

# **Bordcomputer for smart for2-2 (451)**

A product of MDC

-V2.10-

The on board computer serves for the determination and announcement of the data resulting in the car and can be used so purposefully to an appropriate driving fashion.

Because only who know, its driving fashion causes which gasoline consumption, can it change.

The data are represented on two displays.

All important data are represented as continuous announcement.

## Output data of on board computer:

- Current consumption
- three separated driving statistics also:
  - ➔ Travel time
  - ➔ Distance
  - ➔ Average consumption
  - ➔ Average speed
  - ➔ Insertable maximum speed
- Time
- Speed
- Speed (RPM)
- On-board voltage control
- boost pressure
- Engine temperature in 1 ° to steps
- Highly exact tank contents announcement with warning tips
- Rest distance calculation
- Acceleration measurement
- Graphic consumption announcement
- Total kilometer
- Trip odometer
- Service interval announcement
- Gear indicator
- Gear indicator in automatic mode
- Warning symbols :
  - ➔ Water temperature rise (instead of original announcement)
  - ➔ Oil pressure (instead of original announcement)
  - ➔ Battery charge (instead of original announcement)
  - ➔ Door(s), Rear flap up
- cruise control indicates all functions for the MDC cruise control
- Outside temperature with warning symbol
- Inside temperature \*2
- Oil pressure \*2
- Oil temperature \*2
- Connection of an optional temperature sensor \*2
- OBD Diagnostic function
- Very adaptably, individually Adjustable.

\*2 Only with distributor box and sensors

## Other options:

- Able of update on Internet and PC-USB connection
- Prepared for future additional options.
- Individually Adjustable (also comfortably about PC with other set possibilities)
- Simple two-keys operation
- Simple installation in the speedometer housing without changes in the speedometer

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- Trouble-free back construction on the original state possibly

## Attention:

**We recommend to print out this side and to lay in the glove compartment!**

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## Workshop mode

In the workshop mode

1. All activities OBD of the BC opposed.
2. 1. The use the right served branch in the cockpit again on the original state made.

The workshop mode is required for the following use:

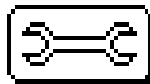
- ✓ Adjusting of the brightness of the cockpit lighting with switched on dipped headlights.
- ✓ Switch off of the ESP.
- ✓ Connection of certain diagnosis devices.

Tip:

- During the workshop mode does not become the right key on the BC durchgeschaltet, there occurs no side wide circuit in the BC.
- OBD Data cannot be selected any more by BC.

## Turning on of the workshop mode

1. Ignition turning on.
2. Both keys in the cockpit operate at the same time.
3. A bordered spanner is indicated.

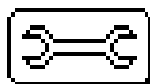


4. Keys release.
5. Within the 10s ignition switch off. Now the workshop mode is activated and is confirmed with ignition one with a filled out spanner.



## Turning off of the workshop mode

1. Ignition turning on.
2. Both keys in the cockpit operate at the same time.
3. A bordered spanner is indicated.

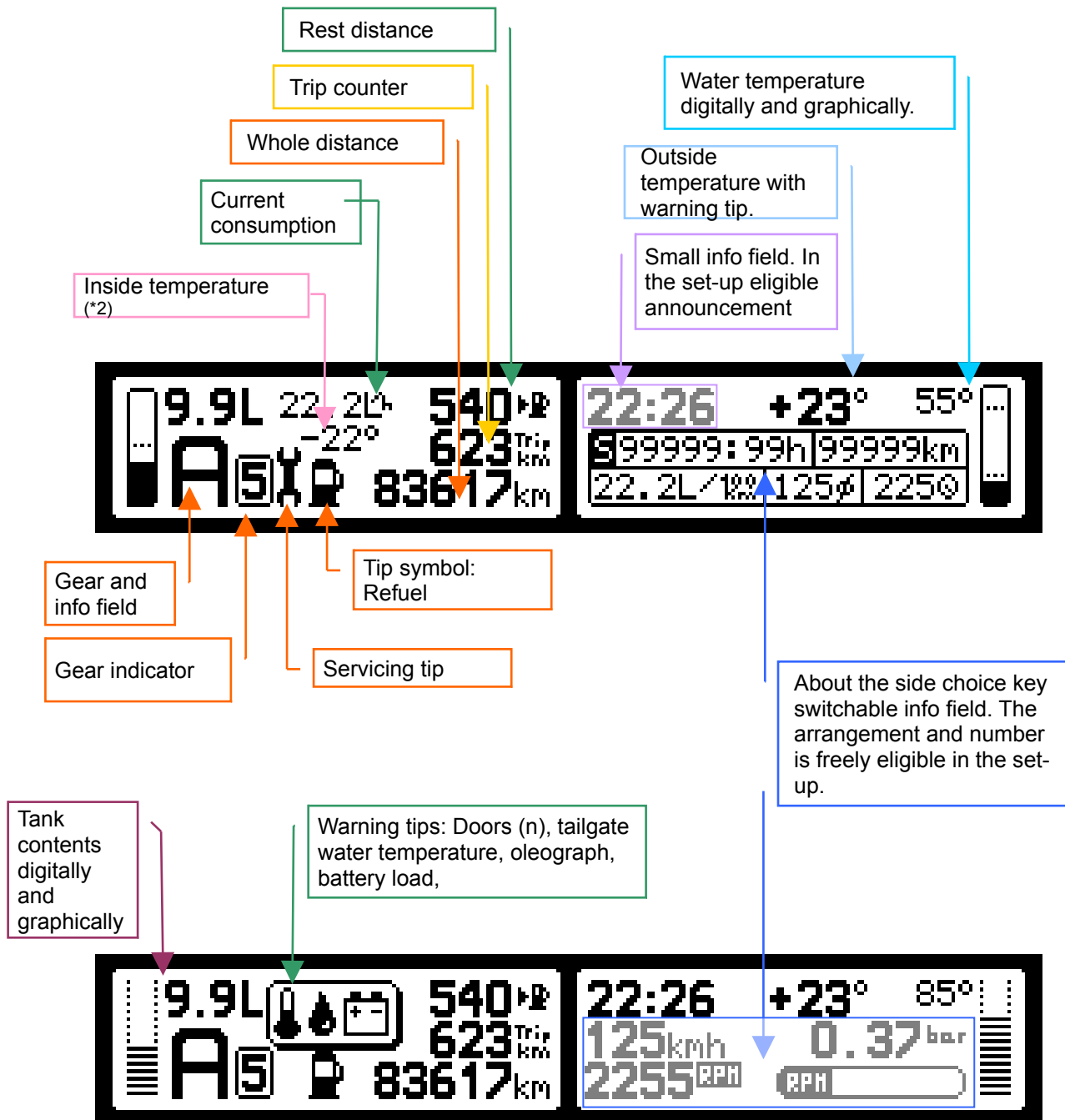


4. Keys release.
5. Within the 10s ignition switch off. Now the workshop mode is deactivated and is confirmed with ignition one with a dark spanner.

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## Key allocation in the Standby:

With taken off ignition key can be switched on the lighting the LCD by operation the one of the two keys briefly.

## Delete the statistical values of the two statistics R and S:

The R-statistics can be deleted only manually. In addition, the S-statistics is deleted automatically at expiration of a park time, can be put back at any time manually.

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Overview key function:

Ansicht	Linke Taste	Rechte Taste
Normally representation	2s: Day kilometres clear (On side OBD not possibly)  25s: Counter engine starts clear	short: Switch next data side  2s: Delete statistical value
OBD side	short: next PID value *	short: Switch next data side
	2s: show temporary error codes	2s : next PID value *
	once more 2s: show final error codes	
	10s: OBD error memories clear	
		* alternatively
3. Dataside	2s: Day kilometres clear	short: Switch next data side  2s: the next free-switched underside  Special case acceleration measurement 2s: Measurement begin / stop 5s: the next free-switched underside
setup	Both keys 5s hold	
In the setup menu	short: menu selection  2s: A menu level back Or finish set menu	Input / value change
With ignition off	Lighting for a short time on	Lighting for a short time on
Workshop mode	Change-over: Both keys short hold → ignition off	

With „scan function“ (automatic switching of the data sides) can be interrupted by short pressing of the right key „scan function“. By renewed short pressing, it is begun „scan function“ again. During the "interruption" the right key can be operated "long", around a suitable function (clear, etc.) to explain on the data side.

