STEYR MOTORS

INNOVATION WITH LIGHTNESS

Engine Diagnostics Tool 2.0 User Manual

Version 1.3

About Manual

This manual describes the EDT 2.0 application and its ability to monitor ECU. It provides detailed information concerning the usage of EDT 2.0 application.

This manual contains the following chapters:
Introduction
Installation
Starting EDT 2.0
Main Window
Application Menu
Connect
Measurement
Faulty Manager
Engine Information
View
Help

Revision history

Revision No.	Revision Description	Revision Date
0.00	Document created	16 January 2012
1.00	Document updated	22 February 2012
1.10	Document updated	13 June 2012
1.20	Document updated	14 June 2012

Warning:
Failure to read and understand the information provided in this manual may result in product failure. Please read each chapter in its entirety and be sure you understand the information provided in the chapter and related chapters before attempting any of the procedures or operations given

Table of Contents

Prerequisites
Supported Operating Systems

- Windows XP 32bit SP3
- Windows Vista, 32 and 64bit
- Windows 7, 32 and 64bit
- **.NET Framework 4.0**

Supported Hardware

- Minimum: Intel or AMD Dual-Core-Processor with 2.0 GHz or faster
- Recommended: Intel i3,i5 or i7 processor
- 2 GB RAM memory
- Free USB 2.0 Port for connecting the USB/CAN interface

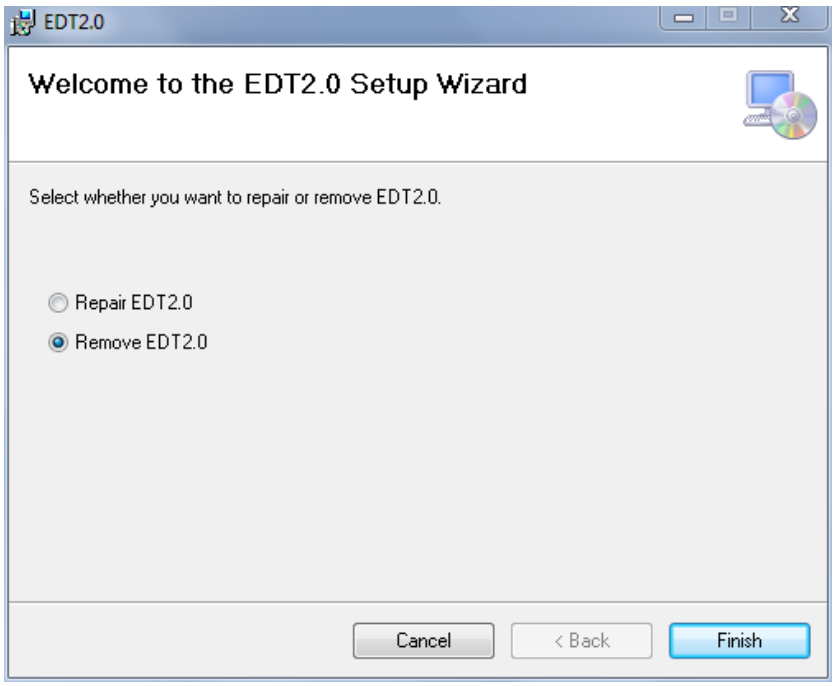
Introduction

This software is used for diagnosis on “Steyr-Motors” Diesel engines. It supplies data out of the engine control unit (ECU) and allows measurements and malfunction detection.

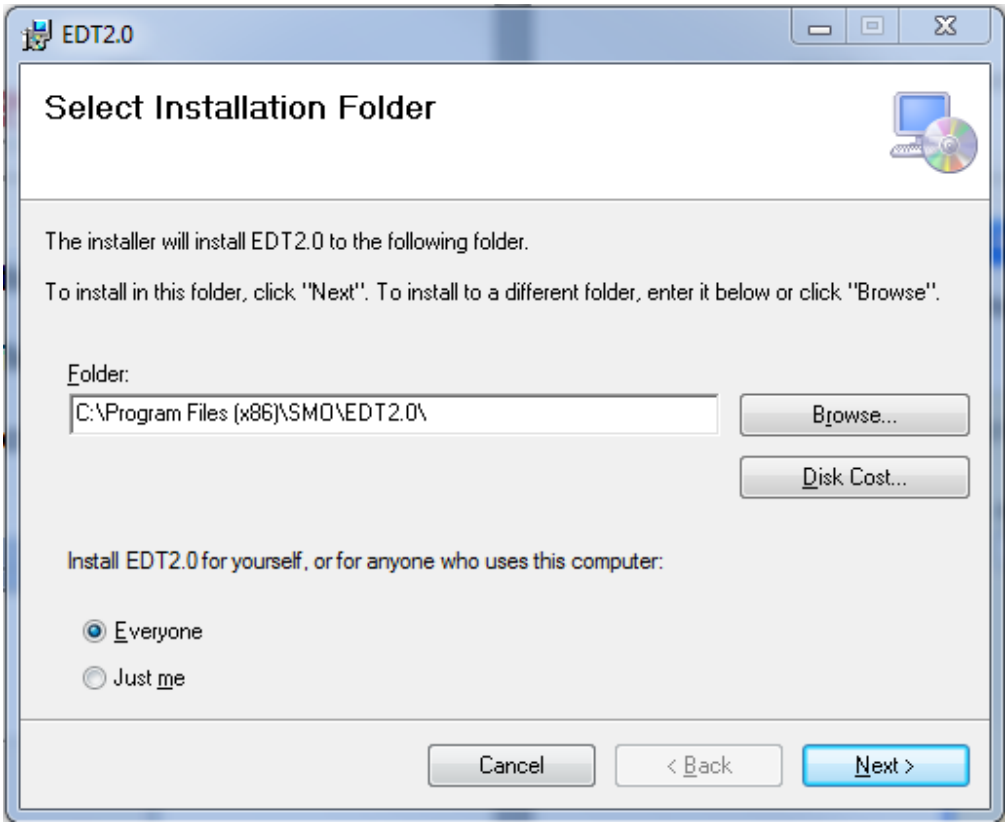
Installation

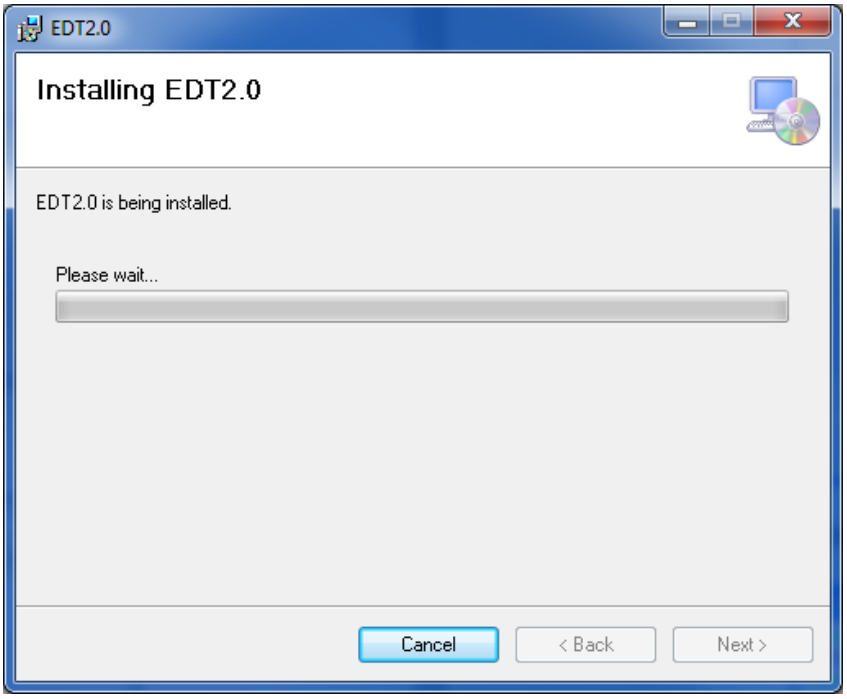
This chapter describes the procedures involved in the installation of EDT 2.0 on a standard workstation running under Microsoft Windows XP and 7.
The software is supplied on CD-ROM and is installed easily from within Microsoft Windows. The installation can be terminated at any point during the installation process.

