

## Automotive Diagnostic Oscilloscope

The vehicle system analyzer in a box

### ALL NEW PICOSCOPE AUTOMOTIVE OSCILLOSCOPES

When you buy a PicoScope Automotive Oscilloscope you get industry-leading performance that is both affordable and easy to use. With the introduction of the PicoScope 4225 and 4425, performance has been upgraded – but the price remains the same!

Pico automotive oscilloscopes are used by more than twenty of the world's leading vehicle manufacturers, and in thousands of workshops to save time and money by making it easier and quicker to diagnose faults.

PicoScope 4225 and 4425 are the most advanced automotive PicoScopes ever, handling hybrid, electric, diesel and petrol vehicles, and can be purchased separately or as part of a kit.

### FASTER SAMPLING

The PicoScope 4000 Series can capture up to 400 million samples per second, making them fast enough to handle CAN and even FlexRay signals. You can be sure that you will always be ready for next-generation vehicles and challenges not yet encountered. Performance and intermittent problems are revealed in great detail, and stored for later analysis.

### MORE MEMORY

The PicoScope 4225 and 4425 have eight times the memory of our previous scopes. This ensures that you can capture even more information without sacrificing sampling rates - making it easier to reveal complex intermittent faults and rare events.

### HIGH INPUT RANGE

The high  $\pm 200$  V input range of the PicoScope 4225 and 4425 reduces the need for external attenuators to a minimum, and differential probes are available to handle very high voltages to 1400 V and beyond.

### FLOATING INPUTS

The inputs on the PicoScope 4225 and 4425 have their own ground reference separate from USB. Each input is independent (common mode voltage up to  $\pm 30$  V), increasing the flexibility and allowing you to directly measure signals such as hybrid vehicle resolver circuits.

### CONNECTDETECT™

This handy feature detects when you have made a good connection in those difficult-to-reach places, displaying the connection status on your big screen and on the front of the unit.

- 2 or 4 channels
- Up to 400 MS/s real-time sample rate
- 20 MHz bandwidth
- 250,000,000 sample memory
- $\pm 200$  V input range
- Floating inputs
- ConnectDetect™ for reliable connections
- No external power supply required
- USB 3.0 connection for faster screen updates
- Protected against overloads and short circuits
- CAN bus and FlexRay compatible
- Use with any vehicle
- Easy to use
- Includes PicoScope Automotive software
- Free software updates
- 24 month warranty
- Free technical support



# TECHNICAL SPECIFICATIONS OF THE PICOSCOPE 4425 & 4225 DIAGNOSTIC OSCILLOSCOPES

	PicoScope 4225	PicoScope 4425
Channels	2	4
Vertical resolution	12 bits (16 bits in enhanced resolution mode)	
DC accuracy	±1% of full scale (2% on 50mV range)	
Sensitivity	10 mV/div to 40 V/div	
Input ranges (full scale)	±50 mV to ±200 V in 12 ranges	
Input impedance	1 MΩ in parallel with 24 pF	
Input type	Floating single-ended BNC connector	
Input coupling	Software selectable AC/DC	
Input overvoltage protection	±250 V (DC + AC peak)	
Buffer memory	250 M samples shared between active channels	
Waveform buffer	Up to 10,000 waveforms	
Timebase ranges	5 ns/div to 5000 s/div	
Bandwidth	20 MHz (10 MHz on ±50 mV range)	
Maximum sampling rate (single shot)		
1 channel in use	400 MS/s	
2 channels in use	200 MS/s	
3 or 4 channels in use	100 MS/s	
<b>TRIGGERS</b>		
Source	Any input channel	
Basic triggers	Auto, repeat, single, none	
Advanced triggers	Rising edge, falling edge, edge with hysteresis, pulse width, runt pulse, dropout, windowed, logic	
Maximum pre-trigger delay	Up to 100% of capture length	
Maximum post-trigger delay	Up to 4 billion samples	
<b>SPECTRUM ANALYZER</b>		
Frequency range	DC to 20 MHz	
Display modes	Magnitude, peak hold, average	
<b>ENVIRONMENTAL</b>		
Operating temperature range	0 °C to 40 °C (15 °C to 30 °C for quoted accuracy)	
Operating humidity range	5% to 80% RH, non-condensing	
Storage temperature range	-20 to +60°C	
Storage humidity range	5 to 95% RH, non-condensing	
<b>PHYSICAL CHARACTERISTICS</b>		
Dimensions	190 x 160 x 40 mm (approx 7.5 x 6.3 x 1.6 in)	
Weight	<900 g (approx 2 lb)	
<b>GENERAL</b>		
Additional accessories (supplied)	USB 3.0 cable, user manuals, software CD-ROM	
PC interface	USB 3.0 (USB 2.0 compatible)	
Power requirements	Powered from USB port	
Compliance	FCC (EMC), CE (EMC and LVD), RoHS compliant	
Warranty	2 years	
<b>PRICE</b>		
Scope only price	2 Ch £499 \$819 €699.	4 Ch £799 \$1315 €1115
Kits are also available		

