

# VFIZ



# User Manual

Date: 19 April 2016.

**Legal Disclaimer:**

Although I made comprehensive test of each VFIZ device and believe it is well tested and safe, I assume no responsibility for damages caused by the installation nor use of the VFIZ .

I can't guarantee that the VFIZ will function flawlessly in all circumstances nor don't disturb key car functionality.

Installation should be performed by experienced user or expert and even in some countries modification to car have to be approved by appropriate authorities probably.

It is responsibility of the user to check legal status of car modification and usage of VFIZ module in usage area, and particularly don't use it on public roads in case if it is not allowed.

**Be careful, don't allow other usage to distract you while driving !**

*Qmatis, Mariusz Proszczek*

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# 1 About

The VFIZ is embedded research computer which allow to monitor car's health and performance parameters directly in a car via Instrument Cluster FIS, for example while are you on trip and don't have access to service equipment. It allows to Read and eventually clear Diagnostic Trouble Codes or trigger user configured alarms which will inform driver when some important parameters limits are exceeded.

The VFIZ fits behind Instrument Cluster and is not visible to other people. Installation is easy, there is only need to insert plugs and make adaptation of tachometer once. The VFIZ act as Telematic in car infotainment system thus VFIZ can't cooperate with factory Telematic in a car.

The VFIZ integrates seamlessly with existing car infotainment so you don't lost normal operation of Navigation system or MFSW or Bluetooth module.

The VFIZ is recalled by fast double press of left button (**MODE**) on **Multi Steering Wheel**. This is **Mode** (or **Telephone Mode** in case of Audi A4/B6) button which is next to left roller on MFSW. This button is used to recall phone set functionality normally.

If you press this button single time the button operates in standard way recall phone functionality so you don't loose factory equipment functionality.

For predefined measures there is possibility to use S.I. Unit system or U.S. Unit system, other units systems possible on request.

There is also possibility to choose user interface language at runtime, English, German, French or Polish. Other language support can be easily added after providing translation resource file.

## 1.1 Requirements

The VFIZ prefers color display but can work also with red FIS display. Anyway on color looks many times better due high resolution and multi-color. The VFIZ uses Multi Function Steering Wheel (MFSW) or multi-purpose dial placed near handbrake for control.

## **1.2 Features**

The VFIZ can be build in two different hardware revision Standard and Extended. Standard version has almost all software features, Extended version add support for external sensors, has more data memory and longer warranty period.

### **1.2.1 Standard version**

- Displaying users chosen parameters in RDS area (over fifty different parameters, e.g. RPM, Speed, Coolant temperature, Oil temperature, Intake air temperature, most of them are listed in Appendix A)
- Display multiple user configured screens with chosen car parameters
- Display Measuring Values Blocks gathered directly from CAN bus or over OBD protocol
- Both KW1281 and KW2000/2089 supported over k-line and can-bus
- Reading, decoding and displaying Diagnostic Trouble Codes – DTC
- Clearing Diagnostic Trouble Codes – DTC
- Plot user chosen parameter over time
- Measuring different acceleration time e.g. from 0 – 100 km/h, 0 – 96 km/h, 60 – 90km/h, 0 – 200km/h, etc..
- Alarms – user configurable audible and visible alarms when configured parameter limits are exceeded
- Welcome message
- Open Ceremony – Tachometer needle sweep after ignition off
- Plug & Play install, no factory harness modification needed, only Instrument Cluster adaptation
- Seamless integration with car equipment

- storage memory to future usage, for example for label files, more DTC descriptions, additional graphics
- User upgradable by USB cable
- Standard warranty period to 24 months

### **1.2.2      *Extended version***

Extended version add some additional features:

- support for connecting four additional analogue external sensors:
  - two type K thermocouples for Exhaust Gas Temperature (EGT) or Cylinder Head Temperature
  - two sensor with voltage output for Oil Pressure Sensor, Turbo Rotational Speed sensor, additional Boost sensor, etc. (there is also optional possibility to configure one input to support resistive output sensor like common Oil Pressure sensors)
- integrated relay for configurable driving external circuit to be used in future
- storage memory to future usage, for example for label files, more DTC descriptions, additional graphics
- extended warranty period to 48 months

### **1.2.3      *Customized version***

We can also made some custom / intermediate configuration with combination of features and prices on request.

## 2 Installation

The VFIZ need to be connected between existing car wiring and Instruments Cluster. First you need just to pull out masking cover just under instrument cluster (see picture below). After removing masking cover there will be two screws which has to be unbolt - marked by red circles below.

**Hint:** It is best to cover steering casing with soft cloth to avoid scratching while pulling out Instruments.



*Illustration 1: Instrument Cluster - Masking - removal.*

Now it is possible just to pull out Instruments and remove factory blue and green plugs from Instruments. First you need to carefully release blocking and lift levers.

