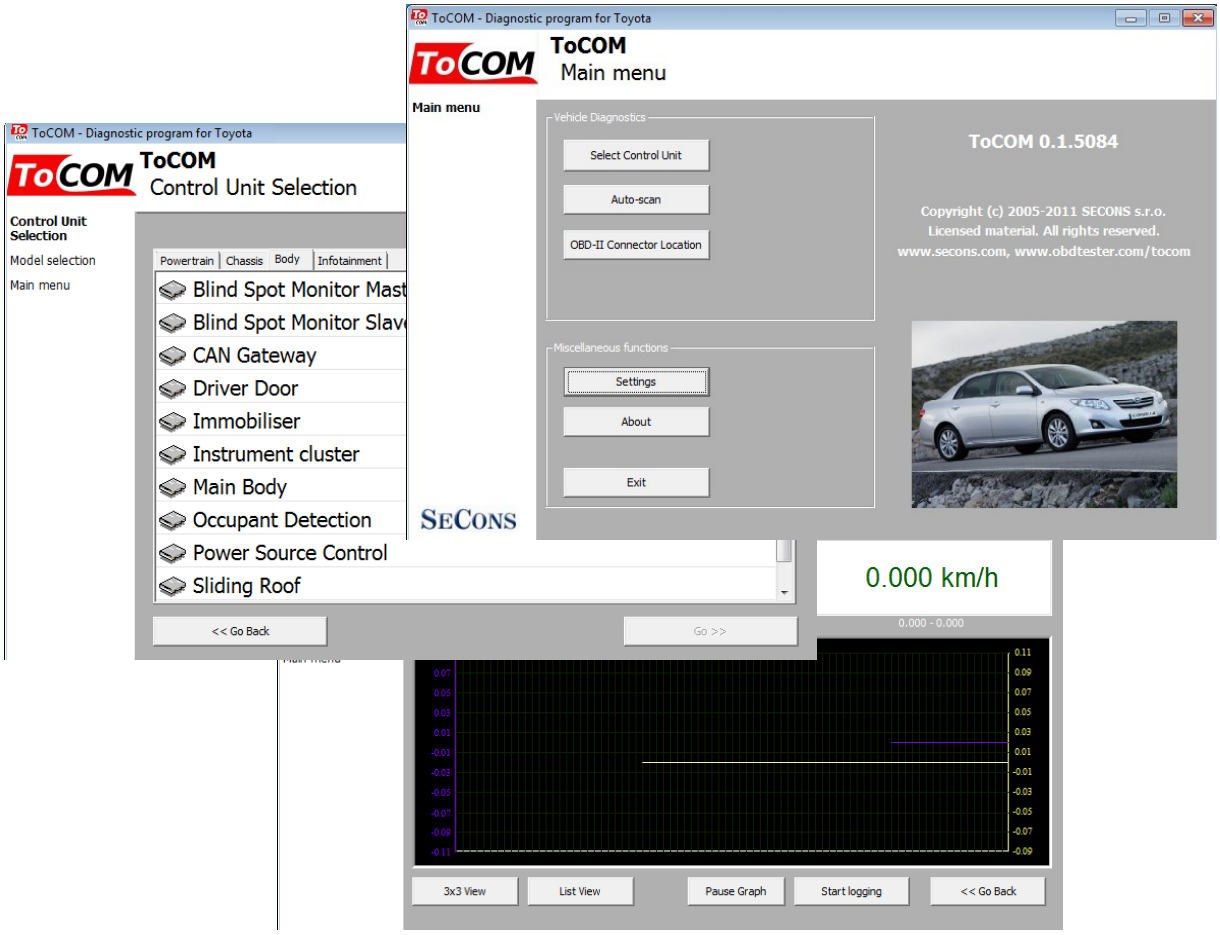
ToCOM
User manual

http://www.obdtester.com/tocom

PRELIMINARY VERSION



SECONS Ltd. is not connected with Toyota Motor Corporation in any way.

SECONS Ltd. is not liable for damages caused by using of ToCOM software.

Please read carefully this user manual before using the ToCOM software.

Before using the software please read license agreement.

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CE

Table of Contents

1 Introduction

Thank you for purchasing the ToCOM diagnostic interface and software. ToCOM is professional tool for diagnostics of Toyota, Lexus and Scion vehicles. Please read carefully this User Manual before using the product.

We hope you'll find our products useful. In case you have any questions, problems or feedback please contact as at support@secons.com. We're here to help!

1.1 Key features

- Support for wide range of ECUs and models
- Easy connection via smart USB to OBD2 interface
- Designed to maintain compatibility with dealer tool
- Automatic ECU recognition
- Automatic vehicle scan
- ECU Identification
- Fault code (DTC) reading
- Fault code clearing
- Freeze frame
- Monitor function (Engine readiness)
- Measured values / live data
- Live data recording
- Diagnostic protocol printing
- Actuator tests
- Control unit customization
- Control unit adjustments ("utility" function)

The ToCOM system works with Toyota/Lexus/Scion and other Toyota-Manufactured vehicles.

