Operating Instructions
minidiag2 diagnostics and parameter setting tool

Order no. 3490.3200.00 EN Edition A, 05/09

Mercedes-Benz

Symbols

*	Optional equipment
	Warning
	Environmental note
	Possible vehicle damage
	Tip
▶	Action required
▶	Sequence of actions (several ▶)
▷ ▷	Continuation symbol
▷ ▷	Continuation symbol for a warning
▷ page	Page reference
->	Term from the glossary of technical terms
Display	Displays in the multifunction display

Internet

Further information about Mercedes-Benz vehicles and Daimler AG can be found on the following websites:

www.mercedes-benz.com
www.daimler.com

Editorial office

You are welcome to forward any queries or suggestions you may have regarding these Operating Instructions to the technical documentation team at the following address:

Daimler AG, Abt. TM-ECR, HPC: D503, D-70546 Stuttgart

As at: 11.05.2009

Thank you for choosing the minidiag2 diagnostics and parameter setting tool.

Familiarise yourself with the operation and functions of this tool before using it for the first time.

Read the Operating Instructions before you use the device. This will prevent you putting yourself and others at risk.

Daimler AG reserves the right to make changes to the design, equipment and technology. Therefore, no claims may be based on the information, illustrations and descriptions in these Operating Instructions.

The Operating Instructions are an integral part of the device. You should therefore always carry them with the device and, if you sell the device, pass them on to the new owner.

The technical documentation team at Daimler AG wishes you much success.

Please also refer to the index (▷ Page 103)

1 At a glance

2 Safety

3 Connection

4 Controls in detail

5 minidiag2 Assistant

6 Index

minidiag2

Overview of the buttons

Connections

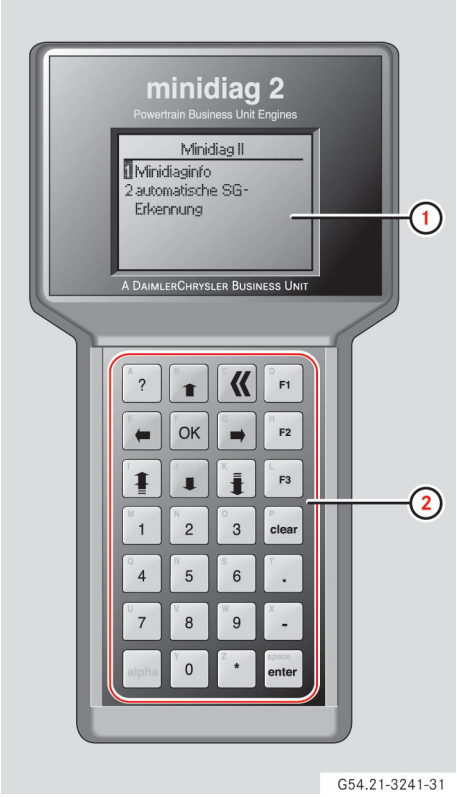
Accessories and contacts

1

minidiag2 is a diagnostics and parameter setting tool from Daimler AG. It can be used on its own or to enhance Star Diagnosis® products.

The minidiag2 diagnostics tool enables the following work to be carried out on Mercedes-Benz control units:

- Teaching in the accelerator pedal (▷ page 34)
- Setting parameters (▷ page 37)
- Reading out actual values (▷ page 50)
- Reading out / deleting the fault code memory (▷ page 54)



minidiag2

① Display showing main menu
② Keypad

Three versions of minidiag2 are available with the following functions:

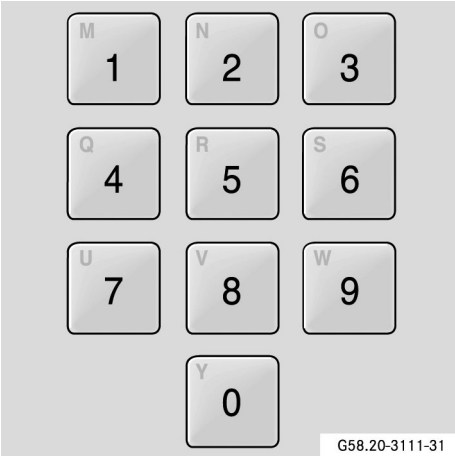
Function	***Version A*** ***Part no.:*** ***000 153 12 18***	***Version B*** ***Part no.:*** ***000 153 13 18***	***Version C*** ***Part no.:*** ***000 153 14 18***
Fault code: • showing / deleting	•	•	•
Showing actual values: • analogue / binary values	•	•	•
Routines: • teaching in of the accelerator pedal (ADMx) • unit pump exchange (PLD / *MR2)* • SCR initial start-up (MR2-B) • ...	•	•	•
Flashing (special software): • data sets / software (PLD, MR2, etc.) • software (ADM, VCU, etc.)	•	•	•
Setting parameters: • setting single parameters • setting parameters for data sets • reading out parameter sets from the control unit • converting parameter sets	Setting parameters for data sets with password protection possible but restricted.	•	•

Function	*Version A Part no.: 000 153 12 18*	*Version B Part no.: 000 153 13 18*	*Version C Part no.: 000 153 14 18*
PC program: • loading software and parameter sets to minidiag2 • saving parameter sets from minidiag2 to PC • creating / changing / managing parameter sets • printing parameter sets (to file or printer) • comparing parameter sets • ...	A-parameter sets with password protection can be created by OEM. Parameter sets for versions B and C are not visible in version A.	•	•
Authorisation to influence the legal speed limit (> 85 km / h). The legal regulations in accordance with ECE-R 89, Part I, Paragraph 5.1.2.2 must be observed.			• *1*

1 Only using password routine

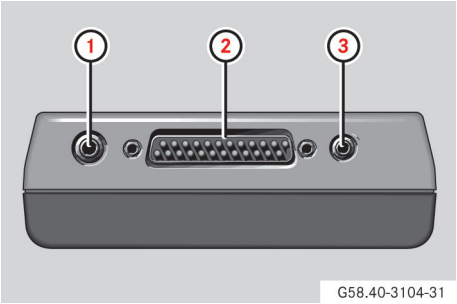
Button	Function
F OK	Confirms a selection / input
space enter	Confirms a selection / input
B ⬆	Moves the cursor or display up
J ⬇	Moves the cursor or display down
C «	Back to the previous menu
G ➡	Scrolls forwards in lists of values (e.g. parameter values)
E ⬅	Scrolls backwards in lists of values (e.g. parameter values)
I	Scrolls up
K	Scrolls down
P clear	Deletes newly entered and unconfirmed values
X -	Minus
T .	Point

Button	Function
alpha	Switches to letter input
H F2	Sets the contrast and brightness of the display
L F3	Sets the contrast and brightness of the display
Buttons that cannot currently be used	
D F1	Reserved
Z *	Text search aid
A ?	Help function



To enter digits

Connections



View of connectors

① No longer required (C2 – C4) or no longer present (as of hardware version C5)
② 25-pin connector for connecting to the diagnostic socket or PC, incl. power supply
③ No longer required (C2 – C4) or no longer present (as of hardware version C5)

Accessories

Order no.	Accessory	Price
3490.2100.00	Mains adapter	€35 (plus statutory VAT)
3490.2200.00	PC connector cable (RS232)	€30 (plus statutory VAT)
3490.2200.01	PC connector cable (USB-CAN + RS232)	€245 (plus statutory VAT)
3490.2300.00	Diagnostic cable (14-pin)	€35 (plus statutory VAT)
3490.2700.01	Diagnostics cable (OBDII, 16-pin) J1939	€88 (plus statutory VAT)
3490.2700.02	Diagnostics cable (OBDII, 16-pin) MB truck	€88 (plus statutory VAT)
3490.3200.00	German Operating Instructions	€10 (plus statutory VAT)
3490.3200.02	English Operating Instructions	€10 (plus statutory VAT)
3490.3200.03	French Operating Instructions	€10 (plus statutory VAT)
3490.3200.04	Spanish Operating Instructions	€10 (plus statutory VAT)
3490.3200.06	Italian Operating Instructions	€10 (plus statutory VAT)
3490.2600.00	USB-RS232 interface converter	€68 (plus statutory VAT)

Contacts

Sales and service	Repairs
1st level support: MTU Friedrichshafen GmbH On behalf of Daimler AG Aleksandra Pavelic Telephone:+49 (0) 75 41 / 90-70 36 Fax: +49 (0) 75 41 / 90-90 70 36 E-mail: aleksandra.pavelic@mtu-online.com	Trefz GmbH Martin Weissenberger Markgröninger Str. 64 D-71701 Schwieberdingen, Germany Telephone:+49 (0) 71 50 / 35 09-33 Fax: +49 (0) 71 50 / 35 09-44 E-mail: minidiag@trefz.biz
2nd level support: Daimler AG Telephone:+49 (0) 711 / 17-2 48 11 Fax: +49 (0) 711 / 17-2 48 10 E-mail: minidiag@daimler.com	

2

2

General

Risk of fatal injuries 

It is possible to influence safety-relevant settings for the engine and vehicle (e.g. accelerator pedal analysis, engine brake control, etc.) with the minidiag2 diagnostics tool.

Incorrect modification of parameters can have an enormous effect on the behaviour of the engine and / or the vehicle. This can result in injuries and material damage.

Correct use

The minidiag2 diagnostics tool is designed exclusively for the purpose set down in the contract. Use that differs from or exceeds this shall be regarded as incorrect use.

Daimler AG shall not be liable for any damages resulting from incorrect use.

- ▶ Observe the minidiag2 Operating Instructions.
- ▶ Comply with the conditions for use (▷ see page 15).

Requirements for users

Parameters must only be set by personnel with appropriate training or who have been trained by Daimler AG, or by experts in workshops authorised by Daimler AG.

Converting and modifying minidiag2

Unauthorised modifications to minidiag2 can impair the function and safety of the device.

Daimler AG shall not be liable for any damages resulting from incorrect use.

Organisational measures

The Operating Instructions must be handed out to personnel working with the minidiag2 diagnostics tool and should be kept at hand.

All universal, country-specific, legal and other binding regulations for accident prevention and protection of the environment must be complied with in addition to the Operating Instructions.

Genuine Mercedes-Benz parts

Genuine Mercedes-Benz parts are subject to the strictest quality inspections and guarantee the highest possible levels of functionality, safety and durability.

Every part is specially designed, produced, selected and approved for Daimler AG.

We must therefore refuse all responsibility for damages caused as a result of using parts and accessories that do not meet these requirements.

In Germany and in some other countries, certain parts, for example parts relevant to safety, are only approved for installation and conversion if they meet the applicable legal regulations.

This requirement is always fulfilled by genuine Mercedes-Benz parts.

Despite ongoing market research, it is not possible to assess and guarantee this requirement if other parts that have not been tested and approved by Daimler AG are used, even if such parts have been certified or officially approved. Daimler AG may therefore unilaterally limit warranty claims.

Conditions for use

!

You must observe the operating conditions described below to prevent damage to the device and components.

- Do not store or operate the device in locations with high levels of dust or humidity.
- The storage temperature must not exceed 80 °C.
- The operating temperature range is between 0 °C and 50 °C.
- At other temperatures the function of electronic components may be impaired.
- Keep the device dry.
  If moisture gets into the device, the electronic circuits will corrode. This may result in malfunctions.
- Never open the device.
  If you open the device, the warranty will be invalidated.
  Incorrect handling can result in damage.
- Do not drop the device and do not subject it to shocks or impacts.
  Circuit boards in the device could otherwise break. This may result in malfunctions.

- Do not use corrosive chemicals, solutions or strong cleaning agents to clean minidiag2. Clean the device using a soft cloth and a mild soap solution.
- The device is designed for diagnostics and not for continuous operation.
- Warranty claims for defects caused by incorrect operation, incorrect or negligent treatment and / or handling will be rejected.

Faulty devices must be sent to the following address within the warranty period (6 months after dispatch from Daimler AG):

Trefz GmbH
Herr Martin Weissenberger
Markgröninger Strasse 64

D-71701 Schwieberdingen, Germany

3

Connection to diagnostic socket

Connection to PC

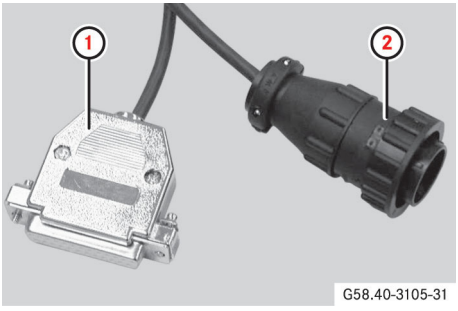
Connection to diagnostic socket

Switch off the ignition before connecting minidiag2.

▶ Use a suitable cable (see illustration).

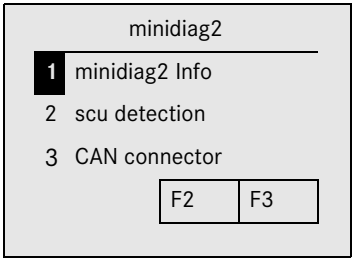
Depending on the diagnostic socket, you can use a 6, 9, 14 or 16-pin diagnostic connector.

6 and 9-pin diagnostic connectors can only be ordered from the USA.



Cables for connection to the 14-pin diagnostic socket

① Mating connector for connection to the 25-pin connector on minidiag2 (▷ page 10)
② Mating connector for connection to the 14-pin diagnostic socket



▶ Switch on the ignition.

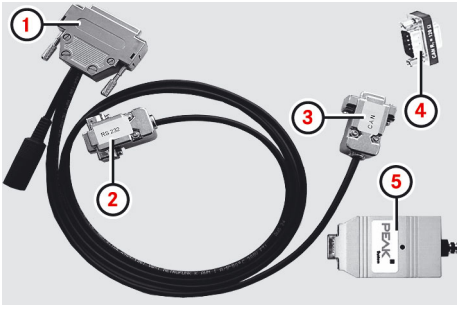
minidiag2 switches on automatically.
The main menu is displayed.

You can adjust the contrast directly using buttons **F2** (darker) and **F3** (brighter).

When it is connected to a PC, minidiag2 must have a power supply (12 V – 24 V / min. 800 mA).

Connect an external power supply unit to the relevant connector (▷ page 10).

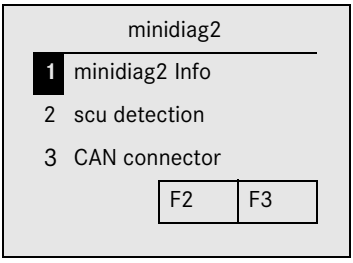
- ▶ Connect the minidiag2 to the serial (RS232) and / or USB interface on the PC.
- ▶ Use a suitable cable (see illustration).



Cables for connecting to PC

① 25-pin mating connector for connection to the 25-pin connector on minidiag2 (▷ page 10).
② 9-pin mating connector for connection to the serial interface RS232 of the PC (longer cable)
③ 9-pin mating connector for connection to the USB-CAN (shorter cable)
④ 120 Ohm terminator resistor (between CAN and PEAK).
⑤ USB-CAN (PEAK) for connection to the PC

Connection to PC



You can also connect 9-pin mating connector ② for serial interface RS232 when data is to be transmitted via CAN. CAN (PEAK) recognition will then occur automatically.

3

minidiag2 switches on automatically. The main menu is displayed.

4

minidiag2 Info

Adjusting the display settings

Software / hardware versions

PC communication

Automatic control unit detection

Showing control unit information

Teaching in the accelerator pedal

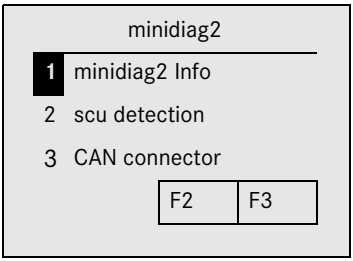
Setting parameters

Showing actual values

Showing / deleting the fault code memory

minidiag2 Info

To display the serial number and software version of the equipment:

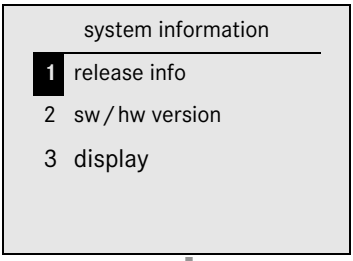


▶ Connect minidiag2 (▷ page 18).

