

## Product Datasheet - Technical Specifications



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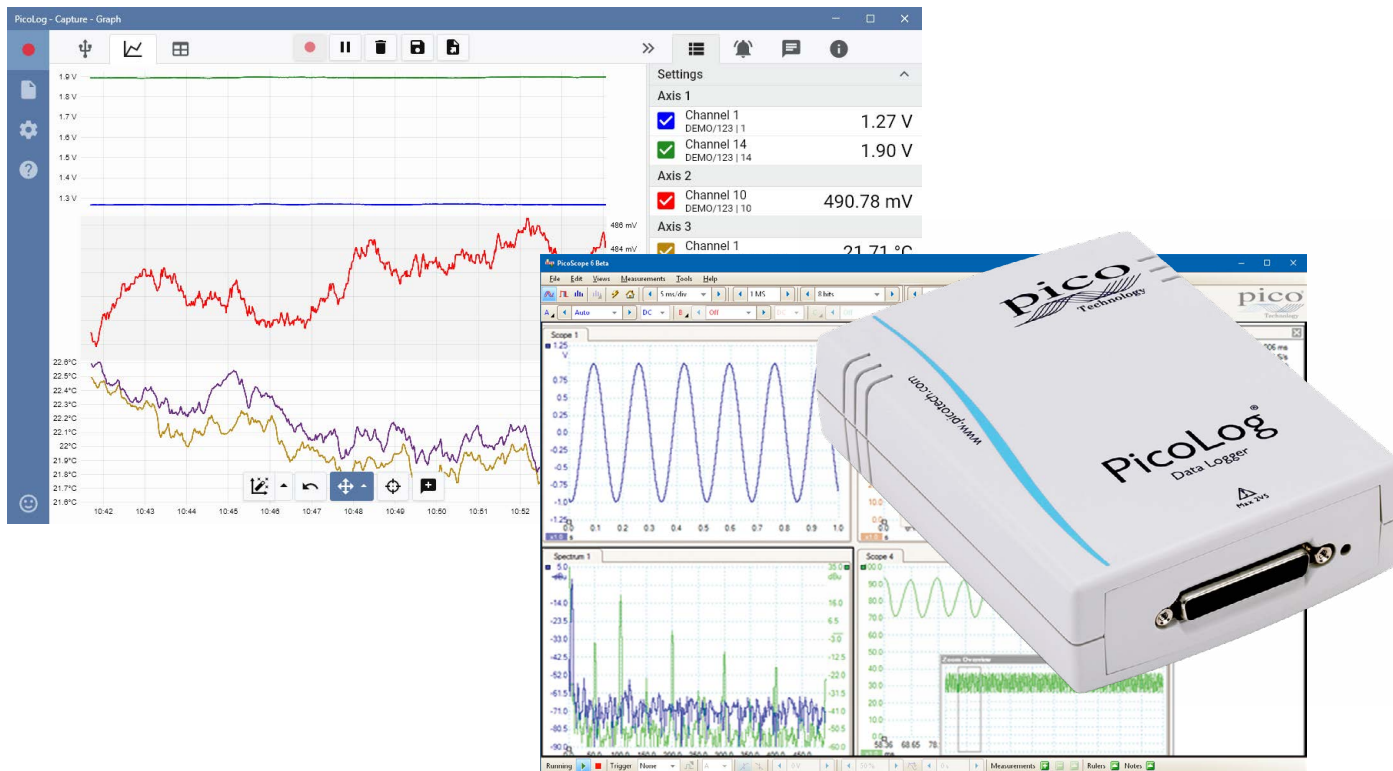
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# PicoLog<sup>®</sup> 1000 Series

Multipurpose data acquisition



- Up to 16 unipolar analog input channels
- Up to 12-bit resolution with 0.5% accuracy
- Up to 4 software-configurable digital output lines
- Up to 1 MS/s sampling rate
- USB connected and powered
- Free to download PicoLog 6 data logging software
- Free to download PicoScope 6 oscilloscope software

## PicoLog 1000 Series

Designed to meet the needs of a wide range of general-purpose voltage, sensor and transducer logging applications, the PicoLog 1000 Multipurpose DAQ Series features independent software-configurable scaling and control outputs, an external terminal board for custom front-end circuitry and a choice of 10 or 12-bit input resolution.