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## Attitude menu „Setup“

Serves for the personal adjustment of on board computer by the user. All attitudes remain permanently, also stored without voltage supply.

### Switch on the Setup menus:

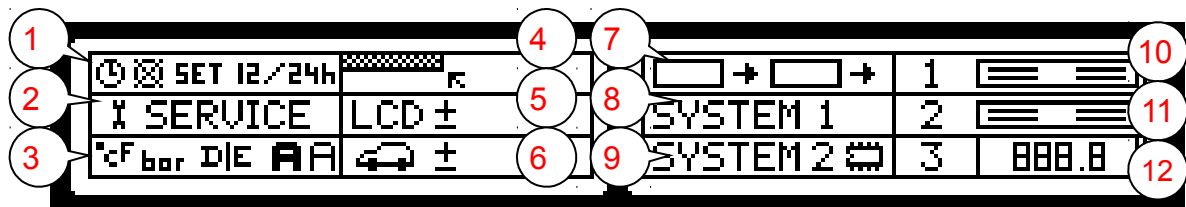
Both keys for 5s hold. Release afterwards both keys.

### Operation:

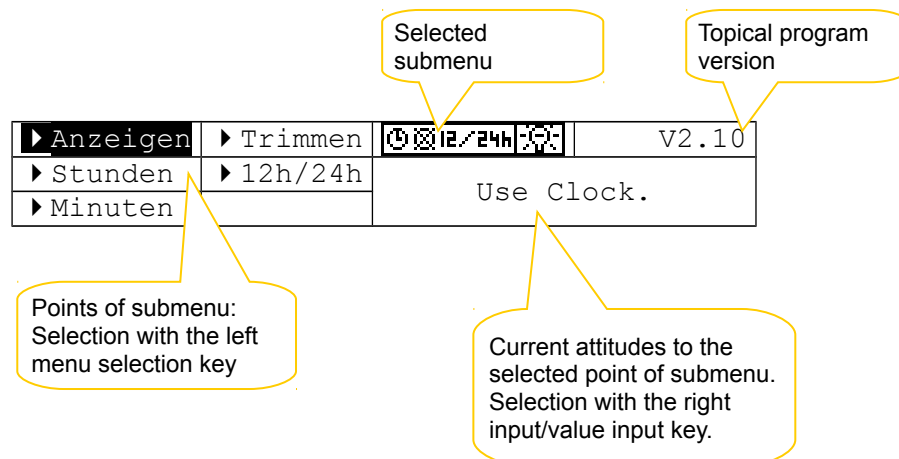
Left Key → Menu selection. (2s hold back → a menu)

Right Key → Input, value input

### Menu main side



### Menu Undersides...



To each selected point of submenu in the left LCD, in the right LCD the appropriate setting is indicated.

The respective menu/submenu can hold through for the left menu selection key from 2 seconds to be left (a menu level back).

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Menü

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▶ Show	▶ Adjust	00:12/24h	V2.10
▶ Hours	▶ 12h/24h	Use Clock.	
▶ Minutes			

## Show:

Use Clock

The inserted clock is supported in the system and can be selected in the appropriate menus.

Don't use the clock

The inserted clock is not supported in the system and cannot be selected and indicated in the appropriate menus no more.

## Hours:

0:00

Adjusting of the hours.

## Minute:

0:00

Adjusting of the Minutes.

## Trimm:

+0



Here manufacturing tolerance of the clock quartz can be compensated and the way of the internal clock become fine-adjusted.

+ Values → Clock goes faster.

- Values → Clock goes more slowly.

Set area -15...+15

## 12h/24h:

12h

12 hours of announcement.

24h

24 hours of announcement.

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Menü

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Service

▶ Reset1	▶ Reset2	I SERVICE	V2.10
▶ Interval [Miles]		Reset	
▶ Interval [Days]		▶ 2s hold	

## Rücksetzen:

Reset

▶ 2s hold

The BC own interval announcement is put on the topical vehicle value. The topical selected service 1 or 2 is put back.  
Right key two seconds hold.

Service is

Reset

Maintenance is reset. The interval was set on those, in the menu of stopped values. Maintenance is again indicated, if one of the two defaults applies first (days or Miles).

---

## Interval [Miles]:

10000 Mi

Default of the servicing interval in Miles.

---

## Interval [Days]:

360 Days

Default of the servicing interval in Days..

---

Tip: The BC owns own servicing counter. This is not identically with service interval counter belonging to vehicle!

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Menü

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▶ Abs/Rel	▶ L/G km/M	°C F bar km Mi AA	V2.10
▶ bar/psi	▶ Symbols	Relativ	
▶ °C °F	▶ Font 1		

## Abs/Rel:

Absolut

The pressure announcement did cover to the surroundings pressure.

Relativ

The pressure announcement is relative to the surroundings pressure.

Extern

The pressure announcement is connected directly in the pressure sensor.

**Tip: The boost pressure measurement is available only with vehicles with turbocharger!**

---

## bar/psi:

bar

Unit of all pressure measurements in bar.

psi

Unit of all pressure measurements in psi

---

## °C °F:

°Celsius

Unit of all temperature measurements in Celsius.

°Fahrenheit

Unit of all temperature measurements in Fahrenheit.

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L/G km/M:

Index	Verbrauchsanzeige	Strecken	Liter/US/UK Gallonen
1	L/100km	km	Liter
2	L/100km	km	US-Gallonen
3	L/100km	km	UK-Gallonen
5	L/100km	Miles	Liter
6	L/100km	Miles	US-Gallonen
7	L/100km	Miles	UK-Gallonen
9	L/100 Meilen	km	Liter
10	L/100 Meilen	km	US-Gallonen
11	L/100 Meilen	km	UK-Gallonen
13	L/100 Meilen	Miles	Liter
14	L/100 Meilen	Miles	US-Gallonen
15	L/100 Meilen	Miles	UK-Gallonen
17	Mpg (Miles per Gallon)	km	Liter
18	Mpg (Miles per Gallon)	km	US-Gallonen
19	Mpg (Miles per Gallon)	km	UK-Gallonen
21	Mpg (Miles per Gallon)	Miles	Liter
22	Mpg (Miles per Gallon)	Miles	US-Gallonen
23	Mpg (Miles per Gallon)	Miles	UK-Gallonen
25	km/Liter	km	Liter
26	km/Liter	km	US-Gallonen
27	km/Liter	km	UK-Gallonen
29	km/Liter	Miles	Liter
30	km/Liter	Miles	US-Gallonen
31	km/Liter	Miles	UK-Gallonen

The index is indicated with [xx].

Symbols:

**AN4**  
**AN4**

Gear info. field announcement in standard font.

Gear info. field announcement in narrow font.

