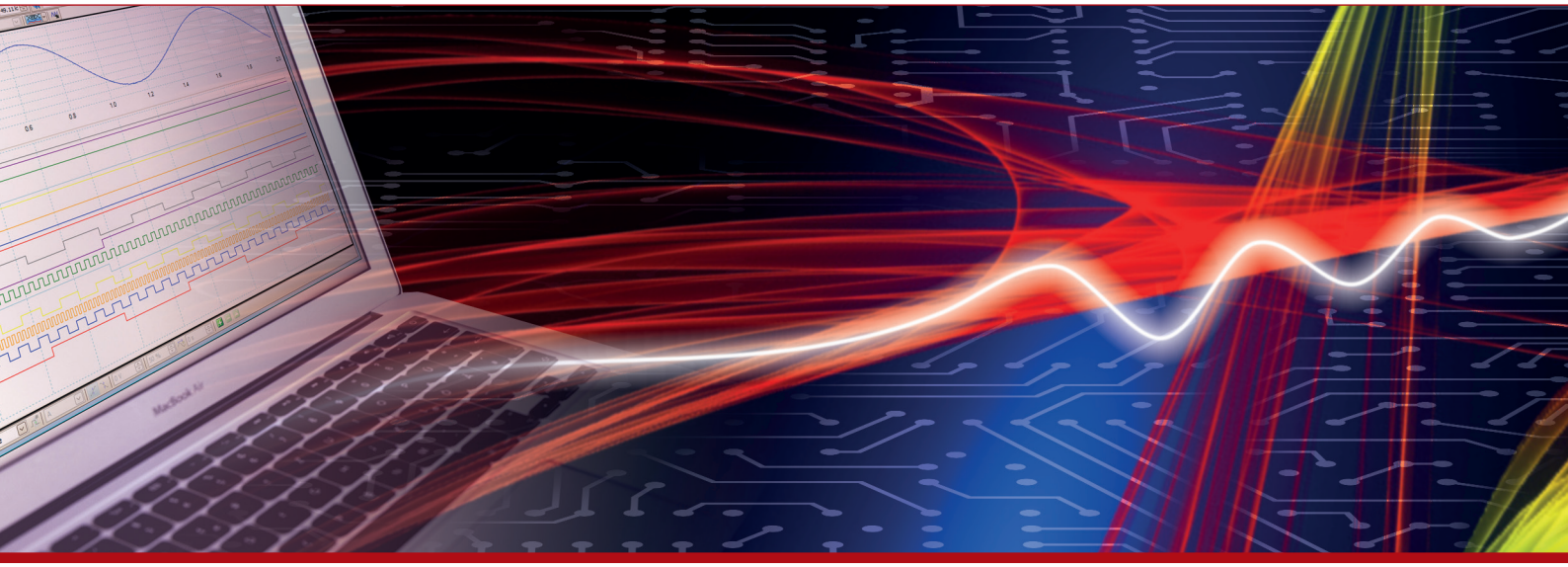
Product Datasheet - Technical Specifications



More information in our Web-Shop at ▸ **www.meilhaus.com** and in our download section.

