL, IMRE, JAXA, LNL, MSL (NZ), NIST, NUS (SSLS), PAL, RAL, RTRI, TATA, TPS, and TUM (FRMII).

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3T VARIABLE FIELD HTS MAGNET: THE CRYOGEN-FREE SOLUTION FOR HIGH-FIELD RELAXOMETRY

MODEL: 2G-NMRD VAR-3T

MAGNET SPECIFICATIONS

Peak Field	3.0 T (Variable 0-3 T)
Uniformity	< 50 ppm over Ø5 mm x 20 mm sample zone
Magnet Type	2nd-generation HTS (ReBCO) Solenoid
Cooling System	Integrated air-cooled, cryogen-free cryocooler
Clear Bore	26 mm
Bore Length	210 mm
Fringe Field	0.5 mT (5 Gauss) envelope within enclosure
Power Requirements	< 600 W (110–240 V AC single-phase)
Max Operating Current	80 A
Dimensions (HxWxD)	358 x 370 x 568 mm
Magnetic Centre	Geometric centre of the clear bore

SITE AND OPERATING ENVIRONMENT

- Power: Standard single-phase AC (<600 W for magnet system).
- Cooling: No facility water required (air-cooled).
- Space: Compact footprint suitable for benchtop use or integration into larger instruments.
- Maintenance: Maintenance-free cooling system; automated vacuum management.

SYSTEM COMPONENTS

- **Magnet Sub-System:** Fully integrated 2G HTS magnet with air-cooled cryocooler and vacuum jacket.
- **Control Electronics:** Integrated monitoring of coil temperatures and voltages with active protection.
- **Vacuum Management:** Built-in automated vacuum pump system.
- **User Interface:** Integrated touchpad for system status and basic control.
- **Warranty:** 1-year standard warranty on all sub-systems.

EXTERNAL POWER SUPPLY

Model dependent on application, for NMRD we recommend:

- CAENels FAST-BI-1K5 / FAST-PS-1K5
- Output: Max 1.7 kW
- Input: 180 - 264 VAC / 47 - 63 Hz single phase

RELAXOMETRY SYSTEM ENQUIRY

Integrated NMRD systems are available.

www.stelar.it
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MAGNET ENQUIRY AND DELIVERY PROCESS

Initial Consultation or Feasibility Study

Discuss your needs to confirm if a turnkey, customised or bespoke magnet is suitable.

Application and Options Assessment

Verify specifications, supply a quote with lead time, and reserve stock or capacity.

Production and Testing

We build, test, and QC the system to rigorous standards.

Delivery and Integration

On-site installation and operational training, plus lifetime support.

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First generation magnet pictured