

7.2.4 Automatic series recognition

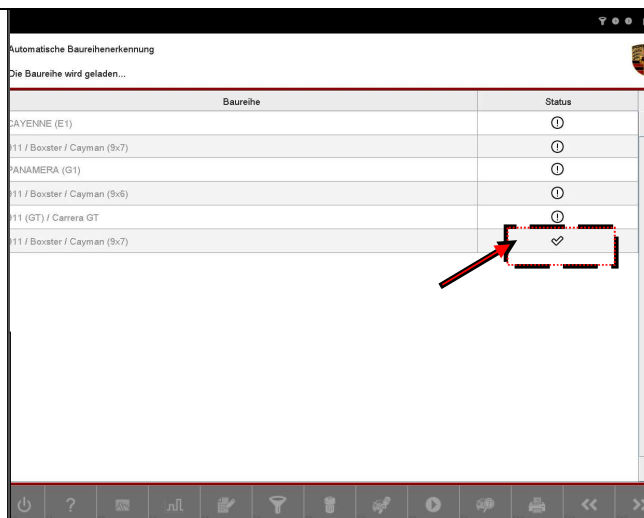
Preconditions



- ▶ The automatic series recognition must have been set up: See Chapter 6.2.2.2
- ▶ There is a corresponding valid series in the project directory.
- ▶ The appropriate processes for the series must be stored in the corresponding series directory.

1. Have the automatic series recognition

selected / set up, the diagnostic application automatically checks which vehicle is connected via the OBD connector when it starts. The appropriate control unit list is then displayed.



If no series could be recognized ..:

Start the diagnostic application in the basic system by manually selecting the relevant series.

7.2.5 Optional: Selection of the VIT to be loaded



When will this option be offered?

If you have selected an ODX project that has data from several vehicle models, you have to select the vehicle model from the VIT (Vehicle Info Table) in a further step (similar to the series selection). In this step you will also be offered a drop-down menu from which you must select the model.

Once you have selected the model, the diagnostic application starts with the data of this model.

8 Operation

The general operation of the diagnostic application is described below. Each sub-chapter deals with a function group of the diagnostic application. It describes how you use the individual function groups and what actions you can carry out within a function group.



Note on view mode:

In chapter 8.1.3 there is a special treatment for the view mode. Restrictions apply to this mode, which affect the operation described in Chapter 8. These are listed in a table and must be observed when operating the application.



Note on operation:

How you can adapt the interface to your needs and which restrictions / deviations apply to the operating behavior when groupings are displayed is explained in Chapter 9.

8.1 Control unit list / control unit overview


This chapter describes how you can display the control units installed in the vehicle using a control unit search in a control unit overview.

The basis is an existing ODX project in which the ECU-specific data is stored. The system must check whether a project control unit is installed in the vehicle and which variant it is.

After a user action, a control unit search is first carried out by the diagnostic application. The list of all or selected control units and their status is then displayed in the control unit overview.

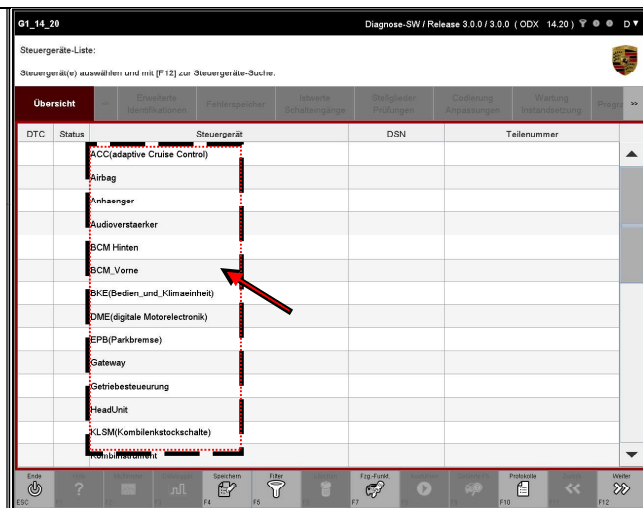
When searching for control units, an alternative installation of control units (control unit variants which, depending on the version, can be connected via CAN, K-line, etc.) is automatically recognized.

8.1.1 Action-specific buttons in this function group

Control devices - overview			
button	Label	Icon	description
F8	All with FSP		By pressing the <F8> key, all control units that have a fault memory entry are selected.

8.1.2 Process with vehicle communication

1. After the application has started successfully, the list of control devices for the respective ODX project is displayed in a control device list.

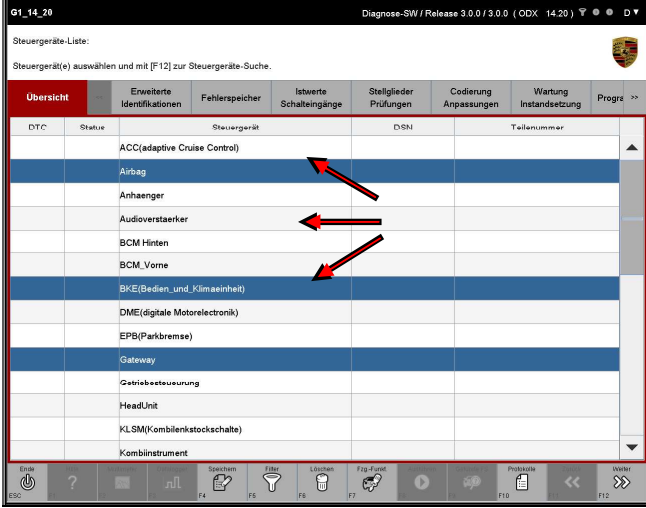


You have two options for selecting control units:

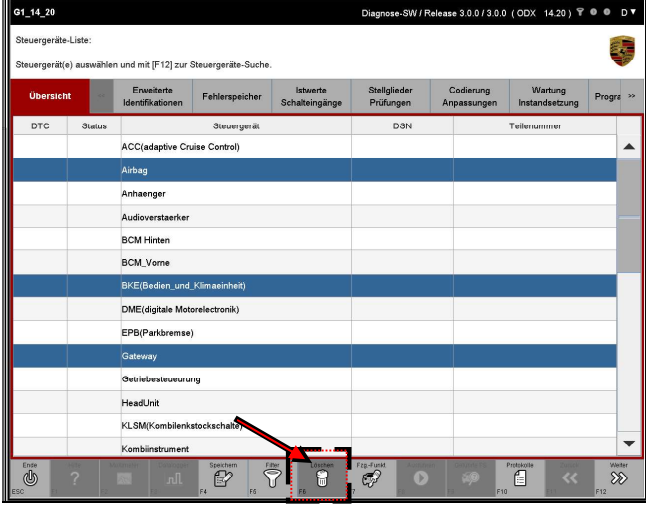
Variant 1: Selection of a number of control units

2. Select the desired control devices by marking them.

If you would like to deselect a selected control device, click again on the corresponding line.

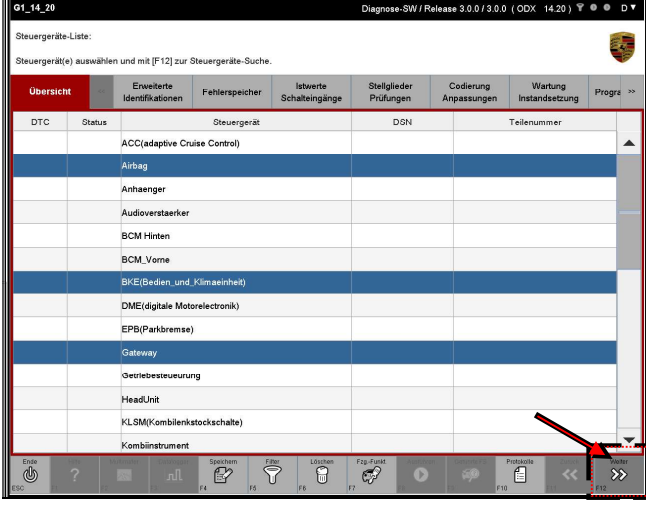


3. The complete selection can be canceled again by pressing the <F6> key.



4. Then press the <F12> key to start the control unit search.

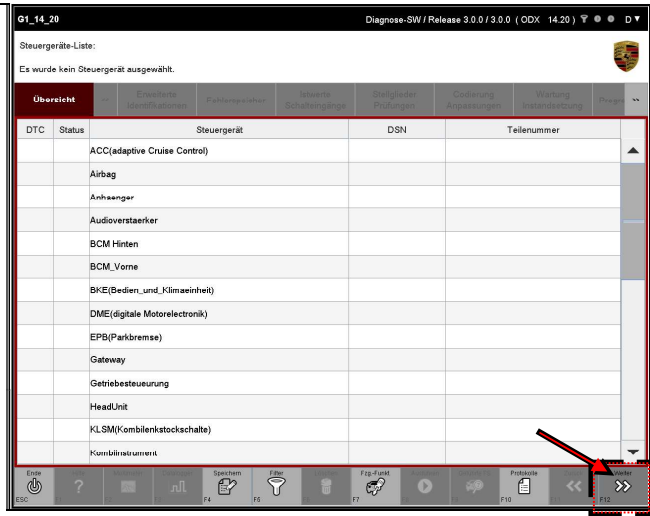
The system now checks which control units or selected control units of the project can be addressed.



Variant 2: Selection of all control devices

5. Would you like a control unit search for all of them Control devices, press the <F12> key without having selected a control device.

The system now checks which control units or selected control units of the project can be addressed.



Optional display of a note

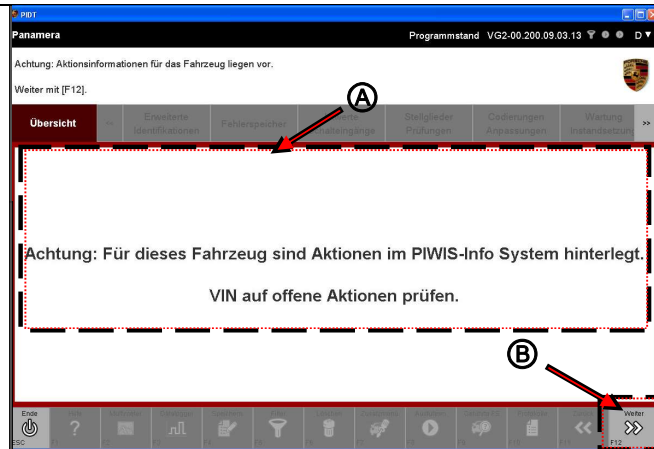


Display of actions:

After the control unit search, a message can be displayed depending on the data stored for the vehicle to be tested / serviced. This informs you about further actions or provides you with further information for the current vehicle.

6. Example of an optional note (A).

Note the note and confirm it with <F12> (B).



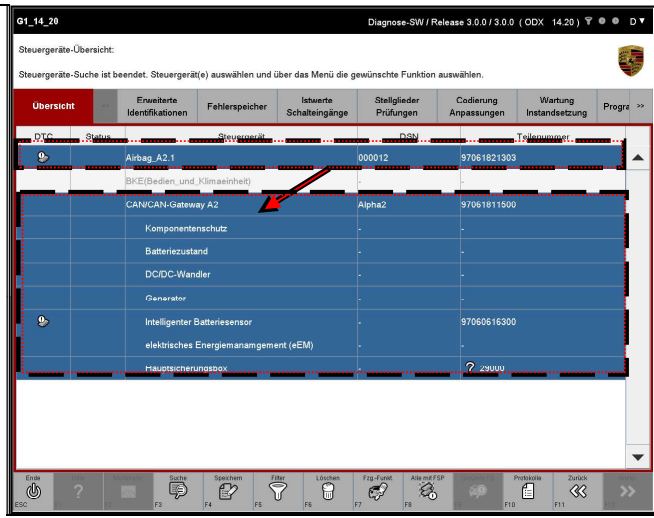
↓ Next, see next page

Display of search results

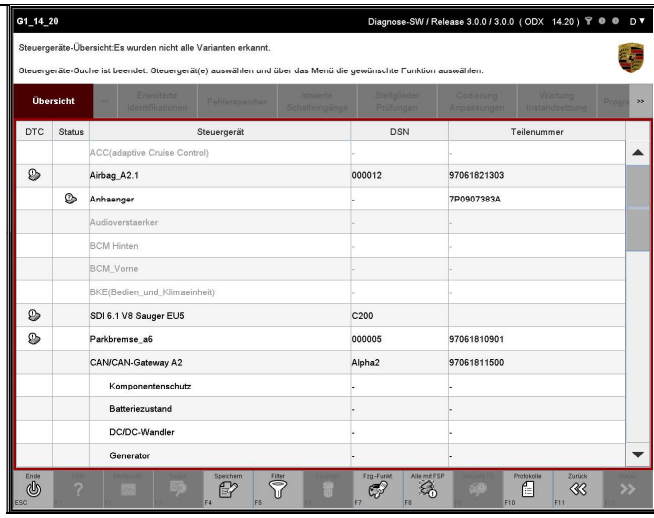


The list of addressable control units is then displayed in the control unit overview. Depending on which selection variant you have chosen, the display is similar to that shown in step 7 or step 8.

7. Display with previous selection (variant 1):
Control units that were previously selected in the control unit list and that can be addressed are already preselected in the control unit overview.



8. Display without previous selection (variant 2):
All addressable control devices are displayed. The control units are not marked.