The main menu is displayed.

▶ Position the cursor on "minidiag2 Info".

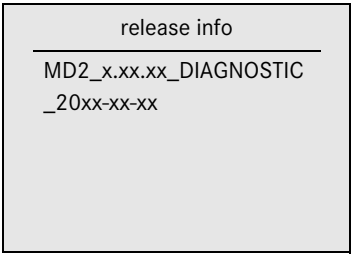
▶ Press: F OK



▶ Position the cursor on "release info".

▶ Press: F OK

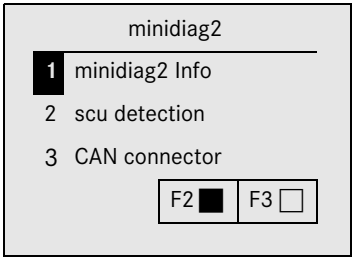
The description of the equipment configuration is displayed.



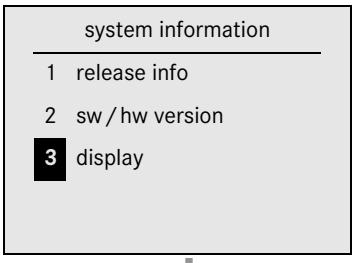
▶ Press: C «

You will be taken back to the main menu.

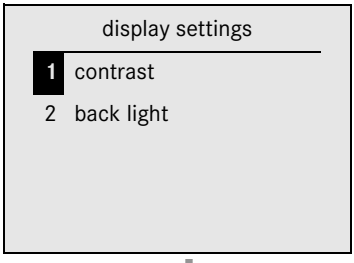
Setting the contrast and brightness of the display.



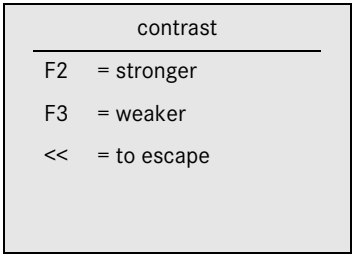
- In the main menu, position the cursor on "minidiag2 Info".
- Press: F OK



- Position the cursor on "display".
- Press: F OK



- Position the cursor to adjust the contrast or brightness of the display.
- Press: F OK



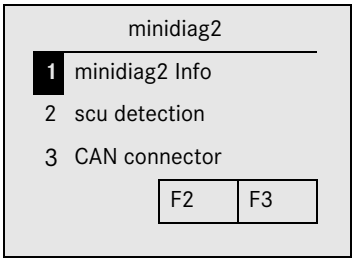
- Press function buttons F2 and F3 to adjust the contrast.
- Press: C «

Adjusting the display settings

back light	
F2	= lighter
F3	= darker
<<	= to escape

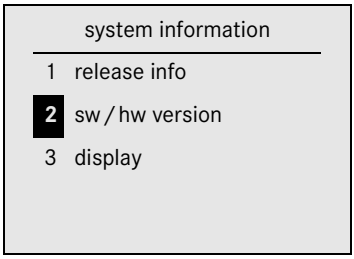
- ▶ Select "back light".
- ▶ Press function buttons F2 and F3 to adjust the brightness.
- ▶ Press three times: 

  You will be taken back to the main menu.



▶ Position the cursor on "minidiag2 Info".

▶ Press: F OK

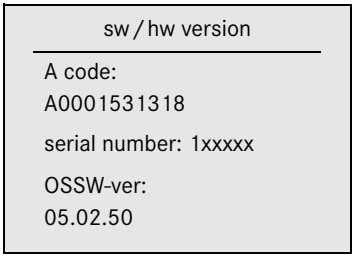


▶ Position the cursor on "sw / hw version".

sw = software

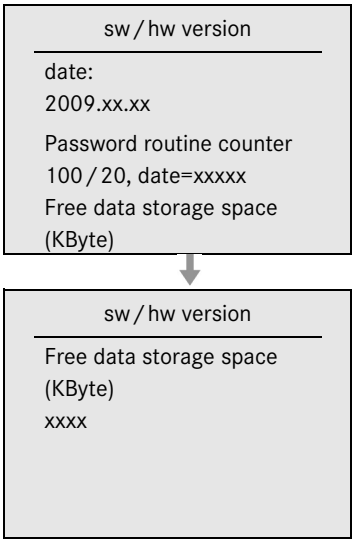
hw = hardware

▶ Press: F OK



A code:	=	Mercedes-Benz item number (same as the "part number")
serial nr:	=	Serial number
OSSW-ver:	=	Operating system version
date:	=	Latest update
Password routine counter	=	Number of times remaining to access password routines
Free data storage space	=	For parameter sets or reports and snapshots which can be saved using the F3 function

Software / hardware versions



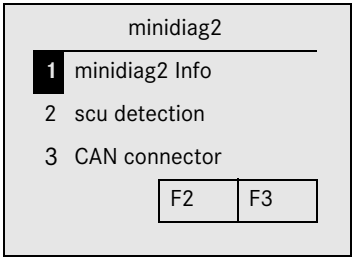
▶ Press: 

This scrolls the display down.

▶ Press: 

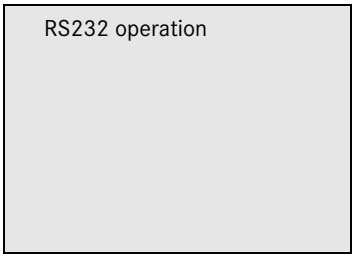
You will be taken back to the main menu.

To transfer data from PC to minidiag2, you must connect the diagnostics tool as required:

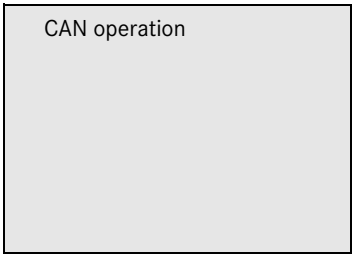


▶ Always connect minidiag2 to the PC first (▷ page 19).

The main menu is displayed.



or

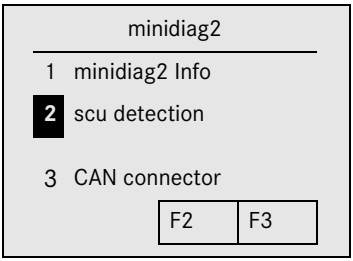


▶ Start the data transfer with the "minidiag2 Assistant" PC software (▷ page 88).

minidiag2 is ready to accept data from the PC.

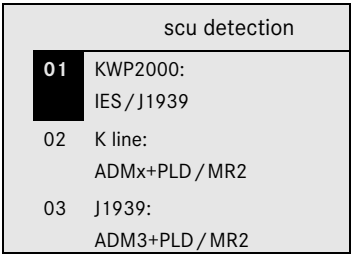
ⓘ

You can switch between CAN and RS232 operation using the back button.



- Connect minidiag2 (▷ page 18).

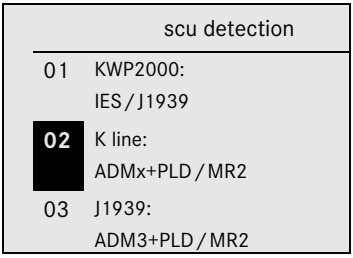
  The main menu is displayed.
- Position the cursor on "scu detection".
- Press: OK



KWP2000: IES / J1939

- Position the cursor on "KWP2000: IES / J1939" to enter the control unit via the "Instrument" gateway (MB-Truck) or via the "ADMx" (external on and off highway).
- Press: OK

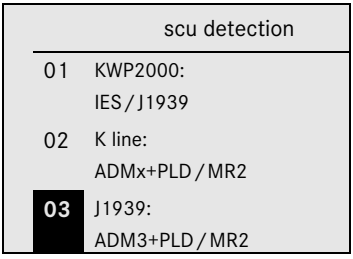
or



K line: ADMx+PLD / MR2

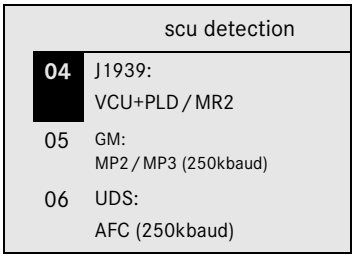
- Position the cursor on "K line: ADMx+PLD / MR2" for direct control unit entry into the ADMx vehicle management and PLD or MR2 engine management via the K line.
- Press: OK

or



J1939: ADM3+PLD / MR2

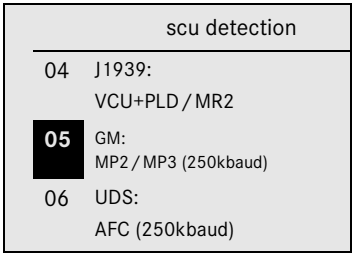
- Position the cursor on "J1939: ADM3+PLD / MR2" for communication via SAEJ1939 HS-CAN for control unit entry into the ADM3 vehicle management and PLD or MR2 engine management.
- Press: OK



J1939: VCU+PLD / MR2

- Position the cursor on "J1939: VCU+PLD / MR2" for communication via SAEJ1939 HS-CAN for control unit entry into the VCU vehicle management and PLD or MR2 (NAFTA) engine management.
- Press: F OK

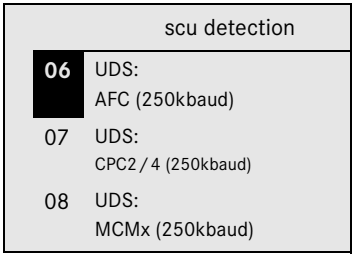
or



GM: MP2 / MP3 (250kbaud)

- Position the cursor on "GM: MP2 / MP3 (250kbaud)" for control unit entry via the "Basic module" gateway for Actros MP2 / MP3 (MB Truck).
- Press: F OK

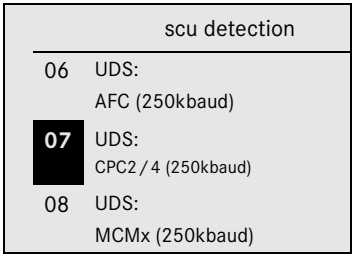
or



UDS: AFC (250kbaud)

- Position the cursor on "UDS: AFC (250kbaud)" for control unit entry into the AFC (Automatic Fan Control) airflow management.
- Press: F OK

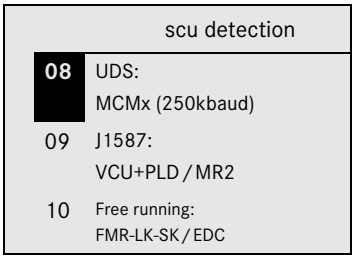
or



UDS: CPC2 / 4 (250kbaud)

- Position the cursor on "UDS: CPC2 / 4 (250kbaud)" for control unit entry into the CPC2 / 4 (Common Powertrain Controler) vehicle management.
- Press: F OK

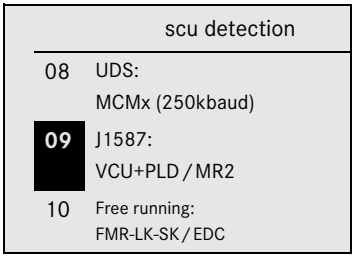
Automatic control unit detection



UDS: AFC (250kbaud)

- ▶ Position the cursor on "UDS: MCMx (250kbaud)" for control unit entry into the MCMx (engine management module) engine management.
- ▶ Press: F OK

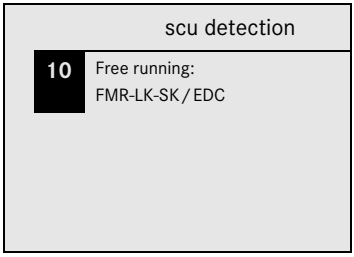
or



J1587: VCU+PLD / MR2

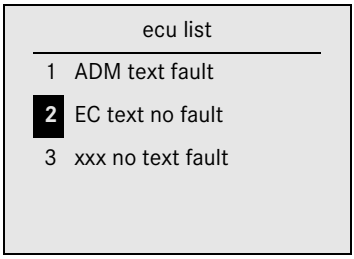
- ▶ Position the cursor on "J1587: VCU+PLD / MR2" for control unit entry into the VCU vehicle management and PLD or MR2 (NAFTA) engine management.
- ▶ Press: F OK

or



Free running

- ▶ Position the cursor on "Free running" for control unit entry via the K line (older control units, such as FMR-SK, FMR-LK, FLA (without CAN) and EDC).
- ▶ Press: F OK



A list of the connected control units is displayed.

The control unit abbreviations are followed by endings:

text fault	=	In minidiag2, the description file for the respective control unit is loaded and at least one active error code is available.
text no fault	=	In minidiag2, the description file for the respective control unit is loaded and there are no active error codes available.
no text fault	=	In minidiag2, the description file for the respective control unit is not loaded and at least one active error code is available.

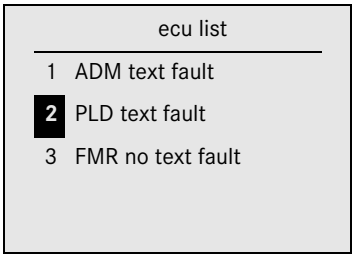
!

If, in minidiag2, the description file of a control unit is not loaded, no explanatory texts for fault codes, measured values, parameters etc. are available. Parameters cannot be set and special diagnostics routines cannot be performed for this control unit.

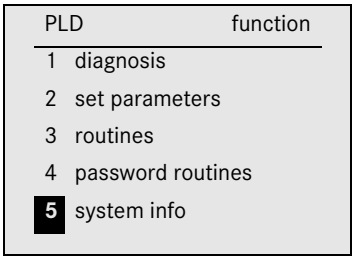
You can load description files and parameter sets with the help of the "minidiag2 Assistant" PC program (▷ page 88).

Description files which are not available can be ordered from Daimler AG in accordance with the control unit information (▷ page 32).

Showing control unit information

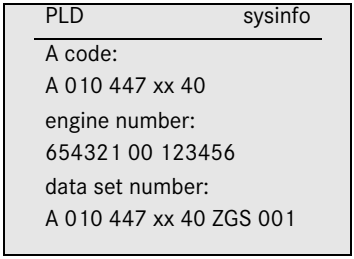


- ▶ Perform the automatic control unit detection (▷ page 28).
- ▶ Position the cursor on the desired control unit (e.g. PLD).
- ▶ Press: F OK



- ▶ Position the cursor on "system info".
- ▶ Press: F OK

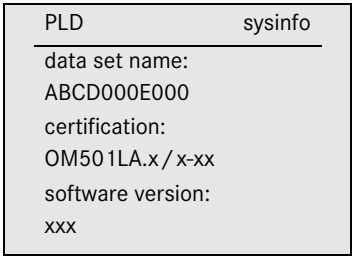
  The control unit information is displayed.



