pico®
Technology

PicoScope

for cars, motorbikes and commercial vehicles

Pico PC-based diagnostics

All you need in one kit

PicoScope is a diagnostics kit that shows you what is really going on inside your vehicle.

The kit contains everything you need to start work.

All you have to supply is a PC.

PicoScope Oscilloscope Diagnostics

PicoScope hardware

Kit includes 4000 Series scope and accessories

PicoDiagnostics software

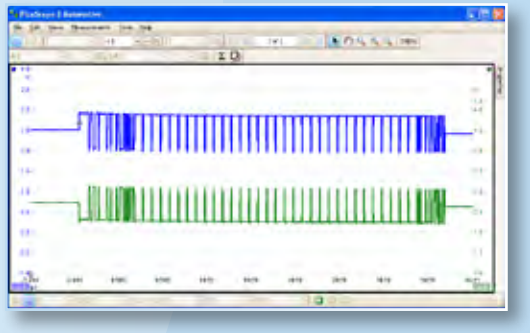
One-click access to a range of tests

Windows PC

Laptop or desktop

PicoScope software

Scope software for advanced diagnostics



Pico PC-based diagnostics

Simplicity and reliability

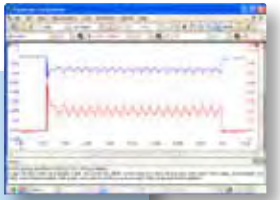
PicoScope connects to your PC using a simple, reliable USB cable. It also gets its power through this cable, so there's no extra power adapter. We have made everything else as simple as possible.

We have been refining and testing the PicoScope concept for over 18 years. Everything you get in a PicoScope Diagnostics kit has been selected by our own automotive experts. If a component fails, falls apart or just annoys us, we redesign it. The result is a kit that is used by independent garages, vehicle manufacturers and dealer networks the world over.

- No maintenance or update fees
- No special hardware to buy
- No battery to go flat
- No complicated interfaces to configure
- Works with any Windows PC, laptop or netbook with a USB port

One kit, a wide range of diagnostic tests

PicoScope includes all these tests in one package

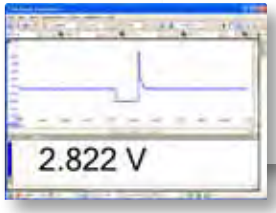


Oscilloscope

The oscilloscope is the X-ray machine of diagnostics, letting you see the changing signals inside wires. Start with the built-in library of waveforms and then, when you get more confident, add more of your own. Test primary and secondary ignition, injectors, pumps, temperature sensors, MAP and MAF sensors, crankshaft and camshaft sensors, glow plugs... and the rest.

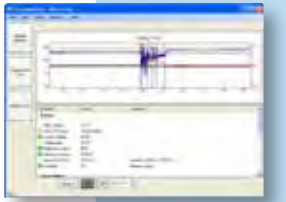
Compression Tester

Show relative compression with just a simple connection to the battery. Add an optional pressure transducer to measure absolute compression.



Automatic Measurements

With PicoScope's automatic measurements, you can stack up as many measurements as you need on the screen and watch them change in real time. This feature can replace a whole collection of multimeters.



Electrical system test

More than just a battery tester: as well as measuring state of charge, condition and cold cranking amps, it also checks the starter motor, the alternator and the wiring. Hook up the scope to the battery and start the engine. Pico Diagnostics does the rest, giving you graphical results that you can print and give to your customer.

Cylinder Balance Analyser

With just a pair of crocodile clips connected to the battery, Pico Diagnostics shows you in seconds if any cylinder is underperforming or misfiring.

Do I need a scope or a scan tool?

The short answer is “both”, but read on...

PicoScope is not designed to replace scan tools. Scan tools and scopes do very different jobs, so a well-equipped workshop needs both.

Here’s how a typical PicoScope diagnosis works:

- Read the fault report or listen to the customer’s story.
- Test the vehicle until you see the problem for yourself.
- If the MIL is on, use a scan tool to look for fault codes (DTCs).
- If the DTCs point to a faulty component, use PicoScope to check that the component really is faulty before replacing it.
- If the DTCs are inconclusive, or no fault is logged, use PicoScope to rule out the correctly functioning parts of the electrical system until you find the fault.

It’s just like the procedure you have always used but without any unnecessary part-swapping, so you save time and money.

Can it...		
diagnose all electrical components?	✓ Can be used to test all the electrical and electronic components, wiring and connectors found on modern vehicles	× Can often quickly identify problem areas. Component-level testing depends on the vehicle and capabilities of the scan tool.
work when no fault code is set?	✓	×
test wiring and connectors?	✓	×
be used on all makes and models?	✓ One scope works on all vehicles	× Coverage varies between manufacturers. You may need to buy several different models to work on a wide range of vehicles.
save me money?	✓ One-off purchase with unlimited free software updates	× Repeated payments usually required for software updates
reprogram or remap a control unit (ECU or PCM)?	×	✓
show fuel trims and other information held inside a control unit?	×	✓
automatically test batteries, alternators and starter motors?	✓	×
test relative compression?	✓	×
test cylinder balance?	✓	×
be used as a general-purpose oscilloscope (“lab scope”)?	✓	×

Fix all of these with PicoScope

Any make, model or type

Hybrid

Petrol

Diesel

Bikes

Commercial vehicles

Agricultural

...in fact, anything with an engine


DELL

PicoScope oscilloscope software

Make it as simple or as complicated as you want

Just select a built-in tests from this menu, and PicoScope sets up everything for you

Auto setup button sets up voltage ranges and timebases automatically

Clear, high-resolution display of your waveform

There are no old-fashioned knobs and dials. We leave most of the space free for what matters: your waveforms

Show as many measurements as you want here

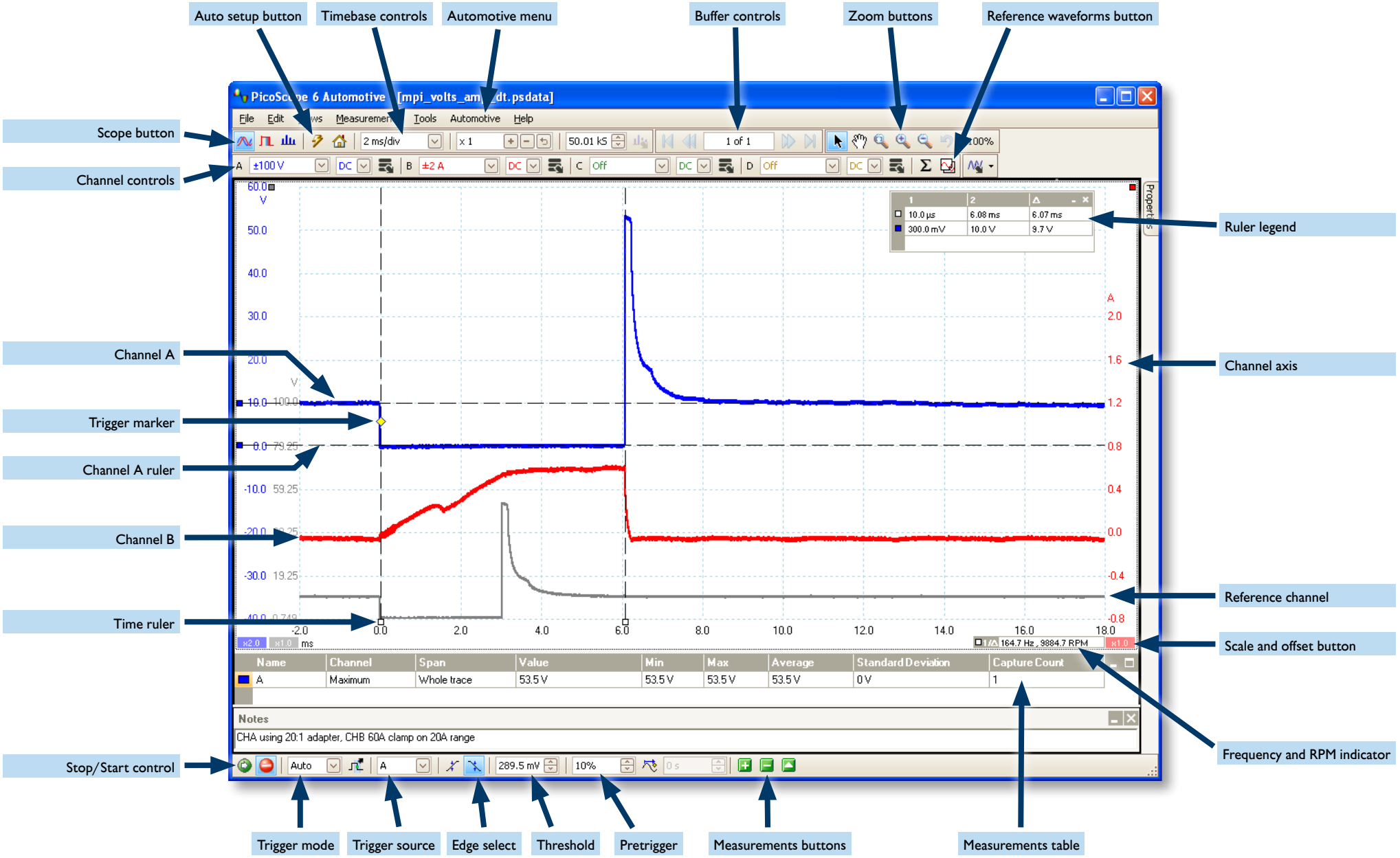
Because PicoScope is PC-based, it can use the whole width of your computer screen. You're not limited by the size of the scope.