After removing them from Cluster you need to plug them into the VFIZ module.

## 2.1 Connecting VFIZ - rev. $\geq$ C

Later versions of VFIZ (revisions starting from C, since Q3/2013) uses single socket in module with wiring extension harness compatible to given car model. You should insert corresponding car plugs in extension harness and second ends into Instrument Cluster.

Plug for VFIZ can be recognized by that it has splitting cable and it is marked additionally.

**Don't try to insert tacho plugs into the VFIZ or VFIZ plug into Instrument Cluster !**

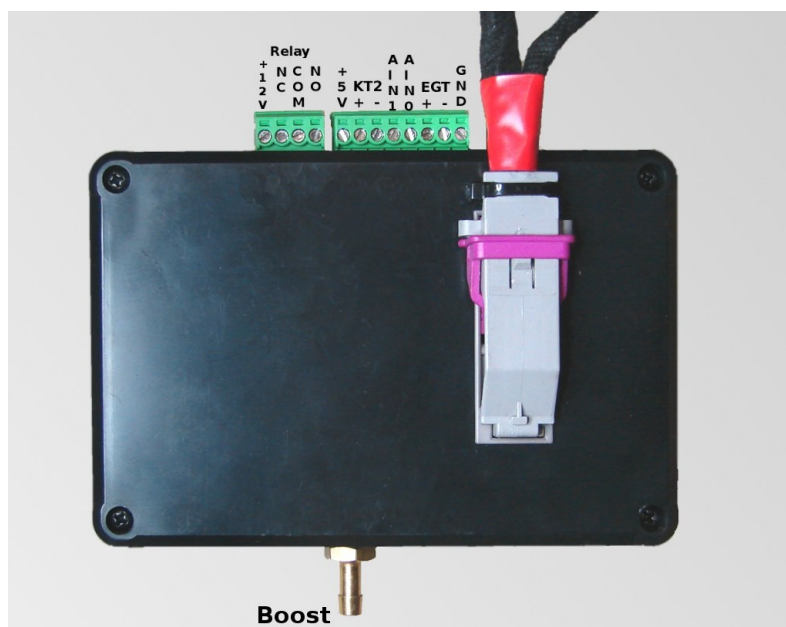


Illustration 2: The VFIZ module (rev. C and above).

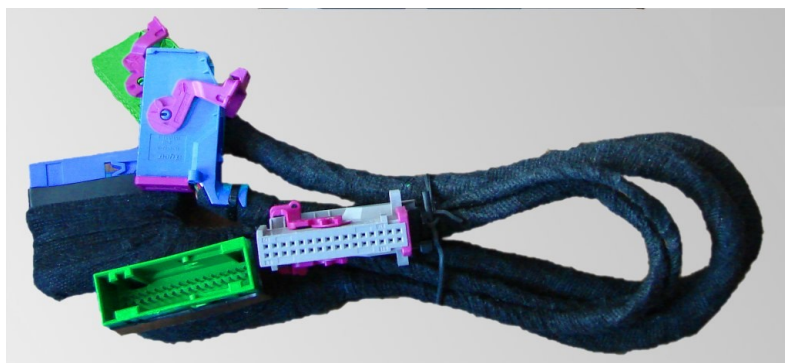


Illustration 3: VFIZ extension wiring.

## 2.2 Connecting VFIZ - rev. B

Later version of VFIZ (rev. B, period Q2-3/2013) uses Instruments cables build-in VFIZ enclosure, in this case plug order is straight forward.

**Whole operation should be performed while ignition is off !**



*Illustration 4: Single sockets pair version (rev. B)*

**Whole operation should be performed while ignition is off !**

## 2.3 Connection VFIZ - rev. A

If you have version with dual sockets pairs (rev. A) you need to put car harness to to left places to corresponding colours (see picture bellow). In set there are cables which are then used to connect Instruments Cluster to the right connectors on the VFIZ module.