Note on representation

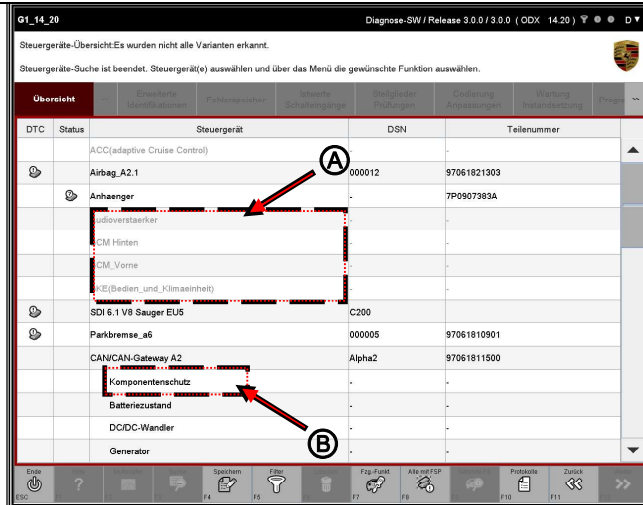


Control units for which no variant is recognized are identified by one of the in columns status marked. The data of the basic variant is displayed for the control units marked in this way.

Control units that have a fault memory entry are identified by a - Icon in the column DTC marked.

9. If communication with a control unit cannot be established, this is shown in the list indicated by dashes after the name of the control unit (A). These control units are grayed out and cannot be selected any further.

Subcomponents of control units (so-called ECU subcomponents) are shown indented under the respective control unit (B). You can work with these sub-components in the same way as with the regular control units (see also additional information below).



Representation of sub-components:

If a higher-level control unit has sub-components and you select the higher-level control unit and switch to another function group or function, all sub-components are implicitly selected as well.

However, if you select a sub-component or several sub-components and switch to another function group or function, the further action is only carried out for this selection.

Example:



You select the control unit Gateway and switch to another function group. In addition to the main control unit Gateway The following sub-components are then also displayed in this function group:

- Battery condition,
- Main fuse box,
- Intelligent battery sensor, electrical energy management (eEM)

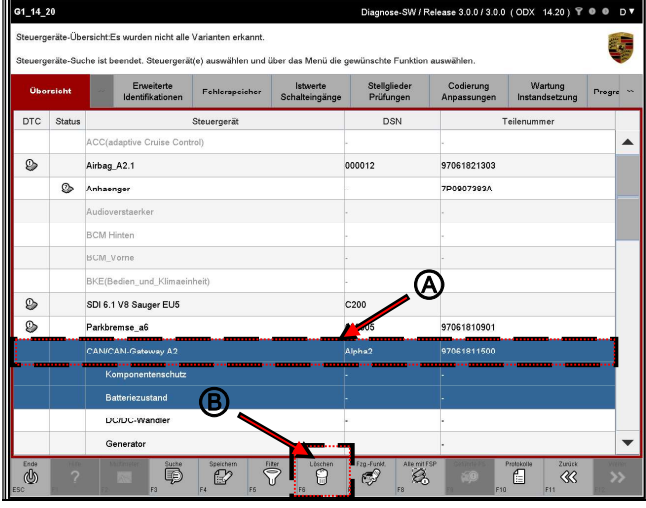
However, you only have the subcomponent Intelligent battery sensor selected and change to another function group, only this element is made available for a further action in this function group.

Proceed further

10. Now select those control units from the list for which you would like to receive further information.

If you would like to deselect a selected control device, click again on the corresponding line (A).

The complete selection can be canceled again by pressing the <F6> key (B).



Notes on the selection of function groups

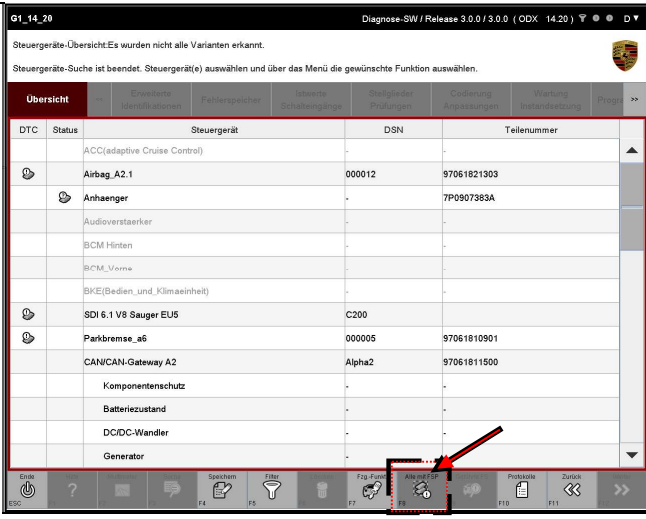
Function groups can be selected:



- If you have selected at least one control unit or a sub-component, all function groups are available to you.
- If you have not made an explicit selection, only the protocol services function group can be selected. All other function groups are grayed out and cannot be selected.

Notes on the selection of all control units with error memories

11. Would you like to select all control units that have a Have an entry in the error memory, press the <F8> key.



8.1.3 Process without vehicle communication (special treatment in view mode)

If the diagnosis is carried out in view mode, there is no communication with the vehicle via a VCI. The variant detection normally carried out in the control unit search is no longer necessary due to the lack of vehicle communication.

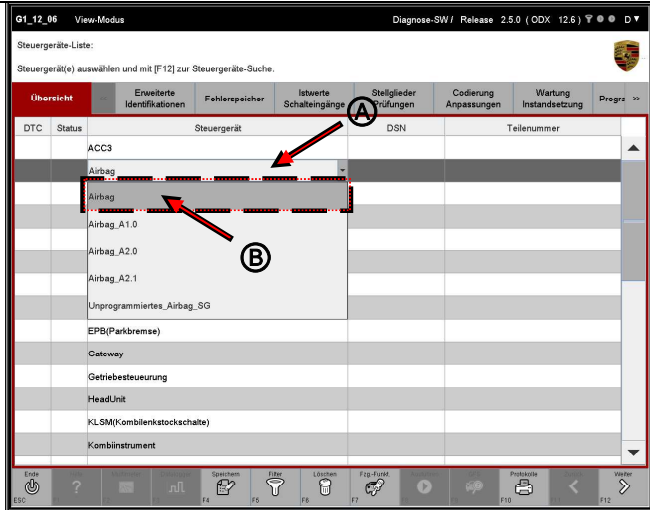
In order to still get access to the data of the respective control unit variant, you have to select it in the control unit list. Proceed as follows.

Variant 1: Selection of a number of control units

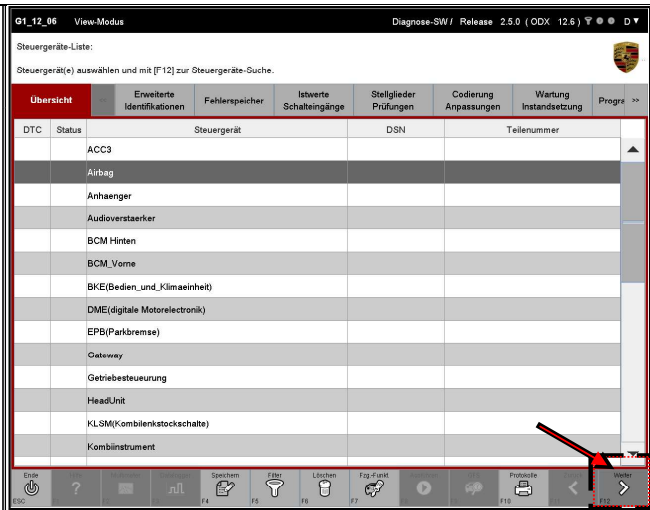
1. Click in the column for the respective control device Control unit (A) and select one for each control unit from a drop-down menu Control unit variant from (B).

If you would like to see the basic variant for the respective control unit, select the first / top entry in the drop-down menu.

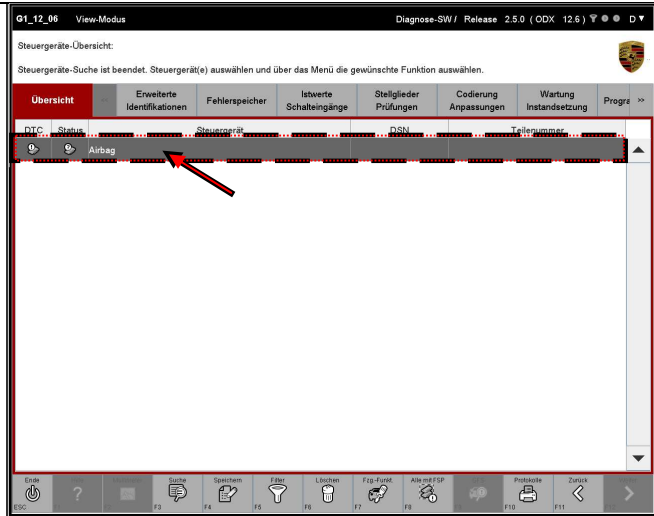
The complete selection can be canceled again by pressing the <F6> key.



2. Then press the <F12> key.



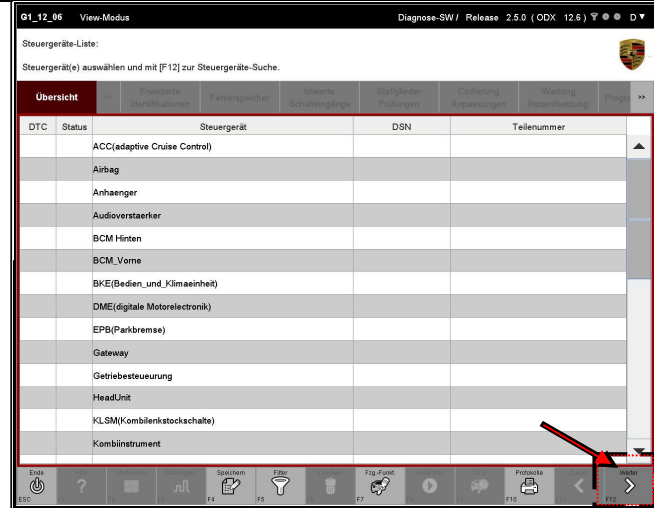
3. All selected control unit variants or control unit basic variants are displayed.



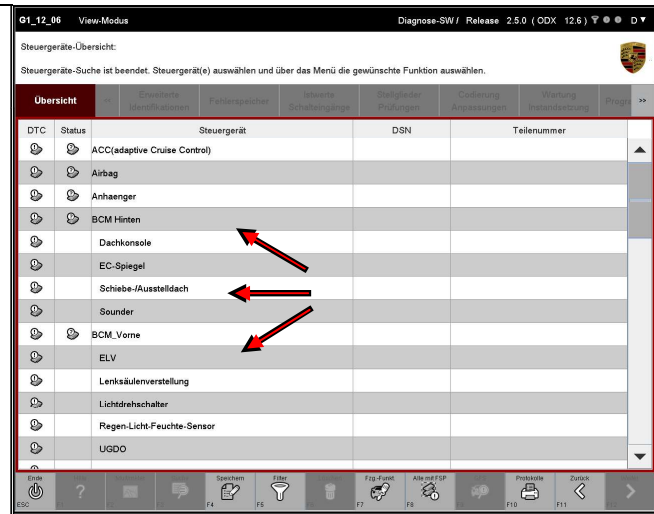
Variant 2: Selection of all control devices

4. If, on the other hand, you would like to have the basic variant displayed for all control devices, do not select any control device.

Then press the <F12> key.



5. The control units are displayed in the basic variant.



6. The functions described in Section 8.2 ff are then available to you, with the following restrictions:



Limitations:


Since no VCI is connected, no control unit communication is established. The following restrictions during operation must therefore be observed:

- All fault memories are displayed in the fault memory function group. Since every control unit has an entry in the error memory, all control units are selected by pressing the <F8> key in the control unit overview.
- In the actual values / switching inputs function group, default values are displayed instead of real actual values.
- In function groups for which services can be sent via an input, no response from the control unit is displayed in the response field.

8.2 Extended identifications

In the Extended Identifications function group, you have the option of displaying additional identifications for one or more control units. This chapter describes how you can display the extended identifications and change the values of the extended identifications.

8.2.1 Action-specific buttons

Extended identifications			
button	Label	Icon	description
F8	To write		The identifications for selected control units are written by pressing the <F8> key.

8.2.2 Display of the extended identifications

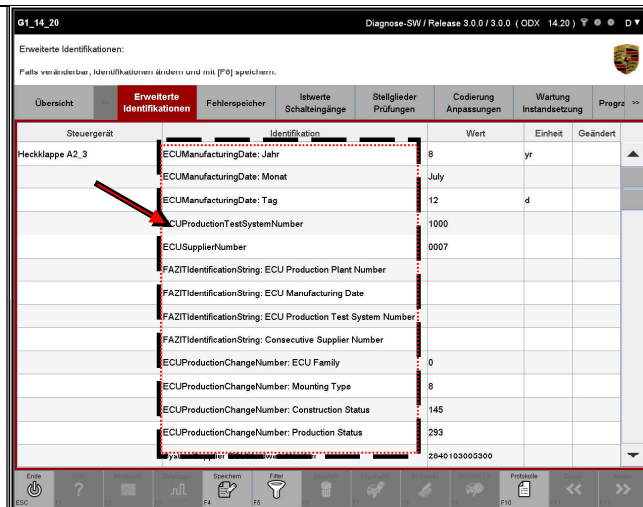
1. Display the list of installed control units and select the desired control units:

▶ See chapter 8.1

2. Select the function group in the menu bar

Extended identifications.