A code = Mercedes-Benz item number (same as the "part number")

engine number = 14 digits (format: 6-2-6 or 6-1-7 with letters in the middle)

data set number = A-item number from the characteristics map data set



- ▶ Press: K

  This scrolls the display down.

data set name = description of data set

certification = engine type

software version = current software

MR	sysinfo
diag ver: 35 Pin: 2	
HW / SW:	
A xxx xxx xx 40 ZGS xxx	
description file:	
B_MR2_SW10	

▶ Press: 

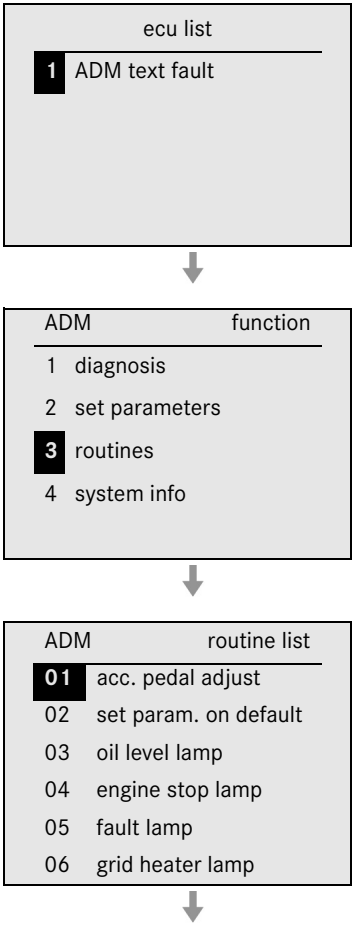
This scrolls the display down.

diag ver	=	Diagnostics version
Pin	=	Connection pin on minidiag2
HW / SW		Hardware / software number
description file	=	Parameterization file

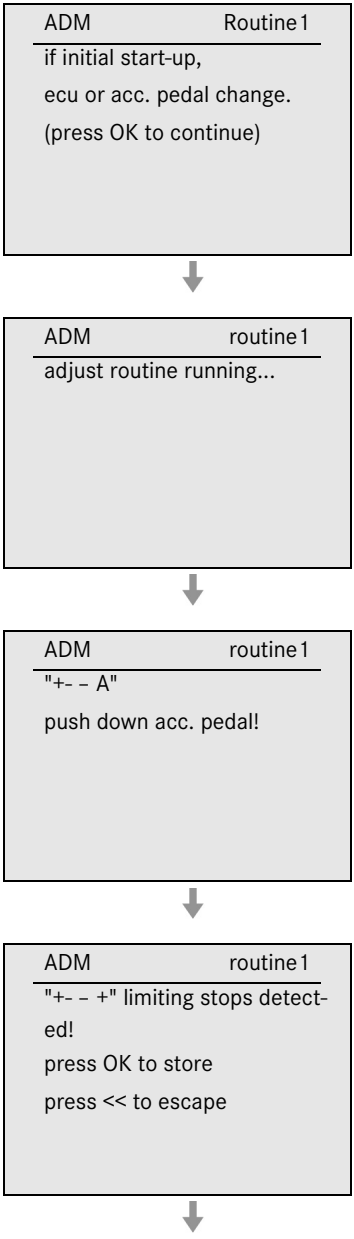
Teaching in the accelerator pedal

In the ADMx, no constant signal values are assigned to the accelerator pedal limit positions (not depressed, fully depressed). For this reason, the accelerator pedal limit positions must be taught to the vehicle control unit once. This procedure stores the accelerator pedal limit positions in the control unit's permanent memory. If the accelerator pedal or control unit is replaced, the teaching-in process must be repeated.

4



- ▶ Make sure that the accelerator pedal is in the idle position.
- ▶ Perform the automatic control unit detection (▷ page 28).
- ▶ Position the cursor on the vehicle control unit (e.g. ADM or FMR).
- ▶ Press: F OK
- ▶ Position the cursor on "routines".
- ▶ Press: F OK
- ▶ Position the cursor on "acc. pedal adjust" (accelerator pedal).
- ▶ Press: F OK



▶ Press: OK

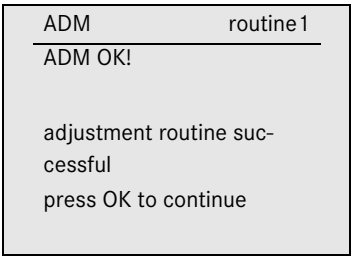
▶ Wait for the next display.

▶ Depress the accelerator pedal as far as it will go and hold it for approximately 5 seconds until the next display appears.

▶ Press: OK

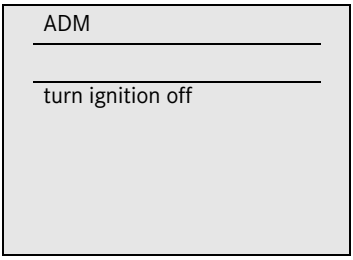
The signal values are temporarily stored.

Teaching in the accelerator pedal



▶ Press: F OK

The routine is continued.



▶ Switch off the ignition for 15 seconds.

A progress bar is displayed.

▶ After the 15 seconds, switch the ignition back on.

The accelerator pedal signal values are stored permanently.

You can use the minidiag2 diagnostics tool to perform two types of parameter setting:

- Setting single parameters
- Setting parameter data sets

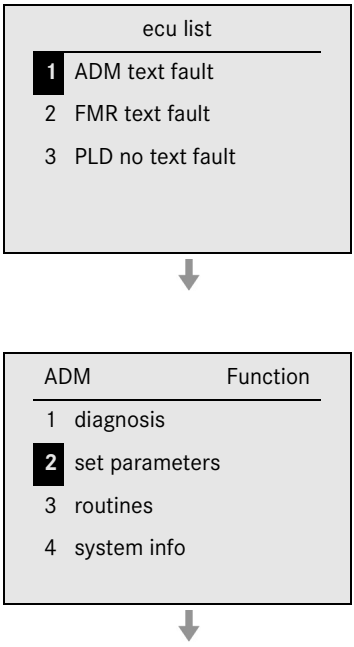
Additionally, modified parameter data of the control unit can be saved (▷ page 44) or converted with (▷ page 46) using the minidiag2 in order to import them from the minidiag2 to a PC at a later time (▷ page 75).

!

Do not start setting parameters while the engine is running.

Setting single parameters

Single parameter values are modified.



▶ Perform the automatic control unit detection (▷ page 28).

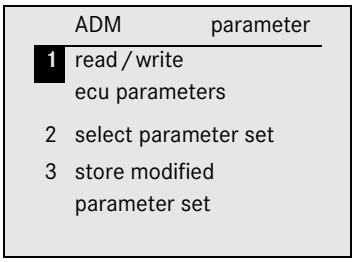
▶ Position the cursor on the desired control unit (e.g. ADM).

▶ Press: F OK

The functions of the selected control unit are displayed.

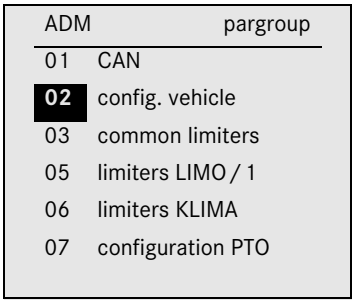
▶ Position the cursor on "set parameters".

▶ Press: F OK



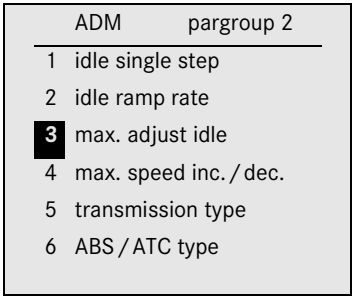
- Position the cursor on "read / write ecu parameters".
- Press: F OK

The parameter groups of the control unit are displayed.



- Position the cursor on the desired parameter group (e.g. "02 config. vehicle").
- Press: F OK

The parameters of the selected parameter group are displayed.



- Position the cursor on the desired parameter (e.g. "3 max. adjust idle").
- Press: F OK

The values of the selected parameter are displayed.

ADM	par2 / 3
850	rpm
maximum adjustes idle	
speed default:	850
max:	4000
min	0

ADM	par2 / 3
1000	rpm
maximum adjustes idle	
speed default:	850
max:	4000
min	0

par2 / 3 = parameter 3 of group 2

850 rpm = current value

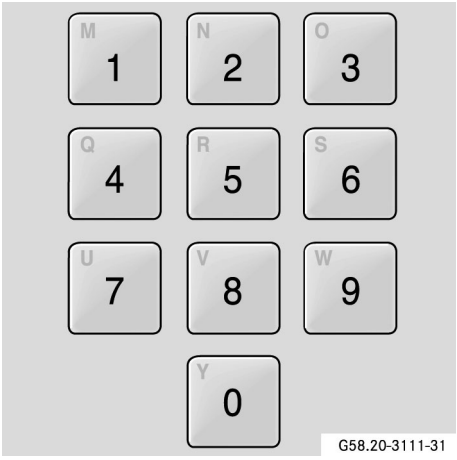
speed default = preset / basic value

max = maximum value

min = minimum value

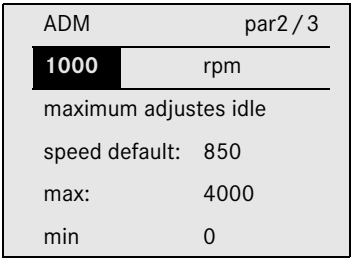
▶ Enter the new value using the keypad.

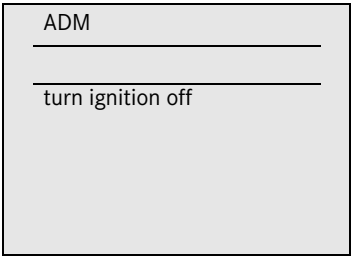
▶ Press: F OK

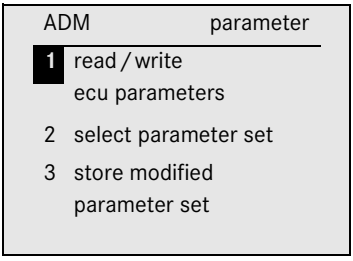


Keypad

ⓘ You can delete incorrectly entered values using the "clear" button.







▶ Press three times: F OK

Once you have finished setting parameters:

▶ Switch off the ignition for 15 seconds.

A progress bar is displayed.

▶ After the 15 seconds, switch the ignition back on.

The modified parameters are stored permanently.

Communication with the control unit is restarted.

If you have to change several parameters, change all the parameters first and then switch off the ignition for 15 seconds.

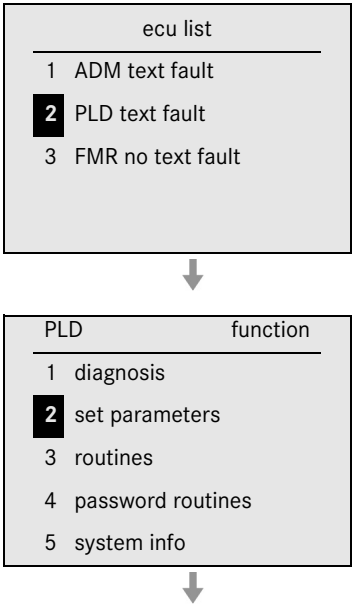
Setting parameters for data sets

When you transfer a parameter set to a control unit, control unit paramenter values which are able to be changed will also simultaneously be modified in accordance with the parameter set and the respective MIN / MAX limitations. Parameter values outside of the MIN / MAX will not be modified.

- ▶ Create a parameter set with the help of the "minidiag2 Assistant" PC program (▷ page 65).
- ▶ Transfer a parameter set to minidiag2 with the help of the "minidiag2 Assistant" PC program (▷ page 88).
- ▶ Carry out control unit detection (▷ page 28).

!

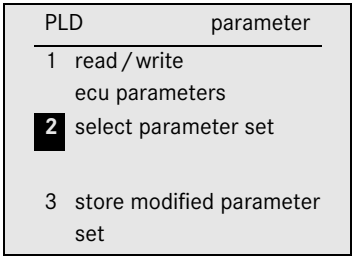
It is not permissible to set parameters while the engine is running.



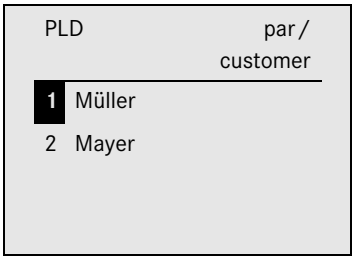
- ▶ Position the cursor on the desired control unit (e.g. PLD).
- ▶ Press: F OK

  The functions of the selected control unit are displayed.

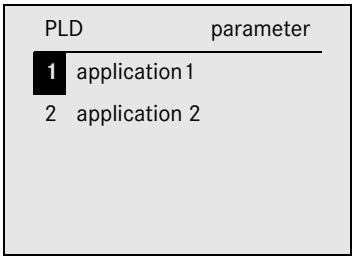
- ▶ Position the cursor on "set parameters".
- ▶ Press: F OK



- Position the cursor on "select parameter set".
- Press: F OK

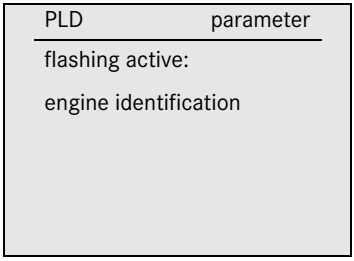


- Position the cursor on the desired customer (e.g. "Müller").
- Press: F OK

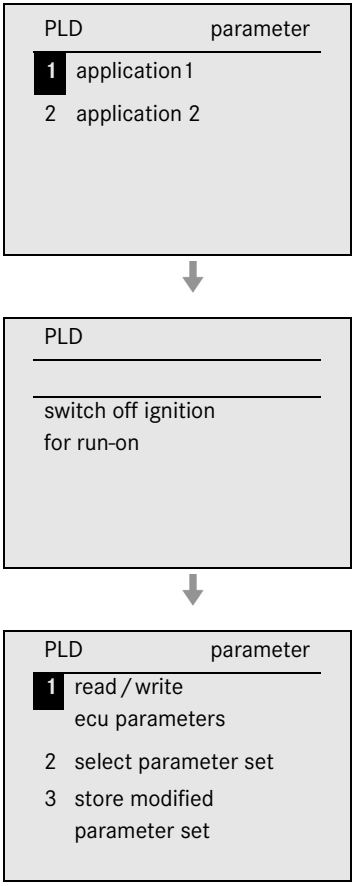


- Position the cursor on the desired application (e.g. "application 1").
- Press: F OK

The parameters of the selected control unit (PLD) are set to the values from the "application 1" parameter data set.



The parameter groups transferred are displayed in turn.



- After the process for setting parameters has been completed, the display jumps back to the selection menu. The selected control unit (PLD) has now been set to the values from the "application 1" parameter data set.
- In order to finish setting the parameters, press the

  button twice.
- Switch off the ignition for 15 seconds.

  A progress bar is displayed.
- After 15 seconds, switch the ignition back on.

  The modified parameters are stored permanently.

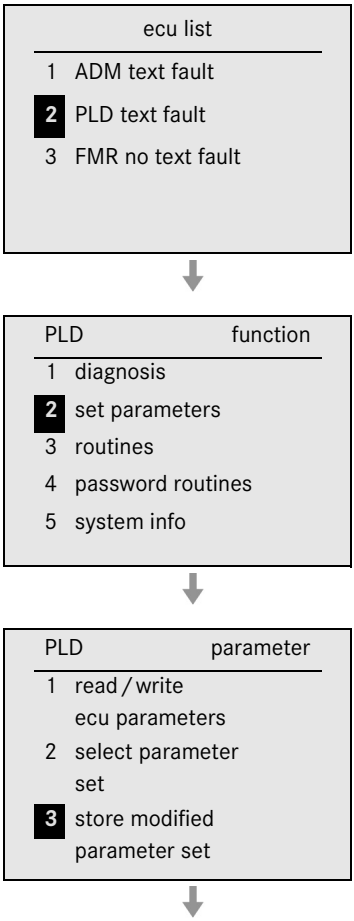
Communication with the control unit is restarted.

Storing the modified parameter set (from control unit to minidiag2)

You can save the parameter data from the control unit to minidiag2.

!

It is not permissible to set parameters while the engine is running.

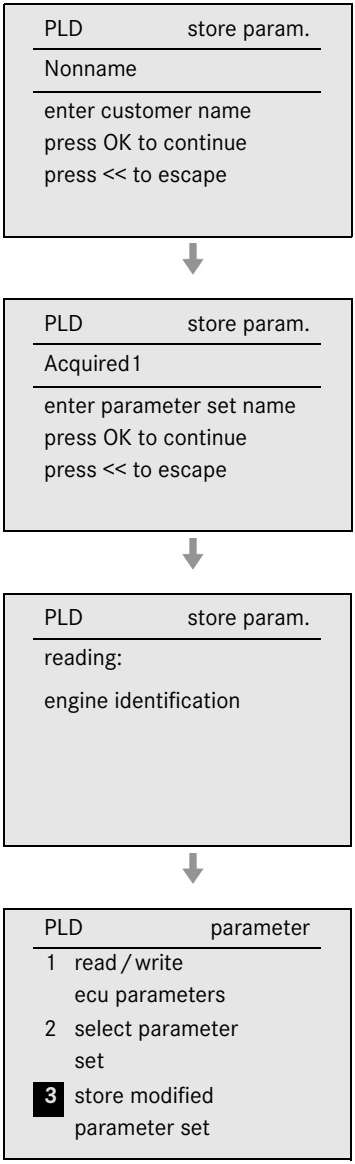


- ▶ Perform the automatic control unit detection (▷ page 28).
- ▶ Position the cursor on the desired control unit (e.g. PLD).
- ▶ Press: F OK

The functions of the selected control unit are displayed.