**Whole operation should be performed while ignition is off !**

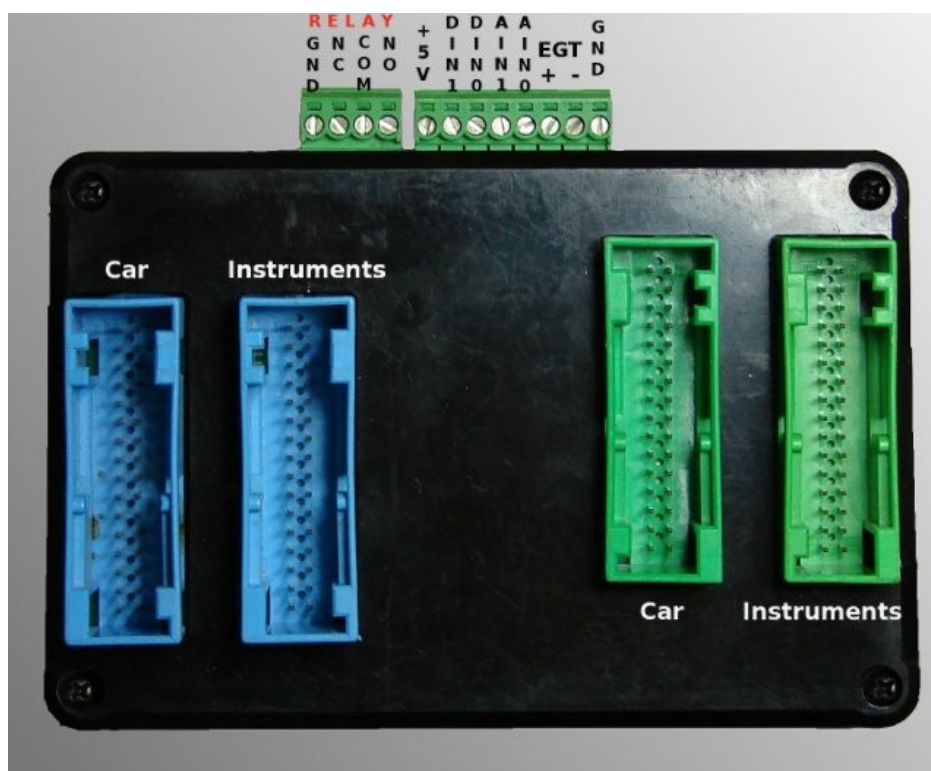


Illustration 5: Dual sockets pairs version (rev. A).

**Whole operation should be performed while ignition is off !**

## **2.4 Installation Hints**

**Hint:** There is provided standard mini-USB cable to allow to perform firmware upgrades. It is recommended to plug one end in the VFIZ permanently (and best protect it with duct tape so will not release accidentally) while second end hide in some bottom hole of console (e.g. just above legs).

**Hint2:** The VFIZ modules can be fitted on left side just above light switch and bellow Instruments or on right side next to Instruments.

**Hint3:** It is best to cover module with some kind of thin, soft foam to protect again accidental noises during drive.

**Hint4:** If you cover VFIZ computer with some foam or alike, don't cover small hole over USB connector, there is sounder output, it is not so loud, if you cover it will quieter.

## 2.5 Navigation Panel wiring

If you need to install Navi Panel, his wiring should done according to table:

Navigation Panel pin	Tachometer plug, pin
1	Blue, 8
2	Blue, 5
3	Blue, 6
4	<b>Green, 17</b>
5	Not Connected
6	Blue, 12
7	Blue, 28
8	Blue, 25
9	Terminal 15 / e.g. Fuse No 5
10	Ground/Earth
11	Blue, 7

## 2.6 Adaptation of instrument cluster

After making connection there can be need to do Adaptation change of Instrument Cluster, because there is need to have Telematic support enabled. Generally this is achieved by adding 8 to Adaptation channel 62 in instruments cluster.

**+01 - Radio (optional extra)**

**+02 - Phone (or Telematic in US Cars)**

**+04 - Navigation (optional extra)**

**+08 - Telematic (optional extra)**

**+16 - Instrument cluster (coded only if a second unit was installed)**

To do this open connection to Instruments using diagnostic cable or device, then Go to Adaptation channel 62 and add 8 to value which is displayed there **if there is less than 8, or more than 15 but less than 24.**

**There is also need to have navigation and radio enabled, common values are 29 (16+8+4+1) or 31.**

*Example: if there was 7 we enter new value 15 (= 7+8) if there was 23 should be changed to 31 (= 23+8). If there was 8 or 9, 10, 11, 12, 13, 14, 15 or value bigger than 23 we don't have to enter new value because Telematic support is already enabled.*

*Example: for case of Audi A3 (8L) new value is Adaptation Channel 62 should be 14 (= 6+8)*

## 3 Usage

**Important Note : Be careful, don't allow other usage to distract you while driving !**

The VFIZ is recalled by fast double press of some Activation key. While VFIZ is active normal operation of Car equipment by given keys are post-phoned and this buttons control VFIZ menus. After leaving VFIZ menu OEM operation is restored thus you don't loss original car functionality.

For different cars models different options are available.

### ***3.1 Control by Multi-Function Steering Wheel***

In case of Audi B6/B7 activation key is by default is left button (**MODE**) on **Multi-Function Steering Wheel** or Dial on Navi Panel near handbrake. This is **Mode** (or **Telephone Mode** in case of Audi A4/B6) button which is next to left roller on MFSW, **not** Mode button on right side of Instruments Cluster. This button is used to recall phone set functionality normally.

