

USER MANUAL

AVL DITEST CDS

COMPACT DIAGNOSTIC SYSTEM



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Warning and Safety Notices

This device manual contains important **warning and safety notices** that must be observed by the user.

The product is intended only for the highly specific use described in the user manual. The most important prerequisites and safety measures for the use and operation of the product are also described to ensure faultless operation.

No warranty can be given and no liability is assumed for applications beyond the described use, irrespective of observance of the necessary prerequisites and safety measures.

The product may only be used and operated by personnel who, based on their qualifications, are capable of adhering to the necessary safety measures during use and operation. Only accessories and consumables supplied by AVL DiTEST or approved by AVL DiTEST may be used. The measurement results obtained from the product in question depend not only on correct functioning of the product, but also on a series of general conditions. The results delivered by the product must therefore be evaluated by a specialist (e.g. plausibility check) before further measures are taken on the basis of a delivered measurement.

Settings and maintenance work on open devices while still live may only be performed by trained specialists who are aware of the associated danger.

The product may only be repaired in the factory of origin or by specialists specifically trained to perform such repair.

When using the product, it must be ensured by a specialist that the test object or test system is not brought into any operational state that could result in damage to goods or endangerment of people.

Summarized Safety Notices



DANGER



Danger to life by electric potential on vehicles with high voltage systems

Deadly high voltages are present on the HV energy store (HV battery) and on parts connected to it! Make sure no-one can come into contact with the connections on the HV battery, connecting cables of the HV battery or other parts under high voltage!



WARNING



Danger to life by electric potential on the ignition system

The ignition system carries a deadly high voltage!
Do not touch the ignition system while the motor is running!



WARNING



Danger to life by electric potential on vehicles with Xenon light

A lighting system that uses a xenon light carries a deadly high voltage!
Do not touch the components of the xenon light while the lighting is turned on!



WARNING

Danger from harmful or irritating substances

When performing measurements on the running motor in closed rooms (workshops, test halls, etc.), extract the vehicle exhaust gases and ventilate the rooms thoroughly!



WARNING

Risk of burns from hot parts

Measurements must be performed at normal motor operating temperature or according to the test specification! Do not touch hot parts such as the motor, motor components or any of the entire exhaust system! Use cooling fans if necessary!

**WARNING****Risk of injury from rotating parts**

Only ever perform work in the engine bay while the motor is not running and the ignition is turned off!

Do not touch any rotating parts such as alternator, radiator fan or their drives (e.g. drive belts)!
Make sure measurement cables are laid safely while the motor is running!

**WARNING****Risk of injury from unsecured vehicle**

Engage the handbrake or shift the gearshift to P (on automatics)!
Adequately secure the vehicle against rolling!

**WARNING****Risk of explosions due to pyrotechnical setups and restraint systems**

Testing and assembly work may only be performed by trained personnel!

Never test the igniter with a multimeter!

Only perform system tests with approved testing equipment!

Disconnect the battery when working on the airbag system!

When reconnecting the battery, the ignition must be turned off and there must be no person inside the vehicle.

Always store the airbag unit with the discharge side facing upwards or according to the storage specifications!

Never leave the airbag unit lying around unattended!

Protect the airbag unit against flying sparks, open fire and temperatures above 100°C!

Do not transport the airbag unit in the passenger space!

Do not allow the airbag unit to come into contact with oil, grease or cleaning agents!

An airbag unit that has been dropped from a height greater than 0.5 m must be renewed!

Dispose of untriggered airbag units!

Do not open or repair the airbag unit!

NOTICE

When maintaining the cut-off speed of diesel engines, observe the applicable manufacturer's specifications!

NOTICE

Always turn off the ignition before connecting or disconnecting the OBD connector or the various AVL DiTEST vehicle adapters!

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1 General

1.1 General Description

AVL DiTEST CDS (CDS: **C**ompact **D**iagnostic **S**ystem) is a stand-alone exhaust measurement system for latest generation gasoline and diesel engines.

It features the following:

- Quick availability and quick procedures
- Universal, integrated speed and oil temperature measurement for gasoline and diesel engines
- Wireless Bluetooth connection of OBD module
- Low-maintenance turbidity measurement chamber AVL DiSmoke 480 BT with wireless Bluetooth connection
- Clear, quick and intuitive operation
- Low maintenance effort (once-yearly maintenance, AVL DiTEST Gas 1000 can be taken out of the AVL DiTEST CDS as a component)
- Ready for future requirements (legal requirements, high-precision turbidity measurement, etc.)
- Network connection (as NW client)
- Connection to various workshop networks (e.g.: asanetwork, DAG, GiegNet/GiegLan)

AVL DiTEST CDS Versions:

Functions	Station	Station	Station	Station
Gas	CDS 230	CDS 240	CDS 250	CDS 251
Smoke	CDS 330	CDS 340	CDS 350	CDS 351
Combo	CDS 430	CDS 440	CDS 450	CDS 451
Display		√	√	
Trolley			√	√
Ext. Monitor				√

1.2 Safety Notices

This document contains important warning and safety notices that must be observed by the user. Faultless and safe operation can only be guaranteed if the prerequisites and safety measures are adhered to. Always additionally observe the safety notices on the screen.

1.3 Typographic Conventions

Safety Notices:



DANGER

Refers to an **extremely hazardous** danger that, if not avoided, would lead to death.



WARNING

Refers to an immediate threat that, if not avoided, could lead to death or severe injuries.



CAUTION

Refers to a danger that could lead to moderate or light injuries.

Additional warning signs:



Danger from electric current.

Notices:

NOTICE

This text refers to situations or examples of incorrect operation that could result in damage to goods or loss of data.

Information:

Information

This text refers to important information or instructions. Failure to observe these instructions will prevent or significantly encumber successful conclusion of the actions described in this document.

Standard font formats:

bold	Important text/text passages, parameters
<i>italic</i>	Dialogues and reports on screen
ALL CAPITALS	Names of devices and operating modes
Menu Menu item	Selection of menu commands by clicking on buttons

List formats:

1. 2.	Step-by-step instructions to be performed in a specific order
•	Instructions involving only one step
▪	Lists with no specific order
-	

1.4 Front View

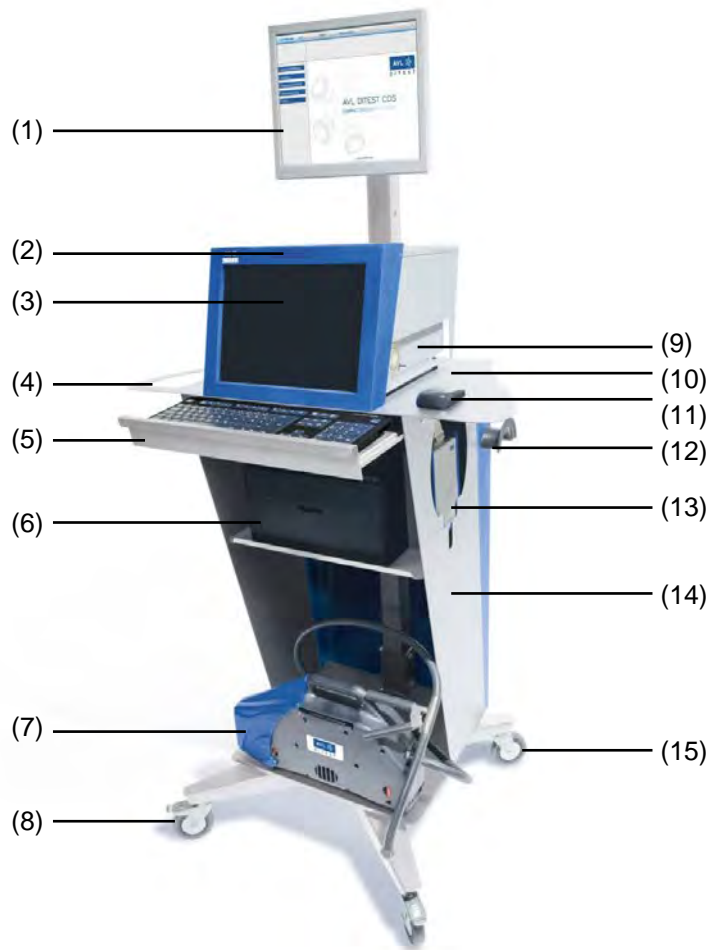


Fig. 1-1

Feature	Description
(1)	Monitor
(2)	Cover of USB connections
(3)	Display
(4)	Handle
(5)	Drawer for keyboard
(6)	Printers
(7)	AVL DiSmoke 480 BT with Bluetooth module
(8)	Swivel-roller with stop
(9)	AVL DiTEST Gas 1000
(10)	Shelf
(11)	Mouse
(12)	Holder for cables, exhaust hose
(13)	Mount for AVL DiOBD 880
(14)	Trolley
(15)	Swivel roller

1.5 Right Side View

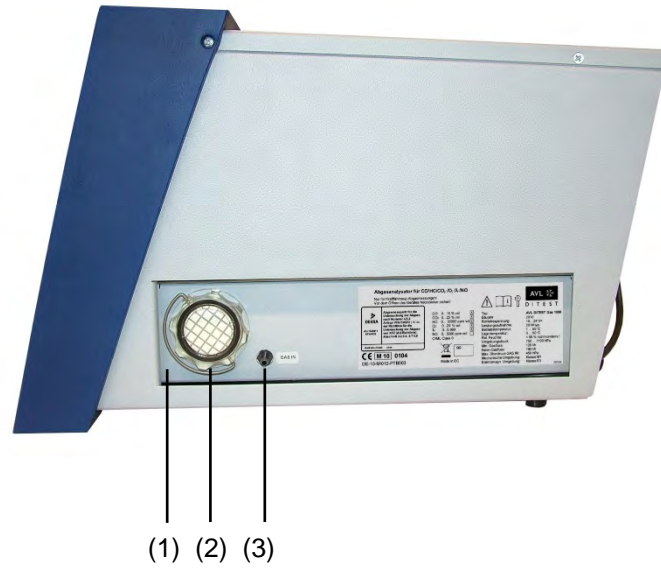


Fig. 1-2

Feature	Description
(1)	AVL DiTEST Gas 1000
(2)	Filter
(3)	Gas input

1.6 Left Side View

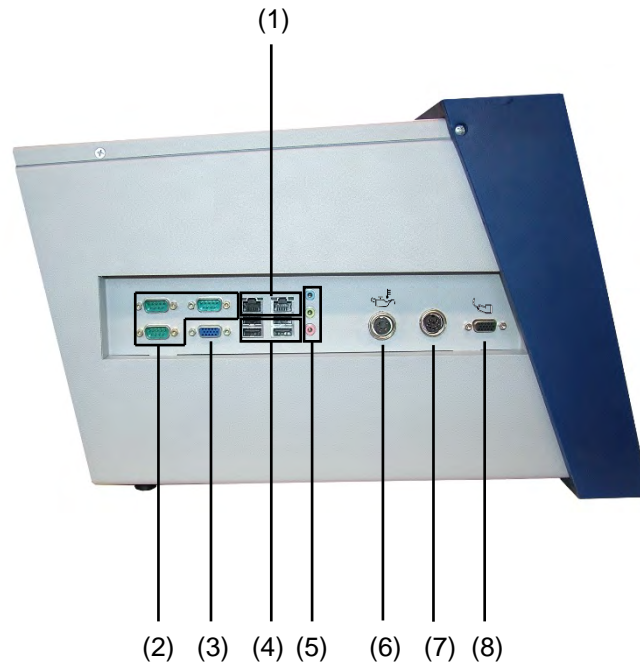


Fig. 1-3

Feature	Description
(1)	2X RJ45 network ports
(2)	3X RS232 ports
(3)	VGA port for connecting an external monitor
(4)	4X USB ports
(5)	Audio connectors (not used)
(6)	Socket for oil temperature sensor
(7)	Socket for connecting ext. AVL DiSpeed 492
(8)	Socket for Combo Sensor

1.7 Rear Side

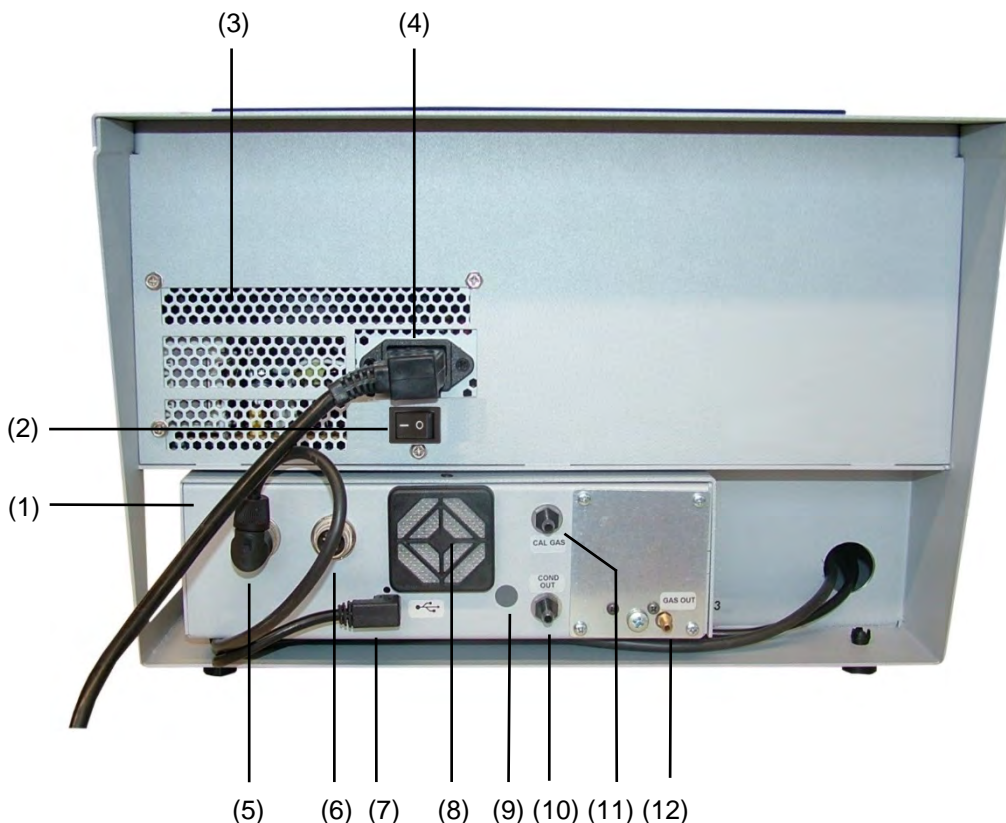


Fig. 1-4

Feature	Description
(1)	AVL DiTEST Gas 1000
(2)	Mains switch
(3)	Ventilation grate
(4)	Network connection
(5)	Power supply for AVL DiTEST Gas 1000
(6)	Socket for MDS connection
(7)	USB connection
(8)	Fan
(9)	Bluetooth antenna (not used on AVL DiTEST CDS)
(10)	COND OUT: Condensation water output
(11)	CAL GAS: Calibration gas input
(12)	GAS OUT: Gas output

NOTICE

The condensate output and outputs of the O₂ sensor and NO sensor (optional) may not be blocked! Make sure the hose is connected to the condensation water output.