### An expandable multichannel data acquisition system

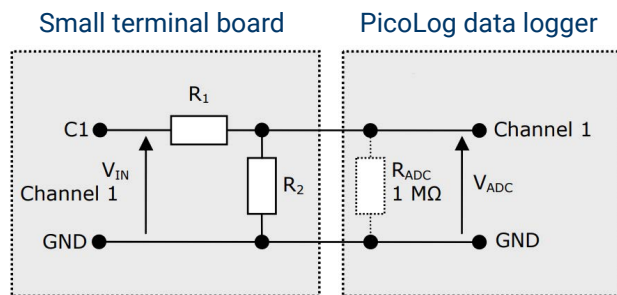
The budget model PicoLog 1012 has 12 input channels and 10 bit resolution. The powerful PicoLog 1216 has 16 channels and 12 bit resolution. Need more channels? No problem. Using the new PicoLog software you can connect up to 20 Pico data loggers to one PC – giving you a potential 320-channel PicoLog 1000 Series data acquisition system, or the ability to use your PicoLog 1000 logger with other devices such as the TC-08 thermocouple data logger.

### External terminal board

The external terminal board, which plugs in to the 25-way connector on the logger, has screw terminals to allow sensor wires to be attached to the data logger without soldering. The terminal board also has locations where you can fit resistors to offset and extend the input ranges of the logger.

The terminal board user manual contains simple circuit diagrams to increase the input voltage range of the logger or to measure current, for example, 4 to 20 mA sensors.

The image below is an example from the terminal board user manual showing how to measure voltages above +2.5 V by using a voltage divider connection:



This circuit shows the voltage divider for analog channel 1. The connections are similar for other channels. You must cut one track on the terminal board and fit two 0805 surface mount, or axial leaded, resistors for each channel that you wish to use this way.



### Fast and accurate

With 10 or 12-bit resolution and multiple sampling modes, a PicoLog 1000 Series logger will meet your data logging needs. The PicoLog 1000 Series has two sampling modes:

- Using the PicoLog software, readings can be logged continuously at up to 1 kS/s limited only by your computer's available storage.
- Using the PicoScope software, the full sampling rate of 1 MS/s (split between enabled channels) is available using the logger's internal 8000 sample memory buffer.

Using PicoSDK you can write your own programs using these (and other) sampling modes and rates. See the specifications table and PicoLog 1000 Series Programmer's Guide for more information.



## PicoLog software – straightforward from the start

PicoLog is a complete data acquisition software package for the PicoLog 1000 Series 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 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.

### Device settings, Graph and Table

Easily set up and adjust acquisition and math channels on one or more data loggers and check their status at a glance. You can also select Graph view to see live data trend lines and Table view to see data in tabular form in real-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.

