Bosch Motorsport **Modas Displays F3 2008**







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1 Working with MODAS-DISPLAYS FIA F3

When MODAS has been started, the FIA-F3 display will be automatically loaded. The term display means measure and program boxes. These boxes provide easy monitoring and programming of all the important functions of the ECU (Engine Control Unit) and the Card-Memory, for the use in F3 race cars using the FIA F3 2008-2010 technology.

All important Motronic functions can be found in the option "Engine" and "Lifetime/Cons". These functions include data-measuring-boxes for the various parameters, for example pressure, temperature and revolutions. There is also the possibility to read any errors, check Min/ Max measurements, these may also be reset (see also chapter 2).

The vehicle channels can be calibrated in the "Suspension", "Acceleration Steering" and the "analogue" display. In this function the sensor characteristic curves are saved in the CardMemory, for example the suspension sensors (see also chapter 3).

The option "Race" contains measuring and programming boxes which offer the possibility to set the driver functions like for example pit speed limiter, and the possibility to program shift LEDs (see also chapter 4).

Note: Some functions may not be supported in certain program versions.



2 Motronic – Functions

When the option Engine has been selected a list of Motronic functions will appear in the following window.

2.1 ENGINE – Display

MODAS V3 - MS3.1 : F3E3AHWA_E.cfv - engine File View Action Tools Help	Motorsport 🕃 BOSCH 💷 🗵
engine rev 1/min	EKP switch on B_ekptst
ignition / Injection	throttle adjustement
ri w %	uwdk_w volt wdk w %
DZWAPPL -0.75 ww zwout ww	wdkba_w %
temperatures pressure	lambda
toel ··· poel	bar
tmot ro pfuel	bar lamsoni_W
tfuel ·c pu_w	fr_w
tans ·· pcrank_w	b_lr
race F2 Engine F3 Lifetime/Cons F4 Suspension F5 Acceleration Steering F6	Memo F7 Wheel F8 Gear F9 analogue F10 ESC F1

The most important engine parameters will be shown in this display. This function contains for example engine revolutions, throttle valve angle, temperatures, pressures, ignition angle, injection time.

2.2 ENGINE – Throttle

engine rev			tinin	EKP sv B_ekptst	witch on	PUMF
ign	ition / In	jection		throttle ad	djustement	
			- 1	investion in		
	te_w				vot	Set Thro
DZWAPPL -0.75	te_w rl_w zwou	it	me %	wdk_w wdkba_w	vot s	Set Thro
DZWAPPL -0.75	te_w rl_w zwou Ires	ıt p	ressure	wdk_w wdk_w wdkba_w	mbda	Set Thro
DZWAPPL -0.75 temperati	te_w rl_w zwou Ires	ıt poel	ressure	wdk_w wdkba_w la	mbda	Set Thro
DZWAPPL -0.75 temperate toel tmot	te_w rl_w zwou Jres	it poel	ne sure	wdk_w wdkba_w lamsoni_	mbda	Set Thro
DZWAPPL -0.75 temperatu toel tmot tfuel	te_w rl_w zwou ires	poel pfuel pu_w	ressure	wdk_w wdkba_w la	mbda	Set Thro

This function allows adjustment of the throttle potentiometer.

The throttle sensor can be calibrated (learning), when a new engine is installed in the car. The reference point for the calibration is the mechanical throttle-valve-stop.

Calibration of the throttle valve: Release the throttle pedal and idle stop and click the macro "set throttle".

> The calibration can only be carried out when the engine is stopped (B_nmot = FALSE) and there is no throttle-valve failure (E_dk = FALSE).

2.3 ENGINE – Fuel-Pump

This option contains the fuel pump function. The pump will be switched on for ten

				EKP switch or	n	
engine rev			B_	ekptst	PUM	Ρ
i	gnition / In	jection	t	hrottle adjusteme	ent	
	te_w		ms uv	vdk_w	Vot Set Thr	ott
	rl_w		<u>*</u> <u>wo</u>	dk_w	×	_
DZWAPPL -	0.75 'w zwo	Jt 🗌	10V WC	ikba w		
					-	
tempe	ratures	pressu	re	lambda		
tempe	ratures	poel	re tar	lambda		
tempe toel tmot	ratures	poel pfuel	re bay	lambda		
tempe toel tmot tfuel	ratures	poel pfuel pu_w	re bar	lambda lamsoni_W fr_w		
tempe toel tmot tfuel tans	ratures	poel pfuel pu_w pcrank_w	re	lambda lamsoni_W fr_w b_Ir		
tempe toel tmot tfuel tans	ratures	poel pfuel pu_w pcrank_w	re	lambda lamsoni_W fr_w b_ir		

seconds when the "pump" macro is selected. The engine must be stopped (B_nmot = FALSE) and communication between the PC and the ECU must be active. (B_klineok = TRUE).

