

microK Buyers Guide

The microK Precision Thermometry Bridge

Why choose the microK?

Because quite simply there is no alternative considering accuracy, stability, versatility, reliability and ease of use.

Accuracy

Calibration laboratories require accuracy – the microK delivers sub mK performance for resistance thermometers. For thermocouples its performance is comparable with the best laboratory 8.5 Digit DVMs.



It does this by using a new type of Analog to Digital Converter. The technology is licensed from the NPL, the United Kingdoms National Measurement Laboratory. A sigma delta ADC is used, but with a 5 Bit DAC employed in the feedback loop. For more technical data see the “Web Links” box.

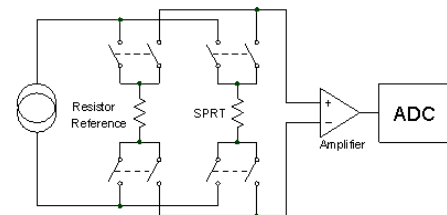
Stability

For resistance measurements the microK has no drift. This means that the stability specification for microK is 0 ppm / per year!

This is possible because the instrument successively switches the device under test (DUT) and the reference resistor into the same position in the measuring circuit.

The benefit, an inherently stable instrument.

The instrument can be used with external standard resistors or one of the five internal reference resistors.



Versatility

Secondary laboratories typically use resistance thermometers and for high temperature applications thermocouples. *At last the microK provides users with a high accuracy instrument that can support all the thermometers that the laboratory uses.* Standard Platinum Resistance Thermometers (SPRTs), Industrial PRTs, Thermistors and Thermocouples. There are no other instruments available that can work at this precision with all three of these sensor types.

This versatility also provides value – the cost of a DVM with comparable accuracy for thermocouple work is similar to the cost of the microK alone.

The microK has three input channels – guidelines frequently specify that two standards should be used to cross check each other. The microK can have two references and the device under test connected simultaneously.

Reliability

Before the microK instruments with this level of performance had to use mechanical relays. The microK breaks the mould by using the latest semiconductor devices to provide a completely solid state solution. To reduce the component count high density silicone integration technology is



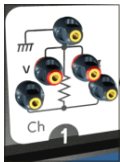
used (FPGA). If you have ever seen inside another instrument in this performance class you may have been concerned about long term reliability and servicing cost. Compare this with the inside of the microK.

Ease of Use

The claim “Ease of Use” is a common one but again the microK breaks the mould. The instrument is operated by a large 6.4” (163mm) colour touch screen. Simply tab through the four user screens to configure the instrument with all the options clearly presented. Temperature conversion types include ITS-90, Callendar-van Dusen, Steinhart-Hart and IEC 584-1. Enter coefficients from the touch screen or add a mouse or full size keyboard via the USB interface.



The microK includes a graphing facility with auto or configurable scales. It can also log the data to its internal memory or plug in a USB Pen Drive and log directly to that.



There Is So Much More

It doesn't stop there, microK has comprehensive security, an internal data base for all the standards and thermometers and it will warn you if a calibration has passed its expiry date. It can automatically be updated by downloading the latest software from the internet. It is fast with a measurement time of just one second and it uses keep warm currents. The low thermal EMF gold plated tellurium copper input connectors accept 4mm plugs, bare wire or spade terminals.

Laboratory Thermometer Check List

Accuracy - SPRT	Better than 0.5mK Over Whole Range
Channels	Three
Probes Supported	SPRTs, PRTs, Thermistors <i>and Thermocouples</i>
Solid State Design	All solid state NO relays or dials
Stability	Oppm / per year
Measurement Time	<2 Seconds
PC Interface	RS232 and USB Host
Units	Ratio, V, °C, °F and K

There is no equivalent – don't accept one!

List of Advantages over an AC Bridge

Compute Zero Current Resistance Automatically eliminating self heating effects without the need for manual correction (microK 200 models and above).

Have Three Input Channels

The microK is a precision thermometer which can be used

- A- All three channels have keep warm currents set by the user
- B- All three channels can be programmed to indicate zero current resistance with standard deviation
- C- When Calibrating SPRTs the third channel can be connected to a monitor SPRT to check the standard resistor
- D- When Calibrating Thermocouples the third channel can monitor the fixed point cell
- E- When intercomparing cells two SPRTs are exchanged to get accurate temperature differences – the third channel allows the two SPRTs to be compared to a reference resistor (nominally every six seconds)



Drift Free Using external reference resistors the microK is drift free, it does not have any correction circuits and does not require visits from a service engineer to keep it in specification.

Internal Data Logging – store years of results to internal memory or a USB Memory Stick

Measure Voltage – Use with Platinum / Rhodium, Platinum / Gold and other thermocouple types

Ease of Use – via touch screen and optional mouse and keyboard

Plug and Play Scanner Available – Each channel individually programmable for keep warm current, flexible – any combination of External Resistor SPRT

No PC Needed – can log, including up to 90 scanner channels from the touch screen

Reliability – Solid State and surface mount construction – modern design

Cost Saving – Significantly Cheaper than comparable AC systems.

Ease of Use

Direct Temperature Read Out

No PC needed, the display can show temperature and resistance in addition to ratio.

On Screen Charts

For example see freeze plateau of cells

Internal Storage of Standard Resistors, internal and external, SPRT Coefficients, Calibration Dates...

USB Port: Connect a Mouse, Keyboard for easy data entry, Flash Drive for easy file sharing

All of this without the need for a PC or additional software