

#### Silver/BlackBox Configurator Version:V1.0

Datum:26.04.2021



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#### **Software Installation**

1. Download the software from homepage and extract it

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2. Run Setup.exe and follow the instructions



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#### **Driver installation**

- 1. Plug the USB cable into the PC
- 2. Install USB driver. The drivers are located in the installation folder "Driver\FTDI\"

▶ Lokaler Datenträger (C:) ▶ Programme (x86) ▶ WIC GUI ▶ Driver ▶ FTDI ▶					
othek aufnehmen 🔻 🛛 Freigeben für 🔻 Brennen 🛛 Neuer Ordner					
Name	Änderungsdatum	Тур	Größe		
🐌 amd64	10.12.2016 16:27	Dateiordner			
🐌 i386	10.12.2016 16:27	Dateiordner			
B Static	10.12.2016 16:27	Dateiordner			
CDM v2.12.18 WHQL Certified.zip	04.10.2016 15:35	ZIP-Datei	1.323 KB		
h ftd2xx.h	21.06.2016 15:20	Header file	41 KB		
ftdibus.cat	21.06.2016 15:20	Sicherheitskatalog	15 KB		
ill ftdibus.inf	21.06.2016 15:20	Setup-Informatio	19 KB		
ftdiport.cat	21.06.2016 15:20	Sicherheitskatalog	14 KB		
i ftdiport.inf	21.06.2016 15:20	Setup-Informatio	15 KB		

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#### **Configurator overview**

al Coding Out	tput/Input	Table PWM 1	Table PWN	12 Table	PWM 3	Table PWM	4 Log Data	Developer							
Vehicle lo	dentificatio	n					Syste	em Coding				Pr	ofile Mapping		
Model		BMW F-Se	ries, F1x, F2>	c, F3x, F8x		V	Sc	reen Logo	Log	01	•		INITIAL	ECO	T
ECU		UDS_MEV	D172X_N13	_N20_N55_	S55_Fx	x	Te	mperature Option	Gea	r Temperature	•		TRACTION	ECO	T
M-Mod	el	M3/M4/M5	F8x F90	T	N/A	V	N//	A	N/A		V		COMFORT	ECO	T
Engine	•	Turbo				V	N//	A	N/A		<b>V</b>		BASIS / ADAPTIVE	ECO	•
Transn	nission	Automatic				V	Exi	haust Flap Variant	OEM	I Electrical M	. 🔻		SPORT	SPORT	•
	tification							iit Speed	Km/	h			SPORT Plus	PERFORMANC	εv
ECOIden	uncauon							iit Roost Pressure	<u>°C</u>				SPORT Individual	ECO	
ECU V	ariant	BlackBo	Х			▼		in Doost Tessure	bar				ECO	ECO	T
Hardwa	are Version	21					WMI	Coding							
Softwa	re Version	11					Ma	in Injection	PWI	W1	•				
Serial I	Number	2021193	}				Inj	ect Start Profile	ECC	)	<b>V</b>		OR map	p profile to gear	
LCD S	W Version	59					No	izzle Size @100psi	200	[CC]	<b>•</b>		Select Gear Nr.:		
							N//	A	N/A		V		Map Profile:	ECO	•
Load / Sa	ive Parame	eter													
L	oad													Save	•
		Developer I	ogin:		*****	*****			COM6		Conr	nect	Disconnect		
			-				W	Engineering							

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1. First select the suitable COM port and press "Connect". If no COM port is available in the selection window, the driver was NOT installed correctly. Please pay attention to the choice of the correct COM port.

COM5	•	Connect	Disconnect

2. Press the "Load" button to load the appropriate parameters. With the "Import Cfg" button, the settings can also be loaded offline from a file.

Load	Export Cfg

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Save configuration	
1 Press the "Save" button to transfer the	settings to the control unit

Save

2. Press the "Export Cfg" button to save the settings in a file on the computer.

Ev	nord	- Ofa
EX	DOL	

Silve Versio Datum	er/BlackBox Configurator m:V1.0 m:26.04.2021 9
	Developer Login
	Developer login:
	The developer login is only for WEngineering developers. The Login area can be ignored.