1.8 AVL DiTEST Gas 1000



Fig. 1-5

The AVL DiTEST Gas 1000 can be taken out of the AVL DiTEST CDS, e.g. for sending in to AVL DiTEST Service.

To do this, loosen all cables and hoses and carefully take the AVL DiTEST Gas 1000 out.

When installing the AVL DiTEST Gas 1000, insert it carefully into the AVL DiTEST CDS until it audibly snaps into the lock.

Then adjust all hoses and cables as necessary; see Chapter 2.

Information

Also observe User Manual AVL DiTEST GAS 1000.



WARNING

Safety Notices

Also, always observe the safety notices in the User Manual AVL DiTEST Gas 1000!

1.9 Operation

AVL DiTEST CDS is operated using a conventional computer mouse and keyboard.

Operation by mouse: ⇒ Chapter 1.9.2 *Operating by mouse*

Operation by keyboard: ⇒ Chapter 1.9.3 *Operating by keyboard*

1.9.1 Application Window

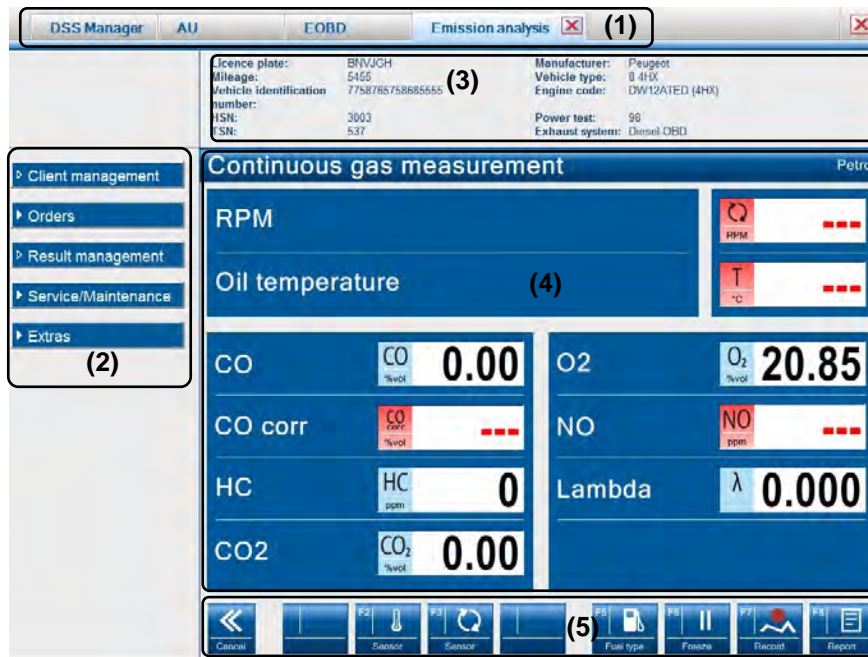


Fig. 1-6 (example)

(1) AVL DiTEST CDS main functions:

- DSS manager, AU, exhaust analysis and EOBD
- Functions already running can be recognized by

(2) Navigation tree:

- For choosing the operating modes

(3) Vehicle information:

- The vehicle ident data are shown here

(4) Application:

- The current operating mode is shown here

(5) Operating bar:

- The available function buttons are shown here

1.9.2 Operation by mouse

Action	Explanation
Point	Moving the mouse until the mouse cursor points to the desired button
Click	Moving the mouse to the button and briefly pressing and then letting go the left mouse button. Executes immediate actions.

1.9.3 Operation by Keyboard

Key	Explanation
Windows Key	Selects the DSS Manager. The applications (AU, EOBD and exhaust analysis) can be started using the cursor keys and Enter key.
Ctrl + Tab	Swaps between navigation tree and application window.
Tab or ↓	Swaps to the next entry.
Shift + Tab or ↑	Swaps to the previous entry.
Enter	Starts the desired function or opens a submenu; closes information or help windows.
↓ ↑	Swaps between fields, increments or decrements entries, opens list fields.
← →	Swaps between entries.
Space	Opens information texts, activates control fields (e.g.: current-fed).
0–9 and A–Z	Text input in input fields.
Ctrl + Enter	New line in input fields.

1.9.4 Operating Elements of the Operating Bar

The operating bar can be controlled with the mouse or keyboard.

Each button on the operating bar (see Fig. 1-6(5)) is assigned to a function key on the keyboard (ESC, F1 to F8).

The following buttons always have the same function:
















<< Cancel

F1 Help

F7 Back














F8 Next (also called **Confirm, Yes** and **OK**)

The current function of the function keys **F2** to **F6** is depicted by a symbol on the screen and in plain text.

	Cancel; exit the current test procedure immediately.		Print preview.
	Shows help texts.		Shows explanations.
	Moves one step forward in the test procedure.		Starts a printout.
	Moves one step back in the test procedure.		Selects protocols and functions.
	Confirms a question with Yes or OK.		Deselects protocols and functions.
	Closes a dialog and adopts the set parameters.		Delete.
	Confirms a question with No or Not OK.		For searching for a vehicle by manufacturer from a database.
	Overwritten data can be restored.		Manual input of data.
	Selects a speed sensor.		For selecting a job via asanetwork.
	Freezes the displayed values (living results) and displays them.		Saves executed jobs in the asanetwork.
	Unfreezes the displayed values again.		

1.9.5 User Prompts

User prompts are displayed optically by symbols on the screen.

	Slow, continuous speed increase by slow, continuous pushing on the gas pedal.		Waiting for recognition of the deviation.
	Slow, continuous speed decrease by slow, continuous removal of pressure from the gas pedal.		Deviation recognized.
	Maintain speed.		Deviation not recognized.
	Accelerate as fast as possible until cut-off speed is reached.		Waiting for recognition of the cut-off.
	Decelerate as fast as possible.		Cut-off recognized.
	Control loop check: Apply disturbance value.		Cut-off not recognized.
	Control loop check: Remove disturbance value.		

1.9.6 Help

Help text appears when you click on  or on .


Additional information appears when you click on .

1.9.7 ON/OFF Switch and Speed Status LED



Fig. 1-7

1.9.7.1 Switching On

You switch on the AVL DiTEST CDS or wake it up out of standby by pressing the  button (see also Chapter 2 *Preparing Hardware for First Use*).


1.9.7.2 Switching Off

You switch off the AVL DiTEST CDS by pressing the  button:

- Press for maximum 2 seconds: AVL DiTEST CDS goes into standby:
(makes it quickly available when you press the button again).
- Press for maximum 4 seconds: AVL DiTEST CDS is switched off
(System restart when you press the button again).
- Press for longer than 4 seconds: Emergency measure to force the AVL DiTEST CDS to switch off.
This would be necessary, for example, if your device stops responding and can no longer be switched off by either of the above two methods.

1.9.7.3 Speed Status LED

The symbol  shows the status of the AVL Combo Sensor when the system is operational. (See also Chapter 4.2.1 *Function Indications of the Status LED*).

During startup and shutdown, the  symbol blinks red.

2 Preparation for First Use

2.1 Hardware

Information

This chapter describes how to prepare the AVL DiTEST CDS 451 (full featured) for first use. Should you own a different AVL DiTEST CDS station, then some of these preparation steps will not be required.

1. Screw the monitor (1) on firmly and connect by the power cord to the power strip (3). Run the power cord through the gap in the rear wall to do so.
2. Place the AVL DiTEST CDS (2) on the upper shelf and connect it by the power cord to the power strip (3).
3. Place the printer (4) on the middle shelf and connect it by the power cord to the power strip (3).
4. Place the AVL DiSmoke (5) on the lower shelf and connect it by the power cord to a free power socket.
5. Push the exhaust probe onto the exhaust input (6). Place the exhaust probe behind the AVL DiSmoke 480 BT on the lower shelf.

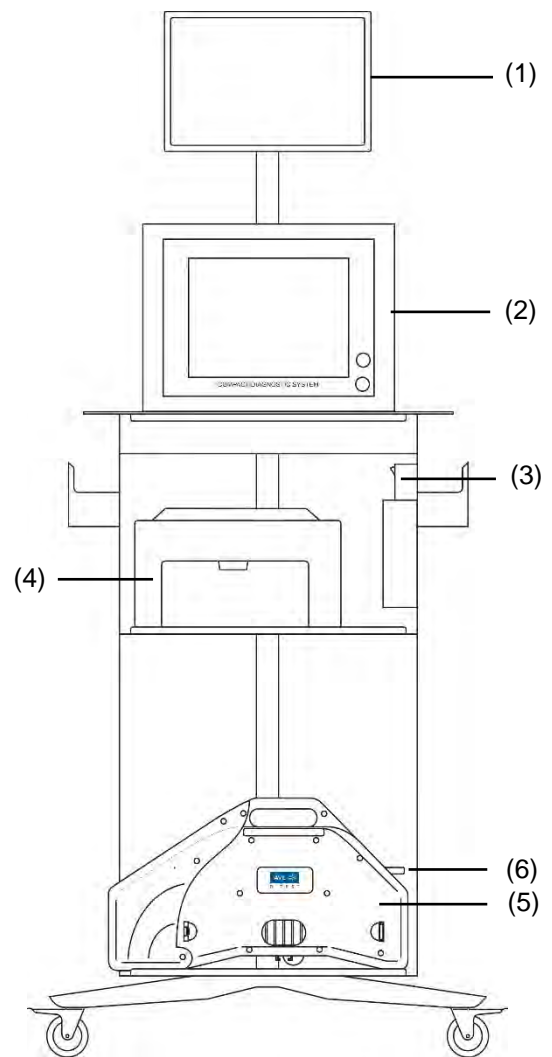


Fig. 2-1

6. Plug the power strip into a mains power socket.

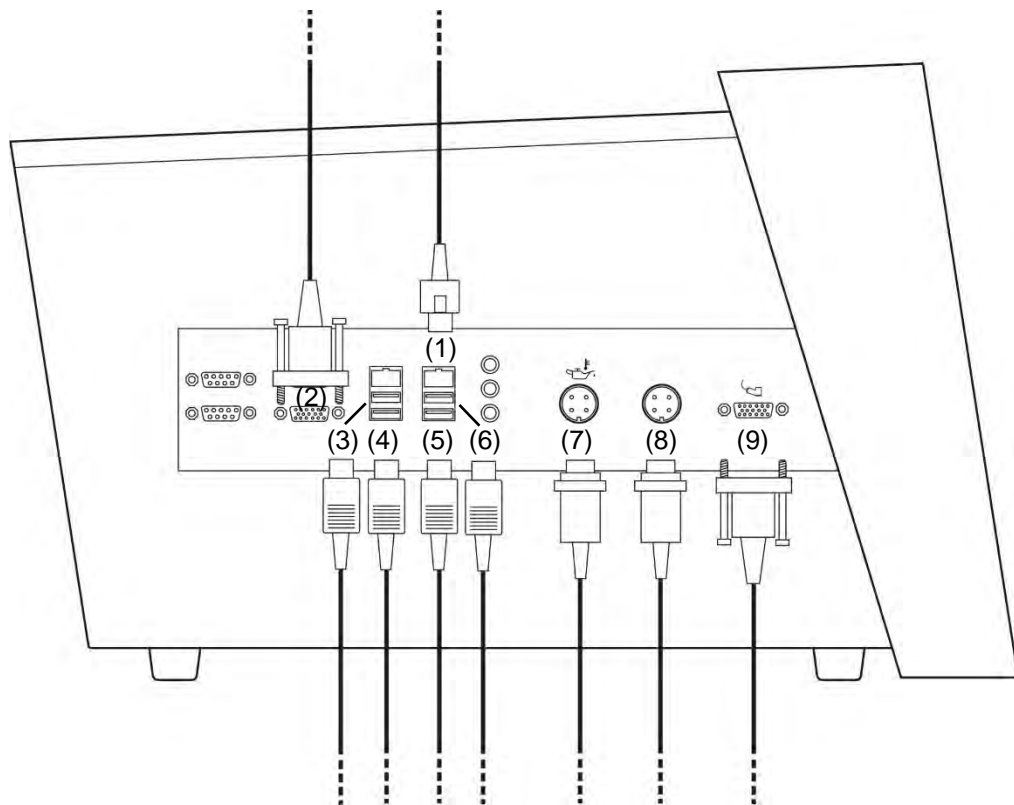




Fig. 2-2

7. Connect the keyboard and mouse to USB ports (3) and (4).
8. Connect the monitor the VGA port (2).
9. Connect the printer to USB port (5).
10. If your AVL DiOBD 880 does not feature Bluetooth, then connect it to USB port (6) and insert it into the designated socket; see Chapter 1.4.
11. If you will be operating your AVL DiTEST CDS on a network, then plug the network cable into the RJ45 port (1).
12. Connect the oil temperature sensor to the connector  (7) and plug the oil temperature sensor into the designated socket.
13. Connect the AVL Combo Sensor to the connector  (9) and clamp it firmly onto the left side wall.
14. If your AVL DiTEST CDS is not equipped with an internal DiSpeed, then you can connect an external DiSpeed to socket (8).

