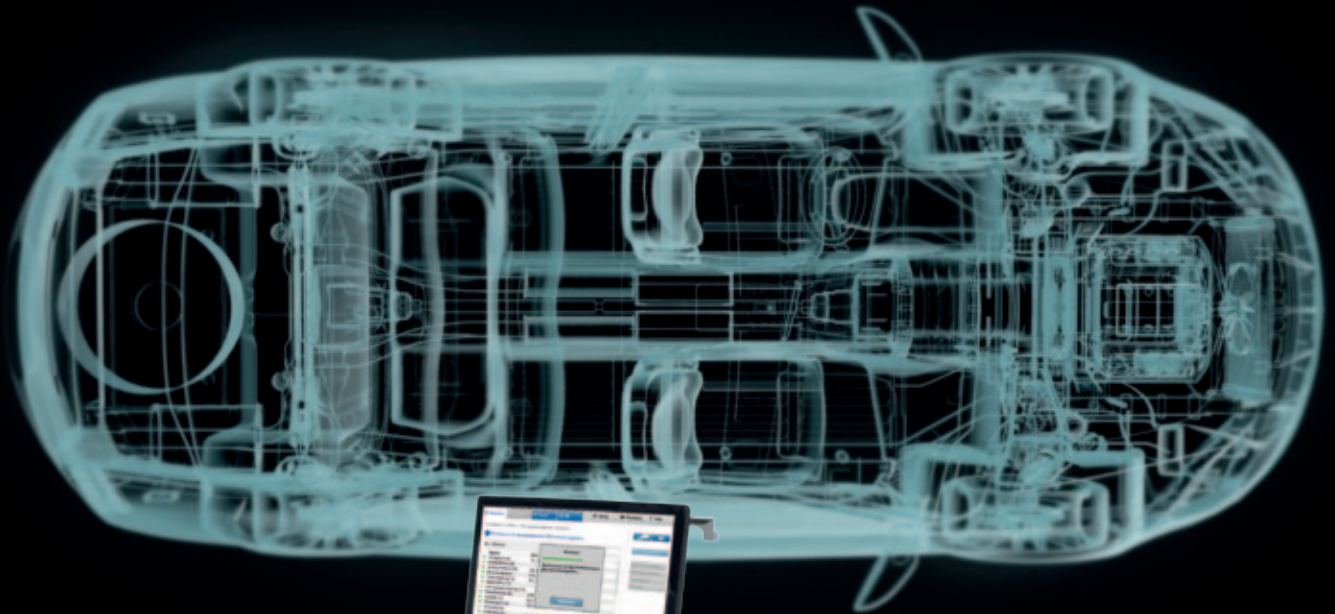


# In-depth diagnostics for increasing requirements.



## AVL DITEST MDS MODULAR DIAGNOSTIC SYSTEM

The revolution in vehicle diagnostics

FUTURE SOLUTIONS FOR TODAY





# Modular solutions are added value for workshops.

## AVL DITEST MDS – FLEXIBLE UND EFFICIENT DIAGNOSTICS







People striving for success need top-class performance. In this, your partner for exhaust and diagnostic technology will support you with top-class solutions. This is where AVL DiTEST comes into play – with the pit lanes’ darling: MDS. The modular diagnostic system solution adapting to its assignment and not vice versa. Use MDS to read out and delete error codes or go even deeper into diagnostics and detect error causes more precisely and quicker. This is pure added value. The proverbial safety when handling hybrid vehicles is priceless, but provided for by MDS. Just as the exact measurement and examination of emission values – we are very skilled in the field of gasoline and diesel engines.

### MODULARITY – THE KEY TO QUICK SUCCESS.

The best at first: when purchasing MDS, you will get what you want. Not less, rather more. Since it is possible to network individual modules due to the modular concept of AVL DiTEST. Your requirements are combined to an overall system – MDS saves nerves, space, and hard cash. Emission stations of the basic series can be expanded adeptly to savvy diagnostic stations overnight. The suitable engine and component tester is practically available to you at the touch of a button and ready for connection.

### THE FUNCTIONS OF THE MODULAR WORLD IN AVL DITEST MDS.

It's your choice – the following list shows how it is done: all functions are configured according to your wishes and exactly in accordance with your requirements. Get started, select individual modules, combinations, or the entire solution.

-  **CONTROL UNIT DIAGNOSTICS**
-  **ENGINE AND COMPONENT TESTING**
-  **HIGH-VOLTAGE INSTRUMENTATION**
-  **AU / OFFICIAL EMISSION MEASUREMENT**
-  **EOBD FOR READING OUT THE AUXILIARY VARIABLES**
-  **EXHAUST EMISSION ANALYSIS**
-  **INFORMATION SYSTEM**





## THE MOBILE WORLD OF DIAGNOSTICS

AVAILABLE FOR EVERY APPLICATION AND EASY TO CARRY.