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#### **General Coding**

System Coding		
Screen Logo	Logo 1	•
Temperature Option	Gear Temperature	•
N/A	N/A	•
N/A	N/A	•
Exhaust Flap Variant	OEM Electrical M	•
Unit Speed	Km/h	•
Unit Temperature	°C	•
Unit Boost Pressure	bar	•
WMI Coding		
Main Injection	PWM 1	V
Inject Start Profile	ECO	•
Nozzle Size @100psi	200 [cc]	•
N/A	N/A	<b>V</b>

1. Logo

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2. Display of transmission or water temperature

- 3. Setup for units kmh/mph, °C/°F, bar/PSI
- 4. Option which PWM channel should be shown in the <u>display in</u> the main bar.



5. Settings of the nozzle size to linearize the injection characteristic. Nozzle size @100PSI.

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## Injection profile mapping

Profile Mapping	
INITIAL	ECO
TRACTION	ECO
COMFORT	ECO
BASIS / ADAPTIVE	ECO
SPORT	SPORT
SPORT Plus	
SPORT Individual	ECO
ECO	ECO
OR ma	p profile to gear
Select Gear Nr.:	1 •
Map Profile:	ECO

There are two ways to assign the profiles.

- 1. Map injection profiles to the driving profiles available depending on the vehicle (F / G models).
- 2. Map injection profiles to the gears (ONLY automatic or DKG transmission).
- 3. There are 3 injection profiles available
- 4. ECO, sport and performance. Depending on the mapping, the profiles are loaded automatically. Which type of mapping you want to use can be configured individually in the individual PWM table.

Main Map Options				
Profile map to:	Drive Profile	v		
	Drive Profile			
	Gear Nr.			

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## **Configuration inputs/outputs**

Outputs		Inputs
Outputs Mapping	Logic Control Configuration	
HS Output 1: PWM 1	Select Output: High Side Output 1 💌	Presure Sensor: WE 72PSI 🔻 use as: Custom 🔻
HS Output 2: PWM 2	Condition 1 none v > v 0	Temp1 NTC Sensor: Custom variant: 10Kohm V
LS Output 3: PMW 3 🔻	OR	Temp2 NTC Sensor: Custom 🔻 variant: 10Kohm 💌
LS Output 4: PMW 4	Condition 2 none v > v 0	Temp3 Type-K Sensor: Custom
LS Output 5: Logic	OR	Temp4 Type-K Sensor: Custom
LS Output 6: Logic	Condition 3 none V > V 0	WMI Flow Sensor: HAL 1300cc 🔻
LS Output 7: Logic		Ethanol Sensor: Continental
		Digital Input: Custom DI
LS Output 6: Logic V LS Output 7: Logic V	Condition 3 none V > V 0	WMI Flow Sensor: HAL 1300cc  Ethanol Sensor: Continental Digital Input: Custom DI

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Outputs



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#### **Configuration of outputs**

Outputs Mapping	9
HS Output 1:	PWM 1
HS Output 2:	Logic 🔻
LS Output 3:	PMW 3
LS Output 4:	PMW 4
LS Output 5:	Logic
LS Output 6:	Logic
LS Output 7:	Manuel 🔻

In general, what the output is used for is set here. Only the outputs 1-4 are PWM capable.

- PWM: The output is mapped to the corresponding PWM table.
- Logic: The output can be set for automatic control in the Logic configuration.
- Manuel: The output can be controlled manually via the display. The state is not saved. The output is "OFF" after each restart.

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#### **Configuration logic function**

Logic Control Co	Logic Control Configuration									
Select Output:	Low Side Output 5									
Condition 1	Accelerator Pedal [%]	> 🔻	90							
	AND									
Condition 2	PWM 1 [%]	> 🔻	20							
	OR									
Condition 3	Digital Input [0/1]	== 🔻	1							

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Conditions for switching the output can be set here for the respective output. 3 conditions can be configured. Each condition consists of a signal, a comparison operator (less than "<", greater than ">" or equal to "==") and a value for setting. Two conditions can be logically linked to each other (AND, OR).

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## **Configuration logic function example**

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Logic Control Co	nfiguration			
Select Output:	Low Side Output 5			
Condition 1	Accelerator Pedal [%]	> 🔻	90	
	AND			
Condition 2	PWM 1 [%]	> 🔻	20	
	OR			
Condition 3	Digital Input [0/1]	== 🔻	1	
				and the second

Logic Control Co	nfiguration		
Select Output:	Low Side Output 5		
Condition 1	Engine RPM	> ▼	2500
	AND		
Condition 2	Engine RPM	< 🔻	6500
	OR		
Condition 3	none	> ▼	0

Example 1: Output 5 is activated when the accelerator pedal position is greater than 90% AND PWM1 is activated with more than 20%. OR The digital input is equal to 1.