### Give instant feedback

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

### Capture controls

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

### Save and Export options

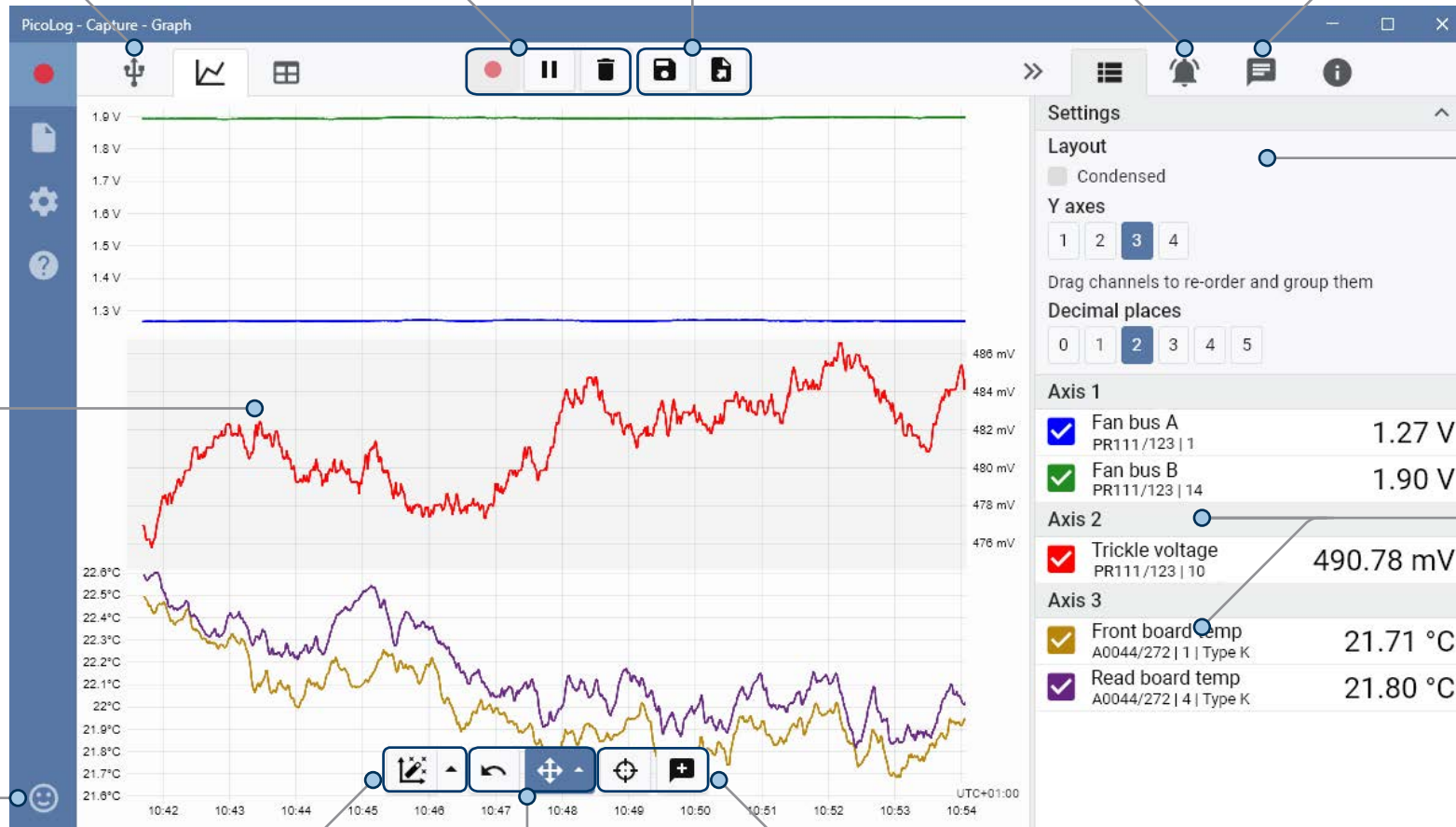
Copy your graph to the clipboard, save it as a PDF, export the raw data to a CSV file, or save the data and configuration as a robust .picolog database file.

### 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.



### 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.

### Multiple devices

Log data on up to 20 devices at the same time. Here, two separate data loggers are in use: one PicoLog 1216 multi-channel data logger and one TC-08 temperature data logger.

### 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.

## PicoScope software

The display can be as simple or as advanced as you need. Begin with a single view of one channel, and then expand the display to include any number of live channels, math channels and reference waveforms.

**Tools:** Including serial decoding, reference channels, macro recorder, alarms, mask limit testing and math channels.

**Waveform replay tools:** PicoScope automatically records up to 10,000 of the most recent waveforms. You can quickly scan through to look for intermittent events, or use the **Buffer Navigator** to search visually.

