

GMR Surface NMR

Representing the cutting-edge in surface NMR geophysics, GMR delivers superior hardware and software capabilities enabling any user to conduct more precise, efficient, safe, and informative groundwater investigations.

SPECIFICATIONS

540V DC/DC Converter

PERFORMANCE SPECS:

- Max bus voltage: 540V DC
- Charge current: 1A
- Capacitance: 0.054 F
- Power supply: two 12V batteries

SAFETY FEATURES:

- Auto-shut down for safety in case of improper connection
- Analog voltage meters on panel

OPTIONS:

- Two DC/DC converters can be used in parallel



4800V Standard Transmitter or 6000V XHV Transmitter

PERFORMANCE SPECS:

- Standard output: 4800V, 600A, 25As
- XHV output: 6000V, 800A
- Ultra-short dead-time: <5ms
- Four full-duplex Tx/Rx channels
- Wideband receiver noise <500pV/rt(Hz)
- Pulse sequences with phase cycling: FID (T_2^*), 4-Phase & Crush-Recovery (T_1), Spin echo & CPMG (T_2), and Adiabatic sweeps†
- Compatible with shielded cables and separated transmit/receive loops

SAFETY FEATURES:

- Auto-shutdown in case of improper connection
- Environmentally-rated connectors with no-touch contacts

OPTIONS:

- Expandable to 8 or 12 channels



16 μ F Tuning Unit

SAFETY FEATURES:

- Auto-shutdown in case of improper connection
- Transmitter operates only when tuning lid is securely closed and shuts down if opened

OPTIONS:

- Expansion 16 μ F tuning unit for up to 32 μ F capacitance (only suggested for low Earth latitudes)



Four-Channel 4800V Tx/Rx Expansion Module

Adding Four Fully-Functional Tx/Rx Channels



Four-Channel Reference Sensor Module

Adding Four Synchronized Receive Channels



High-Voltage Surface Cables

Environmentally Rated Connectors

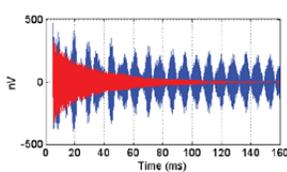
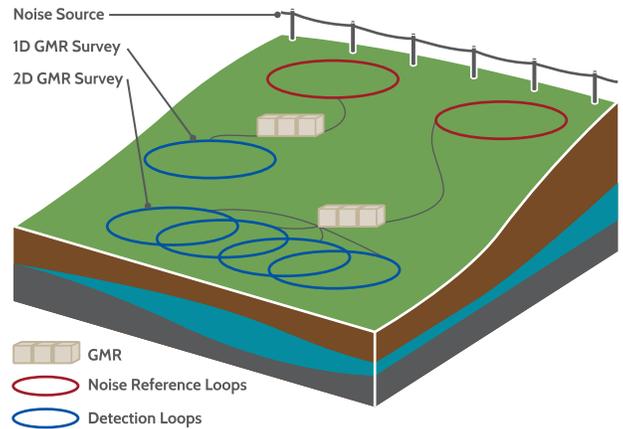


GMR Surface NMR

Boasting a rich array of sophisticated features and proprietary technology, GMR elevates surface NMR geophysics, delivering superior performance and data quality in an ever expanding range of environments and applications.

Groundbreaking Multi-Channel Design

The unique multi-channel architecture of the GMR system enables adaptive noise cancellation for vastly improved data quality as well as more efficient 2D or 3D groundwater imaging[†]. Four independent Tx/Rx channels (expandable to eight or more) allow for simultaneous measurements on multiple loops. GMR's identical broadband frequency response on all channels is critical for effective noise cancellation.



Shortest Dead-Time

The ultra-short dead-time (<5 ms), of the GMR system means even the shortest NMR signals are captured. NMR signals are short for water in magnetic geology, in fine-grained sediments, or in the vadose zone. These important signals are

invisible without a ultra-short dead-time capability.[†]

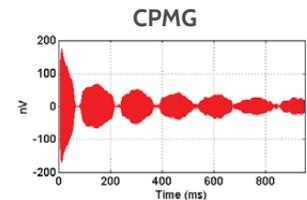
Highest Power Output

With the highest power output available*, GMR enables detection of deeper and shorter groundwater signals. Proprietary efficient power conversion architecture enables output up to 800A and 6kV through larger loops using thinner, more portable cables.



Proprietary Pulse Sequences

Acquisition software includes sophisticated multiple-pulses measurements. These pulse sequences enable T_1 recovery and T_2 spin-echo or CPMG measurements, which yield more robust estimates of hydrogeologic properties. Advanced phase cycling suppresses artifacts for improved data quality.[†]



High-resolution Inversion Software

Patented all-linear inversion software delivers superior spatial resolution of NMR signals, allowing the user to more precisely identify features of interest and derive aquifer properties. Advanced processing and interpretation algorithms are accessed through a straightforward GUI interface that is easy to learn and understand.

Priority on Safety

Safety is always the important consideration and is extensively integrated in the GMR design. Robust features protect the user from powerful electrical energy. As one example, all GMR wiring uses environmentally-rated no-touch connectors so that the operator never touches any conductive element of the high-voltage circuitry.



[†] Protected by US Patent 7,466,128; 7,986,143; 8,451,004 B2; 8,581,587; USRE43264 E1 Additional patents pending

* Confirmed by multiple independent third-party field tests