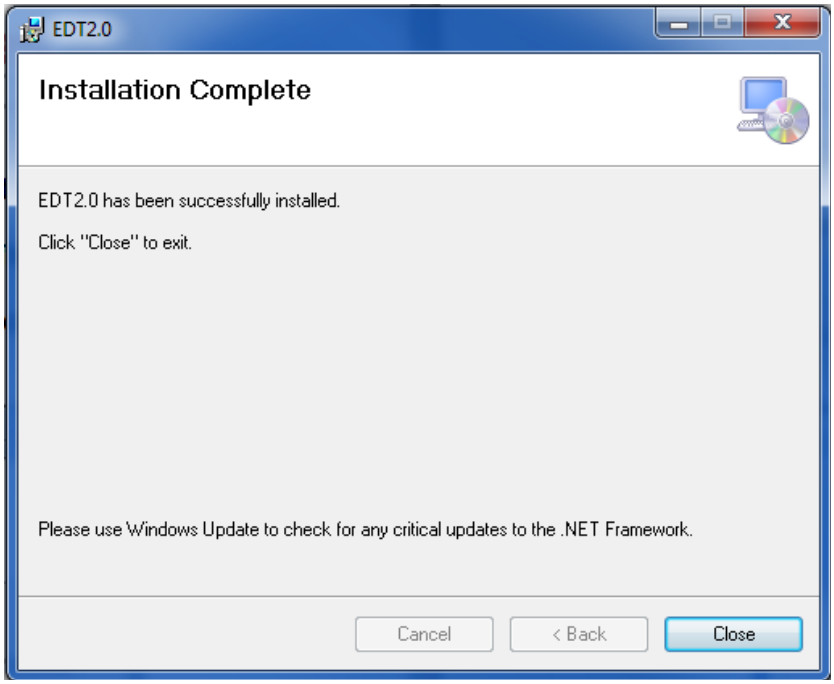
If there is an older version of EDT 2.0 already installed, please uninstall/remove this version first:



Insert the CD-ROM in the appropriate drive and select the *Run* option from the **Start** pushbutton on the taskbar.
Click the **Browse** pushbutton to select the **setup.exe** executable file from the CDROM drive.
Click the **OK** pushbutton to initiate the installation. Follow the on-screen instructions.




EDT2.0
Installing EDT2.0
EDT2.0 is being installed.
Please wait...
Cancel
< Back
Next >


EDT2.0
Installation Complete
EDT2.0 has been successfully installed.
Click "Close" to exit.
Please use Windows Update to check for any critical updates to the .NET Framework.
Cancel
< Back
Close

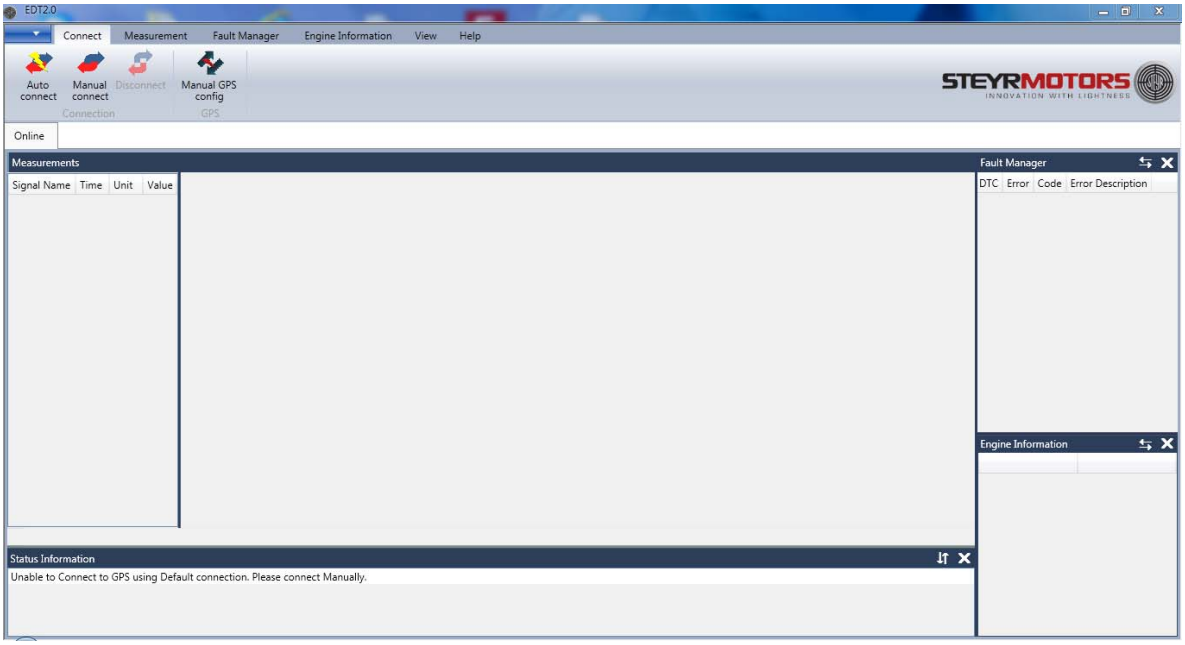
Starting EDT 2.0

To open the EDT go to:

Windows Start → Programs → SMO → EDT2

Or
Desktop → EDT2

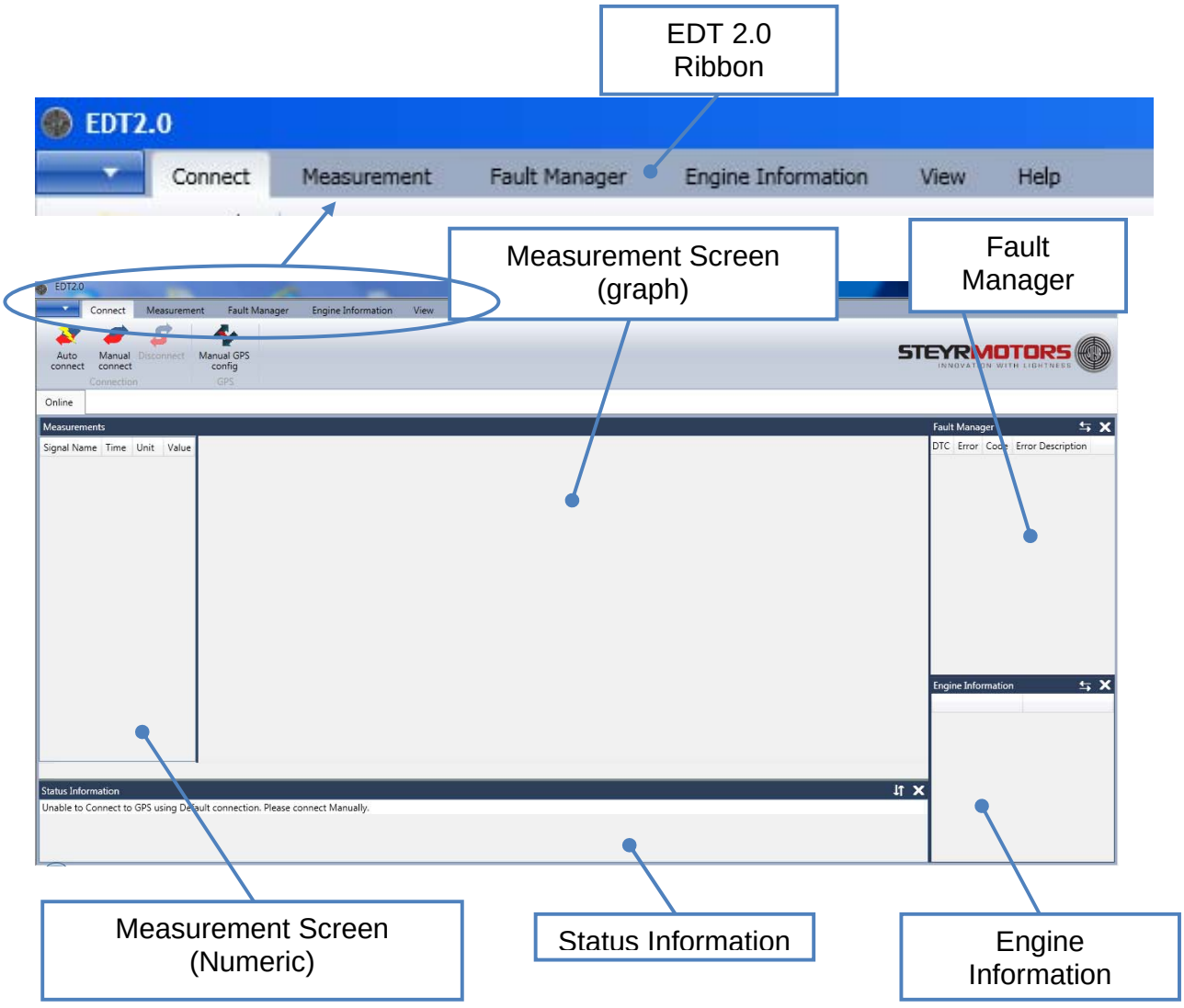
Shortcut Icon on Desktop



EDT 2.0 application window

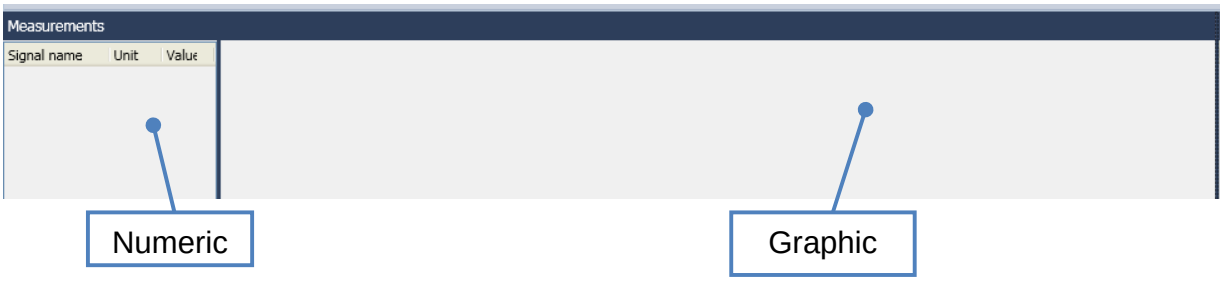
Main Window

The EDT main window contains the following parts:



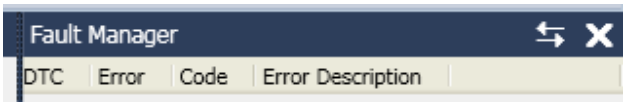
Measurement Screen

Measurement screen shows Graphical and Numerical values of the selected Signals from ECU



Fault Manager Screen

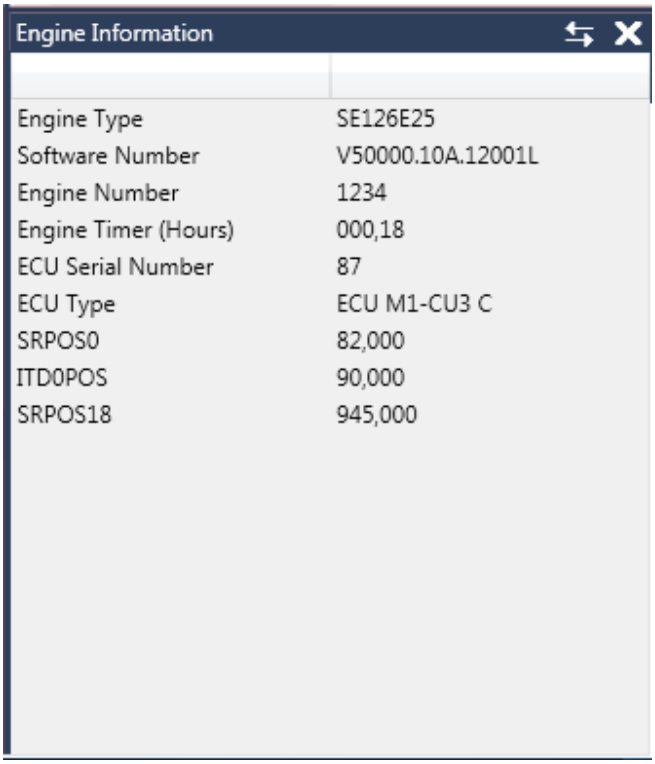
Fault Manager Screen displays the L1 and L2 Fault values from ECU



Engine Information Screen

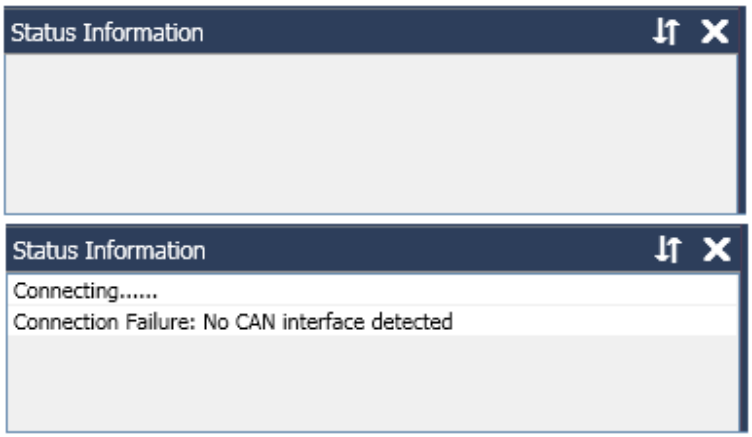
The Engine Information Section displays the following Engine Informations:

- Display Software Number
- Engine Number
- Engine Type
- ECU Serial Number
- ECU Type
- Engine Timer
- SR0Pos
- SR18Pos
- ITD0Pos
- Offset SR

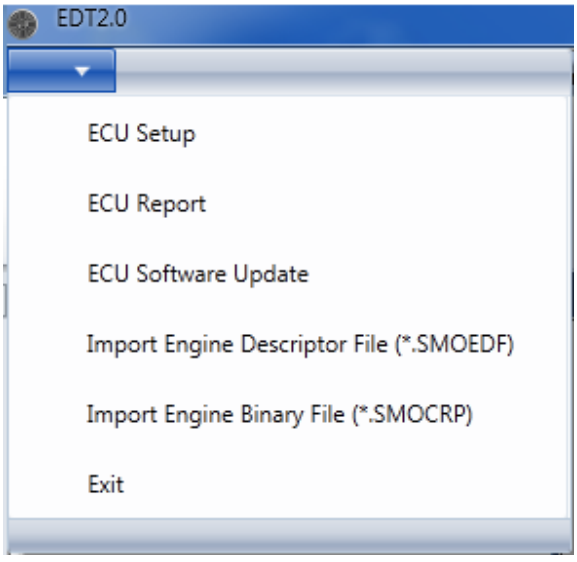


Status Information Screen

Status Information Screen shows the information of activates done on EDT 2.0 application



Application Menu



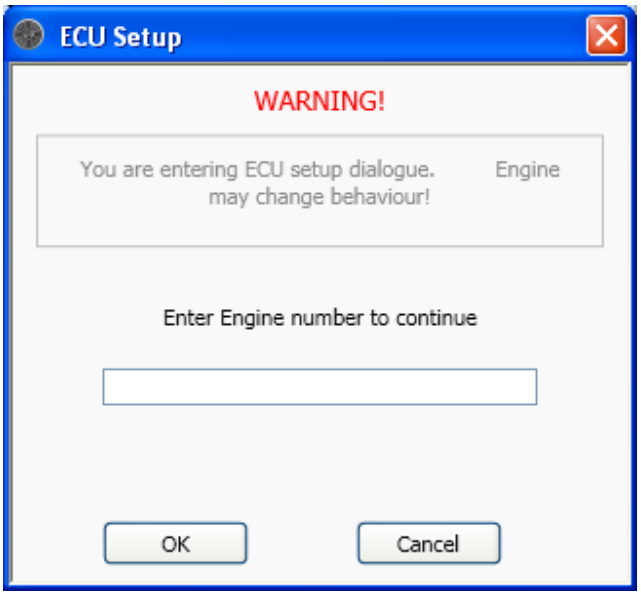
ECU Application menu consists of:

- ECU Setup
- ECU Report
- ECU Software Update
- Import Engine Descriptor File
- Import Engine Binary File
- Exit

ECU Setup

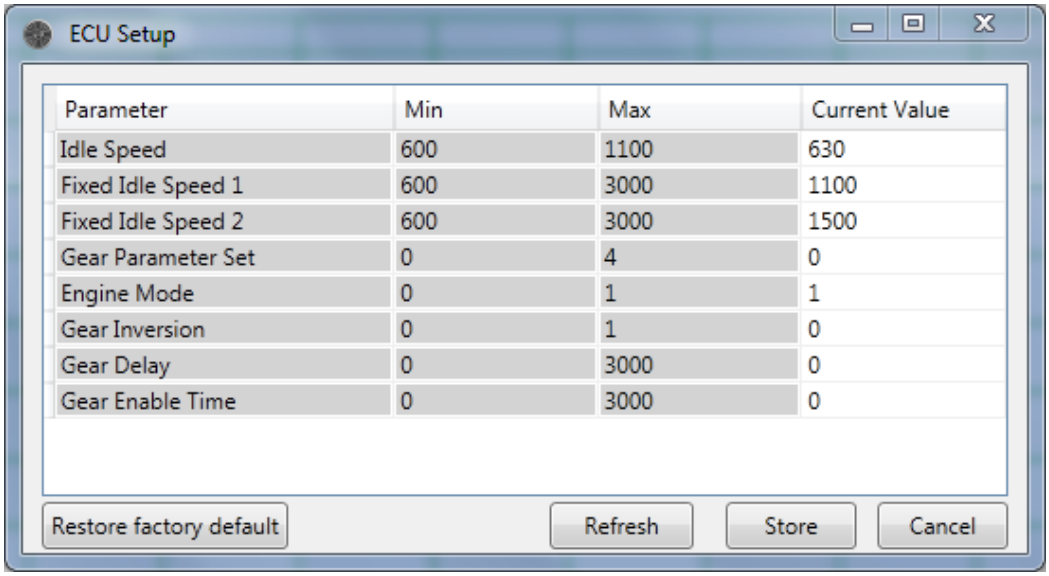
ECU Setup helps to modify the ECU parameters

To open ECU Setup window click Application Menu → ECU Setup → Enter Engine number → Press Ok

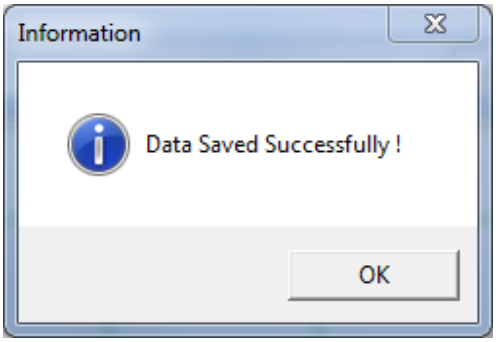


The following window contains at least 2 parameters, according to the ECU software there are more or less parameters:

- IdleSpeed: contains the current used engine idle speed
- FixedIdleSpeed1: contains the idle speed which is used, if the idle switch is switched to position 1
- FixedIdleSpeed2: contains the idle speed which is used, if the idle switch is switched to position 2
- GearParameterSet: every increase of this value will increase the idle speed while shifting for 10%
- EngineMode: choose between torque governor (select “0”) and speed governor (select “1”)s
- Gear Inversion: inverts the Gear activation
- Gear Delay: Gear activation delay time in milliseconds
- Gear Enable Time: activation time for gear strategy in milliseconds



To store the given values, press the “Store”- Button, a pop up window will show, whether the storage was done.