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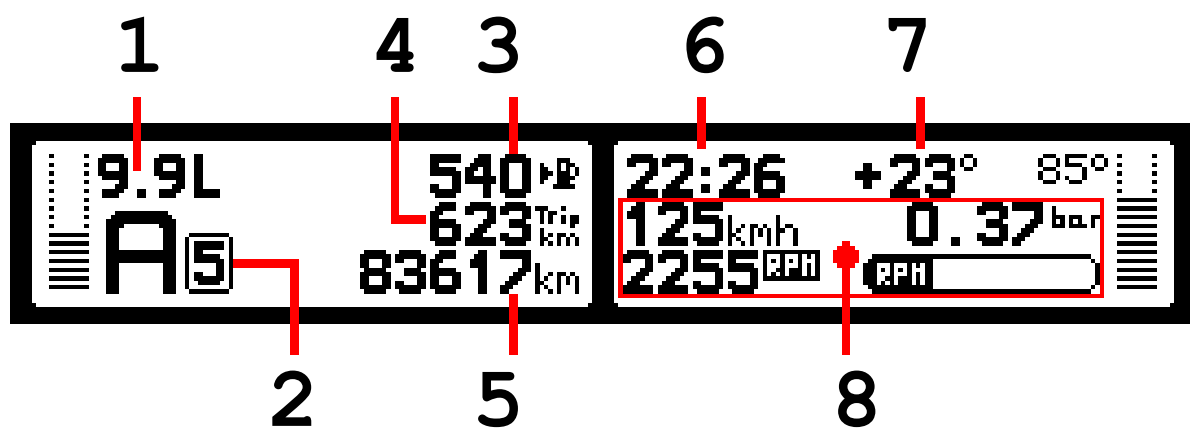
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Font 1...8:

0123456789 Numbers in standard font.

0123456789 Numbers in narrow font.

Allocation of the positions (1...8)



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Menü

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Specify to the value edition in the small info. field

▶ Value&Scanning		V2.10													
▶ Scan-Values	<table><tr><td>oCLK</td><td>oRPM</td><td>oLb.</td><td>o▲b.</td><td>oØC.</td></tr><tr><td>oMph</td><td>oVOLT</td><td>o▲T.</td><td>oØ↑</td><td>oIT.</td></tr></table>					oCLK	oRPM	oLb.	o▲b.	oØC.	oMph	oVOLT	o▲T.	oØ↑	oIT.
oCLK	oRPM	oLb.	o▲b.	oØC.											
oMph	oVOLT	o▲T.	oØ↑	oIT.											

## Value&Scanning:

Show No Value	No announcement in the small info. field.
Clock	Continuous announcement of the clock in the small info. field.
Speed	Continuous announcement of the speed in the small info. field.
Engine Speed	Continuous announcement of the number of eng.Speed with max. insertion.
Voltage	Continuous announcement of the voltage.
Boost Pressure(1)	Continuous announcement of the boost pressure. *1
OilTemperature2)	Continuous announcement of the Oil temperature. *2
OilPressure(2)	Continuous announcement of the Oil pressure. *2
Engine starts	Continuous announcement of engine starts
AccelerationMeas	Average of the topical consumption. *2
I-Temperature	optional inside temperature measuring point. *2
Scan: 3.5s	Automatic step up of all in „advancing values of “registered values with the indicated switching time (1s to 10s)

\*1 Cable to the engine compartment must be attached.

\*2 Distributer box with sensors necessarily.

## Advancing values:

oCLK	oRPM	oLb.	o▲b.	oØC.
oMph	oVOLT	o▲T.	oØ↑	oIT.

Field marking, ->  
field selected

Value marking,  
-> value is used with the Scan.

Here all values are registered, which are to be indicated with automatic step up (Scan function). Altogether the same 10 values are as in the continuous announcement at the disposal.

## Selection:

Field with the input key (right) select. Recognizably from the marking right above in the field.

Around the value to the Scan function to take up the same key (input key) for 2 seconds hold. For delivering likewise again 2s hold.

CLK:	Time
mph:	Speed announcement
RPM:	Engine speed
Volt:	Voltage
Lb.:	boost pressure
▲T:	Oil temperature
▲b:	Oil pressure
Ø↑:	Engine starts
ØC:	topical consumption
iT:	inside temperature measuring point

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▶ NightMin	▶ Frequenc	LCD±	V2.10
▶ Day Max	▶ LEDStdby	50%	
▶ OffDelay			

## Night Min:

33%  
50%  
66%  
100%

Luminosity the LCD lighting with switched on light

No dimm with light.

---

## Day Max:

33%  
50%  
66%  
100%

Luminosity the LCD lighting with switched off light

---

## OffDelay:

10s

Switch-off delay the LCD lighting after switching vehicle electronics off. The value is valid also during the pressing of a key in the Standby, which activates the LCD lighting briefly. At expiration of this time, the LCD lighting is switched off.

---

## LED-Frequenc:

+0 . . +5

In order to prevent a flickering, under manufacture tolerances the LCD with light (LCD dimming), can be changed the frequency the LCD. Range of values 0 (fast) to 5 (slowly).

---

## LEDStdby:

on

Minimum lighting the LCD also in the switched off condition. With blue LCD is needed, in order to be able to out still read off the LCD when ignition. The additional current consumption is only slight and can be neglected.

off

No additional LED lighting in the switched off condition.

---


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▶ CarModel	▶ Driver		V2.10
▶ Consum+/-	▶ TankCap	Benzin	
▶ Tacho +/-	▶ Tank100%		

## CarModel:

gasoline without turbo

All gasoline vehicles without turbo.

gasoline with turbo

All gasoline vehicles with turbo.

Diesel with turbo

Diesel engined vehicle with turbo.

## Consum+/-:

-124...+124

Consumption correction. Here manufacturing tolerances of the fuel injection system can become balanced. Serves also for calibration the consumption gauge (current and average) with GET down vehicles (- 124% to +124% in 1% steps. Basic values for Diesels. With the Benzin inputs can be possible until 100%!

## Tacho +/-:

-15...+15

Tacho correction. Here the tolerances of the Tacho can indicate on board computer to become balanced. Serves also for calibration the announcement with other tire sizes for the correct Geschwindigkeitsanzeige. (- 15% to +15%) base factor: 100% are smart Tacho. (Offset Originaltacho approx. +6-8%)

## Driver:

Left

Vehicle left steering wheel. Germany, the USA, etc.

Right

Vehicle right steering wheel. England, Japan, etc.

## TankCap:

33 Litre

Vehicle with 33 or 35 litres of tank contents.

## Tank100%:

Res (2s) Aktuell (5s) Reference text.

Switch short, switch on/off the automatic reading from tanksensor.

Switch 2s hold sets for the trained 100% tank value (for full) the delivery status (60) and activates the automatic training of the tanksensor value.

Switch 5s hold sets for the trained 100% tank value (for full) on the current raw value of the tank sensor measured in the system as 100% value and deactivates the automatic training of the tank sensor value. Vehicle should be filled up!

Autodetect (Values)

Announcement of the current condition for the determination of the tank giver value.

Automatically: The 100% value of the tank giver are determined automatically. If the BC finds a new higher value, then this is used as more again 100% reference value.

By hand: It does not take place automatic adjustment of the 100% of reference value. The stored value remains.

(Values): Current measured value / 100% Refernz value.

Delivery status = 60. Normally lies between 65 and 75.

Attention - >absolut value, no information of liter!

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Menü

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Aktive Seiten im Infocfeld.

▶ Site	R	S	1	2	3	T	<div><div></div>→<div></div>→</div>	V2.10
▶ OBD	▶ Batt.Mon						In use	
▶ AutoScan								

## Site R S 1 2 3 T

In use

The statistics R, S., T or the data side 1,2.3 is switched on and can be indicated with the side choice key.

Not in use

The statistics R, S., T or the data side 1,2.3 is switched off. This is not indicated with the side choice key any more.

## OBD:

In use

The OBD Function is switched on and can be indicated with the side choice key.

Not in use

The OBD Function is switched off. This is not indicated with the side choice key any more.

## Batt.Mon:

Show: 15sec

Of the battery Monitor (battery supervision while starting the machine) is visible for the opposed time while keeping on. The announcement can be finished with the right key.

Off

The battery Monitor is switched off

Permanently

The battery Monitor remains as long as visible, until the right key is switched.

Middle voltage during  
of the whole start process.



Calculated achievement  
the battery in percent

The lowest voltage  
during the start process

## AutoScan:

Scan: 3.5s

All activated sides are advanced automatically after the time stopped here.