Why "PicoScope 6"?

This is the 6th generation of our oscilloscope software. It has been continuously improving since 1991 to keep up with developments in computer technology and our customers' needs.

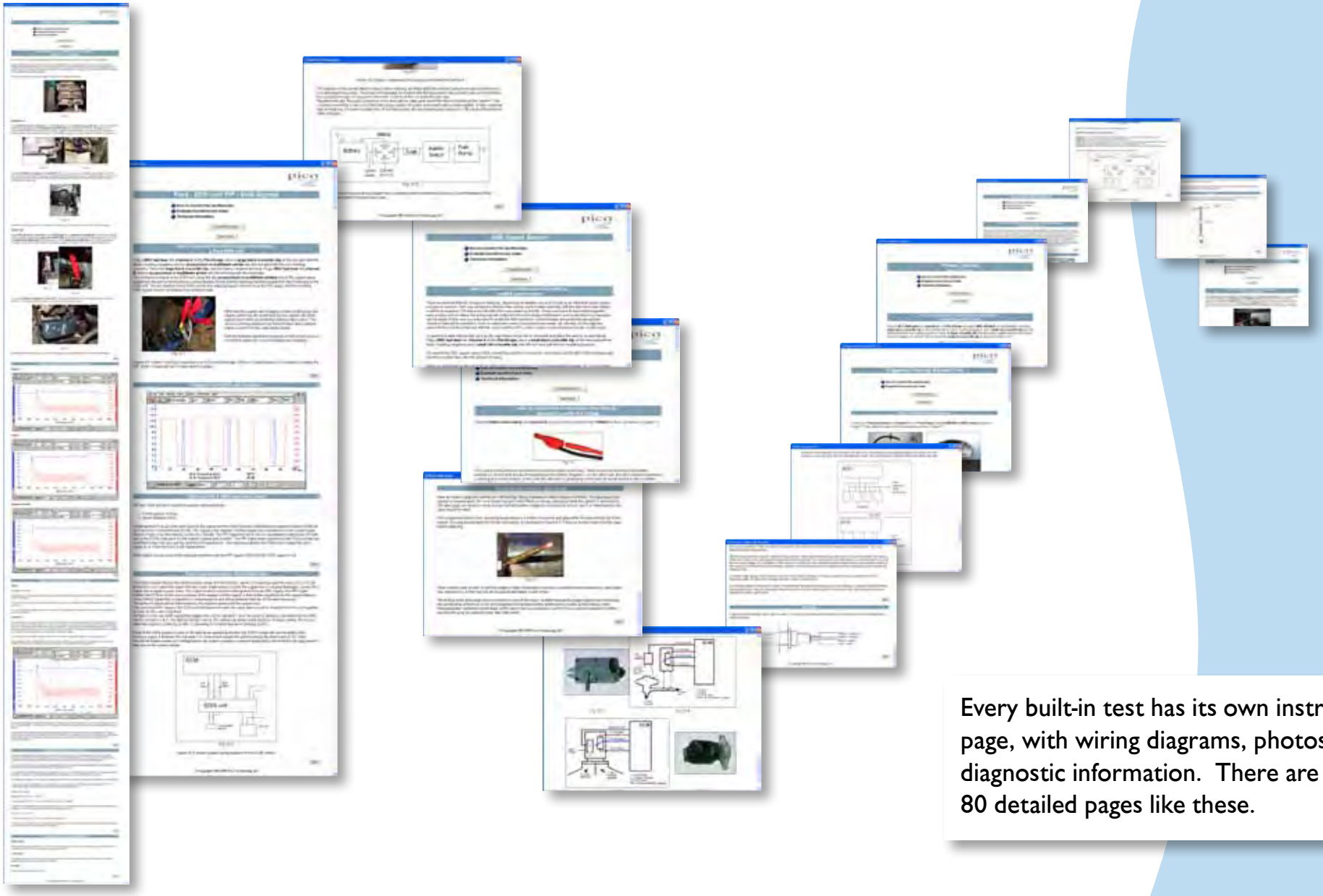
The PicoScope screen

advanced features when you need them



PicoScope online help

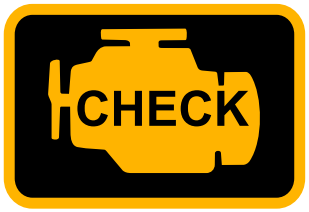
with the PicoScope oscilloscope software



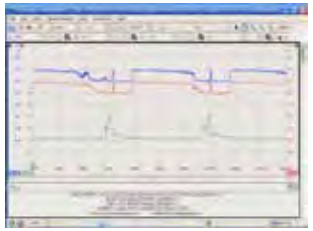
Every built-in test has its own instruction page, with wiring diagrams, photos and diagnostic information. There are more than 80 detailed pages like these.

Case Study: Misfire on a Toyota Avensis

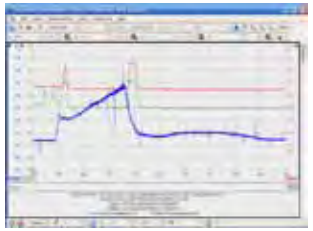
Diagnosed with the PicoScope oscilloscope software



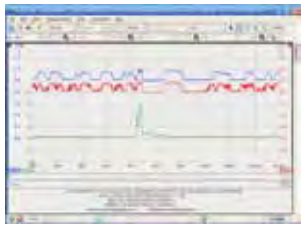
The MIL light was on, and the fault code reader showed:
`P0171 and P0174: System Too Lean`
on banks 1 and 2. The short-term fuel trims were up to 18% and 19%, also suggesting a problem.



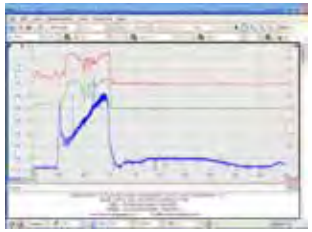
PicoScope showed a glitch in the O2 (red and blue) and MAF (green) sensors when the throttle was snapped open.



Here we can see that the MAF sensor (now blue) had a low peak output of less than 3.5 V, and both O2 sensors remained lean throughout the wide-open throttle test.



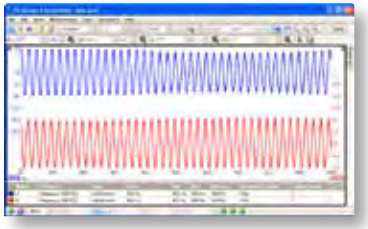
On inspection, the MAF sensor elements turned out to be dirty, so we cleaned them with carb cleaner. After the sensor was refitted, PicoScope showed that the O2 sensors went rich, as expected, during the throttle test and recovered more quickly.

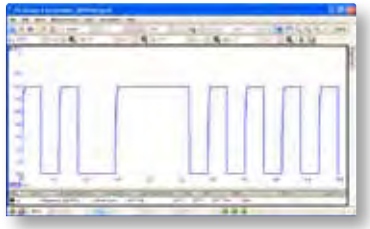


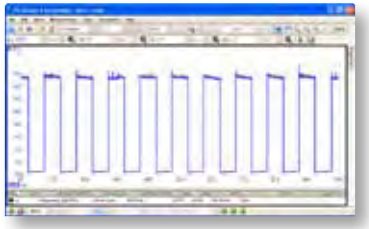
Finally, a new scope capture of the complete test showed a healthier inflow of air. The engine revved more responsively, and the short-term fuel trims had returned to zero.