Our mobile devices are characterized by compact and handy design. Robustness is very important for all devices up to the smallest detail; regarding their capability, our “small devices” are huge: quick, precise, and to be expanded in many ways. All areas – exhaust measurement, ECU diagnostics, or engine and component testing – can be added effortlessly.



### AVL DITEST MDS DRIVE ULTRA MOBILE

Plug and play! A diagnostics expert for rough circumstances: shock-absorbing housing, all-round insensitive to oil and acid. All-round display, single-hand operation, and long-life rechargeable battery as standard.



### AVL DITEST MDS DRIVE 188 HANDHELD DIAGNOSTIC SYSTEM

Impact-resistant, water- and dust-proof, the handheld tool is perfect for rough workshop applications.



### AVL DITEST GAS 1000 AND AVL DISMOKE 480 EXHAUST MEASUREMENT

The stable, portable unit is at home on the road: Highly flexible regarding its use and quickly ready to operate.



## THE STATIONARY WORLD OF DIAGNOSTICS

ADEQUATE TO EVERY TASK AND REQUIREMENT.

MDS – from AVL DiTEST – is the magic bullet for workshops and their exhaust gas and diagnostic systems: a robust, nimble trolley forms the basis for the MDS modular system: resourceful components connected to each other according to the order – there is enough space. Thanks to the ample work surface and multi-functional storage space for PC, printer, probes, and cables. Everything has a designated space; cleanliness and order are called for.



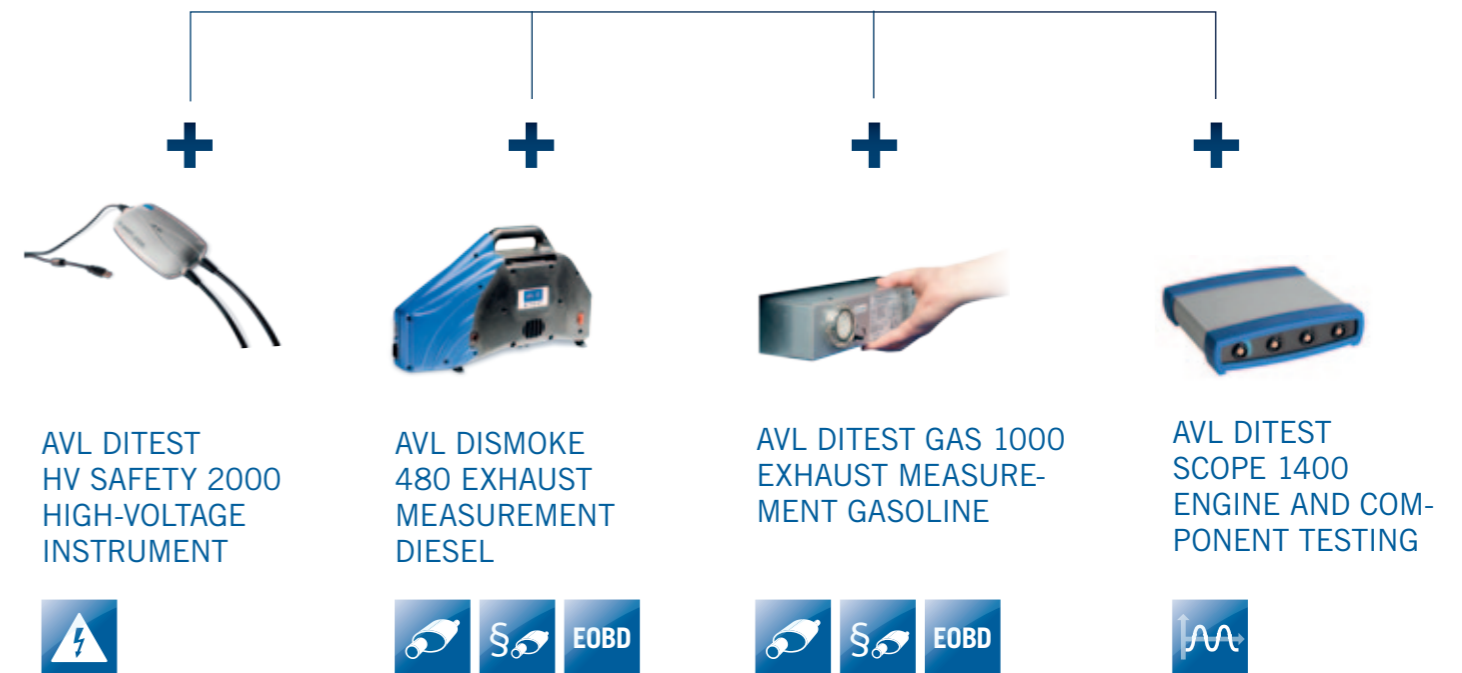
### AVL DITEST VCI 1000 DIAGNOSTIC INTERFACE

With a coverage giving pleasure and technology taking care of the work: testing of engine, safety, and comfort electronics. Covering a broad range from ABS to ignition timing.

