

# Bordcomputer for smart for2-2 (451)

A product of MDC

-V1.04 to V1.06-

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
- Two 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
- 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

\*2 Only with distributor box and sensors

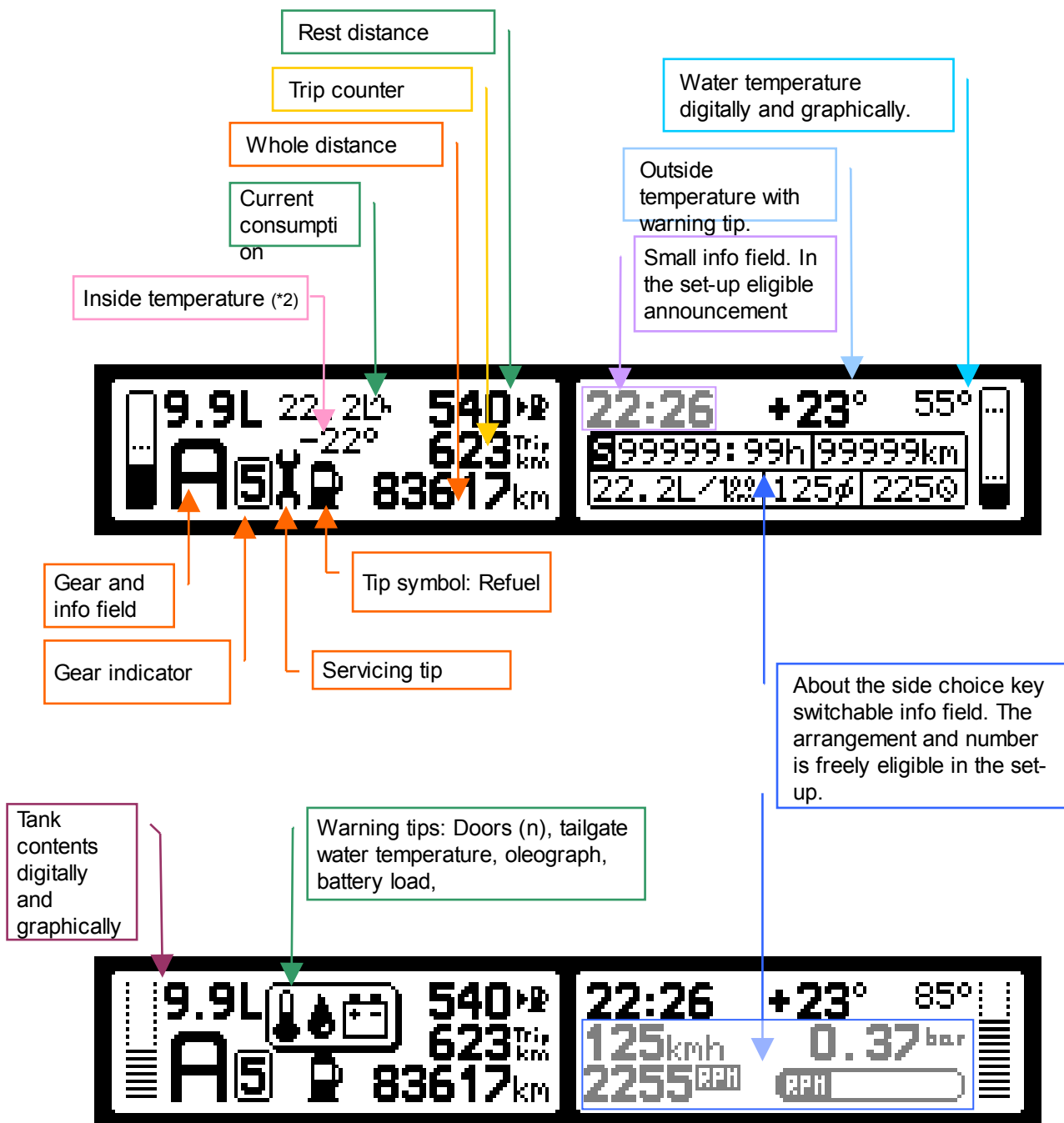
## Other options:

- 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
- Trouble-free back construction on the original state possibly

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## Key allocation in the normal state:

Left Key → Clear tripmeter. Key 2sec hold.