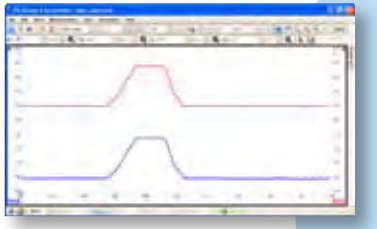
A vast range of built-in oscilloscope tests

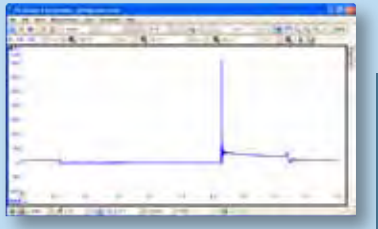
Here is just a sample of the tests available in PicoScope

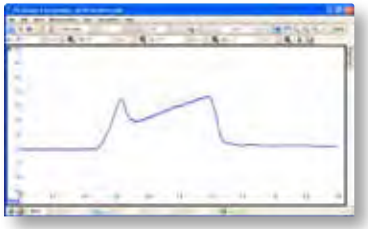

ABS

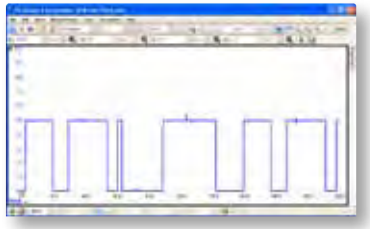

Crank sensor (Hall effect)

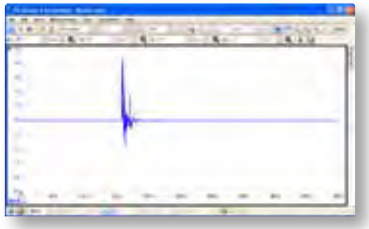

Idle speed control valve

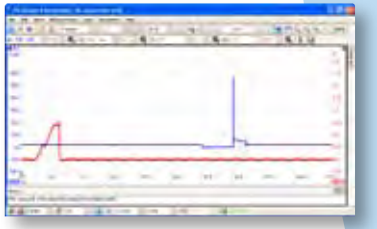

Pedal position sensor

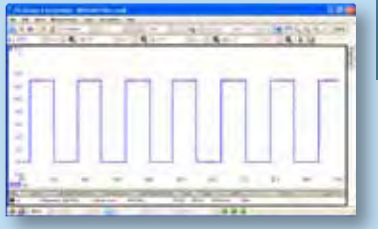

Primary ignition volts

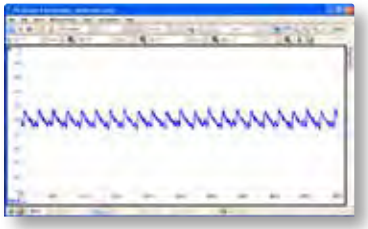

AFM (hot wire)

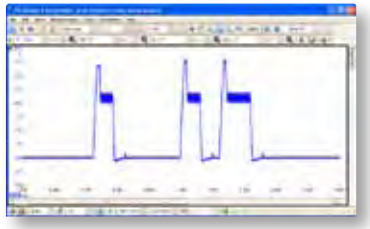

Cylinder ID (Hall effect)

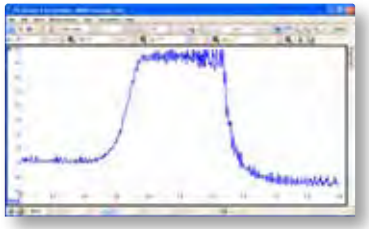

Knock sensor

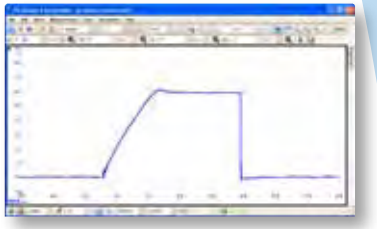

Petrol injectors

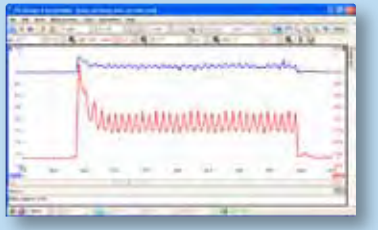

Road speed sensor

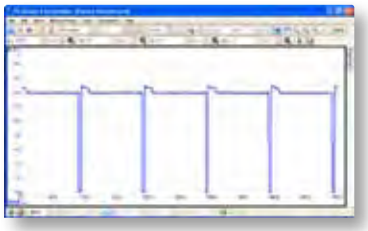

Alternator ripple

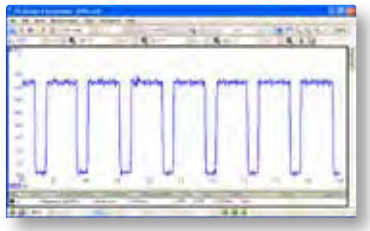

Diesel injectors

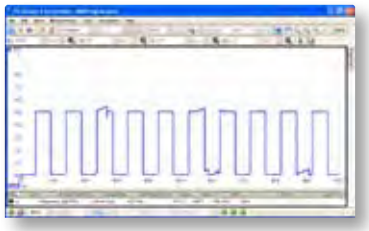

MAP sensor (analog)

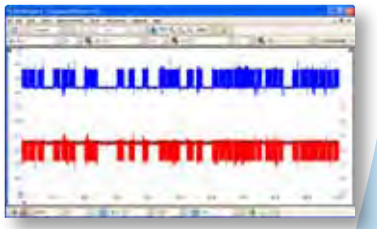

Primary ignition amps

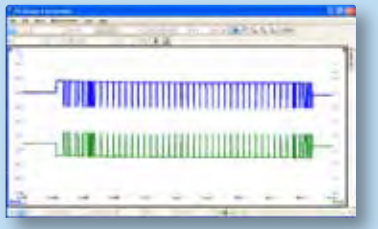

Starter negative volt drop


Carbon canister solenoid


EGR valve


MAP sensor (digital)


CAN bus

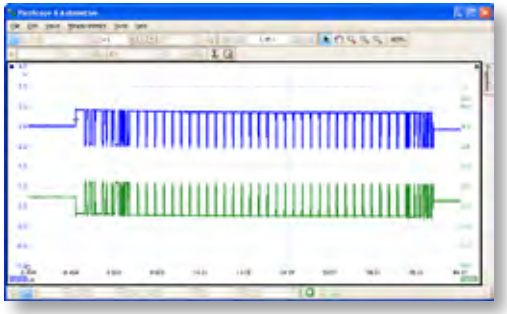

FlexRay network

PicoScope for CAN bus, LIN bus and FlexRay

PicoScope is compatible with the main vehicle data bus standards

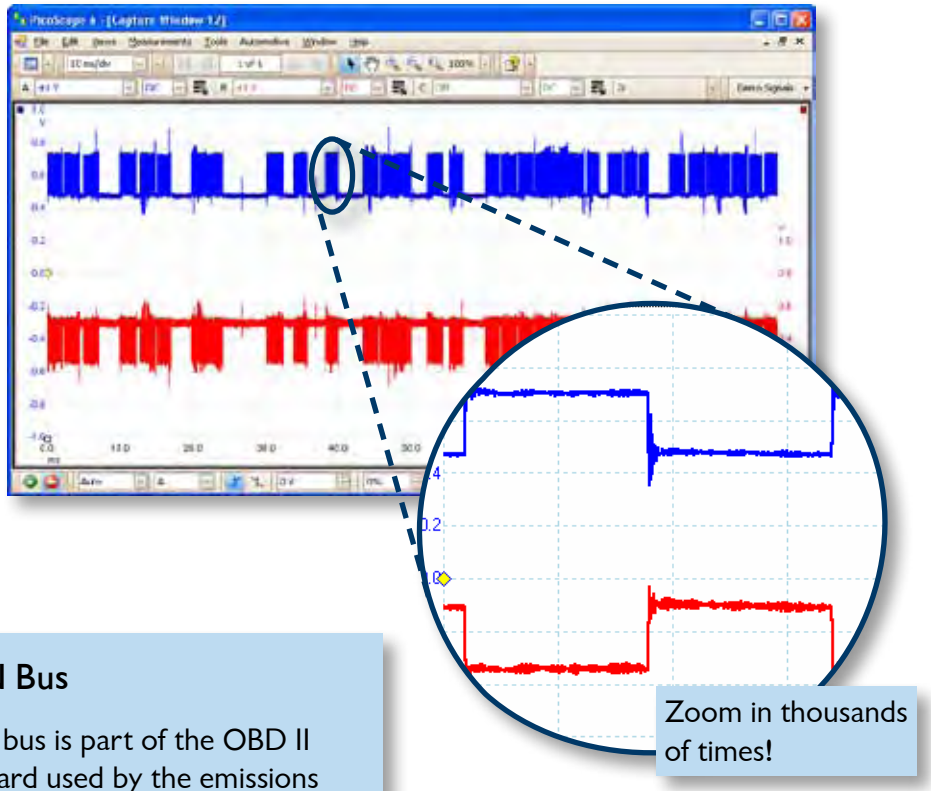
PicoScope is fast enough and accurate enough to look at the electrical signals on CAN bus, LIN bus and the new FlexRay interface. By looking at the electrical waveform you can check for short circuits, open circuits, missing termination resistors, noise and interference.