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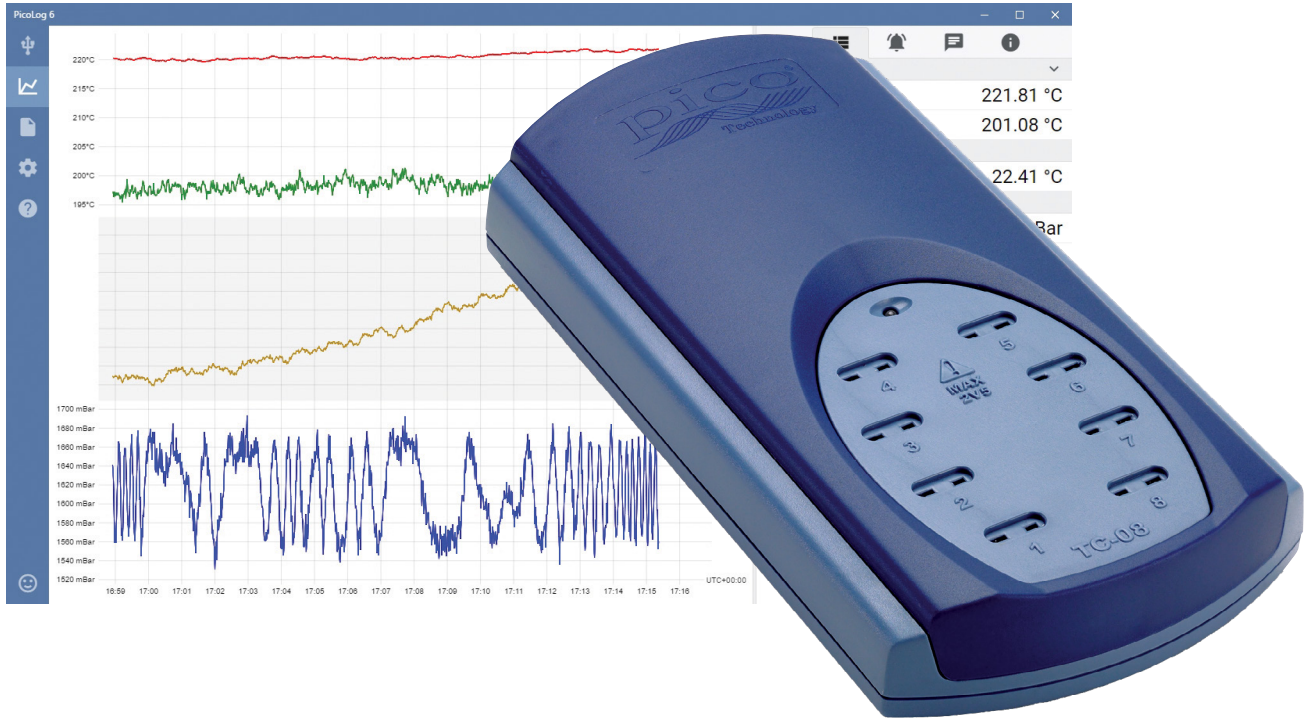
USB TC-08

8-channel thermocouple data logger



Low cost, high resolution

Measures and records up to eight thermocouples at once
20-bit resolution and high accuracy
Supports all commonly used thermocouple types
Measures from –270 °C to +1820 °C
Built-in cold junction compensation
Up to 10 measurements per second
USB-connected and powered
Run multiple units on a single PC
Supplied with PicoLog® 6 data logging software and PicoSDK®
Compatible with Windows, Linux and macOS

USB TC-08 thermocouple data logger

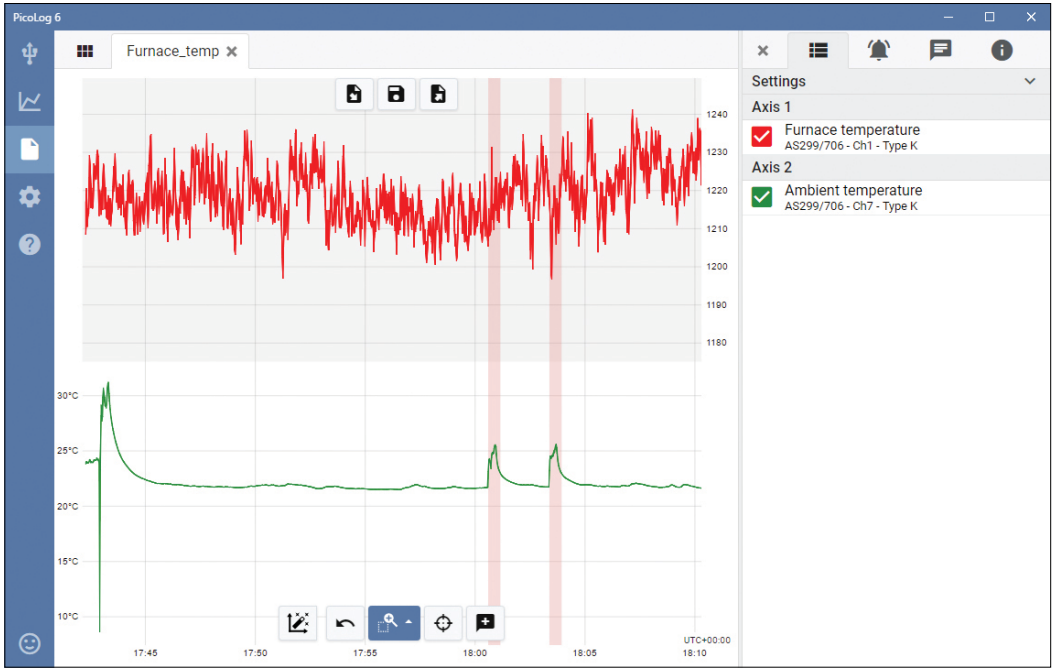
The USB TC-08 thermocouple data logger offers industry-leading performance and a cost-effective temperature measurement solution. With eight direct thermocouple inputs, the USB TC-08 can take accurate, rapid readings. In addition, you can use up to 20 units simultaneously on one PC. The logger can measure and record temperatures ranging from –270 °C to +1820 °C using the appropriate thermocouple type (B, E, J, K, N, R, S, T). It draws power from your computer's USB port, so no external power supply is necessary.