List of supported vehicles and control units can be found at the link below:
http://www.obdtester.com/tocom-eculist

1.2 Software updates

Software updates in diagnostic version are available for free. You can download them at http://www.obdtester.com/downloads. Before download starts, you are asked for user name and password.

USER NAME = serial number of your diagnostic interface.
PASSWORD is blank.

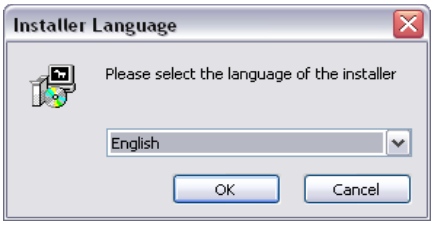
The serial number can be found in settings of ToCOM after performing test interface, or on a silver label of your diagnostic interface.

We recommend you to maintain software up-to-data, because updates provides support for new ECUs and fix various ToCOM issues.

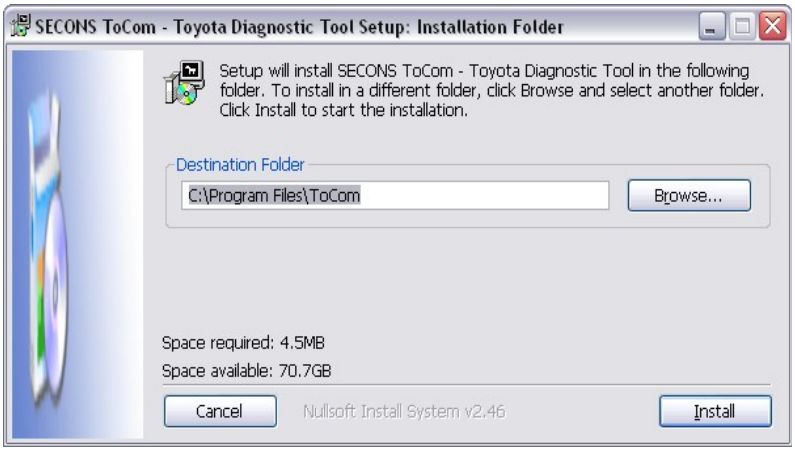
2 ToCOM software and driver installation

2.1 Microsoft Windows operating System

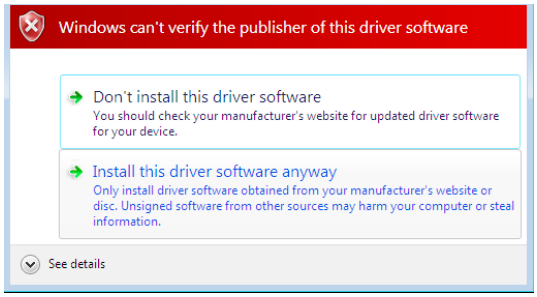
1. Insert ToCOM installation CD to your CD-ROM drive
2. Run installation file ToComSetup.exe
3. Choose language for the installer

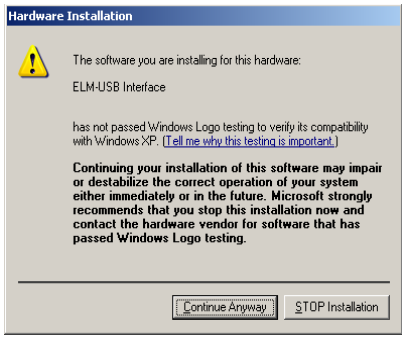


4. Choose your destination folder for ToCOM and click *Install* button and after successful installation click *Close* button.



ToCOM drivers are automatically updated during the ToCOM installation. When prompted to install „unsigned“ drivers, click on *Install this driver software anyway* (Microsoft® Windows® 7) or *Continue Anyway* (Microsoft® Windows® XP).