- ▶ Position the cursor on "set parameters".
- ▶ Press: F OK

- ▶ Position the cursor on "store modified parameter set".
- ▶ Press: F OK



- Enter the customer name or select a customer name (if available) or use an automatically generated name ("Noname").
- Press: F OK

- Enter the name of the parameter set or use an automatically generated name ("Acquired1").
- Press: F OK

Parameter groups are read out and displayed.

The parameter set has been read out from the selected control unit (PLD) and stored.

You can now store the modified parameter set from minidiag2 to PC (▷ page 75).

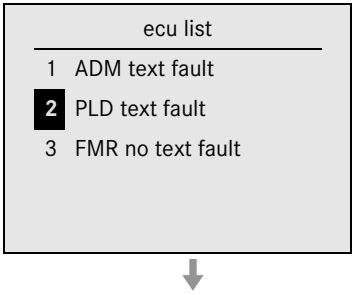
Converting the parameter set

When replacing hardware, e.g. PLD diagnosis version 5 with version 6, a parameter conversion is necessary.

▶ Perform the automatic control unit detection (▷ page 28).

It is not permissible to set parameters while the engine is running.

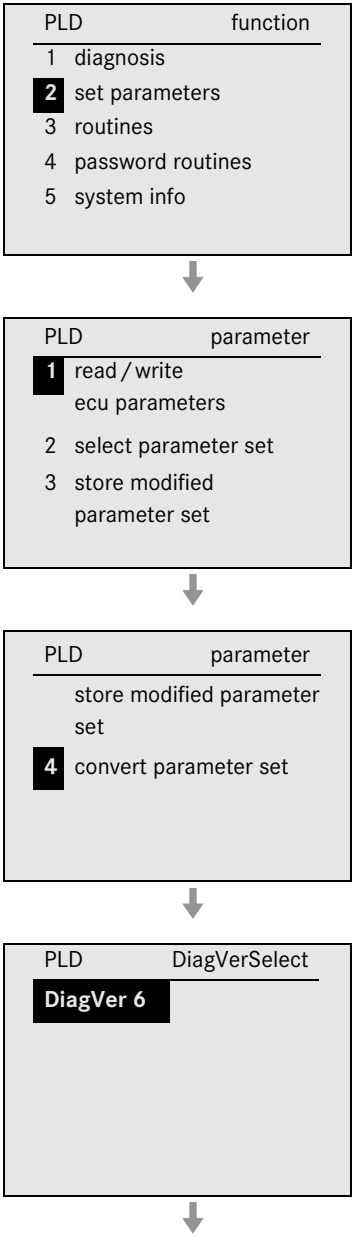
During the parameter set conversion, the engine number is written into the converted parameter set. You can therefore only use the parameter set for the same engine (vehicle).



▶ Position the cursor on the desired control unit (e.g. PLD).

▶ Press: F OK

The functions of the selected control unit are displayed.

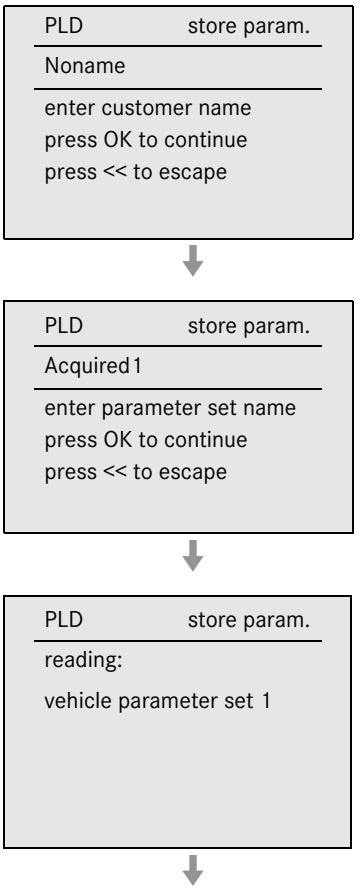


- Position the cursor on "set parameters".
- Press: F OK

- Press: K
  The display scrolls down.

- Position the cursor on "convert parameter set".
- Press: F OK

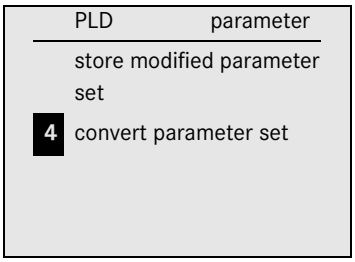
- Position the cursor on "DiagVer 6".
- Press: F OK



- Enter the customer name or select a customer name (if available) or use an automatically generated name ("Noname").
- Press: F OK

- Enter the name of the parameter set or use an automatically generated name ("Acquired1").
- Press: F OK

Parameter groups are read out and displayed.



The parameter set has been read out from the selected control unit (PLD), converted and stored.

You can now connect minidiag2 to PLD diagnosis version 6.

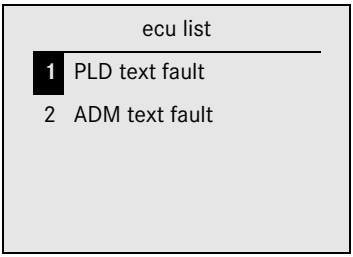
Then carry out the following steps:

- On the ADMx, first carry out the default routine (No. 02 or 25), the save the parameter set.
- Set the data set parameters (transfer parameter set to a control unit) (▷ page 41).
- Again, read out the parameter set via "store modified parameter set" (▷ page 44).

  The parameter sets which have been read out are complete and more suitable for a subsequent parameter set comparison or for archiving. The converted parameter sets contain only some assignments.
- Before overwriting the minidiag2, you must save the default parameter set which has been read out to a PC with the "store data from minidiag2 on PC" menu item (▷ page 75). Data may be deleted inadvertently.
- On the PC, compare the parameter set which has been read out for the new diagnostics version with the old parameter set (▷ page 69).

Showing analogue measurement values

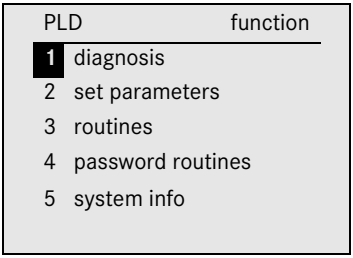
▶ Perform the automatic control unit detection (▷ page 28).



▶ Position the cursor on the desired control unit (e.g. PLD).

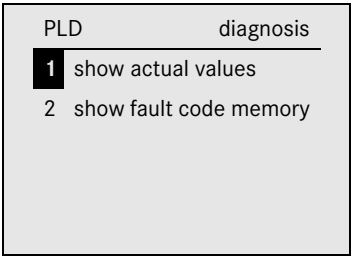
▶ Press: F OK

The functions of the selected control unit are displayed.



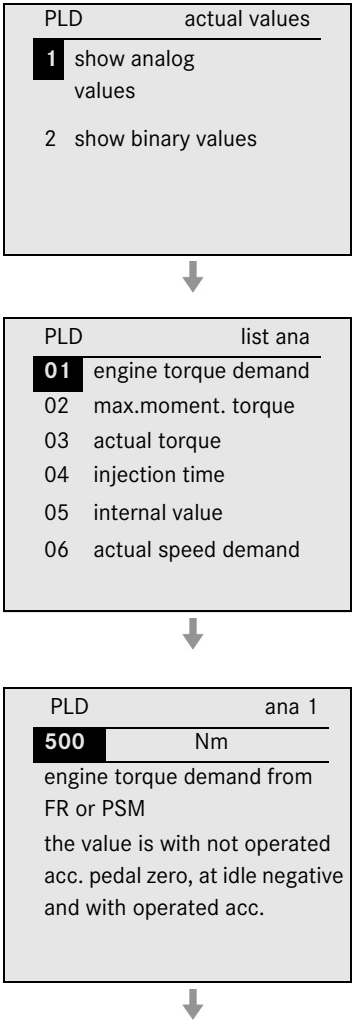
▶ Position the cursor on "diagnosis".

▶ Press: F OK



▶ Position the cursor on "show actual values".

▶ Press: F OK

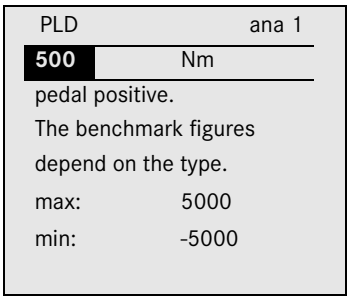


- Position the cursor on "show analog values".
- Press: F OK

- A list of the analogue measurement values is displayed.
- Position the cursor on the desired analogue measurement value (e.g. "01 engine torque demand").
- Press: F OK

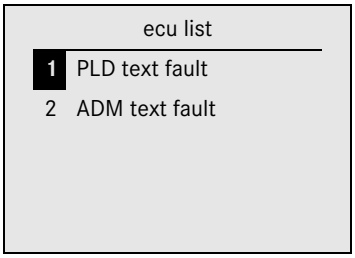
  The value of the selected analogue measurement value, its physical unit and an explanatory text are displayed.
- Press: K

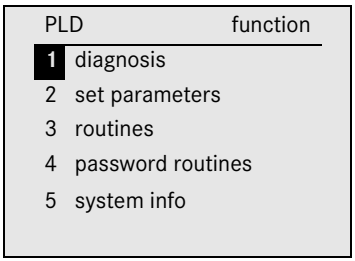
  Scroll down the display



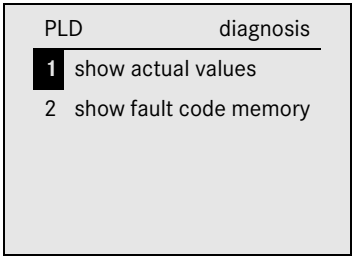
- Press: G ➡
  The next analogue measurement value is displayed.
- Press: E ⬅
  The previous analogue measurement value is displayed.

Showing binary measurement values

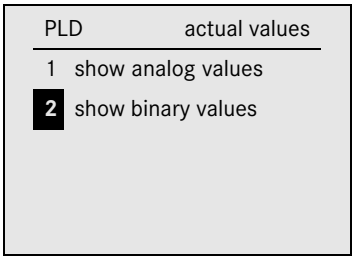




- Perform the automatic control unit detection (▷ page 28).
- Position the cursor on the desired control unit (e.g. PLD).
- Press: F OK
  The functions of the selected control unit are displayed.
- Position the cursor on "diagnosis".
- Press: F OK

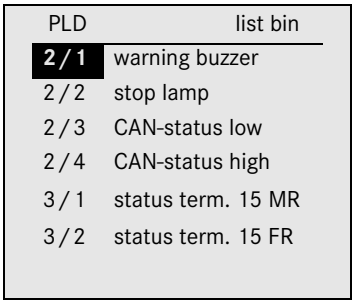


- Position the cursor on "show actual values".
- Press: OK



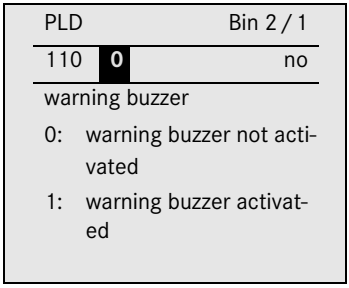
- Position the cursor on "show binaryt values".
- Press: OK

  The list of binary measurement values is displayed: e.g. 2 / 1 = binary measurement value 1 of group 2.



- Position the cursor on the desired binary measurement value (e.g. "2 / 1 warning buzzer").
- Press: OK

  The current status ("no") and the explanation (text below) of the binary measurement value are displayed. The cursor is on the selected binary measurement value.



- Press: G

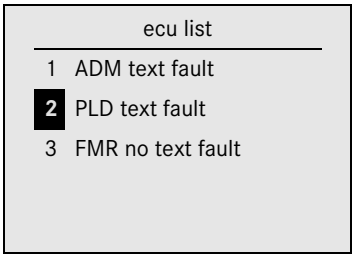
  The next binary measurement value is displayed.
- Press: E

  The previous binary measurement value is displayed.

Showing/deleting the fault code memory

Showing the fault code memory

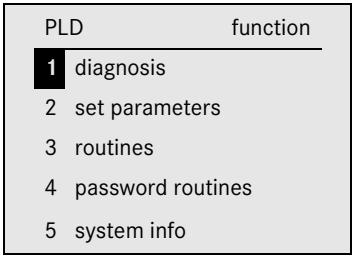
▶ Perform the automatic control unit detection (▷ page 28).



▶ Position the cursor on the desired control unit (e.g. PLD).

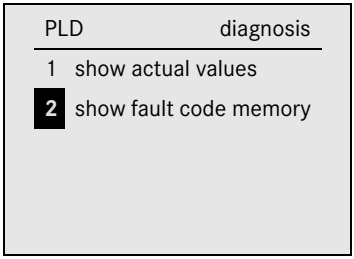
▶ Press: F OK

The functions of the selected control unit are displayed.



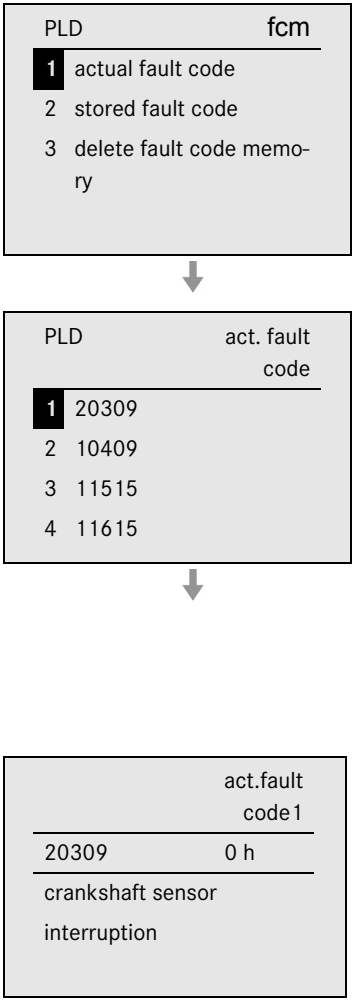
▶ Position the cursor on "diagnosis".

▶ Press: F OK



▶ Position the cursor on "show fault code memory".

▶ Press: F OK



actual fault code = currently valid faults (not yet remedied). These cannot be deleted.

stored fault code = faults which are no longer current (possibly already remedied). These can be deleted if necessary.

- ▶ Position the cursor on the desired error group (e.g. "current fault code").
- ▶ Press: F OK
  The fault codes of the selected error group are displayed.
- ▶ Position the cursor on the desired fault code (e.g. 20309).
- ▶ Press: F OK
  The selected fault code, its description (consisting of error name and explanation / remedies) as well as the status of the service counter are displayed.
- ▶ Press: G ➡
  The next fault code is displayed.
- ▶ Press: E ⬅
  The previous fault code is displayed.

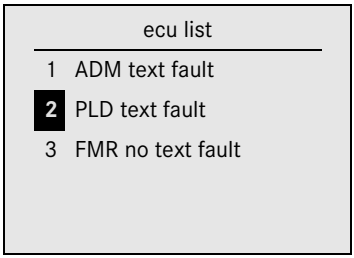
ℹ

The service counter indicates the number of operating hours that have passed since the last occurrence of the fault. The counter can count a maximum of 255 hours and stops once the maximum value has been reached.

Showing/deleting the fault code memory

Deleting the fault code memory

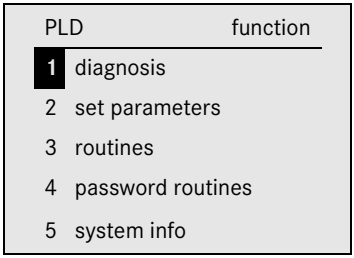
▶ Perform the automatic control unit detection (▷ page 28).



▶ Position the cursor on the desired control unit (e.g. PLD).

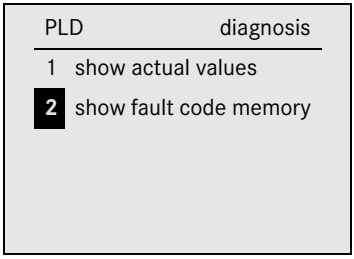
▶ Press: F OK

The functions of the selected control unit are displayed.