No AutoScan

The automatic advancing function of the sides is switched off. Step up with the page selection key.

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Aktive Seiten im Infocfeld.

▶ IceWarn.	▶ Stat.R/S	SYSTEM 1	V2.10
▶ RPM Diss	▶ Stat.Clr	At+35 Flashing.	
▶ RPM Max	▶ Beams		

## IceWarn.:

No ice warning

Here the ice warning symbol can be deactivated.

At x° Flashing

At x° Not Flashing

Flashing one or not flashing ice warning with x°

## RPM Diss.:

1 RPM  
5 RPM  
10 RPM  
25 RPM  
50 RPM  
100 RPM

Dissolution of the RPM indication.

## RPM Max.:

5000 RPM

Input of the limit value for the maximum speed. With exceeding of the value stopped here, in the LCD one spends.

## Stat R/S.:

Stat. with MaxMmh

Driving statistics with capture and announcement of the maximum speed.  
Note: The average speed is indicated for it without decimal place.

Stat.without Max

Driving statistics without capture and announcement of the maximum speed  
Note: The average speed is indicated exactly for it as a decimal place.

## Stat.Clr:

Reset Stat.after  
5h

Automatic RESET the statistics of S after the time with turned off vehicle, stopped here. Time intervall 1 to 24 hours.

Reset Stat.after  
No autom.Reset

Automatic RESET the statistics of S is switched off. The statistics S can be put back over the right page selection key manually.

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## Beams:

Differently representations of the bars for level of fuel in the tank and water temperature.

Form 1	
Form 2	
Form 3	
Form 4	
Form 5	
Form 6	
Form 7	
Form 8	
Form 9	
Form 10	
Form 11	
Form 12	
Form 13	



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▶ Store setup data	SYSTEM2	V2.10
▶ Load setup data	To Start	
▶ Restore default	▶ 10s hold	

## Store setup data:

To Start

▶ 10s hold

Save of all made current attitude in the system. These can be loaded later again. (Rights key 10s hold)

Tip:

This storage area can be used as "a backup" to file own settings. These are not the settings used by the BC!

---

## Load setup data:

To Start

▶ 10s hold

Load of the stored attitudes. (Rights key 10s hold)

---

## Restor default:

To Start

▶ 10s hold

Restore all basic adjustments, like on delivery. NOTE: All made attitudes are overwritten!!!

(Rights key 10s hold)

**If an inside temperature sensor is connected, this is activated!**

---

Tip to the tank sensor maximum value:

The maximum value of the tank sensor is ordinarily determined by the BC itself and lies according to sensor between 65 and 70 (pure numerical value). If the authoritative value after one does not update of a control device any more is right, this can load with basic values again are put on a start value (Restore default). Not to lose, besides, own settings to the BC, had to go before with (Store setup data) everything are stored and after with (Load setup data) are restored .

Alternatively only the basic value of the sensor can be put in → menu Nr.6 (Tank100 %). Here automatic determining of the maximum value can be also switched off.

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Menü 10

Side construction of the data side Nr.1.

► Pos1	► Pos2	1	V2.10
► Pos3	► Pos4		
		Speed	

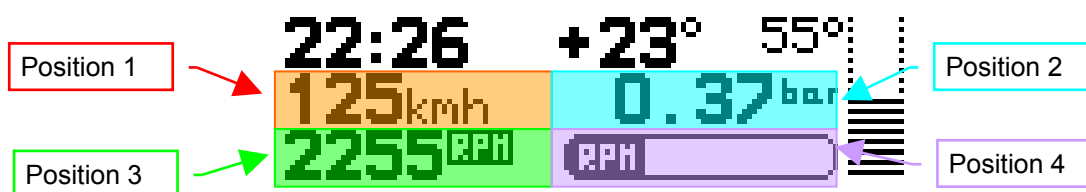
Pos1...4 :

Show No Value	No announcement selected. Field remains empty.
Clock	Issue of the time. Clock must be activated.
Speed	Indicate the current speed.
Engine speed	Indicate to the current number of revolutions.
Voltage	Indicate the current voltage.
BoostPressure (1)	Indicate the Boost Pressure. *1
OilTemperature (2)	Indicate the Oil Temperature. *2
OilPressure (2)	Indicate the Oil Pressure. *2
Engine starts	Indicate number of engine starts
Speed (—)	Number of revolutions as graphic bar line display.
BoostPre. (—)	Boost Pressure as graphic bar line display. *1
OilTemp. (—)	Oil Temperature as graphic bar line display.. *2
OilPres. (—)	Oil Pressure as graphic bar line display.. *2
Consumpt.average	Average of the topical consumption. *3
I-Temperature (2)	Indicate the Inside Temperature. Only with Setup program adjustable. *2

In the info field (right LCD, middle area) three data sides with the side choice key can be also selected except both statistics R & S and pages. The user can determine himself the arrangement of the data side 1 and 2.

Tip: The single sides admit themselves in the menu 7 individually or switch off.

Each of four positions of a side, can be taken with 15 announcements listed on top. Graphic issues can be also mixed with digital expenses. Single positions can remain also empty (No announcement).



Menü 11

Side construction of the data side Nr.2

► Pos1	► Pos2	2	V2.10
► Pos3	► Pos4		
		Speed	

Like data side Nr.1

- \*1 Cable to the sensor in the engine space must be connected, or values OBD (absolutely or relatively).
- \*2 Distributer box with sensors necessarily.
- \*3 Average setting. Setupprogram->Extra->Remainder dist. Comp.->Speed of calculation.

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Menü

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Side construction of the data side Nr.3

► Font	3	888.8	V2.10
► Value	Fine		
► Info field			

Indicate a selected value in large writing on the 3rd data side. Additionally an edition value in the info. field announcement can be selected during the large type representation, e.g. with edition of current consumption in large announcement, in the info. field the number of revolutions, instead of the default value be thus indicated can.

## Font:

**1234567890**

**Normal** Selection of the character set of the large announcement in normal character font.

**Schmal** Selection of the character set of the large announcement in narrow character font.

**1234567890**

## Value:

Consumption

Announcement of current consumption.

Speed

Announcement of current consumption.

Engine speed

Indicate to the current number of revolutions.

BoostPressure(1)

Announcement of the topical boost pressure.

OilTemperature2)

Announcement of the topical oil temperature(only with Box & sensor)

Voltage

Voltage monitor. Graphic announcement of the voltage.

AccelerationMeas

Announcement of the Acceleration measurement

graphic consum.

Graphic consumption announcement.

Aktivation an edition side (step up of the announcements on the data side 3 (see additional functions) by [x] one identified-draws. With [-] this edition value is jumped over. Aktivation or switch off by hold to the key from 2s.

## Info field:

No Change

The issue value in the info field remains unchanged.

Show No Value

No announcement value in the info field at big announcement.

Clock

Issue of the time at big announcement. Clock must be activated.

Speed

Issue of the topical speed at big announcement.

Engine speed

Issue of the topical speed at big announcement.

Voltage

Issue of the board voltage at big announcement.

BoostPressure(1)

Issue of the topical boost pressure at big announcement.. \*1

OilTemperature2)

Issue of the topical oil temperature at big announcement. \*2

OilPressure(2)

Issue of the current oil pressure at big announcement. \*2

Engine starts

Issue of the number of engine starts

tip :

- At announcement of the topical consumption, the consumption announcement is switched off in the left LCD.
- With the acceleration measurement the speed is indicated during the measurement in the „small info field“.
- To be able to indicate the data side, this must be activated in the menu 7!