Example 2: Output 5 is activated when the engine speed is greater than 2500 rpm AND less than 6500 rpm.

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## **Configuration Inputs/Sensor**

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Inputs
Presure Sensor: WE 72PSI 🔹 use as: Boost pressure 🔻
Temp1 NTC Sensor: Custom 💌 variant: 10Kohm 💌
Temp2 NTC Sensor: Custom 💌 variant: 10Kohm 💌
Temp3 Type-K Sensor: Custom
Temp4 Type-K Sensor: Custom
WMI Flow Sensor: HAL 1300cc 🔻
Ethanol Sensor: Continental
Digital Input: Custom DI

Pressure, temperature, flow and ethanol sensors can configured here. On the one hand to set the sensor variant and on the other hand mapping the sensor values to the existing signals. For example, you can connect an external pressure sensor and use it as a boost pressure signal. If the setting is "Custom", the value is only used as an additional signal.

The digital input can be used as a level sensor for the WMI tank to be shown on the display or as a normal digital input (DI).

Image: Select Profile         Control: VMII pump         Value PVM1 1         Table PVM1 2         Table PVM1 3         Table PVM1 4         Log Data           Main Map Option:           Main Map Option:         Vector Profile         Profile map to:          Profi	on:V1.0 m:26.04.20	ckBox 21	c Co	nfig	ura	tor	-									_		WEngir	16	<u></u> . ?€		
Overview PWWM table configuration           Image: Control: WMI pump * Map Option: Use 3D * Select Y Auis Signal: Boost[PSI] * Y Start @ Y Max 24 *           Map           Profile * Control: WMI pump * Map Option: Use 3D * Select Y Auis Signal: Boost[PSI] * Y Start @ Y Max 24 *           Map           Select Profile: ECC * [FPM]           1000         1500         2000         2500         3000         5500         6500         7000         7500         8000           1000         1500         2000         2500         3000         5500         6500         7000         7500         8000           1000         1500         2000         2500         3000         5500         6500         7000         7500         8000           1000         1500         2000         2500         3000         5500         6500         7000         7500         8000           1010         100												17	7).					•				
Overview PWWM table configuration           General Coding         Output/Input         Table PWM1 Table PWM1 Table PWM1 Log Data           Main Map Options           Profile map to:         Onive Profile         Control:         WMI pump<																						
General Coding       Output/Input       Table PVM1 Table PVM1 Table PVM1 Table PVM1 Log Data       Developer         Main Map Options         Profile map to:       Drive Profile V       Control:       WMII pump       V       Map Option:       Use 2D V       Select Y Axis Signal:       Boost[PS]       V       Y Start:       0       Y Max 24 V         Map           Map           1000       1500       2000       2500       3000       4500       5000       6500       6500       7000       750       8000       Precondition 1         1000       150       221       30       31       33       34       35       36       37       100	Over	view	<b>P</b>	NN	I ta	abl	le	coi	nfi	gu	ıra	ntio	n									
Main Map Options           Profile map to:         Drive Profile         Control:         WMI pump         Map Option:         Use 3D         Select Y Axis Signal:         Boost (PSI)         Y Start:         0         Y Max         24           Map         Select Profile         Control:         WMI pump         Map Option:         Use 3D         Select Y Axis Signal:         Boost (PSI)         Y Start:         0         Y Max         24         P           Map         Select Profile         ECO         V         [RPM]         Precondition 1         Accelerator Pedal (%)         > P         90         Precondition 1           0	General Coding	Output/Inpu	t Table	PWM 1	Table I	PWM 2	Table	e PWM 3	Tabl	e PWN	14 Lo	og Data	Devel	oper								
