

Scandevil PC Mode

Functions and commands

Bios Version 1.1.0

PC mode:

In PC mode, a virtual COM port is available, with any terminal program (such as HyperTerminal) can be addressed. Please provide the terminal program for royalty COM port, as the protocol parameter to set a 8N1 (8 bits, no parity, 1 stop bit). The baud rate will be ignored due to the USB connection, any value can be set here. It will always be used the maximum USB speed. For convenient use of the Scan Devil PC Mode we recommend the programs moDiag or OBD-Diag.

Command entry:

You will get a list of all available AT commands if you enter a question mark:

>?

The number and sequence of commands shown here may vary in different BIOS versions. Please make sure you read the corresponding BIOS Update documentation.

Many via AT command modifiable parameters can be immediately stored permanently in EEPROM. To check which these are, please refer to the command table. Please set a point before the command:

ATE0 Changes the command only temporarily until the next reset (**ATZ, ATWS, ATD**)

.ATE0 Saves the command permanently from, so is valid even after a reset.

Notes:

The Scan Devil PC mode was created largely compatible with other existing OBD2 adapters, due to changes in microcontroller architecture and the already slightly dusty old instruction set have been changed and expanded. In this way, it can happen that the Scan Devil PC mode no longer works with all programs. Only the proper functioning with moDiag and OBD-Diag is guaranteed.

The "Ident Edit" program does not work anymore. Due to the simplified instruction set changing the Ident-text is now easily possible via terminal program. Please take a look in the instruction set described in "Atomy" and "ATOID".

ENTERING FUNCTIONS AND OBD COMMANDS

All entries are made to the prompt character>. After execution of a function or OBD2 command the user must wait for this sign to enter a new command. A command must be completed by the carriage return character (ASCII 13d, 0x0D). By default, all characters with ASCII 33d 0x21 ignored and all lowercase letters are converted to uppercase. Entered blanks are used only for readability, but are completely ignored.

The interface distinguishes between two different command groups:

- Internal commands to configure and initialize the interface controller. All of these commands begin with the characters "AT", this was taken over by the control commands for modems and means "Attention, attention! This only applies for the delivery status of the scan Devil. All commands can be completely renamed, so no longer need to start with "AT".
- Data, which are forwarded to the OBD2 bus for the control unit of the vehicle. All these commands are transmitted as hexadecimal numbers. It may therefore only entered ASCII characters 0-9 and AF in pairs.

In the following examples, each entry must be completed with the newline character, it is not mentioned separately.

Examples:

at dp

Is converted internally by ATDT

A T Z

Is converted internally to ATZ

01 1c

Is converted internally to 011C

If the newline character CR fails, the command will be automatically cancelled after 10 seconds and a ? is output as an error message. This time period can be changed with the ATST command.

Commands that are not understood by the controller or incorrect entries in hex values, are also a ? as an error message acknowledged On delivery all error messages are also displayed as plain text, this can be switched off to allow compatibility with older interfaces.

OBD2 commands must always be entered with even number of hex characters:

Example:

0100

or

01 00

An odd number of characters produce an error message.

Some AT commands require additional parameters one or more hex characters or decimals. The exact number, please refer to the command list. An incorrect number of parameters is also acknowledged with an error message.

A list of all AT commands is displayed by typing >?. Here all commands are issued with the corresponding function codes. The order of the commands in the list is not sorted, but has been established during the programming of the software.

COMMAND TABLE OVERVIEW

Notes on the command table:

- The column "ATZ" indicates which parameters are reset by ATZ, ATD or ATWS to the stored default value.
- The column "memory" indicates which parameters can be stored.
- Defaults are shown bold

Command	ATZ	Memory	Function name
ATI			Displays the interface ID
ATE	✓	✓	Switches the terminal echo (on/off)
ATL	✓	✓	Linefeed (0x0A, ASCII 10) after carriage return (on/off)
ATZ			Warm start reset, restore defaults
ATD			Reset to Defaults (without reset)
ATWS			Faster warm start, same function as ATZ
ATOEN	✓	✓	Output error as numbers instead of plain text [on / off]
ATOMY	✓	✓	Add Your Own Interface ID [on / off]
ATOID		✓	Enter your own interface ID
ATOF	✓	✓	Microcontroller output format on / off
ATOHS	✓	✓	Spaces between HEX bytes [on / off]
ATOUC	✓	✓	Convert characters to uppercase [on / off]
AT!			Special functions, display internal data
ATV			See a list of modifiable parameters
ATH	✓	✓	See OBD2 header [on / off]
ATP		✓	Protocol preset [AUTO]
ATONI	✓	✓	Connection without initialization [on / off]
ATONR	✓	✓	After initialization no Send inquiry [on / off]
ATN			Output Current Log as a number
ATDP			Output Current Log in plain text