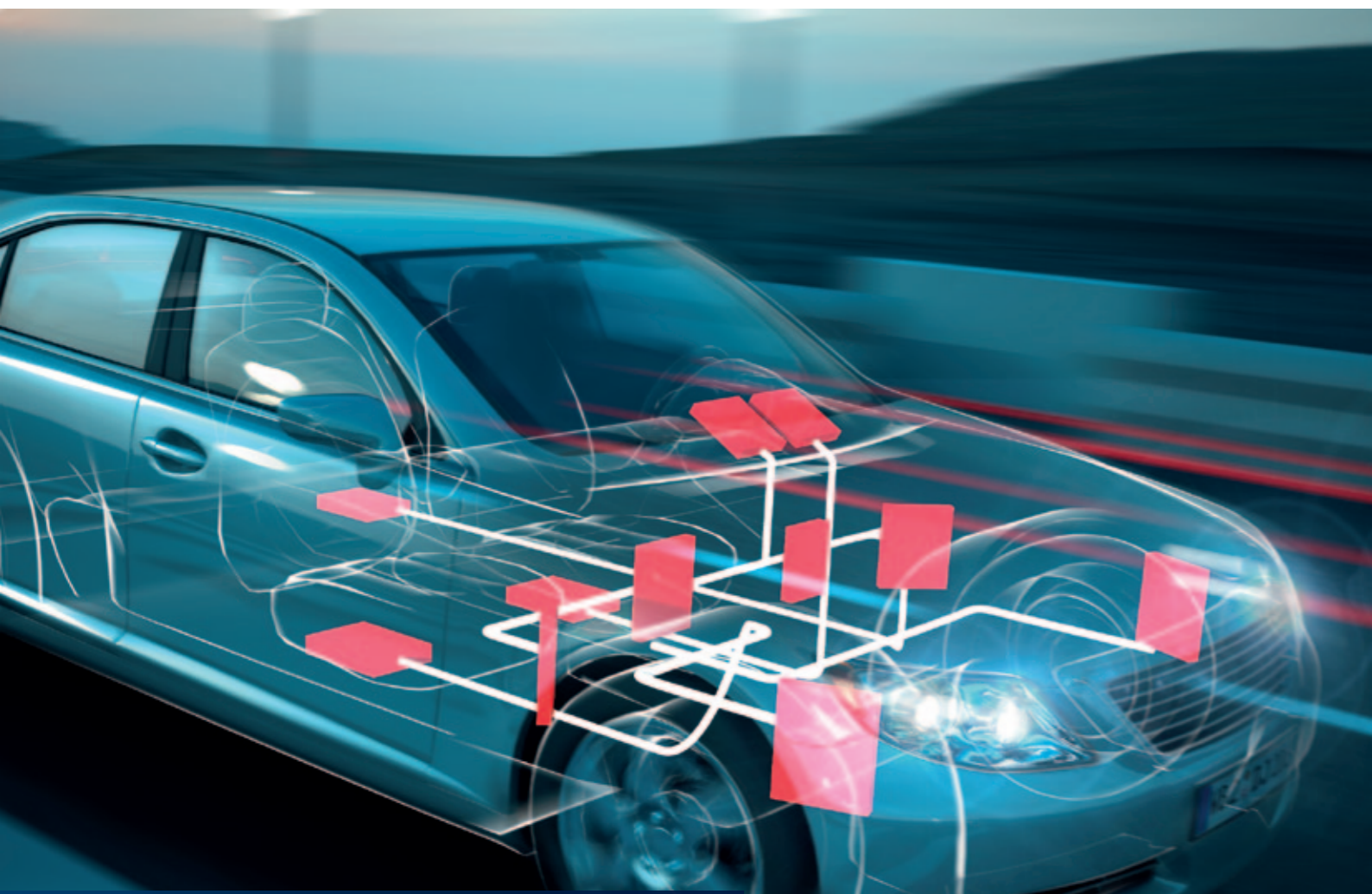


### AVL DITEST MDS BASIC SYSTEM

Hop in, please: AVL DiTEST MDS 150 is equipped with a display and, as a member of the stationary diagnostics unit, it already disposes of all capabilities and equipment modules for vehicle diagnostics and error analysis.







# Vehicle diagnostics in the twinkling of an eye.

## AVL DITEST XDS 1000 – EXPERIENCED DIAGNOSTIC SOLUTION

Put an end to time-consuming error read-out. Discard diagnostic software that is complex in operation. Finish the ever-lasting quest for the required functions. The revolutionary AVL DiTEST XDS 1000 is the software adapting to your requirements and not vice versa: quickest multi-brand diagnostics, uncomplicated and intuitive for the user, fully automatic diagnostics wizards saving valuable time. By using AVL DiTEST XDS 1000, experts and those who want to be experts can access professional and reliable vehicle diagnostics in the quickest and safest manners: detailed depth and extraordinary consistency for personal cars, light and heavy commercial vehicles, buses, and trailers. The multi-brand diagnosis with safe added value.