Right Key → Info. field step up or with visible statistics through think of 2s the statistical values delete.

## 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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## 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:

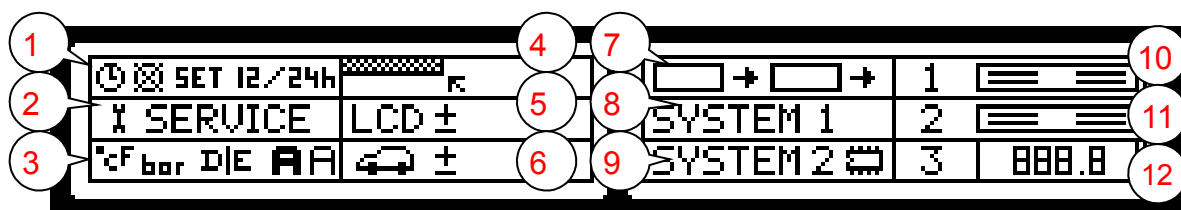
Both keys for 5s hold. Release afterwards both keys.

### Operation:

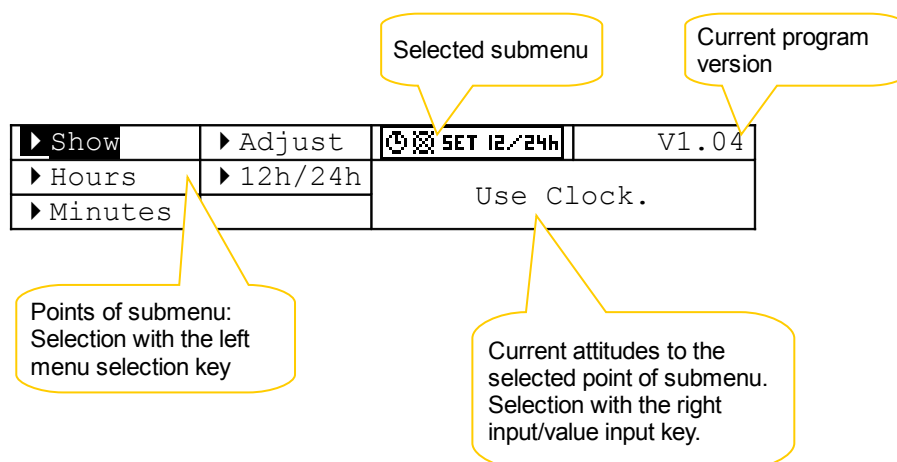
Left Key → Menu selection. (2s hold back → a menu)

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

1

▶ Show	▶ Adjust	⊗ SET 12/24h	V1.04
▶ 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.

---

## Minuten:

0:00

Adjusting of the Minutes.

---

## Trimmen:

+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.

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## 12h/24h:

12h

12 hours of announcement.

24h

24 hours of announcement.

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Menü **2**

Service

▶ Reset	I SERVICE	V1.04
▶ Interval [Miles]	Reset	
▶ Interval [Days]	▶ 2s hold	

## Rücksetzen:

Reset

▶ 2s hold

The interval announcement is put back to the current vehicle value.  
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).

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## Interval [Miles]:

10000 Mi

Default of the servicing interval in Miles.

---

## Interval [Days]:

360 Days

Default of the servicing interval in Days..

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Menü **3**

▶ Language	▶ km/Milen	°F bar DIE AA	V1.04
▶ bar/psi	▶ Symbols	Deutsch.	
▶ °C °F	▶ Font		

## Language:

**Deutsch** The system language is German.

**english** The system language is English.

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## bar/psi:

**bar** Unit of all pressure measurements in bar.

**psi** Unit of all pressure measurements in psi

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## °C °F:

**°Celsius** Unit of all temperature measurements in Celsius.

**°Fahrenheit** Unit of all temperature measurements in Fahrenheit.

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## Km/Milen:

**Km & Liter** Unit of all distances in km and amount of filling in liters.

**Milen & U.S.Gallons** Unit of all distances in miles and amount of filling in American gallons.

**Milen & U.K.Gallons** Unit of all distances in miles and amount of filling in English gallons.

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## Symbols:

**AN4** Gear info. field announcement in standard font.

**AN4** Gear info. field announcement in narrow font.

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## Font:

**0123456789** Numbers in standard font.

0123456789 Numbers in narrow font.

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Menü 4

Specify to the value edition in the small info. field

▶ Value&Scanning			V1.04	
▶ Scan-Values	●UHR	●UPM	○Lbar	○TME
	●kmh	●Volt	○bar	○TME

## 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
- Temperature (2)** Continuous announcement of an optional 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:

●UHR	●UPM	○Lbar	○TME
●kmh	●Volt	○bar	○TME

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 8 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.