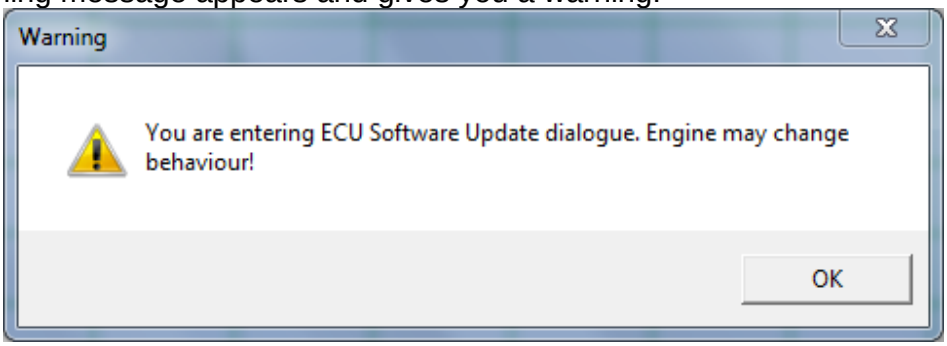


To restore the default configuration, press “Restore factory default”.

Virgin ECU Software Update

To update a virgin / brand new ECU start EDT and click “ECU Software Update”.

A warning message appears and gives you a warning.

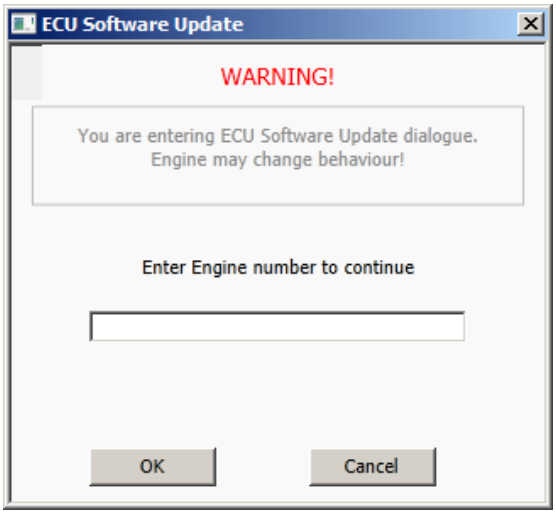


ECU Software Update

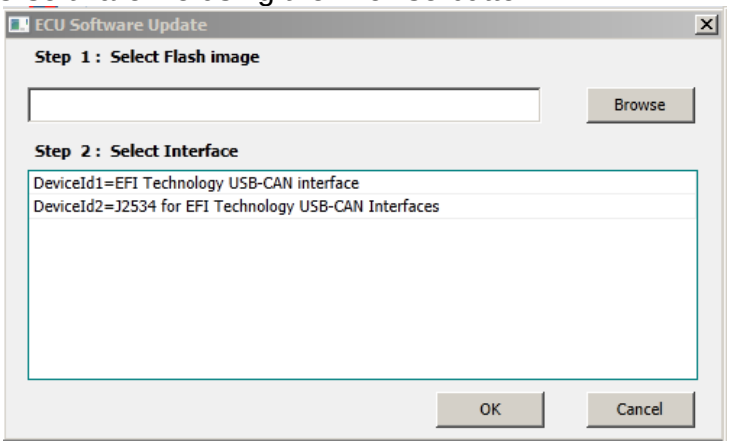
ECU Software Update helps to update the software on the ECU.

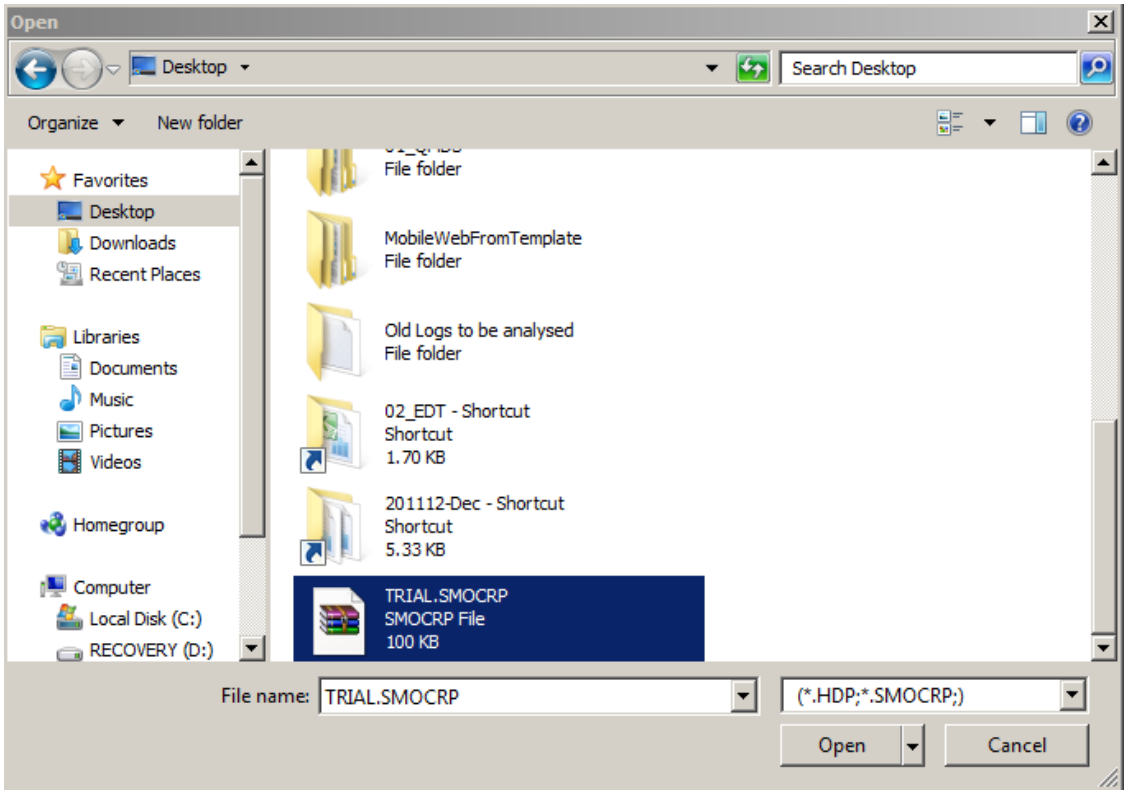
To open Software Report window click Application Menu → ECU Software Update.

The Engine number is entered for validation. Press Ok button after entering the current engine number.

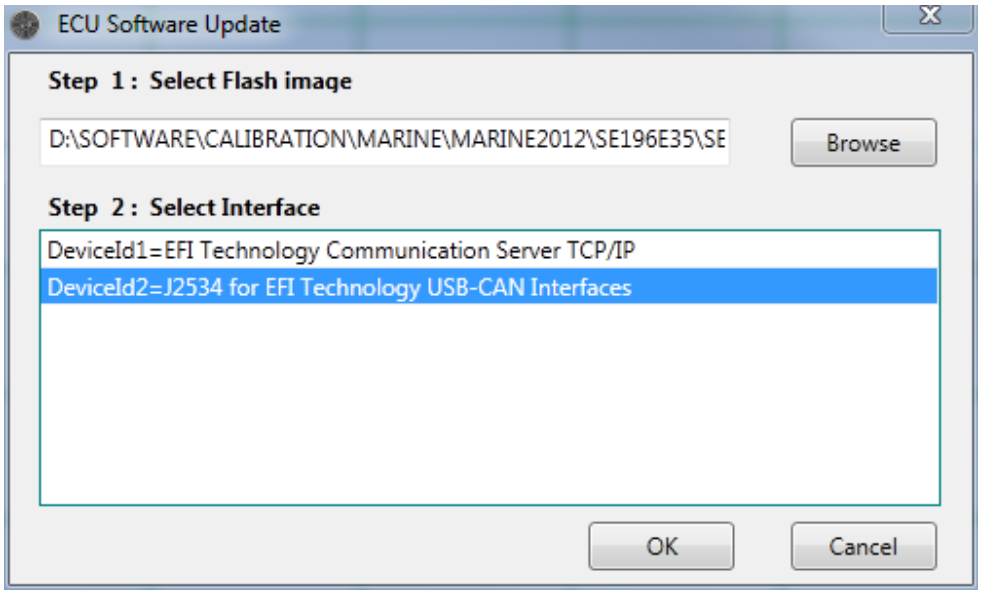


Select the ECU software file using the Browse button.