\* All prices exclude VAT. Prices are correct at the time of publication. Please contact Pico Technology for the latest prices before ordering.

## WHAT DOES IT ALL MEAN?

The main specifications explained.

### VERTICAL RESOLUTION



The number of dots in the waveform from top to bottom. "12 bits" means 4,096 dots, which is more detail than you can see on the screen all at once. PicoScope stores the extra detail for when you zoom in.

### BUFFER MEMORY



The number of dots in the waveform from left to right. If you don't have enough memory then the waveform won't show all the detail in the signal. PicoScope has more than enough memory, so you can zoom in thousands of times and still see a clear display and spot intermittent glitches.

### WAVEFORM BUFFER



A memory that collects your most recent waveforms. If a waveform disappears off the screen, you can look back through the waveform buffer to find it.

### TRIGGER



This ensures that the scope captures the waveform at the right time and keeps it in a stable position on the screen. PicoScope can set up the trigger automatically, but if you want you can select special trigger modes to catch unusual waveforms that you might otherwise miss.

### BANDWIDTH



For faster signals, more bandwidth gives a more faithful reproduction of the signal shape on the screen. PicoScope has enough bandwidth to display CAN bus and FlexRay signals accurately.

### SAMPLING RATE



Like bandwidth, this is more important for fast signals. A high sampling rate ensures that you catch the high-frequency details of the signal.

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Technology

## Automotive Diagnostic Test Kits

Get started with PicoScope today

Our PicoScope test kits are designed to make diagnostics and testing of vehicle electronics and components intuitive and logical. Take a look at the kits below and view the multitude of tests available to you through our advanced automotive software, PicoScope 6, offering unrivalled value for money with full PC-Scope capability and the power of our PicoScope community right at your fingertips.

### 4 CHANNEL STARTER KIT

Complete with 59 tests straight out of the box, including:

- |                       |                      |                        |
|-----------------------|----------------------|------------------------|
| ■ Compression Test    | ■ Throttle Position  | ■ Amplifier Signal     |
| ■ Cylinder Balance    | ■ Solenoid Valve     | ■ Primary              |
| ■ Pedal Sensor        | ■ Fuel Pump          | ■ Cam vs. Crank        |
| ■ MAF Sensor          | ■ Stepper Motors     | ■ Position Sensors     |
| ■ Camshaft            | ■ Pressure Regulator | ■ Primary Ignition     |
| ■ Temperature Sensor  | ■ Throttle Servo     | ■ vs. Crank            |
| ■ Crankshaft          | ■ Cooling Fan        | ■ Cam, Crank, Injector |
| ■ Distributor Pick-Up | ■ Primary Ignition   | ■ and Ignition         |
| ■ Fuel Pressure       | ■ Secondary HT       |                        |
| ■ Lambda              | ■ DIS Ignition       |                        |
| ■ MAP                 | ■ SAW Signal         |                        |
| ■ Road Speed          | ■ Amplifier Earth    |                        |



Part Number: PP921  
£979 \$1615 €1375

### 4 CHANNEL STANDARD KIT

Complete with 88 tests straight out of the box, as with the starter kit plus:

- |                           |                     |                       |
|---------------------------|---------------------|-----------------------|
| ■ Battery Alternator Test | ■ Glow Plugs        | ■ DIS Primary Voltage |
| ■ Alternator              | ■ EGR               | ■ vs. Current         |
| ■ Starting Volt/Amps      | ■ Injectors         | ■ Coil-on-Plug        |
| ■ ABS                     | ■ Camshaft Adjuster | ■ Primary Ignition    |
| ■ Knock Sensor            | ■ Valve Timing      | ■ vs. Injector        |



