

CRYOGENIC PROBES for the laboratory

FEATURES

- Easy to Install
- Multiple Measurement Capability
- Immersion or Vacuum Operation

Tristan manufactures three basic SQUID probes for general laboratory use. These probes are used to interface the SQUID sensors to the flux-locked loops and provide the basic capability for a variety of ultrasensitive measurements such as:

- Magnetic Fields and Field Gradients
- Static Magnetic Moment and Susceptibility
- Electric and Magnetic Fluctuations
- dc Voltage and Resistance
- Low Frequency ac Resistance and Self-inductance
- Low Frequency Mutual Inductance and Susceptibility

Tristan's cryogenic probes and cables are the heart of any SQUID based measurement system. They provide a flexible transmission line running from room temperature to either 4 K or 77 K with plug-in connectors at each end. Without restrictions of a rigid probe, a variety of installation options are available.

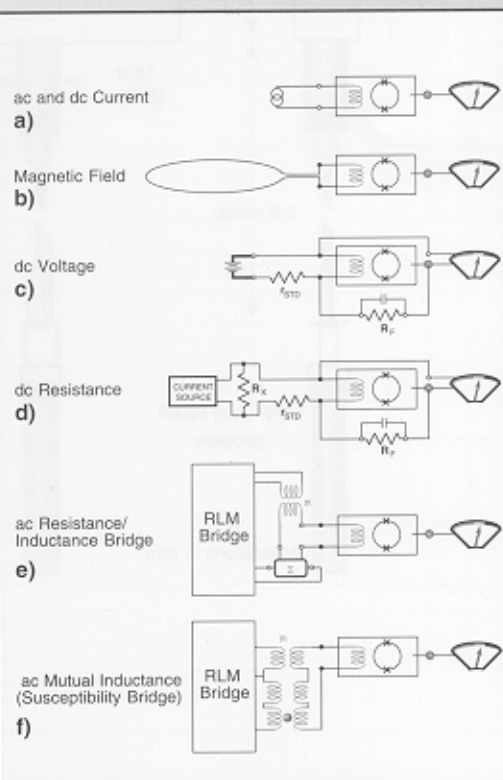
In all Tristan probes, construction materials are non-magnetic and carefully selected to minimize conduction of heat into the cryogenic bath. All probes are shielded against rf interference and other electrical transients that may affect the SQUID operation. A room temperature O-ring seal allows pumped dewar operation. Probes are available separately for upgrading older SQUID systems or for expanding the capabilities of a more recently purchased system.

The Model SP Cryogenic Cable is the probe of choice for simple current and magnetic field measurements. Used with the Model DSQ/20 low temperature (LTS) dc SQUID sensor, measurements shown in Fig 1a & 1b are possible. Used with the Model HTM-100 high temperature (HTS) dc SQUID sensor, measurement configurations shown in Fig 1b are possible.

The Model MFP Multi-Function Probe is the most versatile LTS SQUID probe offered. It combines full picovoltmeter, magnetometer, and ac bridge capabilities in a compact, easy-to-use design. The Model MFP can be used in any of the configurations shown in Fig. 1.

The MFP probe includes additional room temperature circuitry located in a vacuum sealed housing. The longer LSQ/20M SQUID sensor housing accommodates a cryogenic terminal board with the resistance and mutual inductance standards required for voltage and impedance measurements. Its great versatility makes this the recommended probe when a variety of applications are required.

The Model RMP is designed for ac measurements (Fig. 1e & 1f) and configurations requiring external feedback, but not a standard resistor.



TECHNICAL FEATURES

Model SP: Working Temperature: 0 – 77 K (Sensor dependent)

Model RMP: Working Temperature: 0 – 7 K (LSQ/20M sensor only)

Standard Mutual Inductance: 0.6 μ H (nominal)

Input Impedance: capacitive at non-zero frequencies with $Z = 1/20 j \omega$

Current Leads: rf decoupled floating pair, maximum current 0.5 Amperes

Model MFP: Working Temperature: 0 – 7 K (LSQ/20M sensor only)

Standard Resistor: 30 $\mu\Omega$ (nominal)