In fact, at the time of writing, PicoScope is the only automotive scope that is fast enough for FlexRay. You may not be using FlexRay today, but it is on its way. Why buy another scope that will be out of date in a couple of years?



FlexRay

PicoScope is the only scope fast enough to display FlexRay signals accurately. FlexRay is a new vehicle data bus standard used in active suspension systems. Its high speed means that signal quality is critical, and only a scope can reveal problems like reflections and ringing.



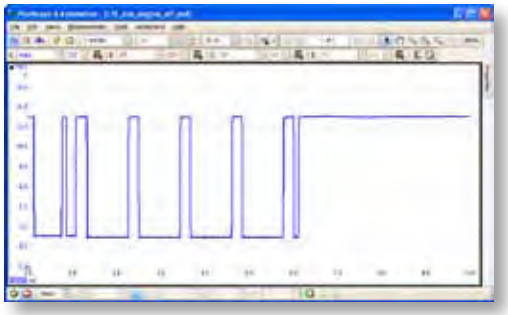
Zoom in thousands of times!

CAN Bus

CAN bus is part of the OBD II standard used by the emissions control computer in all modern vehicles. With PicoScope you can check that the two wires, CAN H and CAN L, are mirror images of each other. You can also see if either wire is shorted or broken.

LIN Bus

LIN bus is a low-speed serial bus used to control non-critical components such as door mirrors and electric windows. With PicoScope, you can check that the signal levels are correct.



Serial decoding

For advanced users such as vehicle designers and aftermarket equipment engineers, PicoScope can decode the CAN data and display it in graphical and tabular formats. This feature is free of charge and is built in to the standard software.

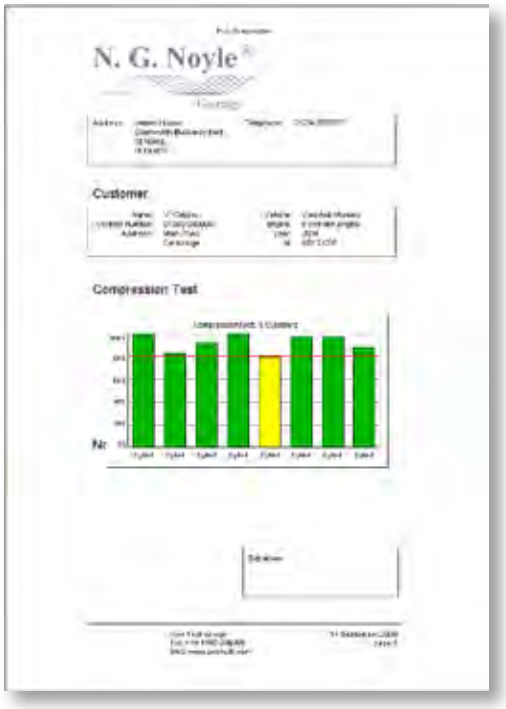
PicoDiagnostics software

Does most of the work for you

The PicoDiagnostics software is included with every PicoScope, whether you buy a kit or just the scope. It contains a range of tests that require almost no user intervention apart from connecting a few test leads, but which give professional-quality results that you can print out and show to the customer. It's the perfect software to use when you're in a hurry.

Customized to your garage

PicoDiagnostics gives a professional appearance to your reports by customizing them with your business name and logo.



Compression test

Clip a test lead on the battery, crank the engine for a few seconds, and PicoDiagnostics calculates how hard each cylinder is working. You can run this test with or without a pressure transducer.

Relative compression test

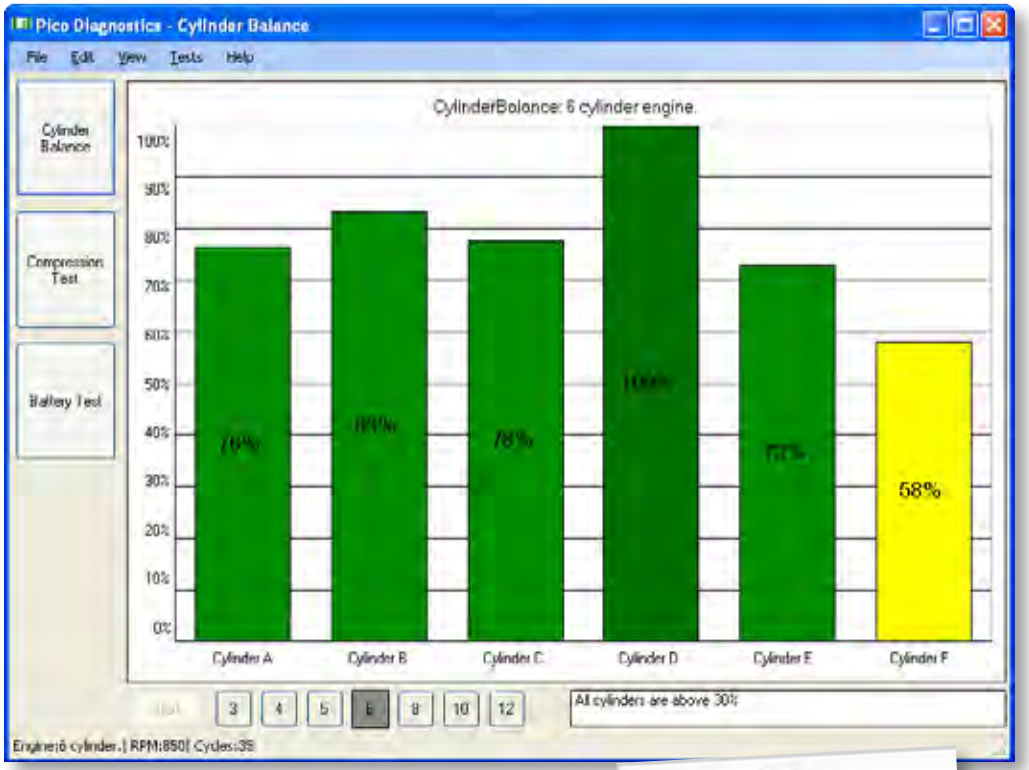
A useful first test of engine condition. See immediately if any cylinder has poor compression.

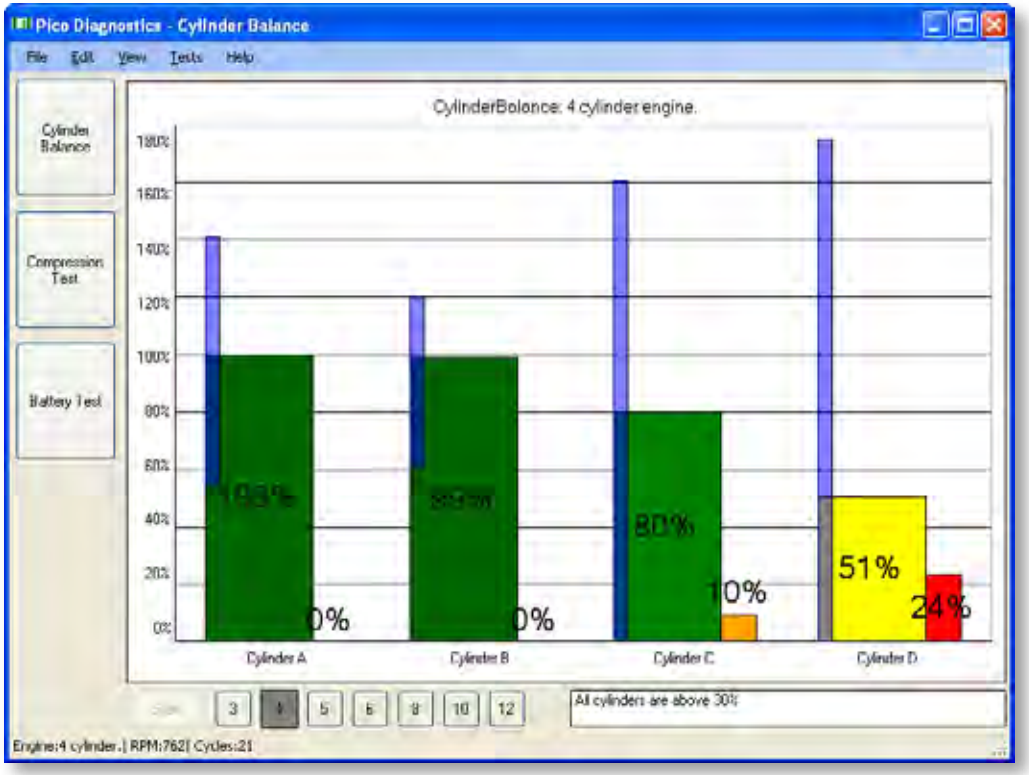
Absolute compression test

If you connect a pressure sensor in place of one of the spark plugs, PicoDiagnostics adds pressure readings to the display (in bar or psi) and shows the cylinder numbers.