Part Number: PP923 £1545 \$2545 €2165

STARTER AND STANDARD KITS ARE ALSO AVAILABLE IN 2-CHANNEL VERSIONS

Tests may vary with 2 channels

2 ch starter kit: PP920, 2 ch standard kit: PP922

### 4 CHANNEL DIESEL KIT

Complete with 84 tests straight out of the box, as with the starter kit plus:

- |                           |                       |                       |
|---------------------------|-----------------------|-----------------------|
| ■ Battery Alternator Test | ■ Glow Plugs          | ■ DIS Primary Voltage |
| ■ Alternator              | ■ EGR                 | ■ vs. Current         |
| ■ Starting Volt/Amps      | ■ Speed Control Valve | ■ Primary Ignition    |
| ■ ABS                     | ■ Injectors           | ■ vs. Injector        |
| ■ Distributor Pick-Up     | ■ Camshaft Adjuster   |                       |
| ■ Knock Sensor            | ■ Valve Timing        |                       |



Part Number: PP924 £1545 \$2545 €2165

## SOMETIMES, 2 CHANNELS ARE JUST NOT ENOUGH.

To be ready to tackle the full range of diagnostic challenges, why not consider a fully-featured 4 channel kit?

Only with 4 channels can you run multiple component tests simultaneously to give you the full picture, making sure you get to the heart of the problem and fix it right, first time.

## 4 CHANNEL ADVANCED KIT

Complete with 114 tests straight out of the box, including:

- |                           |                                     |
|---------------------------|-------------------------------------|
| ■ Compression Test        | ■ Valve Timing                      |
| ■ Battery Alternator Test | ■ Primary Ignition                  |
| ■ Cylinder Balance        | ■ Primary vs. Secondary             |
| ■ Alternator              | ■ DIS Primary Voltage               |
| ■ Smart Alternator        | ■ DIS Primary Current               |
| ■ Relative Compression    | ■ DIS Primary Voltage vs. Current   |
| ■ Starting Volt/Amps      | ■ DIS Primary Voltage vs. Current   |
| ■ ABS                     | ■ Primary Ignition vs. Secondary    |
| ■ Pedal Sensor            | ■ Secondary HT                      |
| ■ MAF Sensor              | ■ DIS Ignition                      |
| ■ Cam Shaft               | ■ Amplifier Earth                   |
| ■ Temp Sensor             | ■ SAW Signal                        |
| ■ Crankshaft              | ■ Amplifier Signal                  |
| ■ Distributor Pick-Up     | ■ Primary                           |
| ■ Fuel pressure           | ■ Coil-on-Plug                      |
| ■ Knock                   | ■ Secondary HT                      |
| ■ Lambda                  | ■ Multi Coil On Plug                |
| ■ MAP                     | ■ CAN Bus                           |
| ■ Road Speed              | ■ Blink Codes                       |
| ■ Throttle Position       | ■ FlexRay                           |
| ■ Solenoid Valve          | ■ KWP2000                           |
| ■ Glow Plugs              | ■ LIN bus                           |
| ■ EGR                     | ■ Cam vs. Crank Position            |
| ■ Fuel Pump               | ■ Sensors                           |
| ■ Speed Control Valve     | ■ Primary Ignition vs. Crank        |
| ■ Stepper Motors          | ■ Primary Ignition vs. Injector     |
| ■ Injectors               | ■ Cam, Crank, Injector and Ignition |
| ■ Pressure Regulator      |                                     |
| ■ Throttle Servo          |                                     |
| ■ Cooling Fan             |                                     |
| ■ Camshaft Adjuster       |                                     |



Part Number: PP925 £2065 \$3405 €2895

For full details on all our automotive kits go to [www.picoauto.com/diagnostic-kits.html](http://www.picoauto.com/diagnostic-kits.html)

Tests shown relate to inbuilt PicoScope tests as of February 2015. Further releases of PicoScope may extend these tests.

The use of your PicoScope is not restricted to these preset tests, and any of our accessories can be added as you need them to further enhance your diagnostic capability. Get started with PicoScope today by choosing the kit that best meets your needs.

\*Prices are correct at the time of publication. Please contact Pico Technology for the latest prices before ordering.

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