2.4 ENGINE – Ignition

This display shows the ignition angle offset from the application tool. Positive numbers

engine rev			the		EKP switc	h on	PUMP
ig	nition / In	jection		t	hrottle adjus	tement	
	te_w		ms	uw	vdk_w	Volt	Set Thro
	rl_w	: I	*	wo	ik_w		
DZWAPPL -0.	75 1W ZWOL	it 🗌	nov	wo	ikba w		
	1-1-1-1	2.0					
tempera	tures	pi	ressure		lambo	da]
tempera toel	itures	poel	ressure		lambo	da	
tempera toel	tures v	poel pfuel	ressure	Law Law	lambo	da	
tempera toel tmot	*	poel pfuel pu_w	ressure		lambo lamsoni_W fr_w	da	
tempera toel tmot tfuel tans	**************************************	poel pfuel pu_w pcrank_w	ressure		lambo lamsoni_W fr_w b_lr	da • •	

indicate more advance and negative numbers a less ignition advance.



Display Th	resholds	consum	ption	
тмотмх	UBMN Veit	kvges w	Ltr	Clr Cons
POELMN bar	PFUELMN bar			
lifetime	engine	distar	ice	
ltnmotm2_w s Itn	notmx_w	ltdistkm_w	km	CIr Dist
itecu_w h Itn	notmo_w s	Itdistm_w	m	
Itm	ot_w h	Itdisteng	km	
temperatures	pressure		SC	
tmotma	c pfuelma	bar		
tmotmi	c pfuelmi	bar nmotmax_w	1/min	
toelma	poelma	bar ubmi	Volt	
toelmi	poelmi	bar		

2.5 Lifetime/Cons – Min/Max and display thresholds

This display shows all the Min/ Max data. It includes: engine revolution (max), fuel pressure (min/ max), oil pressure (min), engine temperature (max), oil temperature (min/max), battery-voltage (min). The alarm thresholds can be set in the box "Display Thresholds":

TMOTMX for maximum engine temperature, UBMN for minimum battery voltage, POELMN for minimum oil pressure and PFUELMN for minimum fuel pressure.

2.6 Lifetime/Cons – Lifetime engine

MODAS V3 - MS3.1 : F3E3BVW_E_V3.cfv - Liftlin File View Action Tools Help	ne/Cons	Motorsport	BOSCH 🔲 🗖 🗙
Display Three TMOTMX ~ POELMN \$#	Sholds BMN Veit FUELMN Bar	consumption	Clr Cons
lifetime er	ngine	distance	
Itnmotm2_w i Itnmot Itecu_w b Itnmot	mx_w mo_w s	Itdistkm_w km Itdistm_w m	Clr Dist
Itmot_	W h	Itdisteng km	j
temperatures	pressure	misc	
tmotma "c	pfuelma b	82	
tmotmi "c	pfuelmi b	*	n I
toelmi "c	poelmi b		
race F2 Engine F3 Lifetime/Cons F4	Suspension F6 Acceleration Memo	F7 Wheel F8 Gear F9	analogue F10 ESC F1
Open LevelX driver for MSA-Box fail.		ONO ERROR OKWP2K	MSA-BOX SAVE

In its lifetime, the MS3.1 saves specific lifetime MIN/MAX data. This includes the operational time of the ECU (Itecu) in its life, the driven distance in km (Itdistkm_w), the driven distance in m (Itdistm_w), the engine operating time (Itmot_w), the engine distance (Itdisteng), the time spent

above a preset RPM limit ltnmotmo_w), max engine revolution limit data (ltnmotmx_w) and the fuel consumption.



The distance counter can be reset with the macro "Clr Dist". The fuel consumption can be reset with the macro "Clr Cons".

Only the engine manufacturer can reset all the other macros.



3 ESC – Escape button

- At any time, a move backwards through the programme can be done with the "ESC" button.

4 CHASSIS – Functions

MODAS is used to calibrate the vehicle chassis channels. There is an adjustment facility using the button "Chassis". The characteristic curves made with the macro are saved in the CardMemory and have to be adjusted when there is a change of sensors or the CardMemory.