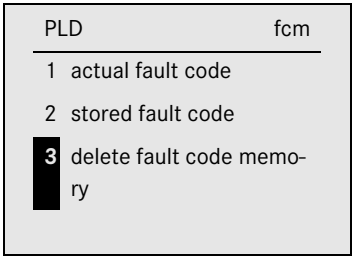
▶ Position the cursor on "diagnosis".

▶ Press: F OK



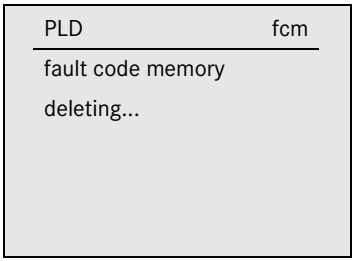
▶ Position the cursor on "show fault code memory".

▶ Press: F OK

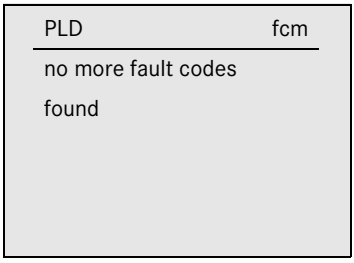


- Position the cursor on "delete fault code memory".
- Press: F OK

  The control unit fault code memory is deleted.



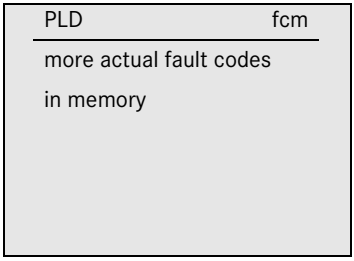
- Wait for the next display.



Depending on the status of the fault code memory, one of the following messages is shown in the display:

No current fault codes (faults which are yet to be remedied) have been found. The entire control unit fault code memory has been deleted.

or



Current fault codes (faults which are yet to be remedied) are present in the fault code memory.

Current faults (faults which are yet to be remedied) cannot be deleted.

Showing/deleting the fault code memory

After you have completed work on the fault code memory:

- Switch off the ignition for 15 seconds.
- After the 15 seconds, switch the ignition back on.

  The processed faults are removed permanently from the control unit.

5

Tasks of the minidiag2 Assistant

Installation

Creating / modifying / storing parameter sets

- Creating, comparing or modifying parameter sets for setting parameters of control units (▷ page 65).
- Transferring parameter sets and description files to the minidiag2 in order to properly set the parameters and correctly operate the control unit (▷ page 88).

The "minidiag2 Assistant" software is available via:

- Data carrier **(CD-ROM contained in scope of delivery)**
- Internet FTP server. Up-do-date minidiag2 software and information can be found under the following link: **www.minidiag.de**

▶ Enter your user name and password:

User name: md2 service
Password: !4Ab?X53!R

You must install the "minidiag2 Assistant" software on your PC in order to use it.

The minimum system requirement is Microsoft® Windows™ 95 or later.

FTP server

▶ Under download, click on "World Wide Release".

▶ Save the file "WorldWideRelease.zip" from the FTP server in a folder on the hard drive.

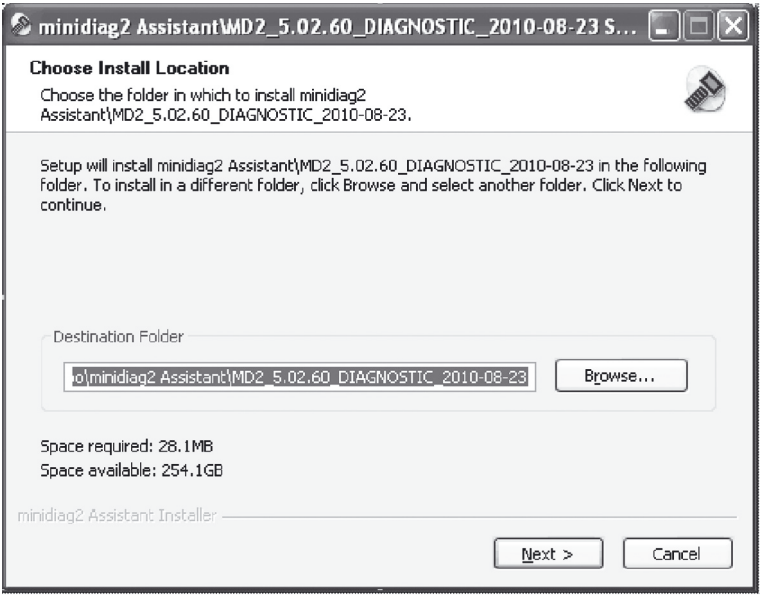
CD-ROM

▶ Copy the contents of the CD-ROM onto the hard drive and carry out the following instructions.

Installation

▶ Extract the file and start the "MD2_x.xx.xx_DIAGNOSTIC_20xx-xx-xx.exe" application.

The following window opens:



Select: target drive and directory

▶ Click on the "Browse" button to select the target drive or directory for installation (default: "C:\ Documents and Settings***USERNAME***\ minidiag2 Assistant\MD2_x.xx.xx_ DIAGNOSTIC_20xx-xx-xx").

▶ Click on "Next" and follow the additional installation instructions.

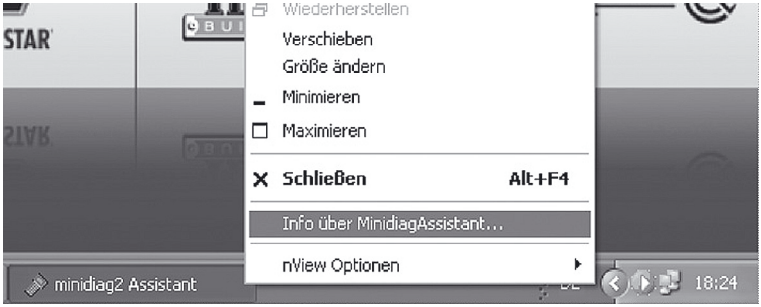
Where is my minidiag2 Assistant installed?

- ▶ Click on the small minidiag2 symbol in front of the minidiag2 Assistant. The context menu opens.
- ▶ Click on "MinidiagAssistant info...".

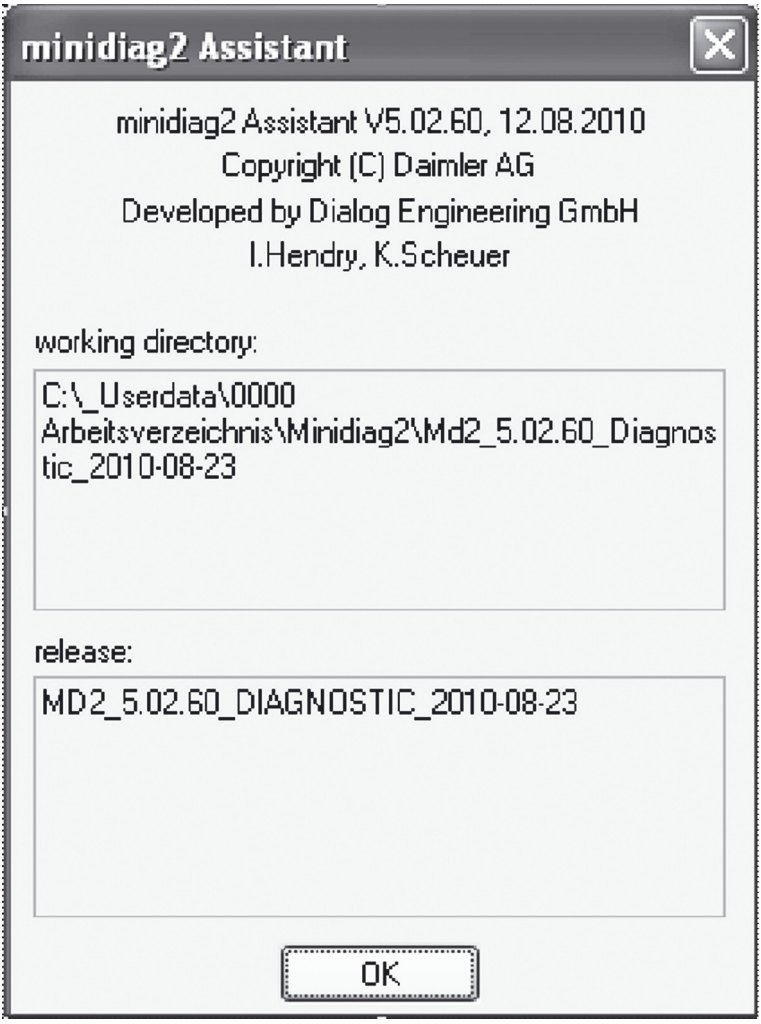
or

- ▶ Right click on "minidiag2 Assistant" in the taskbar.

  The context menu opens.
- ▶ Click on "MinidiagAssistant info...".



The following window opens:



You can see the installation path under "working directory".

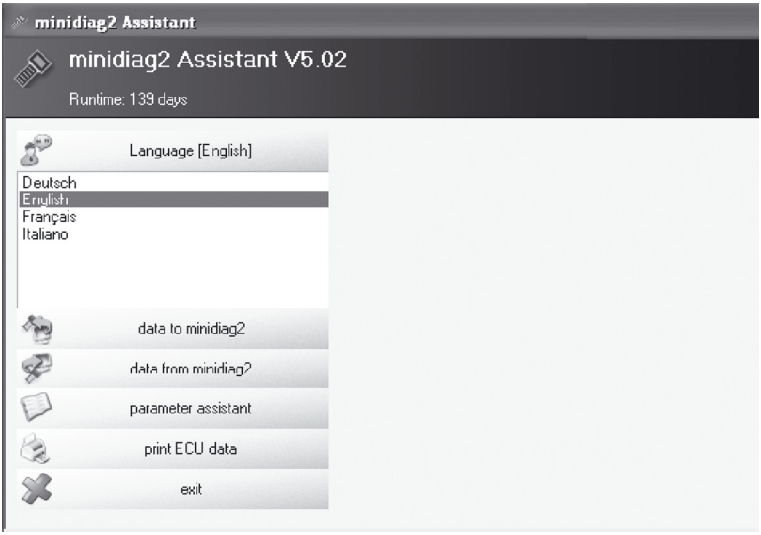
You can see the minidiag2 version in use under "release".

Creating a parameter set (B and C version)

First, read out a parameter set from the vehicle and process it using the PC.
See "**Storing a modified parameter set (control unit minidiag2)**" (▷ page 44).

▶ Start the minidiag2 Assistant using "Minidiag2Assistant.exe" via the desktop shortcut or from the "MD2_..." directory on the hard drive.

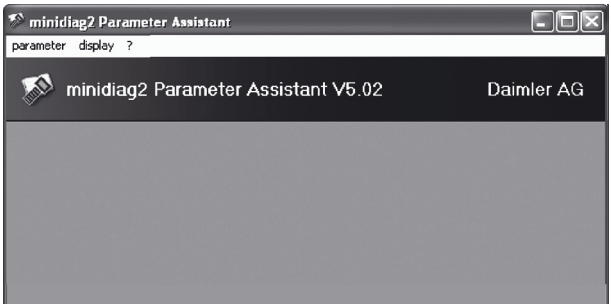
The start window opens.



▶ Click on "Parameter assistant".

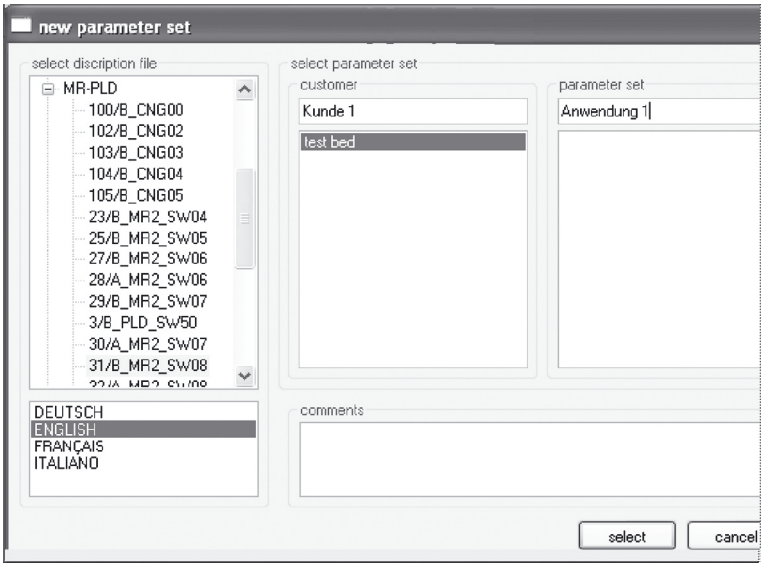
The "Parameter Assistant" window opens.

Creating/modifying/storing parameter sets



▶ Click on the "New" menu item in the "Parameter set" menu.

The "New parameter set" window opens.



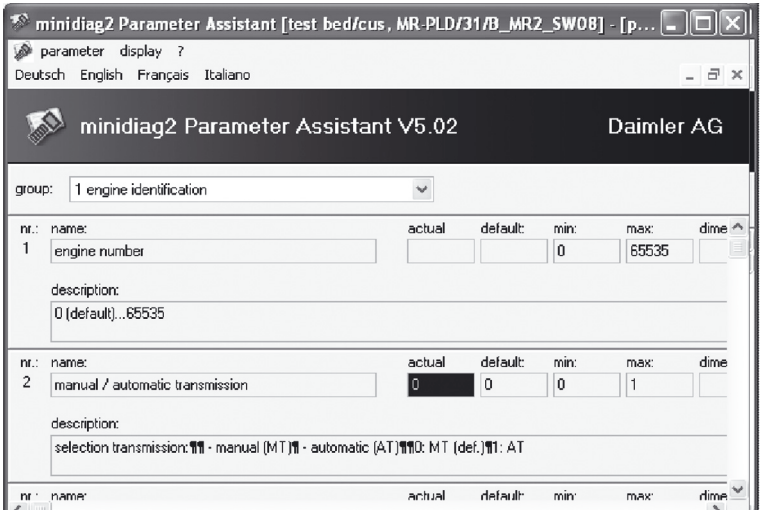
▶ In the "SELECT TEXT DATA" field, click on the control unit for which you wish to create a parameter set.
In the example, MR2-B diagnosis version 31 and software V08 have been selected.

Creating/modifying/storing parameter sets

- Enter the customer and parameter set name in the "PARAMETER SET SELECTION" field.
- You can supply additional information for the user in the COMMENT FIELD.
- In order to create a new parameter set, click on "Select".

  The "Parameter data" window opens.

> **i**
>
> You can find out how to read out the control unit version using minidiag2 on (▷ page 32).



- Click on the parameter group that is to be displayed or modified.
- Enter the desired value for the relevant parameter in the "Actual value" input field.

> **i**
>
> Grey input fields are deactivated.

actual	=	Set value of the parameter
default	=	Preset or basic value of the parameter (cannot be modified)
min	=	Minimum value of the parameter (cannot be modified)
max	=	Maximum value of the parameter (cannot be modified)
unit	=	Unit of the parameter (cannot be modified)

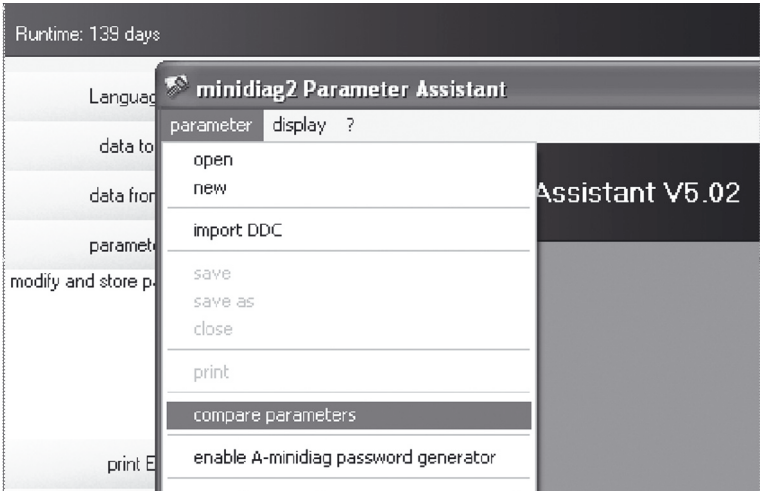
The language can be changed at any time.