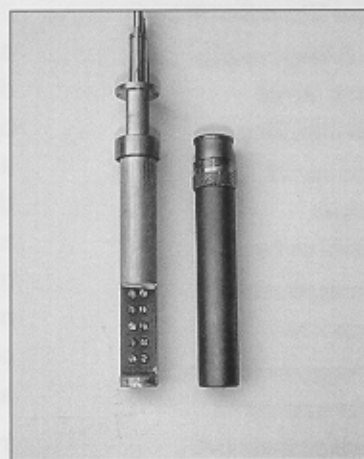
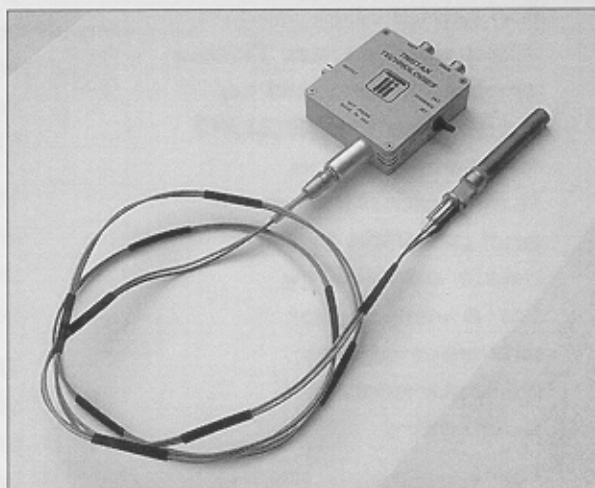
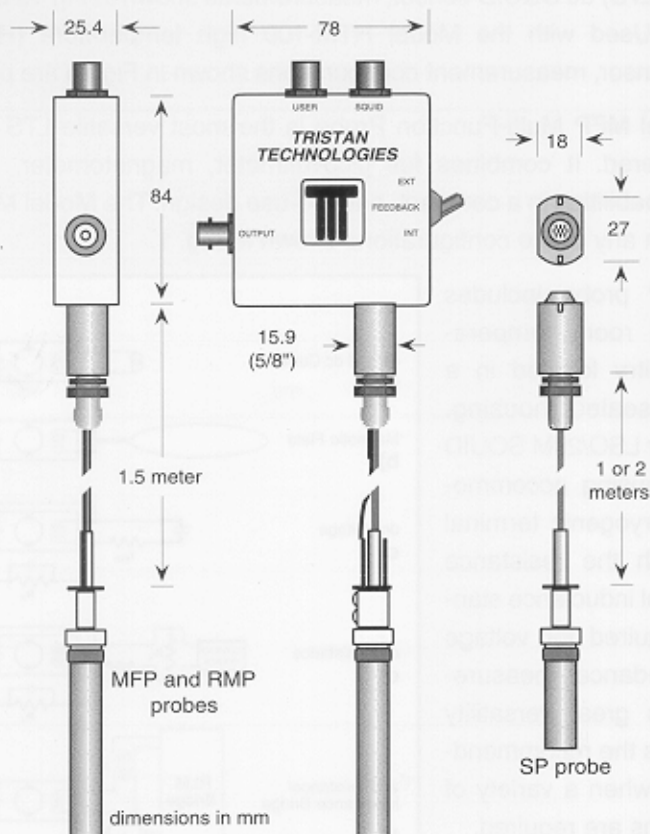
Standard Mutual Inductance: 0.6 μ H (nominal)

System Voltage Gain: 10^8 (nominal)

Noise/ $\sqrt{\text{Hz}}$: $(V^2)^{1/2} \leq \sqrt{10^{-26} + 5 \times 10^{-25} R_{\text{source}}^2 + 4k_{\text{Boltzmann}} R_{\text{source}} T_{\text{source}}}$

Input Impedance: capacitive at non-zero frequencies with $Z = 1/20 j \omega$

Current Leads: rf decoupled floating pair, maximum current 0.5 Amperes



**TRISTAN
TECHNOLOGIES**

Specifications subject to change without notice.

6350 Nancy Ridge Drive, Suite 102, San Diego, CA 92121
 Tel: (858) 550-2700 Fax: (858) 550-2799 E-mail: info@tristantech.com
[www: http://www.tristantech.com](http://www.tristantech.com)