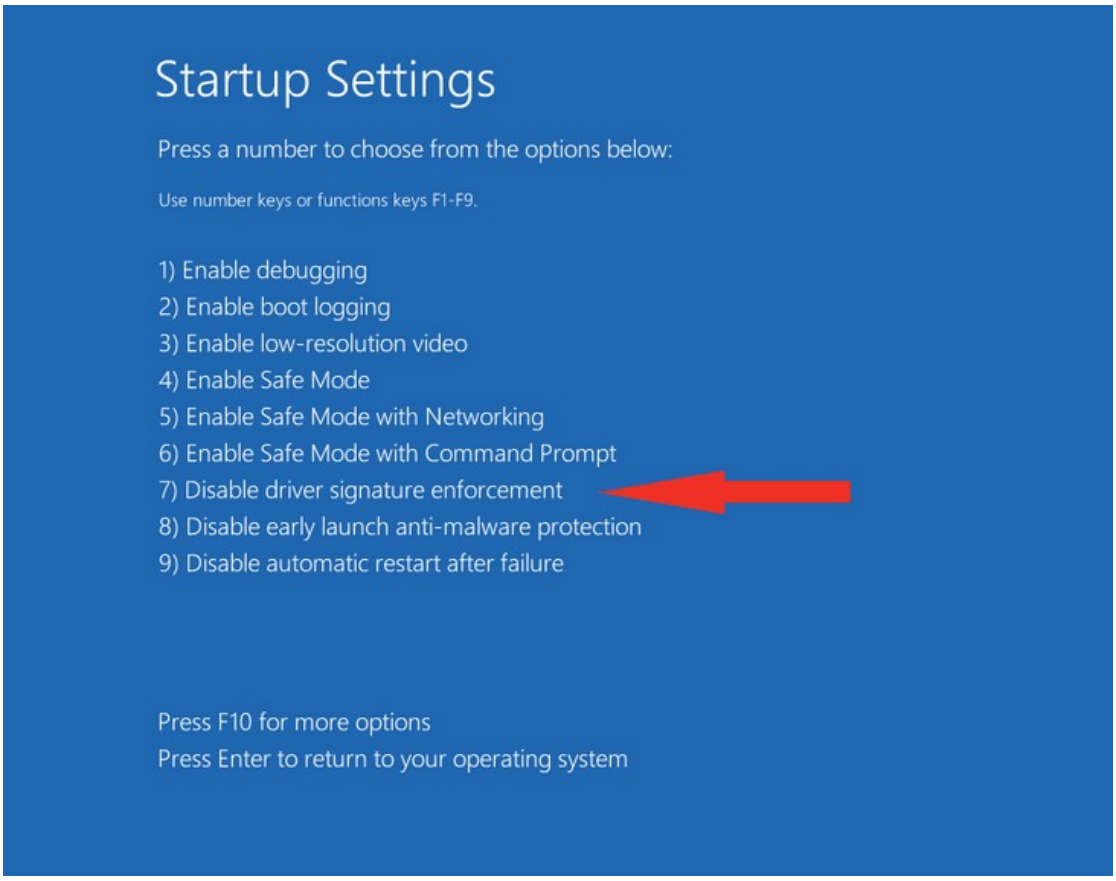
Microsoft® Windows® will automatically install drivers when you plug-in the ToCOM to USB port. Driver installation isn't required for operation on GNU/Linux system.

2.2 Microsoft Windows 8 driver installation

Installing drivers on Windows 8 usually requires a special procedure. In such case please follow the steps below:

1. Press Windows Key + R
2. In the window that appears, type: “shutdown.exe /r /o /f /t 00”
3. Press "OK" button
4. The System will restart to a "Choose an option" screen
5. Select "Troubleshoot" from "Choose an option" screen
6. Select "Advanced options" from "Troubleshoot" screen
7. Select "Windows Startup Settings" from "Advanced options" screen
8. Click "Restart" button
9. System will restart to "Advanced Boot Options" screen
10. Select "Disable Driver Signature Enforcement" (press number on keyboard for option shown on screen)
11. Once the system starts, install the APM / FTDI / Arduino drivers as you would on Windows 7

Windows Vista & 7 required signed all .sys files (we use usbser.sys shipped by Microsoft with valid digital signature). Final version of Windows 8 requires also signed .inf file (which is not in our case). The above procedure helps to override unsigned .inf file. Once driver is installed, the program will work properly.



2.3 Interface busy issue [Microsoft Windows]

In case you receive error “Interface busy” while testing your interface, please make sure:

1. You're not running any modem, mobile phone, or printer monitoring application that blocks “COM ports” from being used by other applications.
2. You're not running Hella Gutmann software on the same PC. Process called “GMPortal.exe” prevents SECONS diagnostic applications from properly accessing the diagnostic interface. You may temporarily resolve this problem by running “Windows Task Manager”, right-clicking on GMPortal.exe process in “Processes” tab and selecting “End process”.
3. Software modem drivers do not block COM ports.
4. You have selected correct COM port (use “Device manager” button to find port number under “Ports (COM & LPT)” group.

2.4 GNU/Linux System

Our diagnostic applications are tested to work under Linux. The applications can be run under Linux, BSD or Apple OS/X on Intel x86 using Wine environment. The installer and applications perform fully automated installation under these operating system.

2.4.1 Requirements

- Linux 2.6.x with USB support (or FreeBSD)
- USB CDC Driver
- Wine 1.0.1 or newer

Recent Debian Linux or Ubuntu meet the above requirements.

2.4.2 Setting up devices

Driver installation isn't required for operation on GNU/Linux system. Diagnostic applications require access to /dev/ttyACMx devices from Wine environment. This can be set-up very easily using these commands:

```
ln -s /dev/ttyACM0 ~/.wine/dosdevices/com5
ln -s /dev/ttyACM1 ~/.wine/dosdevices/com6
ln -s /dev/ttyACM2 ~/.wine/dosdevices/com7
ln -s /dev/ttyACM3 ~/.wine/dosdevices/com8
```

Diagnostic interface should be then visible from the ToCOM diagnostic application.