▶ Click on "Store" in the "Parameter set" menu to store the set parameter set.

Comparing a parameter set

- Start the minidiag2 Assistant using the "Minidiag2Assistant.exe" desktop shortcut or from the "MD2_..." directory on the hard drive as in "Creating a parameter set (B and C version)" (▷ page 65).
- Click on "Parameter assistant".

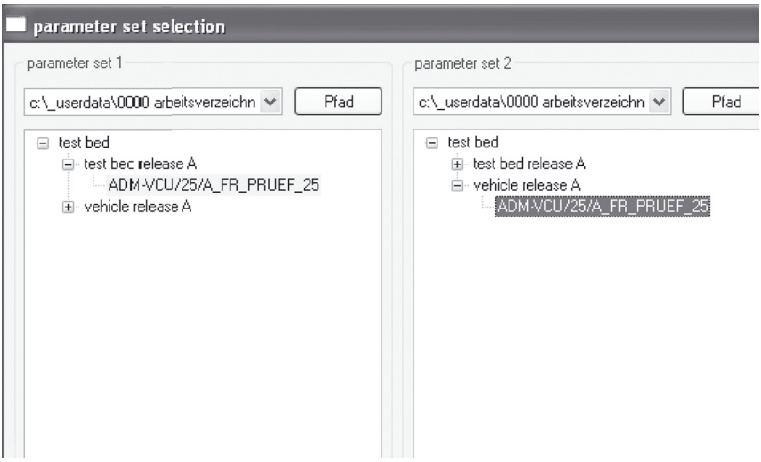
  The "Parameter assistant" window opens.
- Click on the menu point "Compare parameter set" under parameter set.



The "Parameter set selection" window opens.

- Make a your selection as shown in the following example.

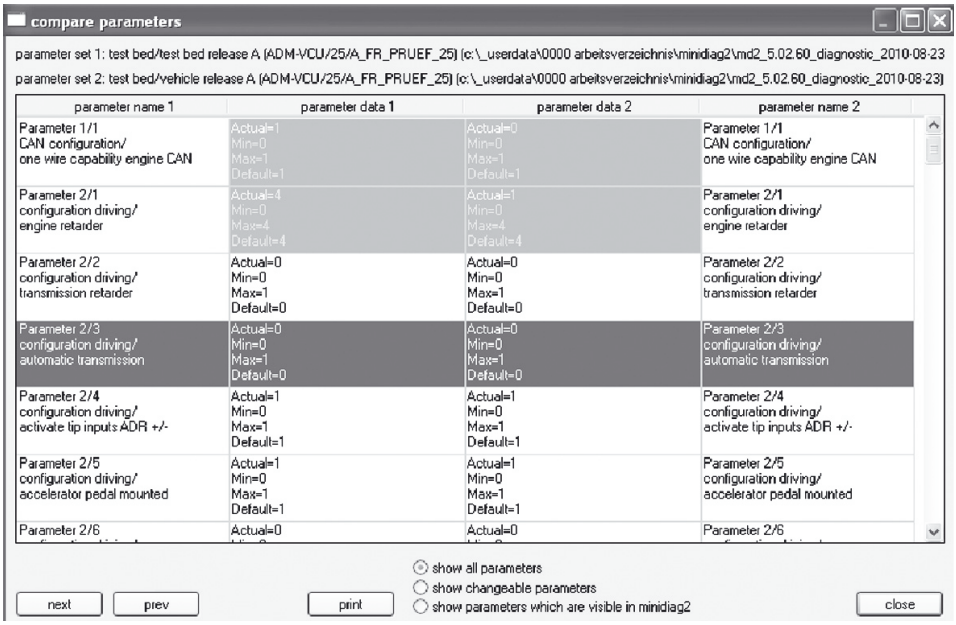
Creating/ modifying/ storing parameter sets



The path can be changed at any time. As a requirement, the parameter sets to be compared must be located in a main directory of the appropriate minidiag2 version.

▶ Click on "OK".

The "Parameter set comparison" window opens.



Make the appropriate settings, e.g. to display only parameters which can be modified. Next, click on "Next / Previous" to go through the differences the differences until the "No more differences" message appears. If you wish to print the data, click on "Print". End the comparison with "Close".

Compare your customer parameter set with a default parameter set to see the difference. This is suitable for ADMx control units, for example, which contain a default routine and is advisable due to the number of parameters.

Before creating a default parameter set in ADMx, you must make sure that you have a relevant customer parameter set as back-up.

- ▶ Set the ADMx with routine 2 or 25 to default.
- ▶ Store these default parameter sets using "Store changed parameter sets" in minidiag2 (▷ page 44).
- ▶ Load the relevant customer parameter set to the ADMx (▷ page 41) once again.
- ▶ Save the read-out default parameter set on the PC with "Store data from minidiag2 to PC" (▷ page 75) before overwriting the minidiag2. Data may be deleted inadvertently.
- ▶ Compare the customer parameter set with the default as described above.

Modifying a parameter set

- ▶ Start the minidiag2 Assistant using the "Minidiag2Assistant.exe" desktop shortcut or from the "MD2_..." directory on the hard drive as in "Creating a parameter set (B and C version)" (▷ page 65).
- ▶ Click on "Parameter assistant".

  The "Parameter assistant" window opens.
- ▶ Click on "Open" under "Parameter set".

  The "Select parameters" window opens

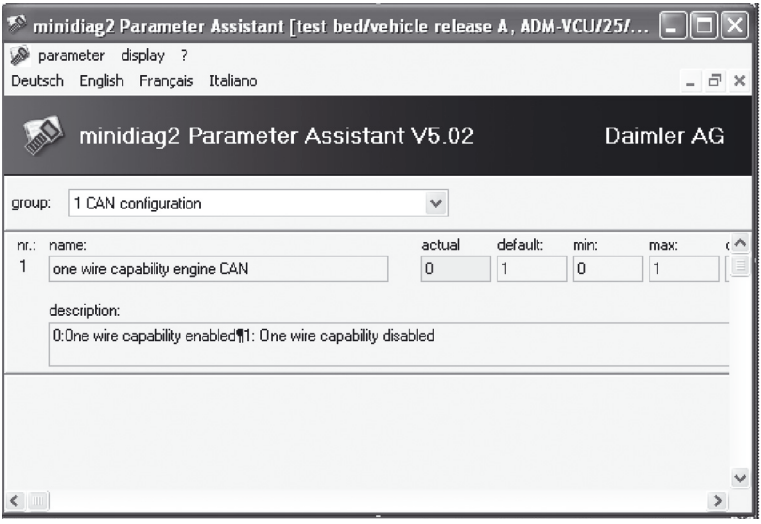
▶ Select the relevant parameter set in the desired language (can be modified at any time) and confirm the selection with the menu point "Open".

Creating/ modifying/ storing parameter sets

Click on "Delete parameter set" to delete the selected parameter set.

You will then not be able to use this parameter set again.

The parameter set can now be modified as with "Creating a parameter set".



Storing parameters from minidiag2 to PC

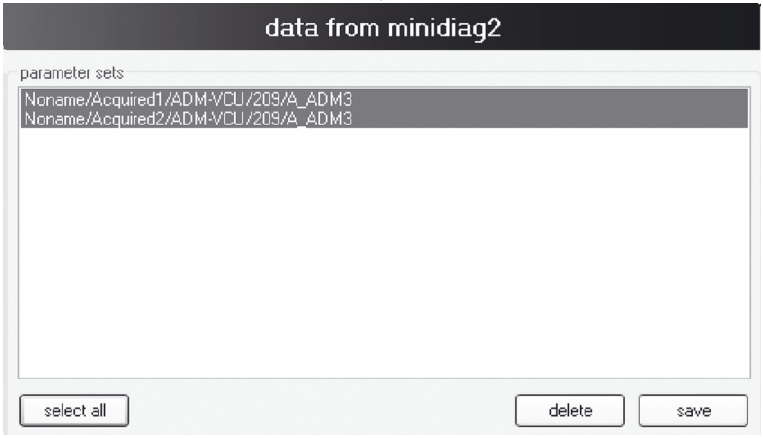
▶ Start the minidiag2 Assistant using the "Minidiag2Assistant.exe" desktop shortcut or from the "MD2_..." directory on the hard drive as in "Creating a parameter set (B and C version)" (▷ page 65).

The start window opens.

▶ Click on the "Data from minidiag2" button.

Part 1: Parameter sets

▶ Click on the button "Mark all".



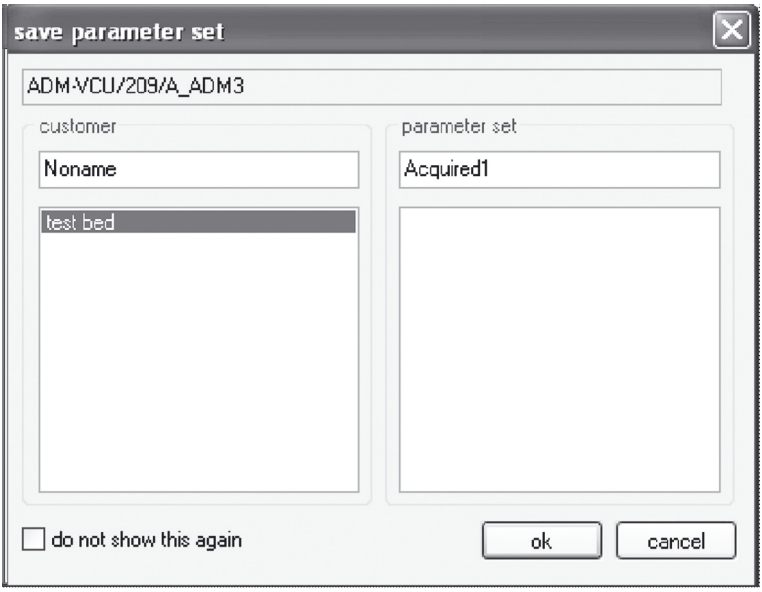
Click on "Delete" to delete the selected parameter set.

You will then not be able to save this parameter set again.

▶ Click on the "Store" button.

The following window opens:

Creating/ modifying/ storing parameter sets



▶ Check or modify the designation and click on "OK".

The "do not show this again" setting is recommended for many parameter sets.

The parameter sets are saved on the hard drive in the installation directory of the minidiag2 version in the "*.CUS" folder.

Part 2: Parameter sets

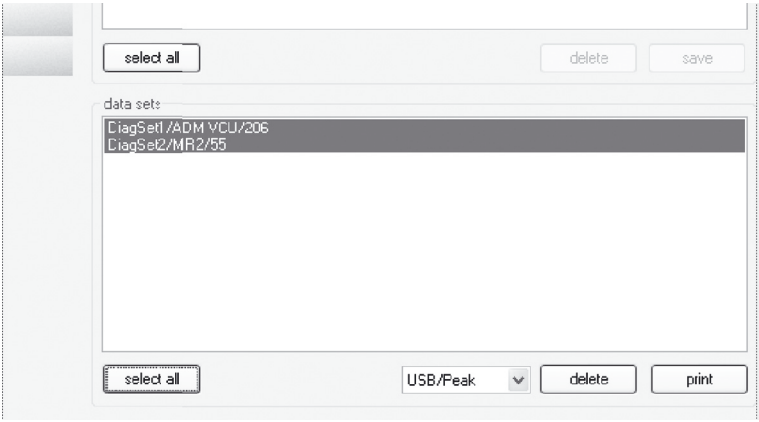
Data records are data which is stored with the memory "F3" (bottom right of the display) in the relevant control unit menu using the minidiag2.

The following table shows the menus in the control unit, e.g. MR2-B, which can be used with the memory function "F3". These must mainly be carried out manually.

diagnosis (manual)	=	To record actual values, fault codes, system data from control unit and minidiag2 data
system info (manual)	=	To record actual values, fault codes, system data from control unit and minidiag2 data
EHM (manual)	=	To save the Engine History Map (EHM)
SCR initial start-up (automatic)	=	To save measured values (actual values, fault codes, system date) of SCR initial start-up
Flashing (manual)	=	To save flash data, including engine operating hours
Vehicle documentation system (manual)	=	To save VDS data

Creating/ modifying/ storing parameter sets

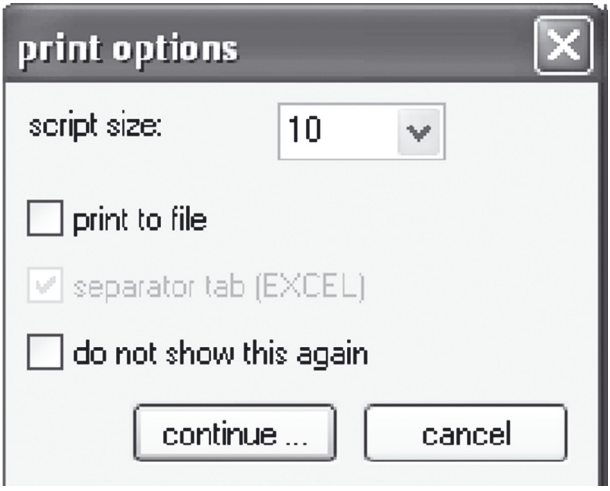
▶ Click on the button "Mark all".



▶ Click on the "Print" button.

Click on "Delete" to delete the selected data set. Be aware that you will no longer be able to save or print this data set.

The following window opens:

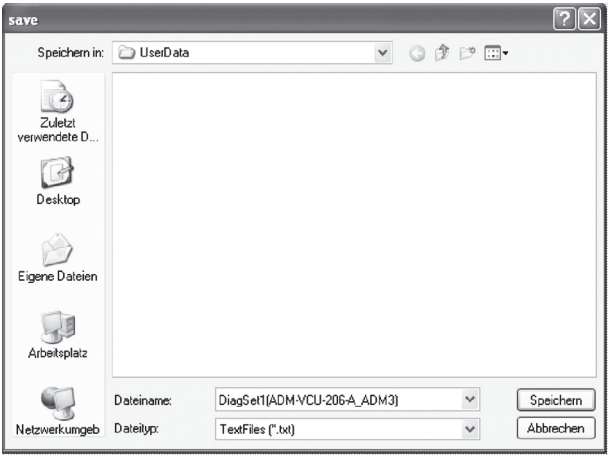


Creating/ modifying/ storing parameter sets

▶ Carry out the appropriate settings and click on the "Continue" button.

The "do not show this again" setting is recommended for many parameter sets.

The following window opens:



▶ Click on the "Save" button.

The data sets are saved in the installation directory of the minidiag2 version in the **"User data"** folder.

Creating, modifying, saving as, using an A-parameter set (minidiag2 A version)

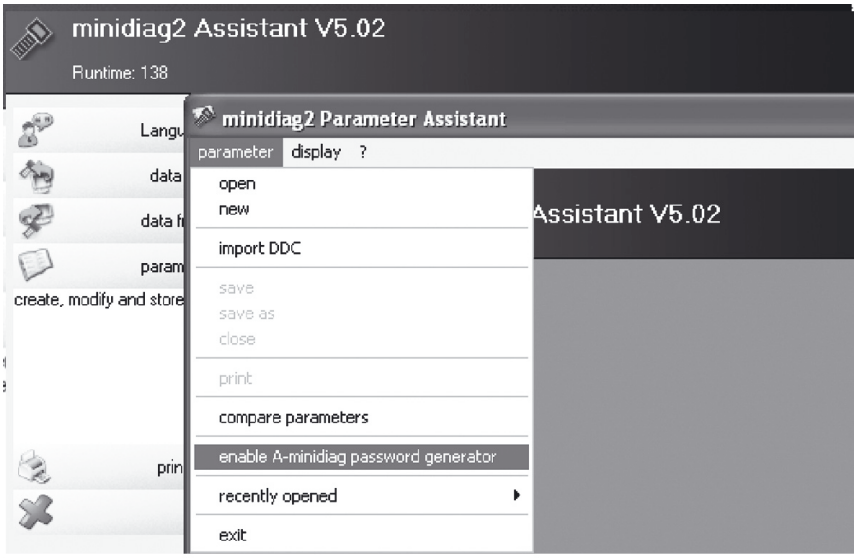
A-parameter sets can be used with an A version of minidiag2 after separate activation. Activation of A-parameter sets must be initiated / authorised by the respective OEM.

