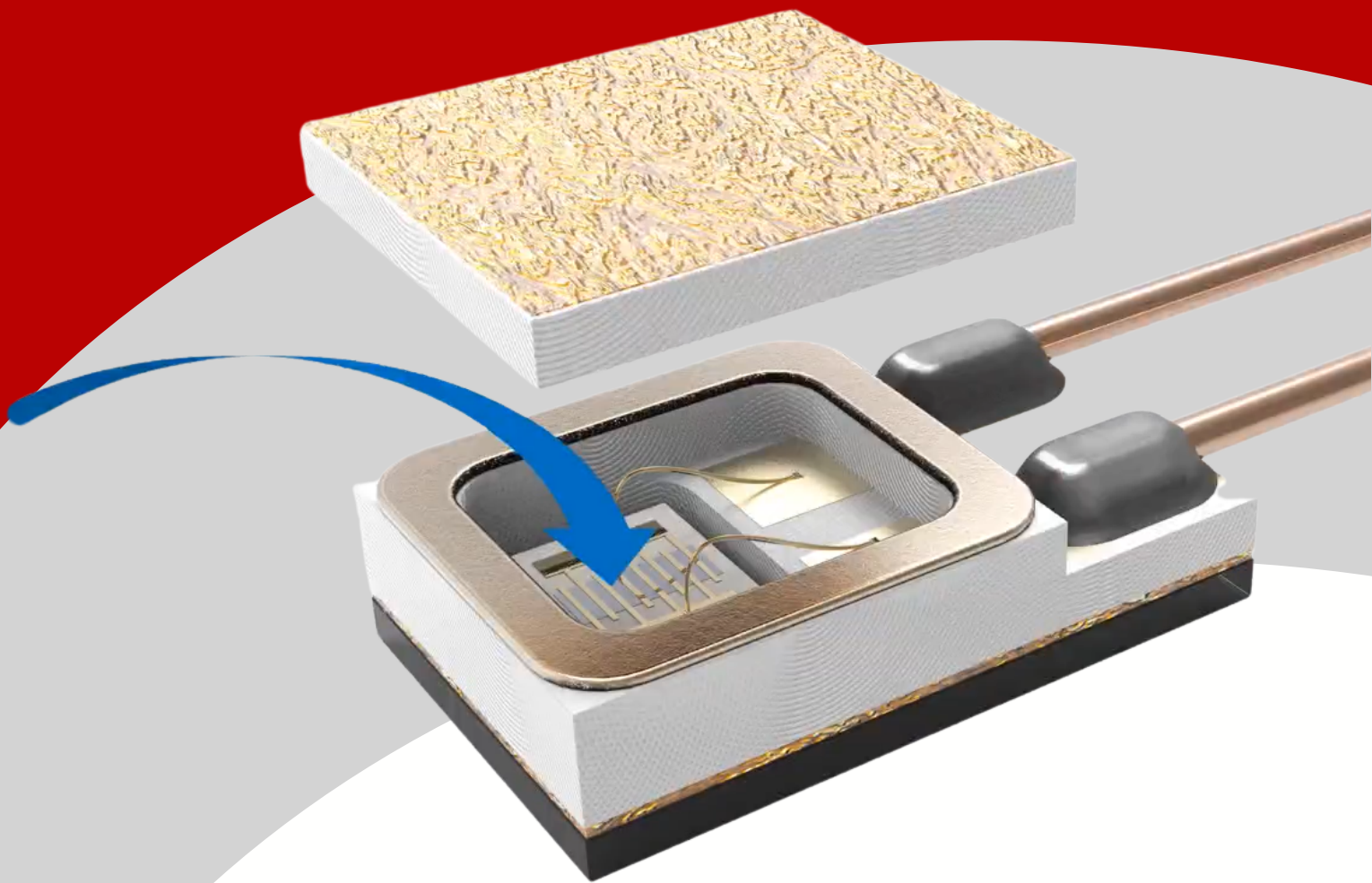




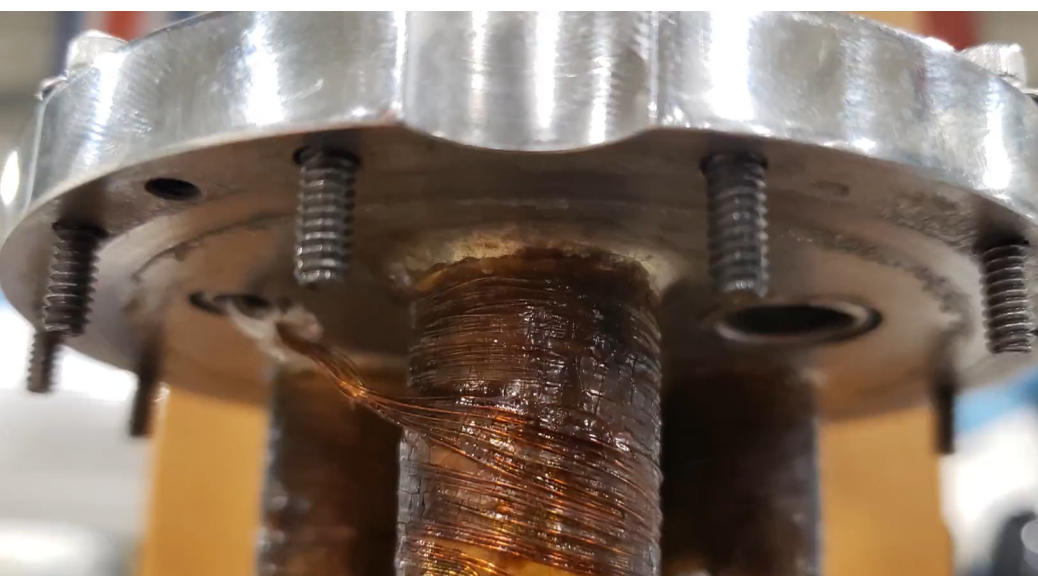
Quantum Design  
UK AND IRELAND

# Temperature Products



# About Lake Shore Cryotronics

**Supporting Breakthrough Science** in your academic laboratories and industrial facilities around the world



Leading researchers around the world trust Lake Shore Cryotronics for measurement and control solutions that drive the discovery and development of new materials for tomorrow's technologies. In electronics, clean energy, nanotechnology, and many other applications, Lake Shore provides the products and systems needed for precise measurements over a broad range of temperature and magnetic field conditions.

Quantum Design UK and Ireland (QDUKI) offers components and systems used in materials science, imaging, spectroscopy, photonics, nanotechnology, and life science research. QDUKI, like Lake Shore, possesses a deep understanding of the needs of researchers exploring next-generation technologies.

The partnership between Lake Shore and QDUKI combines the knowledge and application expertise of two industry leaders in scientific measurement, characterisation, and test to deliver best-in-class solutions to the research community.

We'd be happy to chat with you about your applications and areas of research. If you would like to find out more, please do not hesitate to get in touch with our dedicated technical experts here at QDUKI ...

DR. SHAYZ IKRAM  
**Technical Director**

DR. SATYAM LADVA  
**Technical Product Manager**

## Contents

### Temperature Controllers



Monitor & control temperatures from <300 mK to over 1,500 K. Choose from variety of sensor inputs, sensor excitation ranges, display features, and interfaces.

**Page 4**

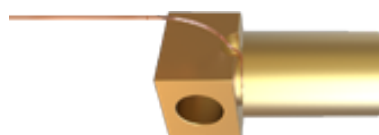
### Temperature Monitors



Monitor temperatures from 1.4 K to over 800 K. Choose from one or eight standard inputs. USB, IEEE-488 and RS-232C interfaces, relays, and analog outputs available.