2.4.3 Installation

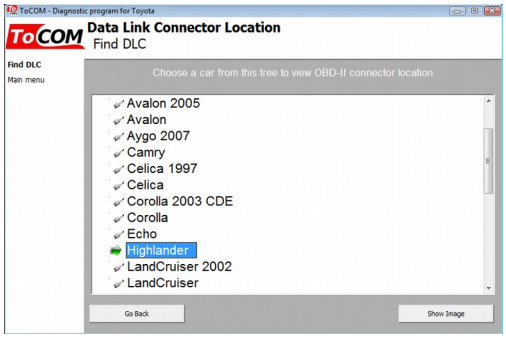
Programs can be installed by launching setup .exe file using wine, e.g. `wine ToComSetup.exe`.

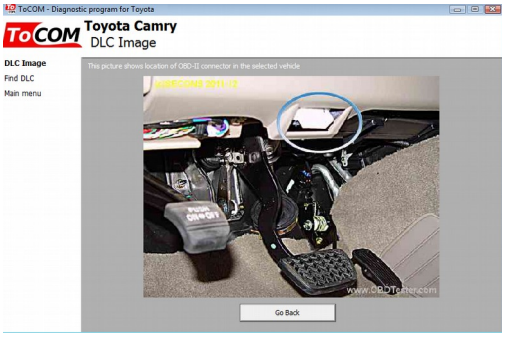
You can download the latest version of ToCOM at www.obdtester.com/downloads

3 First steps

1. Connect ToCOM interface to your computer.

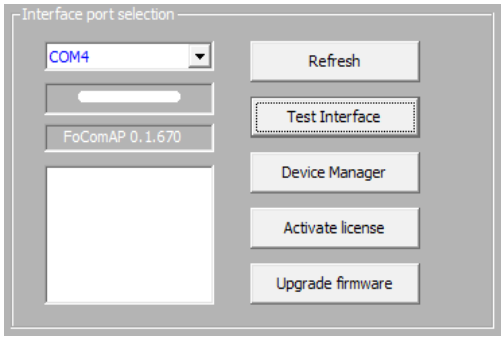
2. Connect ToCOM interface to OBD-II connector in the vehicle. You can use picture gallery for find it, available from main menu – *OBD-II Connector Location* button



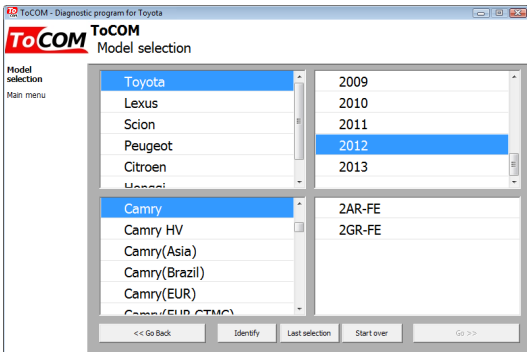


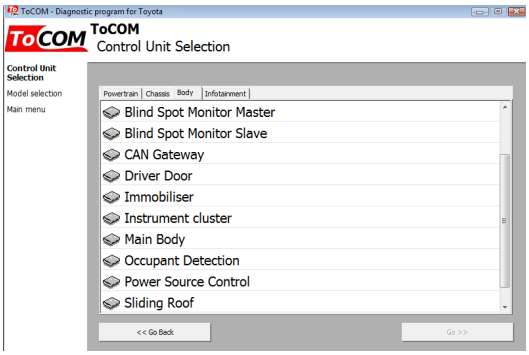
3. Set-up ToCOM application

Select *Settings* in ToCOM main menu and configure interface port. After clicking on *Refresh* button, software should find port to which is ToCOM interface connected. Choose this port. Click on *Test Interface* to make sure everything is OK, you should see *Serial number* (now hidden in white line).



4. Save settings and return to main menu.
5. Turn ON the ignition, but don't start the engine.
6. Select control unit by clicking on *Select Control Unit* button.
7. Select exact vehicle model.
8. In a new window, choose control unit to connect to.





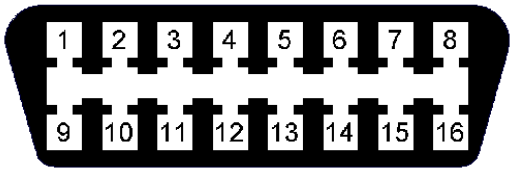
4 Diagnostic connectors used in Toyota vehicles

Location of OBD-II and manufacturer-specific (OBD-I) connectors is available in DLC location database available from the ToCOM main menu.

4.1 OBD-II (DLC3)

Standard OBD2 connector is used usually since 1996 models to present.