The extended identifications for the selected control units are displayed in a list.



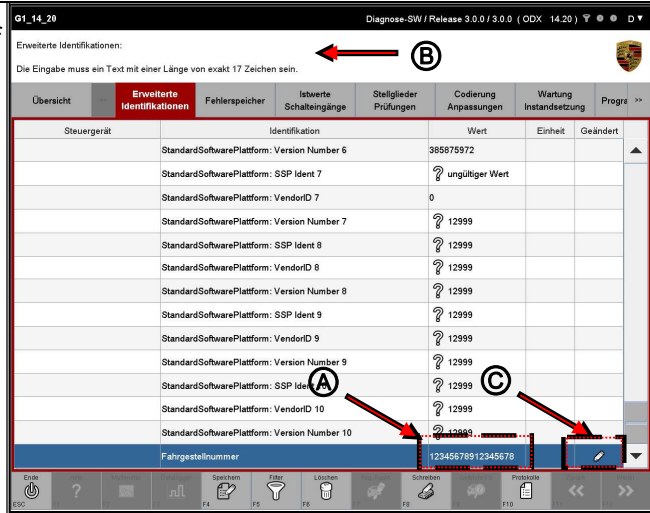
8.2.3 Changing and writing the extended identifications

1. Display the extended identifications: See chapter 8.2.2.

2. If you want to change the values of the identifications, first enter the new value in the value field of the corresponding identification (A).

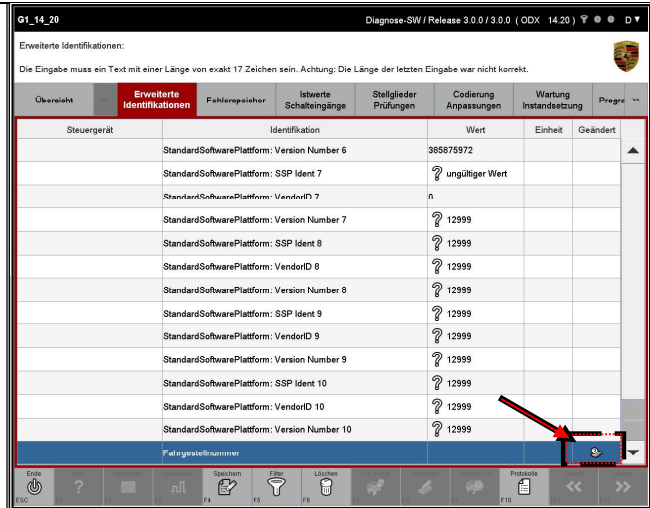
In the information area, you will find help with inputting (B).

Have you changed a value, this is indicated by the icon in the Column ?? Changed ?? marked (C).



Note and tip

3. If the value entry is incorrect, because z. B. the format of the value is incorrect, this is indicated by the ? - Icon in the column Changed is displayed and the original value is entered again in the value field.





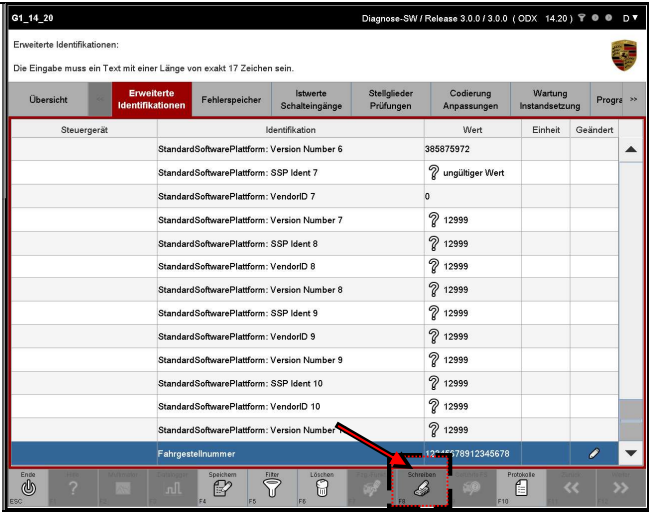
Restoring the original value:

If you want to undo your entry, you have two options:

- They carry the original value of the identification back in Value field. The identification by the icon next to the value field is retained.
- You select the overview function group, select the desired control unit again and display the list of extended identifications again by selecting the extended identifications function group. All value changes that you have made will be discarded.

Proceed further

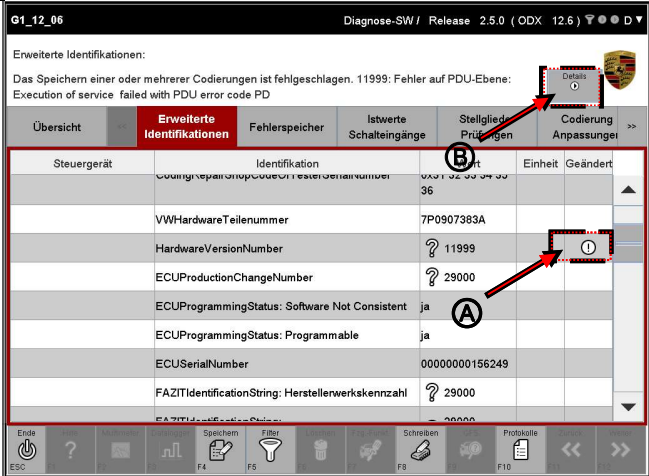
4. After you have changed the values of the identifications, press the <F8> key to write the changed values.



After writing

5. If a value for an identification has not been written successfully, this will be done by the icon in the column Changed displayed.

If the message text in the information area is not completely legible due to the lack of space, you can view it by clicking on Details (B) display.



Details of the error description:

The values are checked in part - e.g. B. in the case of texts that are too long - only when the identifications are written. In the information area, the information about the reason why the data could not be written is displayed behind the display of the permitted input value.

The information area is currently only updated after the selection of the identification value marked with an error icon has been changed.



Example: If an identification value with an error has already been selected, the error description is not displayed directly. Only after this line has been deselected (for example by selecting another entry) and selected again will the reason for the error be displayed in the info area.





Some values of the extended identifications are not written in the current state of the control unit display, although no problems are displayed. The reason for this is that the control unit responded positively to a value request, but did not write the value. The cause can here z. B. in a flash memory problem of the control unit.

There are also identifications, the value of which is determined by the runtime system. This is e.g. B. the case with some dates. The date can be changed, but a different value (e.g. the current date) is written.





8.3 Fault memory

This chapter describes how you can display the fault memories of a number of control units. It is also described how you can delete individual fault memory contents of a control unit and how you can display the environmental data for a fault memory entry or several fault memory entries.

8.3.1 Action-specific buttons

Fault memory			
button	Label	Icon	description
F8	All FSP Lo.		This button is displayed if there are error memory entries and you have not made a selection in the working screen of the function group. All error memory entries are deleted by pressing the <F8> key. A query by the system then gets a confirmation from the user.
F8	Single FSP Lo.		This button is displayed if there are error memory entries and you have made at least one selection in the working screen of the function group. A previously selected fault memory is deleted by pressing the <F8> key. A query by the system then obtains confirmation from the user.
Decision question			
button	Label	Icon	description
F11	no		By pressing the <F11> key, you cancel an action with a query (e.g. an error memory should not be deleted as originally specified). The <F11> key shown only occurs in combination with the <F12> key shown in the next line.
F12	Yes		By pressing the <F12> key, you confirm an action with a query (e.g. error memory should be deleted). The <F12> key shown only occurs in combination with the <F11> key shown in the previous line.

8.3.2 Icons

Display of a fault memory entry Icon	
Description	
	<p>The following error images are not represented by an icon:</p> <p>Priority 1: There is an error that has a major impact on vehicle availability. The vehicle is then no longer ready to drive.</p> <p>Priority 2: There is an error that requires a direct visit to the workshop.</p> <p>Priority 3: There is an error that does not immediately oblige you to visit the workshop, but can be linked to a service appointment.</p> <p>Priority 4: There is an error that leads to a recommendation for action before starting the journey. Vehicle availability may be limited.</p> <p>Priority 5: There is an error that does not affect vehicle availability or there is an error that is not relevant for repairing the system for customer service. However, the display of the error by the icon is intended to support you in troubleshooting or error analysis in customer service.</p>
	<p>Task: Advertisement with informational character. This icon indicates defects that represent wear and tear.</p> <p>Priority 6: There is an error that affects the wear and tear of the vehicle or individual components and is therefore relevant to customer service.</p>
	<p>Task: This icon symbolizes a general note.</p> <p>Priority 7: Note has an influence on the comfort function, but has no influence on the availability of the vehicle and is not relevant for a repair of the system in customer service.</p>
	<p>Task: This icon symbolizes a general note. Priority 8: General Notice</p>
	<p>Task: This icon symbolizes a note for development purposes and quality assurance.</p> <p>Priority 9: Notes for development purposes and quality assurance.</p>

8.3.3 Unknown error codes

If an error code occurs that is not data in ODX, it is still displayed by the diagnostic application and as an? Unknown error code ?? marked.

8.3.4 Display of the error memory

Options for displaying the fault memory:

You have various options for displaying the error memory.

If you would like to display all control units with fault memory entries, proceed as follows:

► From the control unit list or control unit overview:

- Press the <F7> key (- Icon). The vehicle-wide functions screen (F7) is called up.
- Select the entry in the list of vehicle-wide functions (F7) Read all fault memories and delete them if necessary

► From the control unit overview:

- Press the <F8> key (- Icon). All control units are marked with fault memory entries.
- Call up the function group Error memory.



If you only want to display the fault memory entry for individual control units, proceed as follows.

- Go to the control unit overview.
- Select the desired control devices. Control units that have a fault memory entry are indicated by an icon in the Column DTC marked.
- Call up the function group Error memory. This way

is described below.

1. Display the list of installed control units and select the desired control units:

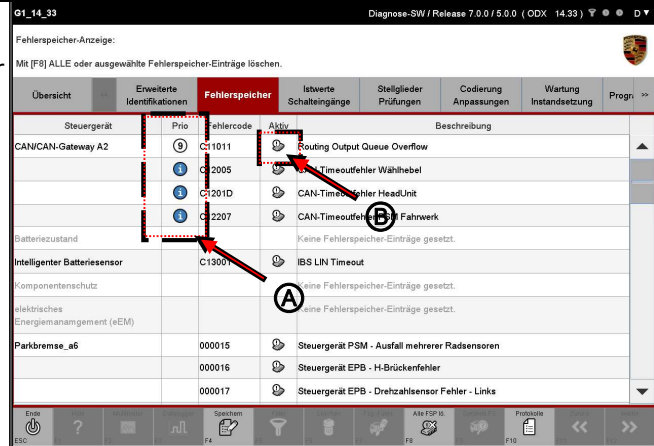
► See chapter 8.1.

2. Select the function group Error memory in the menu bar. An error memory list of the control unit is displayed.

The severity or priority of the error is indicated by different traffic light symbols (see Section 8.3.2).

If an error memory is active, this is indicated by the icon (B).

If an error memory entry is present but inactive, this is indicated by the ?? icon (A).



The fault memory list is updated cyclically. As a result, individual error memories can change the activity status.

8.3.5 Display of environmental data

1. Select the fault memory function group and display the fault memory content:

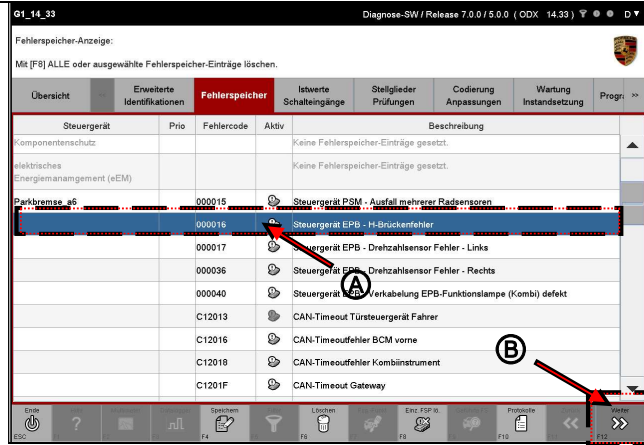
▶ See chapter 8.3.4.

2. Mark the corresponding error code for which you would like to have the environmental data displayed (A).

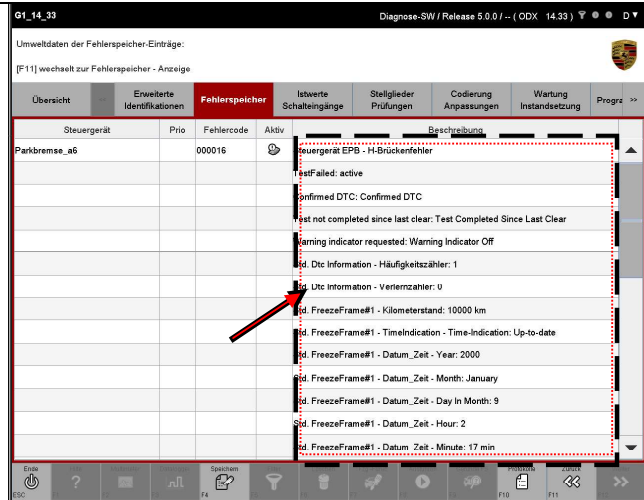
If you would like to deselect a selected error code, click again in the corresponding line.