The option "Chassis" consists of several chassis functions:

- Suspension,
- Steering,
- Acceleration Long,
- Acceleration Trans,
- All Chassis Channels.

4.1 CHASSIS – Suspension

The first of the suspension functions allows calibrating single suspension sensor. All the suspension sensors can be reset ("ZERO ALL") together.

🙀 MODAS V3 - MS3.1 : F3E38VW_E_V3.cfv - Suspension	Motorsport	возсн
File View Action Tools Help		
Suspension front right		CAR DOWN
sus in fr ususinfr w	mV	CAR UP
susfrchk nm sus_out_fr nm ususoufr_w	mV	ZERO
Suspension front left	CAR DOWN	
sus in fl ususinfl w	mV	CAR UP
susfichk mm sus_out_fi mm ususoufi_w	٣٧	ZERO
		i
Suspension rear right		CAR DOWN
sus in rr ususinrr w	mV	CAR UP
susrrchk sus_out_rr wususourr_w	mV	ZERO
		i
Suspension rear left		CAR DOWN
sus in ri ususinri w	mV	CAR UP
susrichk nm sus_out_ri nm ususouri_w	٣٧	ZERO
		ZERO ALL
race F2 Engine F3 LifetimetCons F4 Supervision F5 Reamy F6 Memory F6 Memory F6	Gear F9 analo	ogue F10 ESC F1
Open LevelX driver for MSA-Box fail.	GKWP2K MS/	A-BOX SAVE

4.1.1 CHASSIS – Suspension Front Left

To carry out adjustment:

MODAS V3 - MS3.1 : F3E3BVW_E_V3.cfv - Sus	pension			Motorsport	BOSCH			
He View Action Tools Help					1			
S S	uspensio	n front rigl	nt		CA	R DOWN		
	sus_in_fr	mm	ususinfr_w	۳V	C	AR UP		
sustrchk mm	sus_out_fr	mn	ususoufr_w	mV		ZERO		
5	Suspension front left							
	sus_in_fl	mm	ususinfl_w	٣٧	c	AR UP		
SUSTICHK	sus_out_fl	mm	ususoufl_w	۳V		ZERO		
S	uspensio	on rear righ	nt		CA	R DOWN		
	sus_in_rr	mm	ususinrr_w	mV	C	AR UP		
susrrchk	sus_out_rr	mm	ususourr_w	٣٧		ZERO		
	Suspensi	on rear left			CA	R DOWN		
	sus_in_rl	mm	ususinri_w	mV	C	AR UP		
susrichk	sus_out_rl	mm	ususourl_w	٣٧		ZERO		
					ZE	RO ALL		
race F2 Engine F3 LifetimerCons F4	Suspension P5	coeleration Rearing F6 Memo F7	Wheel F8	Gear F9 analog	pue F10	ESC F1		
pen LevelX driver for MSA-Box fail.			ONO ERROR	KWP2K MSA	BOX	SAVE		

The sensor which is to be calibrated is moved to any position (for example the mechanical stop: Position1). For this position the input in "SUS_IN_FL" is the physical data 0. Position 1 can be saved in

the CardMemory with the "Car down" button. The

measured voltage can be checked with the "ususinfl" label.

The sensor is then moved to a second position (for example the opposite mechanical stop: Position 2). The difference between position 1 and 2 is the input for the label "SUS_OUT_FL" (here: 10 mm).

- Position 2 can be saved with the "car up" button. The measured voltage can be checked with the label "ususoufl".
- At this point the characteristic curve of the sensor is defined. The physical data can be checked with the label "susflchk".
- The button "ZERO" resets the sensor, with the sensor in the desired zero reference position.

4.1.2 CHASSIS – Suspension Front Right

The adjustment of this function is the same as the "Suspension Front Left".

4.1.3 CHASSIS – Suspension Rear Left

The adjustment of this function is the same as the "Suspension Front Left".

4.1.4 CHASSIS – Suspension Rear Right

The adjustment of this function is the same as the "Suspension Front Left".

4.2 CHASSIS – Steering

The steering angle can be adjusted with the "Steering" button.

The adjustment of this function is similar the adjustment of the "Suspension Front Left "function. Instead of the suspension position the input is the steer angle sensor ("STEERPOS1" und "STEERPOS2).