### COMPLETE COVERAGE – MAXIMUM DEPTH.

The prevailing pluralism of brands regarding vehicles is a true challenge and requires comprehensive vehicle and diagnostics know-how. Therefore, the more know-how about vehicle brands and systems can be retrieved in a workshop, the more secure the utilization will be. Thus, the more intelligent the diagnostics systems, the better for the business! The secret of the AVL DiTEST equipment: one of the world's largest vehicle databases – for personal cars, light and heavy commercial vehicles, and trailers – in only one diagnostic system.

The new AVL DiTEST XDS 1000 diagnostic solution impresses with superior vehicle coverage – from Alfa Romeo to Wabco – and functional, professional scope of testing. Perform the most difficult diagnoses in a correct, quick, and safe manner – that is what we are skilled at.

### DIAGNOSTIC FUNCTIONS OF AVL DITEST XDS 1000 WORKSHOP DIAGNOSTICS

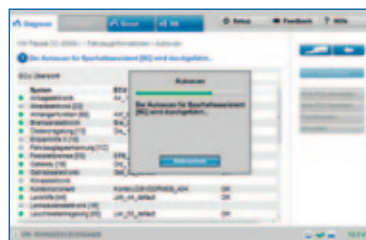
- reading and deleting error codes
- measured values
- actuator tests
- parameterization
- coding
- service reset
- basic setting







With the first click: select the vehicle



With the second click: perform the complete scan



With the third click: select the required function

### REVOLUTIONARY USER GUIDANCE – WITH 3 CLICKS TO THE GOAL.

Given the large number of control units per vehicle and regarding the appropriate scope of testing, only one thing counts today: staying on top of things. Therefore, XDS 1000 will support you with helpful functions and simple user interface as of now. This saves time, money, and nerves. This is because AVL DiTEST XDS 1000 allows for performing a quick vehicle check even during the acceptance meeting with the customer. The revolutionary quick vehicle selection makes this possible!

Finally: the fully automatic system and control unit detection facilitates the day-to-day work significantly: with only one click, all vehicle systems are checked automatically for control unit data, error status, and supported functions using XDS 1000. In doing so, the new Intelligent-Guide-System guides the user through the diagnostic procedure in three steps and indicates operating errors or shortcuts.

Upon quick complete scan, all error codes can be read out or deleted – with only one click. Browse all vehicle functions for the required test simultaneously in real time. The time consuming search in different control units is no longer applicable. The adept filtration of measured values, as well as the graphic interpretation allow for a quick and professional analysis of each error cause.

### HIGH-SPEED DIAGNOSTICS – COMPREHENSION INCLUDING OVERVIEW.

- AVL DiTEST AutoScan – unique complete vehicle scan
- automatic identification of the engine code
- automatic detection of diesel/gasoline vehicles
- filtration of functions and measured values in real time
- definable TOP functions without control unit selection



Practical: effortless identification of control units

### FULLY AUTOMATIC WIZARDS – INTELLIGENT GUIDE SYSTEM

- automatic VIN and mileage read-out
- permanent status display of the vehicle connection
- continuous on-board voltage control



Impressive: graphic representation of measured values

### XIS AND SCOUT

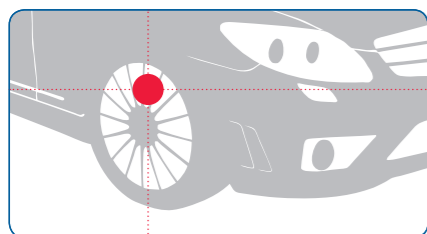
- obtain additional information for diagnostics and repair work
- have the expert system support you during troubleshooting



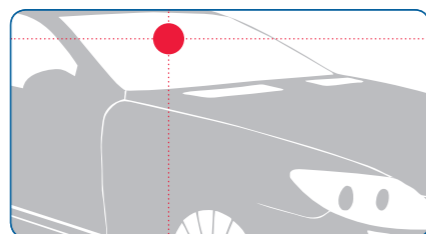
Exemplary: find and detect diagnostics connector

### 1, 2 OR 3? DIAGNOSTICS IN ANY CASE AND FOR ANY EVENTUALITY.

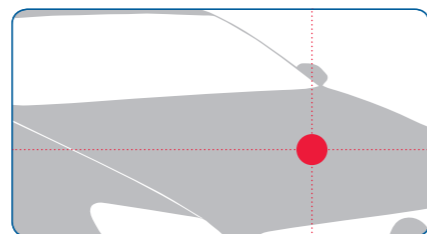
Regardless of whether responsible multi-brand workshop, committed panel beater, or quick “fast fitters”. Everybody can rely on XDS 1000 from AVL DiTEST in good conscience and full confidence. The revolutionary product program convinces with a unique field of application bringing everybody further than yesterday and helping everybody.