### ***3.2 Control by Wiper stalk***

Activation key in case of Audi A3 8E or Audi A6 this could be by default UP button on wiper stalk or Dial on Navi-Panel near handbrake.

Activation key in case of Audi A3 8L or Audi A6 this could be RESET button on wiper stalk or Dial on Navi-Panel near handbrake.

For Volkswagen Golf 4 / Passat B5 FL and derivatives (e.g. VW T4, Sharan, Octavia 1, Seat Leon 1, Toledo 2) this is RESET button on wiper stalk.

**Notice :** For the VFIZ to be able to display own information on instrument cluster there shouldn't be pending tachometer notice on FIS screen e.g. about opened door or missing coolant, etc.

**The VFIZ will be not able to show its own screen in such cases.**

After this VFIZ main menu should appear:



You can move around by pressing Up/Down button on stalk and enter by pressing **Mode** button shortly. To move back in menu hierarchy you need to press **Mode** button longer. In other word short press of **Mode** have Enter functionality and long press of **Mode** provides Escape functionality.

*After first installation you should go into in **Diag** menu and then **Info** sub-menu to give VFIZ possibility to recognize your ECU and update available parameters list. Despite this you can also set engine/ECU type in **Setup** menu if VFIZ will unable to detect your ECU automatically. In setup menu you can choose Engine type from **Gasoline, Diesel, 1.9 TDI or 1.8T, FSI, TFSI, 2.0 TDI, 3.0TDI, etc . Only after this OBD/Boost will appear in measures list !***

You should be aware that if there is some engine parameter displayed in VFIZ screen or RDS area which is read by diagnostic protocol (not directly from can-bus), it can be not possible to connect to car controllers using external diagnostics interfaces like. Thus it is important to disable displaying parameters by VFIZ when car is given to car repair shop.

To restore factory setting go to Setup menu and choose load Defaults than choose Save.

In very rare situations it can happened that the VFIZ module will “hang”, whole car will still operate normally but there will be not response to VFIZ recall. You can fix it without reconnecting battery, to do this, **while ignition is off** by removing fuse number 15 from side fuse box for a 15 seconds.

## 4 Main Menu

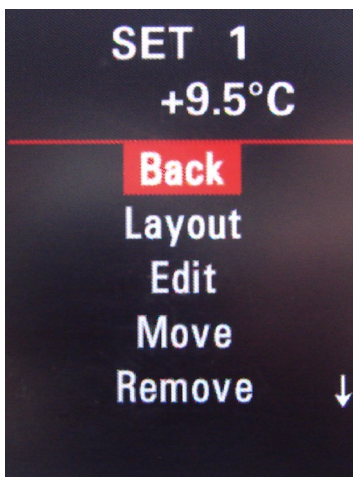


- Measure – show measuring parameters
- Performance – performance functionality
- Diag – OBD diagnostic functionality
- Setup – Settings
- About - Information

Illustration 6: Main Menu

## 4.1 Measures

Provides few screens with user chosen parameters, (position SET 1 to SET n). Initially these screens are empty but after press of Reset there will appear sub-menu where is can edit each position and add parameter from a predefined list, change display mode, delete or move around:



*Illustration 7: Measure Set Edit submenu.*

- Back – return
- Layout – change display layout
- Edit – edit/add entry from predefined list
- Move – move entries
- Remove – remove entries
- Save – immediately save (parameter set will be also saved automatically after ignition off)

There is also entry with all parameters read directly from can-bus at position named **CAN** which is unmodifiable.

Measure parameter name are abbreviation by default to allow to display them in RDS information area, this can be changed by view layout or in Setup menu.

There is possibility to uses few screen layout, e.g. as in RDS area with parameters strong abbreviations, with minimal abbreviation and with pretty split mode.

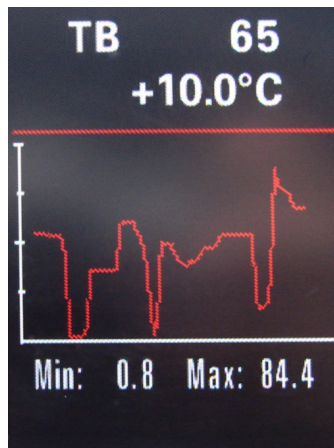
SET 1 +10.0°C		SET 1 +10.0°C		SET 1 +9.5°C	
BST	0.00B	Boost	0.00Bar	Boost 0.00	
N75	0.0	N75	0.0	N75 0.0	
CLT	11°C	Coolant	11°C		
OilT	10°C	OilTemp	10°C	CLT	11°C OilT 10°C
EGT	6°C	EGT	6°C	EGT	6°C Cons 0.0
OilT	10°C	OilTemp	10°C	LAM	0.99 IgnR 0.00

Illustration 8: Presentation layouts, 1st, 2nd and 3rd.