PicoDiagnostics software

Cylinder balance test





Standard test

Hook up one test lead to the battery and start the engine. Pico Diagnostics shows you how hard each cylinder is working, making it possible to spot misfires and fueling problems.

Advanced options

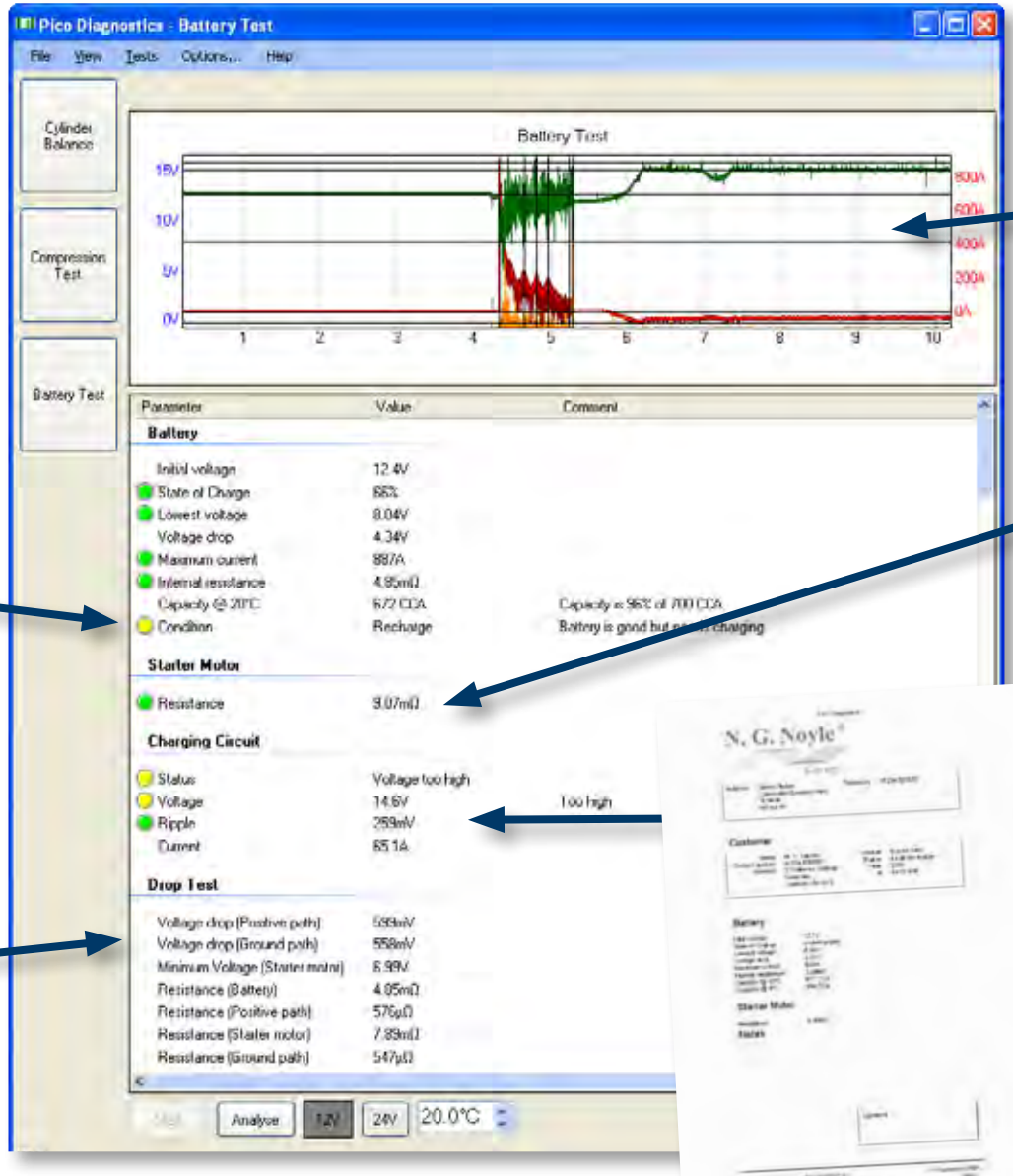
Misfire (red and orange bars): PicoDiagnostics shows the relative number of misfires counted on each cylinder. This enables you to distinguish frequent and occasional misfires.

Variation (blue bars): PicoDiagnostics shows the range of measurements obtained from each cylinder. A highly variable cylinder has an intermittent misfire, while a consistently misfiring cylinder could be suffering from a blocked injector or poor compression.

PicoDiagnostics software

Electrical system test

Check the battery, starter alternator and wiring all in one test. All the equipment you need is included in the kit, so there's no longer any need to buy an expensive battery tester. Just connect a test lead and a current clamp to the battery and then start the engine. As the test is done under high load during starting, the results are repeatable and accurate.



Battery condition

Red/amber/green indicators, and comments in plain English, tell you if the battery needs replacing.

Voltage drop test

PicoDiagnostics automatically displays extra information to help localize the fault to the battery, the starter motor or the wiring.

Voltage and current

See at a glance whether the battery and starter motor are performing correctly.

Starter motor

No need for extra equipment. Pico Diagnostics measures the coil resistance using a few simple connections.

Charging test

Checks that the alternator is correctly charging the battery, and spots problems such as overcharging and excessive ripple due to a blown diode.

Custom report

Gives your workshop the professional touch.


pico
PicoScope

The PicoScope oscilloscope

So easy to use, nobody reads the manual

Ergonomic

Notice how simple the PicoScope oscilloscope looks. There are no switches, dials or knobs (not even hidden round the back), and just a bare minimum of connectors. You don't even have to switch it on and off, as the software does that for you.

What sets PicoScope apart is the clever design of its hardware and software. When you run an oscilloscope test, the program sets up the scope automatically, so you get a waveform on the screen right away. All the advanced adjustments are there, but in many cases you won't need them. And with the fully automated Pico Diagnostics software, you don't even need to know how to use a scope - the results are displayed in plain English and illustrated with performance charts.

Future-proof

Vehicles equipped with CAN bus networks are now commonplace. FlexRay is a new network designed to be faster and more reliable, and is starting to replace CAN networks in newer vehicles. Picoscope is currently the only diagnostic scope with enough performance to cope with both CAN bus and FlexRay. Don't buy a scope that will soon be out of date - buy a PicoScope and be future-proof.

Robust

In the kit you will find a range of accessories and probes. They all fit on the same standard BNC connectors on the front of the scope, so there are no expensive adaptors to buy, or complex cables to break.

We know that mistakes will happen when connecting up test leads, so your PicoScope is protected against overloads and short circuits.

Powerful

The PicoScope has more memory than you are ever likely to need. The details are in the specifications, but all you need to know is that the PicoScope will carry on displaying high-quality waveforms, no matter which test you run. Some competing scopes save on costs by using a smaller memory, but when this fills up, they have to cut down the sampling rate so that you see less detail on the screen. And then there are scopes that become less responsive as you use more memory. Again, with PicoScope, you don't need to worry about that, as the scope automatically manages its memory usage so that it never slows down.

We could tell you more about the 80MS/s sampling and the 32M memory but all this information is in the specification table. We feel it is important to list the technical specifications, but you don't need to understand them all in order to use the scope. If you prefer, you can just trust its reputation as the best diagnostic scope in the industry. It's a reputation we are proud of.