The complete selection can be canceled again by pressing the <F6> key.

Then press the <F12> (B) key.



3. You will then be shown the environmental data of the fault memory entry.



4. Press the <F11> key to return to the error memory list.

8.3.6 Deletion of error memory entries



Different types of deletion:

- Delete all fault memories:
If there are error memory entries and you have not made a selection, you have the option of deleting all error memory entries with the <F8> key.
- Delete individual fault memories:
If there are fault memory entries and you have marked at least one line, the labeling and the function of the <F8> key change. You now have the option of only deleting the selected entries.



Limitations:

The deletion of individual error memory entries is only carried out if the corresponding service has data. That means:

- If fault memory entries are selected from control unit variants for which a corresponding service has been entered, after pressing the <F8> key and subsequent positive confirmation of the query, each individual fault memory with the specified service is deleted.
- If only fault memory entries from control unit variants are selected for which this service is not available and the <F8> key is pressed to delete, a corresponding confirmation dialog follows and no service for erasing the fault memory is carried out.
- If fault memory entries are selected from control unit variants for which this service is only available for one control unit and the <F8> key is pressed to delete, a corresponding confirmation dialog follows. If this is confirmed, the service for deleting individual fault memories is only carried out for the control unit that has this service.

1. Select the fault memory function group and display the fault memory content:

▶ See chapter 8.3.4.

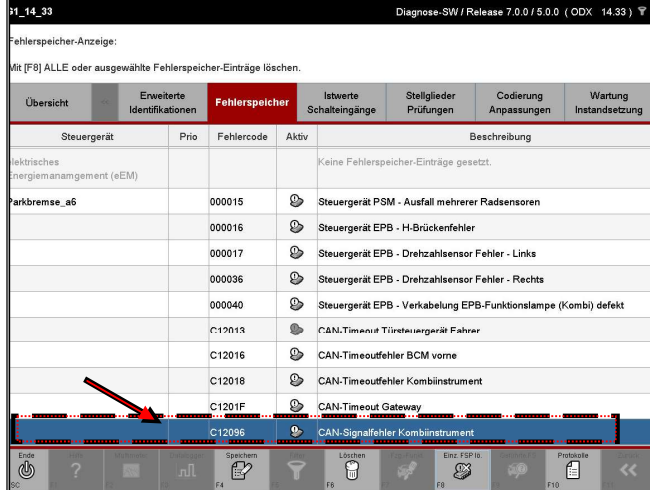
2. To delete an entry, first mark the corresponding error code.

If you would like to deselect a selected error code, click again

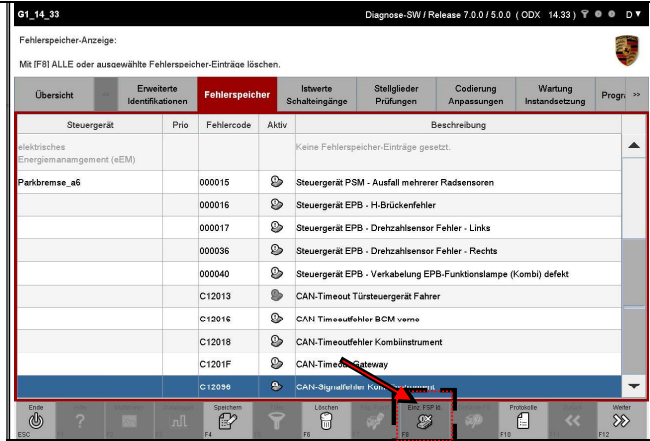
corresponding line.

The complete selection can be canceled again by pressing the <F6> key.

If you want to delete all fault memory entries of the displayed control units, do not make a selection.

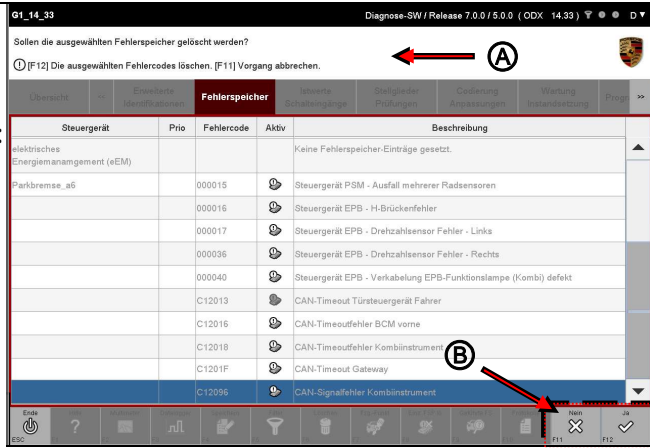


3. Then press the <F8> key.

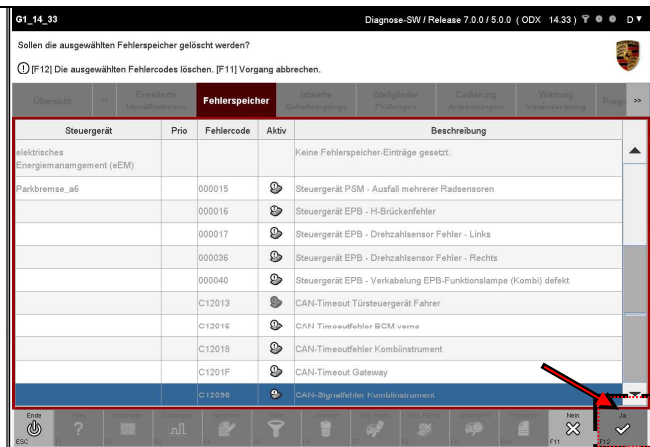


4. A selection appears in which you must confirm the deletion of the selected error memory entries (A). You have the following options (B):

- Cancel the process with <F11>. You come back to the list of error codes. With <F12> you
- confirm that you want to delete the error code.



5. If you want to delete the error code, confirm the query by pressing the button <F12>. The selected fault memory is then deleted. Error memory entries that could not be deleted are listed in the info area.



After deleting



After deleting the error code, you will automatically be shown an updated list of the error codes (see next screenshot).

Note:

If the conditions for the display of an error are still given, the case may arise that the error is displayed again after deletion due to the cyclical reading of the error memory.

6. Updated list of fault memories.

Die ausgewählten Fehlerspeicher wurden gelöscht

Steuergerät	Prio	Fehlercode	Aktiv	Beschreibung
Parkbremse_a6		000015		Steuergerät PSM - Ausfall mehrerer Radsensoren
		000016		Steuergerät EPB - H-Brückenfehler
		000017		Steuergerät EPB - Drehzahlsensor Fehler - Links
		000036		Steuergerät EPB - Drehzahlsensor Fehler - Rechts
		000040		Steuergerät EPB - Verkabelung EPB-Funktionslampe (Kombi) defekt
	C12006		CAN-Timeout Airbag	
	C12013		CAN-Timeout Türsteuergerät Fahrer	
	C12016		CAN-Timeoutfehler BCM vorne	
	C12085		CAN-Signalfehler PSM	
	C1209D		CAN-Signalfehler Gateway	
CAN/CAN-Gateway A2		C11006		GW Codierung
		C11011		Routing Output Queue Overflow
		C12006		CAN-Timeoutfehler Airbag










If an error occurs while deleting an error memory, the application will inform you about this in the information area.

8.4 Actual values / switching inputs

This chapter describes how you can display the actual values or switching inputs of control units. It describes how you can change the way the displayed values (current value, minimum, maximum) are displayed. It also describes how you can display the measured values graphically using the data logger.

8.4.1 Action-specific buttons in this function group

Actual values / switching inputs / data logger			
button	Label	Icon	description
F3	Datalogger		Pressing the <F3> key calls up the data logger screen.
F3	To press		The diagrams of the data logger are printed out by pressing the <F3> key.
F8	begin		The data recording of the data logger is started by pressing the <F8> key.
F8	stop		By pressing the <F8> key, the data recording of the datalogger is stopped.
F8	value		Pressing the <F8> key changes the display of the values to the current actual value.
F8	minimum		Pressing the <F8> key changes the display of the values to the current minimum.
F8	maximum		Pressing the <F8> key changes the display of the values to the current maximum.

8.4.2 Display of measured values

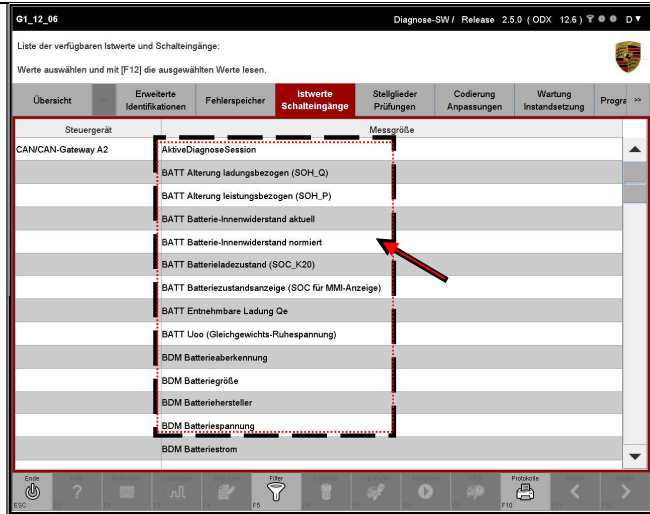
1. Display the list of installed control units and select the desired control units:

► See chapter 8.1.

2. Select the function group in the menu bar

Actual values / switching inputs.

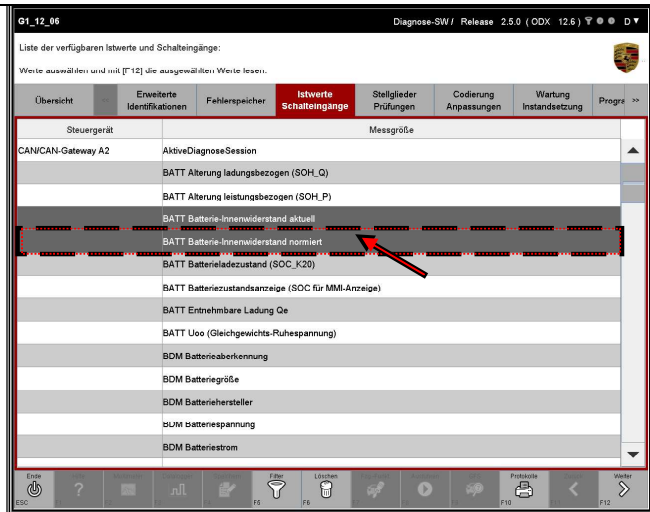
A list of the measured values and switching inputs of the selected control devices is displayed.



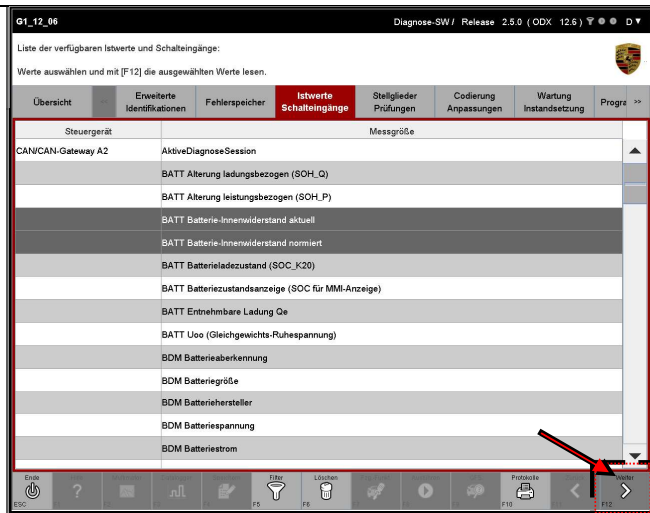
3. In the list, mark those measured values and switching inputs whose values you would like to have displayed.

If you would like to deselect a selected switching input, click again in the corresponding line.

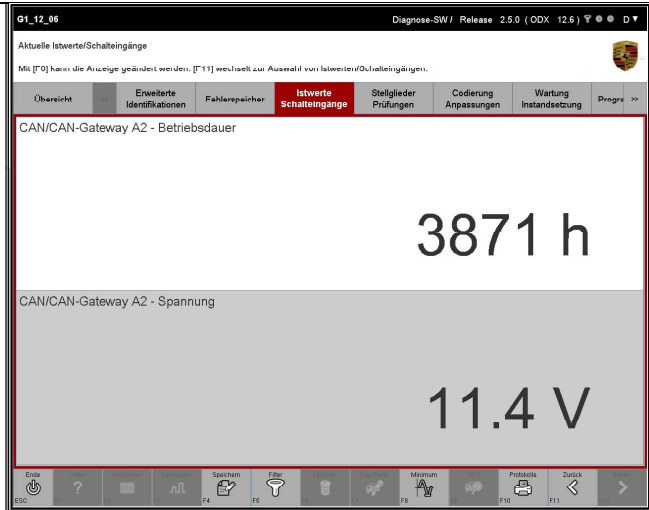
The complete selection can be canceled again by pressing the <F6> key.