ATK			ISO / KWP Show Key bytes
ATB			Show Buffer content completely
ATBD			Show Buffer content (compatible, short)
ATSF	✓		Set ECU filter [0x00 = off]
ATSW	✓	✓	Set Wakeup time [0x19]
ATST	✓	✓	Set Input timeout [0x64]
ATSH			Set header for ISO, KWP, PWM, VPWM
ATWM			Set wakeup message for ISO, KWP
ATRST			Cold Start reset all values to default (if not saved)
ATCB			Setting the CAN bit rate for the protocols 8 and 9
ATCA	✓	✓	CAN Auto Format [on / off]
ATCC	✓	✓	CAN Flow Control [on / off]
ATCD		✓	CAN Flow Delay [0x0A]
ATCT		✓	Setting CAN TX address [7DF, 18DB33F1]
ATCR		✓	Setting CAN RX filter [7E0-7EF, 18DAF100-18DAF1FF]

COMMAND LIST

Notes on the command table:

- (x) Optional parameters in parentheses.
- [x | y | z] Required parameters in square brackets to the list of allowed values.
- A point before the command means that the change is stored directly in the EEPROM and thus remains stored after a reset or disconnection of the supply voltage.

Command: **ATI**

Function Code: 01

Name: Shows the Interface ID on

example:

```
> ATI
```

```
DIAMEX Scan Devil v1.0
```

The Interface-ID of the scan Devil is issued. However, this can be changed for compatibility adjustments when a user program is not yet known the new interface and his ID is to be transmitted for a known interface. With the option described below commands Atomy and ATOID the identifier can be changed temporarily or permanently.

Command: (.) **ATE [1 | 0 | ON | OFF]**

Function Code: 02

Description: Switches the terminal echo on or off (ASCII 10) after a carriage return on / off.

Default: 1 ON

Examples:

```
> ATE1
```

```
OK
```

```
> .ATE OFF
```

```
OK
```

Turns the terminal echo on or off. When working with a terminal program, it is in most cases quite useful to have turned the echo, because you get sent back immediately a typed character and can control it, whether the input is OK.

After ATZ, ATD ATWS or the default value is set. With a point before the command of the set parameter is stored in the EEPROM of the interface and thus serves as a standard value by ATZ, ATWS or ATD.

Command: (.) ATL [1|0|ON|OFF]

Function Code: 03

Description: Turns the expenditure of Line Feed

Default: 1 ON

Examples:

> ATL1

OK

> .ATL OFF

OK

This command displays the output of the additional Line Feed character (ASCII 10, HEX 0x0A) is controlled by a carriage return. Many terminal programs add their own line feed characters added when they recognize a carriage return, this means that output behind each line an extra blank line inserted and the output is unnecessarily prolonged.

After ATZ, ATD ATWS or the default value is set. With a point before the command of the set parameter is stored in the EEPROM of the interface and thus serves as a standard value by ATZ, ATWS or ATD.

Command: ATZ

Function Code: 04

Description: warm start Reset

example:

> ATZ

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This command breaks all the functions and the interface performs a warm start reset. The current call is disconnected and various parameters are reset to their default values if they are not permanently stored in the EEPROM (see Function table).

Command: ATD

Function Code: 05

Name: Restore Defaults

example:

> ATD

OK

Various parameters are reset to their default values if they are not permanently stored in the EEPROM (see Function table). In contrast to the ATZ command a possibly forehand compound is not isolated.

Command: ATWS

Function Code: 04

Description: Faster warm start Reset

example:

> ATWS

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>

This command breaks all the functions and the interface performs a warm start reset. The current call is disconnected and various parameters are reset to their default values if they are not permanently stored in the EEPROM (see Function table). The difference with the ATZ command is that this command is executed more quickly.

Command: (.) ATOEN [1|0|ON|OFF]

Function Code: 07

Description: An error occurred as a number rather than send as plain text (enable Numbers)

Default: 0 OFF

Examples:

```
> ATOEN1  
OK
```

```
> .ATOEN OFF  
OK
```

By default, errors are displayed as plain text. To simplify the evaluation with a microcontroller, hereby the error code can be output as hex value.

Example with ATOEN0:

```
> AT  
? UNKNOWN COMMAND
```

Example with ATOEN1:

```
> AT  
? Error # 03
```

After ATZ, ATD ATWS or the default value is set. With a point before the command of the set parameter is stored in the EEPROM of the interface and thus serves as a standard value by ATZ, ATWS or ATD.

Command: (.) Atomy [1 | 0 | ON | OFF]

Function Code: 09

Description: Show your own interface ID (show my id)

Default: 0 OFF

Examples:

> ATOMY1

OK

> .ATOMY OFF

OK

To personalize the Devil can scan the message that appears at the ATZ or ATI commands are changed. These must first be prepared using the following command ATOID. With ATOMY1's own text will now be activated.