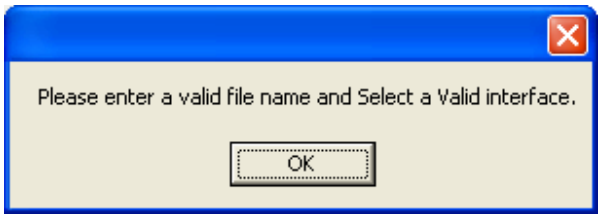


Select the interface to be used to program the ECU from the list displayed.



Press Ok. After selection of a valid Flash image file and an interface.

If a valid file or interface is not selected the below message is shown. Press Ok and try again.



Import Engine Descriptor File

To use other available files on your Computer (sent by mail, downloaded at the homepage), you can use the import function to import a file to the SMO program folder. Press the “Import Engine Descriptor File” menu item and choose a valid SMOEDF file, the program will use this file automatically next time.

Import Engine Binary File (Engine Software)

To use other available files on your Computer (sent by mail, downloaded at the homepage), you can use the import function to import a file to the SMO program folder. Press the “Import Engine Descriptor File” menu item and choose a valid SMOCRP file, the program will use this file automatically next time.

Exit

Exits the EDT 2.0 application
To Exit click Application Menu → Exit.

Connect

Auto Connect

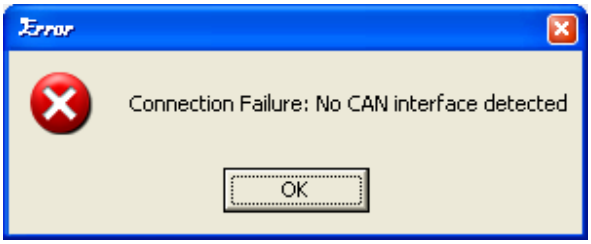
Connects to ECU automatically. Go to Connection Menu →Auto Connect.

For Single connection:
Connects automatically if a single connection is available.

For Multi-connection

Display Message for selection of CAN interfaces
Select CAN Connection from Multiple Connections
Connects to ECU

If no CAN connection displays an error message – Connection Failure: No CAN interface detected



CAN is connected, but ECU is not connected or no Power supply to ECU displays an error message – “Connected Failure: No ECU Detected”

Manual Connect

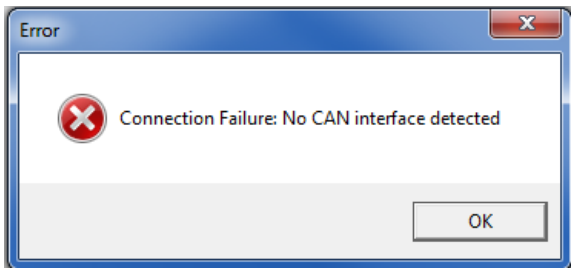
Display Open window and Prompt to select file .SMOEDF.
Go to Connection Menu →Manual Connect.

Connects to ECU automatically for Single connection after selection of .SMOEDF

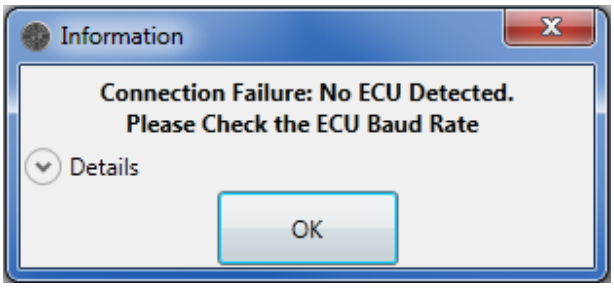
For Multi-connection

Display Message for selection of CAN interfaces
Select CAN Connection from Multiple Connections
Connects to ECU

If no CAN connection, displays an error message – “Connection Failure: No CAN interface detected”

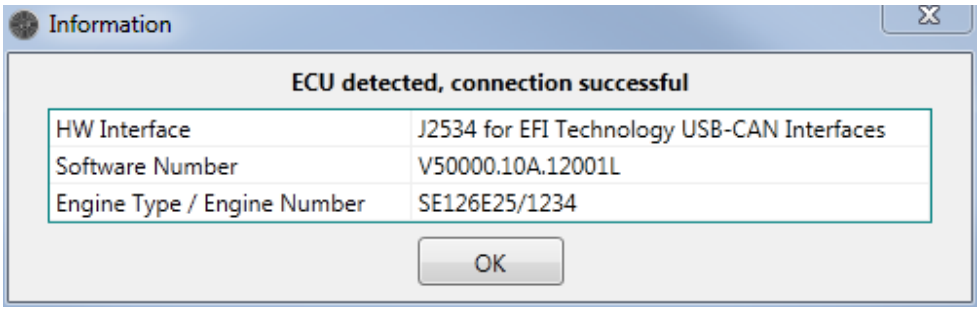


CAN is connected, but ECU is not connected or no Power supply to ECU displays an error message – “Connected Failure: No ECU Detected”

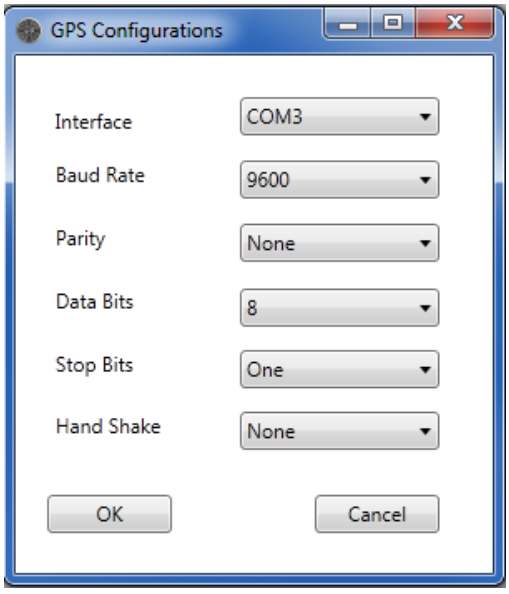


CAN device and ECU connected but ECU is invalid or not responding as expected, displays an error message – “Connection Failure: ECU is not compatible with the application EDT”

Display message on successful connection to ECU– ECU detected, connection successful

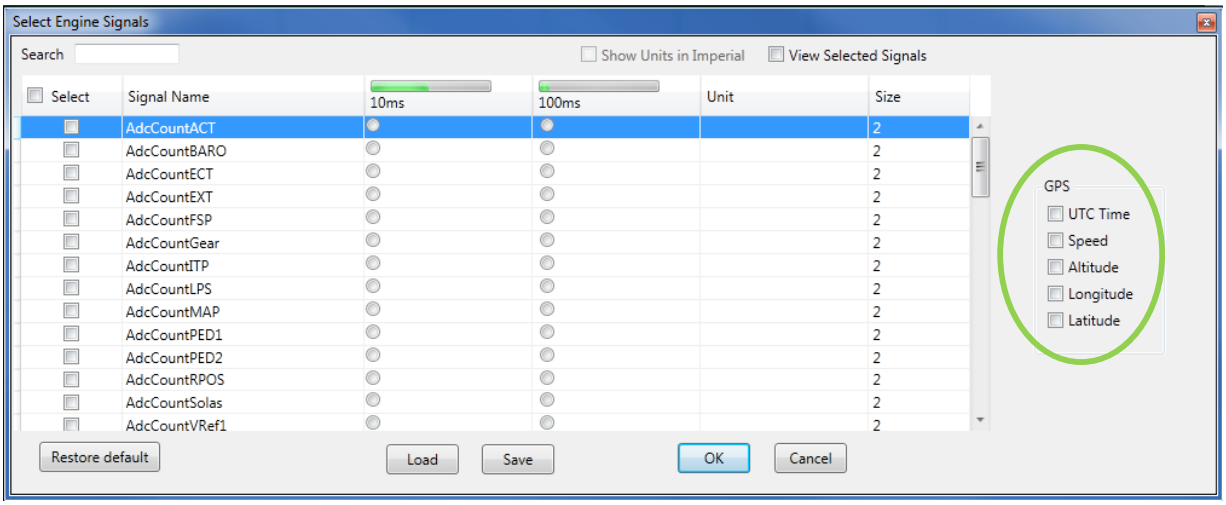


GPS



The setting of the GPS-System depends on which GPS-System is in use.

To see the current GPS information you can choose the desired signals in the Measurement dialog in GPS Section.



