A high performance lab scope for the automotive technician.

The **Automotive scope ATS5004D** is a four channel automotive oscilloscope with **differential inputs.** Besides the standard available features of a professional USB oscilloscope, the Automotive scope ATS5004D has specific features like SureConnect connection test and resistance measurement that are essential for automotive measurements.

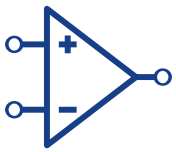
Key specifications

Oscilloscope / Spectrum analyzer / Voltmeter
12 bit resolution (14 and 16 bit enhanced resolution)
50 MS/s sampling
500 kS/s, 12 bit continuous streaming
50 MHz bandwidth
128 KSamples memory per channel
0.3 % DC vertical accuracy
100 ppm timebase accuracy

Amount	Item
1	Carry case BT341
1	Automotive scope ATS5004D
4	Measure lead TP-C1812B
4	Differential attenuator TP-DA10
1	CDROM with Multi Channel software and drivers
1	Instrument manual
1	Software manual

Safe measuring using differential inputs

The Automotive scope ATS5004D is a four channel automotive oscilloscope with **differential inputs**. With the differential inputs it is possible to measure four totally unrelated signals simultaneously. It is not possible to create a short circuit through the oscilloscope or through a second device connected to your computer and to the car, like e.g. a fault code scanner.



Differential inputs: no risk of damaging the car, the oscilloscope or the computer.

SureConnect connection test on each channel

TiePie engineering is the first oscilloscope manufacturer to implement **SureConnect** technology. While measuring, the revolutionary SureConnect technology checks in real time whether a test probe is in physical and electrical contact with the test subject.

Assuring a good connection of a probe with a test subject may not always be easy. The subject under measurement may be dirty, oxidized or an (invisible) protective layer may be present. Or, the test subject may be hidden, making visible contact confirmation impossible. Also, capacitive coupling between test probe and test subject can result in measuring a distorted version of the actual signal, wrongly suggesting a connection. Simply activate the SureConnect connection test and you know whether there is contact or not.

SureConnect: no more doubt whether your probe doesn't make contact or there really is no signal.

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Resistance measurement on each channel

Many automotive sensors are based on variable resistors. Use your Automotive scope ATS5004D in the resistance setting to test them, no more need to take a separate ohm meter. Resistance values can be displayed as a number, but it is also possible to display the resistance variation in time, in a graph: an **Ohm scope**. Advantages of the Ohm scope are:

- Capture fast resistance changes in a graph.
- Detect and locate carbon track defects in a variable resistor.
- Create resistance graphs of special resistors like NTCs and PTCs. Use e.g. channel 1 to measure the resistance of the PTC and channel 2 to measure the temperature. An XY plot will then show the resistance variation as a function of the temperature.

The Ohm scope uses the same inputs as the oscilloscope. Changing the measure leads is not required. The advanced protection against over voltage ensures that the Ohm scope withstands high voltages.

The Ohm scope is an indispensable feature of the Automotive scope and a must for every automotive mechanic.

Fully supported by ATIS

All features of the Automotive scope ATS5004D are fully supported by **ATIS**, the Automotive Test and Information System. Select a specific diagnostic measurement in ATIS, click the measure button and the Automotive scope ATS5004D will be completely setup for that specific measurement and ready to perform it.

Low noise differential measuring lead

The Measure lead TP-C1812B is the only **low noise differential measure lead** in the market. It is designed to be used with the Automotive scope ATS5004D. This 3 meter long measure lead splits in two individual ends of each 1.2 meter long. The BNC connector at one end plugs directly on the instrument. The two other ends each feature a single 4 mm banana jack, on which application specific test points, clamps or probes can be plugged. The Measure lead TP-C1812B is very flexible, uses shrouded banana jacks and a heat and oil resistant silicone isolation, designed for daily use in garage environments

The Measure lead TP-C1812B is very insensitive to external interfering signals. The two ends can be placed up to two meters apart, while picking up very little interference. With a conventional oscilloscope with standard oscilloscope probes this is not possible. The maximum distance between the positive side and ground of a standard oscilloscope probe is usually limited to approximately 20 cm. The Measure lead TP-C1812B for the Automotive scope ATS5004D does not have this limitation and allows you to measure between points that are more than 2 meters apart, without picking up external interferences.