4.3 CHASSIS – Acceleration Long

Sil File	MODAS V3 - View Action	MS3.1	F3E3BVV Help	E_V3.cfv - Ac	celeration Steering			Motorspo	rt 🛞 BO:	SCH 🔲 🖂	Tł
[Accelera	tion trans				ACC LEFT	tic
				ACCLE	a	uaccle_w		mV	ACC RIGHT		
	acctcl	ık		1	ACCRI	1	uaccri_w		m∨	ZERO	CS
ſ					Accelera	tion long				ACC BACK	"А
			_		ACCBW	0	uaccbw_w		mV	ACC FWD	
	accich	ık		*	ACCFW	9	uaccfw_w		mv	ZERO	
					Stee	ering				STEER POS1	
	steer_	ŗ		grae	STEERPOS1 STEERPOS2	grad grad	E_steer		•	STEER POS2	
	race F2	En	gine F3	Lifetime/Cons F4	Suspension PS	celeration sering F6 Memo I	F7 Wheel F8	Gear F9	analogue F1	D ESC F1	
Оре	en LevelX driv	er for M	SA-Box fa	ı.			ON0 ERROR	KWP2K	MSA-BOX	SAVE	
1	Start	- 🕼 🔅	0 🙆	😂 315e3bm	🛞 MSD-FI	а_F3 🛛 👸 М	ODA5 V3 - M53.1 :	🦉 suspension - Paint		C 🐠 11:26	

The longitudinal acceleration sensor can be calibrated with the "Acceleration Long" box.

The calibration proceeds as follows:

- The sensor which has to be calibrated has to be removed from its mounting and turned 90 degrees backwards. The calibration input ("ACC_BW") for this position is +1g.
- Clicking the button "Acc back" (and sensor turned 90 degrees backwards) this position is saved in the CardMemory. The measured voltage can be checked with the label "uaccbw_w"
- The next calibration position of the sensor is 90 degrees turned forwards. The physical input for this position is –1 g.
- Clicking the button "Acc fwd (and sensor turned 90 degrees backwards) this position is saved in the CardMemory. The measured voltage can be checked in the macro "uaccfw_w".



- The characteristic curve has now been defined for the sensor. The physical data can be checked with the label "acclchk".
- For "ZERO"-point adjustment of the sensor, its position has to be horizontal (mounted in the car).

	A	ccelera	ation tr	ans			ACCLEFT
acctchk	AC	CCLE	-0.0100	9	uaccle_w	mv	ACC RIGHT
acctchk	AC	CCRI	-0.0100	9	uaccri_w	mV	ZERO
	A	cceler	ation lo	ong			ACC BACK
	A	CBW	-0.0100	9	uaccbw_w	mv	ACC FWD
accichk						 - Andrews	
	A	CCFW	-0.0100	9	uaccfw_w	mv	ZERO
	A	Ste	-0.0100	9	uaccfw_w		ZERO STEER LEFT
	A (Ste	-0.0100	•	uaccfw_w		ZIRO STEER LEFT STEER ROOT
stangchk	A(CFW Ste	-0.0100 eering -0.100	9	uaccfw_w usteerl_w	m/	ZERO STEER LEFT STEER RIGHT

4.4 CHASSIS – Acceleration Trans

The transversal acceleration sensor can be calibrated with the "Acceleration Trans" box.

This sensor has the same calibration as the longitudinal Acceleration sensor (see chapter 3.3).

The input +1g is when the sensor has been turned 90

degrees to the left (car cornering right) and can be edited by the label "ACCLE". The input -1g is when the sensor has been turned 90 degrees to the right (car cornering left) and can be edit by the label "ACCRI"

4.5 CHASSIS – Analogue

Selecting the option *All Chassis Channel* provides a display of all the voltages of the CardMemory.

5 RACE – Function

The function "RACE" provides quick access to all of the lap information. This function contains for example the gear setup, the programming of gear ratios, lap- and segment distances.

5.1 RACE – Dash

This function controls the map switch and the LEDs (oil- and diagnostic LEDs).

