

Model 372 AC Resistance Bridge

Lake Shore Cryotronics



- For dilution refrigerators (DRs) to be operated below 100 mK
- Ability to increase the number of measurement channels to a maximum of 16 with an optional 3726 scanner
- Powerful impedance measurement capabilities such as quadrature measurements
- Multiple PID controllable outputs with up to 10 W of heater power available

**U.S. Patent #6, 501, 255, Dec. 2002, "Differential current source with active common mode reduction," Lake Shore Cryotronics, Inc.*

16 Channel Scanner

The Lake Shore Model 3726 scanner is designed to connect to multiple ultra-low temperature measurement points in a system. With lower input noise and DC bias current, the 3726 scanner offers superior performance to the previous generation 3716 scanner and will be capable of taking full advantage of the performance improvements built into the Model 372.



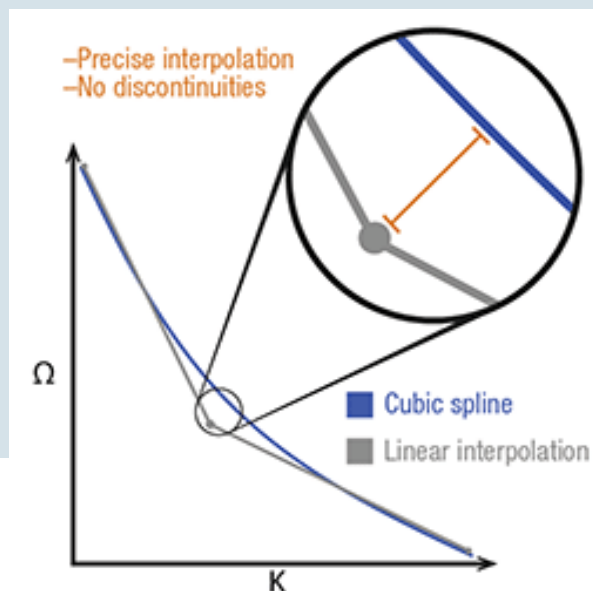
Latest-generation design for ultra-low temperature applications

The Model 372 AC resistance bridge and temperature controller builds on the solid foundation provided by the original Lake Shore AC resistance bridge. The Model 372 provides the best possible temperature measurement and control capabilities for dilution refrigerators (DRs) that are intended to be operated below 100 mK. The Model 372 makes it easy to perform multiple tasks that were once very difficult to perform reliably at ultra-low temperatures:

- Temperature measurement
- Automatic or manual temperature control
- Device or sample impedance measurements

Targeted Applications

- Ultra-low temperature measurement
- Noise rejection
- AC measurement signals
- Low noise signal recovery
- Temperature measurement
- Measure a wide range of resistive devices
- Backwards compatibility



Expandability

For situations where temperature measurements must be taken at multiple locations, the 3726 scanner and preamp can be paired with the Model 372 to provide up to 16 connections for 4-wire resistance measurements. The Model 372 can switch measurement to any one of these connections as required, removing the need to physically switch cables on the instrument to look at different sensors. The measurement signal is also boosted by a preamp circuit in the 3726, preserving the signal-to-noise ratio between the sensor and measurement circuitry of the Model 372. This allows connection cables of up to 10 m (33 ft) to be used between the Model 372 and the 3726.

Connectivity and Usability

Physical Connectivity

Various methods for communicating with the Model 372 are made available:

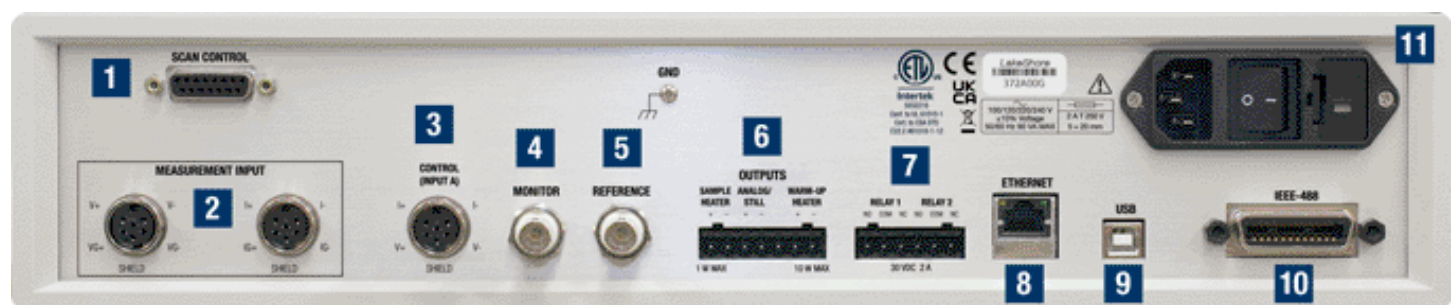
Ethernet	allows full control and reporting throughout an IP network.
USB	provides direct serial communication by emulating a standard RS-232 connection.
IEEE-488.2	allows connection to GPIB systems.



Available Functions

Multiple actions can be performed when connected to the Model 372 through one of its various remote access options:

- Send any command to the instrument that could be entered via the front panel
- Read and store measurement data that is generated by the instrument
- Live graphical viewing of data using the Lake Shore Cryotronics Chart Recorder software
- Load new calibration curves for use with new temperature sensors
- Upload new firmware if required



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|--|---|------------------------------|
| 1 Scanner control input (DA-15) | 5 Reference output (BNC) | 8 Ethernet interface (RJ-45) |
| 2 Sensor voltage/current input (6-pin DIN) | 6 Sample heater output, warm-up heater output, and still heater output (terminal block) | 9 USB interface (USB Type A) |
| 3 Secondary control input (6-pin DIN) | 7 Relay 1 and 2 (terminal block) | 10 IEEE-488.2 interface |
| 4 Monitor output (BNC) | | 11 Line power/fuse assembly |



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Specifications subject to change.
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