NOTICE

Observe the safety notices at the beginning of this device manual!
 Observe Chapter 5.1.4 Service/Maintenance!

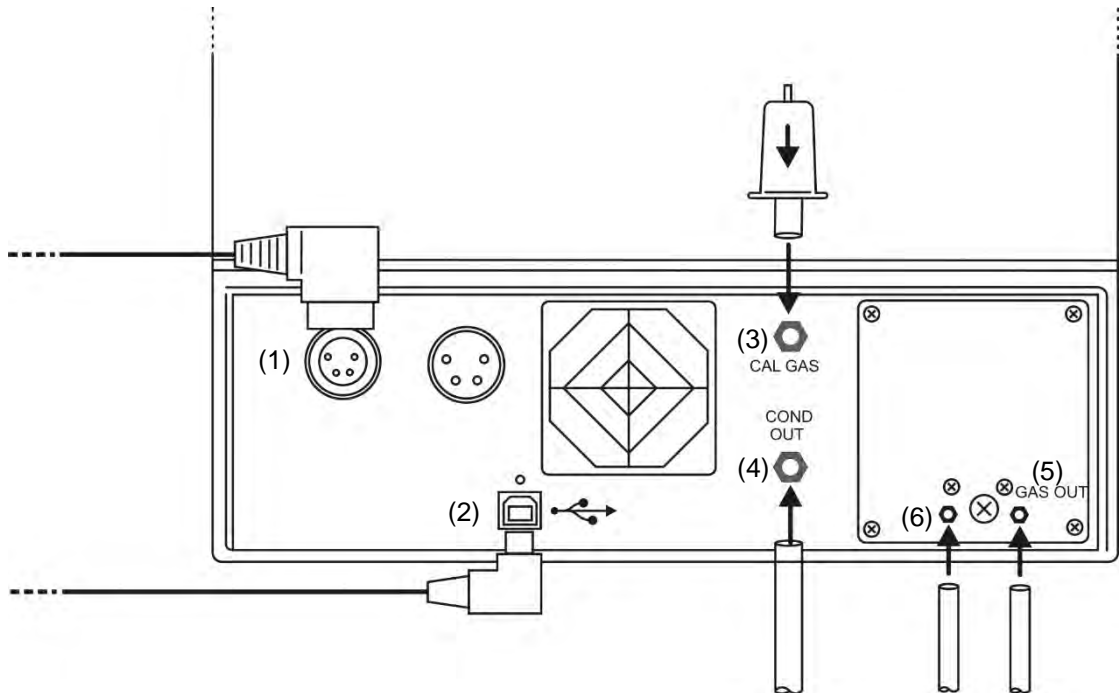


Fig. 2-3

15. Connect the AVL DiTEST CDS to the socket (1).
16. Connect the USB cable of the AVL DiTEST CDS to the USB port (2).
17. Push the hose for fresh air / calibration gas, with the activated charcoal filter, onto the connector CAL. GAS (3). Observe the proper direction of installation (arrow on filter).
18. Push the hose labeled COND OUT onto the COND OUT connection (4) on the AVL DiTEST CDS and insert it into the condensation water container.
19. Attach the hose labeled GAS OUT to the GAS OUT connection (5) on the AVL DiTEST CDS.
20. If the AVL DiTEST CDS is equipped with a NO_x sensor, connect the hose as shown (6).

NOTICE

Make sure the hoses do not get kinked or damaged!
 Do not block the measurement gas output!
 The measurement gas must be able to escape unhindered!
 Otherwise there is a risk of faulty measurement or even destruction of the measuring cells!

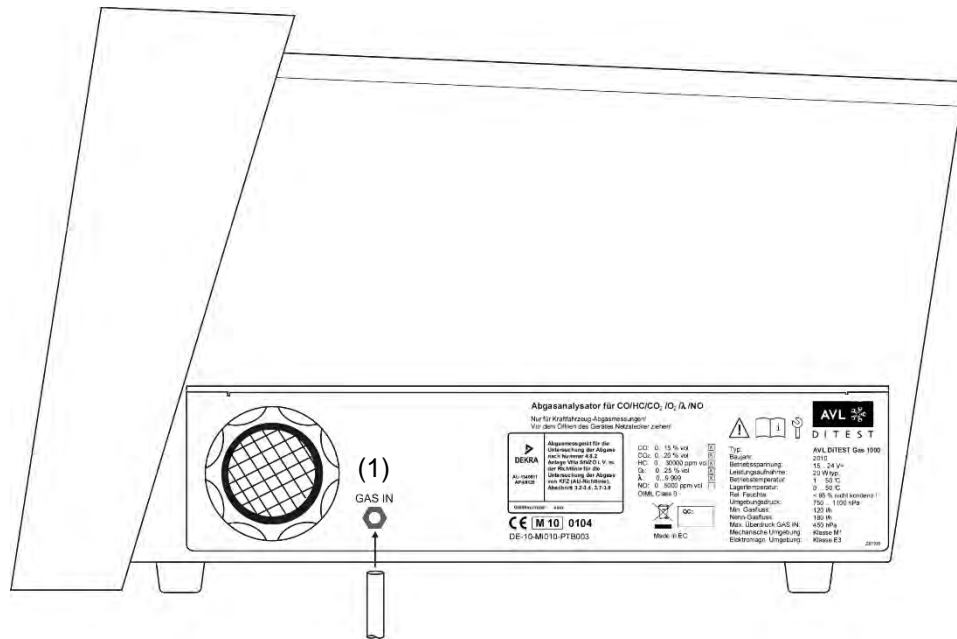



Fig. 2-4

21. Connect the exhaust probe with the connector hose to the GAS IN (1) connector.
22. Switch the power strip on; see Fig. 2-1.
23. Switch on the AVL DiTEST CDS by the mains switch on the rear side of the AVL DiTEST CDS and briefly press the  button.
24. After switching on, the AVL DiTEST Gas 1000 first runs through a self-test and then automatically the warm-up phase.
The duration of the warm-up phase depends on the environmental temperature and is approximately 2 minutes.
Should the AVL DiTEST Gas 1000 detect a temperature of < 0 °C when switched on, the device will be warmed by pumps for approx. 5 minutes.
Should the temperature be between 0 °C and 10 °C, the device will be warmed by pumps for approx. 60 seconds.
25. The AVL DiTEST CDS is now ready for use.

NOTICE

Only insert the exhaust probe into the exhaust when the AVL DiTEST CDS is switched on. After every measurement, immediately remove the probe from the exhaust. Before switching off the AVL DiTEST CDS, have the AVL DiTEST CDS rinse through with pure ambient air with the pumps running for at least 10 minutes. That way, the filters and measuring cells will be rinsed with fresh air and no exhausts will remain in the device.

2.2 Software

Check and complete the entries in the [Extras](#) | [Settings](#) area (see Chapter. 5.1.5)

3 Preparing for Measurement

All measurement preparation steps described are started automatically by the device.

3.1 Leak Test

The AVL DiTEST GAS 1000 demands a leak test once a day!

When prompted, close off the probe and press **F8 Next**.

The leak test will be performed and the exhaust instrument tested for leaks.

Once the leak test is complete, unblock the exhaust probe again and the program will continue where it left off.

3.2 HC Residue Test

Before every exhaust measurement, an HC residue test must be performed on the AVL DiTEST Gas 1000.

This serves to measure the HC value in the measurement system and the ambient air, and lasts for 80 seconds.

Remove the exhaust probe from the exhaust pipe.

F8 Next starts the HC residue test.

The measured HC value must be below **20 ppm**. If this is the case, then the measurement will continue automatically (sometimes even before the 80 seconds are up).

If the HC value is above 20 ppm, then check whether the exhaust probe is in the exhaust stream; note that high quantities of fuel residue can also exist in the ambient air. In this case, change the testing location or ventilate the room.

Wait until the HC residue test is complete.

Once the HC residue test is complete, you have the options:

F5 Repeat to repeat the HC residue test, if errors occurred.

F8 Next to continue the process.

3.3 Warm-Up Phase

After switching on, the AVL DiTEST Gas 1000 requires a warm-up time of up to 7 minutes. You must wait out this warm-up phase in order to obtain stable measurement values.

3.4 Stability Test

Before each measurement, the AVL DiTEST GAS 1000 runs through a stability test. The exhaust probe must not be in the exhaust stream during this test.

This test runs automatically and takes about 20 seconds.

3.5 Initializing the AVL DiSmoke 480 BT

After starting *"Diesel AU"* or operating mode *"Emission analysis / Opacity"*, the AVL DiSmoke 480 BT is initialized.

4 Adapting Cables and Probes

4.1 Measuring Speed on Vehicles With an OBD Interface

Connect the AVL DiOBD 880 to the OBD socket on the vehicle.

The illustrations shown here are provided as examples only, and can differ greatly between vehicles.

The AVL DiOBD 880 communicates with the AVL DiTEST CDS over a wireless Bluetooth connection.

Observe the settings in Chapter 5.1.5.1.11.

A USB connection can be used as an alternative.

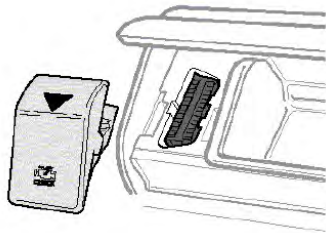


Fig. 4-1

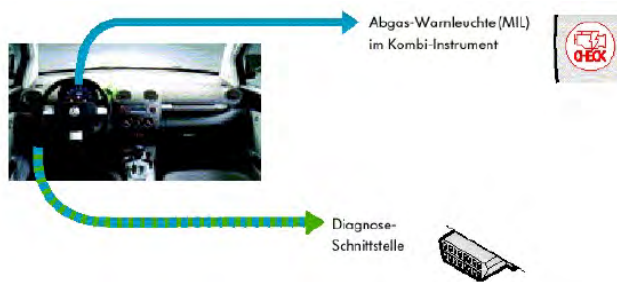


Fig. 4-2

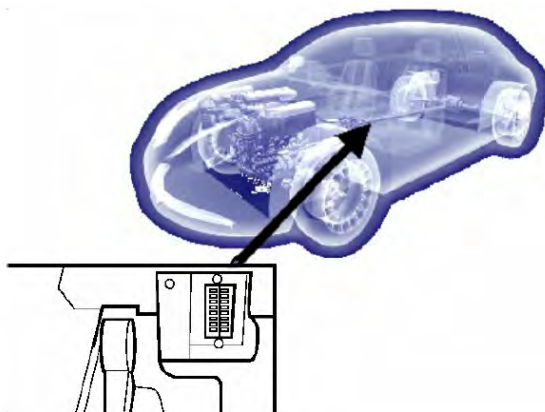


Fig. 4-3

4.2 Measuring Speed on Vehicles Without an OBD Interface

Connect the AVL Combo Sensor as shown.

The AVL Combo Sensor has a magnetic foot, and must therefore be attached to an iron part of the engine.

The best speed recording results are obtained when the engine vibrations are not dampened by rubber-cushioned parts between the engine and attachment point (engine suspension).

You can attach the AVL Combo Sensor while the engine is off or idling. As soon as the engine starts to idle, an LED on the Combo Sensor gives feedback as to whether the chosen attachment point is suitable or not (see chapter 4.2.1).

NOTICE

If the AVL Combo Sensor is attached to the idling engine:

- Observe the warning notices at the beginning of the user manual
- The LED on the AVL Combo Sensor will show after 3 to 10 seconds whether the AVL DiTEST CDS has recorded the speed or not

The following engine parts are examples of where you can connect the AVL Combo Sensor:

- Bolt heads



Fig. 4-4



Fig. 4-5

- Flat sheet metal parts Mounting brackets (crane eyes for engine mounting)



Fig. 4-6



Fig. 4-7

- Oil drain plug



Fig. 4-8

- Brake lever holder (motorcycle)



Fig. 4-9

- Exhaust clamp, exhaust mounting points (be cautious of heat development!)



Fig. 4-10



Fig. 4-11

- Heat shields and aggregate fastenings



Fig. 4-12



Fig. 4-13

- Hollow bolt of rear axle suspension mount



Fig. 4-14



Fig. 4-15

- Bolt on brake hose fastening of rear brake cylinder



Fig. 4-16



Fig. 4-17

4.2.1 Function Indications of the Status LED

The AVL Combo Sensor indicates various functions by an LED (red/yellow/green).