**Zoom and pan tools:** PicoScope allows a zoom factor of several million.

**Digital outputs:** Toggle outputs manually or set up PWM waveforms

**Ruler legend:** Absolute and differential ruler measurements are listed here.

**Auto setup button:** Configures the collection time and voltage range for clear display of signals.

**Channel options:** Filtering, offset, resolution enhancement, custom probes and more.

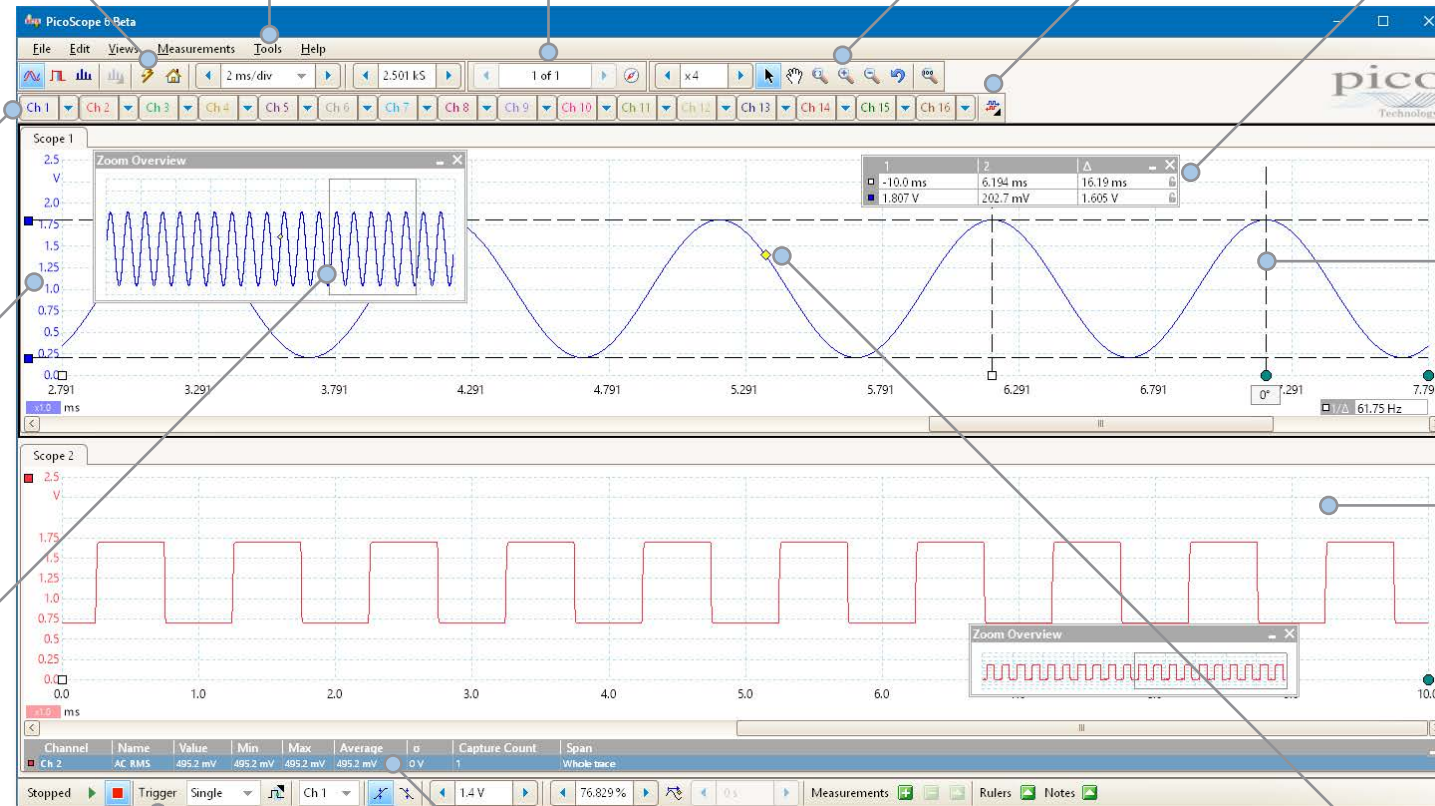
**Movable axes:** The vertical axes can be dragged up and down. This feature is particularly useful when one waveform is obscuring another. There's also an **Auto Arrange Axes** command.

**Zoom overview:** Click and drag for quick navigation in zoomed views.

**Trigger toolbar:** Quick access to main controls.

**Automatic measurements:** Display calculated measurements for troubleshooting and analysis. You can add as many measurements as you need on each view. Each measurement includes statistical parameters showing its variability.