The unique Measure lead TP-C1812B is your first requirement to measure between two distant points.

Differential attenuator

Increase the input range of your Automotive scope ATS5004D. The Differential attenuator TP-DA10 is a differential 1:10 attenuator, specially designed to be used with the Automotive scope ATS5004D. The Differential attenuator TP-DA10 is placed directly on the input of the instrument and the measuring lead on the other end of the attenuator.

The Differential attenuator TP-DA10 is required when measuring high voltages, like e.g. measurements on injectors or in hybrid systems.

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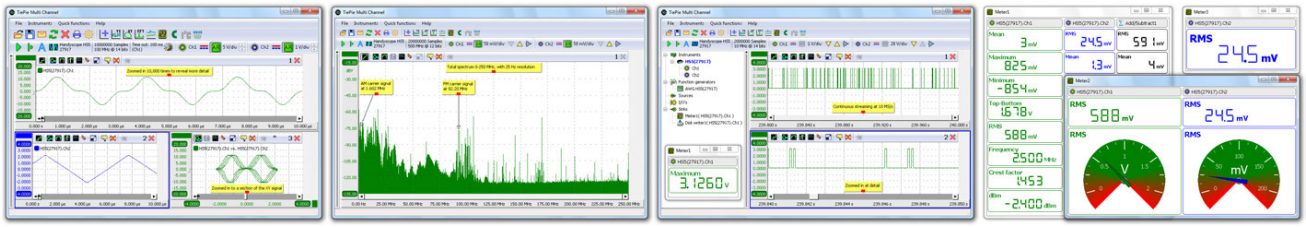
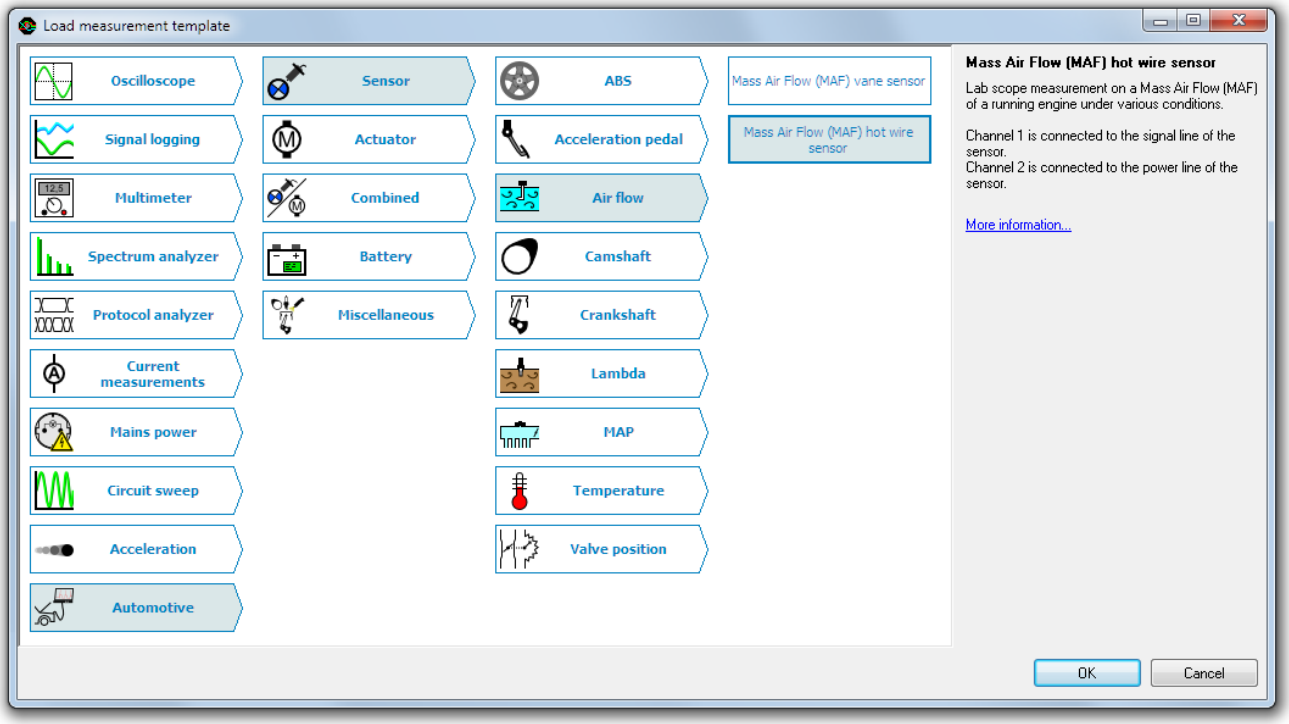
Multi Channel oscilloscope software