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Menü

5

▶ Reduce at Light	LCD±	V1.04
▶ Switch-off delay	50%	
▶ LED-Frequency		

## Reduce at Light:

33% Luminosity the LCD lighting with switched on light

50%

66%

100% No dimm with light.

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## Switch-off delay:

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.

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## LED-Frequency:

+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).


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Menü **6**

▶ Car model	 ±	V1.04
▶ Consumption corr.	Diesel	
▶ Tacho correction		

## Car model:

gasoline All gasoline vehicles.

Diesel Diesel engined vehicle.

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## Consumtion corr.:

-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 Benziner inputs can be possible until 100%!

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## Tacho correction:

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

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Menü **7**

Aktive Seiten im Infofeld.

▶ Stat. R	▶ Data 2	SYSTEM 1	V1.04
▶ Stat. S	▶ Data 3	Aktiviert.	
▶ Data 1	▶ AutoScan		

## Stat. R:

**In use** The statistics R is switched on and can be indicated with step up with the page selection key.

**Not in use** The statistics R is switched off. This is not no more indicated with step up with the page selection key.

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## Stat. S:

**In use** The statistics S is switched on and can be indicated with step up with the page selection key.

**Not in use** The statistics S is switched off. This is not no more indicated with step up with the page selection key.

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## Data 1: Data 2: Data 3:

**In use** The data side# is switched on and can be indicated with step up with the page selection key.

**Not in use** The data side# is switched off. This is not no more indicated with step up with the page selection key.

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## 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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Menü **8**

Aktive Seiten im Infofeld.

▶ IceWarn.	▶ Stat.R/S	SYSTEM 1	V1.04
▶ 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		Normally, broadly
Form 2		Normally, narrowly
Form 3		LINEs, broadly without edge
Form 4		LINEs, narrowly without edge
Form 5		LINEs, broadly with edge
Form 6		LINEs, narrowly with edge

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Menü **9**

▶ Store setup data	SYSTEM2	V1.04
▶ Load setup data	To Start	
▶ Restore default	▶ 10s hold	

## Einst. speichern:

To Start  
▶ 10s hold

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

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## Einst. laden:

To Start  
▶ 10s hold

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

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## Grundwerte:

To Start  
▶ 10s hold

Restore all basic adjustments, like on delivery. NOTE: All made attitudes are overwritten!!!  
(Rights key 10s hold)

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## Menü 10

Side construction of the data side Nr.1.

▶ Pos1	▶ Pos2	1	V1.04
▶ Pos3	▶ Pos4	Speed	

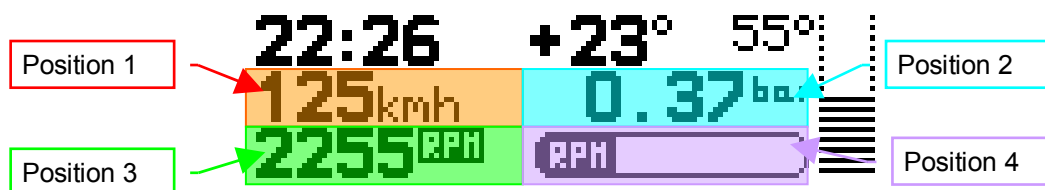
### Pos1...4 :

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
Temperature(2)	Indicate of an optional temperature value. *2
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

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 12 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	V1.04
▶ Pos3	▶ Pos4	Speed	

### Like data side Nr.1

- \*1 Cable to the engine compartment must be attached.
- \*2 Distributer box with sensors necessarily.