4. Then press the <F12> key.

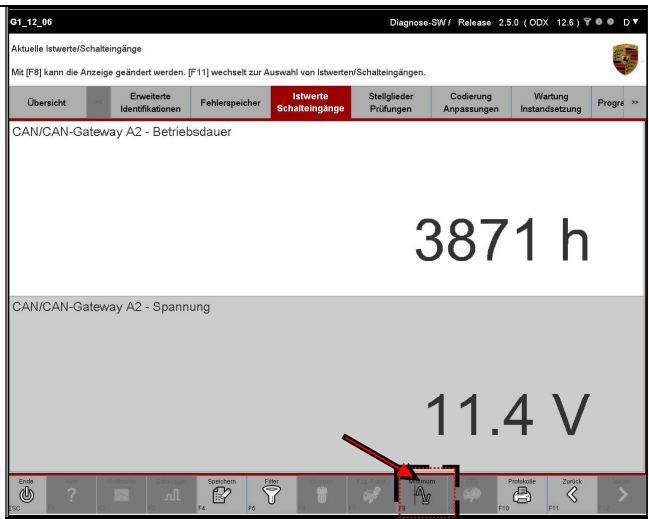


5. A list of the current actual values is displayed. The values are read continuously.



6. With the <F8> key you can choose between the following representations of the actual value:

-  value
 This selection shows you the actual value that is currently being read out.
-  minimum
 This selection shows you the minimum of the values read out.
-  maximum
 This selection shows you the maximum of the values read out.





What does ?? minimum ?? mean in this case? or ?? maximum ???

Based on the physically delivered values of the respective addressed control unit, the following relationship applies:

- The minimum is either the smallest lexical value (for a character string), the smallest number (for a number) or FALSE (for Boolean values). The range of validity and reference value is the duration of the measurement initiated.
- The maximum is either the largest lexical value (for a character string), the largest number (for a number) or TRUE (for Boolean values). The range of validity and reference value is the duration of the measurement initiated.
- The value is the current lexical value (for a character string), the current number (for a number) or TRUE or FALSE (for Boolean values).



Update of the values:

The value display of the elements ?? value ??, ?? minimum ?? or ?? maximum ?? is updated cyclically every 250 milliseconds.

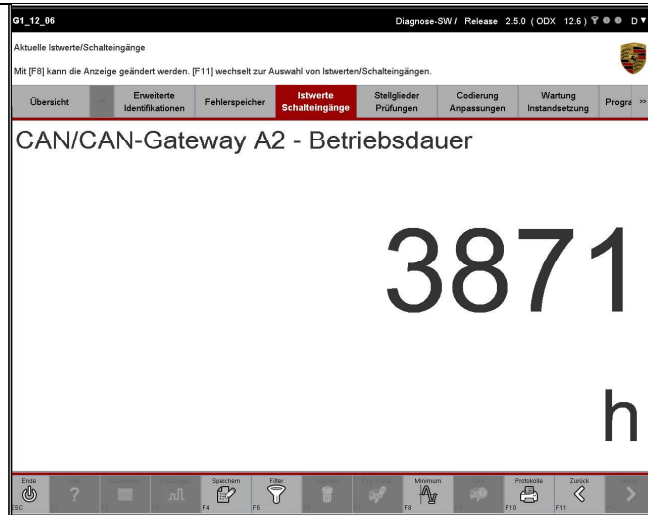
Depending on the selected display type, the labeling of the Value column also changes to Value, minimum respectively. Maximum.

8.4.3 Different display types (representation of 1, 2, 3, 4 and more values)



Depending on the number of parameters to be displayed, the system automatically switches to an enlarged display type.
The following figures show the behavior.

1. Representation one Parameters.



2. Representation of two Parameters.



3. Representation of three Parameters.

Diagnose-SW / Release 2.5.0 (ODX 12.6)

Aktuelle Istwerte/Schaltgänge

Mit [F8] kann die Anzeige geändert werden, [F11] wechselt zur Auswahl von Istwerten/Schaltgängen.

Übersicht | Erweiterte Identifikationen | Fehlerspeicher | **Istwerte Schaltgänge** | Stellglieder Prüfungen | Codierung Anpassungen | Wartung Instandsetzung | Progra >>

CAN/CAN-Gateway A2 - GEN Load-Response-Time

3.00 s

CAN/CAN-Gateway A2 - Betriebsdauer

3871 h

CAN/CAN-Gateway A2 - Spannung

11.4 V

Ende ? [F4] Suchen [F5] Filter [F8] Messen [F10] Protokolle [F11] Zurück >

4. Representation of four Parameters.

Diagnose-SW / Release 2.5.0 (ODX 12.6)

Aktuelle Istwerte/Schaltgänge

Mit [F8] kann die Anzeige geändert werden, [F11] wechselt zur Auswahl von Istwerten/Schaltgängen.

Übersicht | Erweiterte Identifikationen | Fehlerspeicher | **Istwerte Schaltgänge** | Stellglieder Prüfungen | Codierung Anpassungen | Wartung Instandsetzung | Progra >>

CAN/CAN-Gateway A2 - BDM Batteriegröße

72

CAN/CAN-Gateway A2 - GEN Load-Response-Time

3.00 s

CAN/CAN-Gateway A2 - Betriebsdauer

3871 h

CAN/CAN-Gateway A2 - Spannung

11.4 V

Ende ? [F4] Suchen [F5] Filter [F8] Messen [F10] Protokolle [F11] Zurück >

5. Representation of more than four Parameters.

Diagnose-SW / Release 2.5.0 (ODX 12.6)

Aktuelle Istwerte/Schaltgänge

Mit [F8] kann die Anzeige geändert werden, [F11] wechselt zur Auswahl von Istwerten/Schaltgängen.

Übersicht | Erweiterte Identifikationen | Fehlerspeicher | **Istwerte Schaltgänge** | Stellglieder Prüfungen | Codierung Anpassungen | Wartung Instandsetzung | Progra >>

Steuergerät	Typ	Name	Wert	Einheit
CAN/CAN-Gateway A2		BATT Batterieladestatus (SOC_K20)	10	%
		BDM Batteriegröße	72	
		GEN Load-Response-Time	3.00	s
		Betriebsdauer	3871	h
		Spannung	11.4	V

Ende ? [F4] Suchen [F5] Filter [F8] Messen [F10] Protokolle [F11] Zurück >

8.4.4 Datalogger

The graphical view of the data logger is an additional view for the pure number representation (see chapter 8.4.3) for measured values in the function group actual values / switching inputs. The data logger can display several measured values simultaneously in one or more measurement curves. The type of display is selected when the data logger is started. Using a marking cursor (marker), detailed values can be read off at the cursor position. The time and value axes are automatically scaled, and they can also be scaled manually. Measured values recorded by the data logger can be saved and later via the protocol selection Measurement protocol graphically displayed again.

This chapter describes how you can display measured data of actual values using a data logger. It also describes how you can change the display type of the measured values and thereby change the viewing area. Finally, it is described how you can save the data recorded by the data logger in a measured value protocol.

8.4.4.1 Call up the data logger and start recording



Maximum number of measurement curves:

Depending on the type of display, the following conditions apply to the maximum number of displayable measurement curves:

- All measured values in one diagram: 4 turns
- Individual diagrams below each other: 8 curves, whereby 4 curves are displayed simultaneously on one page.
- Two diagrams side by side: 8 curves, whereby 4 curves are displayed simultaneously on one page.



Note on color representation:

Do you have the type of representation All measured values in one diagram selected, each measurement curve is displayed in its own color to differentiate between the measured values. In the control application, you have the option of assigning a specific color to each curve:

► See chapter 6.1.3.4.2

1. Select the function group Actual Values / Switching Inputs in the menu bar and select the desired measured variables that you want to display graphically:

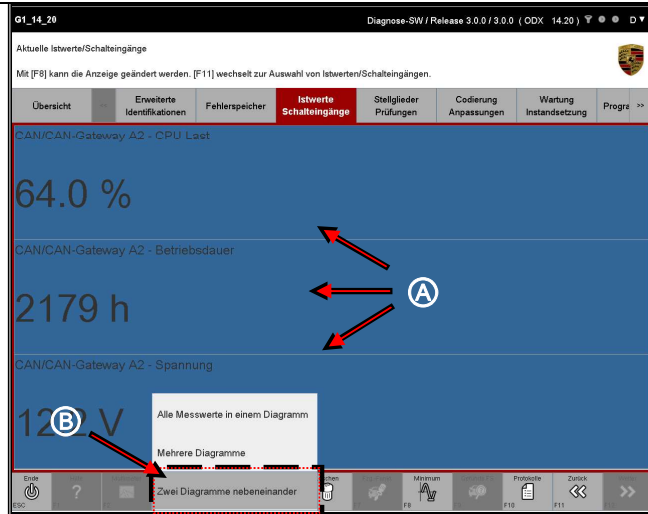
► See chapter 8.4.2 and chapter 8.4.3.

2. The parameters whose measured values you have selected are initially displayed in the work screen. Now select the Parameters that you want to be displayed graphically (A).

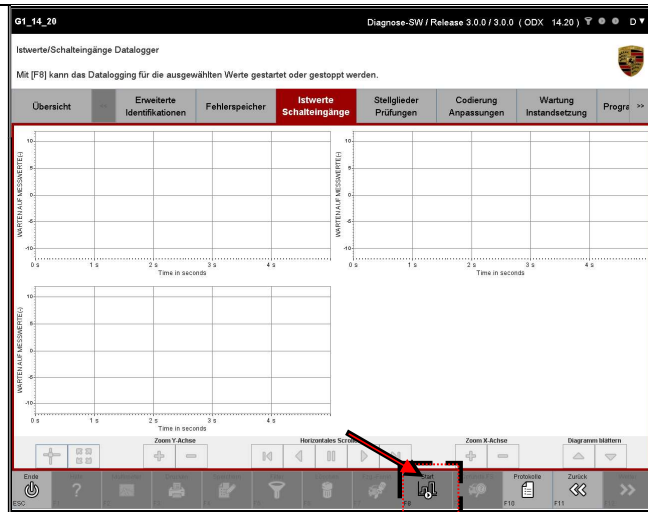
Press the <F3> (B) key. In a selection window you are offered a selection option via the <F3> key with which you can select the type of Can choose diagram display. The following variants are available:

- All measured values in one diagram
- Individual diagrams among themselves
- Two charts side by side

In the example, the option Two charts side by side chosen.



3. To start the data logger recording, press the <F8> key.



4. The data of the selected parameters are now read from the control units and displayed graphically. If the right edge of the diagram is reached when inserting a measured value, the graph is shifted to the left by a certain percentage of the visible screen width. Should the value of ?? Infinity ?? (infinitely) have been measured, this is not displayed in the data logger and is saved as ZERO in the measured value protocol.




Note on axis labeling / units:

- The X-axis labeling is always the time. The time values are the seconds since the start of the measurement.
- The Y-axis labeling depends on the measured variable you have selected.



Display in the title line:



As long as the recording is running in the data logger, a will appear on the right in the title line
 - Icon displayed.



You have the following options:

Variant 1: Leaving the data logger with ongoing recording

5. You can exit the data logger while the recording is in progress in order to carry out actions in other function groups. The <F3> key becomes active and is named Datalogger labeled.
 If you would like to call up the data logger from another function group, press the <F3> key (data logger).
 Please note the instructions for adding new measured values to the measured value recording of the data logger:
 ► See chapter 8.4.4.2

Variant 2: stopping the recording

6. You can stop the recording of measured values within the data logger: See
 ► chapter 8.4.4.3

8.4.4.2 Behavior when adding new measured values to the measured value recording

If you have left the data logger while the measured value is being recorded, the <F3> (data logger) key in the control bar becomes active.

If you want to add new measured values to the measured value recording, the following restrictions apply:



Behavior if the selection is not changed: Have you not changed the measured value selection, ie

- you have not selected any additional measured values for the measured value recording or
- you have not deselected any existing measured values

and if you call up the data logger again by pressing the <F3> key, the currently running data logger is displayed again.



Behavior when changing the selection:

On the other hand, if you have changed the selection, e.g. through

- Adding new measured values to the current selection
- Selection of a different set of measured values for a different actual value

and if you call up the data logger again by pressing the <F3> key, the measured value recording of the old data logger is stopped and discarded. Instead, a new data logger is displayed with the new measured values of the current selection.

You have to explicitly start the recording of measured values again by pressing the <F8> (Start) key.

To start the recording within the datalogger:

► See chapter 8.4.4.1

8.4.4.3 Stop recording

It can happen that the recording of the measured values is stopped by an action within another function group, e.g. within the **programming** function group.

You can recognize the stopped datalogger by the fact that ...



- ... the measured value recording is not running
- ... the START / STOP Key <F8> the label BEGIN shows.

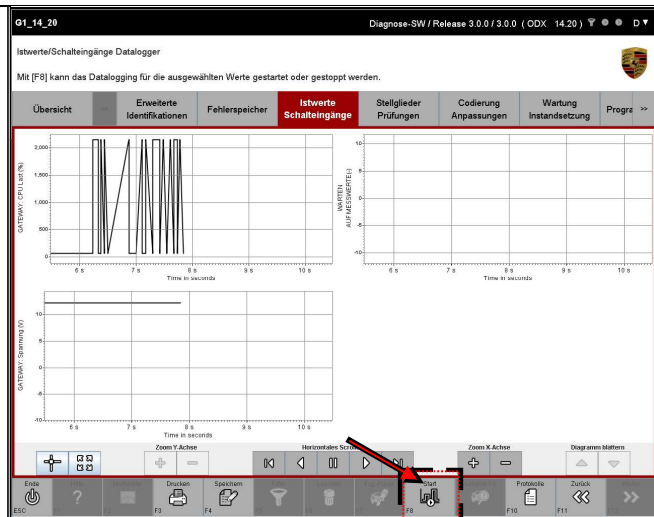
The following steps describe the case in which the data logger is recording measured values and has not already been automatically stopped by an action within another function group.