MODAS V3 - MS3.1 : F3E3BVW_E_V3.cfv - race	Motorsport 😝 BOSCH
warning	shift lights
B_mil ·	KLNSHGEAR1
B_oellamp	KLNSHGEAR2
map position	KLNSHGEAR3
mappos	KLNSHGEAR4
Pit Speed Limiter	KLNSHGEAR5
VMAXO km/h	KLNSHGEAR6
brake pressure FRONT	brake pressure REAR
upbr_f v	upbr_r v
pbrk_f	pbrk_r bar
pbrproz_f *	pbrproz_r ×
nuce F2 Engine F3 Lifetime/Cons F4 Suspension F6 Acceleration Steering F6	Memo F7 Vibeel F0 Dear F0 analogue F10 ESC F1
Open LevelX driver for MSA-Box fail.	MODAS V3 - NS3.1 : F3E38W E_V3.dv - race MSA-BOX SAVE
🛃 Start 🖉 🖉 🙆 🕒 315esbm 🛞 MSD-FIA_F3	😸 MODAS V3 - MS3.1 : 🍞 Uniternannt - Paint 🛛 🔇 🥵 11.41

The display left, shows the map position conditions one and two, the active diagnostic LED (B_mil = true), and the oil warning LED (B_oellamp = true). mappos is showing the current map position.

Further more you see the brake balance in procent (pbrproz_f /_r) and the absolute Pressure front (pbrk_f) and rear (pbrk_r).

The revs for the shift LEDs can also be set there. This is dependent on the gear engaged, that is why the 5 LEDs have to be set up for each gear in the maps KLNSHGEAR1...6.

The pit speed limiter can also be set up: the target speed should be set in VMAXO. The codeword CWVMAX allows turning off the speed limiter by setting it to 0. In order to turn on the limiter this codeword has to be set to 1.

5.2 RACE – Memo

The clock in the CardMemory contains the real time and has a battery backup. This real time is saved with each data file and shown in WinDarab. The clock in the system has to be reset when the battery has been changed.

BUODAS V3 - US3 1 - F3F3RVW F V3 of - Her	0	Motosport	
File View Action Tools Help		motorsport	
			_
Laptrigger	Test	Data version	
B lannin		DATAVERS	1
B lapin	MAY		
B laptra	MINI I	DATATENDE	<u> </u>
		ADR Status	1
		adr_status	
stored value	cet value	etatue CM40	ī
Stored value	Set value	Status Omito	Read Clock
tclomemyr ·	CLOMEMYR	•	Set Clock
tclomemmon ·	CLOMEMMON	B_memcan	
tclomemday ·	CLOMEMDAY	· B_memcard ·	1
tclomemhr	CLOMEMHR	B memcardn	
telemenumin			-
telomemmin	CLOMEMMIN	· B_memrec ·	-
tclomemsec ·	CLOMEMSEC	•	
race F2 Engine F0 Lifetime/Cons F4	Suspension F5 Acceleration Steering F6	mo F7 Wheel F0 Gear F0	analogue F10 ESC F1
Open LevelX driver for MSA-Box fail.		MODAS V3 - MS3.1 : F3E38VW, E. V3.cfv - Memo	MSA-BOX SAVE
🛃 Start 🔰 🗳 😂 🔯 🜰 🛛 😂 315e3bm	MSD-FIA_F3	MODAS V3 - MS3.1 : 🦉 Race - Paint	C 🚭 11:55

It is possible to read in the active memory time by clicking "Read Clock." The time is shown in the labels "tclomemyr, tclomemmon …". The new time can be defined in the labels "CLOME-MYR, CLOMEMMON …". This can be set in the CardMemory by clicking "Set Clock".

Different operational conditions of the memory can be checked with the bits

B_memcan, -card, -cardn, and -rec.

B_memcan means that a CM 40 is connected to the chassis loom

B_memcard means that a initalized card is in the slot

B_memcardn means that a new initalized (without data) card is in the slot

B:memrec means that the CM 40 is recording data, and so definitly must be some Data on the card !

This page also displays the status of the Accident Data Recorder (ADR). For further information, please contact the ADR manufacturer.

Note: when putting the beacon transmitter in front of the receiver, the bits B_lappin and B_lapin should get true. If not, there is a problem.

The parameters FLLAPMIN and FLLAPMAX allow avoiding wrong beacon impulses.



After getting a laptrigger, the ECU will wait till a distance equal to LLAP * FLLAPMIN has been driven before recognising a beacon impulse as a laptrigger.

In the same way, if no laptrigger has been detected after a distance equal to LLAP * FLLAPMAX has been driven, the ECU will set a laptrigger. (it is possible to switch this function off by setting this parameter to 4).

Typical values for these parameters are thus: FLLAPMIN = 0.6 and FLLAPMAX = 2.

5.3 RACE – Memo, Datavers

The name of the data version is shown in the label DATAVERS, a note may also be added. WinDARAB will show this name.