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Menü **12**

Side construction of the data side Nr.3

▶ Font	3	000.0	V1.04
▶ 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:

**Normal**

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

**1234567890**

**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)

**OilPressure(2)**

Announcement of the current oil pressure (only with Box and sensor)

## 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

**Temperature(2)**

Issue of an optional temp.senor at big announcement. \*2

## tip :

- At announcement of the topical consumption, the consumption announcement is switched off in the left LCD.
- To be able to indicate the data side, this must be activated in the menu 7!

Issue example topical consumption in normal font:

22:26 +22° 55°  
**21,4** L /100km 

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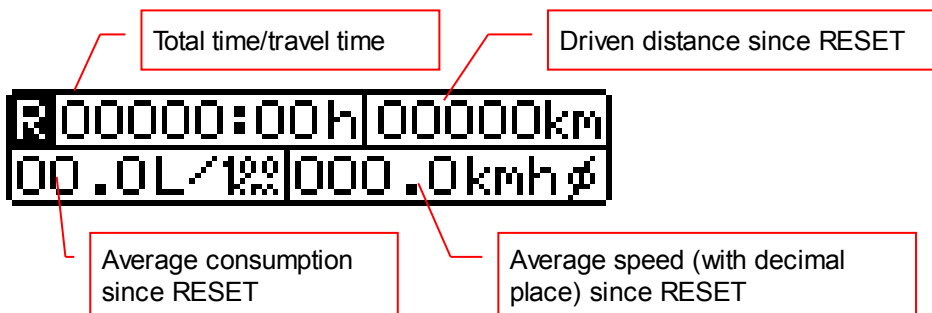
## Statistik announcement :

There are a total of two statistics sides. The statistics R and the statistics S. 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.

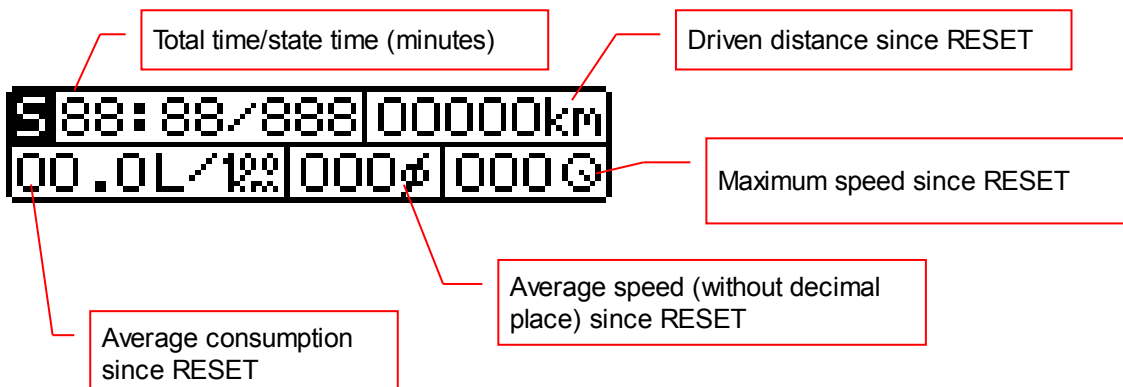
In the case of use of the Setup of program additional attitudes can be made!