Number 1 – the multi-brand workshop: here, XDS 1000 from AVL DiTEST provides masterful assistance for diagnostic work on state-of-the-art brake systems regarding the ventilation of the brakes and the replacement of the brake pads, for example.

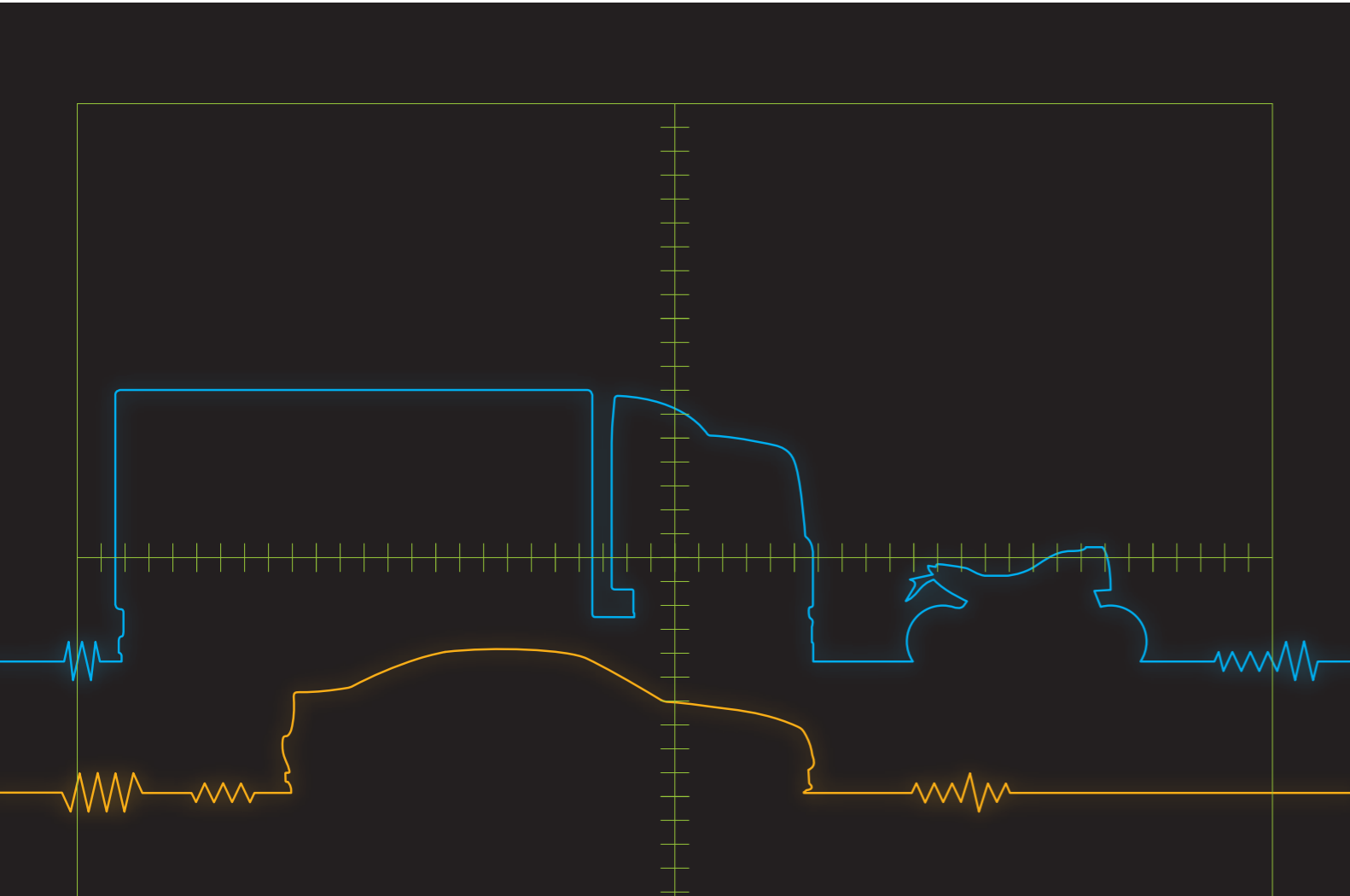


Number 2 – the body shop: XDS 1000 keeps its eyes peeled and exactly checks that the rain/light sensor is adjusted absolutely precisely during the performance of bodywork.



Number 3 – the “fast fitter”: in order that everything is correct under the hood and, for example, charging curves are correct after having replaced the battery, XDS 1000 from AVL DiTEST once again provides for the aforementioned.





# The quickest way to achieve reliable results.

## AVL DiTEST SCOPE 1400 – ENGINE AND COMPONENT TEST

You do not have to be an electronics expert in order to use the intelligent engine and component tester AVL DiTEST Scope 1400 in the workshop. You can measure electronic signals and detect errors in the twinkling of an eye in three simple, menu-guided steps. The number of electronic components in automobiles has increased ten-fold in the past 15 years. Today, electrical components are vital. Assessing these is a very challenging task – fortunately, there is the indispensable aid AVL DiTEST Scope 1400. Professional error diagnosis by testing the electronic components in order to unambiguously identify error and cause. AVL DiTEST – the safest way to detect errors quickly and safely.