## 4.2 Performance

There are function for measuring:

- different acceleration times
- stopwatch
- plotting different parameters, e.g. BOOST (**Graph Boost**) and user choose other parameter (**Graph2: some\_name**).



*Illustration 9: Sample Plot of Throttle Body.*

### 4.3 Diag submenu

This is sub-menu which provide some diagnostic functionality you can there read information about control units in car, read Measure Valued Blocks or **Read DTC** (Diagnostics Trouble Codes) and also **Clear DTC**.



- Info – display information about Unit
- Meas Grp – read Measuring Values Groups
- DTC by Name – display DTC by Unit Name
- DTC Clear – clear DTC
- DTC by No. - display DTC by unit Number

Illustration 10: Diag Submenu.

Near the end there also sub-menu with diagnostic communication settings. This menu is described in Setup chapter.

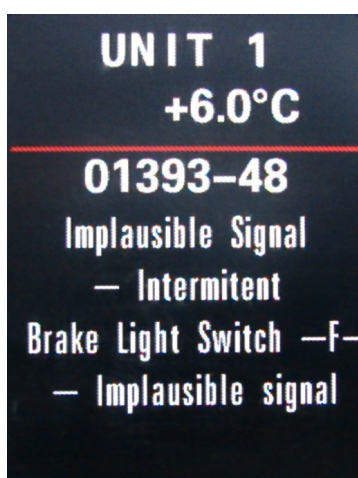
#### 4.3.1 Displaying Measuring Values Blocks

After entering of **Diag** menu go to Measures position than choose unit number (e.g. 1 – is Engine) and confirm with RESET then starting group number (you can change it by press of Up/Down button). After confirmation VFIZ will try to connect to chosen unit and after few seconds there should be displayed screen with four lines showing measuring blocks. You can change to other group by pressing Up/Down at this place.

### 4.3.2 Display DTC - Read DTC

After entering Unit number read DTC are displayed, including error code description for many codes.

In RDS area there are displayed Unit number with current DTC index / Total DTC count.



- Unit No interchangeable with DTC index / Total DTC count
- Error Code with Status Code
- decoded Status Code description
- Intermittent or Permanent
- decoded Error Code

*Illustration 11: Read DTC with description - Unit 1 (ECU).*

## 4.4 Alarms

There can be user configured audible and visible Alarms when some of chosen parameters exceed user configured limits. This can be done in **Setup/Alarms** sub-menu. After pressing Enter key during alarm notice, alarm notice is postponed for one minute.

Alarms Ena.	Enable user configured alarms
Alarms	Alarms settings submenu
(Meas. name)	Any available from predefined parameters
Min	Lower limit
Max	Upper limit
Remind	Remind period in seconds
Beep time	Beep time
Beep period	Beep repeat time

## 4.5 Setup

Here user configurable parameters can be changed, this setting will automatically saved some time after ignition on, when whole Car electronics go into sleep mode (this can be recognized by Hazard Lights button illumination turning off).

You can also force to save configuration immediately via selecting Save entry.

Alarms Ena	Enable user configured alarms
Alarms	Alarms settings
RDS Info	Enable display of two user chosen parameters in RDS area
RDS0	Parameter to display in first line of RDS area.
RDS1	Parameter to display in second line of RDS area.
Graph2	Parameter used to graph2 function.
Buzzer	Sound effect enable or disable.
Remem. VFIZ	Enable automatic restoration of active VFIZ screen while ignition was off.
Full screen	Use full screen (usefull if car have manual transmission)
Show logo	Enable show of start-up logo.
Open Ceremony	Open Ceremony sub-menu, see bellow.
Advanced	Advanced options
Save	Save settings in non-volatile memory
Restore	Restore settings from non-volatile memory
Defaults	Load settings defaults.
Reset Best	Reset best performance date (e.g. Acceleration times from 0-100km/h)
Lang	Set user interface language, e.g. English, German, French, Polish
Units	Set user interface units systems. Possible systems are SI and US currently
Release Diag.	Allow external diagnostics, don't use diagnostic methods, be quiet and passive

### 4.5.1 Open Ceremony settings

OPEN CER.	Enable open ceremony at ignition on.
K-VALUE	K-value, value which tachometer uses to calculate speed from wheel rotation speed. This value depends on wheel, tire size and gearbox ratio. If correctly set user set MAX SPEED matches showed value on speedometer.
START DELAY	Delay after which open ceremony starts after ignition on
MAX SPEED	Value to which speedometer needle goes to. Should be set to maximum value +5% on speedometer scale. <b>WARNING:</b> Setting this value equal to or above to 250km/h can result in engine shutdown during Open Ceremony on some cars. (due factory car speed limit)
MAX RPM	Value to which RPM needle goes to. Should be set to maximum value on RPM.
RPM STEP UP	RPM rise step size. Can be used to match needle speed of RPM meter and speedometer.
RPM STEP DOWN	RPM fall step size. Can be used to match needle speed of RPM meter and speedometer.
TEST	Allow to test current settings without need to ignition cycle

