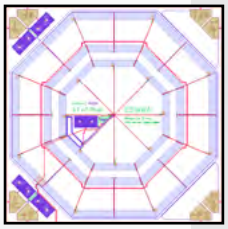
MFFT-1 Noise Thermometer

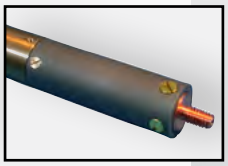
MAGNICON
physical research and instrumentation

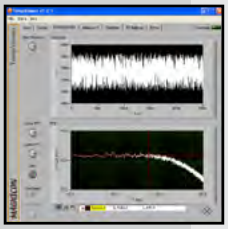
High-Accuracy Magnetic-Field-Fluctuation Thermometer

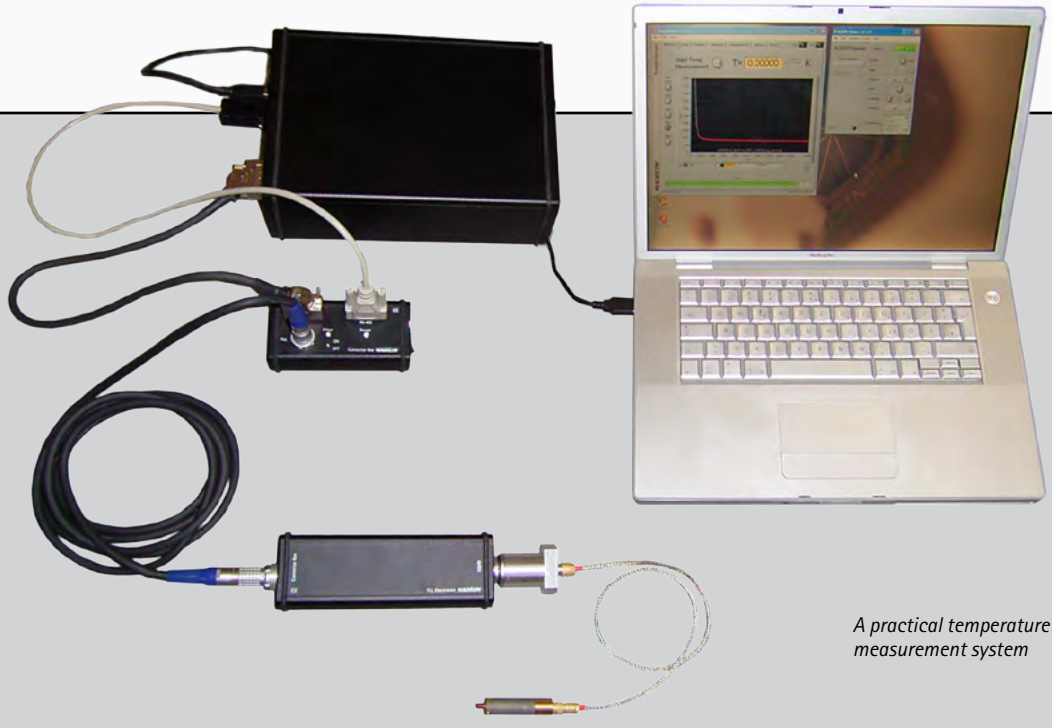
- Highly linear temperature sensor for dilution refrigerators
- Linear temperature range from 1mK to 1K
- Better than 1% resolution in temperature with only 30s measurement time (type A relative uncertainty)
- Compact, robust, and easy to use
- Straightforward mounting with good thermal contact
- Includes Copper temperature sensor, SQUID gradiometer, cryocable, SQUID electronics, 16Bit data acquisition, and analysis software
- Low power dissipation of typically 100pW
- Thermometer developed in collaboration with University of Heidelberg and PTB Berlin*

**fabrication and distribution under license agreement*









A practical temperature measurement system

Technical Data

General	■ magnetic-field-fluctuation "semi-primary" noise thermometer
	■ operable from <1mK up to 4.2K
	■ highly linear temperature range from 1mK to 1K
	■ better than 1% resolution in temperature with only 30s measurement time (type A relative uncertainty)
	■ typical power dissipation of about 100pW
	■ fully computer controlled
	■ only one reference temperature needed
	■ reference temperature calibration by Magnicon on request
	■ all system components are separately available
	■ deliverable as a complete and ready to use system
Sensor Module	■ 1.2cm³ high-purity Copper as temperature sensor
	■ robust SQUID gradiometer for noise read-out (type C5WN)
	■ Niobium screening tube
	■ compact dimensions of 59mm length and 12.7mm diameter
	■ M4 male Copper thread for easy mounting and good thermal contact
	■ thread adapters available
	■ typical SQUID limited sensor noise temperature of about 100µK
	■ plug socket for easy and reliable cryocable connection
Cryocable	■ vacuum tight top flange with 24 pin plug socket for SQUID electronics
	■ available with KF25 and KF40 flange option
	■ braided stainless steel sleeve for em shielding and stability
	■ 5 wires of Alloy30 (AWG 32/0.2mm) as standard wiring
	■ gold-plated brass plug on cold end
	■ completely customizable to allow heat sinks and feedthroughs
SQUID Electronics	■ fully functional high-performance SEL-1 SQUID electronics
	■ SQUID electronics additionally applicable for any SQUID application
	■ ultra-fast XXF-1 SQUID electronics on request
	■ LabView® based SQUIDViewer software for advanced adjustments
DAQ Box	■ 16Bit digital to analog converter (National Instruments® I/O card)
	■ integrated signal I/O and USB connection for SQUID electronics
	■ USB 2.0 connection
TempViewer Software	■ LabView® based TempViewer software for data acquisition and analysis
	■ continous real time temperature measurements
	■ save, reload, and display temperature vs time curves
	■ FFT and fit functionality
	■ built-in scope view and data preview
	■ easy user calibration measurements
	■ free software updates

MAGNICON GmbH | Lemsahler Landstr. 171 | 22397 Hamburg | Germany
www.magnicon.com | info@magnicon.com | phone +49 40 788 922-11 | fax +49 40 788 922-12