**Page 4**

### Temperature Sensors



Measure temperatures from <20 mK to over 1,500 K. A wide selection of diodes, RTDs, thermocouples, and mounting packages are available.

**Page 5**



**see the full Lake Shore range on our website**

# TEMPERATURE CONTROLLERS



[Learn more](#)

## MODEL 372

### AC RESISTANCE BRIDGE

- Patented noise rejection technology and ability to increase the number of measurement channels to a maximum of 16 with optional 3726 scanner
- Dedicated input for ultra-low temperature control
- Powerful impedance measurement capabilities such as quadrature measurements



[Learn more](#)

## MODEL 350

### CRYOGENIC TEMPERATURE CONTROLLER

- Ideal for use with He-3 systems and other ultra-low temperature refrigeration platforms down to 100 mK
- Patented low-noise input circuitry enables super low excitation power for minimal self-heating and high resolution measurement
- 4 independent control loops and 4 PID-controlled outputs



[Learn more](#)

## MODEL 336

### CRYOGENIC TEMPERATURE CONTROLLER

- Operates down to 300 mK with appropriate NTC RTD sensors
- Four sensor inputs and four independent control outputs
- Automatically switch sensor inputs using zones to allow continuous measurement and control from 300 mK to 1505 K
- [Click here for information on Model 335](#)



[Learn more](#)

## MODEL 325

### CRYOGENIC TEMPERATURE CONTROLLER

- Operates down to 1.2 K with appropriate sensors
- Two sensor inputs
- Sensor excitation current reversal eliminates thermal EMF errors for resistance sensors

# TEMPERATURE MONITORS



[Learn more](#)

## MODEL 240

### SERIES INPUT MODULES

- Two or eight cryogenic temperature sensor inputs
- Supports industry-leading Lake Shore Cernox®, platinum, and other RTDs, plus DT-670 diodes
- Monitor temperatures down to 1 K and up to 800 K
- Current reversal to minimise thermoelectric offsets



[Learn more](#)

## MODEL 224

### TEMPERATURE MONITOR

- Equipped with 12 sensor channels for maximum monitoring capabilities
- Precisely measures in both higher temperature and cryogenic applications—down to 300 mK
- Ideal for multi-sensor lab uses, particularly for monitoring Cernox® sensors



[Learn more](#)

## MODEL 218

### TEMPERATURE MONITOR

- Operates down to 1.2 K with appropriate sensor
- 8 sensor inputs
- Supports diode and RTD sensors



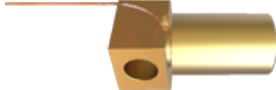
[Learn more](#)

## MODEL 211

### TEMPERATURE MONITOR

- Operates down to 1.2 K with appropriate sensor
- One sensor input
- Supports diode and RTD sensor

