



WEngineering

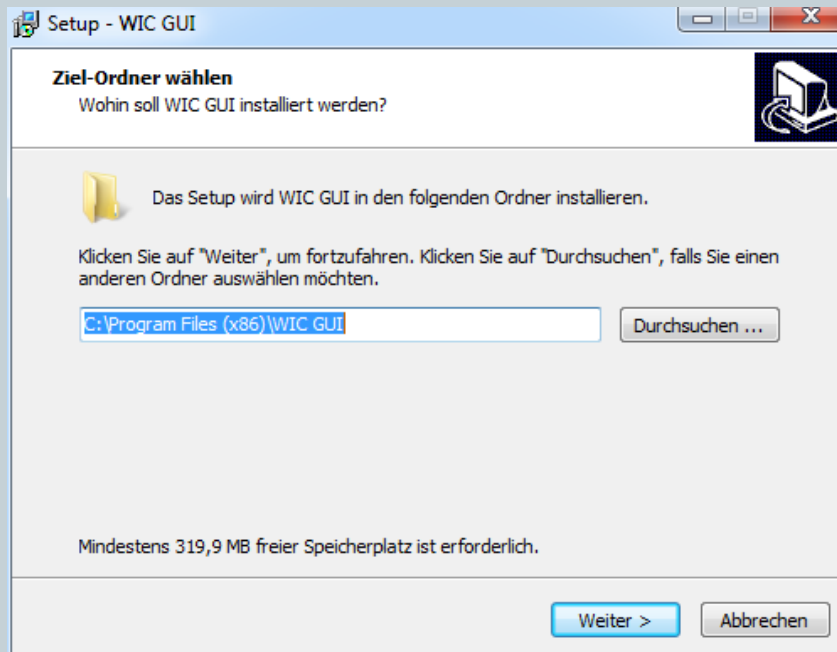


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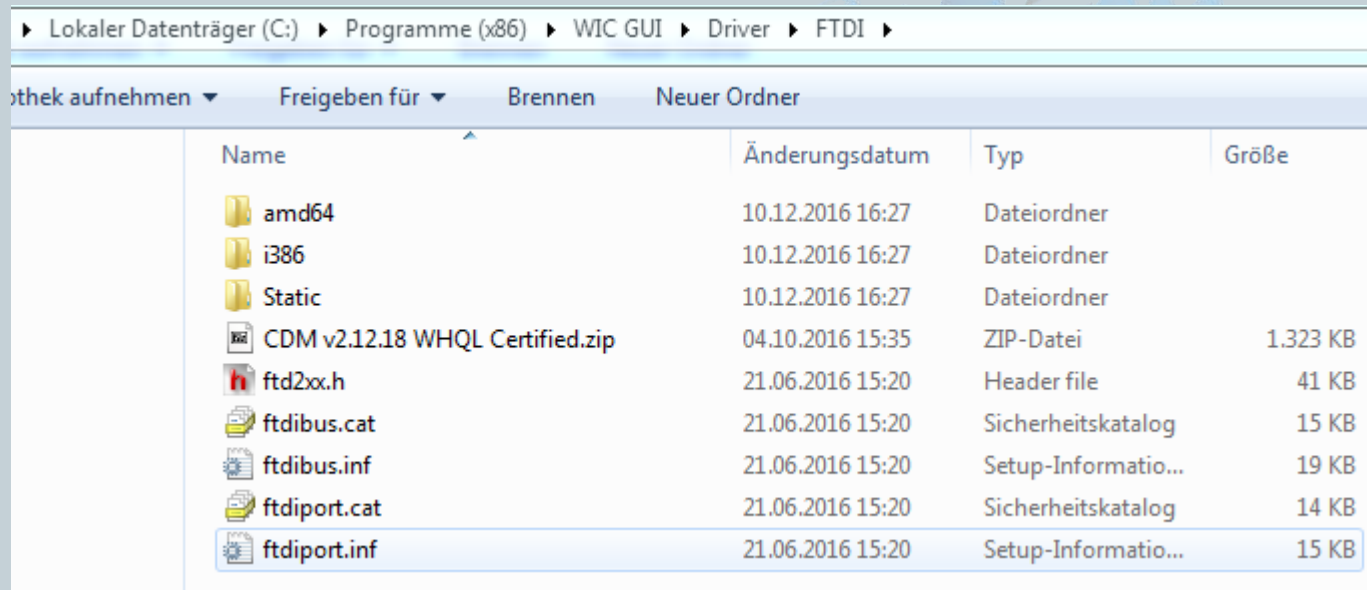
Software Installation