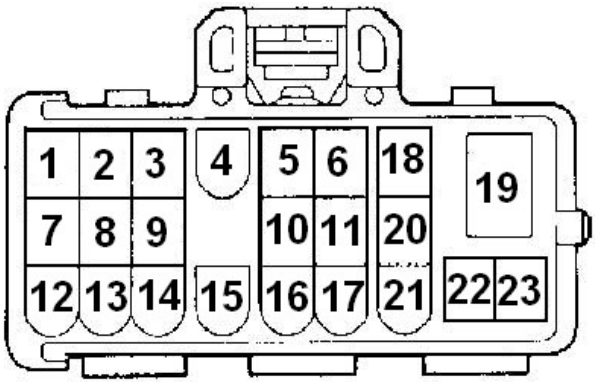
-	1	9	Ignition +12V
-	2	10	-
-	3	11	-
Chassis Ground (CG)	4	12	-
Signal ground (SG)	5	13	TC
HS CAN High (CANH)	6	14	HS CAN Low (CANL)
ISO9141 K Line	7	15	ISO9141 L-Line
-	8	16	Battery voltage



It is possible to read blink code on older vehicles by connecting terminals TC and CG and then turning ignition ON. Then you can read faultcode(s) from the P/S warning light on instrument cluster (combination meter).

4.2 Check connector (DLC1)

Pin		
1	Fp	
2	W	Engine blink code output
3	E1	Battery -
4	Ox1	
5	AB	
6	TH/ O	
7		
8	TE1	Engine blink code
9	TE2	
10	CC2	Second lambda sensor diagnostic
11	TC	ABS L ABS, traction control, Height Control and other system diagnostic

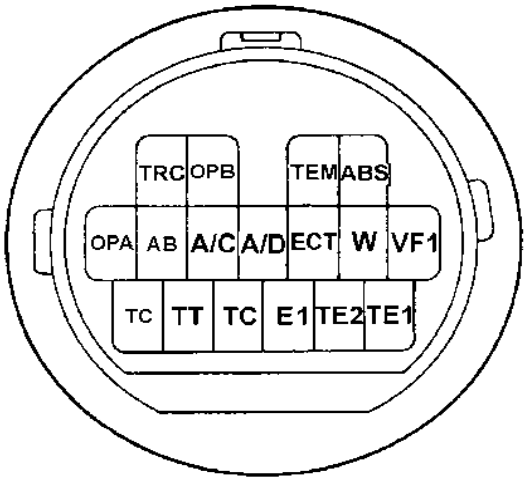


		codes
12	+B	Battery +
13	VF1	
14	VF2	
15	OX2	
16	TS	
17	TT	
18	TEM	
19	IG-	Ignition Pulse output
20	OP2	
21	OP3	
22	WA	ABS K
23	WB	

4.3 TDCL (DLC2)

TDLC (DLC2) has same signal meaning as Check connector.

It is possible to read blink code on older vehicles by connecting terminals TC and CG and then turning ignition ON. Then you can read faultcode(s) from the P/S warning light on instrument cluster (combination meter).



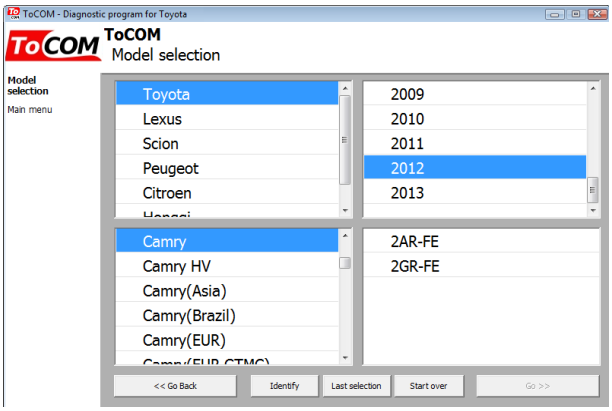
5 Connecting to control units

5.1 Model selection

Before is connection to control units (or performing auto-scan) possible, vehicle model selection is required.

Correct selection of vehicle model and year is essential for proper diagnostic functions.

Incorrect model selection may result in wrong or incomplete live data, improper function of actuator tests and coding functions, possibly resulting in damaged car components.



5.2 Toyota ECU naming terminology

Engine and Autotransmission Electronic Diesel Control	Engine control unit (including diesel engines), also controlling A/T on older vehicles (no individual AT ECU)
Combination meter	Instrument panel cluster
Automatic Trans-axle	Autotransmission
Body	