### 4.5.2 Advanced Settings

Vacuum inHg	Display vacuum in inHg unit (not supported by OEM sensors!)
MAX Boost	Maximum boost (used for graph scaling)
BST Offset	Value to be subtracted while converting absolute boost (used in diagnostic measurer groups) to effective boost, above atmospheric pressure. (e.g. If absolute is 1200, setting BST Offset to 1000 will convert it 200)
BST in BAR	Display boost in Bar despite mBar (used in diagnostic measurmet groups)
TQ WhlMax	Override Maximum Torque available on wheels – for chipped/fooled ECU(s) where ECU doesn't return correct value
Full Screen	Use full screen area, including transmission area - useful for manual transmission
RDS Perman	Don't release RDS area if not actively used for radio RDS
Uppercase	Use upper case letters in measures names
Slower updates	Slow down screen refresh rate (used for test only)
Activ. Time	Double press interval for activation of the VFIZ. In <b>10</b> milliseconds step, thus default 70 corresponds to 700ms.

Back Time	Long press interval, corresponding to Back/Escape function. <b>In milliseconds</b> , thus default 700 corresponds to 700ms = 0.7 second.
MEDKEY Time	<b>In milliseconds</b> , thus default 400 corresponds to 400ms = 0.4 second.

### 4.5.3 Diagnostics Settings

Diagnostic setting are available at the end of in Diag sub-menu.

Speed	K-Line Communication speed, default AUTO. Most common 10400 for 2001-2004year cars, 9600 for older
CMD INTV:	Default command interval for kwp1281 protocol. <b>In 100 microseconds.</b> Default 500 = 50ms
BYTE INTV:	Default byte interval for kwp1281 protocol. <b>In 100 microseconds.</b> Default 80 = 8.0ms
ECU CINTV	ECU command interval for kwp1281 protocol. <b>In 100 microseconds.</b> Default 350 = 35ms
ECU BINTV	ECU byte interval for kwp1281 protocol. <b>In 100 microseconds.</b> Default 40 = 4.0ms
SLWINI COR	Slowinit correction factor. Use when problems while connecting using kwp1281 protocol.
Engine	Engine type, default <b>Auto</b> for simple auto detection. If addition measures (e.g. Boost) from VAG-OBd doesn't appear try to select manually. Possible values: <b>Gasoline, Diesel, 1.8T, 1.9TDI, 2.0TDI, 3.0TDI, CR-TDI, TFSI, FSI, R32</b>

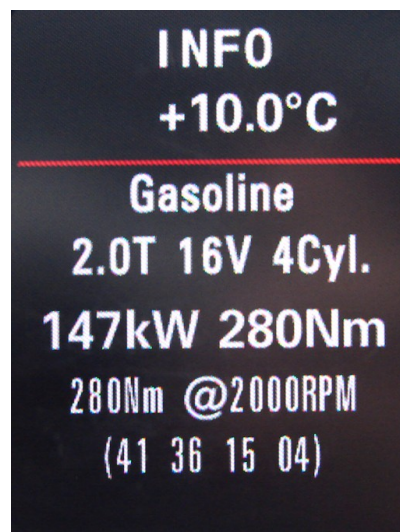
### 4.6 About

Here you can check Engine Information read your saved best acceleration times, check software version or made FIS screen tests.

#### 4.6.1 Engine Information

Displays engine information gathered and parsed from can-bus, there is multiple source for this information.

Note: If engine ECU was tuned there is risk that would not actualized in ECU and show in actual/wrong data.



*Illustration 12: Sample Engine Information for 2.0T FSI.*

## 4.7 Valentine 1 interface

The VFIZ device can be equipped with optional Valentine 1 optional. It allows to display temporary information from Valentine 1 device when its event is detect. This information is showed in RDS area and has higher priority then VFIZ information and Radio information but will expire in few seconds and restore previous RDS information.

The VFIZ interface to Valentine 1 is standard RJ11 socket which can be connected by default RJ11-RJ11 cable (which uses 1:1 wiring) with Valentine 1 device.

## 4.8 Data logger

Data logger can be used to log selected parameters to Bluetooth Serial Port (SPP). You need to pair and connect with VFIZ device first. Data sent is in CSV format and has two modes, legacy mode compatible with other software and there is also extend format which allow to send more fields at time. Logger configuration can be set in Setup / Logger sub-menu:

VF Logger	Toggles on or off predefined measures (CAN-bus and OBD) logger
VFLog.Edit	Select logging entries.
VAG Logger	Toggles on or off OBD groups logger.
VAGLog.Edit	Select log OBD groups.
Logger.PER	Select logging period in milliseconds.
Inst. Mark	Toggles on or off inserting marks by Enter button
VAG compat.	Toggles on or off extended format

## 5 Bluetooth

All newer devices are equipped with Bluetooth interfaces as standard equipment. The Bluetooth (BT) interface offers Serial Port Profile (SPP) for data logging or wireless firmware upgrade.