1. Download and unpack the software
2. Run Setup.exe and follow the instructions



Treiber Installation

1. Connect the USB cable to the PC
2. Install the USB Driver. The driver is in the installation folder „Driver\FTDI\“



1. Vehicle Identification

Vehicle Identification

Modell	<input type="text" value="BMW F1x"/>
Engine	<input type="text" value="DDE7.3.1_N57_Fxx"/>
Engine Power	<input type="text" value="500 hp"/>

Here the ECU will be set to the corresponding vehicle variant.

3. Setup of Injection Parameters

The configuration of the injection profile has 3 parts:

1. Preconditions
2. Conditions
3. Injection parameters

The preconditions and conditions are used to check the engine and transmission status.

The injection parameters are used to check the engine power status.

3. Setup of Injection Parameters

1. Preconditions setup

Inject Preconditions			
<input checked="" type="checkbox"/> Use Engine Oil Temperature [°C]	<input type="text" value="75"/>	<input checked="" type="checkbox"/> Use Gear Oil Temperature [°C]	<input type="text" value="50"/>
<input checked="" type="checkbox"/> Use Outside Temperature [°C]	<input type="text" value="5"/>	<input type="checkbox"/> Use Liquid Level [%]	<input type="text" value="0"/>

Here it is possible to activate the injection preconditions.

Only the selected sensor values will be used (select checkbox). The current sensor value of all selected sensors should be higher than the precondition values.

The status will be shown with the following symbols in the display:



-Preconditions not fulfilled



-Preconditions fulfilled

3. Setup of Injection Parameters

2. Setup Conditions

Inject Conditions			
<input checked="" type="checkbox"/> Use Gear [Nr]	<input type="text" value="2"/>	<input checked="" type="checkbox"/> Use Accel Pedal [%]	<input type="text" value="90"/>
<input type="checkbox"/> Use Boost Temperature [°C]	<input type="text" value="35"/>	<input type="checkbox"/> Use Exhaust Temperature [°C]	<input type="text" value="450"/>

Here it is possible to activate the injection conditions.

Only the selected sensor values will be used (select checkbox). The current sensor value of all selected sensors should be higher than the condition values.

3. Setup of Injection Parameters

3. Setup of Injection Parameters

Main Inject Parameter

Nozzle total flow [ml/min]	<input type="text" value="100"/>	Min Injection [%]	<input type="text" value="20"/>	Max Injection [%]	<input type="text" value="100"/>
<input checked="" type="checkbox"/> Use Torque		Start [Nm]	<input type="text" value="200"/> 56 hp	End [Nm]	<input type="text" value="600"/> 384 hp
<input checked="" type="checkbox"/> Use Engine RPM		Start [U/Min]	<input type="text" value="2000"/>	End [U/Min]	<input type="text" value="4500"/>
<input type="checkbox"/> Use Boost Pressure		Start [mbar]	<input type="text" value="1700"/>	End [mbar]	<input type="text" value="2200"/>
Use Nozzle 1	<input type="text" value="PWM"/>	Start [U/Min]	<input type="text" value="3000"/>		<input type="text" value="50"/>
Use Nozzle 2	<input type="text" value="USE NOZZLE"/>	Start [U/Min]	<input type="text" value="4000"/>		<input type="text" value="0"/>
PWM inject cycle duration [ms]	<input type="text" value="100"/>				

Here it is possible to configurate the injection parameters.

Setup of Injection Parameters

3. Setup of Injection Parameters

Nozzle total flow [ml/min]	<input type="text" value="370"/>	Min Injection [%]	<input type="text" value="60"/>	Max Injection [%]	<input type="text" value="90"/>
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The indication of the Total flow the nozzle helps Control unit that Injection behavior to linearize.