A-parameter sets can also be used with a minidiag2 B or C version, however, B and C parameter sets may not be used with a minidiag2 A version.

▶ Start the minidiag2 Assistant using the "Minidiag2Assistant.exe" desktop shortcut or from the "MD2_..." directory on the hard drive as in "Creating a parameter set (B and C version)" (▷ page 65).

▶ Click on "Parameter Assistant".

The "Parameter Assistant" window opens.



▶ In the "Parameter set" menu, click the "Activate minidiag2 A version" menu point.

The "Password entry" window opens.

Activation of A-parameter sets may only be carried out by OEMs who must create an A-parameter set for end customers.

For assistance, go to minidiag2 support at minidiag@daimler.com.

After entering the required password and successful activation, a new menu point is available in the parameter assistant.

▶ In the "Parameter set" menu, click the "Enter password minidiag2 A version" menu point.

The "Parameter password" window opens.

▶ Enter the serial number of the minidiag2 A version under "MD Serial number".

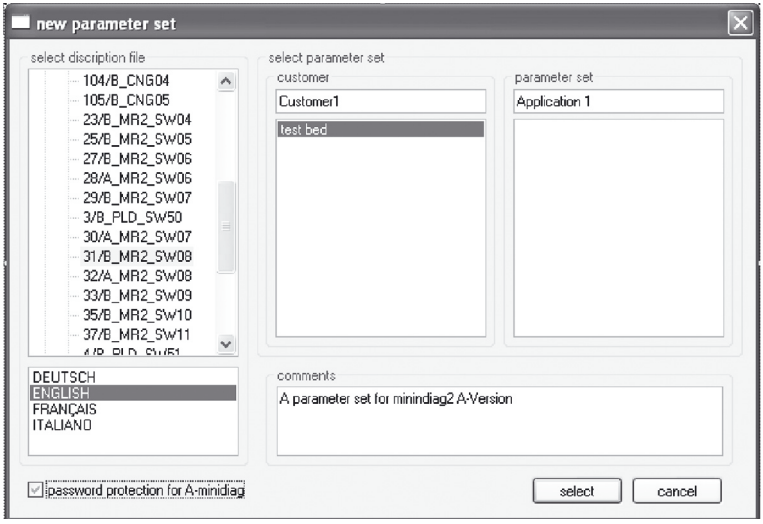
The password created can only be used with the corresponding serial number of the minidiag2 A version.

The following illustrations depict only the differences regarding the creation and saving of A-parameter sets. Please observe the notes on the following page.

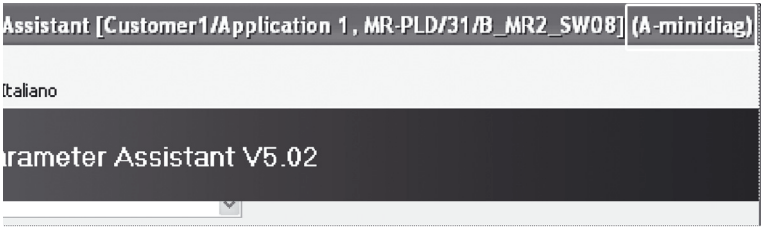
Expansion with the box "Password-protected minidiag2 A version" under "New parameter set" or "Password-protected (A0001530918 minidiag)" under "Save parameter set as", is only available after successful activation.

New parameter set (A version)

The box "Password-protected minidiag2 A version" must be ticked for A-parameter sets.



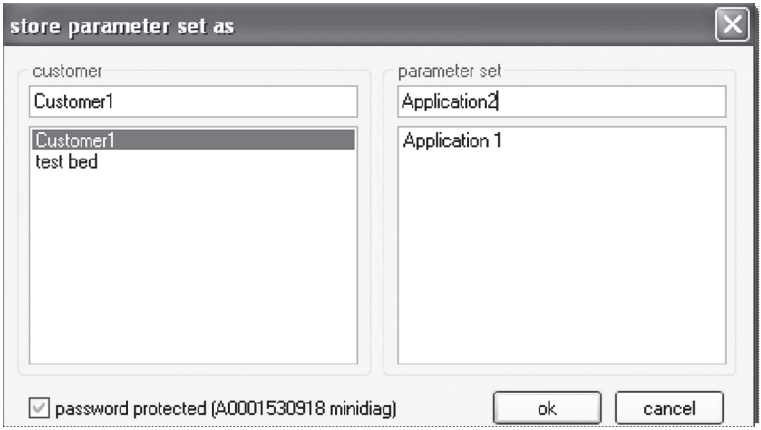
A-parameter sets contain an additional note "(A minidiag)" in the blue bar. These can be modified and saved, as before.



Creating/ modifying/ storing parameter sets

Saving A-parameter sets as (A version)

In order to save a parameter set as the A-parameter set, the "Password-protected (A0001530918 minidiag)" box must be ticked.

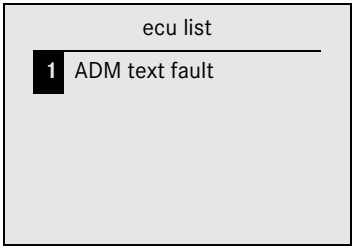


The following pages explain the use of A-parameter sets by means of minidiag2 display illustrations.

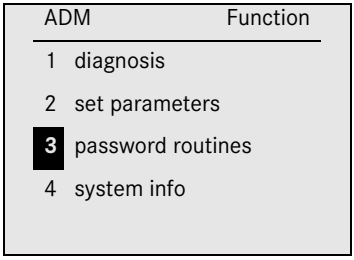
The "Password routines" menu contains the A-parameter sets, provided they have previously been loaded via "Expanded transfer". It is not visible if no A-parameter sets are present on the minidiag2.

Creating / modifying / storing parameter sets

Using A-parameter sets in the minidiag2 (A version)

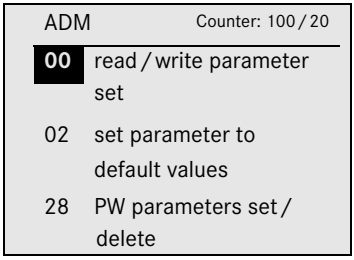


- ▶ Perform the automatic control unit detection (▷ page 28).
- ▶ Position the cursor on the vehicle control unit (e.g. ADMx).
- ▶ Press: OK

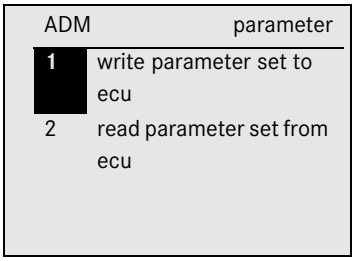


- ▶ Position the cursor on "Password routines".

  Press: OK

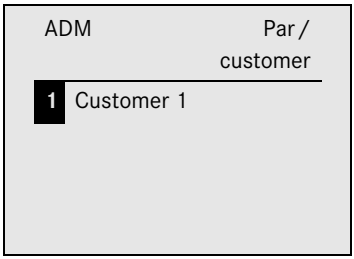


- ▶ Position the cursor on "read / write parameter set".
- ▶ Press: OK



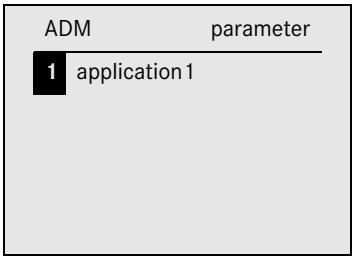
- ▶ Position the cursor on "write parameter set to ecu".
- ▶ Press: OK

Creating/ modifying/ storing parameter sets



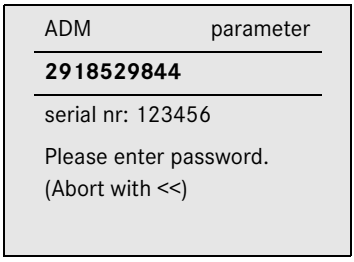
▶ Position the cursor on the desired customer (e.g. "Customer 1").1

▶ Press: F OK



▶ Position the cursor on the desired application (e.g. "application 1").

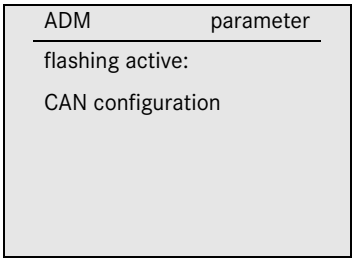
▶ Press: F OK



Entering the password

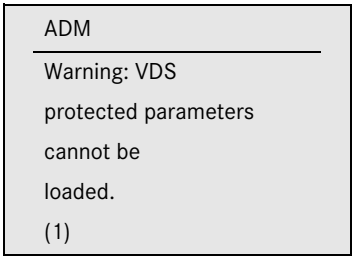
▶ Generate and enter your password based on the serial number of the minidiag2 A version as shown in the example.

▶ Press: F OK

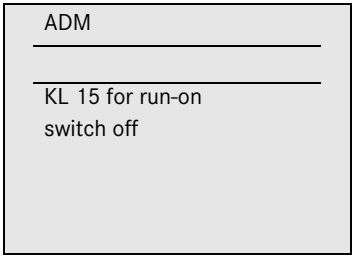


The selected control unit (ADMx) is parameterised according to the A-parameter set "application1".

The parameter groups transferred are displayed in turn.



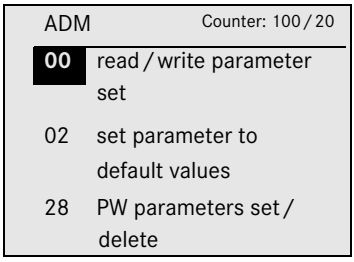
- ▶ On ADM3, from software 703 on, the following messages appear after transmission of parameter sets. This means that parameter 14 / 32 has not been modified because the VDS is protected. As a rule, this parameter does not need to be modified.
- ▶ Press: F OK



- ▶ Switch off the ignition for 15 seconds.

  A progress bar is displayed.
- ▶ After 15 seconds, switch the ignition back on.

  The modified parameters are stored permanently.



- ▶ Communication with the control unit is re-initiated and the Password routine menu is displayed again.
- ▶ Press: C «

  You switch to the main menu.

!

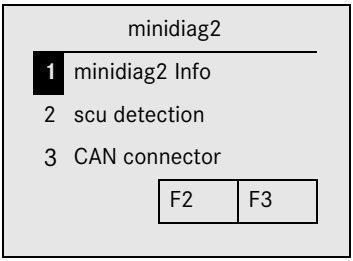
"Read parameter set from ecu" is similar

Transferring data to the minidiag2

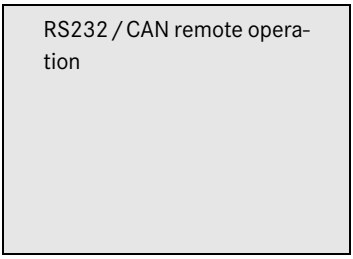
▶ Connect minidiag2 to the PC (▷ page 19).

▶ Connect the power supply.

The following three minidiag2 display statuses are possible:

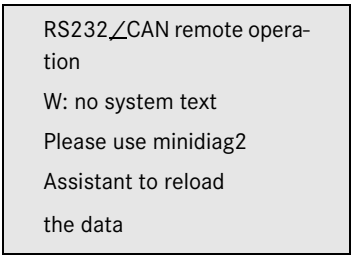


The main menu is displayed.



The communication mode is automatically started.

or



The communication mode is automatically started. The previous load action was not completed.

This message also appears temporarily when updating an old software version to the current version.

Do not interrupt the update process.

or

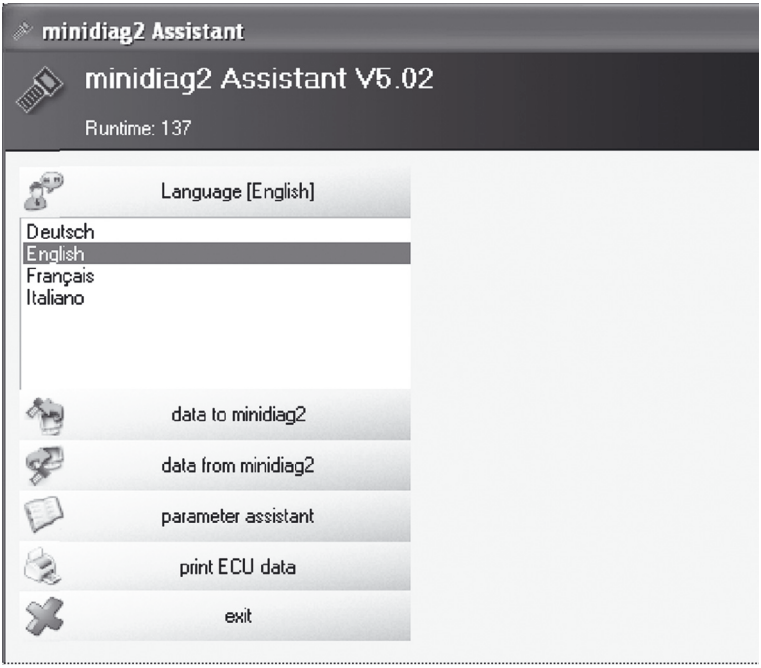
An empty black display is shown. The operating system has not loaded completely and must therefore be transferred again.

This process may take some time.

First, connect the minidiag2 to the PC. Start the minidiag2 Assistant only after connection. This process is only necessary in order to detect the USB / Peak for the CAN transfer between the PC and minidiag2.

▶ Start the minidiag2 Assistant with the "MinidiagAssistant.EXE" file in the "MD2_..." directory on the PC, as in "Creating parameter sets (B and C version) (▷ page 65).

The start window opens.



Start window

▶ Click on the "Data to mindiag2" button.

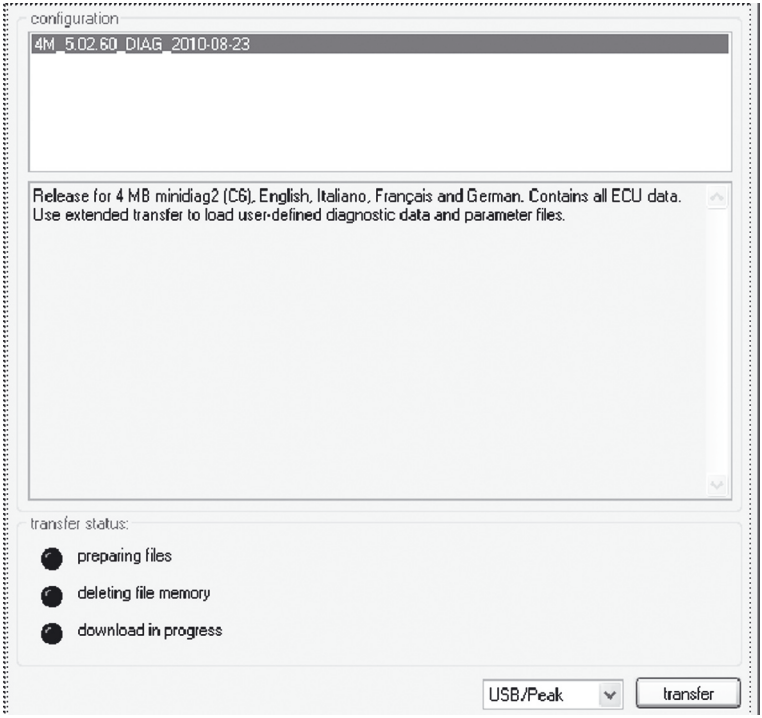
The following window opens (next page).

There are two possibilities to transfer data.

- Via "Transfer", as in the following illustration

  or

- via the "Advanced" function (explained later in "Automatic transfer").