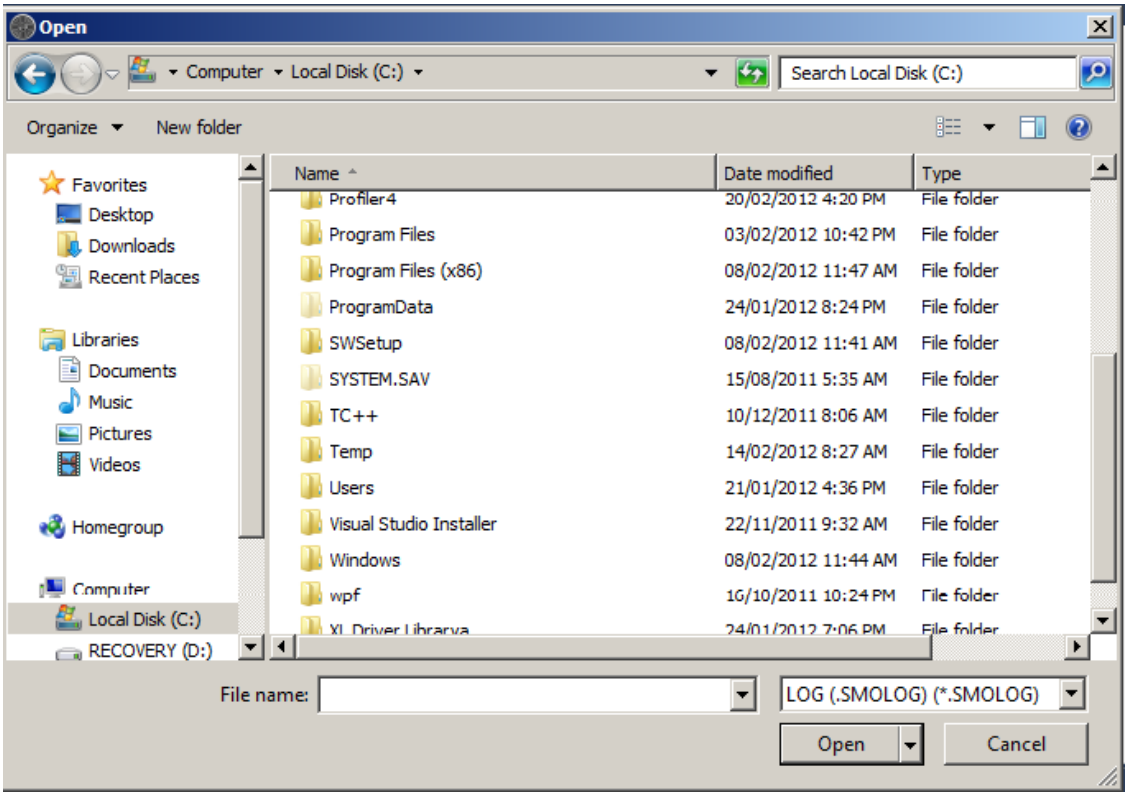
Measurement

Open (multiple tabs)

To open and load a stored log file for analysis, follow the steps:

Click Open button - Displays Open window and Prompt to select file .SMOLOG

On selection of .SMOLOG file, displays the stored Measurements. Go to Measurement Menu →Open.

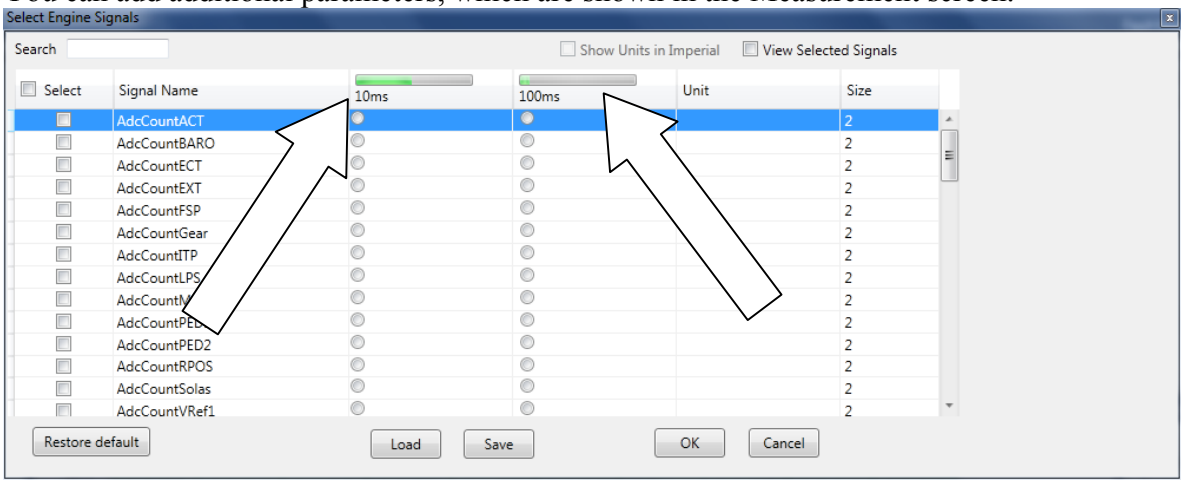


Select Engine Signals

To open Display Select Engine Signal window click on the “Select Engine Signals” button. Required signals can be selected for measurement. Also the frequency for each signal measurement can also be selected.
A tooltip appears when you drop the mouse to a signal, it will show you an description of the selected signal.

Go to Measurement Menu → Select Engine Signals.

You can add additional parameters, which are shown in the Measurement screen.



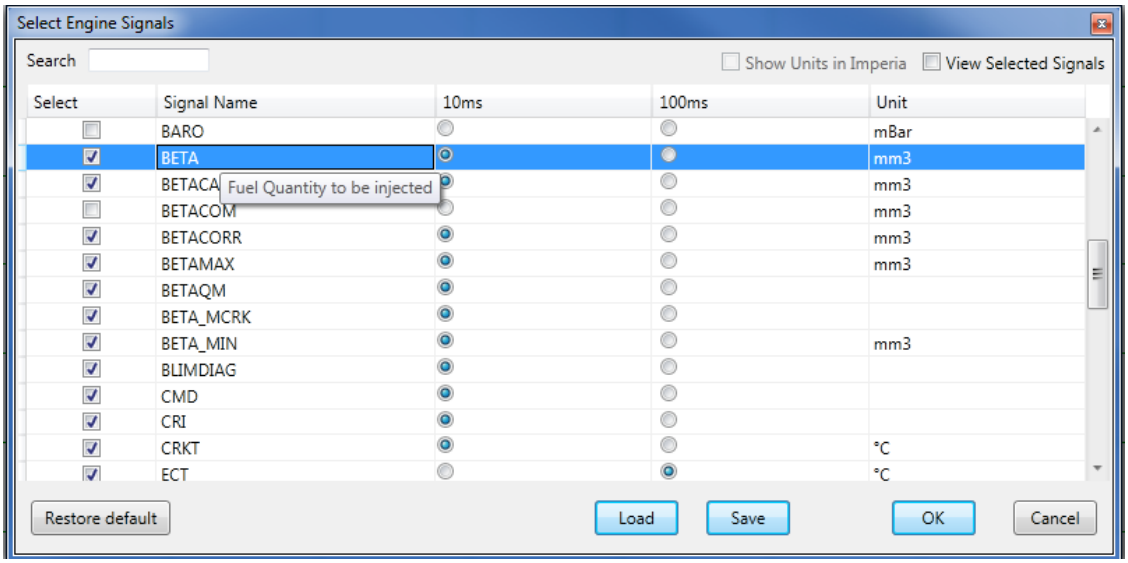
Note: stop adding parameters if the green scale is full.

Following Measurement Signals are available:

Signal Name	Description
BETA_MCRK	Maximum Fuel Quantity (Beta) during cranking
NIDLETUNE	Idle speed tuning value
BETAQM	Current fuel quantity calculated from engine actual behavior
BLIMDIAG	Bitfield,
BLDqm 1	BETA_max limited on max. Injection Quantity Table (FN_QM)
BLDact 2	BETA_max limited by Air Charge Temperature (TBACT)
BLDla 4	BETA_max limited on insufficient boost pressure at given load & speed (TBLA*TBACT) Note: During transient driving condition BLimDiag parameter must be ignored because this “Bit” indication reflects the dynamic parameter situation of momentary load & speed condition. After establishing steady state condition parameter value (bit) will be considered for computing BETA_max
BLDlps 8	BETA_max limited due to insufficient lubricant pressure at present engine speed (TBLPS)
BLDect 64	BETA_max limited due to high engine coolant temperature (TBTLIM)
BLDitd 256	BETA_max limited because of ITD-position (ITPcom ≠ actual ITP)
BLDitderr 1024	BETA_max limited due to ITV / ITPsensor error high or low
ACT	Air Charge Temperature
EXT	Exhaust Temperature (in elbow pipe)

