MILLIK

Expandable 3-channel precision thermometer for PRTs, thermocouples, thermistors and 4-20 mA transmitters, -270°C to 1820°C

The very high accuracy 3-channel thermometer MilliK is capable of performances of 0.003°C with SPRTs and PRTs and high accuracy measurements with thermistors, thermocouples and even 4-20 mA process inputs. The number of channels can be expanded to 33 inputs with the MillisKanner.

Description

The MilliK precision thermometer sets a new standard for the high accuracy measurement and calibration of Platinum resistance thermometers, thermistors, thermocouple and process instrumentation (4-20 mA) over the range -270°C to 1820°C.

In addition to low uncertainty measurements from reference standards and industrial sensor measurement, the MilliK can control temperature sources (liquid baths and dry blocks), sequencing through a programmable list of temperature set points and logging data to internal memory or a USB drive.

The MilliK has two input channels for sensors and a third channel for current. Combined to MillisKanner, it can be expanded to become a measuring system with up to 33 channels reading SPRTs, RTDs, thermistors, or thermocouples with the option to control calibration baths and log readings accurately.

High accuracy and high resolution

Accuracy is < ±5 ppm for PRTs, ±2 µV for thermocouples and ±1 µA for transmitters

The display resolution is 0.0001°C (0.1 mK) and is made possible by using a powerful ADC to achieve a true measuring resolution of just 28 µΩ equivalent to 0.00007°C (0.07 mK) for PRT inputs.

The MilliK can display in °C, °F, K, Ohms, mV and mA with numeric and graphical display modes. The large back lit display makes configuring the instrument and setting the scrolling strip charts intuitive. The USB port allows for the use of a mouse, keyboard or USB Drive.

Designed for field and lab use

A robust design and operation from AC or DC power allows the MilliK to be used in the laboratory, test room or out in the field. It meets the requirements of industrial users and applications:

Fast current reversal technology and solid state switching eliminate thermal EMF effects avoiding the errors that occur with fixed DC instruments.

PRT lead wire errors are eliminated for up to 30 m of four core screened cable.

Not only are the two sensor channels galvanically isolated, but the 4-20 mA input is also separately isolated. The benefits are no ground loops, improved safety and noise immunity.

Key features:

- High accuracy: ±0.003°C
- SPRTs, PRTs, Thermistors, Thermocouples and 4 – 20mA Process Inputs
- Expandable to 33 channels
- Controls calibration baths and dry blocks
- Long term data acquisition
- Eliminates unwanted thermal EMFs and lead wire errors
- Galvanically isolated inputs
- Connectivity: 2 serial interfaces, Ethernet and USB host

Specifications

Specifications and performances in temperature, channel 1 + 2

SPRTs / PRTs: Measurement

Type	Range	Resolution	Accuracy / 1 year
SPRTs	0 / 115 Ω	0.0001°C 0.00001 Ω	At 0°C: 4 mK Over full range: 7 mK
PRTs	0 / 460 Ω	0.0001°C 0.00001 Ω	At 0°C: 4 mK Over full range: 7 mK

Temperature conversions: IEC 60751 (2008), Callendar-van Dusen, ITS-90
Measuring current: 1 mA and 1.428 mA at ±0.4% reversing
Keep-warm current: 1 mA and 1.428 mA

Thermistors: Measurement

Type	Range	Resolution	Accuracy / 1 year
Thermistors	0 / 500 kΩ	0.0001°C / 0.001 Ω	150 ppm

Measuring current: 5 µA reversing

Thermocouples: Measurement

Type	Range	Resolution	Accuracy / 1 year
B	±115 mV	0.0001°C / 0.00001 mV	4 µV / 0.46°C
E	±115 mV	0.0001°C / 0.00001 mV	4 µV / 0.06°C
J	±115 mV	0.0001°C / 0.00001 mV	4 µV / 0.07°C
K	±115 mV	0.0001°C / 0.00001 mV	4 µV / 0.10°C
L	±115 mV	0.0001°C / 0.00001 mV	4 µV / 0.07°C
N	±115 mV	0.0001°C / 0.00001 mV	4 µV / 0.12°C
R	±115 mV	0.0001°C / 0.00001 mV	4 µV / 0.34°C
S	±115 mV	0.0001°C / 0.00001 mV	4 µV / 0.38°C
T	±115 mV	0.0001°C / 0.00001 mV	4 µV / 0.09°C
Au/Pt	±115 mV	0.0001°C / 0.00001 mV	4 µV / 0.23°C

Specifications and performances in process, channel 3

Current: Measurement

Range	Resolution	Accuracy / 1 year
0-30 mA	0.001 mA	0.02% RDG

Further features

Statistical functions	In addition to instantaneous display, the user can select mean of 2-100 measurements with standard deviation
Measurement time	950 ms

General specifications

Size	255 x 255 x 114 mm
Weight	2.25 kg
Display	Graphical color back-lit LCD display, 230 x 420 Display unit: °C, °F, K, Ω, mV, mA
Power supply	88 / 264 V RMS, 47/63Hz 6 Watts
Batteries	Type: 4 x AA cells
Communication ports	Serial interface, Ethernet, USB
Storage capacity	> 180 days of measurements stored with date and time on internal memory

Environmental specifications

Reference range	15 to 30°C (RH: 10 to 90 % w/o condensing)
Operating reference range	0 to 45°C (RH: 0 to 99% w/o condensing)

Models and accessories

Instrument:

MilliK 924 3-channel expandable precision thermometer for PRTs, thermocouples, thermistors and 4-20 mA transmitters, -270°C to 1820°C

Delivered in standard with:

Cal Notepad software

Serial communication cable

User manual

Traceable certificate

External channel expander:

914a MillisKanner channel expander (first unit)

Delivered in standard with:

- Connection cable for MilliK

932-42-33 Universal power supply 90 / 240 V (50/60 Hz), to power up to 4 MillisKanner units

914-03-02 Digital connection cable

914-02-02 Additional connection cable MilliK / MillisKanner

914b Scanner MillisKanner (référence à utiliser à partir du deuxième MillisKanner commandé)

Livré en standard avec :

- Câble de connexion MillisKanner / MillisKanner

914-02-03 DC supply cable (universal power supply not required)

914-03-02 Digital connection cable

914-02-04 Additional connection cable MillisKanner / MillisKanner

Working standard Pt100:

935-14-13/TTI Semi standard Pt100 (-196°C to 250°C), with LEMO connector and carrying case

935-14-16/TTI Semi standard Pt100 (-100°C to 450°C), with LEMO connector and carrying case

935-14-61/TTI Semi standard Pt100 (-50°C to 250°C), with LEMO connector and carrying case

935-14-72/TTI Semi standard Pt100 (-50°C to 670°C), with LEMO connector and carrying case

935-14-95H/TTI Semi standard Pt100 (-80°C to 670°C), with LEMO connector and carrying case

935-14-95L/TTI Semi standard Pt100 (-200°C to 165°C), with LEMO connector and carrying case

Semi standard PRT:

909L/100/480/TTI Semi standard Pt100 in metal (-200°C to 165°C), length: 480 mm, with LEMO connector and carrying case

909Q/100/480/TTI Semi standard Pt100 in quartz (-200°C to 550°C), length: 480 mm, with LEMO connector and carrying case

Accessories:

956 Terminal adapter

931-22-102 Soft carrying case

Packing information:

Size 255 x 255 x 114 mm

Weight 2.25 kg