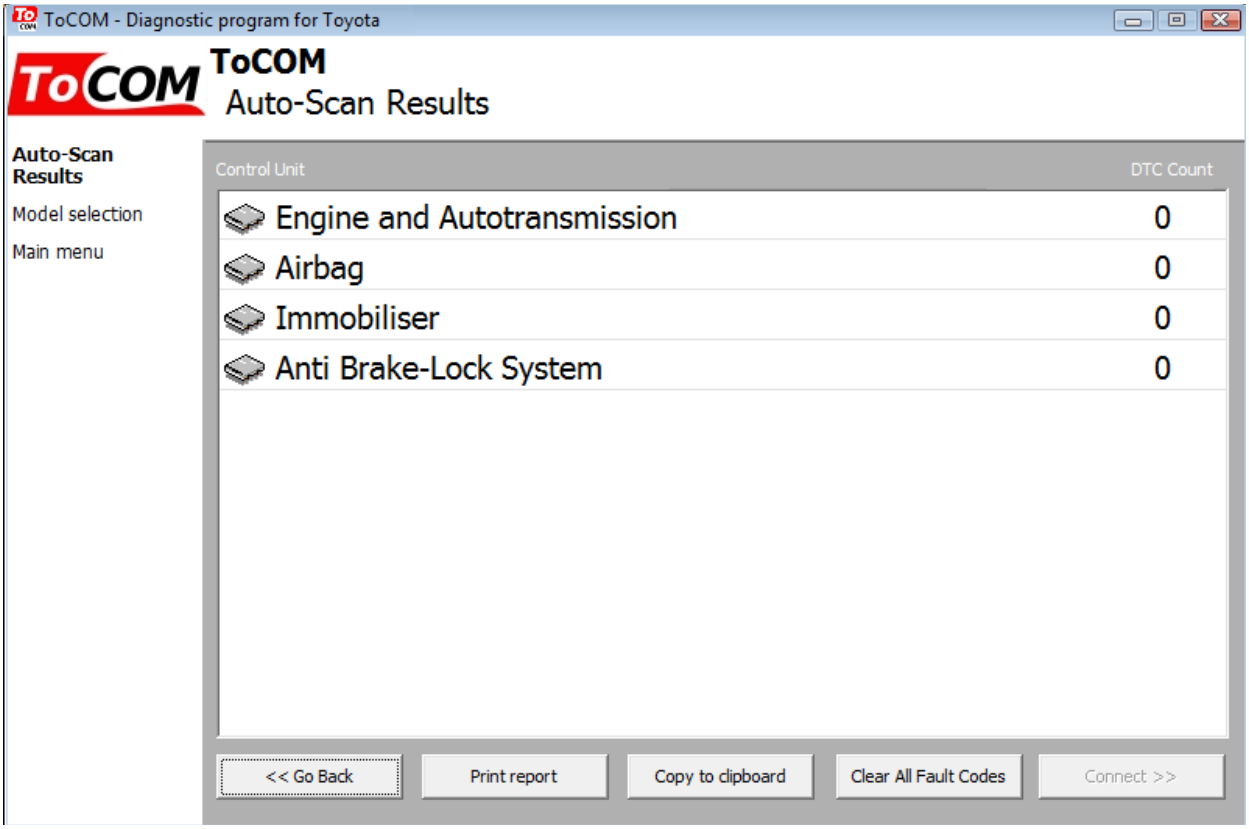
5.3 Communication protocols

ToCOM supports these communication protocols:

Protocol	**Diagnostic bus**	**Production**
ISO9141	ISO9141	1991 – 2001
KWP2000-9600	ISO9141	1996 – present
KWP2000-10400	ISO9141	1996 – present
ISO15765	CAN-BUS (ISO 11898)	2005 – present
ISO15765 GW	CAN-BUS (ISO 11898)	2005 – present

6 Auto-Scan

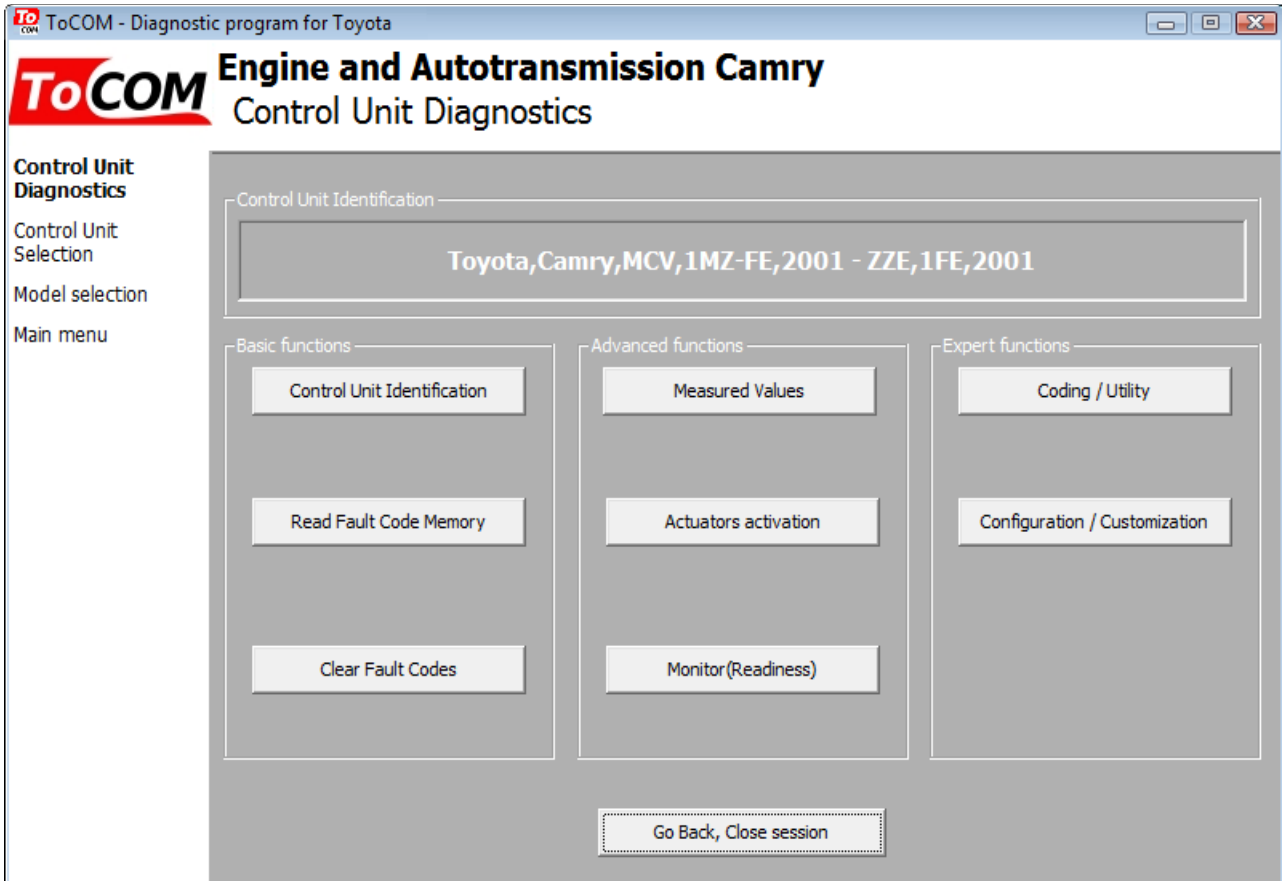
This function scans for all known ECUs in selected vehicle, and shows the list of ECUs present in vehicle along with number of present or stored fault codes (DCTs).