1. Call up the data logger regularly: See
 ► chapter 8.4.4.1

Or:












If you have previously exited the data logger with ongoing measured value recording and not changed the selection, press the <F3> key (data logger). Please also note the note in Section 8.4.4.2.

2. To stop the measured value recording, press the <F8> key.



8.4.4.4 Action options / icons

To change the representation of the diagrams, various options are available that you can call up by pressing the respective key:

Icon	description
	Set markers (see Section 8.4.4.5). By setting the marker in the diagram, the X and Y axis intercepts of the measurement curve are marked and the values of the curve are displayed at the marked point.
	Delete markers (see Section 8.4.4.6).
	Auto scaling: The display range of the coordinate system is adapted to the value range of the curve.
	Scaling the x or y axis: The display area of the coordinate system is enlarged.
	Scaling the x or y axis: The display range of the coordinate system is reduced.
	Horizontal scrolling: The display area jumps to the value $x = 0$.
	Horizontal scrolling: The display area scrolls to the left.
	Horizontal scrolling: The display area scrolls quickly to the left.
	Horizontal scrolling: Stop the scrolling process
	Horizontal scrolling: The display area scrolls to the right.
	Horizontal scrolling: The display area scrolls quickly to the right.

Icon	description
	Horizontal scrolling: The display area jumps to the last recorded value.
	Scroll diagram: Scroll one diagram forward.
	Scroll diagram: Scroll back one diagram.

Table 6: Functions of the data logger

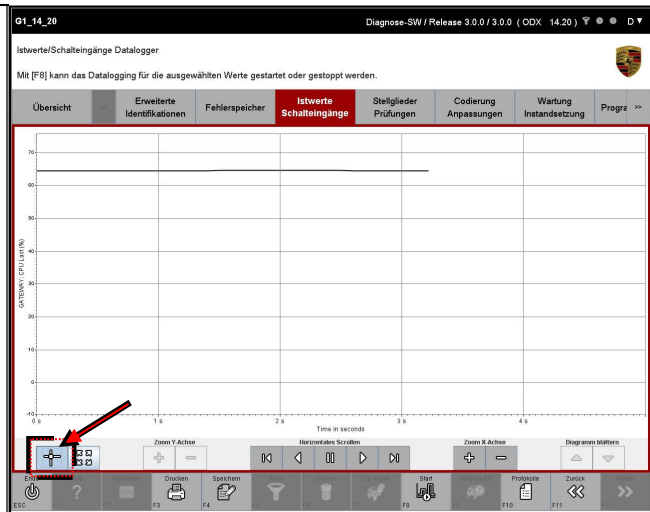
8.4.4.5 Set markers

You can set a marker to display the x and y values of a point on the curve.



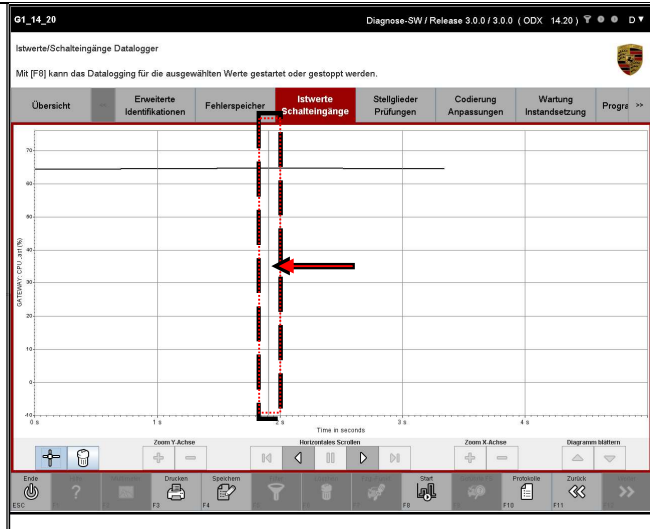
If you have selected a representation in which several diagrams are displayed, the setting of the marker in one diagram is automatically transferred to all other diagrams at the same point (X-axis intercept).

1. Click on the marker button (symbolized by the icon)



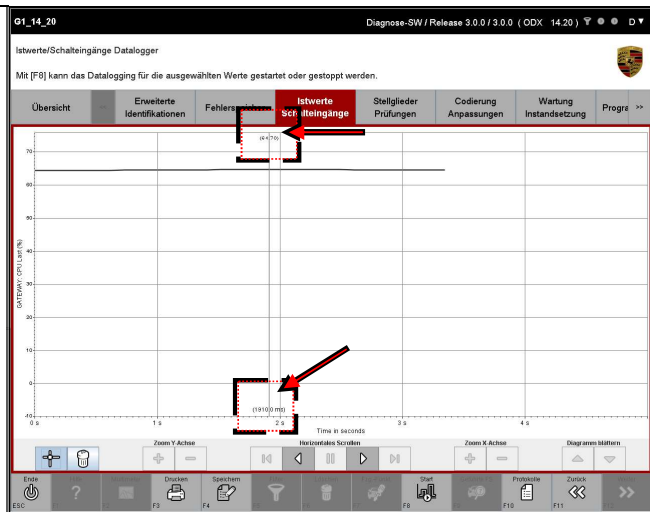
2. Then mark a point on the curve (the x-Axis intercept is decisive here).

A marker can only be set in the visible x-axis segment.



3. The x and y values of the intersection of the marker axis and the recorded curve are displayed as numerical values at the marker issued.

The X value (time) is displayed below, the Y value is displayed above.



Move marker



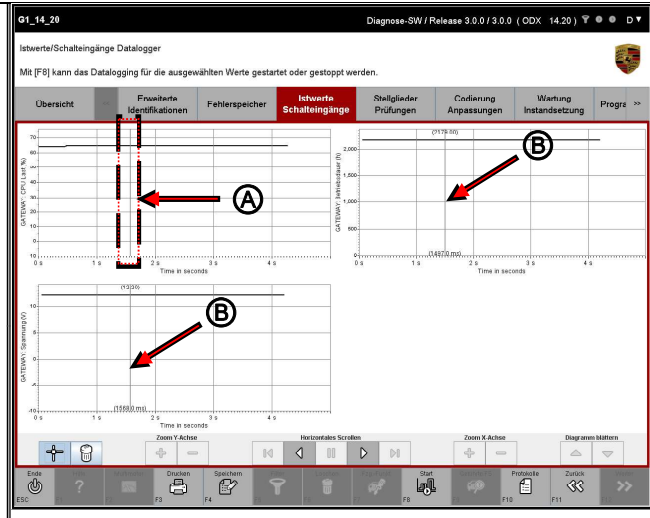
You can use the scroll keys to move the marker in the x direction. You have the following navigation options:

	Marker is moved to the left (-x).
	Marker is moved to the right (+ x).

Setting and moving the marker in the case of several diagrams

4. Put the marker in one diagram (A), the x-position will be on the other diagrams transferred (B).

If you then move the marker, it will be in all others
Diagrams shifted by the same amount.



Proceed further


5. To end the marker function, press the marker button again (symbolized by the icon). The marker remains in the measurement curve.
You can then use the data logger as usual.

8.4.4.6 Delete marker

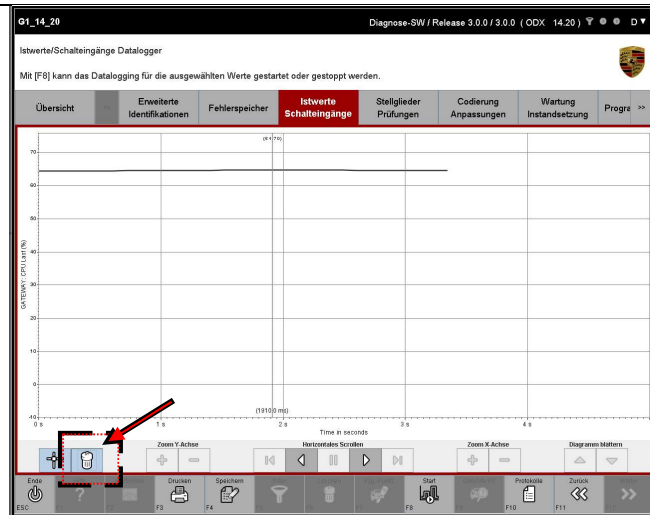


You have the option of placing a marker ?? including all marker copies in other diagrams - to be deleted again. Proceed as follows.

1. Call up the data logger and press the marker button: See previous chapter 8.4.4.5

2. Press the delete marker button (symbolized by the  ?? Icon).

All set markers are deleted.



8.4.4.7 Store measured values temporarily

You have the option of temporarily saving the data recorded by the data logger for later evaluation.



Precondition:

An ongoing recording of measured values must be stopped before being temporarily saved. Only then will the appropriate Save on computer-Button active.

Note on saving:

If you want to store the cached measurement log permanently on the PC / notebook / tester, you have to give it a defined name within the log type Measured value log save the general report management:



► See chapter 8.4.4.8

Note on viewing:

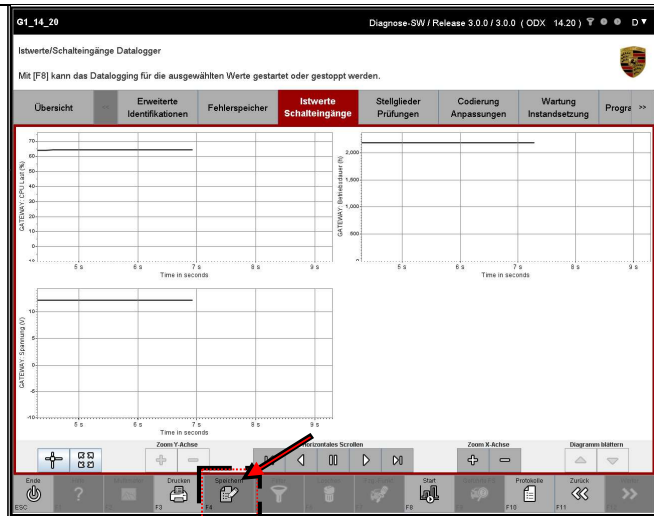
You can save saved and cached measurement logs by selecting the log type Measurement protocol call up the general report management again. The display then takes place within the data logger:

► See chapter 8.4.4.9

1. Call up the data logger and start the display of measured values by pressing the <F8> key:

► See chapter 8.4.4.1.

2. To temporarily save the results of the current measurement recording, press <F4> key.



8.4.4.8 Finally save the current measurement protocol

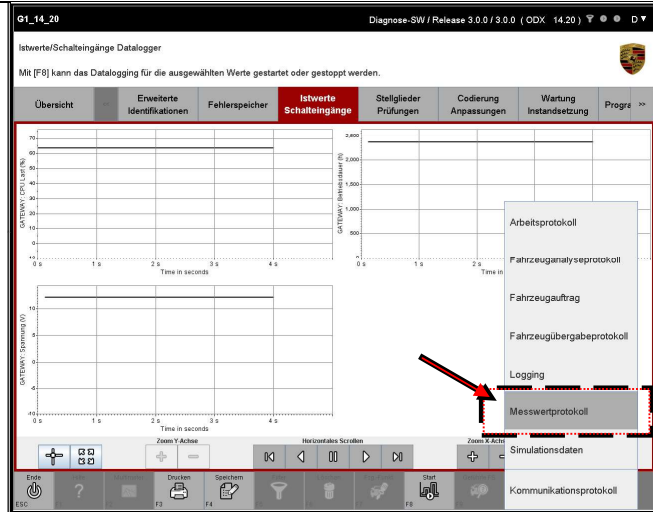
Within the general report management you can finally save the temporarily saved measurement log (see chapter 8.4.4.7). The measured value log is zipped when it is saved.

1. Press the <F10> key.

If the key cannot be selected, first navigate to one of the function groups (e.g. overview) and then press the <F10> key.

2. A key menu appears in which several entries are listed.

Select the protocol type Measurement protocol.



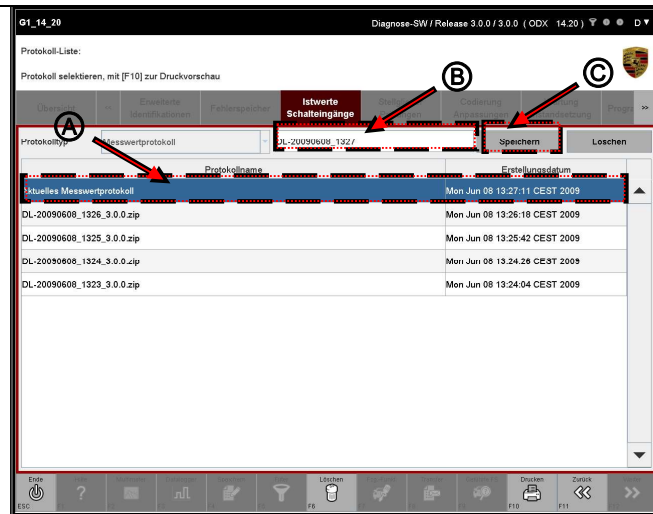
3. The list of measured value logs is displayed. The current or last created

The measured value protocol is the top priority.