Profile map to:         Drive Profile         Control.         WMII pump         Map Option:         Use 3D         Select Y Axis Signal:         Boost(PSI)         Y Start.         0         Y Max         24           Map         Select Profile         ECO         Image         Image         Image         Precondition 1           0 </td <td>Main Map Option</td> <td>s</td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>_</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Main Map Option	s					-							_								
Map         Select Profile:         ECO         Image           0	Profile map to:	Drive Profile	· · ·	Control:	WMI pur	mp	•	Map O	ption: (	Use 3	DV	Select	Y Axis \$	Signal:	Boost	[PSI]	•	Y Start: 0 Y Max 24 Y				
Select Profile:         ECO         V         [RPM]           0         1000         1500         2000         3500         4000         4500         5000         6500         7000         7500         8000         0																						
Boost [PSI]         1000         1500         2000         2500         3000         4500         5000         5500         6000         6500         7000         7500         8000         Accelerator Pedal [%]         >         90           1,5         21         30         31         33         34         35         36         37         100         10	Мар																					
Boost [PSI]         0 <th< th=""><th>Мар</th><th>Select Profile</th><th>e: ECO</th><th></th><th>•</th><th></th><th></th><th></th><th></th><th></th><th></th><th>[RPM]</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></th<>	Мар	Select Profile	e: ECO		•							[RPM]										
A, 3       21       30       31       42       44       45       46       100 <td>Мар</td> <td>Select Profile</td> <td>e: ECO 1000</td> <td>1500 2</td> <td>2000 2</td> <td>2500 3</td> <td>3000</td> <td>3500 4</td> <td>000</td> <td>4500</td> <td>5000</td> <td>[RPM]</td> <td>6000</td> <td>6500</td> <td>7000</td> <td>7500</td> <td>8000</td> <td>Precondition 1</td> <td></td> <td></td> <td></td> <td></td>	Мар	Select Profile	e: ECO 1000	1500 2	2000 2	2500 3	3000	3500 4	000	4500	5000	[RPM]	6000	6500	7000	7500	8000	Precondition 1				
4,5       23       39       47       49       50       51       52       54       100	Мар	Select Profile	e: ECO	1500 1 0 30	2000 2 0 31	2500 3	3000 0 34	3500 4 0 35	0000	4500 0 37	5000 0	[RPM] 5500 0	6000 0	6500 0	7000 0 100	7500 0 100	8000 0 100	Precondition 1 Accelerator Pedal [%]	V	> •	90	
Boost [PSI]       7,5       26       42       55       62       64       65       66       67       100	Мар	Select Profile	ECO 1000 0 21 22 22	1500 2 0 30 39	2000 2 0 31 40	2500 3 0 33 41	3000 0 34 42	3500 4 0 35 44	0000 4 0 36 45	4500 0 37 46	5000 0 100 100	[RPM] 5500 0 100 100	6000 0 100 100	6500 0 100 100	7000 0 100 100	7500 0 100 100	8000 0 100 100	Precondition 1 Accelerator Pedal [%] Precondition 2	V	> •	90	