The value refer to Snow Performance nozzles (size 5 = 370ml).

Start injection value

Maxima injection quantity

Setup of Injection Parameters

3. Setup of Injection Parameters

<input checked="" type="checkbox"/> Use Torque	Start [Nm]	<input type="text" value="300"/>	<input type="text" value="85"/>	hp	End [Nm]	<input type="text" value="550"/>	<input type="text" value="352"/>	hp
<input checked="" type="checkbox"/> Use Engine RPM	Start [U/Min]	<input type="text" value="2000"/>			End [U/Min]	<input type="text" value="4500"/>		
<input type="checkbox"/> Use Boost Pressure	Start [mbar]	<input type="text" value="0"/>			End [mbar]	<input type="text" value="0"/>		

Three signals (torque, speed and boost pressure) are available for the injection control. However, the signals can also be combined as in the example above (2D injection). With the combination of torque and speed, a performance-dependent injection is generated. The injection starts with the minimum set injection quantity as soon as the start values are reached. The maximum injection quantity is reached linearly at the end values.

Setup of Injection Parameters

3. Setup of Injection Parameters

Nozzle total flow [ml/min]	<input type="text" value="370"/>	Min Injection [%]	<input type="text" value="60"/>	Max Injection [%]	<input type="text" value="90"/>
<input checked="" type="checkbox"/> Use Torque		Start [Nm]	<input type="text" value="300"/> 85 hp	End [Nm]	<input type="text" value="550"/> 352 hp
<input checked="" type="checkbox"/> Use Engine RPM		Start [U/Min]	<input type="text" value="2000"/>	End [U/Min]	<input type="text" value="4500"/>
<input type="checkbox"/> Use Boost Pressure		Start [mbar]	<input type="text" value="0"/>	End [mbar]	<input type="text" value="0"/>



Based on the sample values, this looks Injection behavior as follows:

The injection process starts at 60% a power of 85Hp. The maximal Injection volume is reached at 350Hp.

Setup of Injection Parameters

3. Setup of Injection Parameters

Use Nozzle 1	<input type="button" value="USE NOZZLE"/>	Start [U/Min]	<input type="text" value="0"/>
Use Nozzle 2	<input type="button" value="BOOST MODE"/>	Start [U/Min]	<input type="text" value="3700"/>

The control unit supports up to two more by means of a valve switchable injectors. There are 4 different modes.

USE NOZZLE: The output will switched in parallel with an active injection.

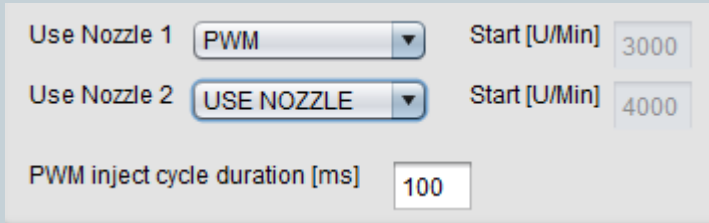
BOOST MODE: The output will switched as soon as the RPM is reached.

Furthermore, an accelerator pedal position of at least 90% is required.

The flow rate is regulated by the pump pressure in the first two modes.

Setup of Injection Parameters

3. Setup of Injection Parameters



The screenshot shows a software interface for setting injection parameters. It includes three rows of controls:

- Row 1: "Use Nozzle 1" dropdown menu set to "PWM", and "Start [U/Min]" input field set to "3000".
- Row 2: "Use Nozzle 2" dropdown menu set to "USE NOZZLE", and "Start [U/Min]" input field set to "4000".
- Row 3: "PWM inject cycle duration [ms]" input field set to "100".

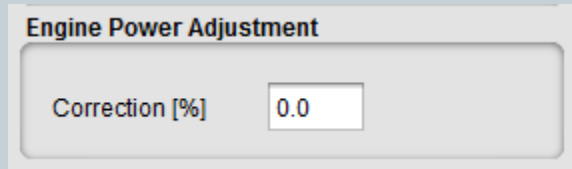
PWM: The valve is clocked by a PWM signal. The pump builds the maximum pressure on. The cycle time of the valve timing can be up to set to 50ms = 20Hz.