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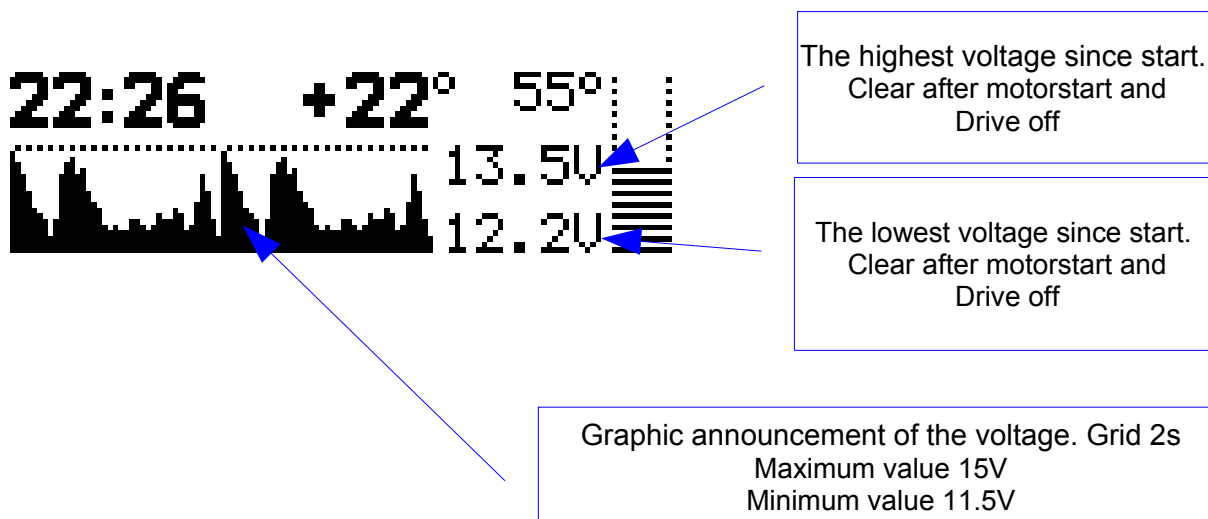
## Additional functions of the right side choice key on the data side 3:

1. By hold to the right side choice key from 2s (5s acceleration measurement) the issue value can be changed.
2. With the acceleration measurement the measuring value on zero is put by operating the side choice key (hold 2s). For starting the measurement the topical speed must be smaller than the final value of the speed measurement. Repeated operating from 2sec finishes a begun measurement again.

Issue example topical consumption in normal font:

22:26 +22° 55°  
21,4 L /100km

Voltage monitor:



Tip:

To see the topical voltage also on the 3rd data side, the voltage can be indicated in the small info field.

Menü12: Behaviour of the small info field on the data side 3

Reset of the min and max values:

The highest and lowest voltage in the monitor, can be cleared, in addition, with a short activity of the left key. Only possibly if the voltage monitor is indicated.

# Bordcomputer for smart for2-2 (451)

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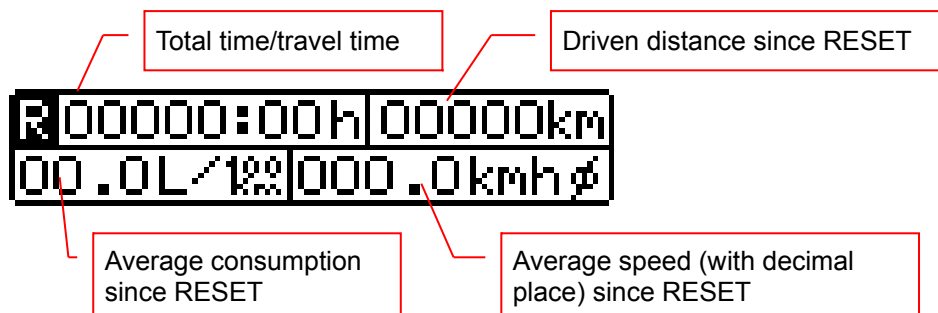
## Statistik announcement :

There are a total of three statistics sides (R,S,T). The statistics R is put back by hand. The statistics S. can be put back alternatively automatically at the end of a given time, with put down vehicle (also switchable) or also by hand. Both statistics can be (used) in the menu 7 individually to or switched off. The special functions of the statistics are possible only with the Windows Setup for programme.

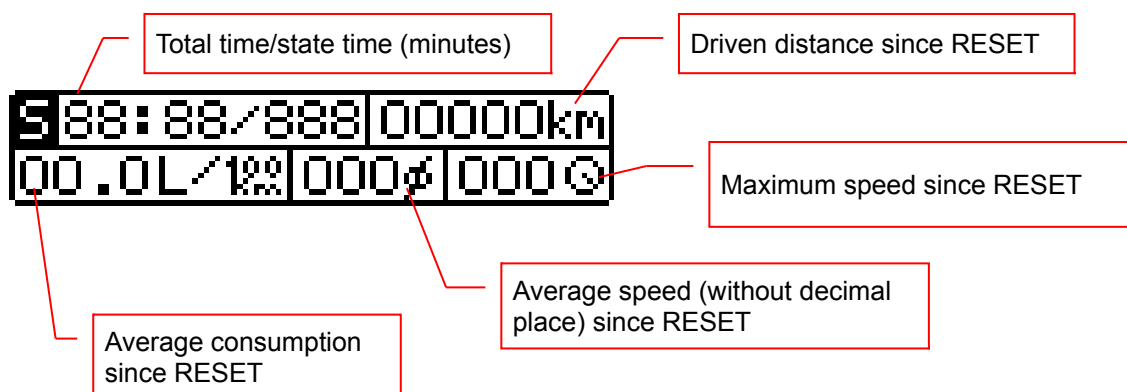
In the case of use of the Setup of program additional attitudes can be made!

Funktion	Attitudes with intern BC Setup	Attitudes with BC Setup Program
With or without information of the maximum speed	Only for both statistics R and S equivalent adjustable.	Separated for statistics R and S selectable
Resetting time of the statistics S	1-24 Hours	1-250 Hours
Time statistics R	Only Total time 00000:00h	Total time 00000:00h Travel time 00000:00h Total time and state time (minutes) 00:00 /000 Travel time and state time (minutes) 00:00 /000
Time statistics S	Only Total time 00000:00h	Total time 00000:00h Travel time 00000:00h Total time and state time (minutes) 00:00 /000 Travel time and state time (minutes) 00:00 /000

Example: Statistics R without announcement of the maximum speed



Example: Statistics S with announcement of the maximum speed as well as total time/ state time



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## OBD-Diagnostic:

With the BC diagnosis data of the vehicle can be shown without other aid. Thus different parametres OBD of the vehicle can be selected according to vehicle type (petrol or diesel).

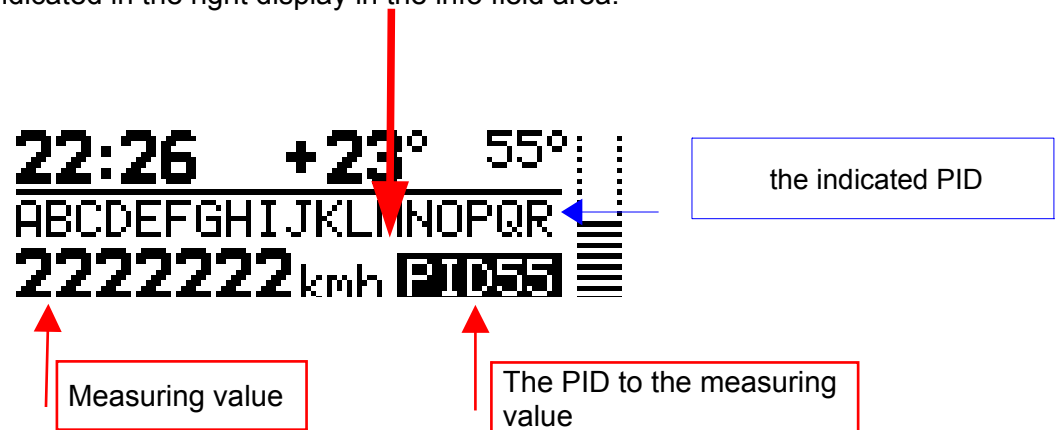
example.