The Automotive scope ATS5004D is standard delivered with the Multi Channel oscilloscope software, **the world's most versatile measuring software package.** Together with the Automotive scope ATS5004D, it can be used as Oscilloscope, Spectrum analyzer, Data logger, Multimeter and Protocol analyzer.



When knowledge or experience are insufficient to setup a measurement instrument correctly and quickly, using **measurement templates** is a must. The TiePie engineering Multi Channel oscilloscope software provides a large amount of ready to use measurement templates. This includes templates for measurements at all common automotive sensors and actuators. Most measurement templates are designed to allow performing an advanced measurement in just a few mouse clicks.



You select the measurement template from a tree structure and the instrument will be fully set up. A measurement template contains all settings for a specific measurement as well as additional information regarding the selected template, like e.g. how the instrument and/or accessories need to be connected. Templates can also contain reference signals that show what to expect. Just a few mouse clicks allow to perform a complex measurement. No need to worry or even know about the complex and difficult settings of the instrument itself, you can focus completely on the car you are working on.

Work efficiently and save your precious time using the unique measurement templates.

A large library with practical measurements on all automotive sensors and activators is online available. It shows all essential information for the automotive mechanic: connection diagrams, sensor and actuator information, downloadable setting files with instrument setups and example signals, and diagnostic information.

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Specifications

Acquisition system			
Number of input channels	4 analog, isolated BNC		
Type	Differential		
Resolution	12, 14, 16 bit user selectable		
DC Accuracy	0.3 % of full scale ± 1 LSB		
Ranges	±200 mV to ±80 V full scale		
Coupling	AC/DC		
Impedance	2 MΩ / 40 pF		
Maximum voltage	200 V (DC + AC peak < 10 kHz)		
Maximum voltage with 1:10 attenuator	300 V (DC + AC peak < 10 kHz)		
Maximum Common Mode voltage	200 mV to 800 mV ranges : 2 V 2 V to 8 V ranges : 20 V 20 V to 80 V ranges : 200 V		
Common Mode Rejection Ratio	-48 dB		
Bandwidth (-3dB)	50 MHz		
AC coupling cut off frequency (-3dB)	±1.5 Hz		
Channel Isolation	500 V		
Channel Separation	-80 dB		
SureConnect			
Maximum voltage on connection	200 V (DC + AC peak <10 kHz)		
Resistance measurement			
Ranges	100 Ohm to 2 MOhm full scale		
Accuracy	3 %		
Response time (to 95 %)	<5 ms		
Maximum sampling rates	12 bit	14 bit	16 bit
Oscilloscope block mode	50 MS/s	3.125 MS/s	195 kS/s
Continuous streaming mode	500 kS/s	480 kS/s	195 kS/s
Sampling source			
Internal	Quartz		
Accuracy	±0.01 %		
Stability	±100 ppm over -40 °C to 85 °C		
Time base aging	±5 ppm per year		
External	LVTTL, on auxilary connectors		
Input range	100 MHz ± 2 %		
Memory	128 KiSamples per channel		

