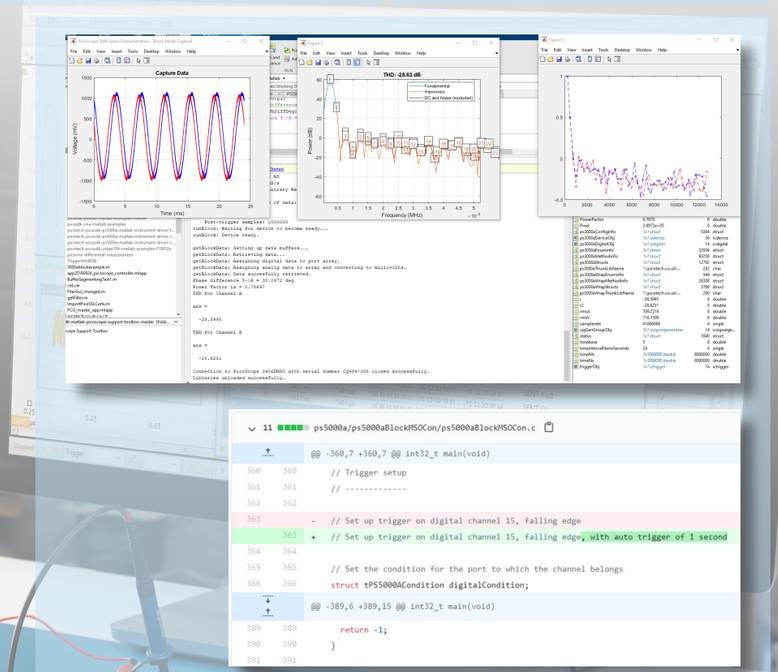
Programming Pico instruments

A key skill for today's engineering students is the ability to program instruments using industry-standard languages. Pico products come with a free-of-charge Software Development Kit (SDK). The SDK includes drivers for Windows and, for most products, macOS, Linux and Raspberry Pi (ARM7) that give full exposure of the instrument hardware via the Application Programming Interface (API). It allows students to write their own software to control the instruments with popular languages such as C, C#, C++ and Python. Code examples are hosted on the Pico Technology GitHub pages and there's a lively Forum where users exchange ideas and knowledge about programming their devices. The SDK can also be used to interface Pico instruments with popular analytical and test automation packages such as MathWorks MATLAB, NI LabVIEW and Microsoft Excel.

PicoScope and other Pico instruments can be connected to MATLAB with Instrument Control Toolbox™ running on the same PC. MATLAB can be used for analysis and visualization of the acquired data. Students can progress to create test automation applications and verify hardware designs through statistical analysis of measured data: "Hardware in the loop".

MathWorks Partner



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PicoScope®

pico® Technology

PICO TECHNOLOGY
TEST & MEASUREMENT TOOLS IN **EDUCATION**

TEST AND MEASUREMENT

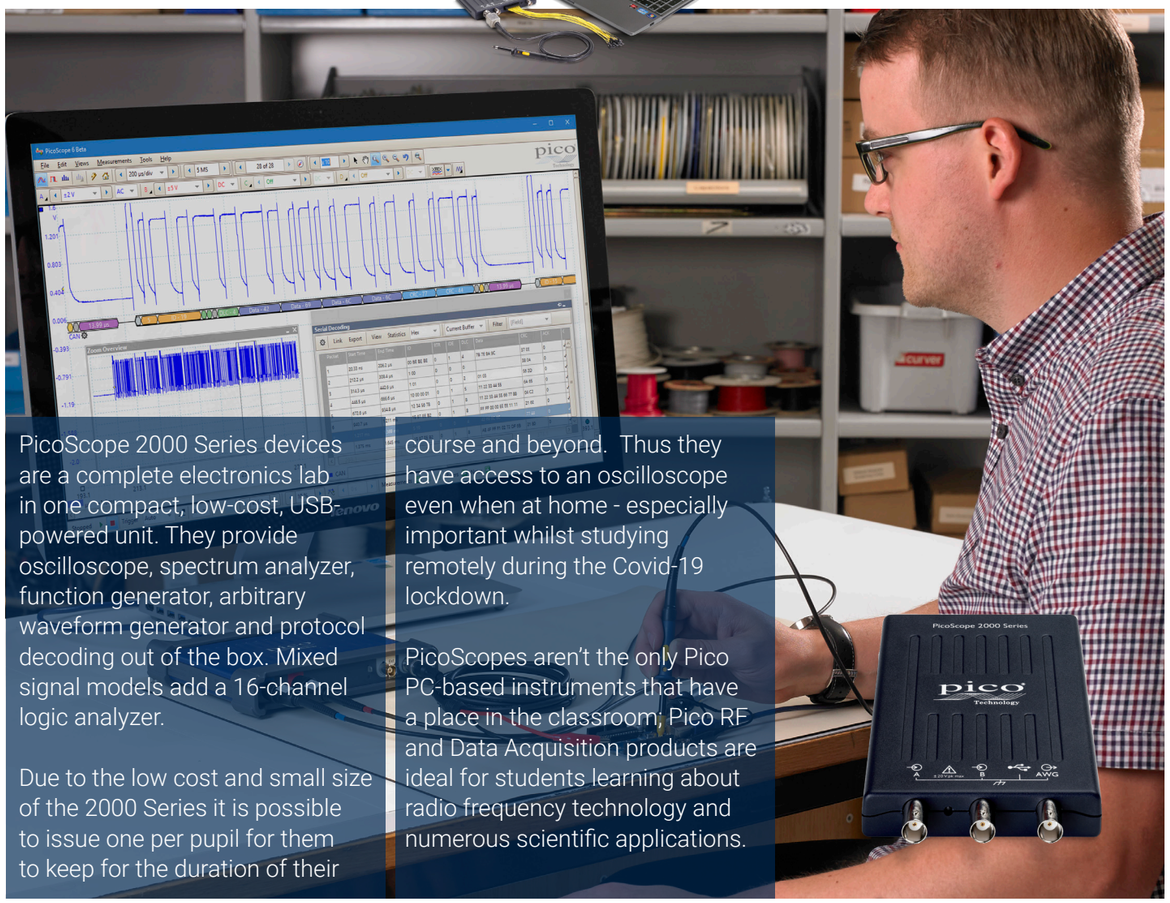
PicoScope PC oscilloscopes are configured with a built-in signal generator, time- and frequency-domain waveform views, serial protocol analyzers and other measurement capabilities to help electrical engineering students achieve oscilloscope proficiency and prepare for a career in engineering or scientific research.