10,5       28       44       58       69       76       77       78       100 <td>Мар</td> <td>Select Profile 0 1,5 3 4,5 6</td> <td>e: ECO 1000 0 21 22 23 24</td> <td>1500 2 0 30 39 39 41</td> <td>2000 2 0 31 40 47 55</td> <td>2500 3 0 33 41 49 56</td> <td>3000 0 34 42 50 57</td> <td>3500 4 0 35 44 51 59</td> <td>0000 4 0 36 45 52 60</td> <td>4500 0 37 46 54 61</td> <td>5000 0 100 100 100 100</td> <td>[RPM] 5500 0 100 100 100 100</td> <td>6000 0 100 100 100 100</td> <td>6500 0 100 100 100 100</td> <td>7000 0 100 100 100 100</td> <td>7500 0 100 100 100 100</td> <td>8000 0 100 100 100 100</td> <td>Precondition 1 Accelerator Pedal [%] Precondition 2</td> <td></td> <td>&gt; •</td> <td>90</td> <td></td>	Мар	Select Profile 0 1,5 3 4,5 6	e: ECO 1000 0 21 22 23 24	1500 2 0 30 39 39 41	2000 2 0 31 40 47 55	2500 3 0 33 41 49 56	3000 0 34 42 50 57	3500 4 0 35 44 51 59	0000 4 0 36 45 52 60	4500 0 37 46 54 61	5000 0 100 100 100 100	[RPM] 5500 0 100 100 100 100	6000 0 100 100 100 100	6500 0 100 100 100 100	7000 0 100 100 100 100	7500 0 100 100 100 100	8000 0 100 100 100 100	Precondition 1 Accelerator Pedal [%] Precondition 2		> •	90	
12       29       46       59       70       80       81       82       83       100	Map Boost (PSI)	Select Profile 0 1,5 3 4,5 6 7,5	e: ECO 1000 0 21 22 23 24 26 27	1500 2 0 30 39 39 41 42	2000 2 0 31 40 47 55 55 57	2500 3 0 33 41 49 56 62 62	3000 0 34 42 50 57 64 70	3500 4 0 35 44 51 59 65 71	0000 0 36 45 52 60 66 72	4500 0 37 46 54 61 67 72	5000 0 100 100 100 100 100	[RPM] 5500 0 100 100 100 100 100	6000 0 100 100 100 100 100	6500 0 100 100 100 100 100	7000 0 100 100 100 100 100	7500 0 100 100 100 100 100	8000 0 100 100 100 100 100	Precondition 1 Accelerator Pedal [%] Precondition 2 none	•	> •	90	
15       32       48       62       73       82       88       90       91       100	Map Boost [PSI]	Select Profile 0 1,5 3 4,5 6 7,5 9 10,5	ECO 1000 0 21 22 23 24 26 27 28	1500 2 0 30 39 39 41 42 43 44	2000 2 0 31 40 47 55 55 57 58	2500 3 0 33 41 49 56 62 68 69	3000 0 34 42 50 57 64 70 75	3500 4 0 35 44 51 59 65 71 76	0000 0 36 45 52 60 66 72 77	4500 0 37 46 54 61 67 73 78	5000 0 100 100 100 100 100 100 100	[RPM] 5500 0 100 100 100 100 100 100	6000 0 100 100 100 100 100 100 100	6500 0 100 100 100 100 100 100 100	7000 0 100 100 100 100 100 100 100	7500 0 100 100 100 100 100 100 100	8000 0 100 100 100 100 100 100 100	Precondition 1 Accelerator Pedal [%] Precondition 2 none Precondition 3	•	> ¥	90	
16,5       33       49       63       74       83       89       92       93       100 <td>Map Boost [PSI]</td> <td>Select Profile 0 1,5 3 4,5 6 7,5 9 10,5 12 13,5</td> <td>e: ECO 1000 0 21 22 23 24 26 27 28 29 31</td> <td>1500 2 0 30 39 39 41 42 43 44 44</td> <td>2000 2 0 31 40 47 55 55 57 58 59 60</td> <td>2500 3 0 33 41 49 56 62 68 69 70 72</td> <td>3000 0 34 42 50 57 64 70 75 80</td> <td>3500 4 0 35 44 51 59 65 71 76 81 85</td> <td>0000 0 36 45 52 60 66 72 77 82 86</td> <td>4500 0 37 46 54 61 67 73 78 8 83</td> <td>5000 0 100 100 100 100 100 100 100</td> <td>[RPM] 5500 0 100 100 100 100 100 100 100 100</td> <td>6000 0 100 100 100 100 100 100 100</td> <td>6500 0 100 100 100 100 100 100 100</td> <td>7000 0 100 100 100 100 100 100 100</td> <td>7500 0 100 100 100 100 100 100 100</td> <td>8000 0 100 100 100 100 100 100 100</td> <td>Precondition 1 Accelerator Pedal [%] Precondition 2 none Precondition 3 none</td> <td></td> <td>&gt; V &gt; V</td> <td>90</td> <td></td>	Map Boost [PSI]	Select Profile 0 1,5 3 4,5 6 7,5 9 10,5 12 13,5	e: ECO 1000 0 21 22 23 24 26 27 28 29 31	1500 2 0 30 39 39 41 42 43 44 44	2000 2 0 31 40 47 55 55 57 58 59 60	2500 3 0 33 41 49 56 62 68 69 70 72	3000 0 34 42 50 57 64 70 75 80	3500 4 0 35 44 51 59 65 71 76 81 85	0000 0 36 45 52 60 66 72 77 82 86	4500 0 37 46 54 61 67 73 78 8 83	5000 0 100 100 100 100 100 100 100	[RPM] 5500 0 100 100 100 100 100 100 100 100	6000 0 100 100 100 100 100 100 100	6500 0 100 100 100 100 100 100 100	7000 0 100 100 100 100 100 100 100	7500 0 100 100 100 100 100 100 100	8000 0 100 100 100 100 100 100 100	Precondition 1 Accelerator Pedal [%] Precondition 2 none Precondition 3 none		> V > V	90	