### INTELLIGENT MEASURING SAVES ALL KINDS OF THINGS: TIME, MONEY, AND NERVES.

AVL DiTEST Scope 1400 – this intelligent instrument for workshops does not only search for the error, but it detects and identifies it. This makes the difference and AVL DiTEST Scope 1400 so sought-after: workshop-optimized technology and comprehensive accessories for guaranteed precise measurements on all types of engines and vehicle components. Digital, high-resolution 4-channel Scope module for signal detection in the field of automobiles. Logical input and operating software. The engine and component tester supports all types of vehicles and all electronic components and bus signals. Using AVL DiTEST Scope 1400, you use a digital, high-definition 4-channel Scope module for signal detection in the field of automobiles, with an operating software guiding you securely.

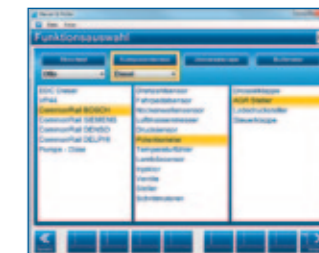
#### EXEMPLARY AND ADVANTAGEOUS:

- The usage of the software impresses with simple and logical operability and functionality.
- The program offers more than 400 pre-configured measurements all grouped according to different engines, sensors, and actuators and sorted according to the functional priority.
- All measurements are supported and guided by comprehensive help functions. Furthermore, they contain connection descriptions of the measuring adapter and a detailed description regarding the measurement procedures, and much more.
- Meaningful curve representation and interpretation is possible due to the automatic measuring range configuration.
- Direct reference curve comparison directly shows whether the electronic component is OK or not OK.
- A curve recorder function allows for recording the signals for later interpretations.
- Thanks to the huge memory, it is also possible to conduct long-term measurements in order to detect sporadically occurring errors.
- Guided connection descriptions of the sensors and inspection whether the proper sensor is connected to the correct channel.

#### HARDWARE FUNCTIONALITIES:

- voltmeter up to 1000V
- galvanic isolation between the 4 channels prevents incorrect measurements and protects the oscilloscope
- galvanic isolation between PC and Scope channel; separate signal earths protect your PC in the event of over-voltage and noise interferences
- digital multimeter for voltage, current, resistance, and diode
- current clamps are supplied by the basic device --> no supply battery required and can be used at all times, thus
- automatic calibration of the current clamp
- color-coded display for each channel: the colors of the LEDs indicate which measuring adapter should be connected to which channel

### ONLY 3 STEPS FOR SUCCESSFUL MEASUREMENT AND ERROR LOCALIZATION



Menu-guided selection of the required measurement – from the extensive portfolio of comprehensive practical pre-settings



Connection of the measuring adapter – supported by the guided connection descriptions and measurement descriptions



Target-actual comparison – by means of automatic measurement configuration and existing reference curves







# Extremely high-voltage technology. Extremely safe diagnostics.

## AVL DiTEST HV SAFETY 2000 – COME TO THE SAFE SIDE

In the near future, every workshop will have to deal with a significant number of hybrid and electrically powered vehicles. Different studies prove that approx. 5% of all newly registered vehicles will be equipped with high-voltage systems in 2015. When taking a look at these numbers, it becomes clear that these vehicles account for a more and more important share in the everyday life of a workshop. High-voltage systems also carry a high safety risk. Guaranteeing the safety and reliability of high-voltage systems within the vehicles is one of the assignments to be performed in the future. The processes of checking the insulation strength of high-voltage systems and the on-board insulation sensor are basic tests for each maintenance and repair activity regarding high-voltage vehicles. For test organizations, these measurements are becoming more and more important, since the insulation strength is subject to a certain process of ageing.

### ALL IN ONE

Developed specifically for the automotive industry, AVL DiTEST HV Safety 2000 – the high-voltage measurement module – guarantees stringent compliance with all safety requirements and the safety in the workshop. AVL DiTEST HV Safety 2000 is the first “all in one” device able to perform measurements according to UNECE R100. It supports the requirements of a measurement with 1 ampere and this exclusively using the standard USB port, without any additional power supply or batteries.

### ALL INNOVATIONS AT ONE GLANCE:

- menu-guided measurement of the de-energized condition with continuous documentation
- active insulation resistance measurement utilising integrated test voltage generator
- integrated voltmeter up to 1,000V
- equipotential bonding measurement according to UNECE R100
- standard multimeter functions
- guided diagnostics and measurement procedure
- power supply via USB interface
- can be calibrated for reproducible accuracy

The device is used in the workshop in order to be able to safely measure on the high-voltage systems of electrically powered and hybrid vehicles. The user benefits from being able to conduct a diverse range of measurements using just one convenient device: de-energized condition, insulation resistance, equipotential bonding (grounding), and all the usual digital multimeter measurements.