Example with ATOMY0:

> ATI

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Example with ATOMY1:

> ATI

My great OBD Interface

Please note that the interface can no longer be detected by the change in the text of various programs.

After ATZ, ATD ATWS or the default value is set. With a point before the command of the set parameter is stored in the EEPROM of the interface and thus serves as a standard value by ATZ, ATWS or ATD.

Command: (.) ATOID "OWN TEXT"

Function Code: 0A

Name: Enter interface ID

Default: OBD-Diag

Examples:

> ATOID WITHOUT BLANK

OK

> .ATOID "With space

OK

To personalize the Devil can scan the message that appears at the ATZ or ATI commands are changed. The length of the text can be up to 32 characters, more characters can be entered, the text is truncated to 32 characters. If lowercase letters or spaces appear in the ID text, the text must end with a "-" start characters. Only with the command ATOMY1 the entered text is activated.

With a point in front of the command, the entered text is stored in the EEPROM of the interface and thus is even after disconnecting the power supply is available again.

Command: (.) ATOF [1|0|ON|OFF]

Function code: 0B

Description: Microcontroller output format switch (output format)

Default: 0 OFF

Examples:

> ATOF1

OK

> .ATOF OFF

OK

For the evaluation of the output data, the output format can be switched. In conjunction with the following command ATOHS can thereby be saved to some unnecessary characters in the transmission.

On delivery, the output format is compatible with the other OBD2 adapter.

After ATZ, ATD ATWS or the default value is set. With a point before the command of the set parameter is stored in the EEPROM of the interface and thus serves as a standard value by ATZ, ATWS or ATD.

Command: (.) ATOHS [1|0|ON|OFF]

Function Code: 0C

Description: show space between Hex bytes (hex space)

Default: 1 ON

Examples:

> ATOHS1

OK

> .ATOHS OFF

OK

To reduce the transmitted character and to simplify evaluation of the result data all disturbing Blanks between the hex-outputs can be suppressed.

Example with ATOHS1:

11 22 33 44 55 66

Example with ATOHS0:

112233445566

On delivery, the output format is compatible with the other OBD2 adapter.

After ATZ, ATD ATWS or the default value is set. With a point before the command of the set parameter is stored in the EEPROM of the interface and thus serves as a standard value by ATZ, ATWS or ATD.

Command: (.) ATOUC [1|0|ON|OFF]

Function code: 0D

Name: Convert characters to uppercase (uppercase)

Default: 1 ON

Examples:

> ATOUC1

OK

> .ATOUC OFF

OK

All AT commands in the delivery must be entered in uppercase letters. Therefore, an automatic conversion from lower to upper case is active. By changing the command list and commands in lowercase letters can be created, in this case, the conversion should be disabled in uppercase.

After ATZ, ATD ATWS or the default value is set. With a point before the command of the set parameter is stored in the EEPROM of the interface and thus serves as a standard value by ATZ, ATWS or ATD.

Command: AT! [xx]

Function Code: 0E

Name: Special Functions

With this command internal data of the Scan Devil can read, but not be changed.

Checking the serial number:

> AT! 00

12345-67890-123

View Device ID:

> AT! 01

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View Board Voltage:

> AT! 10

13.5V

Other commands are only needed for the system test in the production of the device and are therefore not listed here.

Command: ATV

Function code: 0F

Name: See a list of modifiable parameters

The following output should appear at delivery (Protocol 5 active):

```
>ATV
IO-CFG: E1 L1 OHS1 OUC1
OUT-CFG: H0 OF0 OEN0 OSY1 OMY1
OBD-CFG: ONI0 ONR0
VALUES: SF00 SW19 ST64
OID: OBD-Diag
HEADER: C0 33 F1
WAKEUP: C1 33 F1 3E
CAN-CFG: CA1 CC1
BPS (CB): BRP=2 TSEG1=16 TSEG2=8 SJW=4 (500000 bps)
TX (CT): 7DF 18DB33F1
RX (CR): 7E0-7EF 18DAF100-18DAF1FF
FLOW(CD): 30 00 (0A)
```

Command: (.) ATH [1|0|ON|OFF]

Function Code: 10

Spend OBD2 header and checksum byte: Identification

Default: 0 OFF

Examples:

```
>ATH1
OK
```

```
>.ATH OFF
OK
```

Here you can choose whether the OBD2 header and the checksum will be switched on at PWM, VPWM, ISO, KWP-pending or the CAN address and PCI bytes in CAN issues.

If the vehicle has installed more control devices, it is always better to have turned the header, thus it can be seen immediately, which control unit supplies the data. If it can be assumed that there is only one answer (for example, constant polling of vehicle speed), the header can be switched off to useless characters in the transfer us to suppress evaluation.