Wide temperature range

The USB TC-08 thermocouple data logger is designed to measure a wide range of temperatures using any thermocouple that has a miniature thermocouple connector. Pico supplies a wide range of suitable thermocouples (see **Ordering information**).

All types of thermocouple in common use today are supported, allowing an effective temperature range of –270 °C to +1820 °C (the actual temperature range depends on the thermocouple being used).

You can also use the built-in cold junction compensation (CJC) circuit as a ninth channel to measure ambient temperature.



Fast and accurate temperature data acquisition

With the USB TC-08 thermocouple data logger, you can make temperature measurements both quickly and accurately.

The short conversion time of the USB TC-08 means that it can take up to 10 temperature measurements every second (CJC counts as an additional measurement), while the high (20-bit) resolution ensures that the USB TC-08 can detect minute changes in temperature. For Type K thermocouples, the USB TC-08 can maintain a better than 0.025 °C resolution over a –250 °C to +1370 °C range.

PicoLog 6 software – straightforward from the start

PicoLog 6 is a complete data acquisition software package for the TC-08 data logger, and is fully compatible with Windows, macOS and Linux. With its clear and user-friendly layout, ideal for use with a mouse or a touchscreen, PicoLog 6 allows you to set up the logger and start recording with just a few clicks of the mouse, whatever your level of data logging experience. Set up simple or advanced acquisitions quickly, and record, view and analyze your data with ease.