AVL DiTEST HV Safety 2000 offers a safe working environment for all users.

### MENU-GUIDED MEASUREMENT, MOST COMPREHENSIVE DOCUMENTATION



Measuring without any errors – automatic pre-setting



Maximum safety for human beings and the vehicle – menu-guided test instructions



Everything in view at all times – workshop-compatible presentation of the test conditions and measured results



Quality assurance and obligation to produce proof under control – comprehensive logging and documentation





# The law under control: achieving success faster.

## HIGH-SPEED EXHAUST MEASUREMENT – FOR GASOLINE AND DIESEL ENGINES

Always at hand and always ready to use. Uncomplicated, quick, and intuitive regarding the measurement. These features characterize AVL DiTEST MDS. Achieving more by means of modularity; that is the promise of MDS to its customers, because: the shortest cycle times and the most precise measurements allow for gainful prospects. Face the future – indulge yourself in an insight with the technology leader for exhaust and diagnostic technology. Be surprised by the versatility in AVL DiTEST exhaust instrumentation: developed for real professionals and real challenges.

## NUMBER ONE THANKS TO TOP-CLASS TECHNOLOGY: EXHAUST MEASUREMENT SYSTEMS IN PERFECTION.

The following is the motto of AVL DiTEST in the field of exhaust measurement: our devices must facilitate the work, reduce the time required, and comply with the latest standards in the workshop and in the test centers. This makes the difference and economy.

### THE REASONS FOR THIS SPEAK FOR THEMSELVES:

- **most efficient application and operation**  
clear, quick, self-explanatory
- **investment protection and return – exhaust emission test device as cash cow:**  
quicker measurement availability, quickest procedure, highest equipment availability, no downtimes, low maintenance effort, can be extended with new functions and applications due to its modular design
- **only the best of everything**  
robust design, durable materials, solid workmanship – the finest technology on the inside
- **latest, future-proof technology**  
prepared for future requirements for hardware and software (e.g. statutory requirements, highly precise opacity measurement, revolutionary measurement technologies, etc)



### EXHAUST MEASUREMENT GASOLINE: AVL DiTEST GAS 1000

4 gas and 5 gas instrument. For measuring gasoline emissions: HC, CO, CO<sub>2</sub>, O<sub>2</sub>, and Lambda. Optional extension to NOx.

#### PRODUCT ADVANTAGES:

- highly precise IR measuring chamber according to OIML R99 class 00
- can be used in the event of extreme condensate formation
- optional NOx measurement
- very low need for maintenance, calibration once a year
- sophisticated service concept
- MID approval



### EOBD COMMUNICATION: AVL DiTEST OBD 1000

By means of simple connection to the standardized EOBD interface of the vehicle, the auxiliary variables required for the exhaust emission test (e.g. speed and oil temperature) can be read out quickly. Therefore, it is not necessary to use an oil temperature probe and an engine speed device for state-of-the-art vehicles.



### EXHAUST MEASUREMENT DIESEL: AVL DiSMOKE 480

Opacimeter. Module for measuring diesel emissions

#### PRODUCT ADVANTAGES:

- compact, light-weight, and low-maintenance turbidity measuring chamber
- wireless signal connection using Bluetooth
- patented linearity test; automatic inspection of the operational readiness without filter test
- only one probe for all commercial vehicle or personal car exhaust diameters
- extremely short warm-up time, quick response times



### SPEED AND OIL TEMPERATURE MEASUREMENT: AVL DiTEST AUX 1000

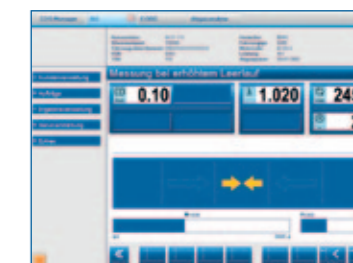
Universal, integrated speed and oil temperature measurement for gasoline and diesel engines and also for vehicles without OBD interface. In doing so, AVL DiTEST AUX 1000 builds upon the tried and tested technology of DiSpeed 492.

## CLEAR, QUICK, AND SELF-EXPLANATORY.

Get an idea of how easy and quick an exhaust emission test can be: you will be guided efficiently and unambiguously through the procedure from customer data collection via the implementation up to the result protocol.



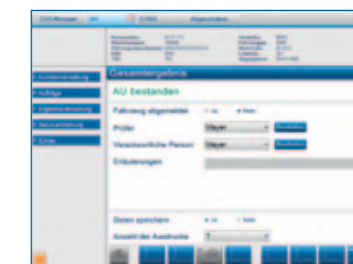
Including customer and vehicle management



Performance of the exhaust emission test – simple user guidance



Result protocol including company logo for customer loyalty



Clear representation of the results



## AVL AND AVL DITEST

Using synergies masterfully, securing technical versatility, creating future-oriented perspectives.