Green LED blinks twice	<ul style="list-style-type: none"> 2-stroke motorcycle mode is selected
Green LED blinks four times	<ul style="list-style-type: none"> 4-stroke motorcycle mode is selected
Red LED lights	<ul style="list-style-type: none"> Self-test okay No speed signal recognized
Red and green LED light (red/green LED on Combo Sensor lights yellow)	<ul style="list-style-type: none"> Idle speed recognized (first calibration point) The idle speed is typically recognized within 3 to maximum 10 seconds upon attaching the sensor If no speed signal is recognized during this time, then attach the AVL Combo Sensor in a different place <i>Stationary</i> speed values are now measured
Green LED lights	<ul style="list-style-type: none"> The AVL DiTEST CDS has recognized the high speed (second calibration point) With this status, the AVL DiTEST CDS is also calibrated for dynamic speed measurements Now both <i>stationary</i> and <i>dynamic</i> measurements can be performed

4.3 “Gasoline” Exhaust Probe

- Observe the user guidance
- Insert the exhaust probe at least 30 cm into the exhaust pipe.
 - The exhaust system must be free of leaks (leak air influences the measured values).
 - The suction system must not be mounted directly on the exhaust pipe (influences the measurements).
 - The probe must penetrate 30 cm into the exhaust pipe (pulsation of exhausts can influence measurements).



WARNING

Risk of burns from hot parts

The probe can be very hot after a measurement – handle with caution!

4.4 “Diesel” Exhaust Probe

- Choose the probe according to the exhaust pipe diameter.
- Push the probe hose onto the turbidity measuring chamber at the measurement gas connection (see User Manual AVL DiSmoke 480 BT).
- Bring the probe into position in the exhaust.
 - The insertion depth into the tail pipe must be at least 30 cm.
 - The longitudinal axes of the probe and exhaust pipe must be as parallel as possible.



WARNING

Risk of burns from hot parts

The probe can be very hot after a measurement – handle with caution!

NOTICE

The probe hose must not be kinked!

The turbidity measuring chamber draws fresh air in when calibrating. Accordingly, do not position the turbidity measuring chamber directly in the exhaust stream behind the exhaust pipe.

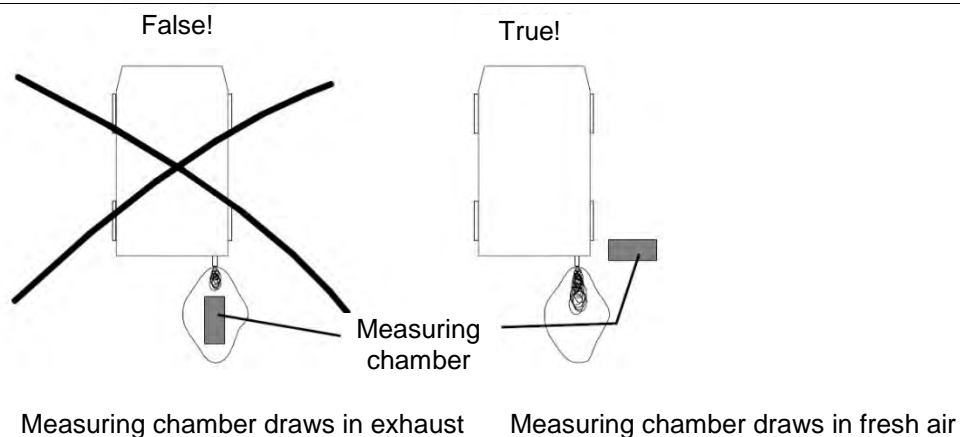


Fig. 4-18

4.5 Oil/Coolant Temperature Measurement

AVL DiTEST CDS supports several options for oil/coolant temperature measurement.

- Manual input
- Temperature probe (see Chapter 4.5.1)
- EOBD (see Chapter 4.5.2)

4.5.1 Oil Temperature Sensor

With gasoline engines, make sure the oil temperature probe sealer seals tightly (leak air onto the oil dipstick influences the control circuit).

With OBD vehicles, it is not necessary to measure the oil temperature using an oil temperature probe. The oil temperature is measured via the OBD connector of the vehicle.

NOTICE

Before inserting the oil temperature sensor, dry the rubber cone on the probe and the counterpart on the engine.

You must adjust the length of the oil temperature probe to the length of the original dipstick.

An inadequate adjustment could cause damage to the engine and the oil temperature sensor!

4.5.2 OBD Module (EOBD)

The AVL DiOBD 880 must be connected as described in Chapter 4.

5 Diagnostic System Software (DSS)

5.1 DSS Manager



Fig. 5-1

5.1.1 Customer Management

5.1.1.1 General

The customer management system consists of the:

- Customer area: for creating, editing, deleting and printing customer data (1)
- Vehicle area: for creating, editing, deleting and printing vehicle data (2)
- for linking and unlinking customer and vehicle data (3).



Fig. 5-2

5.1.1.2 Customer Area

List of costumers: If no filter is active, then all customer records will be displayed.

Filter: A filter can be applied by clicking on a cell in the first row and then clicking on the arrow.

Sort: The table can be sorted by pressing on the table header.

Narrow down: If you enter, for example, **Inc**, then only entries containing *"Inc"* will appear in the corresponding column.

Customer details: If you select a row in the customer list, then the customer record will be displayed in the area (1a). If one or more vehicles are assigned to the customer, then the license number will be shown at the end of the customer record. Clicking on the license number displays the vehicle details in the Vehicle List area (2a).

F2 New A field appears into which you can enter data to create a new customer record.

<< Cancel The input will be discarded.

F8 Save The input will be saved.

F3 Edit If a record is selected, then it can be edited by pressing F3.

<< Cancel The input will be discarded.

F8 Save The input will be saved.

F4 Delete If a record is selected, then it can be deleted by pressing F4.

Printer icon If a record is selected, then it can be printed. On safety grounds, the entire list cannot be printed.

F1 Help Brings up a window providing further information about customer management.

5.1.1.3 Vehicle Area

List of vehicles: If no filter is active, then all vehicle records (vehicle list) will be displayed.

Sort: The table can be sorted by pressing on the table header.

Narrow down: If you enter, for example, *1234*, then only entries containing "1234" will appear in the corresponding column.

Vehicle details: If you select a row in the vehicle list, then the vehicle record will be displayed in the area (2a). If the vehicle is assigned to a customer, then the customer's name will be shown at the end of the detailed information. Clicking on the customer's name displays the customer record in the area (1a).

- F5 New** A field appears into which you can enter data to create a new vehicle record.
F2 Type select can be used to identify the vehicle in a licensed vehicle database (HSN, TSN, manufacturer, model, engine code...).
- << Cancel** The input will be discarded.
- F8 Save** The input will be saved.
- F6 Edit** If a record is selected, then it can be edited by pressing F6.
- << Cancel** The input will be discarded.
- F8 Save** The input will be saved.
- F7 Delete** If a record is selected, then it can be deleted by pressing F7.
- Printer icon** If a record is selected, then it can be printed.
- On safety grounds, the entire list cannot be printed.
- F1 Help** Brings up a window providing further information about customer management.

5.1.1.4 Customer/Vehicle Assignment

One or more vehicles can be assigned to a customer.



If a customer and a vehicle are selected, then the records will be linked (customer data assigned the vehicle data).



This unlinks records.

- F1 Help** Brings up a window providing further information about customer management.

5.1.2 Jobs

In the Jobs area you will find the job services available on your device (asanetwork, GiegNet/GiegLan).

5.1.2.1 Asanetwork

To be able to operate AVL DiTEST CDS in a network, you need:

- AWN-compatible commercial software.
- An active network manager.
- The corresponding network installation (cabling, connection sockets, wireless LAN).

Information

With asanetwork functionality enabled, all AU measurements performed without asanetwork job will be stored under “*Send results*”.

For more options, see Chapter 5.1.5.1.2 “*asanetwork*”.

Information

Observe the documentation of:

- Your asanetwork program
 - Your commercial software
-

5.1.2.1.1 Taking On Jobs from asanetwork

Click on [Orders](#) | [asanetwork](#) | [Select order](#).

Select the desired job by clicking on it.

Display only AU jobs:

If this item is enabled, then only AU jobs will be displayed.

F4 Refresh Refreshes the display of jobs.

Refreshing the display in the main application window of AU jobs may take a few seconds, depending on the network speed.

F5 Release If there are problems with the asanetwork, jobs can “hang”.

That is, they are marked as if being processed by the AVL DiTEST CDS (when this is not the case). Such jobs can be released by pressing F5.

F8 Next Accepts the selected Job.

After performing the AU, the AVL DiTEST CDS automatically sends the AU results log back to the **asanetwork**.

5.1.2.1.2 Send Results to asanetwork

All AU results can be sent to asanetwork.

Click on [Orders | asanetwork | Send results](#).

A list may appear containing obsolete results.

You can either delete these obsolete results with [F5 Yes](#) or keep them with [F8 No](#).

All unsent jobs will be displayed; select the job in question.



	Individual jobs can be selected by checking a box.
F2 Choose	Selects all jobs.
F3 Discard	Discards the selected jobs.
F5 Delete	Deletes the selected jobs.
F6 Send	Sends the selected jobs to asanetwork.
F8 Next	Closes the function “ <i>Send Results to asanetwork</i> ”.

5.1.2.2 GiegNet/GiegLan

Click on [Orders | GiegNet/GiegLan](#) to start the job list.

AVL DiTEST CDS can accept jobs over both **GiegNet** and **GiegLan**, which will then be shown in the job list.

Double-click a job or select a job and press [F8 Next](#) to start the official measurement, whereby data (vehicle data) will be adopted from the order and preset in the application.

Once the measurement is complete, a result will be created and, in the case of GiegNet, sent back if asked for or, in the case of **GiegLan**, a file will be created containing the measured values.

So that communication with the other **GiegNet / GiegLan** end can work, the correct data must be entered in the settings. For this, there is an area called “**GiegNet / GiegLan**” that offers all necessary configuration options (see Chapter 5.1.5.1.3).

Orders received over **GiegNet** can be deleted by pressing [F4](#).

If **GiegLan** is enabled, but no access to the set directory is possible, then a message appears to notify the user of this problem.

5.1.3 Results Management

You can view all logs according to the date of performance.
Click on [Results Management](#).

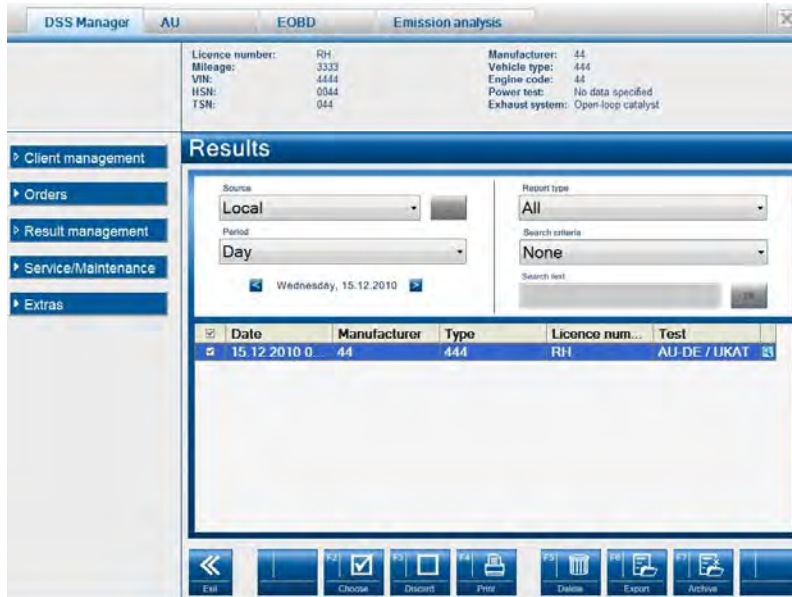


Fig. 5-3

- Source:** Select Local / Network / Saved Results.
Period: Select Day, Week, Month, Year or All.
 You can flip forwards and backwards using the arrows.
Report type: Select Proof / Diagnosis Logs etc.
Search criteria: Choose between “None”, “Manufacturer” or “Licence number”.
 In the Search text field, you can narrow the selection down further.

Double-clicking an entry shows the log. Return to Results Management with [Quit](#).

- Individual logs can be selected by checking a box.
- F2 Choose** Selects all logs.
F3 Discard Discards the log selection.
F4 Print Prints the selected logs.
F5 Delete Deletes the selected logs.
F6 Export Exports the selected logs.
F5 Directory Opens a window to choose the save location.
 Choose a location and then click **OK**.
F8 Next Starts the export.
- F7 Archive** Archives the selected logs.
 The archived logs will be deleted from the internal database.
F5 Directory Opens a window to choose the save location.
 Choose a location and then click **OK**.
F8 Next Starts the archiving.
- << Cancel** Quits the results display.

5.1.4 Service/Maintenance

This chapter gives tips for an initial on-site diagnosis of the AVL DiTEST CDS station. Preparation for calibration and linearity testing can be performed by the end customer as well as by the qualified service company.

AVL SMOKE:

- Service screen (parameters for self-diagnostics)

AVL GAS:

- Service screen (parameters for self-diagnostics)

AVL AUX:

- Service screen (parameters for self-diagnostics)

AVL OBD:

- Service screen (parameters for self-diagnostics)

Information

Please refer to the respective manuals for more information on the AVL hardware components AVL DiSmoke 480 BT, AVL DiTEST Gas 1000 and AVL DiOBD 880.

System info:

- Parameters for self-diagnosis, with and without connected devices.

License information:

- Display the licenses present on the dongle.

Software:

- Swap to software maintenance mode.

Printers:

- Add/remove printers, select standard printer, etc.

CDS Task Manager:

- The CDS Task Manager can be used to swap between measurement mode and software maintenance mode in the case of device problems and to display the device manager.