**Trigger marker:** Drag the yellow diamond to adjust trigger level and pre-trigger time.



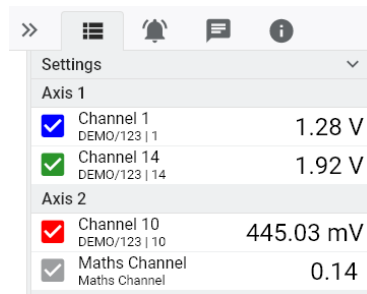
**Rulers:** Each axis has two rulers that can be dragged across the screen to make quick measurements of amplitude, time and frequency.

**Views:** PicoScope is carefully designed to make the best use of the display area. You can add new scope, spectrum and XY views with automatic or custom layouts.

## 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 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.

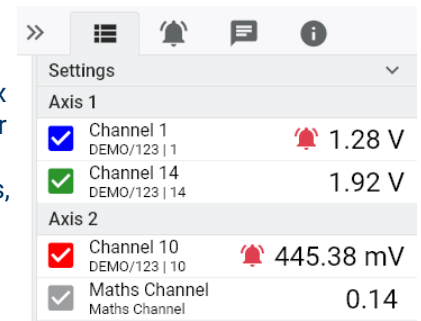
PicoLog treats math channels like any other channel, so you can still set alarms and annotate them.



Settings		
Axis 1		
<input checked="" type="checkbox"/>	Channel 1 DEMO/123   1	1.28 V
<input checked="" type="checkbox"/>	Channel 14 DEMO/123   14	1.92 V
Axis 2		
<input checked="" type="checkbox"/>	Channel 10 DEMO/123   10	445.03 mV
<input checked="" type="checkbox"/>	Maths Channel Maths Channel	0.14

## Alarms

In PicoLog, 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.



Settings		
Axis 1		
<input checked="" type="checkbox"/>	Channel 1 DEMO/123   1	1.28 V
<input checked="" type="checkbox"/>	Channel 14 DEMO/123   14	1.92 V
Axis 2		
<input checked="" type="checkbox"/>	Channel 10 DEMO/123   10	445.38 mV
<input checked="" type="checkbox"/>	Maths Channel Maths Channel	0.14

## 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 up to 20 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 a PicoLog 1216 and a TC-08 temperature data logger.



## Robust file format

At the heart of PicoLog 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 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 for Windows, 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](https://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 *PicoLog 1000 Series Programmer's Guide* are available to download from [www.picotech.com/downloads](http://www.picotech.com/downloads).



## Try the PicoLog software today!

PicoLog'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 to view previously saved data, even with no device connected. Visit [www.picotech.com/downloads](http://www.picotech.com/downloads) and select **PicoLog Data Loggers** to get your copy.

## Specifications

Input		
Model	PicoLog 1012	PicoLog 1216
Analog inputs	12	16
Resolution	10 bits	12 bits
Accuracy	1% of full scale	0.5% of full scale
Maximum sampling rates:		
PicoScope	1 MS/s <sup>[1]</sup>	
PicoLog	1 kS/s <sup>[2]</sup>	
PicoSDK (block mode)	1 MS/s <sup>[1]</sup>	
PicoSDK (streaming)	100 kS/s <sup>[1]</sup>	
Capture memory		
PicoScope (and PicoSDK block mode)		
Sample rates over 100 kS/s:	8000 samples [1]	
Lower sample rates:	1 million samples [1]	
PicoLog (and PicoSDK streaming mode):	Up to available PC storage	
Analog bandwidth (−3 dB)	DC to 70 kHz	
Input type	Single-ended, unipolar	
Input voltage range	0 to +2.5 V	
Overvoltage protection	±30 V to ground	
Input coupling	DC	
Input impedance	1 MΩ	
Outputs		
Digital outputs (D0...D3)	2	4 <sup>[3]</sup>
Digital outputs (PWM)	None	1
Period		100 μs to 1800 μs
Duty cycle		Adjustable from 0% to 100% in 1% steps
Digital outputs (all)		
Logic low voltage	100 mV (typical)	
Logic high voltage	3.3 V	
Current limit	1 kΩ resistors in series with outputs	
Power output for sensors	2.5 V @ 10 mA, current-limited	
Environmental		
Stated accuracy temperature range	20 to 50 °C	
General operation temperature	0 to 70 °C	
Relative humidity (operating)	5 to 80 %RH	
Storage temperature	−20 to +80 °C	