The data is shown "default-mode" as decimal numbers. By "right-clicking" with the mouse pointer at the displayed data, and selecting the "ASCII-character" option, the data can be changed to an ASCII-expression.

Each character can be edited with the decimal number mode. An ASCII-table is shown in chapter 6.

5.4 RACE – Wheel

MODAS V3 - MS3.1 : F3E3AHWA_Exf	v - Wheel	Metersport 💮 BOSCH 🖬	 1) Impulses for each
4W	SB Setting	vehicle speed	wheel revolution
CW4WSB	255.00	vfzg_w kmh	"AIMRU"
			2) Wheel diameter
AIMRUE	adjustements	Wheel speeds	"UMRAD"
UMRAD_F	65535.00	VRAD_FR_W kmh	The speed (signal) can
AIMRU_R	255.00	VRAD_RL_W kmh	be read in the macro
		NO CLR new	boxes vfzg_w and
laptioap_w	lap times Lap	settings segment times setting M SEG 131070.00 m CWCLRLAP 255.00 · M SEG mere	vfzgmph_w.
laptibap_w	sec LAPTIMBES	1310.7000 *** CWINILAPST 255.00 · NO NO SIG reve	
lapctr	laps LAPSEG	65535.00	Each values must be
race F2 Engine F	3 Lifetime/Cons F4 Suspension F5	celeration Memo F7 Wheel F8 Gear F9 analogue F10 ESC F1	filled in for the front (_F)
Load LoveCC API-Library "IxwdPM1.J.dlf"	fait	NO ERROR KWP2K SAVE	

For the correct calculation of the car speed, the following data is needed:



and rear (_R) axel.

The codeword CW4WSB indicates weather you use a 4 wheel speed box (=1) Or not (=0)

5.5 RACE – Wheel, Lap parameters

All functions relating to laps are programmed with this function, for example:

	d	hicle spee	ve		B Setting	4WS	
	kmh		vfzg_w		255.00	в	CW4WSB
	mph		vfzgmph_w		di nati na serie	244	
	Is	neel speed	wł	ents	djusteme	wheel a	v
	kendt		VRAD_FL_W		255.00		AIMRU_F
	kmh	VRAD_FR_W		65535.00		F	UMRAD_
0	kmith	VRAD_RL_W		255.00		2	AIMRU_R
a	km/h	J	VRAD_RR_W	0	65535.0	R	UMRAD_F
NO							
	mes setting	segment ti	settings	Lap s	p times	sured la	mea
	255.00 -	CWCLRLAP	131070.00 m	LLAP	341	w	aptioap_
NOB	255.00	CWINILAPST	1310.7000 sec	LAPTIMBEST	101	w	aptibap_
TAN			65535.00	LAPSEG	laps		apctr
			and an	1	1		

Laptioap_w, Laptibap_w and lapctr are calculated Lap-time-data of the last lap (laptioap_w), the best Lap-time (laptibap_w), and the lap counter (lapctr).

Description of the macros:

- LAPTIMBEST: The fastest lap possible. This prevents the saving of a shortened lap.
- LLAP: Lap distance (To calculate the lap trigger)
- LAPSEG: Distance input of the start of a lap segment from the beginning of a lap in m. For the input of less than 9 segments enter higher values than LLAP in the unused segments. The segments can be selected with the mouse pointer. The segment may also be selected by the input of the segment number.
- CWCLRLAP: reset of the lap counter at the recognition from a new initialised FlashCard = 1; otherwise 0.
- CWINILAPST: Initialising of the lap segment saving: New initialisation = 0 1 0. New initialisation recognising a new initialised Flashcard = 4; Input from the best lap time from BLAPTIME = 0 - 2 - 0.



The following macros can be used in the program:

- CLRLAP:	The active lap counter can be reset
- CLR new:	The lap counter will automatically be erased (CWCLRLAP = 1),
	when a new flash-card is recognised. Confirm the macro proce-
	dure by pressing the SAVE-button.
- NO CLR new:	The lap counter won't be erased automatically (CWCLRLAP = 0)
	when a new flash-card is initialised Confirm the macro procedure
	by pressing the SAVE-button.
- INI SEG:	The best lap time will be erased (lap segment savings).
- INI SEG new:	The best lap time will automatically be erased (lap segment
	saving) (CWINILAPST = 4) with the recognition of a new flash-
	card. Confirm the macro procedure by pressing the SAVE-button.
- NO INI SEG new:	The lap time won't be erased automatically (CWINILAPST = 0)
	when a new flash-card is initialised. Confirm the macro procedure
	by pressing the SAVE-button.
- TAKE Best Lap:	Take the best lap time (BLAPTIME) in laptibap_w.



