



## Innovative Solutions in Cryogenic Instrumentation



### TEMPERATURE CONTROLLERS

2 OR 4 CHANNELS  
OPERATION TO <60mk  
DUAL CONTROL LOOPS  
ETHERNET CONNECTED



### TEMPERATURE MONITORS

2, 4 OR 8 CHANNELS  
OPERATION TO <200mk  
ETHERNET CONNECTED  
DATA LOGGING

### TEMPERATURE SENSORS

### CRYOGENIC ACCESSORIES

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## Spotlight on New Sustaining Member

# SQUID Magnetometers from Mesuron LLC



Mesuron LLC, Latham NY, specializes in the development and manufacture of SQUID sensor-based magnetometers for MagnetoCardioGraphy (MCG) systems. Mesuron also develops and manufactures custom SQUID magnetometers for other applications and state-of-the art, low-magnetic noise fiberglass cryostats.



*This MCG system currently being developed will have approximately 90 SQUID channels.*

The system has an inherent synchronization over the whole magnetic map and uses a single, completely contactless measurement of the electric maps over 60-90 seconds. Obtained data from the electric maps will help identify a whole range of issues, including detection of the heart ventricle repolarization problems related to ischemic heart disease as well as such fast transitory, irregular processes as fast ventricular tachycardia. This procedure requires no contact with the patient's body—not even the simple three-lead ECG, which usually gets attached to the patient's body for synchronization in lower-level MCG systems.

Driven by SQUID technology needs, Mesuron has developed a complete line of cryostats, including several standard series non-magnetic cryostats, which are sold as

part of the SQUID system or as stand-alone items.

The standard Mesuron cryostat series includes a variety of bio-magnetic and other types of cryostats for both liquid helium and liquid nitrogen use. The company also produces custom-made, specialized cryostats or SQUID systems, cryostats that can work in any orientation (including horizontal and upside-down); cryostats with optical windows; cryostats with a record-small measurement distance from the cold liquid inside to the room temperature surface outside (the "hot-to-cold" distance) and others.

The technology of fiberglass-based low magnetic noise cryostats housing SQUID systems is extremely demanding. It requires an exact heat-transfer design, minimal use of heat reflecting shields and materials, special know-how and manufacturing skills. This technology is so complex and demanding that only a few companies in the world possess such knowledge, some of them having gone out of business.

Mesuron's strength is based on the unique knowledge and expertise of its founder: scientist, engineer and inventor Alexander Bakharev, who has more than 30 years of research and practical experience designing and manufacturing SQUID magnetometers that meet FDA and ISO requirements, specifically for MCG application use in standard hospital environments.

His expertise with plastics, epoxy resins and different types of vacuum-tight connections for extremely low temperatures, as well as his experience working with SQUID sensors performing in cryogenic conditions, has helped him to create a variety of SQUID magnetometers that measure extremely weak magnetic signals in a magnetically unshielded environment.

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*Several configurations of the low magnetic noise fiberglass cryostats for SQUID magnetometers or similar applications.*