To use this interface you need first pair with VFIZ BT interface. You need to perform Bluetooth

discovery in your computer or smart-phone and it should find (car ignition needs to be on) VFIZ interface with name: **vfiz-xyz**. Where **xyz** is serial number composed from letters and digits. Bluetooth PIN is fixed to be 4 digit number, where last two digits are equal to last two digits of serial number (**yz**) and two firsts digits are derived from first char of serial number, as 0 with digit or letter position number (counting from one) in alphabet plus 9.

For example:

S/N: 305, BT PIN: 0305

S/N: 911, BT PIN: 0911

S/N: a03, BT PIN: 1003

S/N: i03, BT PIN: 1803

S/N: j03, BT PIN: 1903

If first char of serial number is digit '**x**' then two first digits of PIN are simply equal to '**0x**' form. If first char of serial number is letter than '**a**' translates to '**10**', '**b**' to '**11**', and so on.

After pairing with with VFIZ you can connect to it by clicking on created device. Then there will be automatically created serial port to which data logging information is forwarded. You can view or save this information to file via Serial Terminal program (aka HyperTerminal, etc..) or Bterm on Android phone.

## 6 Firmware upgrade procedure

There are provided two upgrade programs, named **vldr.exe** it can work under Windows(c) and **vldr** which can works under Linux(c) and firmware image files for VFIZ have **.im2** extension.

For all files it is best is to create some folder where only all this files are kept, this folder should have simple name and be somewhere at top of directory structure to have less to type later, good example: [C:\VFIZ](#) also you could rename .im2 to have track from which date/version it comes in case you would want return to previous version in future.

To perform upgrade you should connect VFIZ with computer/laptop by USB, it can be performed directly in Car but also standalone on desk while VFIZ has supply only by USB cable.

If upgrade is performed in Car generally ignition should be off during this process to don't allow accidentally car electronics store some temporary DTCs.

Under Windows(c) for first time before connecting VFIZ with USB cable you should have opened Device Manager tree (by right click on My Computer then choose Properties/Hardware).

If you already have installed FTDI drivers and plugged in VFIZ USB cable into computer then in Device Manger tree should appear one or two new devices, one called COMx and optional COMy. Where x is some number depend on system and usually  $y = x+1$ . (e.g. **COM3** and **COM4**).

Only one COMx device appears in newer VFIZ modules with Bluetooth in standard equipment because second one is internally used by Bluetooth module.

In older modules without Bluetooth as standard equipment there should appear two COM devices.

If they will not appear but Windows detect new devices and ask for driver you should install drivers for FTDI chip first from :

[http://www.ftdichip.com/Drivers/CDM/CDM20830\\_Setup.exe](http://www.ftdichip.com/Drivers/CDM/CDM20830_Setup.exe)

If nothing happen when you connect USB cable to computer probably there fell of USB connector

on VFIZ side (if so best is to glue it there by some duct tape to do not happen again).

<b>Above steps are needed to perform only at first upgrade.</b>
---

When you are at stage where after connection to computer it detects VFIZ and shows new COM device(s), you should open Windows command window (that is by default black background window with text only inside).

In Windows XP/Vista it can be run by pressing Start button, and then in field Run type **cmd** and press enter. There is also to run cmd as Administrator to gain access to COM port.

After opening command window, first you should type there (to go into folder where you keep firmware upgrade), e.g.:

**cd c:\vfiz**

To verify that you are in good place and there exist files from archive you should write then:

**dir**

Then in window should be printed file names where there should be upgrade files , **vldr.exe** and some **.im2 files**.

If there they are you should type now (**but remeber to change COMy with value which you found in device manager**):

**vldr -D COMy vfiz.im2**

after this there should be printed line gradually filling with dots.

After about two minutes process of printing dots should stop and upgrade process is finished.

Now it is enough make ignition on. There is need at first run run after firmware upgrade wait for around 10second (time for VFIZ to import old configuration) before VFIZ can be recalled on screen.

## *Firmware upgrade procedure*

We tried to make upgrade procedure in such way that it will read and merge old configuration but sometimes this can fail anyway. In case of some strange behaviour / missing functionality after upgrade you should try to load defaults in Setup menu

## 7 Appendix A - Abbreviations of predefined measures names

These is list of all possible measure parameters in VFIZ, joined together Diesel and Gasoline engine types. Actual availability depends on specific Car control units types and actual available list will be shorter.