5.6 RACE – Gear, Gearshift settings

This function can monitor the "GearCut" signal, program the gear ratios or the gear potentiometer.

use	e of gearpoti y	/n	ge	ar calibrat	ion
CWGANGI	255.00	•	CWGANGCAL	255.00	0
gearpot	i settings	ge	ear	threshold	ls / no poti
UGANG_W	v	B_gangp		UVGANG12	0.05100
UGANGPHP	319.9951	gangi	•	UVGANG23	0.05100
	319.9951	gangp	•	UVGANG34	0.05100
COANGI	210 0051			UVGANG45	0.05100
UGANGPHN	319.9951			UVGANG56	0.05100
(gearshift setti	ngs			
ugs_w	v TDGS	TR 0.5100	•		
B_gssw	TDGS	TZ 0.5100	5		
B_gs	MDGS	MN 99.61	*		
ice F2 Engine F	3 Lifetime/Cons Susper	nsion F6 Acceleration Steering F6	Memo F7 Wheel F0	Gear F9	analogue F10 ESC I

Note:

While pressing the gear cut button the voltage ugs_w is 5 V. The macro B_gssw (gear switch signal) is only shown when the engine is running. B_gs; Active ECU, can only be checked with a running engine,

passing the relative load limit (rl >70%) and an engine RPM > 5000.

A torque reduction for gearshift can be controlled by the parameters MDGSMN,TDGSTR and TDGSTZ.



MDGSMN is the minimum torque during gear shift.

TDGSTZ indicates how long the minimum torque is active

TDGSTR indicates the time for a ramp from minimum torque to the normal torque



That means that KLNSHGEAR1 is responsible for gear 1. First value is for the first light , 2. Value for the second......

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RACE – Gear 5.7

In this display the gear ratios are calculated and the gear poti can be tuned. These features are used for the gear switch function. The thresholds are calculated as a function of: vfzg/nmot.

Example: 5 speed gear be	OX.					
Gear		1	2	3	4	5
Vehicle speed at 6000rpn	n [km/h]	80	120	160	200	240
Calculated gear ratio (vfz	0,013	0,02	0,026	0,033	0,04	
Programmed shift ratio:	UVGANG12 =	0,016	6			
	UVGANG23 =		0,0234	4		
	UVGANG34 =			0,03	5	
	UVGANG45 =				0,036	6
MIDDAS V3 - MIS3.1 : F3E3AHWA_Exfv - Gear File View Action Tools Help		Motorsp	ort 🕕 BOSCH 📕	<u></u>		
use of gearpoti y/n	ge	ar calibration		The codeword		
CWGANGI 255.00 CWGANGCAL 255.00 CWGA					VGAN	GI is used to
gearpoti settings	gear	thresholds / r	no poti	tur	ne whe	ther a gear
UGANG_W V B_g	angp	UVGANG12 0.0	5100	ро	ti is att	ached or if
UGANGPHP 313.3931 · gang	UVGANG34 0.0	5100	the	egear	position is	
UGANGP 319.9951	UVGANG45 0.0	ANG45 0.05100		calculated via gear		
COANGPHN		UVGANG56 0.0	5100	rat	ios	
				100		
gearshift settings				(=	1 gear	poti attached,

lated by gear ratios). UGANGMX and **UGANGMN** are

ESC F1

thresholds used for diagnostics of the gear poti.

99.61

Acceleration Steering F6

%

Memo F7

MDGSMN

B_gs

race F2

Engine F3

UGANGP is used to tune the gear poti itself. This is done by moving the gear leaver into the gear position that should be detected and reading the voltage (ugang_w) for this gear. This value needs to be written in UGANGP.

Wheel F8

UGANGPHP and UGANGPHN are tuneable thresholds and indicate the min. and max. voltage within a gear is detected. These thresholds can be tuned for each gear individually.

To adjust a new gearposition (after the gearbox was open), it is just necessary to switch the codeword CWGANGCAL from 0 to 1 and back to 0 again. During the adjustment it is absolutely necessary that you are in the 1. Gear !!!!!!