Trigger	
System	Digital, 2 levels
Source	CH1, CH2, CH3, CH4, digital external, AND, OR
Trigger modes	Rising / falling edge, inside / outside window
Level adjustment	0 to 100 % of full scale
Hysteresis adjustment	0 to 100 % of full scale
Resolution	0.024 % (12 bits)/0.006 % (14/16 bits)
Pre trigger	0 to 128 KiSamples (full record length), 1 sample resolution
Digital external trigger	
Input	Extension connector
Range	0 to 3.3 V (TTL)
Coupling	DC

Interface	
Interface	USB 2.0 High Speed (480 Mbit/s) (USB 1.1 Full Speed (12 Mbit/s) and USB 3.0 compatible)

Power Requirements	
Power from USB port	500 mA max (2.5 W max)
Power via external power input	1500 mA max (7.5 W max)
Minimum voltage	4.5 VDC
Maximum voltage	14 VDC

Physical	
Instrument height	25 mm (1 inch)
Instrument length	170 mm (6.7 inch)
Instrument width	140 mm (5.2 inch)
Cord length	1.8 m (70 inch)
Weight	460 g (16 ounce)

I/O connectors	
Channel 1...4	Isolated BNC
USB	fixed cable with USB 2.0 and USB 1.1 type A connector
Extension connector	D-sub 25 pins female

System Requirements	
PC I/O connection	USB 2.0 High Speed (480 Mbit/s) (USB 1.1 Full Speed (12 Mbit/s) and USB 3.0 compatible)
Operating System	Windows 98/ME/2000/XP/Vista/7/8/10

Operating Environment	
Ambient temperature	0 °C to 55 °C
Relative humidity	10 % to 90 % non condensing

Storage Environment	
Ambient temperature	-20° C to 70 °C
Relative humidity	5 % to 95 % non condensing

Certifications and Compliances	
CE mark compliance	Yes
RoHS	Yes

Package

Convenient carry case	Carry case BB451
Instrument	Automotive scope ATS5004D
Probes	4 x Measure lead TP-C1812B, BNC ->4 mm banana jack
Accessoires	4 x Differential attenuator TP-DA10 external power cable for second USB port
Software	Windows 98/2000/ME/XP/Vista/7/8/10 on CD
Drivers	Windows 98/2000/ME/XP/Vista/7/8/10 on CD
Manual	instrument manual and software user's manuals color printed on paper and digital on CD
Total package weight	Approx. 3 kg

Differential attenuators	TP-DA10
Attenuation settings	X10 differential
Bandwidth	25 MHz
Maximum input voltage	300 V (DC + peak AC)
Input impedance	10 MΩ / 15 pF
Input connector	female BNC
Output connector	male BNC
Dimensions	
Length	79 mm
Diameter	19 mm
Weight	30 g

Measure lead	TP-C1812B
Connectors	
Instrument side	isolated female BNC connector
Test point side	red and black 4 mm shrouded banana jacks
Bandwidth	4 MHz
Safety	CAT III, 1000 V, double isolated
Dimensions	
Total length	3000 mm
Length to split	1800 mm
Length individual ends	1200 mm
Weight	100 g
Color	black
Certifications and compliances	
CE conformity	yes
RoHS	yes
Accessories	
Color coding rings	5 x 3 rings, various colors

Customer service

TiePie engineering instruments are designed, manufactured and tested to provide high reliability. In the unlikely event you experience difficulties, the TiePie engineering instruments are fully warranted for one year. This warranty includes:

- No charge for return shipping
- Long-term 7-year support
- Upgrade to the latest software at no charge