Storage humidity	5 to 95 %RH
<b>Physical properties</b>	
Dimensions	45 x 100 x 140 mm (1.77 x 3.94 x 5.51 in)
Weight	<200 g (7.05 oz)
<b>Software</b>	
PicoLog, PicoScope and PicoSDK	Available from <a href="http://www.picotech.com/downloads">www.picotech.com/downloads</a>
PicoSDK example code	Available from Pico's GitHub organization page, <a href="https://github.com/picotech">github.com/picotech</a>
PicoLog user interface languages	English, French, Italian, German, Spanish, Korean, Japanese, Chinese (simplified), Russian
PicoScope user interface languages	Chinese (simplified), Chinese (traditional), Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Romanian, Russian, Spanish, Swedish, Turkish
<b>PC requirements</b>	
PicoLog	Microsoft Windows 7, 8 or 10, 32-bit and 64-bit versions, macOS 10.9 (Mavericks) or later, 64-bit only, Linux*, 64-bit only Hardware requirements as operating system. *PicoLog for Linux is distributed as an AppImage, so you can install it without superuser permissions: see <a href="http://appimage.org">appimage.org</a> for further information. The software has been tested on OpenSUSE and Ubuntu.
PicoScope <sup>[4]</sup>	PicoScope Stable: Windows 7, 8 or 10 (32 or 64-bit). PicoScope Beta: macOS 10.9 (Mavericks) or later, 64-bit only, Linux (OpenSUSE and Ubuntu). Hardware requirements as operating system.
PicoSDK <sup>[4]</sup>	Only available for Windows. Drivers also available for 64-bit Linux and macOS.
PC interface	USB 2.0 full speed (USB 1.1 and USB 3.1 compatible)
<b>General</b>	
Accessories supplied	USB 2.0 cable, Quick Start Guide
PC interface	USB 2.0 full speed
I/O connector	25-way D female
Power requirements	Powered from USB port
Ground fault current protection	0.9 A thermal self-resetting fuse
Compliance	European EMC and LVD standards FCC Rules Part 15 Subpart B RoHS compliant
Warranty	5 years

<sup>[1]</sup>Shared between active channels.

<sup>[2]</sup>Per active channel

<sup>[3]</sup>Except in ADC-11 compatibility mode. Please see the [PicoLog 1000 Series User's Guide](#).

<sup>[4]</sup>PicoScope R6.11 and PicoSDK 10.6.11 are the last versions compatible with Microsoft Windows XP (SP3) and Vista SP2, and they are also compatible with the Windows versions above.



## Ordering information

Order code	Product name	Description
PP543	PicoLog 1012 Data Logger	Data logger with 12 input channels and 10 bit resolution.
PP546	PicoLog 1012 with terminal board	Data logger with 12 input channels and 10 bit resolution including terminal board.
PP544	PicoLog 1216 Data Logger	Data logger with 16 channels and 12 bit resolution.
PP547	PicoLog 1216 with terminal board	Data logger with 16 channels and 12 bit resolution including terminal board.

## Optional accessories

Order code	Product name	Description
PP545	Small terminal board for PicoLog 1000	Enables easy connection to the PicoLog 1012 and 1216 Data Loggers.
CC008	Calibration: voltage logger	Calibration service offered by Pico on its voltage input data loggers.
MI106	USB 2.0 cable, 1.8 m**	Replacement Pico blue USB 2.0 cable, 1.8 m
TA268	USB 2.0 cable, 0.5 m**	Pico blue USB 2.0 cable, 0.5 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 PicoLog 1000 Series data logger with Pico blue USB cables only.



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