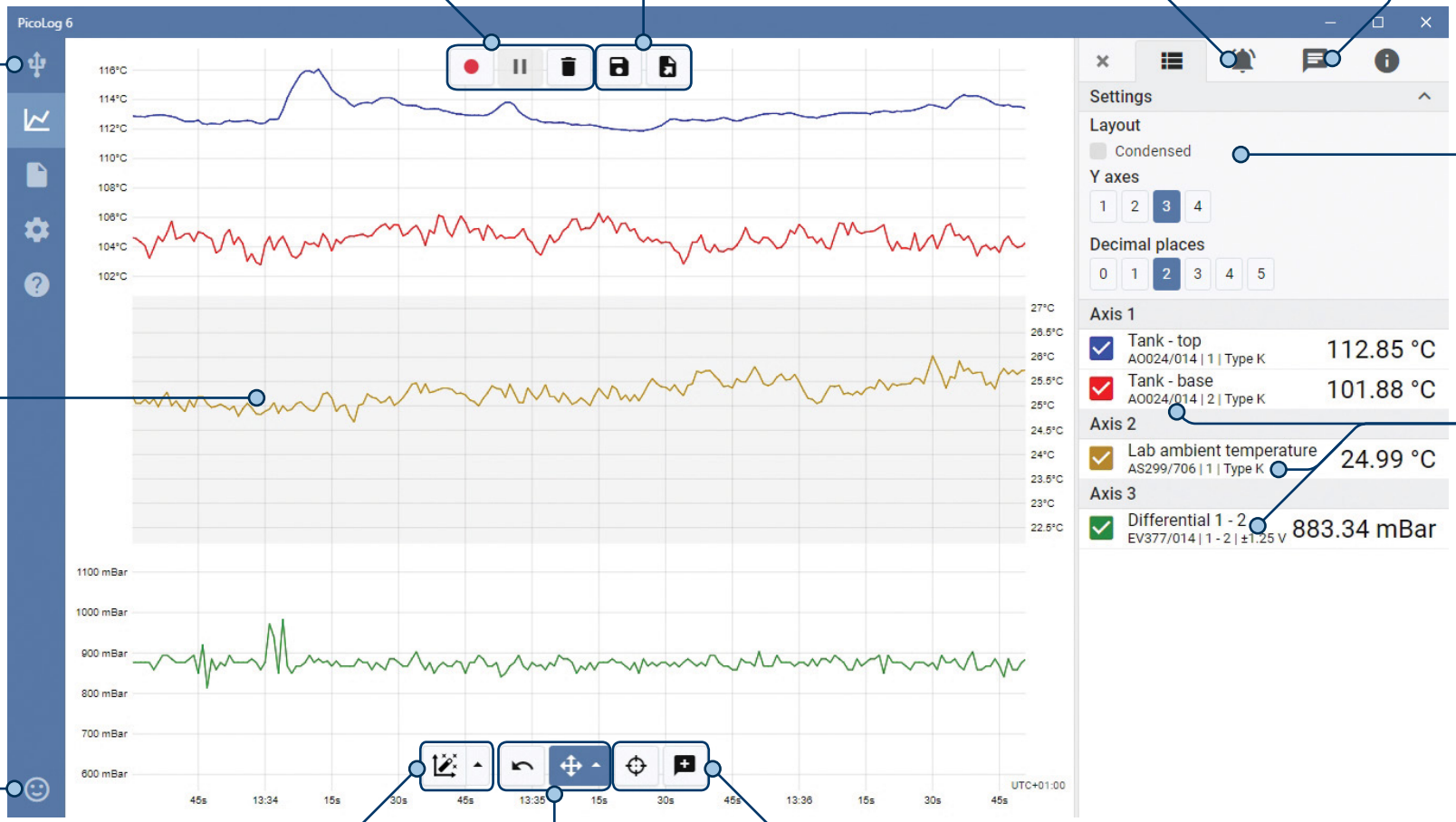
Capture controls
Separate **Record**, **Pause** and **Reset** buttons make it harder to press any of them by mistake.

Save and Export options
Copy your graph to the clipboard, save it as a PDF, export the raw data to a CSV file, or save the data and configuration as a robust `.picolog` database file.

Alarms
Set up alarms to alert you to a range of events. Alarms can take the form of sounds, visual notifications, graph annotations and more.

Notes & annotations
Add notes about the dataset as a whole or annotations about particular points on the graph.

Device settings view
Easily set up and adjust acquisition and math channels on one or more data loggers and check their status at a glance.



Pullout information panel
Manage your channel and axis settings, alarms, notes and capture information in this easy-to-read layout. Close the panel to make more room for the capture graph, and reopen it at any time.

Graph view
Display your data in real time, as it is collected, on up to four independent Y axes simultaneously: set them up by dragging and dropping the entries in the **Channels & Axes** panel on the right.

Multiple devices
Log data on up to 20 devices at the same time. Here, three separate data loggers are in use: two USB TC-08s and one ADC-24 voltage input logger.

Give instant feedback
We want to hear from you! Click here to contact Pico with your comments.

Data view
Display all the data collected so far or keep the graph scale the same and pan along as new samples appear.

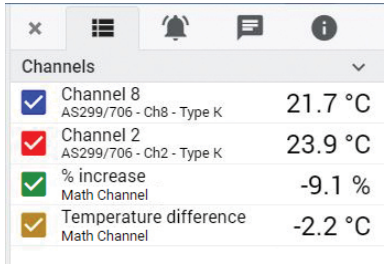
Pan and zoom controls
Zoom in, zoom out, zoom to a selection or pan through the data with these tools. If you make a mistake, just click **Undo**.