PWM Pump: The valve is clocked by a PWM signal. The pump handle depending on the injection quantity the pump pressure.

A suitable PWM valve is required to control the valve via PWM!

Setup of Injection Parameters

3. Setup of Injection Parameters



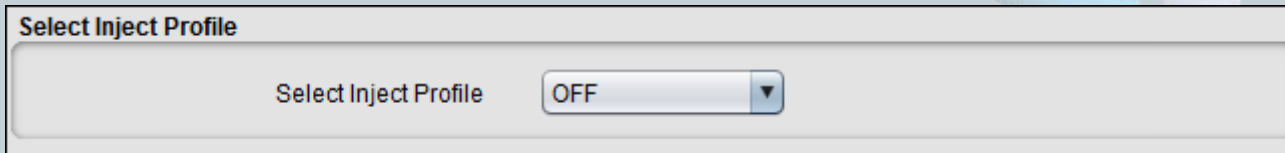
Engine Power Adjustment

Correction [%]

This parameter is used to correct the displayed performance.

There is usually a deviation with an active water injection or through a map optimization. The difference of the deviation can only be determined on a test bench. Example: A max. Power measured by 385PS and the vehicle delivers a value of 350Hp, in this case a 10 percent correction is necessary. This can be set individually for each injection profile.

Mapping the injection profiles to driver profiles



Select Inject Profile

Select Inject Profile OFF

The control unit has 4 configurable injection profiles: "ECO, SPORT, PERFORMANCE, AUTO". Injection profile "OFF" cannot be configured. No injection takes place in this profile. The injection conditions and injection parameters including the power correction can be carried out individually for the configurable profiles.

Mapping the injection profiles to driver profiles

Profile Mapping

INITIAL ----->	OFF
TRACTION ----->	OFF
KOMFORT ----->	AUTO
BASIS ----->	AUTO
SPORT ----->	SPORT
SPORT+ ----->	PERFORMANCE
RACE ----->	PERFORMANCE
ECO ----->	ECO

*The injection profiles (right) are assigned to the driver profiles (left) in this area.
Only for F models.*

Driver profile -----> Injection profile

Shift light parameter

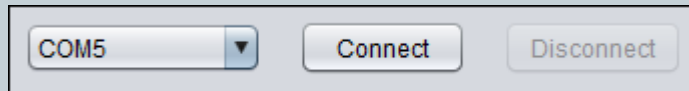
Shift Helper

Gear[Nr.]	1	2	3	4	5	6	7	8	9	10
RPM Trigger	3700	4000	4200	4400	4500	4600	4500	5000	5000	5000
	0	0	0	0	0	0	0	0	0	0

The shift point can be stored here for each gear. Not for manual gearbox available.

Load and save parameter

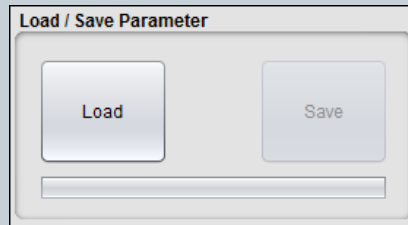
5. Load and save parameter



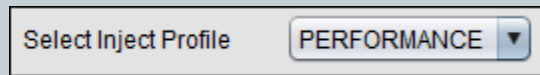
1. First select the appropriate COM port and press "Connect". If no COM port is available in the selection window, an error occurred during the installation of the driver. Please pay attention to the choice of the correct COM port.

Load and save parameter

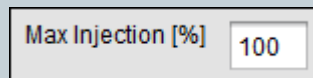
5. Load and save parameter



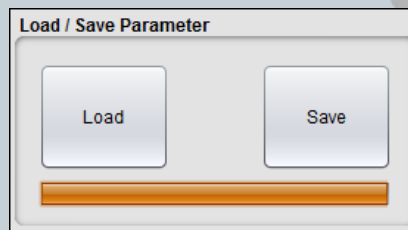
2. Press the Button „Load“.



3. Choose the injection profile.



4. Change parameters. **Important: For security reasons, input fields must be confirmed with ENTER after changing the value!**



5. Press the „Save“ button to transfer the parameter to WIC