19,5       36       52       65       77       85       91       95       97       100       100       100       100       100         21       37       53       67       78       86       93       96       98       100 <t< td=""><td>Map Boost [PSI]</td><td>Select Profile 0 1,5 3 4,5 6 7,5 9 10,5 12 13,5 15</td><td>e: ECO 1000 0 21 22 23 24 26 27 28 29 31 32</td><td>1500 2 0 309 319 41 42 43 44 46 47 48</td><td>2000 2 0 31 40 47 55 55 57 58 59 60 62</td><td>2500 3 0 33 41 49 56 62 68 69 70 72 73</td><td>3000 0 34 42 50 57 64 70 75 80 80 80 82</td><td>3500 4 0 35 44 51 59 65 71 76 81 85 88</td><td>0000 0 36 45 52 60 66 72 77 82 86 90</td><td>4500 0 37 46 54 61 67 73 78 83 83 87 91</td><td>5000 0 100 100 100 100 100 100 100 100</td><td>[RPM] 5500 100 100 100 100 100 100 100 100 10</td><td>6000 0 100 100 100 100 100 100 100 100 1</td><td>6500 0 100 100 100 100 100 100 100 100 10</td><td>7000 0 100 100 100 100 100 100 100 100 1</td><td>7500 0 100 100 100 100 100 100 100 100 10</td><td>8000 0 100 100 100 100 100 100 100 100 1</td><td>Precondition 1 Accelerator Pedal [%] Precondition 2 none Precondition 3 none Precondition 4</td><td></td><td>&gt; V &gt; V &gt; V</td><td>90</td><td></td></t<>	Map Boost [PSI]	Select Profile 0 1,5 3 4,5 6 7,5 9 10,5 12 13,5 15	e: ECO 1000 0 21 22 23 24 26 27 28 29 31 32	1500 2 0 309 319 41 42 43 44 46 47 48	2000 2 0 31 40 47 55 55 57 58 59 60 62	2500 3 0 33 41 49 56 62 68 69 70 72 73	3000 0 34 42 50 57 64 70 75 80 80 80 82	3500 4 0 35 44 51 59 65 71 76 81 85 88	0000 0 36 45 52 60 66 72 77 82 86 90	4500 0 37 46 54 61 67 73 78 83 83 87 91	5000 0 100 100 100 100 100 100 100 100	[RPM] 5500 100 100 100 100 100 100 100 100 10	6000 0 100 100 100 100 100 100 100 100 1	6500 0 100 100 100 100 100 100 100 100 10	7000 0 100 100 100 100 100 100 100 100 1	7500 0 100 100 100 100 100 100 100 100 10	8000 0 100 100 100 100 100 100 100 100 1	Precondition 1 Accelerator Pedal [%] Precondition 2 none Precondition 3 none Precondition 4		> V > V > V	90	
21 37 53 67 78 86 93 96 98 100 100 100 100 100 100 100 Precondition 5 22.5 38 54 68 79 88 94 98 100 100 100 100 100 100 100 100	Map Boost [PSI]	Select Profile 0 1,5 3 4,5 6 7,5 9 10,5 12 13,5 15 16,5 18	E ECO 1000 0 21 22 23 24 26 27 28 29 31 32 33 34	1500 2 0 30 39 39 41 42 43 44 46 47 48 49 51	2000 2 0 31 40 47 55 57 58 59 60 62 63 64	2500 3 0 33 41 49 56 62 68 69 70 72 73 74 75	3000 0 34 42 50 57 64 70 75 80 80 80 82 83 84	3500 4 0 35 44 51 59 65 71 76 81 85 88 89 90	0000 0 36 45 52 60 66 72 77 82 86 90 92 95	4500 0 37 46 54 61 67 73 78 83 87 91 91 96	5000 0 100 100 100 100 100 100 100 100 1	[RPM] 5500 0 100 100 100 100 100 100 100 100	6000 0 100 100 100 100 100 100 100 100 1	6500 0 100 100 100 100 100 100 100 100 10	7000 0 100 100 100 100 100 100 100 100 1	7500 0 100 100 100 100 100 100 100 100 10	8000 0 100 100 100 100 100 100 100 100 1	Precondition 1 Accelerator Pedal [%] Precondition 2 none Precondition 3 none Precondition 4 none			90	
	Map Boost [PSI]	Select Profile 0 1,5 3 4,5 6 7,5 9 10,5 12,5 13,5 15,5 16,5 18,5 19,5 2,2 2,2 19,5 2,5 1,5 1,5 1,5 1,5 1,5 1,5 1,5 1	e: ECO 1000 0 21 22 23 24 26 27 28 29 31 32 33 34 36	1500 2 0 30 39 39 41 42 43 44 46 47 48 49 51 52	2000 2 0 31 40 47 55 55 57 58 59 60 62 63 64 65	2500 3 0 33 41 49 56 62 68 69 70 72 73 74 75 77	3000 0 34 42 50 57 64 70 75 80 80 80 82 83 83 84 85	3500 4 0 35 44 51 59 65 71 76 81 85 88 89 90 91	0000	4500 0 37 46 54 61 67 73 78 83 87 91 93 96 97	5000 0 100 100 100 100 100 100 100 100 1	[RPM] 5500 0 100 100 100 100 100 100 100 100	6000 0 100 100 100 100 100 100 100 100 1	6500 0 100 100 100 100 100 100 100 100 10	7000 0 100 100 100 100 100 100 100 100 1	7500 0 100 100 100 100 100 100 100 100 10	8000 0 100 100 100 100 100 100 100 100 1	Precondition 1 Accelerator Pedal [%] Precondition 2 none Precondition 3 none Precondition 4 none		> ¥ > ¥ > ¥	90	