Cursors and annotations
Use cursors to highlight the data value and time at any point on the graph, or click **Add annotation** to mark that point with a text note.

Math channels

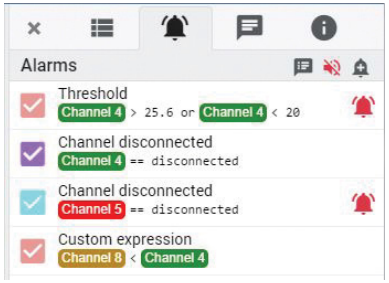
Sometimes you need to use data from one or more measurement channels to graph and record a calculated parameter. You can use the PicoLog 6 equation editor to set up simple math channels such as A–B or more complex functions such as log, sqrt, abs, round, min, max, mean and median.

PicoLog 6 treats math channels like any other channel, so you can still set alarms and annotate them.



Alarms

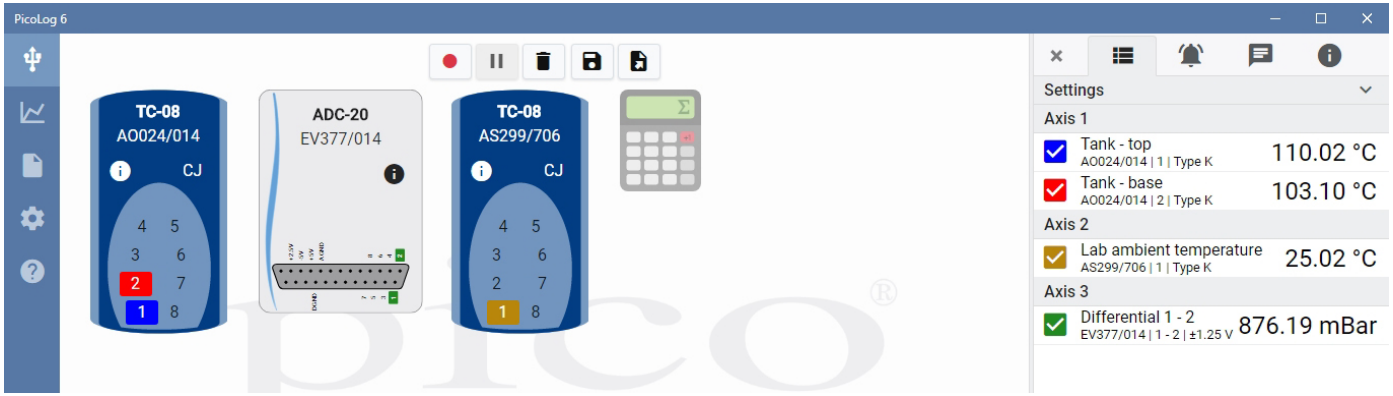
In PicoLog 6, you can set up alarms to alert you to various events. These can be as simple or as complex as you like: alarms can trigger on a signal threshold or disconnection of the data logger, or you can set up a logic expression of your own. Alarms can play sounds, display visual alerts, run applications or mark when the event occurred on the graph.



Intuitive logger and channel setup

The **Devices** view lets you set up a multichannel acquisition system in a simple way, with the option to use multiple different Pico data loggers simultaneously. PicoLog shows you an image of each connected device, so you can quickly and easily enable or disable channels and set up their properties.

On the right, you can see the device setup for the acquisition on the previous page: two USB TC-08s and one ADC-20 voltage input logger.



Robust file format

At the heart of PicoLog 6 is the file system, which stores live capture data directly to a robust database, rather than to a single file that is vulnerable to corruption and data loss. If the computer is shut down and rebooted, PicoLog will only lose the data during the outage – saving resumes when you restart the software.

This file system also means that the size of the dataset you can capture you is virtually unlimited – the only restriction is the size of your computer's hard disk!