If the alternative output format is selected ATOF1, the setting has no function in this case the header data are always output.

After ATZ, ATD ATWS the default value is set. With a point before the command of the set parameter is stored in the EEPROM of the interface and thus serves as a standard value by ATZ, ATWS or ATD.

Command: (.) ATP ([A] [0..9])

Function Code: 11

Description: Set or view log

Default: 0 AUTO

Examples:

>ATP

2 = SAE J1850 / VPWM

>.ATP 5

OK

This command creates a OBD2 protocol which can be set before the connection is established. By default ATP0 is set, this means that an automatic scan of all protocols is performed. However, if the protocol of the vehicle is known, this can be preset here, making it a much faster connection possible. To preset the protocol KWP2000, please enter "ATP5". In this case, only used the protocol 5 (KWP2000). If you are not sure if this is the correct protocol, you can also enter "ATPA5". In this case, a complete protocol scan is performed after a failed connection with Protocol 5.

With a point before the command of the set parameter is stored in the EEPROM of the interface and is thus the default value by separating the power supply is available again.

Command: (.) Atoni [1 | 0 | ON | OFF]

Function Code: 12

Name: connection without initialization (no init)

Default value: 0 OFF

Examples:

>ATONI1

OK

>.ATONI OFF

OK

The protocols PWM (1), VPWM (2) and CAN (6..9) no special initialization sequence is required to prepare a compound of the OBD2 interfaces with the control unit in the vehicle.

However, to secure recognition of the Protocol, Scan Devil sends always the first connection the sequence 01 00, which has to be answered by any OBD2-enabled controller. This first Connection establishment may be suppressed by ATONI1. In this case, the connection is established, if the control unit delivers a valid response to an OBD2 request.

NOTE: Switching off of the initial sequence is only possible by choosing the ATPx protocol.

After ATZ, ATD ATWS the default value is set. With a point before the command of the set parameter is stored in the EEPROM of the interface and thus serves as a standard value by ATZ, ATWS or ATD.

Command: (.) ATONR [1|0|ON|OFF]

Function Code: 14

Description: After initializing do not send any request (no request)

Default: 0 OFF

Examples:

>ATONR1

OK

>.ATONR OFF

OK

When the automatic protocol search mode (ATP0) is used to connect, immediately after a recognized protocol entered OBD2 command is sent. This can be suppressed with ATONR1. In this case, not the response of the OBD2-command but 3 bytes will be returned for a detected protocol:

05 8F E9 Here the protocol 5 with the key bytes 8FE9 has been found.

06 00 00 Here the protocol 6 has been found. For this protocol no key bytes exist.

After ATZ, ATD ATWS the default value is set. With a point before the command of the set parameter is stored in the EEPROM of the interface and thus serves as a standard value by ATZ, ATWS or ATD.

Command: ATN

Function Code: 14

Identification: Output Current Log as number

example:

> ATN

F5

The currently active protocol as hex value F1 - F9 issued.

If there is no connection, F0 is output.

Command: ATDT

Function Code: 15

Identification: Output Current Log in plain text

Example:

>ATDP

ISO 14230-4, KWP2000 (Fast Init)

The currently active log is displayed in plain text.

If there is no connection, NO CONNECTED is displayed.

Command: ATK

Function Code: 16

Description: See ISO / KWP Key bytes

example:

> ATK

8F E9

The Key bytes of the active ISO / KWP connection (logs 3,4,5) are issued.

If the active protocol does not support Key bytes, is issued 00 00.

Command: ATB

Function Code: 17

Description: Show buffer content

example:

>ATB

86 F1 10 41 00 B8 7B 30 10 3B

The complete data received in the last OBD2-command including header and checksum bytes are output.

Command: ATBD

Function Code: 18

Description: Show Buffer content, compatible (buffer dump)

example:

>ATBD

0A 86 F1 10 41 00 B8 7B 30 10 3B 10 00

The first maximum 12 bytes of the last OBD2 command are issued. The first byte indicates the number of valid bytes displayed. 0A = 10 valid bytes.

NOTE: This command is only for compatible with older OBD2 interface available and can no longer be available in future versions. Please use instead the ATB command.

Command: ATSF [xx]

Function Code: 19

Title: put ECU filter (set filter)

example:

> ATSF10

OK

In general the control units reply at automatic vehicles with the identifiers 10 (motor) and 17 (transmission). Here, the expenses can be reduced by inserting the filter to the desired control device in order to facilitate the analysis by the software. The filter can be switched off by entering ATSF00.

NOTES: If an invalid code is entered as a filter, can all outputs be cancelled and only NO DATA is displayed. The set filter value cannot be saved, after the ATZ the filter is automatically disabled.