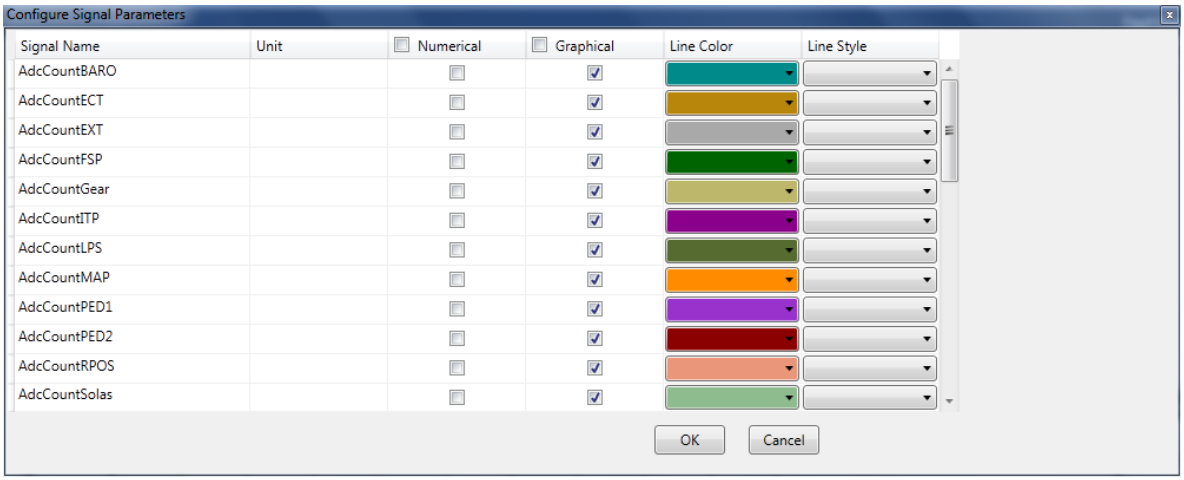
ECT	Engine Coolant Temperature
CRKT	Crank temperature calculated from ECT and ACT
LPS_WARN	Low lubricant pressure warning
CRI	Crank indicator input
GLOW_PLUGS	Glow Plug Relay output
BETA	Fuel Quantity to be injected
BETACORR	Corrected fuel quantity after density compensation
ENGMODE	Engine operation mode 1 "Power On" 2 "Crank" 4 "Idle" 8 "SpeedCtrl" 16 "Run" 32 "No RPM" 64 "SOLAS" 128 "Cruise" 256 "Idle Tune"
BETACOM	Commanded beta from idle speed governor
BETA_MIN	Minimum beta for cold start
BETACAL	Fuel quantity calculated from pedal position (via TBGOVT)
BETAMAX	Maximum quantity of fuel to be injected
VPWR	Battery voltage
CMD	Accelerator pedal
BARO	Ambient pressure
START_ENABLE	Starter enable control
GIR	ground isolation relay output
VREF1	Sensor reference voltage 1
VREF2	Sensor reference voltage 2
VREF3	Sensor reference voltage 3
NFIX_RPM	actual desired fixed idle speed
GEAR_INPUT	Gear switch input
VTG_POS	Position VTG
RPOS	Current rack position
RPCOM	Commanded Rack position
AdcCountVREF	Analog to digital converted counts
AdcCountECT	Analog to digital converted counts
AdcCountACT	Analog to digital converted counts
AdcCountEXT	Analog to digital converted counts
AdcCountLPS	Analog to digital converted counts
AdcCountMAP	Analog to digital converted counts
AdcCountPED1	Analog to digital converted counts
AdcCountPED2	Analog to digital converted counts
AdcCountRPOS	Analog to digital converted counts
AdcCountVTGPOS	Analog to digital converted counts
AdcCountVRef1	Analog to digital converted counts
AdcCountVRef2	Analog to digital converted counts
AdcCountVRef3	Analog to digital converted counts
AdcCountBARO	Analog to digital converted counts
AdcCountSolas	Analog to digital converted counts
AdcCountGear	Analog to digital converted counts

AdcCountITP	Analog to digital converted counts
AdcCountFSP	Analog to digital converted counts
TS_time_ms	Global millisecond counter for time measurement
ITDPOS	Injection timing device position
ITDCOM	Commanded Injection timing device position



Config Signal Parameters

To open Display Select Engine Signal window click on the “Configure Signal parameters” button. The display properties of each of the signal selected can be set. Go to Measurement Menu →Configure Signal Parameters.

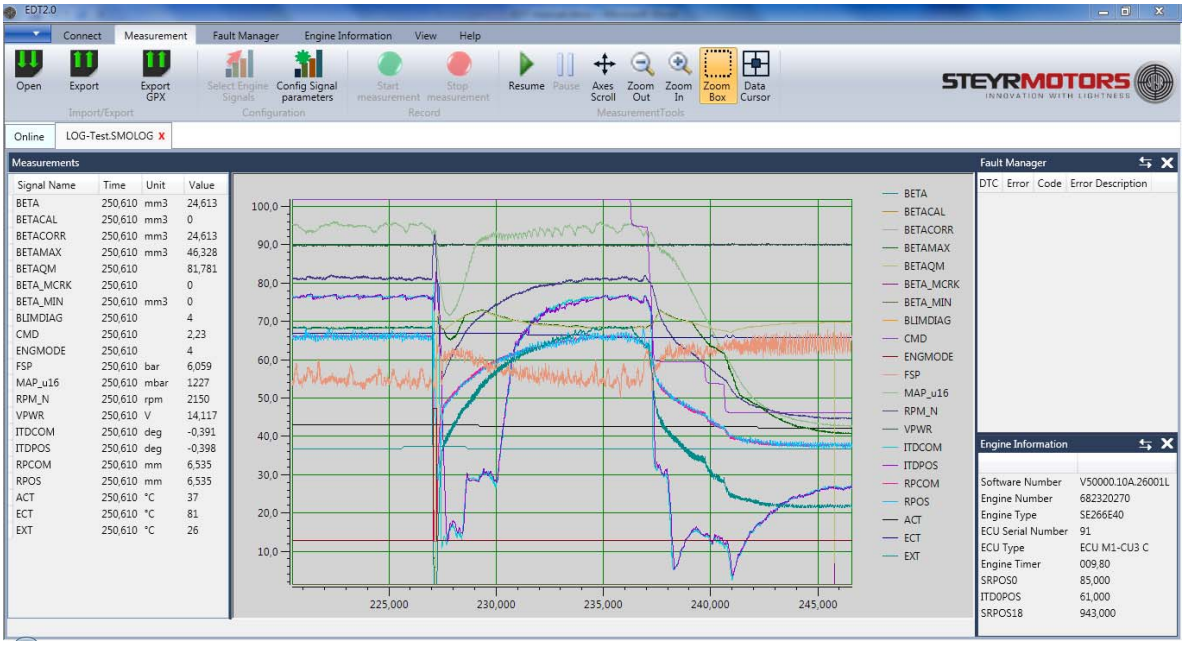


Numerical: is shown in “Measurement Screen (Numeric)“ → only numbers
Graphical: is shown in “Measurement Screen (Graph) “

Start Measurement

Measurement can be started by clicking on the “Start Measurement” button. The Measurement is started and the selected signals are shown in the Measurement window as per configuration.

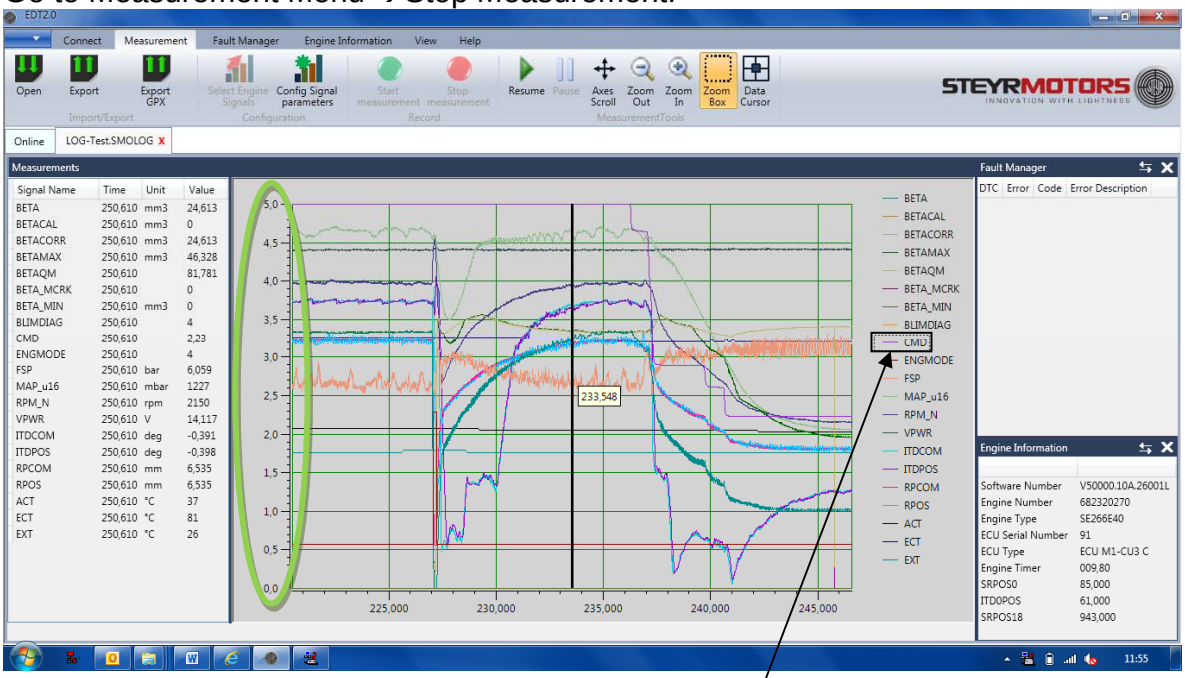
Go to Measurement Menu →Start Measurement.