The `.picolog` file format is compatible across all operating systems, and there is no need to set up a file to save to before the capture is complete. You can also save mid-capture if you wish to share the data collected so far. Since anyone can download and install PicoLog 6 for free, you can easily share saved data with co-workers, customers and suppliers for offline post-analysis.

PicoSDK®

Pico's software development kit, PicoSDK, is available free of charge and allows you to write your own software and interface to third-party software packages.

Pico also maintains repositories of example code on GitHub (github.com/picotech), showing how to use PicoSDK with software packages such as Microsoft Excel, National Instruments LabVIEW and MathWorks MATLAB, or with programming languages including C, C++, C# and Visual Basic .NET.

PicoSDK and the *USB TC-08 Programmer's Guide* are available to download from www.picotech.com/downloads.

Try the PicoLog 6 software today!

PicoLog 6's built-in demo mode allows you to try out the full functionality of the software with a choice of virtual devices and simulated live data. You also can use PicoLog 6 to view previously saved data, even with no device connected. Visit www.picotech.com/downloads and select **PicoLog Data Loggers** to get your copy.

Specifications

Hardware	
Number of channels (single unit)	8
Maximum number of channels (using up to 20 units)	160
Conversion time	100 ms per thermocouple channel + 100 ms for CJC (this can be disabled if all channels are used as voltage inputs)
Temperature accuracy	Sum of ±0.2% of reading and ±0.5 °C
Voltage accuracy	Sum of ±0.2% of reading and ±10 µV
Overvoltage protection	±30 V
Maximum common-mode voltage	±7.5 V
Input impedance	2 MΩ
Input range (voltage)	±70 mV
Resolution	20 bits
Noise-free resolution	16.25 bits
Thermocouple types supported	B, E, J, K, N, R, S, T
Input connectors	Miniature thermocouple

General	
Connectivity	USB 2.0
Device connector type	USB 2.0, Type B
Power requirements	USB port
Dimensions	201 x 104 x 34 mm (7.91 x 4.09 x 1.34 in)
Temperature range, operating	0 °C to 50 °C
Temperature range, operating, for quoted accuracy	20 °C to 30 °C
Temperature range, storage	–20 °C to 60 °C
Humidity range, operating	5 to 80 % RH non-condensing
Humidity range, storage	5 to 95 % RH non-condensing
Altitude	Up to 2000 m
Pollution degree	Pollution degree 2
Water resistance	Not water-resistant
Safety approvals	Designed to 2014/35/EU: Low Voltage Directive
EMC approvals	Tested to 2014/30/EU: Electromagnetic Compatibility Directive
Environmental approvals	RoHS and WEEE compliant
Software	PicoLog 6, PicoSDK (available from www.picotech.com/downloads) Example code (available from Pico's GitHub organization page, github.com/picotech)

General (continued)	
PC requirements	Windows 7, 8 or 10, 32-bit or 64-bit macOS 10.9 (Mavericks) or later, 64-bit only Linux (tested on Redhat, OpenSUSE and Ubuntu), 64-bit only Hardware as required by the operating system
Documentation	Quick Start Guide User's Guide Programmer's Guide EU Declaration of Conformity All relevant documentation is available for download from www.picotech.com/downloads

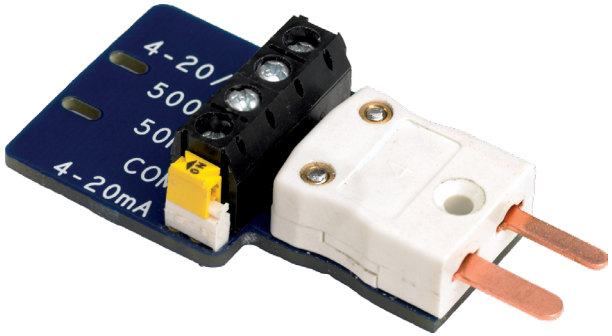
Compatible thermocouples

The USB TC-08 is compatible with all commonly used thermocouples, offering high accuracy without compromising acquisition speed. Thermocouple types and temperature ranges are shown in the table below.