If necessary, select the current measured value log by clicking in the corresponding line. If this is already marked, this step (A) is not necessary.

Enter a name. A name is already suggested to you in the name field. However, you can change this (B).

To view the cached measurement log under the name you have chosen to save, press the Save on computer-Button (C).



8.4.4.9 Call up and display saved measurement logs

Within the general report management, you can call up measured value logs that were generated using the data logger within the actual values / switching inputs function group (see Section 8.4).



Function reduction:

The data logger is used to display the stored measured value data, but in the form of a pure display unit. It is not possible to start a new measured value recording from the display of the measured value data. The <F8> key is therefore grayed out.

To record a new measured value curve:

▶ See chapter 8.4.4.1



Other possible actions:

With <F11> you come back to the general report management. You can also jump directly to one of the other function groups via the menu bar. You will then be shown the data of the control units that are currently in the selection.

You can print out the measured value report with <F3>:

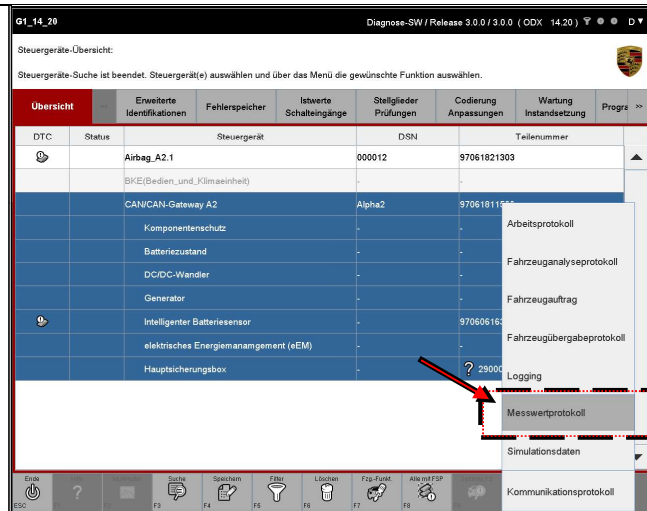
▶ See chapter 8.4.4.10

1. Press the <F10> key.

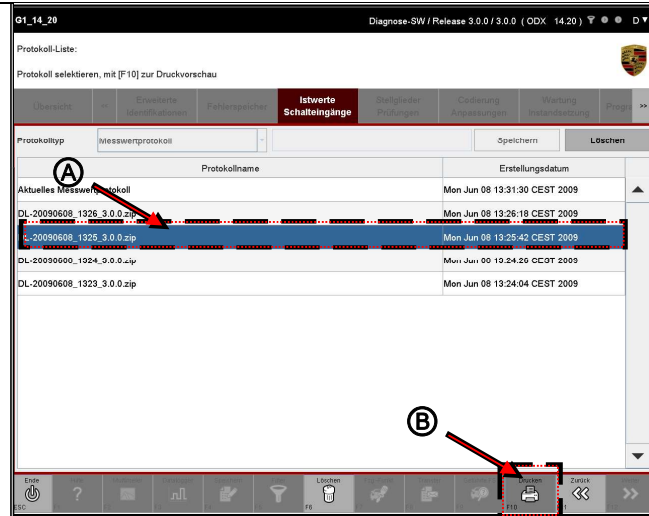
If the key cannot be selected, first navigate to one of the function groups (e.g. overview) and then press the <F10> key.

2. A key menu appears in which several entries are listed.

Select the protocol type Measurement protocol.



3. Select a measurement protocol from the list (A) and then press the <F10> key (B).



4. The measured value curve (s) are displayed within a function-reduced data logger (see the introductory note in this chapter).

You can now in the logged data ...:

- ... use the scrolling and marking functions of the data logger or
- ... Print out the protocol via <F3> (you can find more information in the following chapter 8.4.4.10).

8.4.4.10 Print diagram (s) Note on the



print dialog:

In the V and P mode, the printout is made immediately via the standard printer of the operating system.

In E mode, the operating system dialog for selecting the printer and setting the printer properties is started first.



Notes on the output format:

The format of the printout is DIN A4 landscape.

As many diagrams are printed per sheet as there are diagrams displayed on the screen, i.e.:

- Do you have the type of representation All measured values in one diagram is selected, only one printout is made.
- If you have selected a display type in which the measured values are recorded in several diagrams, as many diagrams are printed out on one sheet as there are diagrams per screen page. The diagrams currently displayed on the screen are printed out. If you want to print diagrams that are displayed on a subsequent screen, you must first scroll to this page (or) before pressing the print button.



Only the diagram (consisting of markers - if available -, axis labels, units and the measurement curve) is printed out.

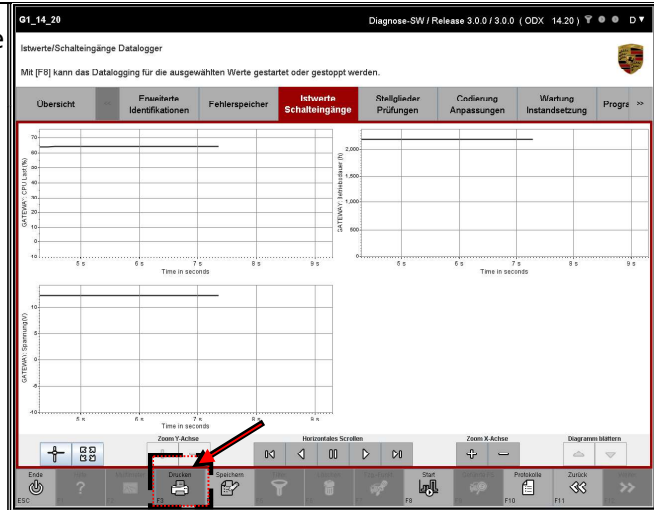


Precondition:

You can ...:

- ... print out the current measurement record directly. the Measured value recording must have been stopped beforehand (see chapter 8.4.4.3). Only then does the print button become active.
- ... a cached or saved measurement log
Call it up via the general report management and then display it within the data logger interface (see Section 8.4.4.9) and print it out.








1. To print out the diagrams, press the <F3> key.



8.5 Actuators / tests

This chapter describes how you can display the actuators of a number of control units. It also describes how you can change the parameters of these actuators and how you can run test routines for individual control units.

8.5.1 Action-specific buttons in this function group

Actuators / Tests button			
	Label	Icon	description
F5	Readings		By pressing the <F5> key, measured values can be selected in an additional selection screen, which are then also displayed in the result area of the actuators / routines.
F6	return		By pressing the <F6> key, control of a selected actuator is returned to the corresponding control unit. The parameter of the actuator is then determined by the control unit.
F7	Freeze		The current routine is stopped by pressing the <F7> key. The routine is restarted by pressing the <F7> key again.
F8	begin		By pressing the <F8> key, a previously selectedCheck routine started.
F8	Carry out		By pressing the <F8> key, a previously selectedActuator set.
F8	stop		A previously selected test routine is started by pressing the <F8> key.
F9	Reset		The current values are reset to a standard value by pressing the <F9> key.

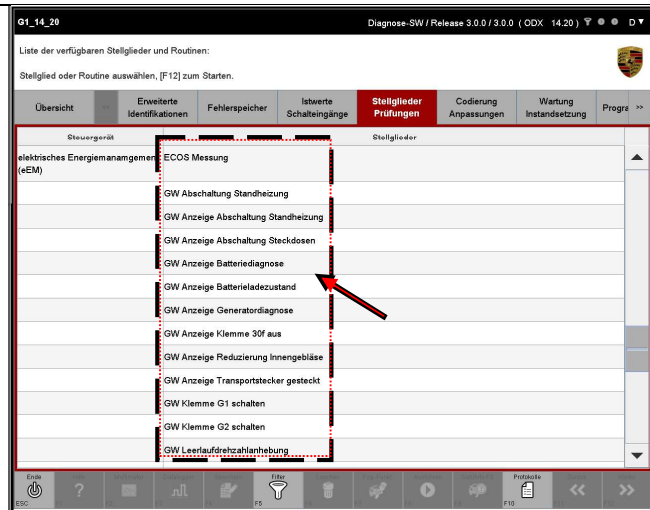
8.5.2 Display of actuators / tests

1. Display the list of installed control units and select the desired control units:

► See chapter 8.1.

2. Select the function group in the menu bar

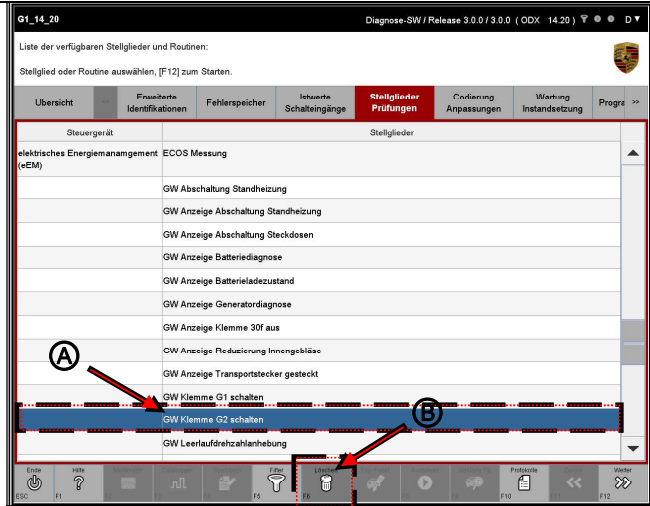
Actuators / tests. A list of the control unit's actuators is displayed.



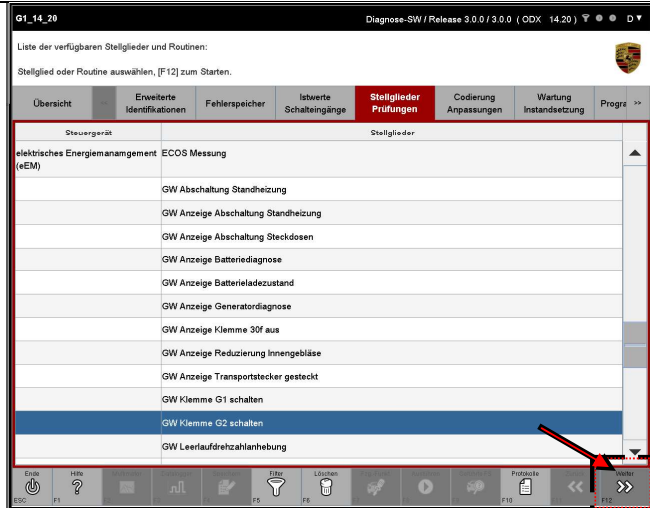
8.5.3 Changing parameters / calling test routines

1. Display the list of actuators and routines: See chapter 8.5.2.

2. In the list, select the actuator whose value you want or for which you want to call a test routine (A).
 If you would like to deselect a selected actuator, click again on the corresponding line.
 The complete selection can be canceled again by pressing the <F6> key (B).

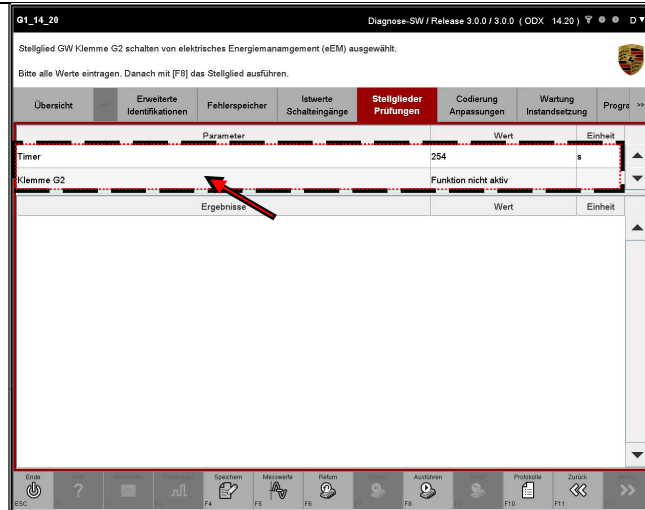


3. Then press the <F12> key.



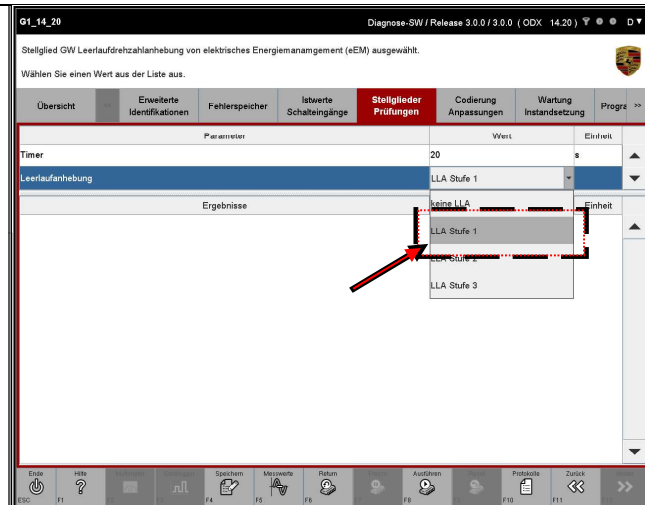
- The available changeable values or test routines for the selected actuator are displayed in the upper area of the current screen.