5.1.4.1 Service Screen AVL SMOKE

The service screen AVL SMOKE shows:

- Device identification
- Measurements
- Status
- Information on the turbidity measurement chamber

Click on [Service/Maintenance | AVL SMOKE | Service Screen](#).

The message *“Initializing the diesel measurement chamber”* appears shortly.

A service screen with parameters for self-diagnostics is shown.



Fig. 5-4

- (1) This field displays the connection and device status as well as various version numbers.
- (2) Here you can perform various functional checks.
 - Valve position: Calibration, measurement
 - Lamp status: lamp A and B ON, lamps OFF, lamp A ON, and lamp B ON
 - Fan status: Automatic, ON
 - Heater status: Automatic, ON
 - Linearity test: The linearity error is measured and then shown.
 - Initialization: AVL DiSmoke 480 BT will be re-initialized.
- (3) This field displays the device-internal measurements.

F4 Report Displays a log. This can also be subsequently printed out.

5.1.4.2 Service Screen AVL GAS

The service screen AVL Gas shows:

- Device identification
- Configurations
- Operating times
- Calibration
- Measurements
- Status
- Advanced status
- Information on the gas test bench
- Status of the gas test bench

Click on [Service/Maintenance | AVL GAS | Service Screen](#).

A service screen with parameters for self-diagnostics is shown.

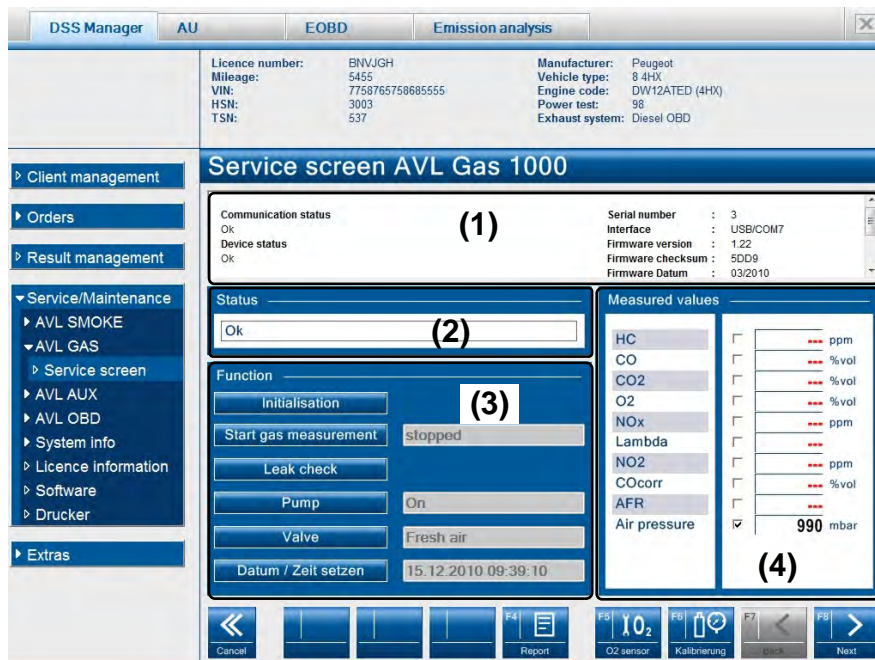


Fig. 5-5

- (1) This field displays the connection and device status as well as various version numbers.
- (2) This field displays the status of the AVL DiTEST Gas 1000 (e.g.: stabilization necessary, leak test necessary...)
- (3) Here you can perform the functions: initialize (stabilization and HC residue test will be performed), gas measurement, leak test, condensation pump (on/off), gas pump (on/off) and valve (gas/fresh air).
- (4) When gas measurement is active, the measured values will be displayed in this field.

- F4 Report** Displays a log. This can also be subsequently printed out.
- F5 O2 sensor** Initializes the O₂ sensor.
- F6 Calibration** Test gas adjustment: The test gas adjustment is password-protected. Refer to AVL DiTEST Service if necessary.
- F8 Next** Swaps to further status displays.

Status displays:



Fig. 5-6

- (1) This field displays the connection and device status as well as various version numbers.
- (2) Should any problems exist, these errors will be marked in the status field with an x.
- (3) Information on the gas test bench built into the AVL DiTEST Gas 1000.

- F4 Report Displays a log. This can also be subsequently printed out.
- F7 Back One step back.
- F8 Next Swaps to further status displays.

5.1.4.3 Service Screen AVL AUX

The service screen AVL AUX shows:

- Rev. speed
- Oil temperature

Switch from DiSpeed Internal/External and select vehicle type.

Click on [Service/Maintenance | AVL AUX | Service Screen](#).

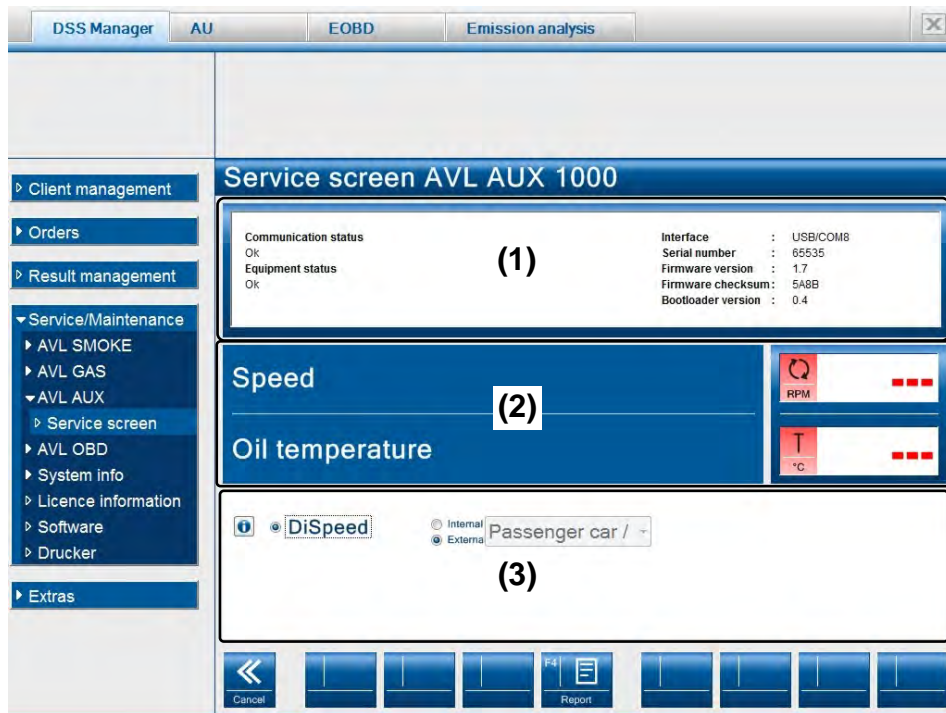


Fig. 5-7

- (1) This field displays the connection and device status as well as various version numbers.
- (2) This field displays the speed and temperature.
- (3) Switch from DiSpeed Internal/External.
Selection: Truck, personal car, motorcycle, 2/4-stroke.

F4 Report Shows a print preview of the service screen.

F8 Next Quits service mode.

5.1.4.4 Service Screen AVL OBD

The service screen AVL OBD shows:

- Firmware version and connection data of the AVL DiOBD 880

In the case of error, the following appear:

- Connection status
- Notes on the connection status
- Scan tool used
- Status of the scan tool used

Click on [Service/Maintenance | AVL OBD | Service Screen](#).

The service screen AVL DiOBD appears.

5.1.4.5 System Info

This shows:

- Product information
 - Installed programs
 - Program versions
 - Program versions of the connected components
- Settings
 - Input values that have been entered under *“Tools”*, *“Settings”*.

Click on [Service/Maintenance | System Info | with devices](#) or [without devices](#).

The AVL DiTEST CDS system information will be displayed.

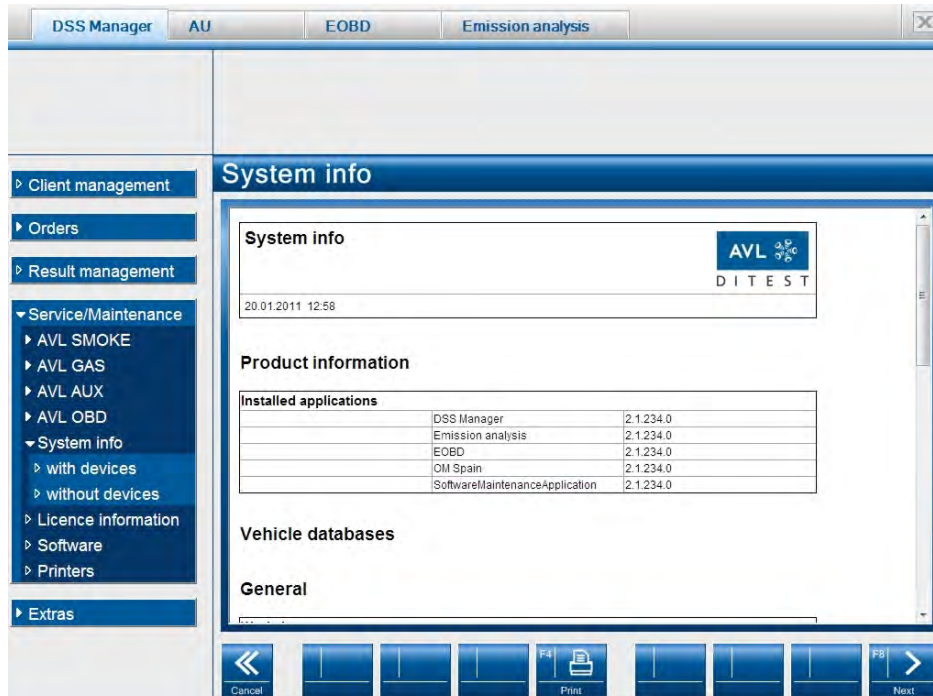


Fig. 5-8

F4 Print Prints a log of the system information.

F8 Next Quits this function.

5.1.4.6 License Information

The license information present on the dongle is displayed.

Click on [Service/Maintenance | License information](#).

The license information present on the dongle will be displayed.

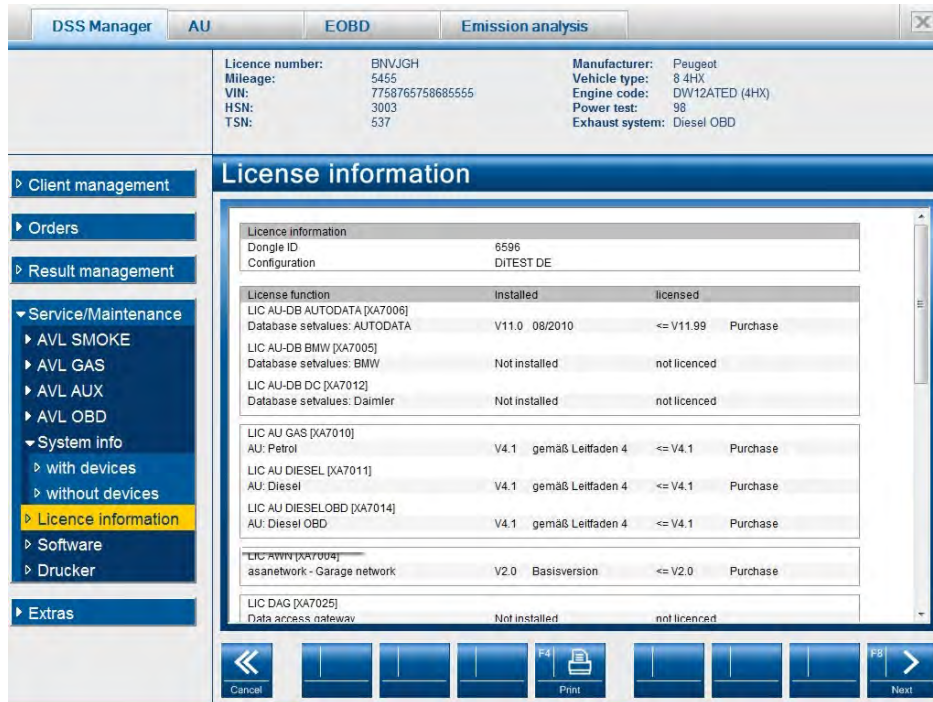


Fig. 5-9

F4 Print Prints a log of the license information.

F8 Next Quits this function.

5.1.4.7 Software

Click on [Service/Maintenance | Software](#).

A message will appear asking if you are sure you wish to swap to “*Software Maintenance*”.

Confirm this with [Yes](#).

The AVL DiTEST CDS will restart in software management mode.