6 ASCII – Decimal – Table

Dec	ASCII	D	ec	ASCII	Dec	ASCII	Dec	ASCII
0	NUL	3	32	SP	64	@	96	1
1	SOH	3	33	!	65	Α	97	а
2	STX	3	34	"	66	В	98	b
3	ETX	3	35	#	67	С	99	С
4	EOT	3	86	\$	68	D	100	d
5	ENQ	3	37	%	69	Е	101	е
6	ACK	3	88	&	70	F	102	f
7	BEL	3	39	'	71	G	103	g
8	BS	4	10	(72	Н	104	h
9	HT	4	11)	73	I	105	i
10	LF	4	12	*	74	J	106	j
11	VT	2	13	+	75	K	107	k
12	FF	4	14	,	76	L	108	I
13	CR	4	15	-	77	М	109	m
14	SO	4	16		78	Ν	110	n
15	SI	4	17	/	79	0	111	0
16	DLE	۷	18	0	80	Р	112	р
17	DC1	2	19	1	81	Q	113	q
18	DC2	Ę	50	2	82	R	114	r
19	DC3	Ę	51	3	83	S	115	S
20	DC4	5	52	4	84	Т	116	t
21	NAK	5	53	5	85	U	117	u
22	SYN	5	54	6	86	V	118	V
23	ETB	5	55	7	87	W	119	w
24	CAN	5	56	8	88	Х	120	Х
25	EM	5	57	9	89	Y	121	У
26	SUB	5	58	:	90	Z	122	Z
27	ESC	5	59	;	91	[123	{
28	FS	6	60	<	92	١	124	
29	GS	6	61	=	93]	125	}
30	RS	6	62	>	94	^	126	~
31	US	6	63	?	95	_	127	DEL

7 CDT – error list

Failure path	Label	codeword
Identifier-Nr		
1	CDTATS	codeword tester exhaust temperature sensor
2	CDTATS2	codeword tester exhaust temperature sensor bank 2
3	CDTBM	code word tester: reference mark sensor
4	CDTDK	code word tester: throttle position potentiometer
5	CDTDK1P	code word tester: Throttle Position Poti 1
6	CDTDK2P	code word tester: Throttle Position Poti 2
7	CDTDSCNK	code word tester: crankcase pressure sensor
8	CDTDSFUE	code word tester: fuel pressure sensor
9	CDTDSL	code word tester: pressure sensor charging pressure
10	CDTDSOE	code word tester: oil pressure sensor
11	CDTDSS	code word tester: Manifold absolute pressure
12	CDTDSU	code word tester: Pressure Sensor Ambient
13	CDTDSVLU	code word tester: pressure sensor comparison (load/
		ambient pressure)
14	CDTEV1	code word tester: injection valve of cyl. 1
15	CDTEV2	code word tester: injection valve of cyl. 2
16	CDTEV3	code word tester: injection valve of cyl. 3
17	CDTEV4	code word tester: injection valve of cyl. 4
18	CDTEV5	code word tester: injection valve of cyl. 5
19	CDTEV6	code word tester: injection valve of cyl. 6
20	CDTGSH	code word tester: request of gear shift function
21	CDTHSV	code word tester: oxygen sensor heater upstream
		catalyst
22	CDTKPE	code word tester: fuel pump relay power stage
23	CDTKRNT	code word tester: knock control zero test pulse [220]
24	CDTKROF	code word tester: knock control offset
25	CDTKRTP	code word tester: knock control test pulse
26	CDTKS1	code word tester: knock sensor 1
27	CDTKS2	code word tester: knock sensor 2
28	CDTKS3	code word tester: knock sensor 3

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29	CDTKS4	code word tester: knock sensor 4
30	CDTLAP	code word tester: lap trigger signal
31	CDTLM	code word tester: air-flow sensor/hot-wire air-flow
		meter
32	CDTLSV	code word tester: lambda sensor upstream catalyst
		[010]
33	CDTMILE	code word tester: MIL power stage
34	CDTN	code word tester: speed pick up
35	CDTOLLAE	code word tester: oil warning lamp powerstage
36	CDTPH	code word tester: phase sensor
37	CDTSHLAE	code word tester: shift lamp powerstage
38	CDTTA	code word tester: intake-air temperature
39	CDTTFUEL	code word tester: fuel temperature
40	CDTTM	code word tester: engine temperature
41	CDTTOL	code word tester: oil temperature
42	CDTTUM	code word tester: ambient (-air) temperature
43	CDTUB	code word tester: power supply voltage UB
44	CDTVFZ	code word tester: vehicle speed signal

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