Stop Measurement

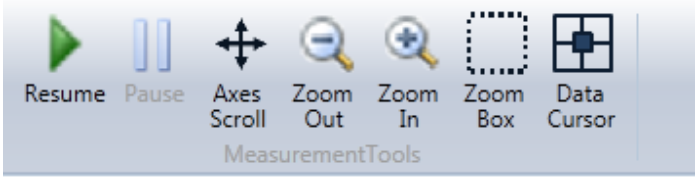
Measurement can be stopped by clicking on the “Stop Measurement” button. Upon measurement stoppage, the log file with the data of the measurement can be saved. This log file is loaded on the measurement window for further analysis. The name of the log file is shown on the application title.

Go to Measurement Menu →Stop Measurement.



Axis Scale:
The Axis Scale is depending on the selected parameter.

Measurement Tools



A number of options are provided control the display of measurements on the screen. These are

Resume

Resumes the default settings and focuses on the latest signals being added.

Pause

Pauses the scrolling of the Measurement screen.

Axes Scroll

Provides the option to scroll the axis.

Zoom Out

Zooms out of the Measurement screen

Zoom In

Zooms into the Measurement screen

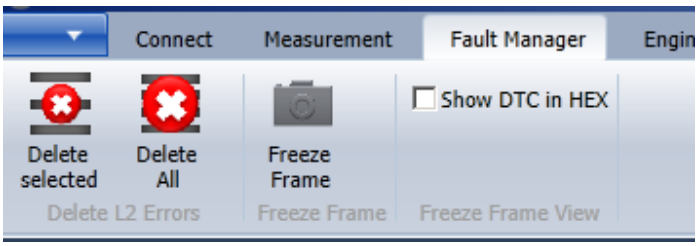
Zoom Box

Zoom into an area marked on the Measurement screen

Data Cursor

Show a cursor on the Measurement screen, for details of the exact values at the cursor point

Fault Manager



Delete Selected

Deletes the selected Fault (in the fault manager window). Go to Fault Manager Menu →Delete Selected

Delete All

Deletes all available L2 faults. Go to Fault Manager Menu →Delete All

Freeze Frame

Displays the Freeze frame information for the selected Fault. Go to Fault Manager Menu →Freeze Frame
Freeze Frame registers all Engine Data of the moment when a failure occurs.

Show DTC in Hex

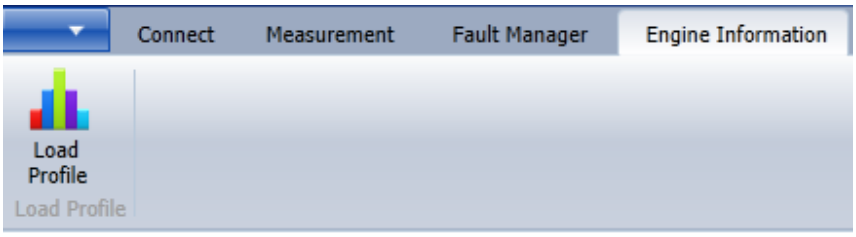
When selected, the DTC is shown as hexadecimal values in the fault manager window. Go to Fault Manager Menu →Show DTC in Hex

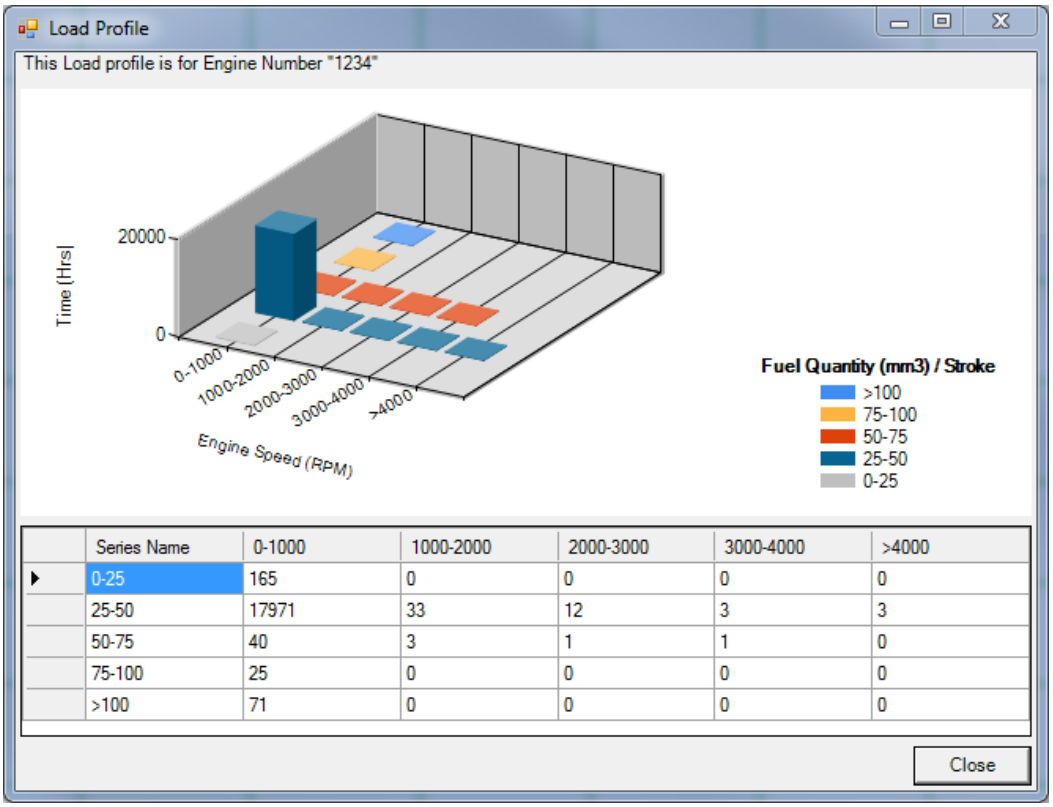
Engine Information

Load Profile

Shows the engines load profile. It shows the driven time. The x-Axis shows the engine speed (rpm_n) and the y-Axis shows the driven load and percent of the maximum fuel quantity.

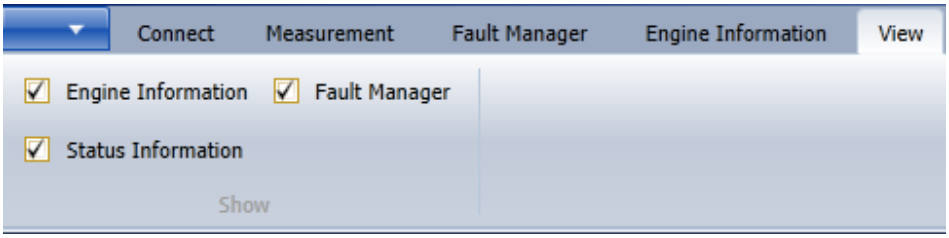
Go to Engine Information Menu → Load Profile





Series Name	0-1000	1000-2000	2000-3000	3000-4000	>4000
0-25	165	0	0	0	0
25-50	17971	33	12	3	3
50-75	40	3	1	1	0
75-100	25	0	0	0	0
>100	71	0	0	0	0

View



Engine Information

Controls the display of the Engine information window. Go to Help Menu → User Manual

Fault Manager

Controls the display of the Fault Manager window.

Status Information

Controls the display of the Status information window.

Help

User Manual

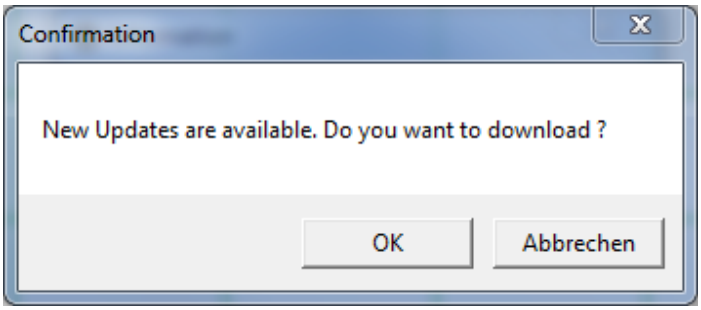
Displays the User manual for the application. Go to Help Menu → User Manual

Check for Engine Description Updates

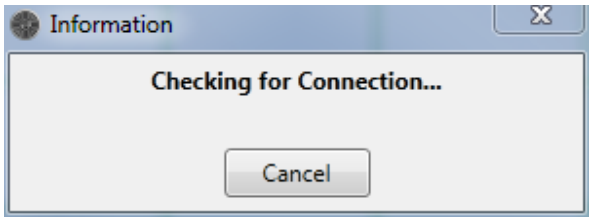
Checks for regular updates of the application. This requires an active internet connection with FTP access to Steyr motors website.

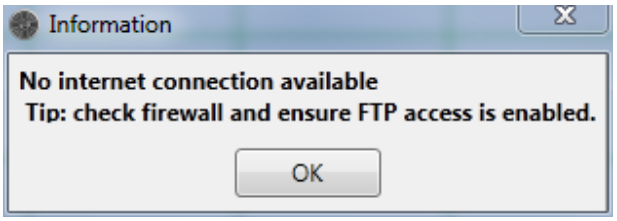
Go to Help Menu → Check for Engine Updates

If there are updates available, pop up appears, and ask you, whether you want to download the files.



Another pop up will show you the current state, and information about the connections.





Help About

To display information about EDT 2.0 Application, will also show the installed Software version of the EDT.

Go to Help Menu → Help About