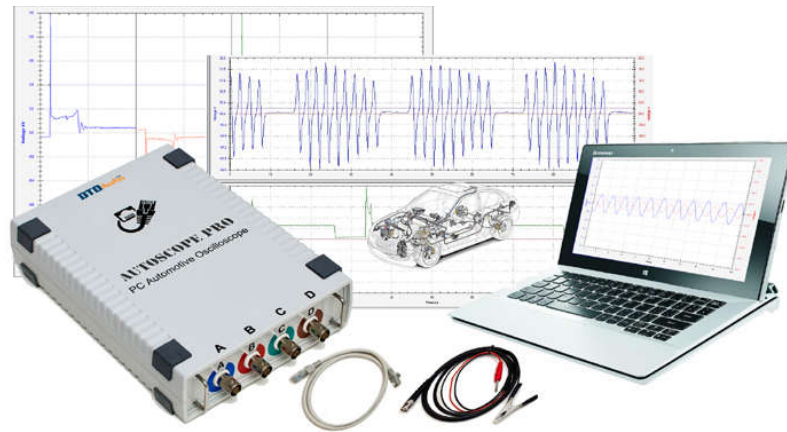❖ **IMAGE**

❖ **INTRODUCTION**

- Today, the new generation cars & motorcycles are controlled by microcontroller technology. Therefore, measuring, checking and fault determining is more difficult because this technology use more fast varying signal pulses that cannot check by analog meter. Example:

+ Measuring, checking, fault diagnosing of generator, stator, rotor, rectification diode …

+ Surveying, checking signal pulse of crankshaft position sensor, camshaft position sensor, vehicle speed sensor, ABS sensor, knock sensor …

+ Surveying, checking ignition control signal as Ne, Igt, Igf, Igc, G… and fuel injection control signal as Ti, Ro, Ks…

+ Measuring, checking communication signal in Integrated Chip *(IC)*, power stage control signal in ECU, CAN bus signal and other signals.

- Technicians need a professional equipment to measure, compare and survey different signals *(Example: measure simultaneously Ne, G, Igt signals to check ignition system, measure simultaneously 04 ignition pulses or 04 injector pulses of 04 cylinders to compare and diagnose)*.

- **AUTOSCOPE PRO** – Tool measures 04 signal channels on cars & motorcycles with software is installed on computer, this is accuracy, reliable, easy solution to measure, check and repair electronic on cars & motorcycles.

❖ **APPLICATION**

- Used for repairing electric, electronic of cars and motorcycles and other electronic device
- Being educational tools for automobile/motorcycle electronic vocational

❖ **FUNCTION**

- Survey electric pulse value and signal waveforms of sensors on cars, motorcycles:

+ Crankshaft position sensor *(CKP)*
+ Camshaft position sensor *(CMP)*
+ Engine coolant temperature sensor *(ECT)*
+ Hall sensor
+ Knock sensor *(KS)*
+ Mass airflow sensor *(MAF)*
+ Manifold absolute pressure sensor *(MAP)*
+ Oxy sensor *(O2S)*
+ RPM sensor *(Ne)*
+ Vehicle speed sensor *(VSS)* vv…

- Allow measure and survey 04 signals of different 04 channels
- Record the results of all measurements
- It allows the users to add signal waveform of sensors to database
- Software integrated standard waveforms of signals and operating principle information of basic pulse sensors on cars, motorcycles. Users have known about sensors, compare current signal width standard signal to diagnose and repair.
- Device integrated memory can storage data as USB.

❖ **TECHNICIAN SPECIFICATION**

- Signal channel: 04 channels
- Input voltage ranges: ±0.5V; ±1V; ±2V; ±5V; ±10V; ±20V
- Overload protection: ± 200V
- Connect to PC via USB 2.0 port
- Power: 8V-36V DC
- Vertical resolution: 8 bits
- Bandwidth: DC to 100 kHz *(real 10µs/div)*
- Maximum sampling: 200 000 samples/sec
- Dimensions: 195 x 135 x 40 mm

❖ **PC REQUIREMENTS**

- Processor: 1GHz Pentium III
- Memory: 128 MB *(XP)*
- Free hard disk space: 700 MB
- Computer has USB port
- Operating systems: Windows XP, Vista, Windows 7, Windows 8; 32-bit / 64-bit

❖ **PACKAGE**

No.	QUANTITY	DESCRIPTION	IMAGE
1	01	Electronic converter	
2	01	Data cable used for connecting to computer (LAN cable)	
3	04	Signal cable used for connecting to vehicle	
4	01	Software CD	
5	01	User guide	

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