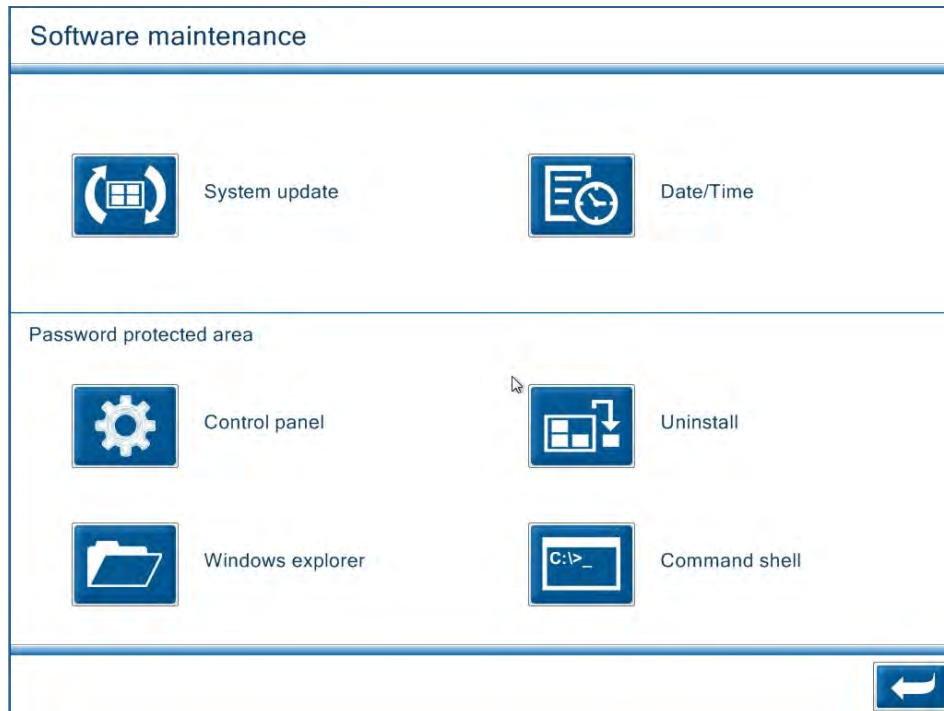


Fig. 5-10

In the software management, you can:

- Update your system (software update, target data update etc.)
- Set the date/time
- In the password-protected area, you can:
 - Open the Windows Control Panel
 - Open Windows Explorer
 - Uninstall DSS software
 - Open the Windows command prompt

System Update

Opens a window in which you can select the self-extracting sfx file. To do this, insert the USB stick containing the self-extracting sfx file into a free USB port.

Select the software to update by double-clicking the corresponding sfx file (.exe).

- DSS Manager
- AU
- EOBD
- Exhaust Analysis
- SW Maintenance Application
- Other sfx files (licenses, target data, etc.)

Confirm all messages by clicking on **F8 Next**.

Your AVL DiTEST CDS will be updated.

Date/Time

Opens a window in which you can set the date/time and select the time zone.



Back to measurement mode.

Password-Protected Area

NOTICE

The settings in the password-protected area may only be performed by system administrators or by equally trained personnel!

Incorrect settings can render your AVL DiTEST CDS non-functional!

Control Panel

Swaps to the Windows Control Panel

Windows explorer

Swaps to the Windows Explorer.

Uninstall

Opens a window in which you can uninstall the software.

Command shell

Opens a window for entering Windows commands.



Back to measurement mode.

5.1.4.8 Printers:

Here, you can:


- Add/remove printers
- Define a printer as standard printer
- Open the print queue if there are problems with the printer

5.1.4.9 CDS Task Manager

The CDS Task Manager can be started using the keyboard shortcut **Ctrl + Shift + Esc** or **Ctrl + Alt + Del** (and then clicking on **-> Start Task Manager**).

Swap To Device restarts and the software management appears.

Maintenance Mode See Chapter 5.1.4.7 *Software*.

Back to measurement mode with .

Device Manager The device manager appears.

Exit Exits the CDS Task Manager.

5.1.5 Tools

5.1.5.1 Settings

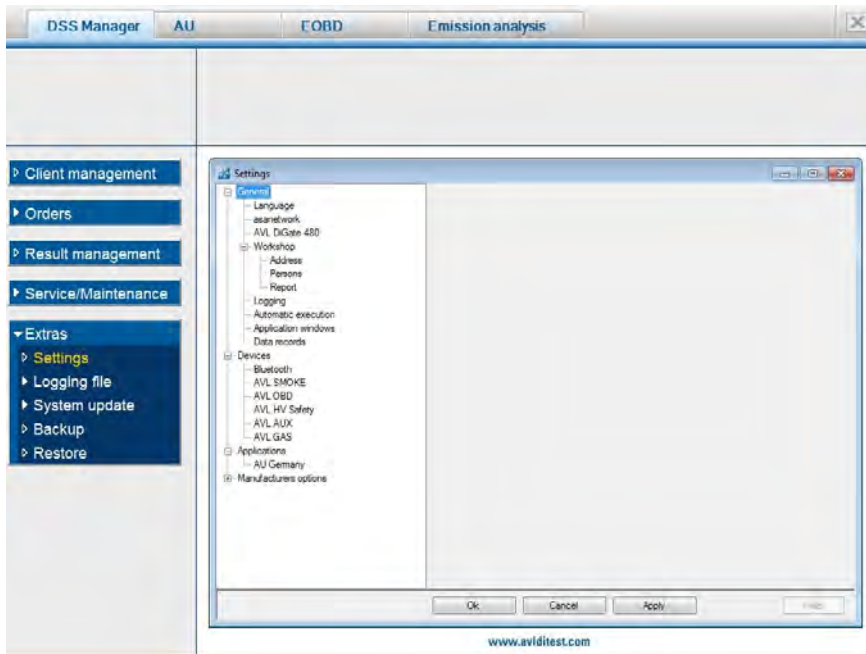


Fig. 5-11

5.1.5.1.1 Language

Click on [Extras | Settings | Language](#).

Here, you can select the desired language.

- [OK](#) Quits the “*Language*” function. The application window appears.
- [Cancel](#) Quits the “*Language*” function without saving changes.
- [Apply](#) Applies the entered values.
- [Help](#) Shows help text.

Information

The buttons [OK](#), [Cancel](#), [Apply](#) and [Help](#) always have the same function under “*Tools*” and will not be discussed any further below!

5.1.5.1.2 Asanetwork

Click on [Extras](#) | [Settings](#) | [asanetwork](#).

Service Location DLOC

The asanetwork location is entered during installation under “**Service Location DLOC**”.

Only ever change this entry if necessary, for example, if several stations are operated in the network.

Additional services

Target Data Service:

Enable the [Set value service](#) if your asanetwork provides a choice of nominal data.

Advanced vehicle type data:

Enable [Extended vehicle data information](#) if your asanetwork provides an extended choice of vehicle type data such as date of first registration, fuel type and engine code.

Unsent result protocols of exhaust emission tests

If you select [Enable deleting of obsolete results](#), then obsolete results will be deleted automatically.

If [Delete with user confirmation](#) is selected, then results will only be deleted upon confirmation.

With [Delete after \(in days\)](#), you can define how many days unsent AU results logs will be kept on the local system before being automatically deleted.

Sent AU event logs

Save sent AU event logs:

Check this box if you wish for sent AU results logs to remain saved after sending.

Days to save:

Set here the number of days a sent results log should be kept before it is automatically deleted.

This option is only available if “*Save sent AU results logs*” has been selected.

Order view

By selecting [Standard](#) or [Extended](#), you can select the view (i.e. display of additional data in the form of additional columns) of jobs over the workshop network.

Show completed jobs

If [Show completed orders](#) is enabled, then the completed jobs will be displayed under “*Orders*”, “*asanetwork*” and “*Select orders*”.

5.1.5.1.3 GiegNet/GiegLan

Click on [Extras | Settings | GiegNet/GiegLan](#)

The following settings must be configured for GiegNet.

To be able to receive messages over the GiegNet serial interface, GiegNet must be **enabled**.

COM port:

Specify here the serial interface that is connected to the remote GiegNet system.

Baud rate:

This is where you set the connection speed.

Address:

Here, you must specify 3-digit numbers as addresses for the connected measuring devices. The address of the concentrator should be assigned the lowest number.

Automatically delete jobs after sending results:

If this is selected, then the remote GiegNet system cannot send extra deletion requests.

The following settings must be configured for **GiegLan**:

So that AVL DiTEST CDS will accept jobs as files and will create instrument description files, GiegLan must be **enabled**.

Directory:

Here you define the directory for exchanges with the remote GiegLan system. This directory must include 3 subdirectories named "ID", "CG" and "RES", where capitalization is unimportant.

5.1.5.1.4 AVL DiGate 480

Click on [Extras | Settings | AVL DiGate 480](#).

Directory for backup classified according to year and month

If this option is enabled, then the network drive on which the results shall be saved (in XML and PDF format) can be selected by clicking on

The connection to the network drive can be tested with [Test](#).

Directory for transmission to external applications

If this option is enabled, then the network drive on which the results shall be saved for forwarding to external applications (in XML format) can be selected by clicking on

The connection to the network drive can be tested with [Test](#).

5.1.5.1.5 Workshop

a) Address

Click on [Extras](#) | [Settings](#) | [Address](#) and enter your details in the labeled fields.

b) Personnel

Click on [Extras](#) | [Settings](#) | [Personnel](#).

Clicking [New](#) opens an input window into which you can enter the name of a new tester. Return to "Tester" with [OK](#).

Clicking [Delete](#) deletes the blue-highlighted tester name.

Clicking [Edit](#) opens an input window in which you can edit the blue-highlighted tester name. Return to "Tester" with [OK](#).

Clicking [Current Operator](#) selects the blue-highlighted tester name (or clicking the desired tester name).

Clicking [Responsible Operator](#) selects the blue-highlighted tester name (or clicking the desired tester name).

c) Report

Clicking [Add](#) opens a window in which you can select your logo. Click [Open](#) to confirm the choice of logo.

Logos can be inserted in **BMP, JPG** and **GIF** format.

You can delete the selected logo by clicking [Remove](#).

With [Show workshop address on reports](#), you can define whether the workshop address shall appear on the log or not.

With [Show vehicle data on reports](#), you can define whether the vehicle data shall appear on the log or not.

These settings do not affect the logs of official measurements (AUs).

5.1.5.1.6 Logging

Click on [Extras](#) | [Settings](#) | [Logging](#).

All of the user's interactions can be recorded and saved for servicing purposes by enabling [Logging](#).

You can drag the [slider](#) to set the size of log file that will trigger a warning upon exporting.

Clicking ... opens a window with which you can specify the location for saving the log file.

5.1.5.1.7 Automatic Execution

Click on [Extras](#) | [Settings](#) | [Automatic execution](#).

Executing functions automatically:

Check the box next to those functions you wish to start automatically.

5.1.5.1.8 Data Recording

Click on [Extras](#) | [Settings](#) | [Data records](#).

In the "Sampling rate" field, select the desired sampling rate in milliseconds.

You can choose the directory in which to save the data recordings by clicking on

Also observe Chapter 5.4.1 *Continuous Gas Measurement*, Chapter 5.4.2 *Continuous Turbidity Measurement* and Chapter 5.4.3 *Continuous Gas & Turbidity Measurement*.

5.1.5.1.9 Bluetooth

Click on [Extras](#) | [Settings](#) | [Bluetooth](#).

Here, you can select the Bluetooth stack (Bluetooth driver) to use.

For AVL DiTEST CDS, the Microsoft stack is preselected by default.

5.1.5.1.10 AVL SMOKE

Click on [Extras](#) | [Settings](#) | [AVL SMOKE](#).

NOTICE

The AVL DiSmoke 480 BT used by AVL DiTEST CDS has a wireless Bluetooth connection. Bluetooth is therefore the default setting for this device.

You can click to select the interface to be used by the AVL DiSmoke 480 BT.

If “*Bluetooth*” is enabled, then you can search manually for the Bluetooth device by clicking on

If your AVL DiSmoke 480 BT is connected to the AVL DiTEST CDS by RS232 cable, then select “*Serial*”. In the list box, select the COM port used.

5.1.5.1.11 AVL OBD

Click on [Extras](#) | [Settings](#) | [OBD](#).

Scantool

Here you can select which scan tool and what connection type to be used.

COM port settings

If you deactivate the function [COM-Port Auto detection](#), you can change the COM port for the AVL DiOBD manually.

You can select the COM port to be used by clicking on the list field.

Logging

By clicking on [Scantool communication \(continuous\)](#), you can set the scan tool communication to be logged continuously. As a rule, this option should be disabled, since it can lead to an enormous volume of data.

Bluetooth connection

Only possible if DiOBD 880 Bluetooth has been selected under “*Scantool*”!

Clicking ... opens a window in which you can search for the Bluetooth device used with [Search](#).

If the Bluetooth device used is found, then click on it and then click [OK](#).

5.1.5.1.12 AVL AUX

Click on [Extras](#) | [Settings](#) | [AVL AUX](#).

You can click to select the interface to be used by the AVL AUX.

AVL DiTEST CDS comes as a standard with an internal AUX module (AVL AUX 1000) with a USB connection.

If “*Bluetooth*” is enabled, then you can search manually for the Bluetooth device by clicking on

If “*Serial*” is enabled, then you can select the COM port used in the list box.

5.1.5.1.13 AVL GAS

Click on [Extras](#) | [Settings](#) | [AVL GAS](#).

You can click to select the interface to be used by the AVL DiTEST Gas 1000.

The standard AVL DiTEST Gas 1000 is connected via USB.

If “*Bluetooth*” is enabled, then you can search manually for the Bluetooth device by clicking on

If “*Serial*” is enabled, then you can select the COM port used in the list box.

5.1.5.1.14 Applications

Here you will find settings for the installed applications such as country-specific emissions tests (“AU Germany”, etc.).

5.1.5.1.15 Manufacturer Options

Click on [Extras](#) | [Settings](#) | [Manufacturer options](#).

In this password-protected area, you can make further specific settings.

5.1.5.2 Log File

Also refer to Chapter 0 *Logging* with regard to this.

5.1.5.2.1 Show Log File

Click on [Extras | Logging file | Display](#).

A window appears showing the log file.

5.1.5.2.2 Export Log File


Click on [Extras | Logging file | Export](#).