7 Diagnostic functions

You can connect to ECU by choosing control unit from list of ECUs in selected vehicle or auto-scan listing.

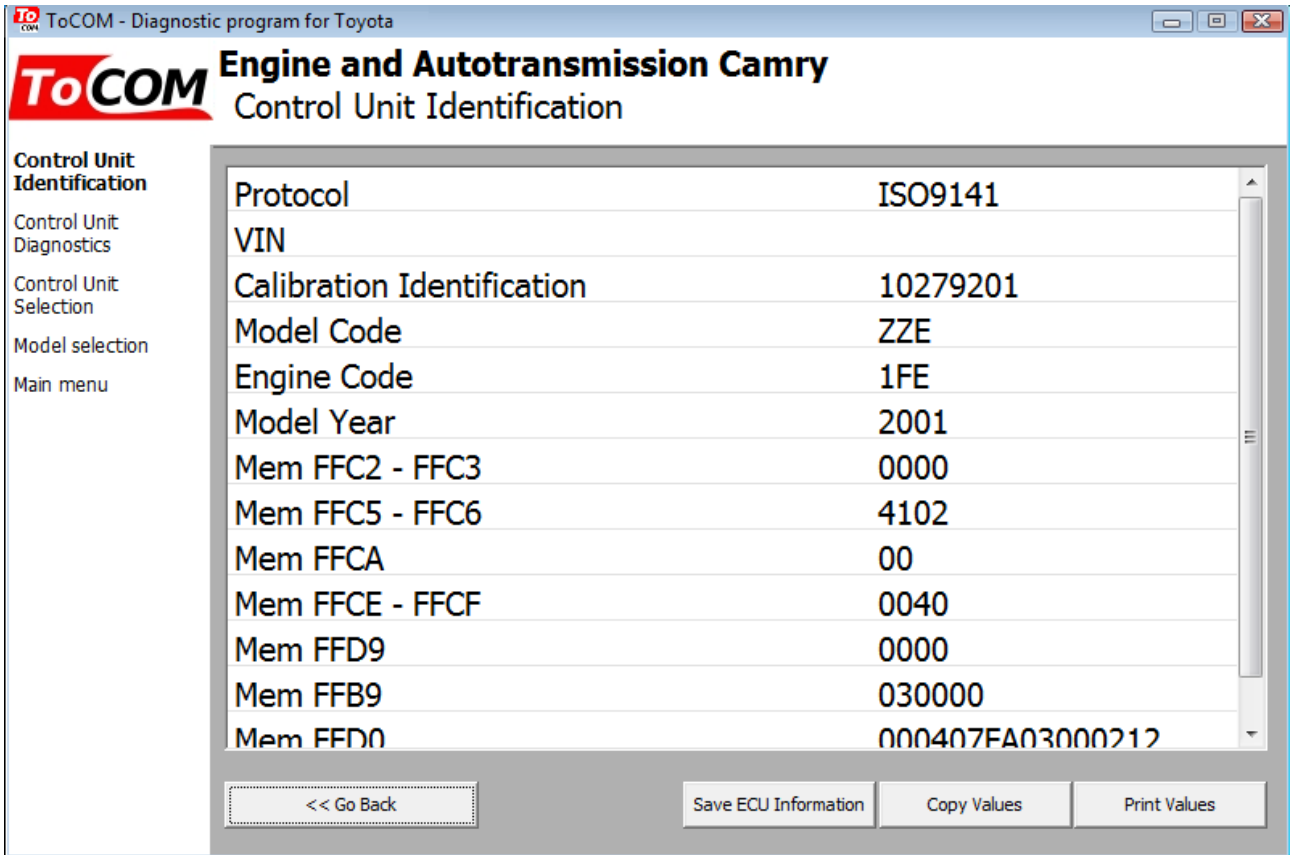
Diagnostic menu is divided into three parts. Basic functions, Advanced functions and Expert functions.