PicoScope 4423

- **80 MS/s** sampling rate
- **32,000,000 sample** memory
- **+/- 100 V** input range
- **1%** accuracy

PicoScope 4223

Two-channel version also available

Full specifications on page 21


Pico
Technology
PicoScope
Automotive Oscilloscope
A
B
Max 100V
C
D

Technical specifications

of the PicoScope 4423 diagnostic scope

Main features	
Vertical resolution	12 bits (16 bits in resolution enhance mode)
Channels	4
Bandwidth	20 MHz (10 MHz on ±50 mV range)
Accuracy	1%
Sensitivity	10 mV/div to 20 V/div
Input ranges (full scale)	±50 mV to ±100 V in 11 ranges
Input impedance	1 MΩ in parallel with 22 pF
Input type	Single-ended, BNC connector
Input coupling	Software selectable AC/DC
Overload protection	±200 V on single input
Maximum sampling rate (single shot) 1 or 2 channels in use 3 or 4 channels in use	 80 MS/s 20 MS/s
Buffer memory	32 M samples shared between active channels
Waveform buffer	Up to 1000 waveforms
Timebase ranges	100 ns/div to 200 s/div
Advanced features	Low-pass filtering, math channels, measurements, reference waveforms
Triggers	
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
Maximum pre-trigger delay	10 x per-division timebase setting
Maximum post-trigger delay	50 s
Spectrum analyzer	
Bandwidth	20 MHz
Frequency range	DC to 20 MHz
Display modes	Magnitude, peak hold, average
Environmental	
Operating temperature range	0 °C to 45 °C (15 °C to 40 °C for quoted accuracy)
Storage temperature range	-20 to +60°C
Storage humidity range	5 to 95% RH, non-condensing
Physical characteristics	
Dimensions	200 x 140 x 35 mm (approx 7.9 x 5.5 x 1.4 in)
Weight	<500 g (approx 1.1 lb)
General	
Additional hardware (supplied)	USB 2.0 cable, user manuals, software CD-ROM Also available in Standard, Commercial and Motorcycle Kits
PC interface	USB 2.0 (USB 1.1 compatible) - cable supplied
Power requirements	Powered from USB port
Compliance	FCC (EMC), CE (EMC and LVD), RoHS
Total satisfaction guarantee	In the event that this product does not fully meet your requirements, you can return it for an exchange or refund. It must be returned in good condition within 14 days.
Warranty	2 years

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 usually sets up the trigger automatically, but if you want you can select special trigger modes to catch unusual waveforms that you might otherwise miss.

Bandwidth

Not something that you need to worry about most of the time, but 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.

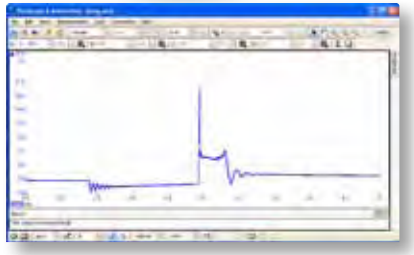
Sampling rate

Like bandwidth, this is more important for fast signals. A high sampling rate gives more detail across the screen, so you can zoom in to see the high-frequency details of the signal.

Ignition diagnostics

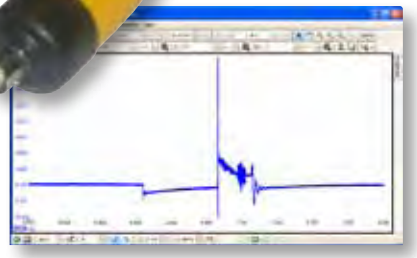
Built into PicoScope

Everything you need for ignition diagnostics is built into PicoScope: probes, accessories, software and reference information.



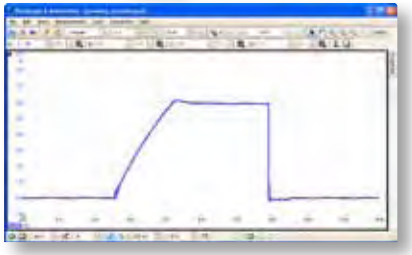
Secondary ignition pickups for HT leads

The PicoScope Diagnostics Kit includes four pickups for testing the high voltages found in secondary ignition cables (HT leads). The user is never exposed to dangerous voltages, as the HT leads stay safely connected all the time. The PicoScope software displays ignition patterns and parades directly in kilovolts (kVs) on the screen.



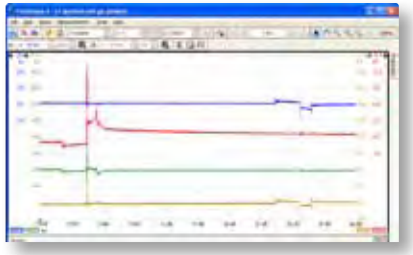
COP probe

Use the COP (coil-on-plug) probe to pick up an ignition signal from a coil pack even when there is no access to the HT leads. The probe and a special grounded cable are included in the kit.



Current clamp

View primary ignition current patterns with the 60-amp clamp included in the kit. The step-shaped pulse shown here corresponds to the dwell time, which consists of the current ramp, coil saturation, and finally the open circuit that triggers the spark.



Distributorless or wasted spark systems

PicoScope works with old and new ignition technology, including wasted spark systems. The software has built-in settings for working with negative-fired plugs.

Current clamps

included in the PicoScope kit

A current clamp lets you measure the current (amps) in a wire without the need to disconnect, pierce or strip it. PicoScope comes with two sizes of current clamp suitable for thick and thin wires, and large and small currents.

Most diagnostics manufacturers make you pay extra for current clamps. With PicoScope, all the clamps you need are included in the kit.

The PicoScope and PicoDiagnostics software is pre-programmed to work with the clamps, so you read the result directly in amps with no need for any conversions or calculations.

The kit also includes fuse breakout leads to allow you to measure the current in a fuse circuit while the fuse is still plugged in.

60-amp clamp

For primary ignition, fuel injectors, fuel pumps, fans and relays. Two clamps included for injector/ignition and injector/injector measurements.

600-amp clamp

For starter motors, batteries and alternators in small to medium-sized vehicles.

Fuse breakout leads

ATS and mini-ATS sizes for all common fuses. Use with the 60-amp clamp to measure fuse current.

2,000-amp clamp

For starter motors and batteries in commercial vehicles.

Optional accessory

PicoScope Advanced Kit

Includes a wide range of accessories

Acupuncture probe set

For back-probing connectors without cutting or piercing the insulation.
Includes spare pins.
Accepts 4-mm plugs.

2 pairs

Multimeter probes

For making voltage measurements with a scope.

Accepts 4-mm plugs.

2 pairs

Small crocodile clips

For hands-free probing of wires and small terminals.

Accepts 4-mm plugs.

Large crocodile clips

For hands-free probing of battery and starter motor terminals

Accepts 4-mm plugs.

S-hook

Hang up your test cables to keep them away from hot or moving parts in the engine bay.
Plastic-coated to protect bodywork.

x2

60 A current clamp

20 A and 60 A ranges.
9 V battery included.
Screened cable with BNC connector to keep out electrical interference.

600 A current clamp

9 V battery included.
Screened cable with BNC connector to keep out electrical interference.

Coil-on-plug probe

Picks up ignition patterns from coils and coil packs when you can't get access to an ignition lead.

BNC to BNC cable with earth clamp

For coil-on-plug ignition probe.
3 metres (10 feet) long.

x4

20:1 attenuator

Extends the range of your PicoScope up to ±400 V to deal with primary ignition. (The scope on its own can handle up to ±100 V.)

PicoScope Advanced Kit (continued)

Includes a wide range of accessories

x4

Spark plug extension lead

Fits between coil pack and spark plug to give access to the HT lead. Suitable for use with secondary ignition pickup.

Vehicle Electronic Diagnostics Course on CD

Learn how to get the most out of your PicoScope. Presented by renowned diagnostics expert Frank Massey.

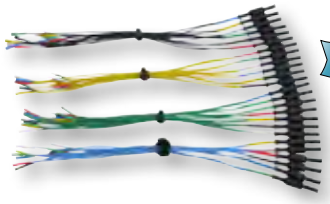
x4

3 m (10 ft) screened test leads

BNC to 4 mm. Use to connect your PicoScope to a test probe. Screened to keep out electrical interference.

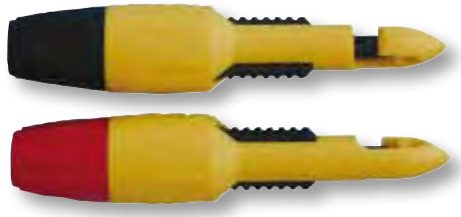
Cable identifier kit

Fit these coloured clips on both ends of your screened test leads. Helps to avoid confusion, especially when using all 4 channels of your scope.