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
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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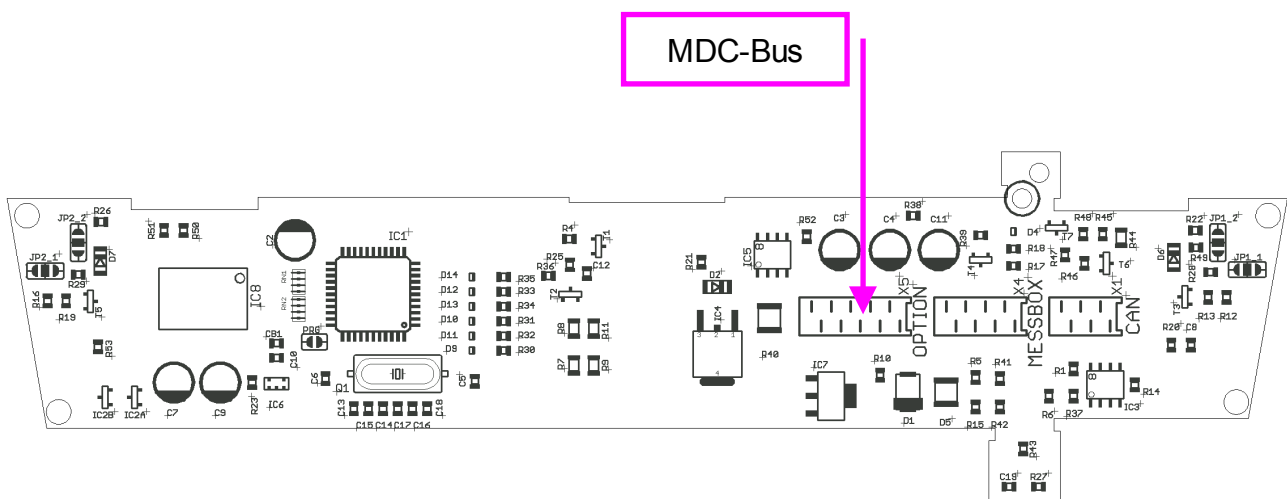
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## Connection option plug:

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). Naturally only ONE plug connector is possible. E.g. if the cruise control - PC - is directly attached, then this plug must for the connection of the PC-USB taken off and the PC-USB plug instead to be attached.