- RPM
- Speed (not the speedometer speed)
- Coolant temperature
- Timing advance
- MAF air flow rate
- Intake manifold absolute pressure
- Absolute throttle position
- WR\_lambda
- .... and all measuring values supported by the vehicle(PID's)

Additional one the trouble codes memory can be selected and extinguished. Besides, temporary and final mistake codes can be read (SID7 and SID3).

## OBD Side:

The OBD values are indicated in the right display in the info field area.



With the right key can become the next measuring value (PID). Besides, is changed to the next free-switched PID. The connection is carried out with Windows set programme. Hold the key 2s.

Alternatively can be also switched with the left key to the next PID further (key briefly operate).

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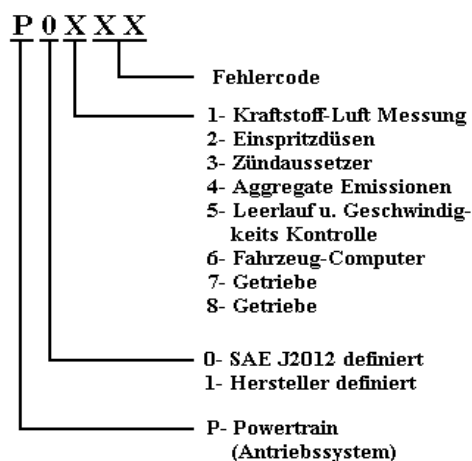
## Special case PID01:

With PID01 NO measuring value on the right display is given, but the number of the stored erros. This PID the number of the temporary and final stored error codes is assigned.

Then with the left key the error memory can be selected. Besides, is switched with every activity between both error memories (finally / provisionally defective). When a temporary error is filed as final, is not same for every mistake.

The error codes are unambiguously encoded:

Dekodierung von Fehlercodes nach  
SAE J2012



1. Digit	Ersatz	Bedeutung
0	P0	Antrieb Codes - SAE definiert
1	P1	Antrieb Codes - Hersteller definiert
2	P2	Antrieb Codes - SAE definiert
3	P3	Antrieb Codes - unverbindlich definiert
4	C0	Chassis Codes - SAE definiert
5	C1	Chassis Codes - Hersteller definiert
6	C2	Chassis Codes - Hersteller definiert
7	C3	Chassis Codes - reserviert für Zukunft
8	B0	Karosserie Codes - SAE definiert
9	B1	Karosserie Codes - Hersteller definiert
A	B2	Karosserie Codes - Hersteller definiert
B	B3	Karosserie Codes - reserviert für Zukunft
C	U0	Netzwerk Codes - SAE definiert
D	U1	Netzwerk Codes - Hersteller definiert
E	U2	Netzwerk Codes - Hersteller definiert
F	U3	Netzwerk Codes - reserviert für Zukunft

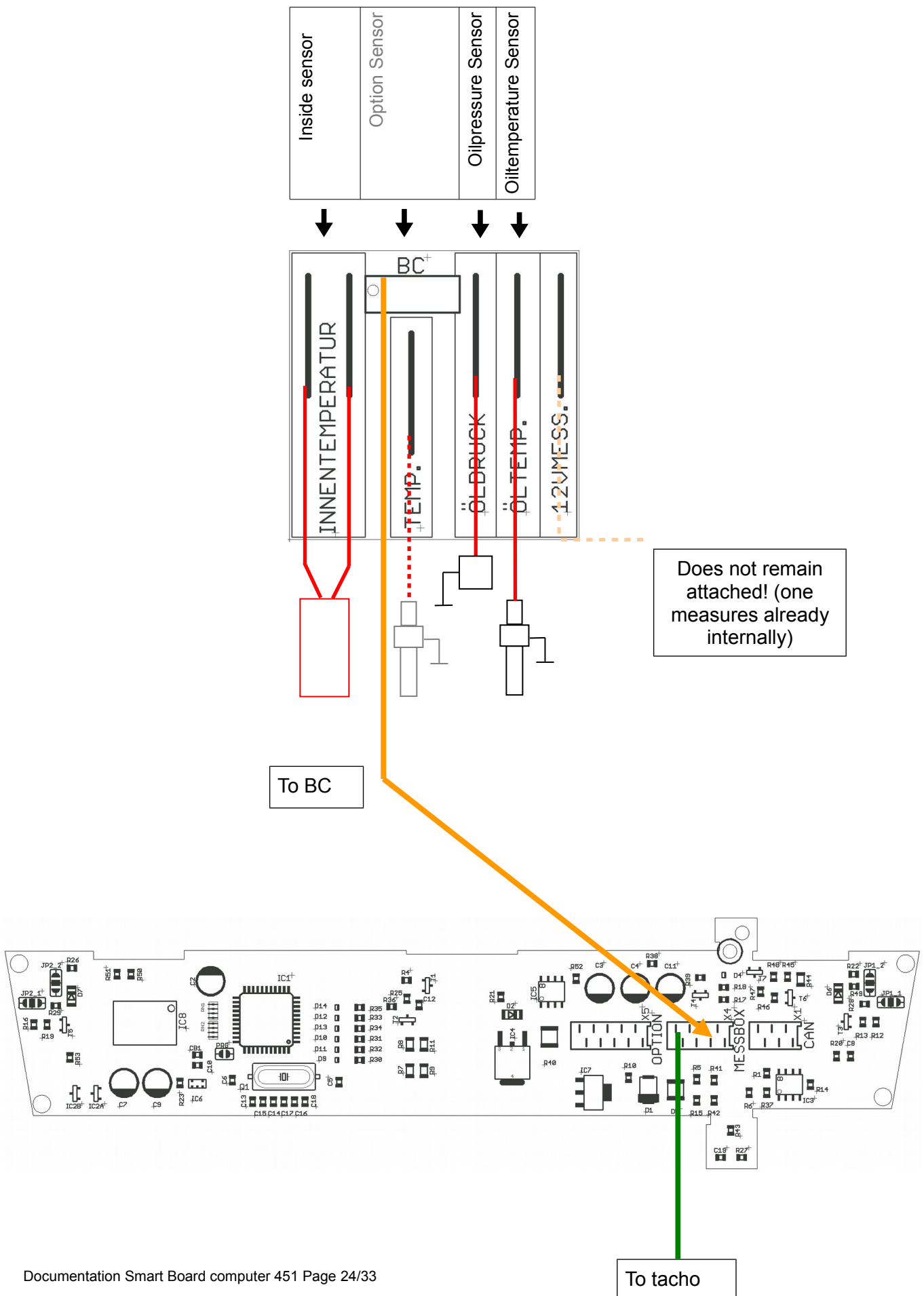
**To the extinguishing of the error memory hold the left key 10sec.**

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## Connection of the distributor box:





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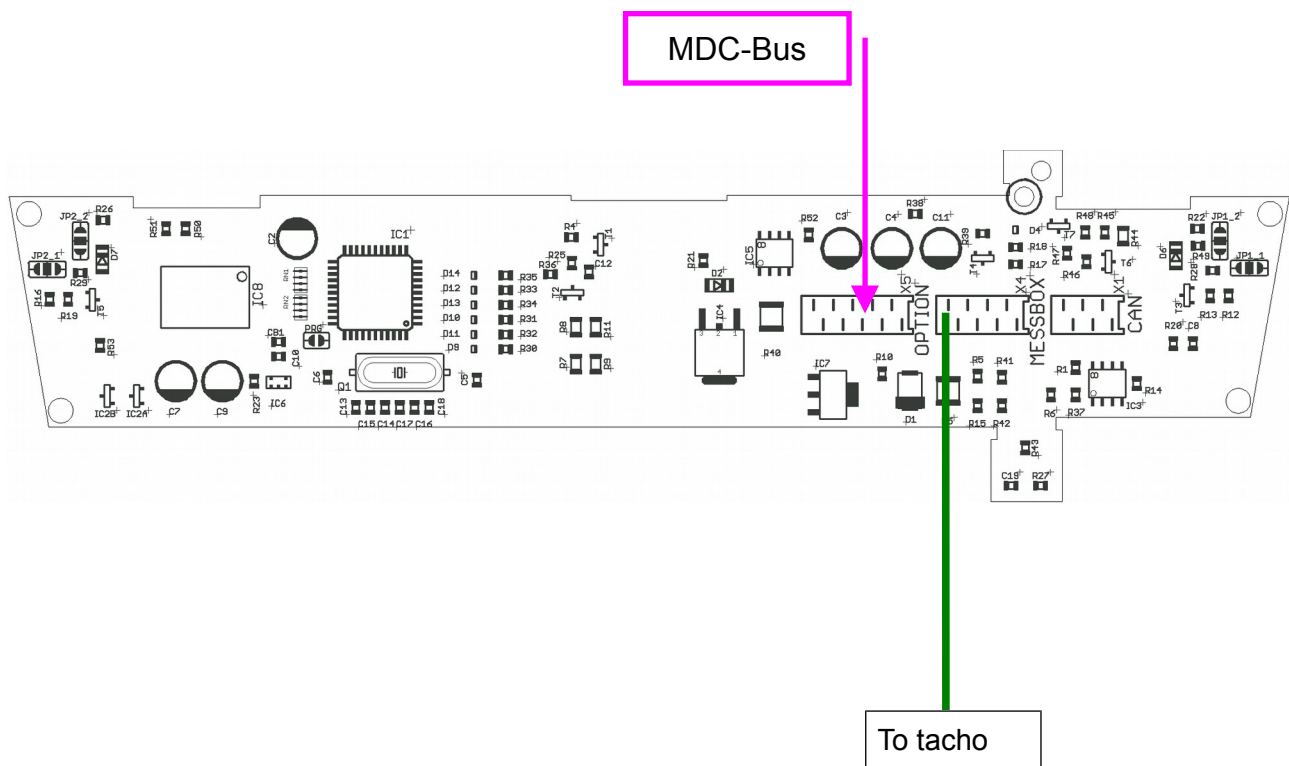
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## MDC Connection option plug:

Here different function extensions are available. Like the connection of the cruise control or the PC connection for the update and setting-up, in addition, further possibilities are plug-on e.g.

In principle all extensions can be attached directly to the MDC bus (10pol socket). Here the plug PC-USB is put on directly.



## Speedometer connection:

It is required to the control of the workshop mode (description on the page 2)!

# Bordcomputer for smart for2-2 (451)

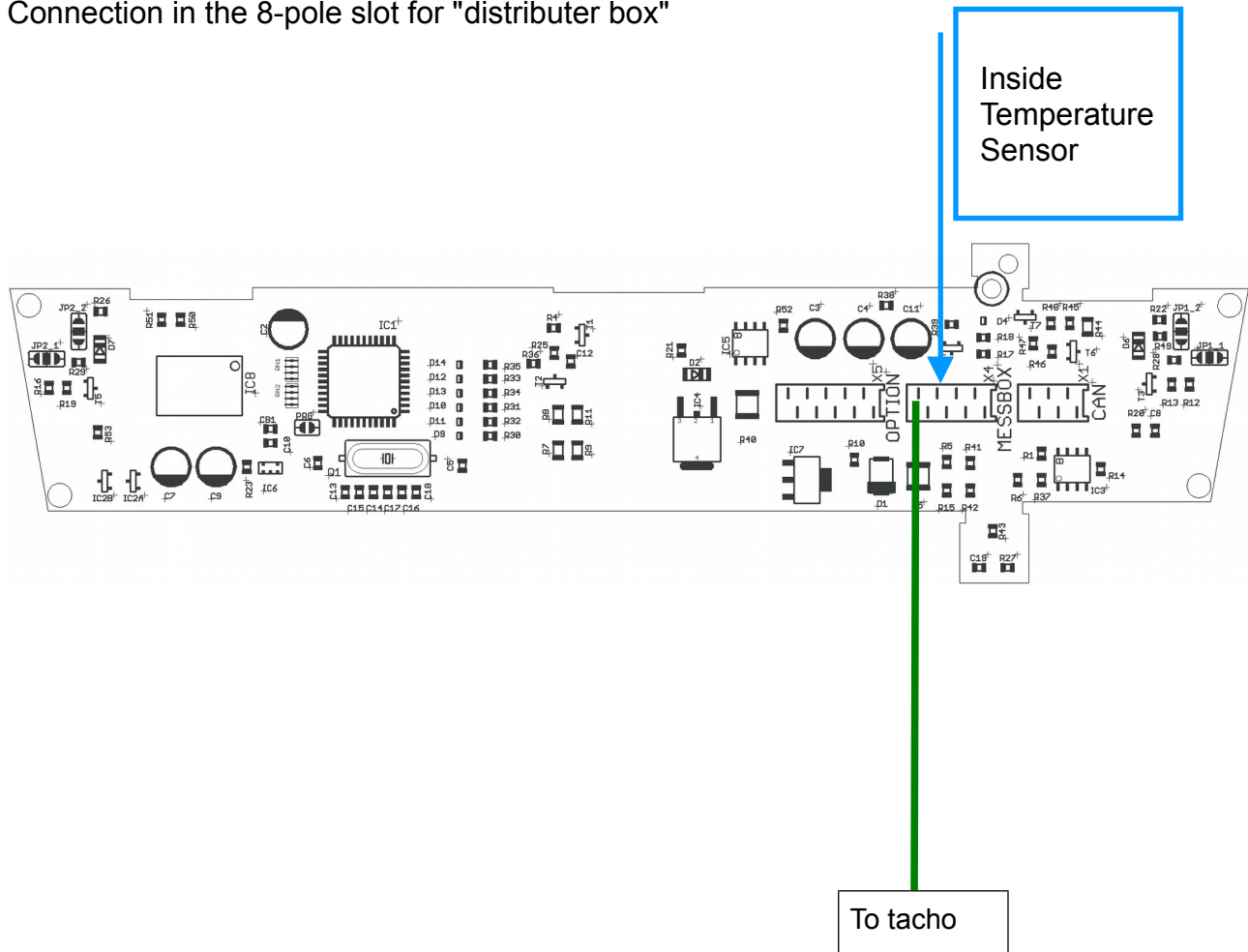
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Direct connection of the inside temperature sensor:

The inside sensor can be also connected directly in the BC, without distributor box. In addition he is delivered in a special implementation with 8-pole plug. In addition, still the tacho connecting lead is led out in the plug. The cable is connected as usual in the tacho.

Connection in the 8-pole slot for "distributer box"



## Speedometer connection:

It is required to the control of the workshop mode (description on the page 2)!