6-way universal breakout leads

Break into almost any connector up to 6 ways.
4 sizes supplied.
Accepts 4-mm plugs.



Insulation-piercing probes

When there is no other way to get to a wire, clamp one of these on and a sharp pin pierces the insulation. Accepts 4-mm plugs.

ATC fuse extension leads

In both mini and standard sizes. Plug the original fuse into the lead, plug the lead into the fuse socket, then use a current clamp to measure current.

x2

60 MHz high-speed probe

For accurate measurement of fast signals like CAN bus and FlexRay.
Standard BNC plug.
1.2 m (about 4 feet) long.

x4

Secondary ignition pickup

For safe probing of HT leads without danger from high voltages.
2.5 m (8 ft) long.

2-pin breakout lead

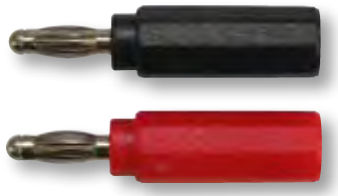
For standard 2-pin sensors and actuators. With 4-mm plugs to connect to PicoScope test leads.

Optional accessories

Extend your diagnostic abilities even further

Sprung hook probes

For hands-free probing of wires.
Fully shrouded for safety.
Use with BNC-to-4-mm test leads.



Shrouded to unshrouded 4-mm adaptors

You need these when your breakout box won't accept our safety-shrouded 4-mm (banana) plugs.

2,000 A DC current clamp

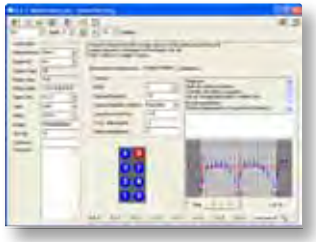
Measures current in starter-motor and battery cables on commercial vehicles.
Fitted with 4-mm plugs.

700 V differential probe

Measures floating voltages on electric motors and generators. Ideal for hybrid vehicles. Other probes available for higher voltages.

Mixmaster 12-channel mixer

Get an ignition parade display for up to 12 cylinders on any 2-channel or 4-channel scope.
9 V battery included.

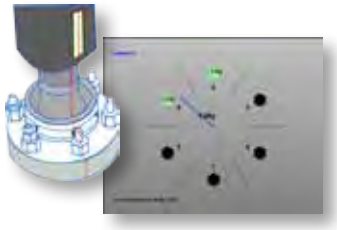


ACE Misfire Detective CD

Software to use with your PicoScope. Helps find misfires using simple pressure measurements.

CAN Test Box

Breakout box for the 16-pin OBD-II connector. LEDs show which protocols are in use. Pass-through connector for connecting a scan tool.



Propshaft balancing and NVH

Please contact our sales team if you have a requirement for propshaft balancing or NVH (noise, vibration and harshness) software options.

5 m (16 ft) screened test lead

Our standard test leads are 3 m (10 ft) long. If you require longer leads (for commercial or agricultural vehicles) we can also supply 5 m cables.

WPS500X pressure transducer

Vacuum to 500 psi (30 bar). Fast and accurate. 3 ranges and 3 zoom levels for static and dynamic pressures.

What the world is saying about PicoScope

Customers, journalists, educators...

Professional Motor Mechanic

"Verdict: It has been hard to do the Pico 4000 kit justice in the space of this review and it must really be seen to be appreciated – the best oscilloscope I have ever used!"

PMM Magazine, July/August 2009

See the full review, "Scope Breeds Eternal", on page 32.

IMI Skillmiles Programme

Pico Technology - Platinum Award

"Staff at Pico Technology have given their time for free to assist at colleges and ATA centres and have also discounted their technical equipment provded to colleges and any member of the IMI. They have helped with the Continuing Professional Development of those working in the industry by contributing diagnostic articles to the trade press."

Professional Motor Mechanic Magazine

Top Diagnostics Product of 2002 and 2003

MOTOR Magazine

For the PicoScope 3000 Series Kit

Commercial Vehicle Workshop Magazine

Top Products 2005

MOTOR Magazine

For the 6-Way Universal Breakout Leads

MOTOR Magazine

For the Mixmaster secondary ignition signal mixer

MOTOR Magazine

For the Multi-Function Pressure Transducer

MOTOR China Magazine

For the PicoScope 3000 Series Automotive scope

About Pico Technology

The scope company

18-year history

This is how long we have been designing and building test equipment. We don't make scan tools, gas analyzers or other workshop equipment for the automotive industry - we just make scopes. So if you want the most advanced and the most intelligently designed scope in the industry, come to the experts.

2-year warranty

If anything goes wrong with any part of your PicoScope kit within the first 2 years, we will fix or replace it.

Newsletter

Our monthly newsletter keeps you up to date with Pico product releases, and includes case studies and technical tips written by diagnostics experts.

To sign up, just type your email address in the box on our home page.

We won't send you spam you or sell your email address to anyone else.

Case studies

On our website you will find over 20 detailed, illustrated diagnostic case studies, plus tutorials, videos, manuals, waveforms and articles, all free of charge.

www.picoauto.com

PicoScope corporate customers

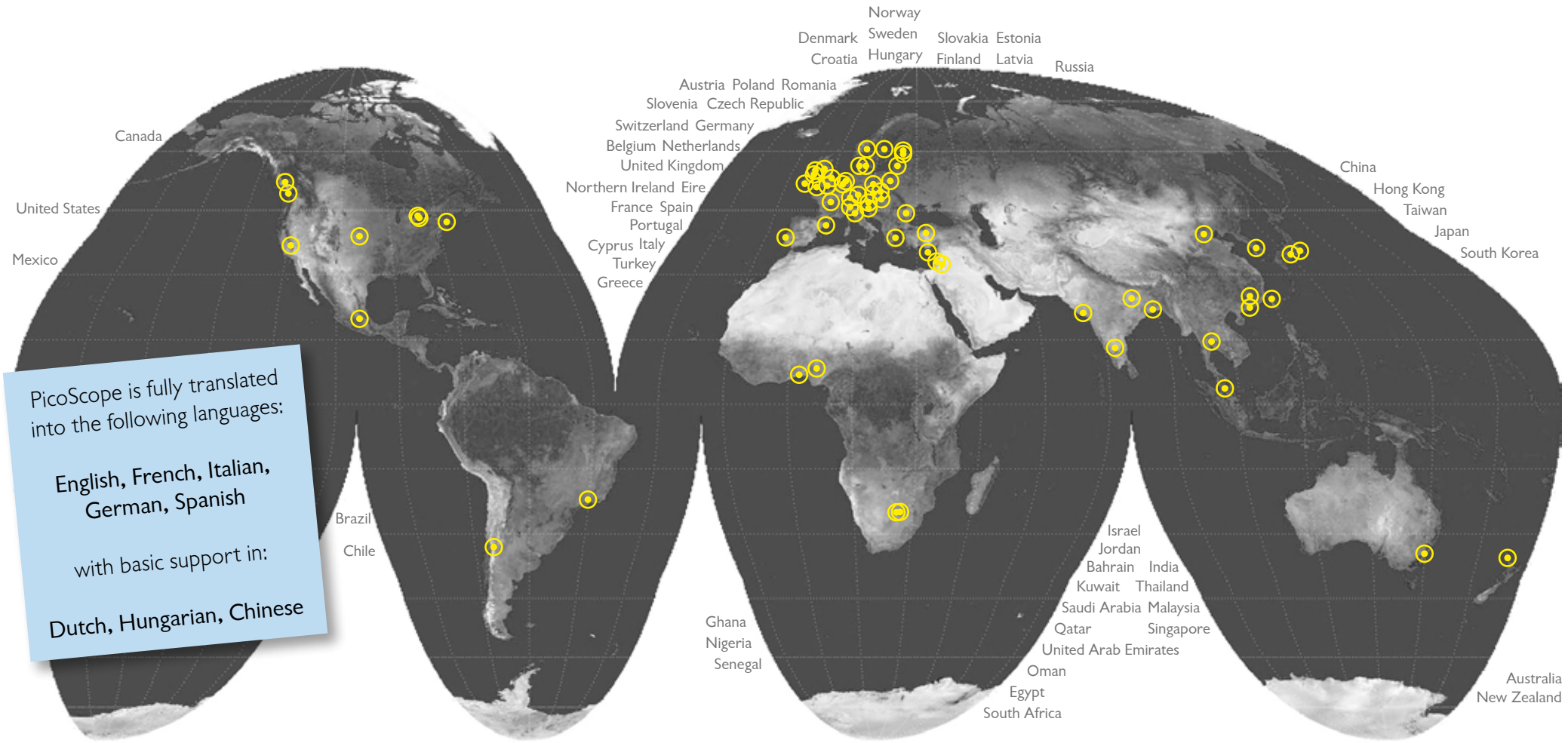
Some of the manufacturers we have supplied with custom kits

Many of the world's leading vehicle manufacturers have chosen to equip their dealer networks with PicoScope. We did more than just print a logo on the case: we also helped them to to choose the right combination of accessories for their service network, rebranded the scope and the software, and worked with them to develop new diagnostic tests for their vehicles.