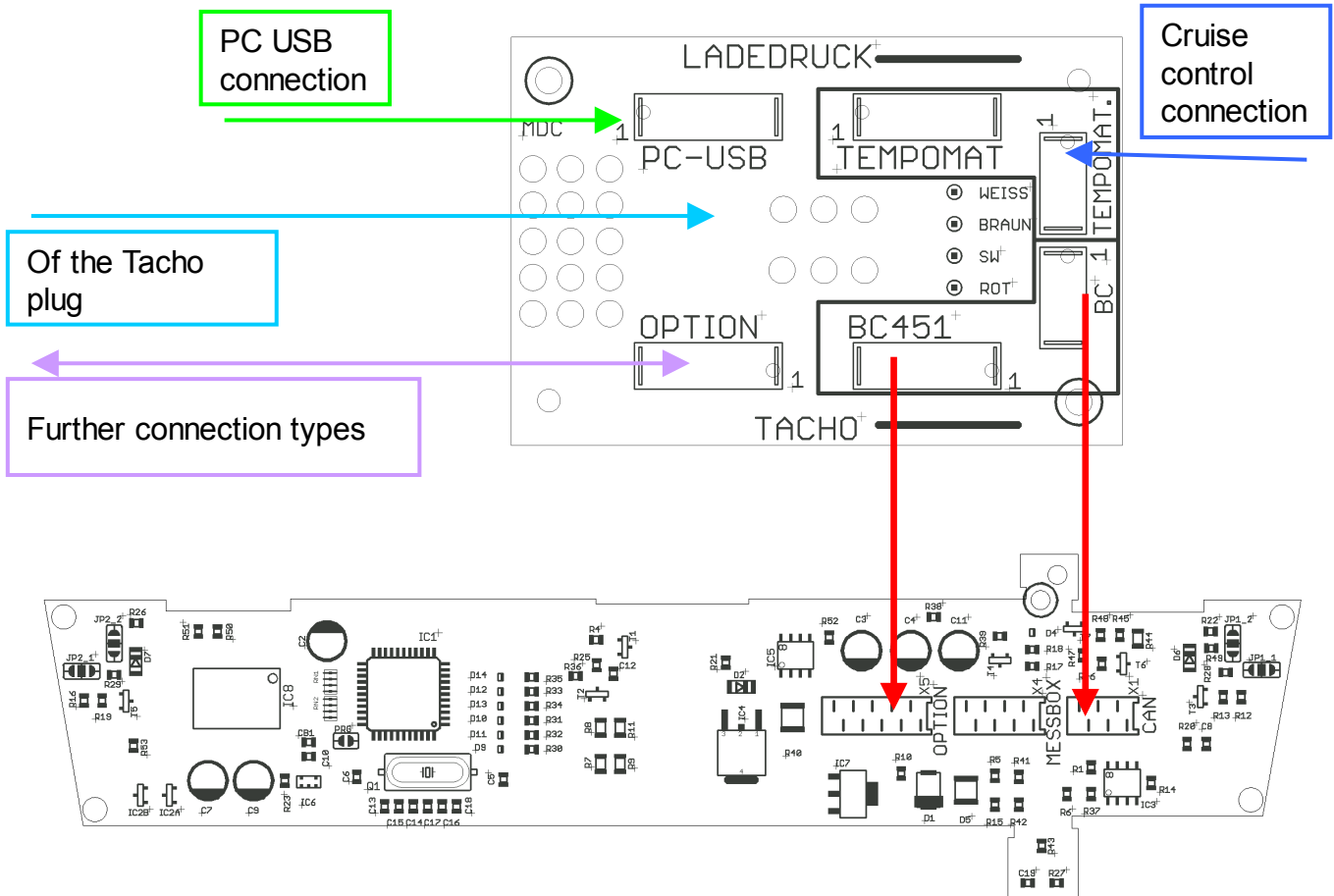


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Erweiterter Anschluss der Versorgung mit dem Optionsverteiler:



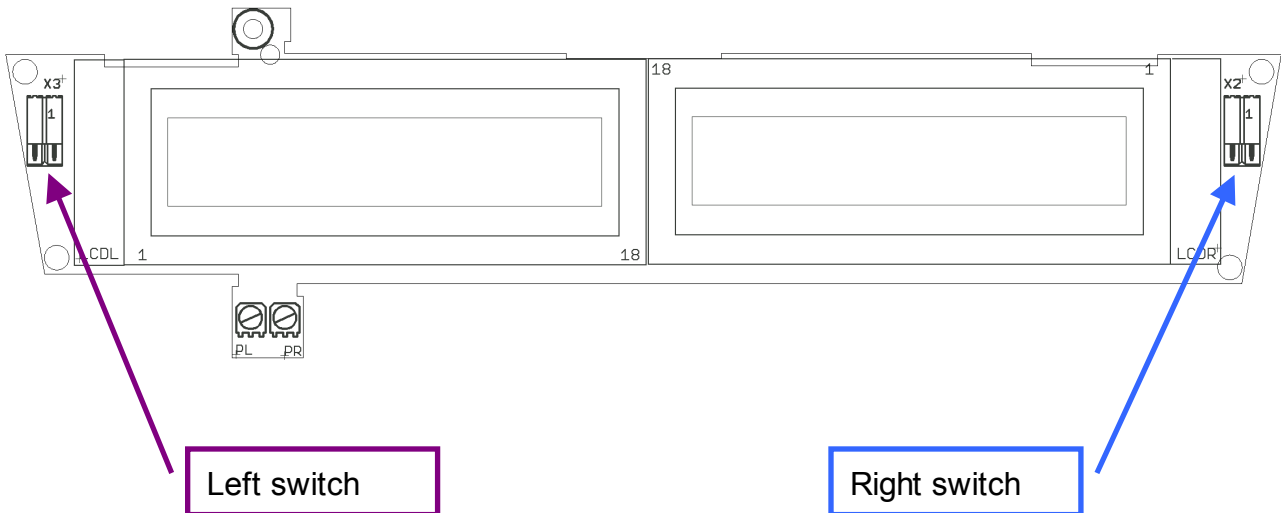
In the case of use of an external distribution point (option distributor), expandabilities WITHOUT development of the BC from the Tacho can be used.

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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.

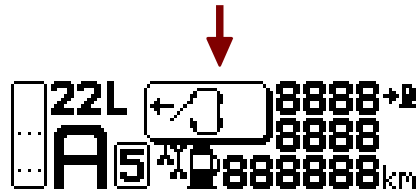
To the activity, both poles of the plugs must be connected in each case. A suitable cable sentence is available.

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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.

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Cruise control:

In the case of use of the MDC cruise control (starting from V2.4) the operating conditions of the cruise control at the BC can be indicated. (Interwiring necessarily)

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.
	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.

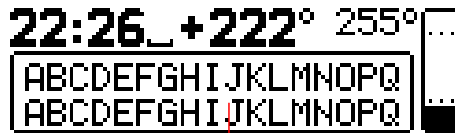
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Cruise control indicates in the Setup:

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.



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