Note:
The status of the routine execution may already be displayed in the results area when you call up the work screen.

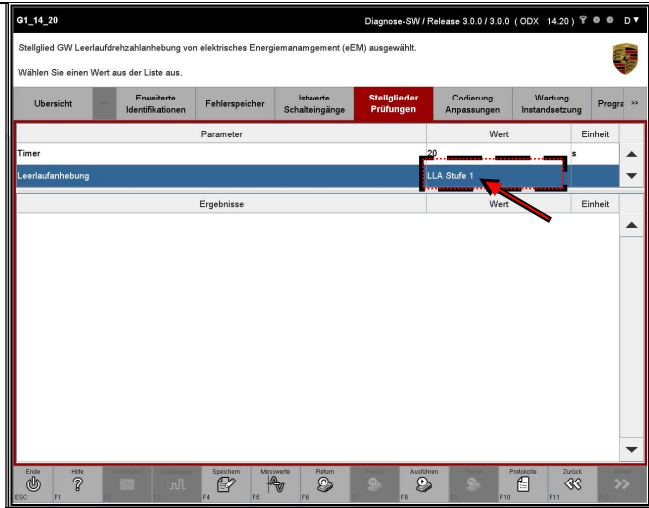


Variant 1: Changing the parameter via a drop-down menu

- If the test routine has fixed adjustable values, you can select the desired value from a menu by clicking on the corresponding value field.



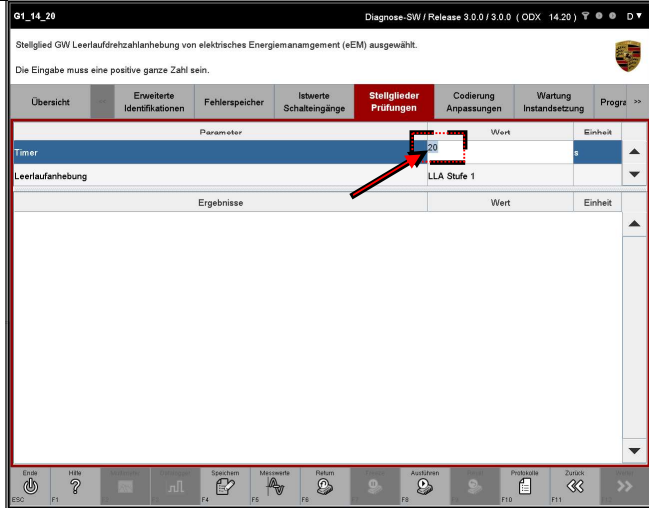
6. The value is then entered in the value field of the test routine accepted.



Variant 2: Changing the parameter via manual input

7. If the value does not have any permanently adjustable values, you can change the value using a manual parameter input.

To do this, click in the value field of the test routine and enter the desired value.



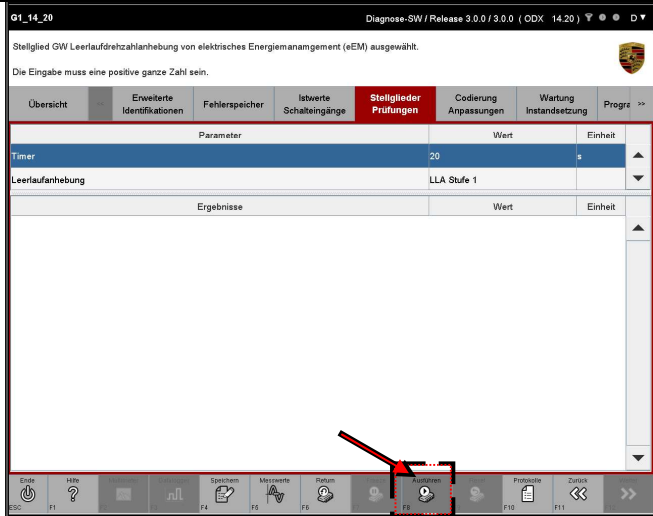
If an actuator has no parameters, the value field cannot be selected.

Proceed further

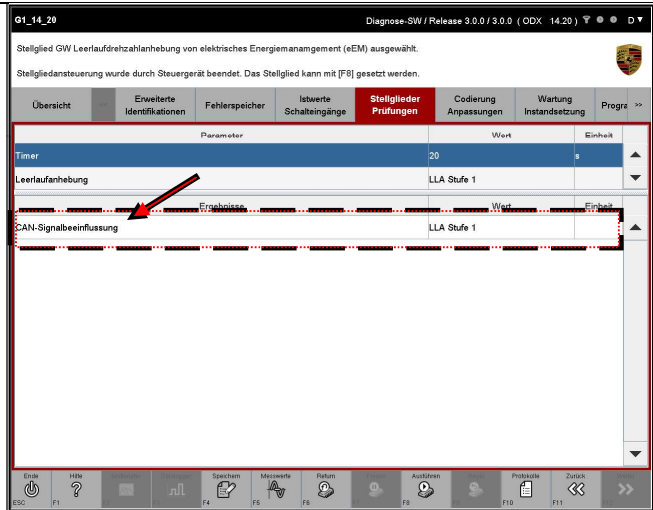
8. To start the test routine or to set the parameter value, press the <F8> key.

To stop the process again, press the <F8> key again.

Note:
It can happen that the routine was already started when it was called. In this case, there is of course no need to start the routine.
Furthermore, it can happen that the routine is ended automatically. In this case, there is no need to stop the routine.
So make sure you know the status of the check routine. To do this, refer to the label on the <F8> key, which varies with the status.



9. The result of the action is shown in the lower area of the current screen.



8.5.4 Set actuators




Basically, there is no difference in operation when entering values for actuators and test routines. In the case of actuators, only other buttons are enabled in the control bar.


1. Enter the appropriate values for the respective parameters. For the various options for entering values, see Chapter 8.5.3.


2. Set the actuator by pressing the <F8> key. The action-specific buttons are only activated after the actuator has been set.

3. The additional possible actions are shown in the Control bar displayed.

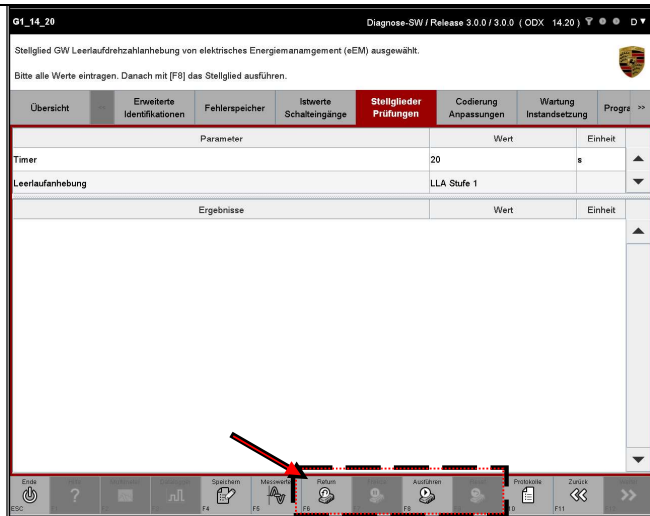
The following additional keys are available:

- 

Return:
If you press the <F6> key, control of the actuator is returned to the control unit.
- 

Freeze:
If you press the <F7> key, the current position of the actuator is saved.
- 

Reset:
If you press the <F9> key, the actuator is reset to a standard value.



4. The result of setting the actuator is displayed in the lower area of the screen. In the information area, you will also be informed which action (Freeze, Reset, Return, Execute) the current result value relates to.



The <F8> key also remains active so that you can set the actuator again if you have changed an input parameter.

8.5.5 KWP2000LP functionality

If the selected actuator has a KWP2000LP communication protocol, the test sequence is carried out in a different way in the Actuators / Tests function group:

After you have selected an actuator and started the test routine with the <F8> key, you can use the <F12> key to call up the next function for this actuator and thereby work through the test sequence successively.



With sequential and selective actuator tests, you have the option of using a suitable key in a configuration file to determine whether ??:

- ?? a defined start of the actuator test is to take place via <F12> or automatically by the diagnostic application,
- ?? At the end of a sequential actuator test, a continue command should be automatically sent to the control unit by the diagnostic application or you have to send it manually via <F8>.

To set this feature:

► See chapter 6.3.1

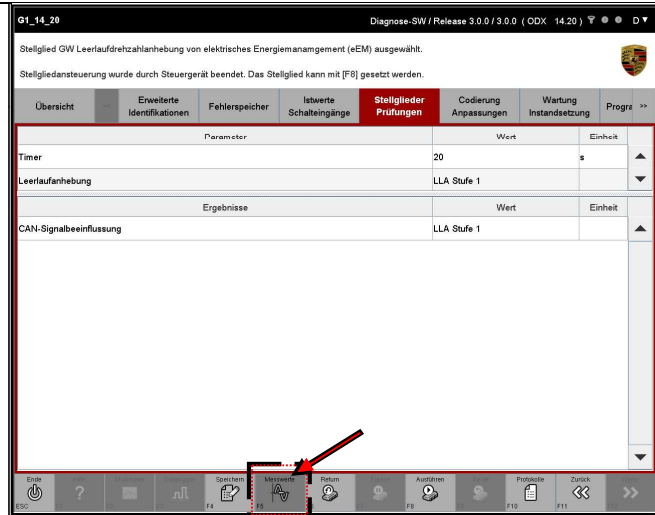
8.5.6 Combined display of actual values and actuators / tests



You have the option of expanding the display of results in the work screen of the actuators / tests. In addition to the results of the actuator test or the routine execution, you can display the measured values of individual measured variables that have been stored for the corresponding actuator in the results area.

The additional measured values to be displayed must first be selected in an actual value screen with reduced functionality.

1. Press the <F5> key (measured values) on the work screen.

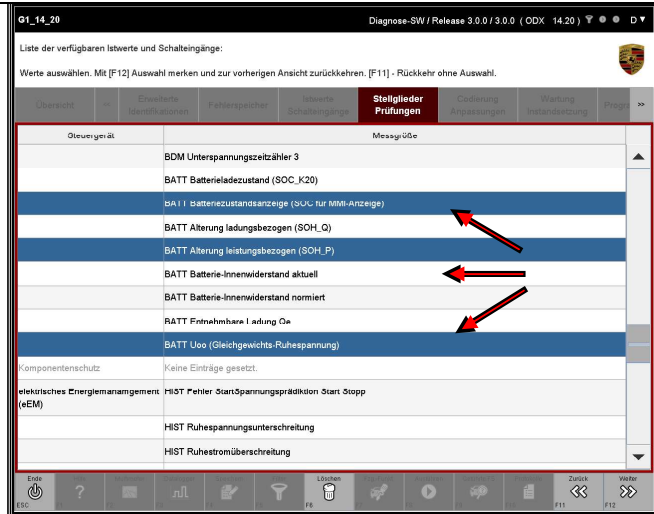


The following selection screen is visually identical to the screen for the actual values / switching inputs, but with some restrictions:

- Calling up another function group is prevented.
- The functionality of the actual values / switching inputs function group will be limited to the selection and deselection of measured variables.

2. All measured variables of the previously in the control unit List or control device overview selected control devices listed. For the / those previously in the function group **Actuators / tests selected** actuator / routine, individual measured variables are already pre-marked.

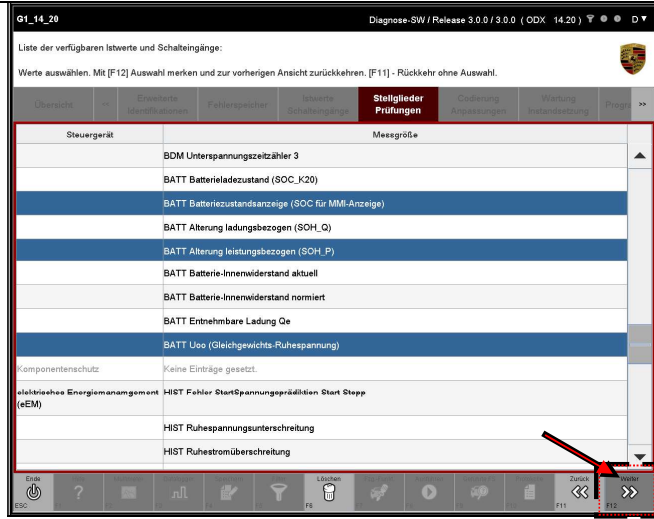
Now click on the measured variables whose measured values are also displayed want to get.



Preselected elements can only be deselected in E mode. This preselection cannot be deleted in P and V mode. However, you may be able to add further measured variables to this preselection.

3. Then press the <F12> key to accept the selection and return to the screen of the **Actuators / exams to arrive**.

If you do not want to accept the selection, press the <F11> key. You will then also get to the screen of the **Actuators / tests back**, but without displaying further measured values. Any selections made are included discarded.



The selection made is stored in a user-specific filter when you confirm with <F12>. This filter is retained even after the diagnostic application is terminated or after a new installation. So if you call up the same control unit again at a later point in time, you will? depending on which control units were selected in the control unit list and in the control unit overview - the last selections made are displayed again on the selection screen.

If you have selected fewer or different control devices in the control device overview, you will be offered either fewer or different selections.