# CRYOGENIC TEMPERATURE SENSORS

|                                                                                                                          | TEMPERATURE RANGE | STANDARD CURVE (INTERCHANGEABLE) | RADIATION RESILIENT        | PERFORMANCE IN MAGNETIC FIELD | VACUUM COMPATIBLE        | BEST FOR                                                                                                                                                                                                | CLICK FOR PRODUCT PAGE       | PACKAGE OPTIONS                                |
|--------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------------|----------------------------|-------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------------------------|
| NEGATIVE TEMPERATURE COEFFICIENT RTDS                                                                                    |                   |                                  |                            |                               |                          |                                                                                                                                                                                                         |                              |                                                |
| <u>CERNOX®</u><br>                      | 0.10 K TO 420 K   |                                  | BEST CHOICE FOR CRYOGENICS | GOOD TO ABOVE 1 K             | ULTRA-HIGH (TO 10-10 PA) | Wide temperature range; best accuracy and precision in presence of magnetic fields or radiation; different models to maximise sensitivity at various temperatures; most popular cryogenic sensor family | <a href="#">PRODUCT PAGE</a> | <a href="#">CLICK HERE FOR PACKAGE OPTIONS</a> |
| <u>INTERCHANGEABLE ROX™</u><br>         | 0.05 K TO 40 K    | ●                                | ●                          | GOOD                          | HIGH (TO 10-4 PA)        | When sensor interchangeability is desired below 1.4 K or in the presence of moderate magnetic fields                                                                                                    | <a href="#">PRODUCT PAGE</a> | <a href="#">CLICK HERE FOR PACKAGE OPTIONS</a> |
| <u>ULTRA-LOW TEMPERATURE ROX™</u><br> | <0.01 K TO 40 K   | ●                                | ●                          | GOOD                          | HIGH (TO 10-4 PA)        | Temperature measurement below 50 mK                                                                                                                                                                     | <a href="#">PRODUCT PAGE</a> | <a href="#">CLICK HERE FOR PACKAGE OPTIONS</a> |
| <u>GERMANIUM</u><br>                  | 0.05 K TO 100 K   |                                  | ●                          | NOT RECOMMENDED               | HIGH (TO 10-4 PA)        | Highly stable measurements over long periods of time                                                                                                                                                    | <a href="#">PRODUCT PAGE</a> | <a href="#">CLICK HERE FOR PACKAGE OPTIONS</a> |
| DIODES                                                                                                                   |                   |                                  |                            |                               |                          |                                                                                                                                                                                                         |                              |                                                |
| <u>SILICON</u><br>                    | 1.4 K TO 500 K    | ●                                |                            | FAIR ABOVE 60 K               | ULTRA-HIGH (TO 10-10 PA) | Great value general-purpose sensor for cryogenic applications down to 1.4 K that don't involve magnetic fields or radiation                                                                             | <a href="#">PRODUCT PAGE</a> | <a href="#">CLICK HERE FOR PACKAGE OPTIONS</a> |
| POSITIVE TEMPERATURES COEFFICIENT RTDS                                                                                   |                   |                                  |                            |                               |                          |                                                                                                                                                                                                         |                              |                                                |
| <u>PLATINUM</u><br>                   | 14 K TO 873 K     | ●                                | ●                          | FAIR ABOVE 30 K               | HIGH (TO 10-4 PA)        | Accurate and repeatable measurements above 500 K, up to 873 K; affordable sensor for applications where temperatures remain above 14 K                                                                  | <a href="#">PRODUCT PAGE</a> | <a href="#">CLICK HERE FOR PACKAGE OPTIONS</a> |
| OTHER                                                                                                                    |                   |                                  |                            |                               |                          |                                                                                                                                                                                                         |                              |                                                |
| <u>CAPACITANCE</u><br>                | 1.4 K TO 290 K    |                                  |                            | EXCELLENT                     | HIGH (TO 10-4 PA)        | Highest control stability when in the presence of massive magnetic fields at cryogenic temperatures; requires a secondary sensor to provide temperature values                                          | <a href="#">PRODUCT PAGE</a> | <a href="#">CLICK HERE FOR PACKAGE OPTIONS</a> |
| <u>THERMOCOUPLE WIRE</u><br>          | 1.2 K TO 1543 K   | ●                                |                            | FAIR                          | ULTRA-HIGH (TO 10-10 PA) | Situations where the temperature exceeds 600 °C (873 K); lowest priced sensor for other temperature ranges, but at the cost of significant loss of accuracy                                             | <a href="#">PRODUCT PAGE</a> | <a href="#">CLICK HERE FOR PACKAGE OPTIONS</a> |
| SPECIALTY                                                                                                                |                   |                                  |                            |                               |                          |                                                                                                                                                                                                         |                              |                                                |
| <u>HR SERIES</u>                                                                                                         | 20 K TO 420 K     |                                  | ●                          | EXCELLENT                     | HIGH (TO 10-4 PA)        | Space Applications                                                                                                                                                                                      | <a href="#">PRODUCT PAGE</a> | <a href="#">MORE INFO ON LAKE SHORE SITE</a>   |



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