In each case, the result was a carefully designed diagnostics kit that gave their service engineers the best tools available.

Worldwide support

Distributors authorised for sales, training and repairs



PicoScope is fully translated into the following languages:

English, French, Italian, German, Spanish

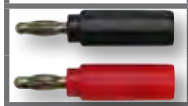
with basic support in:

Dutch, Hungarian, Chinese

www.picoauto.com/automotive_distributors.html

How to order

your PicoScope Oscilloscope Diagnostics Kit and accessories

	Order code	Description	£	$	€
	PP537	PicoScope Advanced Oscilloscope Diagnostics Kit	1995.00	3291.75	2493.75
	TA089	Sprung hook probe (black)	4.00	6.60	5.00
	TA090	Sprung hook probe (red)	4.00	6.60	5.00
	TA016	Shrouded to unshrouded 4-mm adaptor (black)	1.00	1.65	1.25
	TA017	Shrouded to unshrouded 4-mm adaptor (red)	1.00	1.65	1.25
	PP253	2,000 A DC current clamp	99.00	163.35	123.75
	TA041	700 V differential probe	195.00	321.75	243.75
	PP361	Mixmaster 12-channel ignition mixer	197.00	325.05	246.25
	TA029	ACE Misfire Detective software CD	437.00	721.05	546.25
	PP619	CAN Test Box	125.00	206.25	156.25
	TA020	5 m (16 ft) BNC to 4 mm screened test lead	30.00	49.50	37.50
	TA041	WPS500X pressure transducer	TBA	TBA	TBA

A wide range of accessories and spare parts is available on our website:

Terms and conditions

Please see our full terms and conditions of sale on our website.

Prices held until 15th September 2009. U.S. dollar and euro prices are subject to exchange-rate variations. Errors and omissions excepted.

All products are covered by a 2-year warranty.

Ordering

You can place your order direct with Pico Technology in the UK, or through one of the local distributors listed on our website.

Contacting us

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Fax: +44 (0) 1480 396296
Email: sales@picotech.com

www.picoauto.com

“Scope Breeds Eternal”

Product test by Professional Motor Magazine

This month, Mark scopes out the Pico 4000 kit and gives us his considered verdict.

As a regular PicoScope user I believe the automotive kit is at the forefront of vehicle testing technology and user-friendliness. Ask any Pico user for their opinion of the kit and I am sure you will never hear a bad word said about the company or its products. When I heard about the new Pico 4000 kit I was intrigued to see how they could possibly improve the best Oscilloscope I have ever used? Well they have! Available in 2 or 4 channel options, the Pico automotive kit can be used to test the voltage or current of any circuit, sensor, actuator, ignition signal or data bus transfer message. The comprehensive scope kit comes in a protective carry case and includes all you need to get started and a detailed training DVD from Frank Massey. The Scope module is powered directly by the USB 2.0 lead from your laptop which makes the system very versatile and portable to use.

What a memory

The Pico 4000 spec improvements include an increased input voltage to ±100 V before the use of an attenuator is required. The ‘always on’ memory buffer has been increased 64-fold and ensures that when fault finding, no vital information is missed and that when the scope capture is paused, up to the previous 1000 screens can be reviewed, saved and printed.

The extended bandwidth and real time sample rates mean the performance of this scope is much greater than before and high speed CANBus and Flexray systems are easily catered for. This future-proofs the Pico kit against forthcoming vehicle network system developments, giving peace of mind if you invest in it.

The scope screen is presented in a clear and workable format with a large display for waveforms and drop down menus are used to set the testing options, triggers and probe types. Advanced cursor measurements and signal calculations can be displayed onscreen in many options. The automotive tab leads to extensive pages of specific system info, testing methods and channel presets. The duration of time-base that can be displayed across the X axis can be as super fast as 1 microsecond (100 nanoseconds per division) allowing for extreme detail, or as long as 33 minutes 20 seconds (200 seconds per division), which is great for monitoring varying signals over time. The voltage scale (Y axis) can be set as sensitive as 10 mV per division right up to 50 kV for secondary ignition.

Multi-coloured

Each of the four channels are represented by different colour traces on screen – blue, red, green and amber, which eases identification on complex multi-channel testing. I like the windowed zoom function where any part of a captured

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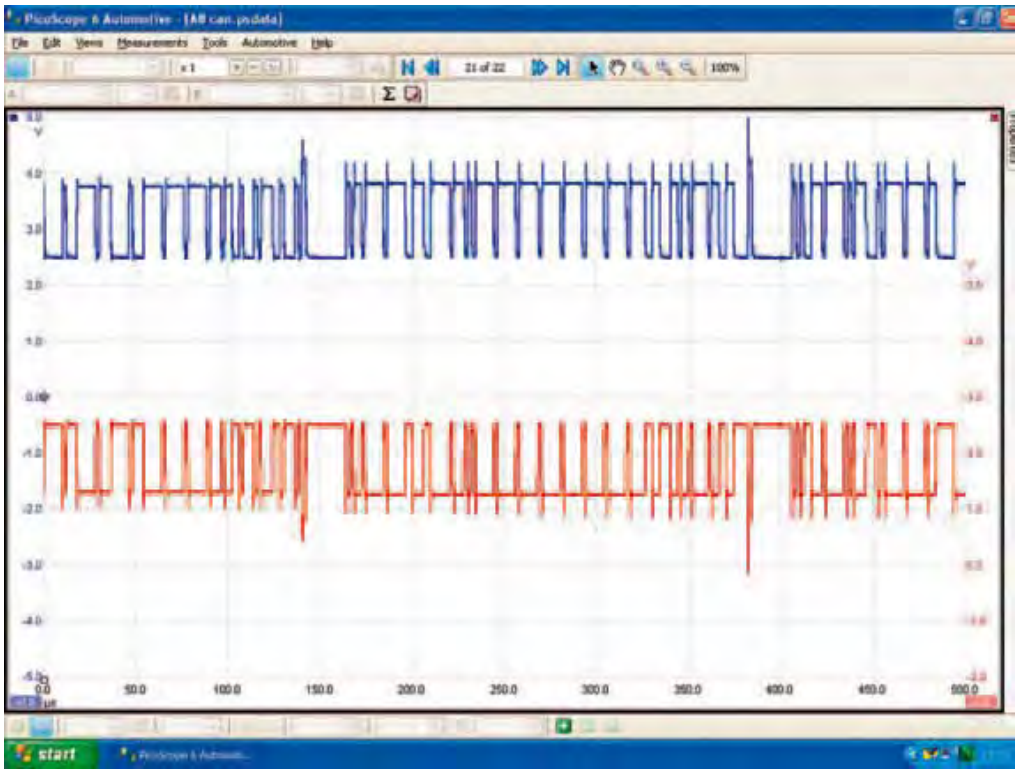

waveform can be selected by dragging a box around the area of interest then the screen instantly zooms in to display the highlighted zone.

Onscreen help is provided by the user's guide and the beauty of working with this oscilloscope, especially on a system that you are not sure about, is that you cannot damage anything by probing a wrong wire. I particularly like the way that testing with a scope on any automotive system opens up the whole story of events and makes it so much easier to understand the relationships between various components. In some cases testing with the amps clamps can give much more reliable results monitoring current rather than voltage in a circuit.

Constant development

The PicoScope operating software is constantly being developed and the latest available version is always free to download from www.picoauto.com. Even if you are not in the market for a scope it is well worth logging on to the website as it is a great resource for technical info and also hosts a user's forum which has some very experienced contributors. Monthly automotive e-mail news letters are great and always feature real life repair case studies by highly respected technicians.

Existing PicoScope users can upgrade the spec of their automotive kit by buying the latest Pico 4000 module only, as all the rest of the test kit contents are compatible. A great range of PicoScope accessories can be obtained to cover any testing eventuality and I am eagerly awaiting the release of the pressure transducer.

Verdict

It has been hard to do the Pico 4000 kit justice in the space of this review and it must really be seen to be appreciated – the best oscilloscope I have ever used!

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