Main Map Options: Global settings for the respective PWM channel

**Map:** These settings can be configured depending on the profile.

Silver/Black	Box Conf	igurator		WEn	gineering	7
PWM t	able gl	obal configu	ration			
Main Map Options						
Profile map to:	Drive Profile	Control: WMI pump	Map Option: Use 3D	Select Y Axis Signal: Boost [PSI]	Y Start: 0 V Max 24 V	
	1.	2.	3.	4.	5.	

- 1. Mapping of the profiles to driving profiles or to the gear No.
- 2. Setting which consumer is connected to the PWM output. This is important so that the controller can use the appropriate PWM frequency and characteristic.
- 3. Whether the map can be interpreted as 2D or 3D. With 2D only the rpm is taken into account.
- 4. Signal which is to be used in addition to the rpm for the 3D injection. The following signals are available: torque, boost pressure, rail pressure, gear no., Analog IN
- 5. Scaling the Y axis to get a better resolution.

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#### **PWM table configuration**

М	а	р		
_	-	-	-	e

	Select Profile	ECC	)	•							[RPM	]				
		1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500	8000
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	625	0	0	0	20	21	23	24	25	27	28	29	31	32	- 33	34
Boost [mBar]	750	0	0	0	21	34	35	36	37	- 39	40	41	43	44	45	46
	875	0	0	0	22	35	47	48	49	51	52	53	54	56	57	57
	1.000	0	0	0	23	37	47	58	58	60	61	62	64	65	66	66
	1.125	0	0	0	25	- 38	49	59	68	69	70	72	73	74	76	75
	1.250	0	0	0	26	- 39	50	60	68	76	77	78	80	81	82	82
	1.375	0	0	0	27	41	51	62	70	78	84	85	86	87	89	88
	1.500	0	0	0	29	42	53	63	71	79	84	89	90	91	93	93
	1.625	0	0	0	30	43	54	64	72	80	86	91	94	95	97	97
	1.750	0	0	0	31	45	55	66	74	82	87	92	95	97	98	99
	1.875	0	0	0	33	46	56	67	75	83	88	93	96	99	100	100

In this picture a 3D injection is configured. Depending on the rpm and boost pressure, the PWM output is controlled with duty (0-100%). The activation (20% duty) takes place as soon as the engine speed reaches 2500 rpm and the boost pressure reaches 625 mbar. If the boost pressure of 1875 mbar is exceeded, the control continues with the values in the last line.

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#### **PWM table configuration**

) 1 2 3 5 5 7	21 34 35 37 38 39 41	23 35 47 47 49 50 51	24 36 48 58 59 60 62	25 37 49 58 68 68 68 70	27 39 51 60 69 76 78	28 40 52 61 70 77 84	29 41 53 62 72 78 85	31 43 54 64 73 80 86
9 0 1 3	42 43 45 46	53 54 55 56	63 64 66 67	71 72 74 75	7 8 8 8	Fill selec % increa calculate calculate	ted se sele selecte Pl	cted ed

Several fields can be marked and changed. There are 4 functions available for this

Fill selected: Set all marked fields to a static value, e.g. "20".

Increase selected: Increase all marked fields by the set percentage value.

**Calculate selected:** Calculates the values for the marked fields linearly. In the picture from 34% - 78%

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**Calculate PI:** Calculates the PI of the injection time [ms] in PWM duty depending on the engine speed (RPM).

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#### **PWM table configuration**

Precondition 1		
Engine Oil Temperature [°C]	> 🔻	50
Precondition 2		
		20
		20
Precondition 3		
Accelerator Pedal [%]	> 🔻	80
Precondition 4		
WMI Tank Level [%]	> 🔻	10
Precondition 5		
none	> 🔻	0
	V	

In addition, further preconditions can be configured for the control of the PWM outputs.

