

# New Enhanced-Fidelity Linear Gradient Amplifier

AE Techron's new 7794MRL provides a solution for the unique requirements of low-cost, high-performance ultra-low-field MRI.

*FOR IMMEDIATE RELEASE*

*Apr 15, 2020* – AE Techron announces the availability of its new, Low-field-optimized Gradient amplifier for use in low- and ultra-low-field MRI applications. The 7794MRL was developed in collaboration with leaders in the Ultra-low-field MRI industry, who needed an alternative to the gradient amplifiers used in conventional MRI systems. The improvements achieved as a result of this collaboration offer the potential for both improved image quality and faster current rise times. The 7794MRL also features an integrated power supply, rugged construction, small footprint and modest weight. These characteristics make it a perfect choice for low-cost, high-performance, small bore and/or mobile MRI systems used in university- or industrial-research applications.

Conventional MRI gradient amplifiers have a switching frequency of 80 kHz to 125 kHz, which coincides with the operational frequencies of some ultra-low-field systems and makes them unusable for ULF MRI applications. To fulfill the requirements for ULF operation, the 7794MRL was developed using a linear Class AB amplifier topology, which has no switching noise at any frequency. In addition, an auto-ranging power supply was used to improve amplifier efficiency and increase long-term power. The results are a gradient amplifier with a 100V/200A potential even under very high-duty cycle pulse sequences, with a signal-to-noise ratio exceeding -110 dBA, and a total noise output under 0.2 mA.

The 7794MRL also possesses a number of important physical attributes. It includes an integrated industrial-grade power supply in a rugged steel case. Its small, 12 x 19 x 23-inch footprint and modest weight of just 150 pounds make it a great choice for portable ULF MRI systems.

As an industry pioneer in MRI, AE Techron engineers developed some of the first commercially available gradient amplifiers, and AE Techron 2100 series gradient amplifiers currently power many short-bore MRI and NMR systems. The 7794MRL incorporates over three decades of AE Techron's engineering knowledge and experience designing linear gradient amplifiers for use in MRI/NMR systems. Input from leaders in the ULF MRI community helped to ensure the unique requirements of high-fidelity, small footprint and modest cost would be met.

AE Techron President Larry Shank explains the likely impact: "The 7794MRL is a gradient amplifier that can be used successfully in MRI systems with field strengths as low as an amazing 6 mT. We believe the 7794MRL will help to further the mission of ultra-low-field MRI researchers and manufacturers: to greatly expand the availability of MRI testing in remote locations and in under-served communities both here at home and around the world."

###

AE Techron, Inc. ([aetechron.com](http://aetechron.com)) designs and manufactures linear and switching power amplifiers, waveform generators and test systems for industrial applications including EMC testing, protection relay testing, MRI/NMR and experimental/research. The company is committed to delivering products with high value, superior design, and quality excellence. AE Techron meets the challenges of the test and measurement, MRI and research industries by providing innovative design, exacting performance and exceptional value.

--- end ---