Success is contagious. Incomparable technologies capture the vehicles. The dynamic interaction of all pulses and signals is decisive. And the constant development. Because the technical change has never been as dynamic. Speed is important right from the start and correct results will win the race. Our top-priority objective – perfect movement, over the course of the entire life of a vehicle. In this, our weakness for technologies enabling us to masterfully master all requirements is our strength.

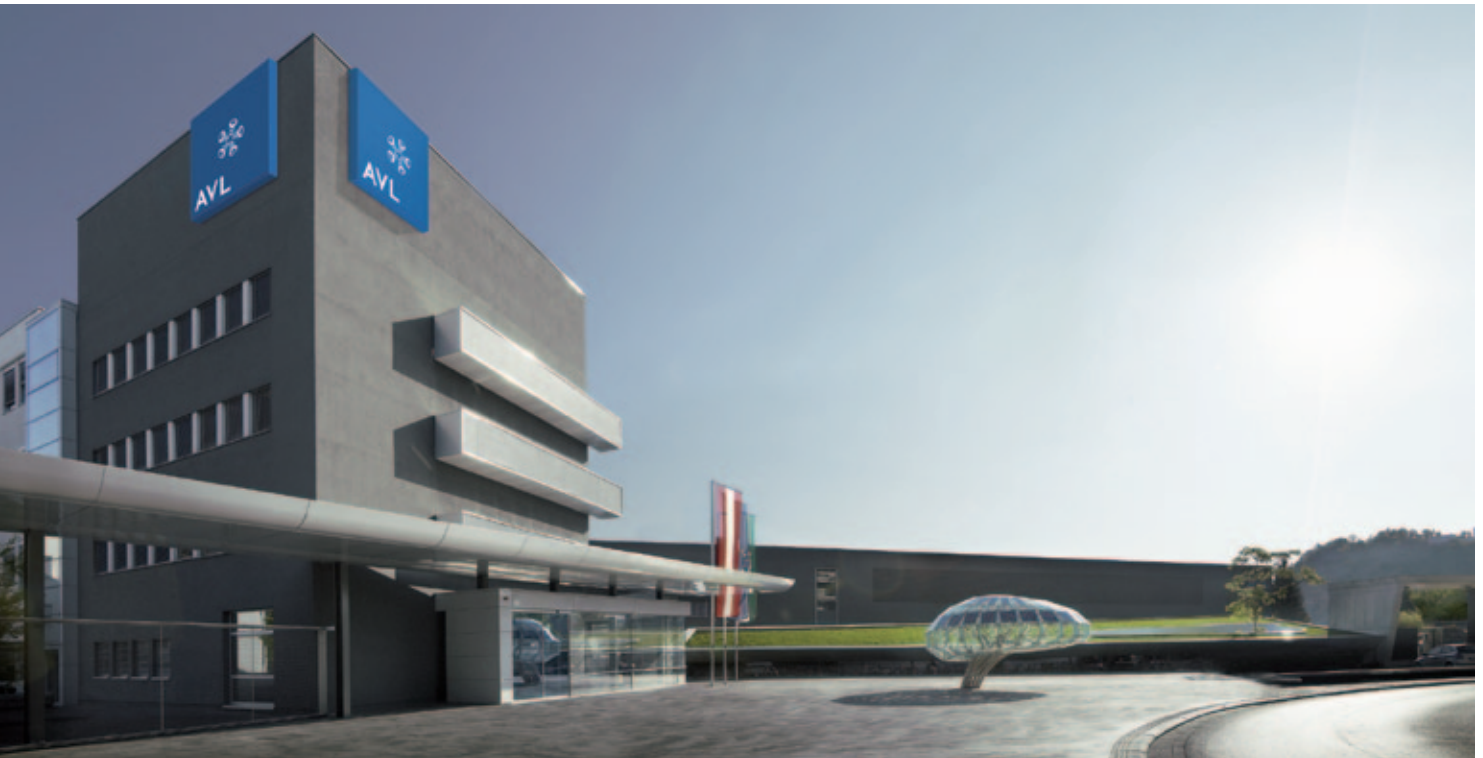
### PERFORMANCE MOVES.

The systematic research trip into the technical world of automobiles started more than half a century ago. AVL is founded in Graz, Austria. The company is focused on the development of engines, as well as testing and measuring technology

on a grand scale. With the claim of perfection and pole position worldwide. It is understandable that AVL in Graz is the central contact partner for all renowned automobile manufacturers.

### FROM THE AVL'S POINT OF VIEW.

Observing the automobile world as a whole – the complete development of a vehicle and the process of securing the error-free, daily use. Within the framework of this guideline, AVL DiTEST takes on the challenge of equipping workshops and test centers with high-tech diagnostic systems on the fast track of technical standard. The result – ideal performance with individual service on the basis of the ground-breaking AVL technology. Know-how from more than 50 years of passion for technology results in unparalleled precision this way.



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