Note: The OBD measures groups differs between ECU kinds (TDI, TFSI, 1.8T ...) and VFIZ need to know your ECU kind first to pre-load correct/available parameters list, you have two options to gain this:

- a) open OBD session to ECU once (e.g. Diag / Info or Measures / Engine)
- b) manually set engine type (aka. 1.8T/1.9TDI, FSI, TFSI...) in bottom on Diag menu
- c) Note: if you load Setup / Defaults then your selections and ECU auto detection will be cleared so you have to redo above.

Abbrev.	Unit	Data form Can-Bus
SPD	km/h   mph	Speed
SPDE	km/h   mph	Speed measure by Engine Control Unit (ECU)
SPDA	km/h   mph	Speed measured by ABS modules
SPDR	km/h   mph	Speed measured by ABS on rear wheels
RPM	1/min	Engine revolution per minute
FUEL	L   Gallons	Fuel level in litres or Gallons
CLT	°C   F	Coolant temperature measured by ECU
CLT2	°C   F	Coolant temperature measured by Instruments Cluster
OILT	°C   F	Engine oil temperature
TB	%	Throttle body angle actual
TBQ	%	Throttle body angle requested (by driver)
OTMP	°C   F	Outside temperature
IAT	°C   F	Intake temperature
BST	Bar, mBar   PSI	Boost absolute (if available on specific car)
CONS	l/h   Gallons/h	Fuel consumption in litre per hour
CONSD	l/100km   mpg	Fuel consumption in litres per 100km
CONSA	l/h or l/100km Gal./h or MPG	Fuel consumption in litre per hour (US: Gallons/hour) when stationary or litres per 100km (US: MPG) when moving
PWRE	kW or hp	Power generated by engine
TQ	Nm   lbf-ft	Torque (on crankshaft)

Appendix A - Abbreviations of predefined measures names

TQW	Nm   lbf-ft	Torque available on wheels
TQL	Nm   lbf-ft	Torque loss
TQLI	Nm   lbf-ft	Idle torque loss
TQAX	Nm   lbf-ft	Maximum actual available torque
TQAM	Nm   lbf-ft	Minimum actual available torque
TQBR	Nm   lbf-ft	Wheels torque (braking)
TQX	Nm   lbf-ft	Engine maximum torque
PWX	kW   hp	Engine maximum power
FAN	%	Actual fan ratio
ACPR	Bar   PSI	A/C pressure
ACTQ	Nm   lbf-ft	A/C torque request
ACFQ	%	A/C fan ratio request
ODO	km   miles	odometer in km
Steer	° / degree	Steering wheel angle
BrkP	Bar   PSI	Brake pressure
AccA	g	Angular acceleration
ACFq	%	Air Conditioning Fan request (request from A/C to ECU)
ACTq	Nm   lbf-ft	Torque used by Air Conditioning
ACPR	Bar   PSI	Air Conditioning pressure
<b>Data from OBD / ECU</b>		
AFR	1	Air Fuel Ratio actual
AFRQ	1	Air Fuel Ratio requested
BST	Bar, mBar   PSI	Boost absolute
BSRQ	Bar, mBar   PSI	Boost requested
CONS	l/h   Gall/h	fuel consumption
CLDV	%	Cold start valve
FPRA	Bar   PSI	Fuel rail pressure
FTEMP	°C   F	fuel temperature
FTL	%	Lambda adaptation at run (fuel long trim)
FTS	%	Lambda adaptation at idle (fuel short trim)
GenL	%	Electricity Generator Load
IGN	° / degree	ignition timing
INQ		injection quantity
IND	ms	injection duration
ITIM	ms	Injection timing
IGNR	deg	Ignition retard (maximum value for all cylinders)
IAPQ	Bar, mBar   PSI	Intake Atmospheric Pressure Specified
IAP	Bar, mBar   PSI	Intake Atmospheric Pressure Actual
INJS	° / degree	Injection angle specified
INJA	° / degree	Injection angle actual
LAM	1	Lambda value actual
LAMQ	1	Lambda value requested
LAFT	1 or V	Lambda value after cat

Appendix A - Abbreviations of predefined measures names

LBEF	1 or V	Lambda value before cat
LOAD	%	Engine load
LPCD	s	Pre-cat o2 duration
MAF		Mass Air Flow
N75	%	N75 valve duty cycle
OilL	mm	Oil level
DPF	% / g	DPF load
Ther	%	Thermostat opening
VLT	V	ECU voltage
HOilT	°C   F	Haldex Oil temperature
HVlt	V	Haldex voltage
		<b>External measures</b>
EGT	°C   F	Exhaust Gas Temperature
AFR	1	Air Fuel Ratio (external)
OilP	Bar   PSI	Oil pressure
BST	Bar   PSI	Boost
TRPM	K/min	Turbine RPM

## 8 Notes