-V2.10-

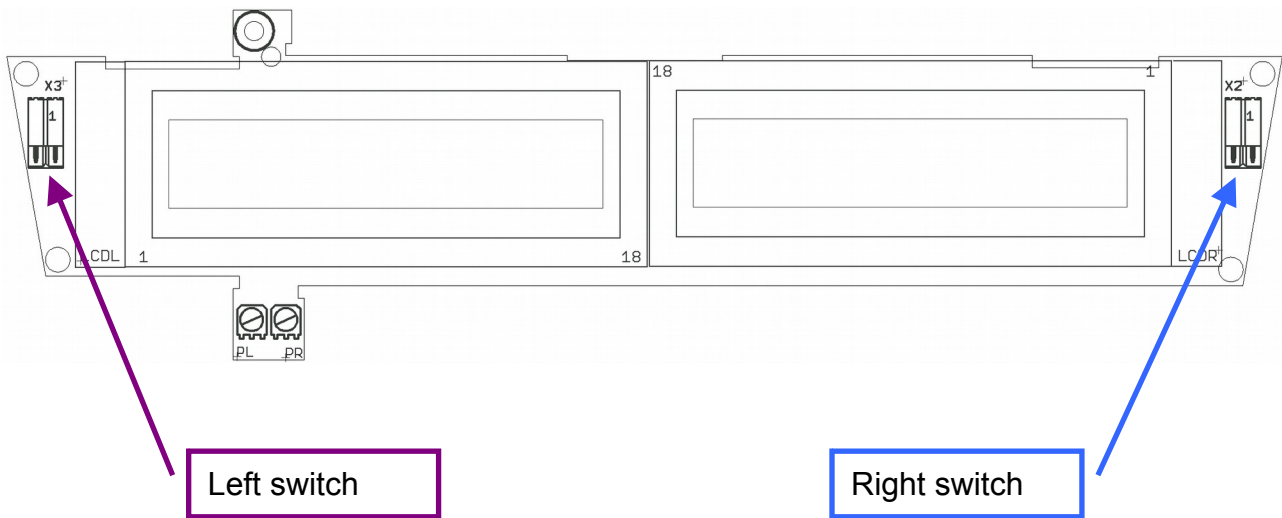
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# Bordcomputer for smart for2-2 (451)

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## Connection of the switches:



## Connection of own switches:

For the operation of the BC also own switches can be used. These are then attached to X2 and X3.

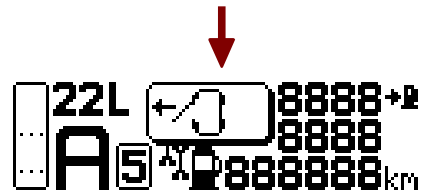
To the activity, both poles of the plugs must be connected in each case. A suitable cable sentence is available.

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Warning references are flashing indicated HERE in the left LCD.



Symbol	Beschreibung
	The left door is opened.
	The right door is opened.
	The left and right door is opened.
	The rear flap is opened.
	The left door and the rear flap are opened.
	The right door and the rear flap are opened.
	The left and right door as well as the rear flap are opened.
	Water temperature rise. Replaces the original announcement.
	Oil pressure too small. Replaces the original announcement. Warning is only indicated with running engine.
	Battery charge. Replaces the original announcement. Warning is only indicated with running engine.
	Oil pressure too small and battery charge. Replaces the original announcement.
	Water temperature rise and battery charge. Replaces the original announcement.
	Water temperature rise and oil pressure too small. Replaces the original announcement.
	Water temperature rise, oil pressure and battery charge too small. Replaces the original announcement.
	External diagnosis device OBD detektiert. All functions OBD of the BC are deactivated for safety reasons. It is switched on by ignition On/Off again.
	The workshop mode is switched on.

# Bordcomputer for smart for2-2 (451)

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Cruise control:

By use of the cruise controls MDC the working conditions of the cruise controls in the BC can be indicated. **Only with auxiliary cable with cruise control possible!**

Announcements of the BC451 in normal operation:



cruise control info

cruise control speed

cruise control info	description
	Starting phase of the cruise control. Within this time the accelerator pedal should be released, there itself otherwise during selected disconnection (8) the cruise control switches off. Announcement of the cruise control settings dependent!
	Normal function of the cruise control
	With the acceleration during the cruise control. The old velocity value is held (Hold) and used when releasing the accelerator pedal again.
	Limiter activates.
	Limiter works (aktiv)
	Setup
	Emergency brake pulled or Door (s) open.
	Error. CAN-Bus Error. Circuit defectively
	The brake for the release of the cruise control operate. Function control of the brake switch after ignition.
	The immobilizer of the Tempomaten is active. This function is optionally capable of being activated.

# Bordcomputer for smart for2-2 (451)

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Original smart cruise control:

By use of the original smart cruise controls the following working conditions of the cruise controls in the BC can be indicated.



cruise control info

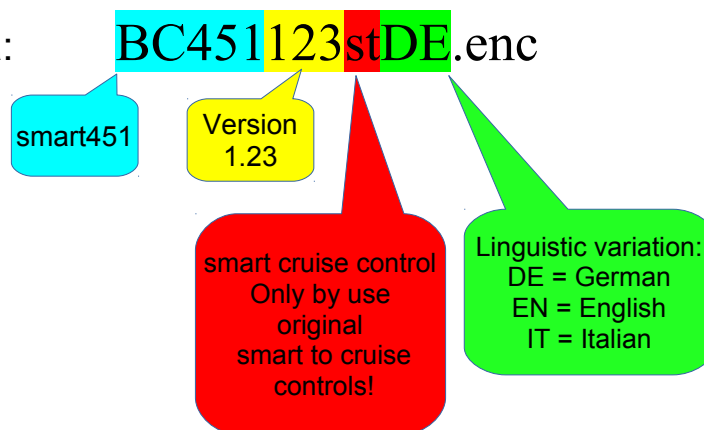
cruise control speed

Tempomat	Beschreibung
	Cruise control is activated. Ready to start.
	Normal funktion of the cruise controls

Tip:

This must be used "st" (smart cruise control) operating system for the BC451.

Naming update data:



# Bordcomputer for smart for2-2 (451)

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Cruise control indicates in the Setup:

In the Setup of the cruise control the attitudes in the plain language in the right display are indicated. So the cruise control attitudes can be very simply made.

22:26\_+222° 255°  
 ABCDEFGHIJKLMNOPQ  
 ABCDEFGHIJKLMNOPQ



Setup	Messages
Behavior with the acceleration during the cruise control(8)	CruiseControl Off by acceleration
	CruiseCtr NOT Off by acceleration
Behavior when braking during Limiter use	Limiter Off with the braking
	Limiter NOT Off with the braking
Automatic controller action Adjust the motor vehicle type.	kind of car: Petrol
	kind of car: Diesel
Accelerator pedal translation	Accelerator Trans lation: OFF
	Accelerator Trans lation: easily
	Accelerator Trans lation: medium
	Accelerator Trans lation: high
	Accelerator Trans lation: very high
Input Code (optional immobilizer)	Input old Code
	Input new Code
	RepetitionNewCode



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Data logger:

For the data recording it is possible to select data BC over the USB connection.

To select of the data, the following protocol must be sent to the BC:

Four data bytes follows in: [32] [0] [11] [43]

Baud: 9600,8,1, N, no Handshake

The smallest query cycle:0,25s (250ms)

Then the BC sends back the following 48 data:

Value	Data typ	Byte Nr.	description
Number of bytes	char	0	48
hours	char	1	
minutes	char	2	
sec	signed short	3,4	Intern *10
Speed	char	5	
RPM	signed short	6,7	
Total km	float	8,7,10,11	
PID	char	12	
PID value	float	13,14,15,16	
tank capacity	float	17,18,19,20	
Topical consumption	float	21,22,23,24	
Consumption average	signed short	25,26	Intern *100
Inside temperature	float	27,28,29,30	
Outside temperature	signed short	31,32	
Motor(water) temperature	signed short	33,34	
Voltage	float	35,36,37,38	
boost pressure	float	39,40,41,42	
Tank raw value	char	43	
Gearcode	char	44	
Warnings	char	45	Tabelle 1
cruise control	char	46	Tabelle 2,3,4
control sum	char	47	sum of byte 0..46

Coding warnings: Tabelle1

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Workshop mode	OBD off	temperature	Oil	battery charge	Tailgate open	Door right open	Door left open

Coding MDC-cruise control: Tabelle2 (Bit3->0 = cruise control normal operation)

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Drivelock	General error	Door or break	break OK	0	Cruse control level bit2	Cruse control level bit1	Cruse control level bit0

Coding MDC-cruise control: Tabelle3 (Bit3->1 = cruise control Setup)

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Setup Data bit3	Setup Data bit2	Setup Data bit1	Setup Data bit0	1	Setup Level bit2	Setup Level bit1	Setup Level bit0

Coding original-cruise control: Tabelle4

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
		1 on 1 readiness	1 on 0 readiness				