The entire log or individual log files can be exported.

a) Export all log files

- | | |
|----------------------------|--|
| F8 Next | The entire log will be compressed. |
| | F5 Directory A window opens in which you can select the saving location. Continue with OK . |
| F8 Next | Creates a zip archive of the entire log. |
| F8 Confirm | Exports the entire log; back to main window. |

b) Export individual log files

- | | |
|------------------------------|--|
| F5 Selection | Shows the log files. |
| | F2 Choose Selects all log files. |
| | F3 Discard Discards the selected log files. |
| |  Selects a log file. |
| F8 Next | The anticipated file size is shown. |
| F8 Next | Compresses the log files. |
| | F5 Directory A window opens in which you can select the saving location. Continue with OK . |
| F8 Next | Creates a zip archive of the entire log. |
| F8 Confirm | Exports the entire log; back to main window. |

5.1.5.3 System Update

Here you can update the licenses, vehicle data and device firmware of your AVL DiTEST CDS.

5.1.5.3.1 License

The license is located on a USB stick in the form of a license file (*.lic).

1. Insert the USB stick into a free USB port.
2. Click on [Extras | System Update | License](#).
3. Click on [F2 File](#).
A window opens in which you can select the license.
Confirm the selection by clicking [Open](#).

The license can now be updated over the Internet.

Click on [F3 Internet](#).

If the Internet connection exists, the license file will be downloaded automatically.


Click [Write to dongle](#) to transfer the license to the dongle.

4. You can print the screen with [F4 Print](#).
5. With [F5 Skip](#), you can prevent the license update.
6. You can see all licenses in the area on the left.
In the area on the right, you can see a detailed view of the license that has been highlighted in blue on the left.
Click on the appropriate license and then click [F8 Next](#).
The license will be transferred to the dongle.

5.1.5.3.2 Vehicle Data

The vehicle data are located on a USB stick in the form of a self-extracting file (*.exe).

Swap to “Software Maintenance”:

1. Insert the USB stick into a free USB port.
2. Swap to “*Software Maintenance*” by clicking on [Service/Maintenance | Software](#).
3. A message will appear asking if you are sure you wish to swap to “*Software Management*”. Confirm this with [Yes](#).
4. The AVL DiTEST CDS will restart in software management mode.
5. Click on the [icon next to System Update](#).
6. A window opens in which you can select the files for the vehicle update. Confirm the selection by clicking [Open](#).
The vehicle data will be copied to the AVL DiTEST CDS.
7. Close the “*Software Maintenance*” by clicking .
8. The AVL DiTEST CDS will restart and will be in “*measurement mode*”.


In “measurement mode”:

1. If, after a reboot, the update does not start automatically with the dialog “License Update” (see step 2), then click on [Extras | System Update | Vehicle data](#).
2. This opens the dialog “*License update*”. You can update the license.
With [F5 Skip](#), you can prevent the license update.
(See Chapter 5.1.5.3.1 *License* for details about license updates.)
3. The currently installed vehicle data will be displayed. Continue with [F8 Next](#).
4. Select the source of vehicle data.
Click on the [icon next to “Locally available versions”](#) and then [F8 Next](#).
5. Check the box next to the vehicle data to be updated and click on [F8 Next](#).
6. A summary of the system update will be shown.
You can print the system update with [F4 Print](#).
7. Finish the system update by clicking on [F8 Confirm](#).

5.1.5.3.3 Devices

The device data are located on a USB stick in the form of a self-extracting file (*.exe).

Swap to “Software Maintenance”:

1. Insert the USB stick into a free USB port.
2. Swap to “*Software Maintenance*” by clicking on [Service/Maintenance | Software](#).
3. A message will appear asking if you are sure you wish to swap to “*Software Management*”. Confirm this with [Yes](#).
4. The AVL DiTEST CDS will restart in software management mode.
5. Click on the [icon next to System Update](#).
6. A window opens in which you can select the files for the device update. Confirm the selection by clicking [Open](#).
The device data will be copied to the AVL DiTEST CDS.
7. Close the “*Software Maintenance*” by clicking .
8. The AVL DiTEST CDS will restart and will be in “*measurement mode*”.

In “measurement mode”:

1. If, after a reboot, the update does not start automatically with the dialog “License Update” (see step 2), then click on [Extras | System Update | Devices](#).
2. This opens the dialog “*License update*”. You can update the license. With [F5 Skip](#), you can prevent the license update. (See Chapter 5.1.5.3.1 *License* for details about license updates.)
3. Connect all devices and switch the devices on. Wait until all devices are available and then confirm with [F8 Next](#).

NOTICE

The devices must be powered during the firmware update!
Do not interrupt the firmware update, otherwise the AVL devices can be damaged!

4. The necessary firmware updates will be determined and automatically installed.
5. A summary of the system update will be shown. You can print the system update with [F4 Print](#).
6. Finish the system update by clicking on [F8 Confirm](#).

5.1.5.4 Backup

This backs up the data on your system.

Click on [Extras | Backup](#).

Select the data to be backed up from:

- Settings
- Results / Customer data / Vehicle data
- All

[F8 Next](#) The data backup commences.

[F5 Directory](#) A window opens in which you can select the saving location. Continue with [OK](#).

[F8 Next](#) The saving location will be shown.

[F8 Next](#) This data will be backed up.

[F8 Next](#) Continue to the main window.

5.1.5.5 Restore

This backed-up data can be restored.

Click on [Extras | Restore](#).

[F5 Directory](#) A window opens.
Select the data to be restored and click on [Open](#).

[F8 Next](#) The directory will be shown.

[F8 Next](#) This data will be restored.

[F8 Next](#) Continue to the main window.

5.2 AU Emissions Test

AVL DiTEST CDS includes country-specific software (examples: "AU Germany", "§57a" Austria, "MOT UK") for performing an official emissions test. To start the installed application, click on [OM](#). The respective application is certified and runs according to the legal requirements. (Example: Guideline 4 for Germany). All AU applications include the starting points for filter test (see Chapter 5.2.1), Diesel values display program (see Chapter 5.2.2) and Gas values display program (see Chapter 5.2.3).

5.2.1 Filter Test

Start the filter test by clicking on [AU | Filter test](#).

For further details on the filter test: See Device Manual AVL DiSmoke 480 BT, Chapter 3.5 *System Check with Filter*.

5.2.2 Diesel Values Display Program

Information

This function is required for calibration.

Click on [AU | Diesel Values Display Program](#).

A window appears showing:

- Serial number and firmware version/checksum of the measurement module
- Driver version/checksum and display version/checksum
- Actual turbidity values
- Maximum absorption value
- Actual absorption value

Logbook:

[Read Logbook](#)

A window appears showing the logbook entries.

Close the "Read Logbook" function by clicking [OK](#).



Closes the window with the logbook entries.

Measuring turbidity and absorption:

[F8 Next](#)

Starts the measurement display.

[F6 Reset](#)

Resets the maximum absorption value.

[F8 Next](#)

Ends the diesel values display program.

5.2.3 Gas Values Display Program

Information

This function is required for calibration.

Click on [AU | Gas Values Display Program](#).

A window appears showing:

- Serial number and firmware version/checksum of the measurement module
- Driver version/checksum and display version/checksum
- Values for CO, CO₂, O₂ and HC

Logbook:

[Read Logbook](#)

A window appears showing the logbook entries.

Close the “*Read Logbook*” function by clicking [OK](#).



Closes the window with the logbook entries.

Measuring the gases:

[F8 Next](#)

Starts the measurement display.

[F8 Next](#)

Ends the gas values display program.

5.3 EOBD

5.3.1 Overview of EOBD Modes

The available EOBD modes depend on the vehicle being tested!

Mode	Name	Description
1	Actual values	Reads out and displays the current exhaust-related engine operating data (=actual values). The readiness code displays the status of the exhaust-related components.
2	Freeze Frame	Reads out the operating conditions that existed at the time of recording an exhaust-related error.
3	Read error memory	Reads out and displays the recorded exhaust-related error codes.
4	Delete error memory	Deletes the exhaust-related error codes Deletes the operating conditions under which an exhaust-related error was recorded. Deletes the lambda probe values Sets the readiness code to "not performed" Deletes the display with the activated fault lamp MIL mileage.
5	Lambda probe values	Reads out and displays the lambda probe values.
6	Sporadic test values	Reads out and displays the test values from non-continuously monitored, manufacturer-specific components such as catalytic converters, evaporative systems etc.
7	Sporadic error memory	Reads out and displays sporadically occurring, exhaust-related errors.
8	Actuators	This mode is not supported.
9	Vehicle information	Reads out and displays the following information: - Vehicle information - Settings information - Settings verification number

5.3.2 Establishing a Connection

For these test procedures, the vehicle must be connected to the AVL DiOBD 880 and the vehicle ignition must be turned on.

5.3.3 Mode 1 Actual Values

Click on [EOBD | Mode 1](#).

A connection with the vehicle will be established and the data will be read out.

All possible diagnostic data will be displayed; select the data you are interested in.

[F8 Next](#) Confirms the selection.

The selected values will be displayed.

[F4 Print](#) Prints the measurements out.

[F7 Back](#) Returns to the parameter selection.

[F8 Next](#) Quits Mode 1 measurement.

5.3.4 Mode 2 Freeze Frame

Click on [EOBD | Mode 2](#).

A connection with the vehicle will be established and the data will be read out.

All possible freeze frame data will be displayed; select the data you are interested in.

[F2 Select](#) Selects all data.

[F3 Discard](#) Discards the selection.

[F8 Next](#) Confirms the selection.

The selected freeze frames will be displayed.

[F4 Print](#) Prints the freeze frames out.

[F7 Back](#) Returns to the parameter selection.

[F8 Next](#) Quits Mode 2 measurement.

5.3.5 Mode 3 Read Error Memory

Click on [EOBD | Mode 3](#).

A connection with the vehicle will be established and all emission-related error codes will be read out.

[F4 Print](#) Prints the error codes out.

[F8 Next](#) Quits Mode 3 measurement.

5.3.6 Mode 4 Delete Error Memory

Click on [EOBD | Mode 4](#).

A connection with the vehicle will be established and all emission-related error codes will be read out.

- [F4 Print](#) Prints the deleted errors out.
- [F5 New](#) Deletes the error memory.
- [F8 Next](#) Quits Mode 4 measurement.

5.3.7 Mode 5 Lambda Probe Values

Click on [EOBD | Mode 5](#).

A connection with the vehicle will be established and the test results of the lambda probe monitoring will be read out.

- [F4 Print](#) Prints the lambda probe values out.
- [F8 Next](#) Quits Mode 5 measurement.

5.3.8 Mode 6 Sporadic Test Values

Click on [EOBD | Mode 6](#).

A connection with the vehicle will be established and all test results of non-continuously monitored systems will be read out.

- [F4 Print](#) Prints the sporadic test values out.
- [F8 Next](#) Quits Mode 6 measurement.

5.3.9 Mode 7 Sporadic Error Memory

Click on [EOBD | Mode 7](#).

A connection with the vehicle will be established and all test results of non-continuously monitored systems will be read out.

- [F4 Print](#) Prints the errors out.
- [F8 Next](#) Quits Mode 7 measurement.

5.3.10 Mode 8 Actuator Test

This mode is not supported.

5.4 Exhaust Analysis

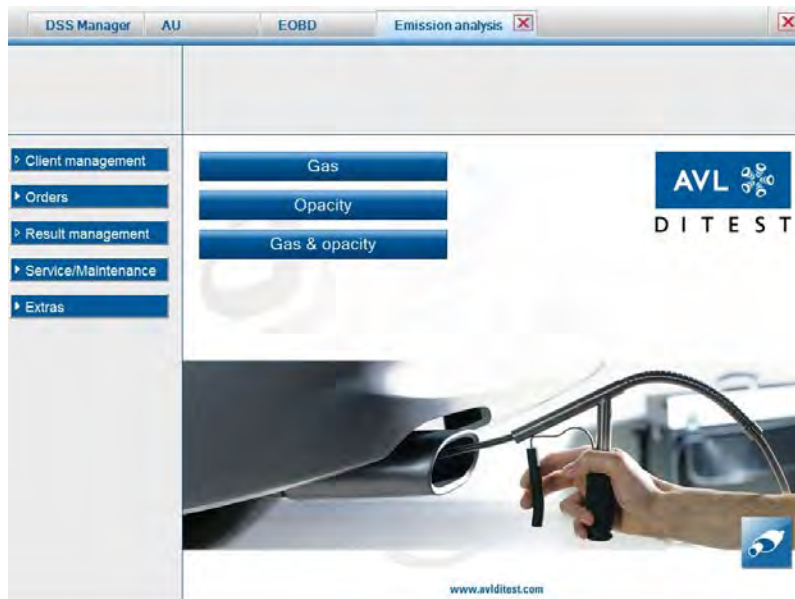


Fig. 5-12

5.4.1 Continuous Gas Measurement

In this operating mode, the concentrations of the gases CO, CO₂, HC and O₂ can be measured without running through the AU procedure.

Speed and engine temperature can also be measured.

Engine settings can be made under direct observation of noxious emission values.

Click on **Emission analysis | Gas**.

The measurements will be shown.