Type	Overall range (°C)	0.1 °C resolution	0.025 °C resolution
B	20 to 1820	150 to 1820	600 to 1820
E	–270 to 910	–270 to 910	–260 to 910
J	–210 to 1200	–210 to 1200	–210 to 1200
K	–270 to 1370	–270 to 1370	–250 to 1370
N	–270 to 1300	–260 to 1300	–230 to 1300
R	–50 to 1760	–50 to 1760	20 to 1760
S	–50 to 1760	–50 to 1760	20 to 1760
T	–270 to 400	–270 to 400	–250 to 400

Also measures voltage and current!

The optional USB TC-08 single-channel terminal board plugs into one channel on the data logger and has a set of screw terminals, allowing you to connect sensors with voltage or current outputs to the data logger without any need for soldering. The four input ranges (±50 mV, ±500 mV, ±5 V and 4–20 mA) allow you to measure a wide range of signals.



Ordering information

Type K and T thermocouples

Product name	Description
SE059 thermocouple type K	High-temperature, exposed tip, fiberglass insulated, 1 m
SE060 thermocouple type K	High-temperature, exposed tip, fiberglass insulated, 2 m
SE061 thermocouple type K	High-temperature, exposed tip, fiberglass insulated, 3 m
SE062 thermocouple type K	High-temperature, exposed tip, fiberglass insulated, 5 m
SE002 thermocouple type K	Probe, air, 4.5 mm tip
SE001 thermocouple type K	Exposed tip, fiberglass insulated, 1 m
SE030 thermocouple type K	Exposed tip, fiberglass insulated, 2 m
SE031 thermocouple type K	Exposed tip, fiberglass insulated, 5 m
SE000 thermocouple type K	Exposed tip, PTFE insulated, 1 m
SE027 thermocouple type K	Exposed tip, PTFE insulated, 2 m
SE028 thermocouple type K	Exposed tip, PTFE insulated, 3 m
SE029 thermocouple type K	Exposed tip, PTFE insulated, 10 m
SE003 thermocouple type K	Insertion, 3.3 mm tip
SE004 thermocouple type K	Ribbon surface, 8 mm tip
SE056 thermocouple type T	5 mm × 50 mm stainless steel waterproof tip, silicone insulated, 3 m
SE057 thermocouple type T	5 mm × 50 mm stainless steel waterproof tip, silicone insulated, 5 m
SE058 thermocouple type T	5 mm × 50 mm stainless steel waterproof tip, silicone insulated, 10 m
SE051 thermocouple type T	Exposed tip, fiberglass insulated, 1 m
SE052 thermocouple type T	Exposed tip, fiberglass insulated, 2 m
SE053 thermocouple type T	Exposed tip, fiberglass insulated, 3 m
SE054 thermocouple type T	Exposed tip, fiberglass insulated, 5 m
SE055 thermocouple type T	Exposed tip, fiberglass insulated, 10 m
SE046 thermocouple type T	Exposed tip, PTFE insulated, 1 m
SE047 thermocouple type T	Exposed tip, PTFE insulated, 2 m
SE048 thermocouple type T	Exposed tip, PTFE insulated, 3 m
SE049 thermocouple type T	Exposed tip, PTFE insulated, 5 m
SE050 thermocouple type T	Exposed tip, PTFE insulated, 10 m

Ordering information (continued)

Product name	Description
USB TC-08	Thermocouple data logger with Pico blue USB 2.0 cable, 1.8 m

Optional accessories

Product name	Description
USB TC-08 single-channel terminal board	Single-channel terminal board for use with USB TC-08 thermocouple data logger
USB 2.0 cable, 1.8 m*	Replacement Pico blue USB 2.0 cable, 1.8 m
USB 2.0 cable, 0.5 m*	Pico blue USB 2.0 cable, 0.5 m
USB 2.0 cable, 4.5 m*	Pico blue USB 2.0 cable, 4.5 m

* Pico blue USB cables are designed and built specifically for use with Pico Technology oscilloscopes and data loggers in order to minimize voltage drop and noise. Take care to use your USB TC-08 data logger with Pico blue USB cables only.