The core instrument that students use to test and document their assigned experiments in almost all teaching labs is the oscilloscope. PicoScope PC-based oscilloscopes running with PicoScope 6 software present a familiar user interface for students to set up the instrument and display the measured waveforms. Each student can have PicoScope 6 software running, free of charge, on their own PC to practice and learn at their own pace.

"I use the PicoScopes in my labs regularly for research and education of students in minor degree (B.Eng.) and major degree (M. Eng.). I'm absolutely happy using the units. They are very intuitive and reduce the "fear" of doing something wrong comparing to conventional scopes with millions of buttons"

Waveforms captured by a PicoScope in the lab can be displayed and processed live to provide instant feedback on projects and exercises, which reinforces the concepts students have been taught and makes the learning process enjoyable. This feedback from Prof. Johannes Stolz at Hochschule Koblenz University of Applied Sciences sums it up nicely:

"Students come along with the use of PicoScope very quickly, normally within less than 30min they know the basics of triggering, doing measurements, analyzing harmonics in spectrum mode."



PicoScope 2000 Series devices are a complete electronics lab in one compact, low-cost, USB-powered unit. They provide oscilloscope, spectrum analyzer, function generator, arbitrary waveform generator and protocol decoding out of the box. Mixed signal models add a 16-channel logic analyzer.

Due to the low cost and small size of the 2000 Series it is possible to issue one per pupil for them to keep for the duration of their course and beyond. Thus they have access to an oscilloscope even when at home - especially important whilst studying remotely during the Covid-19 lockdown.

PicoScopes aren't the only Pico PC-based instruments that have a place in the classroom; Pico RF and Data Acquisition products are ideal for students learning about radio frequency technology and numerous scientific applications.

RF PRODUCTS

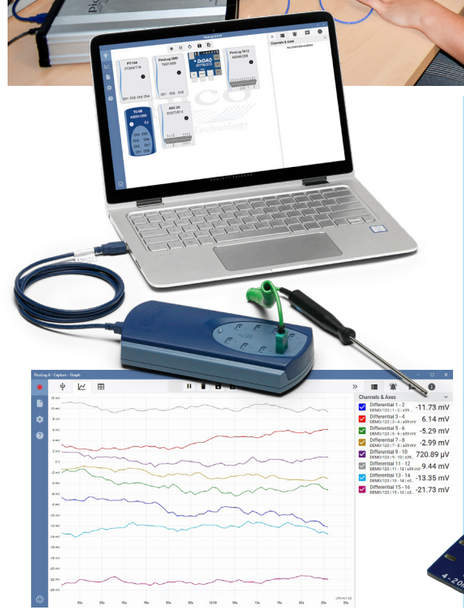
The PicoVNA 6 GHz and 8.5 GHz Vector Network Analyzers with the Network Metrology Training Kit support network metrology education.

Partnered with the PicoVNA, the Network Metrology Training kit provides a variety of passive and active test networks and low-cost calibration standards and test leads. The kit includes a comprehensive training guide that supports teaching objectives around reflection and transmission measurements, S-parameters and standard measurement quantities.

With the included active broadband amplifier element, nonlinear compression measurements such as P1dB and AM to PM can be explored.

PicoVNA also supports software connection to Microwave Office within the Cadence AWR Design Environment, and to Optenni Lab antenna and propagation CAD software. With this the student and teacher can jump into the Design–Simulate–Implement–Evaluate cycle at any point to compare measured results with simulated data.

DATA LOGGERS



Pico data loggers are suitable for a wide range of voltage, current and temperature measurement and recording applications in a classroom or laboratory.
The TC-08 is an 8-channel thermocouple data logger that works with all types of thermocouple sensors to measure temperatures from −270°C to +1820°C.

As well as measuring temperature, the TC-08 can be fitted with an optional terminal board that turns it into a 20-bit high resolution voltage data logger. The terminal board allows measurement of parameters for numerous STEM applications.

All Pico data loggers work with PicoLog 6 application software on Windows, macOS, Linux and Raspberry Pi platforms and up to 20 loggers can be connected simultaneously.