Automatic transfer illustration

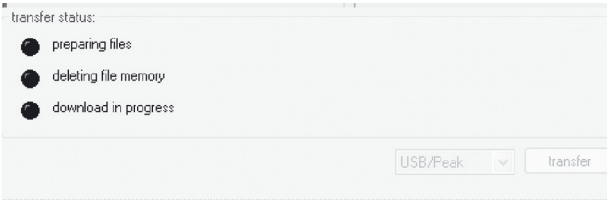
▶ Select the COM port appropriate for communication or the "USB / Peak" which the minidiag2 is connected to.

When using "USB / Peak", point "3 CAN connection" must additionally be selected if the serial RS232 COM port is not simultaneously connected.

▶ Click on "Transfer", when the minidiag2 is found.

The transfer status shows the individual steps.

Creating/ modifying/ storing parameter sets



The data is verified and updated, if necessary.

If temporary data is still on the minidiag2, e.g. saved parameter sets, F3 data or SCR start-up records, the following message appears: select "Cancel" if you need the data and have not yet saved it.

▶ Click "OK".

The entire data memory of the minidiag2 is deleted and parameter sets, including description date, are transferred to the minidiag2.

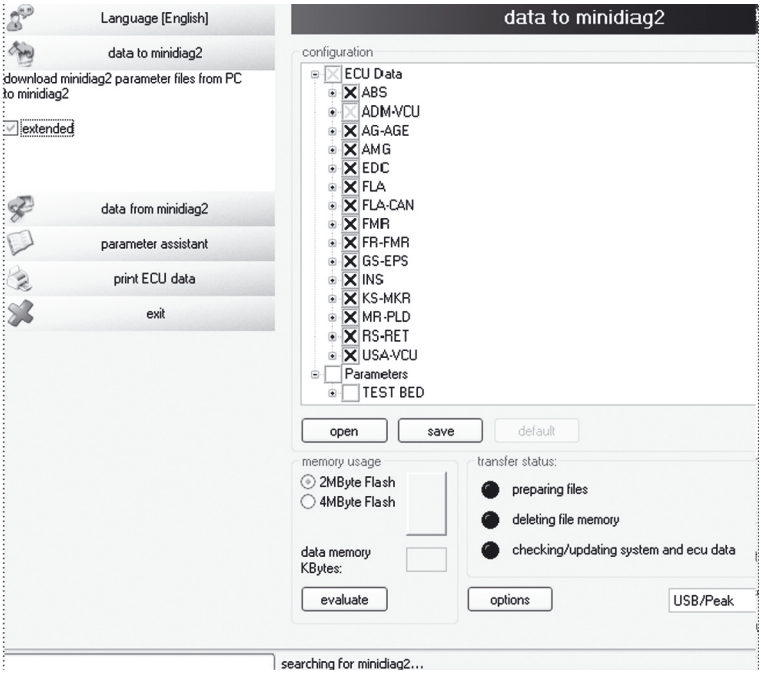
Once the data transfer has been successfully completed, the following window opens:

▶ Click "OK".

The minidiag2 display shows the main menu and is ready for further use.

Creating / modifying / storing parameter sets

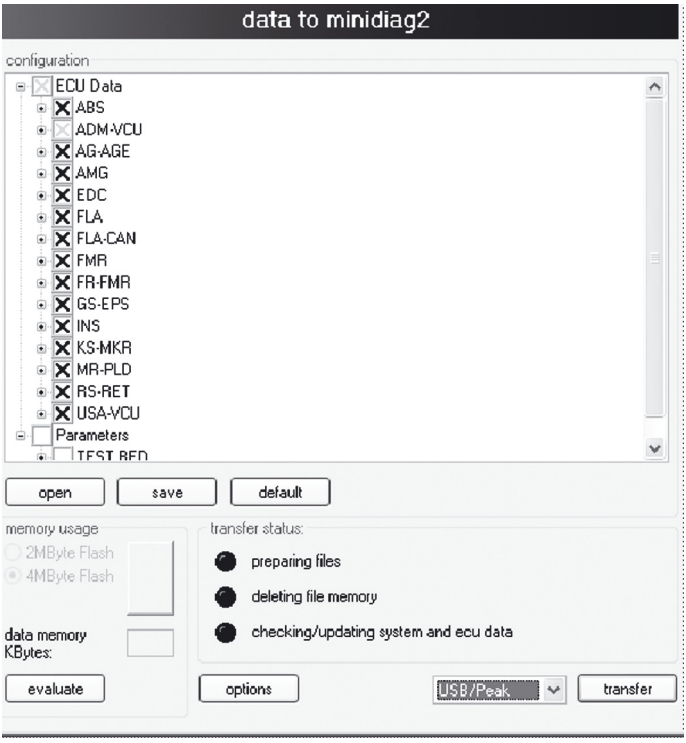
The second transfer possibility, using the "Advanced" function, allows you to create configurations (parameter sets and control unit data), to save or to open them, in order to transfer them to the minidiag2.



Advanced transfer

- In "Advanced transfer", click first on "Default" after the minidiag2 has been found to load the presettings. This comprises 90 – 93% of the data. More is not recommended, as additional storage space is needed for parameter sets and F3 data or for SCR start-up.

Creating/ modifying/ storing parameter sets

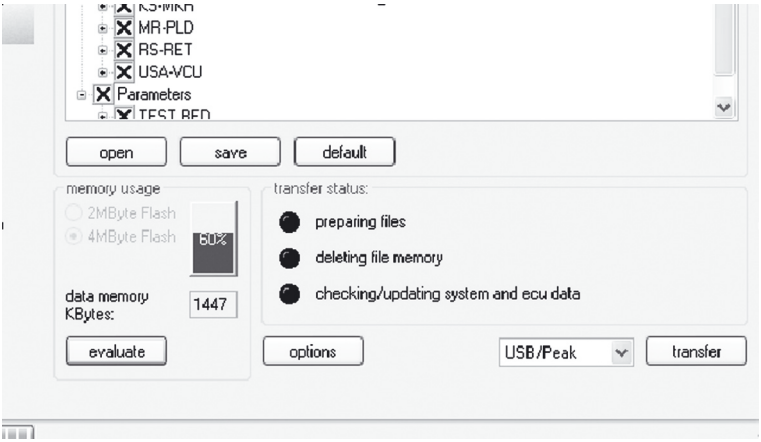


The software detects the minidiag2 hardware automatically and displays the connected version under "Storage used" ("C5 with 2MByte Flash" hardware, in this example).

Twice as much storage space is available with C6 hardware and up.

Create your own configuration and click on "Evaluate".

When over 93% of storage space is used, reduce the volume accordingly. It is recommended to delete unused control unit data (ECU data).



If parameter sets (parameters) are shown in red following "Evaluate", it may be due to one or both of the following reasons:

- control unit data (ECU data) relevant to the parameter set has not been selected.
- you are trying to load parameter sets to an A version which were created solely for a B or C version of minidiag2. This is not possible.

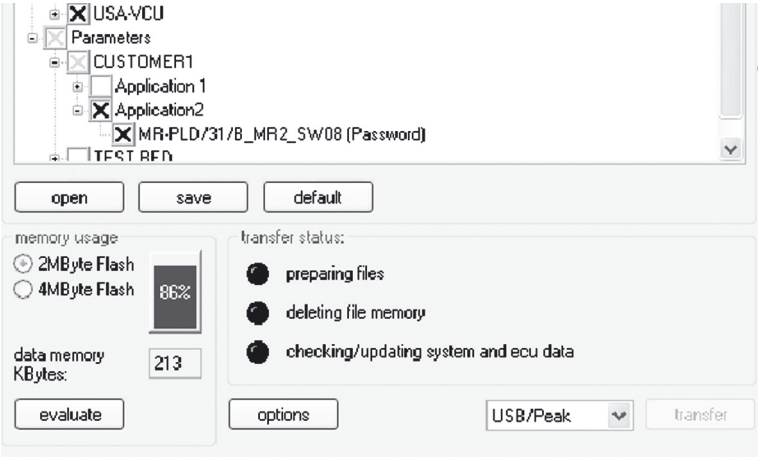
Parameter sets in red will not be transferred to the minidiag2.

Creating/ modifying/ storing parameter sets

Please observe the following notes in order to load and use parameter sets on an A version of minidiag2.

It is possible to set so-called A-parameter sets and an A version of minidiag2 following separate activation. These have the entry "Password" in brackets. Activation of A-parameter sets must be initiated by the respective OEM. See "Creating, modifying, saving as, using an A-parameter set (minidiag2 A version)" (▷ page 80).

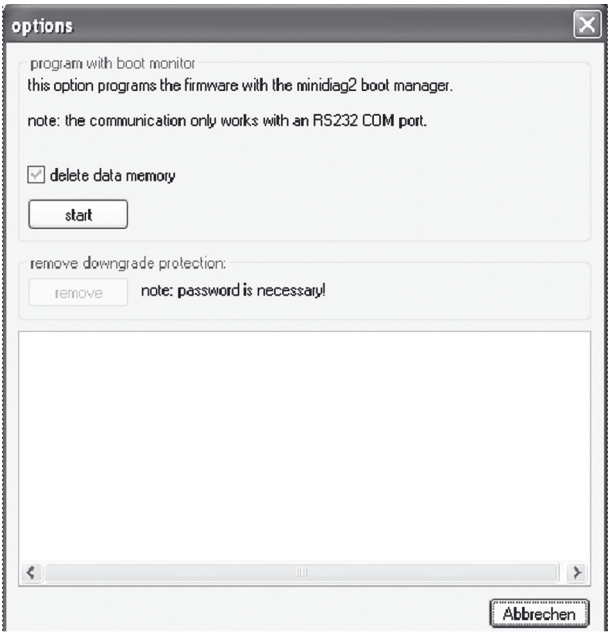
The following picture shows a connected minidiag2 A version and a relevant A-parameter set with the additional "(Password)". The parameter set shown in the example will be transferred. The parameter sets shown in red will not be transferred, as they are only intended for a B or C version.



▶ Click on "Transfer", when all data has been correctly compiled.

Programming with boot monitor / deactivating the downgrade protection

In an emergency, you can restore your minidiag2 or re-activate a downgrade lock.



When using "Programming with boot monitor", communication must take place via the RS232 (COM1, 2, ...) serial interface.

Recovery (programming with boot monitor via serial interface RS232) is only necessary when transfers are no longer possible. This is rarely the case, as transfers, in most cases, take place automatically via normal transfers using the boot monitor with the firmware being newly loaded. When connected, always wait at least 20 seconds before using the boot monitor.

If you must recover the minidiag2 again in an emergency, decide whether parameter sets or F3 data should be kept.

- If yes, remove the tick next to "delete data memory".
- Click on "Start" and follow the subsequent instructions.
- Wait 20 seconds after disconnecting and reconnecting the 25-pin minidiag2 plug connector.

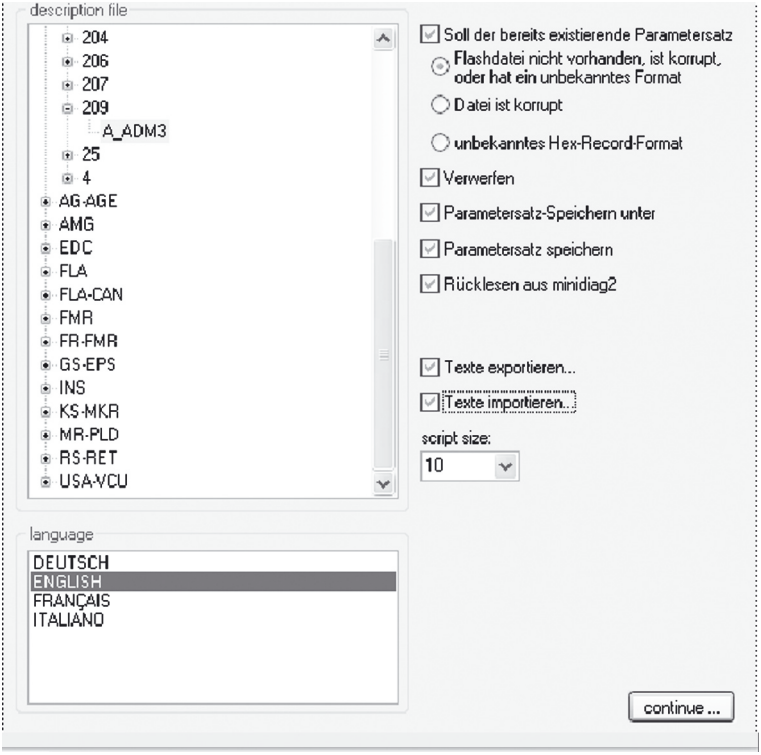
The downgrade lock is for your own protection and is only activated for development purposes.

"Deactivate downgrade protection" also allows communication vie the USB / Peak. In order to carry out these functions, the connection to the minidiag2 must be active (minidiag2 detected).

- Click "Cancel" to return to the advanced transfer.

Printing control unit data

- ▶ Click on "Print ecu data" and make the corresponding settings.
- ▶ Then click "Continue"...

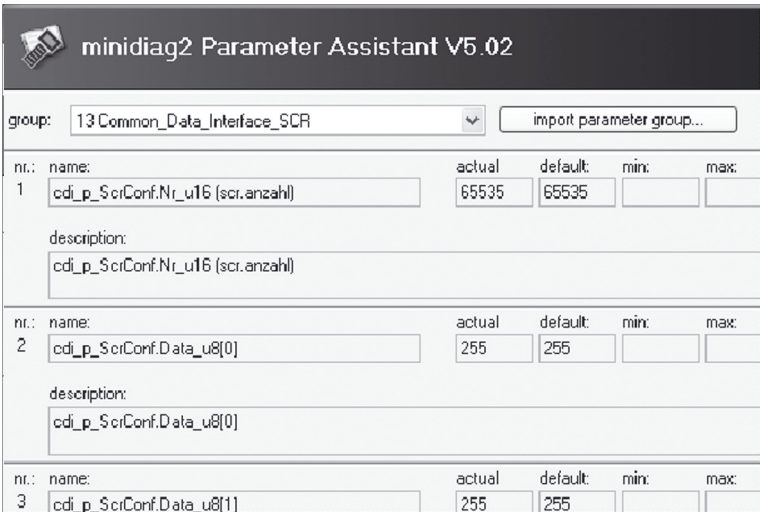


Special function: Import VDODIAG.PAR

On control unit "CPC1", the special function "Parameter group import available" can be found in group 13. This allows the parameter assistant to read pre-configured parameter settings for this group.

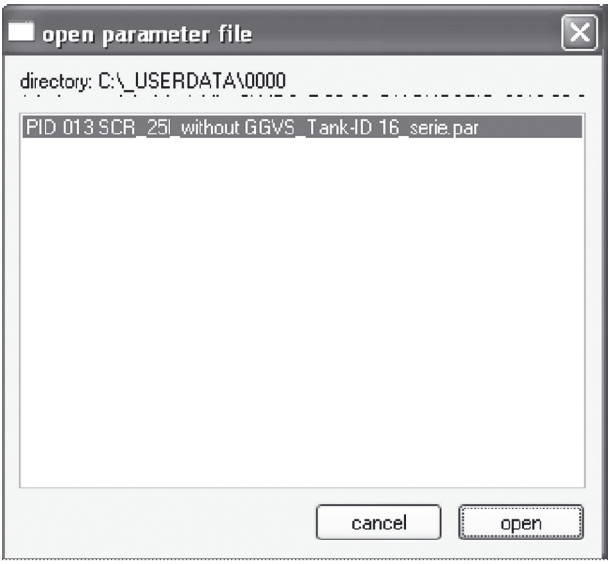
Creating/ modifying/ storing parameter sets

If you need pre-configured parameter settings for this group, go to minidiag2 customer support at minidiag@daimler.com.



▶ Click on "Import parameter group"

The following window opens.



In this example, a parameter file is available for a 25-litre plastic AdBlue tank, with tank ID 16, for a vehicle without a battery isolator switch (German Law on the Road Transport of Hazardous Goods).

By clicking on "Open", the default values in group 13 with the values from the parameter file are overwritten. Finally, the parameter set must be saved.

Importing a parameter file will only modify group 13; all other groups remain unchanged.

Only import a relevant parameter file if it is available for your vehicle. Modifications cannot be made once the parameter sets have been saved.