All 5 preconditions are AND linked and must be fulfilled.

#### Example (see picture):

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The PWM output is only enabled when the engine oil temperature is greater than 50 ° C AND the outside temperature is greater than 20 ° C AND the accelerator pedal position> 80% AND WMI tank level content is greater than 10%.

Preconditions that are set to "none" will ignored.

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## Signal for precondition

none = no functionEngine Water Temperature [°C] = Motor Wassertemperatur Engine Oil Temperature [°C] = Motor Öltemperatur Outside Temperature [°C] = Außentemperatur Boost Temperature [°C] = Ladeluft/Ansaugtemperatur Exhaust Temperature1 [°C] = Abgastemperatur 1 Exhaust Temperature2 [°C] = Abgastemperatur 2 Ext. Ntc Temperature1 [°C] = NTC Temperatursensor 1 Ext. Ntc Temperature2 [°C] = NTC Temperatursensor 2 Ext. Typ-K Temperature1 [°C] = Typ-K Temperatursensor 1 Ext. Typ-K Temperature2 [°C] = Typ-K Temperatursensor 2 Gear [Nr] = Gang Nummer (nur Automatik/DKG) Accelerator Pedal [%] = Gaspedalstellung WMI Tank Level [%] = WMI Tankinhalt Ext. Analog Input [mV] = Analoger Eingang Boost Pressure [mBar] = Ladedruck Boost Pressure [PSI] = Ladedruck Fuel Rail Pressure [Bar] = Raildruck Pressure Ext. Sensor [mBar] = Externer Drucksensor Digital Input [0/1] = Digitaler Eingang Vehicle Speed [Km/h] = Fahrzeuggeschwindigkeit

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## Signal for precondition

Drive Profile [Nr] = Car Profile (2= Komfort, 3= Basis/Adapt, 4= Sport, 5= Sport+, 6= Sport Individ, 7= ECO) Injection Profile [Nr] = Einspritzprofile 0=ECO, 1=Sport, 2= Performance Torque [Nm] = Drehmoment MAF[g/s] = LuftmasseEngine Oil Pressure [mBar] = Motor Öldruck PWM 1 [%] PWM 2 [%] PWM 3 [%] PWM 4 [%] Logic Output 5 [0/1] = Ausgang 5 Logic Output 6 [0/1] = Ausgang 6 Logic Output 7 [0/1] = Ausgang 7 Ethanol Sensor [%] WMI Flow [cc] = WMI Durchfluss WMI Flow Error [0/1] = WMI Durchflussfehler Engine RPM = Motordrehzahl

lver/ rsion:V1 tum:26.	BlackBox Configura	tor			WEngineering
			24		
Da	ata Log				
Confuç	gre Data				
1.	Batterie [V]	5.	Torque [Nm]	9.	Pwm 1 [%]
2.	Accelerator Pedal 0	6.	Engine Power [hp]	10.	Pwm 2 [%]
3.	Engine Rpm 0	7.	Ethanol Sensor [%]	11.	Pwm 3 [%]
4.	VSpeed 0	8.	WMI Flow [cc]	12.	Pwm 4 [%] 0
Data L	ogging				
D:\t	trace				Start Stop

With the help of the data log function it is possible to save 12 sensor values in a csv file. The settings which values can be logged are saved in the control unit. Thus, the software as well as the control unit must be synchronous in this regard. After changing the signals, the new setting must be transferred to the control unit.

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## **Daten Log**

Confugre Data								
1.	Batterie [V]	12,66	5.	Torque [Nm]	100	9.	Pwm 1 [%]	0
2.	Accelerator Pedal	• 0	6.	Engine Power [hp]	35	10.	Pwm 2 [%]	0
3.	Engine Rpm	2510	7.	Ethanol Sensor [%]	0	11.	Pwm 3 [%]	0
4.	VSpeed	• 0	8.	WMI Flow [cc]	0	12.	Pwm 4 [%]	0
Data Logging								
D:V	trace							Start Stop
We recommend for log analyzing the MegaLogViewer								
<u>View MegaLogViewer HD (efianalytics.com)</u> Current signal value								

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## Troubleshooting

Problem: I don't see any COM port to connect to.
Solution: Make sure that the driver is installed correctly.
Problem: I change the values but they are not adopted by the control unit
Solution: Each changed value must be confirmed with the "ENTER" key after the entry.