- | | |
|---------------------|--|
| F2 Sensor | Select the sensor for engine temperature measurement (manual input, temperature sensor or EOBD).
If you have selected EOBD, then press F5 Connect to establish a connection with the OBD module.
F8 Confirm Back to the measurement display. |
| F3 Sensor | Select the sensor for speed measurement (DiSpeed internal/external or EOBD).
With DiSpeed internal, you can choose between personal car/truck, 4-stroke motorcycle and 2-stroke motorcycle.
If you have selected EOBD, then press F5 Connect to establish a connection with the OBD module.
F8 Confirm Back to the measurement display. |
| F5 Fuel type | Select the fuel type (4-stroke gasoline, 2-stroke mixture, CNG (natural gas) or LPG (liquid gas)).
F8 Confirm Back to the measurement display. |
| F6 Freeze | "Freezes" the measurement display.
F6 Continue Continues the continuous measurement. |
| F7 Record | Continuously records the measurements and writes them to a text file.
F7 Quit Quits the continuous measurement recording. |

<p>F8 Report</p>	<p>Creates a results log.</p>
	<p>F3 Identification The “<i>vehicle identification</i>” appears.</p>
	<p>F8 Next Closes the vehicle identification.</p>
	<p>F4 Print Prints the reports log out.</p>
	<p>F5 Edit Here, you can edit the results log (display workshop and vehicle data: yes/no).</p>
	<p>F5 Take over Quits the results log editing.</p>
	<p>F6 Save Saves the results log in the internal database (see also Results Management Chapter 5.1.3).</p>
	<p>F8 Next Back to continuous gas measurement.</p>
<p><< Cancel</p>	<p>Quits the continuous gas measurement.</p>

5.4.2 Continuous Opacity Measurement

In this operating mode, you can measure turbidity without running through the AU procedure. Speed and oil temperature can also be measured.

Engine settings can be made under direct observation of noxious emission values.

Click on [Emission analysis | Opacity](#).

Select the probe number and measurement mode. Continue with **F8 Next**.

The measurements will be shown.

F2 Sensor	Select the sensor for engine temperature measurement (manual input, temperature sensor or EOBD). If you have selected EOBD, then press F5 Connect to establish a connection with the OBD module. F8 Confirm Back to the measurement display.
F3 Sensor	Select the sensor for speed measurement (DiSpeed internal/external or EOBD). With DiSpeed internal, you can choose between personal car/truck, 4-stroke motorcycle and 2-stroke motorcycle. If you have selected EOBD, then press F5 Connect to establish a connection with the OBD module. F8 Confirm Back to the measurement display.
F6 Freeze	“Freezes” the measurement display. F6 Continue Back to continuous measurement.
F7 Record	Continuously records the measurements and writes them to a text file. F7 Quit Quits the continuous measurement recording.
F8 Report	Saves the reports log. F3 Identification The “ <i>vehicle identification</i> ” appears. F8 Next Closes the vehicle identification. F4 Print Prints the reports log out. F5 Edit Here, you can edit the results log (display workshop and vehicle data yes/no). F5 Take over Quits the results log editing. F6 Save Saves the results log in the internal database (see also Results Management Chapter 0). F8 Next Back to continuous turbidity measurement.
<< Cancel	Quits the continuous turbidity measurement.

5.4.3 Continuous Gas & Opacity Measurement

This combines the operating modes “*Continuous Gas Measurement*” and “*Continuous Turbidity Measurement*”.

Click on [Emission analysis | Gas & Opacity](#).

Refer to Chapter 5.4.1 *Continuous Gas Measurement*, Chapter 5.4.2 *Continuous Turbidity Measurement* and Chapter 5.4.3 *Continuous Gas & Turbidity Measurement*.

6 In the Event of Errors

Information

When troubleshooting, make sure to observe all warning notices at the beginning of the device manual.

Error/Error message	Check/Troubleshoot
AVL DiTEST CDS	
Device no longer responds	Quit AVL DiTEST CDS and restart it.
AVL DiTEST Gas 1000	
Gas flow too low	<ul style="list-style-type: none"> ■ Is the exhaust probe nipple blocked? Clean the probe with compressed air. ■ Is the measurement gas output blocked? ■ Is the probe hose kinked or is the gas flow hindered by a heavy object on the probe hose? ■ Check the prefilter and particle filter <ul style="list-style-type: none"> - If these filters are black, then change them - You must run a leak test after changing a filter ■ Check whether the device has been stored at temperatures below 0°C and if it could be iced up with residual condensation. ■ If none of the above measures fix the error, then refer to AVL DiTEST Service.
Measurement chamber pressure not OK	<ul style="list-style-type: none"> ■ Check the measurement gas output for possible blockage. ■ If none of the above measures fix the error, then refer to AVL DiTEST Service.
Measurement chamber temperature too high	<ul style="list-style-type: none"> ■ Take the exhaust probe out of the exhaust pipe (the device switches to zero adjustment if an error occurs and draws in fresh air). ■ Do <u>not</u> switch the device off. ■ Wait at least 10 minutes. ■ Start the measurement again. ■ If the same error message appears, then there is a fault in the measurement chamber – refer to AVL DiTEST Service.
Leak test failed	<ul style="list-style-type: none"> ■ Check the entire sampling line for leaks from the tip of the probe to the input on the rear of the device.
HC residue test failed	<ul style="list-style-type: none"> ■ Make sure the exhaust probe can draw in fresh air.

Error/Error message	Check/Troubleshoot
AVL DiSmoke 480 BT	
Exhaust temperature too high	<p>If this error message occurs, then the switching valve immediately switches to a safety position that prevents exhaust from entering into the turbidity measurement chamber.</p> <ul style="list-style-type: none"> ■ Remove the exhaust probe from the exhaust pipe if this error occurs.
Measurement chamber too hot / too cold	<ul style="list-style-type: none"> ■ If the error message <i>“Measurement chamber too hot”</i> appears during operation, then take the probe out of the exhaust pipe and wait until the temperature is back within the permitted range. ■ If the message <i>“Measurement chamber too cold”</i> appears, then the measurement chamber has been cooled down by cold exhaust. Wait until the measurement chamber has been heated to at least 80°C. ■ If the measurement chamber temperature is still in an impermissible range after repeated attempts (2 to 3 tries), then refer to AVL DiTEST Service.
Measuring head temperature too high	<ul style="list-style-type: none"> ■ Do not place the device in direct sunlight.
Linearity error / turbidity error	<ul style="list-style-type: none"> ■ Check the function of the lamps. ■ Clean the glass panes in front of the optical elements.
Influence of extraneous light	<ul style="list-style-type: none"> ■ The turbidity measurement chamber should not be exposed to extreme, direct illumination from powerful light sources (flashlights, headlights) – if necessary, move the measurement chamber to a new setup location.
Accelerated too slowly	<p>The gas pedal was not pressed down suddenly and quickly enough at the <i>“Accelerate”</i> command.</p> <ul style="list-style-type: none"> ■ Wait 15 seconds ■ The measurement will then repeat automatically
Decelerated too early	<p>The gas pedal was released too early and the cut-off speed was not held for long enough.</p> <ul style="list-style-type: none"> ■ For the measurement, you must maintain pressure on the gas pedal until the <i>“Decelerate”</i> command is given. ■ You must wait 15 seconds; then the measurement will repeat automatically.
No monotone run-up	<p>The device automatically detects when the gas pedal is not floored smoothly and quickly (i.e. no constant, continuous speed increase was achieved during acceleration).</p> <ul style="list-style-type: none"> ■ You must floor the gas pedal as quickly and smoothly as possible. ■ If this message appears, you must wait 15 seconds until the engine has reached a stable idle speed; then the measurement will repeat automatically.

Error/Error message	Check/Troubleshoot
AVL DiOBD 880	
Cannot establish a connection	<ul style="list-style-type: none"> ■ Check the connection between AVL DiOBD 880 and vehicle. ■ Check whether the blue LED on the AVL DiOBD 880 is lit; if not, then turn the ignition on. ■ If the same error message still appears, then there is an error. Refer to AVL DiTEST Service.

Error/Error message	Check/Troubleshoot
Bluetooth	
Cannot establish DiOBD 880 connection	<ul style="list-style-type: none"> ■ Check the Bluetooth connection between AVL DiTEST CDS and AVL DiOBD 880; see Chapter 5.1.5.1.11. ■ If the same error message appears, then there is a fault – refer to AVL DiTEST Service.
Cannot establish AVL DiSmoke 480 BT connection	<ul style="list-style-type: none"> ■ Check the Bluetooth connection between AVL DiTEST CDS and AVL DiSmoke 480 BT; see Chapter 5.1.5.1.10. ■ If the same error message still appears, then there is an error. Refer to AVL DiTEST Service.

7 Maintenance Plans

7.1 Maintenance Plan AVL DiTEST Gas 1000

Refer to Device Manual AVL DiTEST Gas 1000, Chapter 5.1 *Maintenance Plan*.

7.2 Maintenance Plan AVL DiSmoke 480 BT

Refer to Device Manual AVL DiSmoke 480 BT, Chapter 3.1 *Maintenance Plan*.

7.3 Software Update

Proceed as follows:

- Download the installation file from the Internet onto a PC.
- Copy the installation file onto a USB stick.
- Continue as described in Chapter 5.1.4.7 *Software*.

8 Warranty

8.1 New Devices

The warranty period for new devices is 12 months.

The warranty period for rechargeable batteries is 6 months.

The agreements made with your supplier apply.

Wearing parts and accessories are strictly excluded from the warranty.

The date on the delivery slip to the end customer applies for handling claims.

The warranty becomes void in the case of:

- Mechanical damage (e.g. if dropped, etc.)
- Ingress of liquids (e.g. water, oil, acids, etc.)
- Unauthorized intervention (e.g. repair attempts by unauthorized persons)
- Incorrect operation (e.g. operating the touch screen with sharp or pointed objects, cleaning with compressed air)
- Incorrect storage, maintenance and care (e.g. cleaning the device with solvent-based cleaners)

8.2 Replacement or Loaned Devices

The agreements made with your supplier apply.

The date on the delivery slip to the end customer applies for handling claims.

8.3 Damage Claims

For claims of damages or losses, refer to the responsible AVL DiTEST branch / AVL DiTEST partner in your country.

9 Technical Data

AVL DiTEST CDS:	
Display:	12.1" TFT LCD module, resolution XGA 1024x768
Power supply:	230VAC
Power draw:	Max. 125W
Operating temperature	4 ... 40°C
Storage temperature:	-20 ... 50°C
Relative air humidity:	≤90%, non-condensing
Dimensions:	380 X 460 X 280 mm (WxHxD)
Weight:	Approx. 16kg
Speed measurement:	
Speed measurement on 4-stroke gasoline and diesel engines	
Signal input:	AVL Combo Sensor
Speed, diesel engines:	400 ... 6000 min ⁻¹
Speed, gasoline engines:	400 ... 8000 min ⁻¹
Speed search range, idle:	400 ... 1200 min ⁻¹
Speed search range, high rev. speed:	1700 ... 6000 min ⁻¹
Oil temperature measurement:	
Signal input:	Oil Temperature Sensor
Measuring range:	-10 ... 145°C
Connections:	
AVL Combo Sensor	
Oil Temperature Sensor	
Dual 10/100/1000 Mbps Ethernet port	
4 USB 2.0 ports	
Standard VGA connector	
3 RS 232 serial ports	
AVL DiSpeed 492	
4/5 gas measurement	
See User Manual AVL DiTEST Gas 1000, Chapter 8 <i>Technical Data</i>	
AVL DiSmoke 480 BT	
See User Manual AVL DiSmoke Gas 480 BT, Chapter 5 <i>Technical Data</i>	

Disposal

For disposal, it is essential to comply with local legal obligations!

10 CE Declaration



EG – KONFORMITÄTSERKLÄRUNG EC – DECLARATION OF CONFORMITY

D I T E S T
DITEST
FAHRZEUGDIAGNOSE GMBH
ALTE POSTSTRASSE 152
A-8020 GRAZ, AUSTRIA

Wir, **AVL DITEST FAHRZEUGDIAGNOSE GMBH,**
We **A - 8020 GRAZ, ALTE POSTSTRASSE 152**

erklären in alleiniger Verantwortung, dass das von DITEST Fahrzeugdiagnose hergestellte Produkt
declare under our sole responsibility, that the product, produced at DITEST Fahrzeugdiagnose, called

AVL DITEST Compact Diagnostic System

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokument(en) übereinstimmt:

to which this declaration relates is in conformity with the following standard(s) or other related document(s):

- EN 61326-1:06 Elektrische Mess-, Steuer-, Regel- und Laborgeräte EMV-Anforderungen** (Electrical equipment for measurement, control and laboratory use. EMC requirements)
- EN 61010-1:01 Sicherheitsbestimmungen für elektrische Meß-, Steuer-, Regel- und Laborgeräte** (Safety requirements for electrical equipment for measurement, control and laboratory use)

und damit den Bestimmungen der folgenden EU- Richtlinien in den derzeit gültigen Fassungen entspricht:

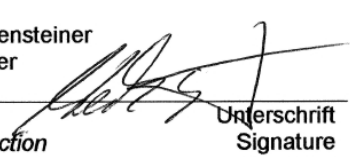
and therefore is in conformity with the following European Directives in their current versions:

- 2004/108/EG (EC) Elektromagnetische Verträglichkeit** (Electromagnetic compatibility)
- 2006/95/EG (EC) Niederspannungsrichtlinie** (Low voltage directive)
- 1999/5/EG (EC) Funkanlagen und Telekommunikationsendeinrichtungen** (Radio and telecommunications terminal equipment – R&TTE)

Graz, den / the 22.11.2010

Manfred Weißensteiner
CE-Beauftragter
CE-Agent

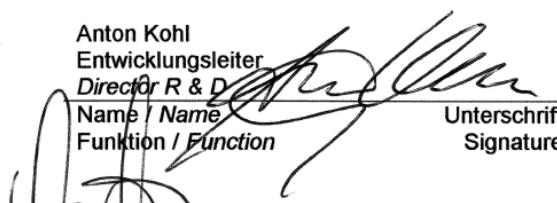
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