7.1 Control Unit Identification

This function is used to display only identification data provided by the ECU, for example:

- Calibration Identification
- Model code
- Engine

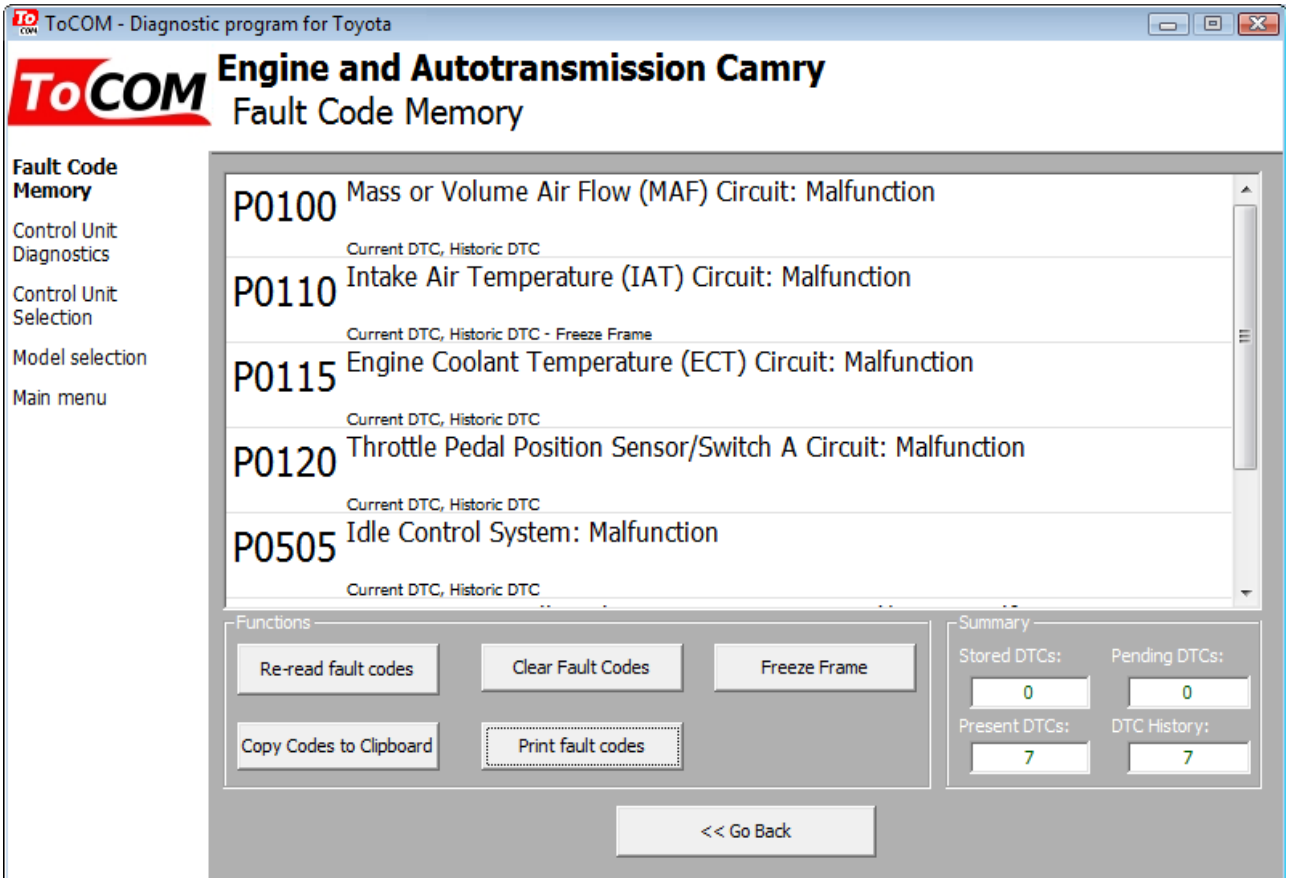


You can print identification by clicking *Print Identification* button or you can copy it to clipboard by clicking *Copy Identification*.

"Save ECU information" is used to save all ECU diagnostic data (not flash memory) to a XML file. This file is useful for further ToCOM improvements and debugging. It can also be used to recover improperly coded ECU. It is highly recommended to save this file before performing any configuration operation on the ECU.

7.2 Read fault code memory

This function allows you to read and display diagnostic trouble codes saved in control unit memory.



7.3 Clear Fault Codes

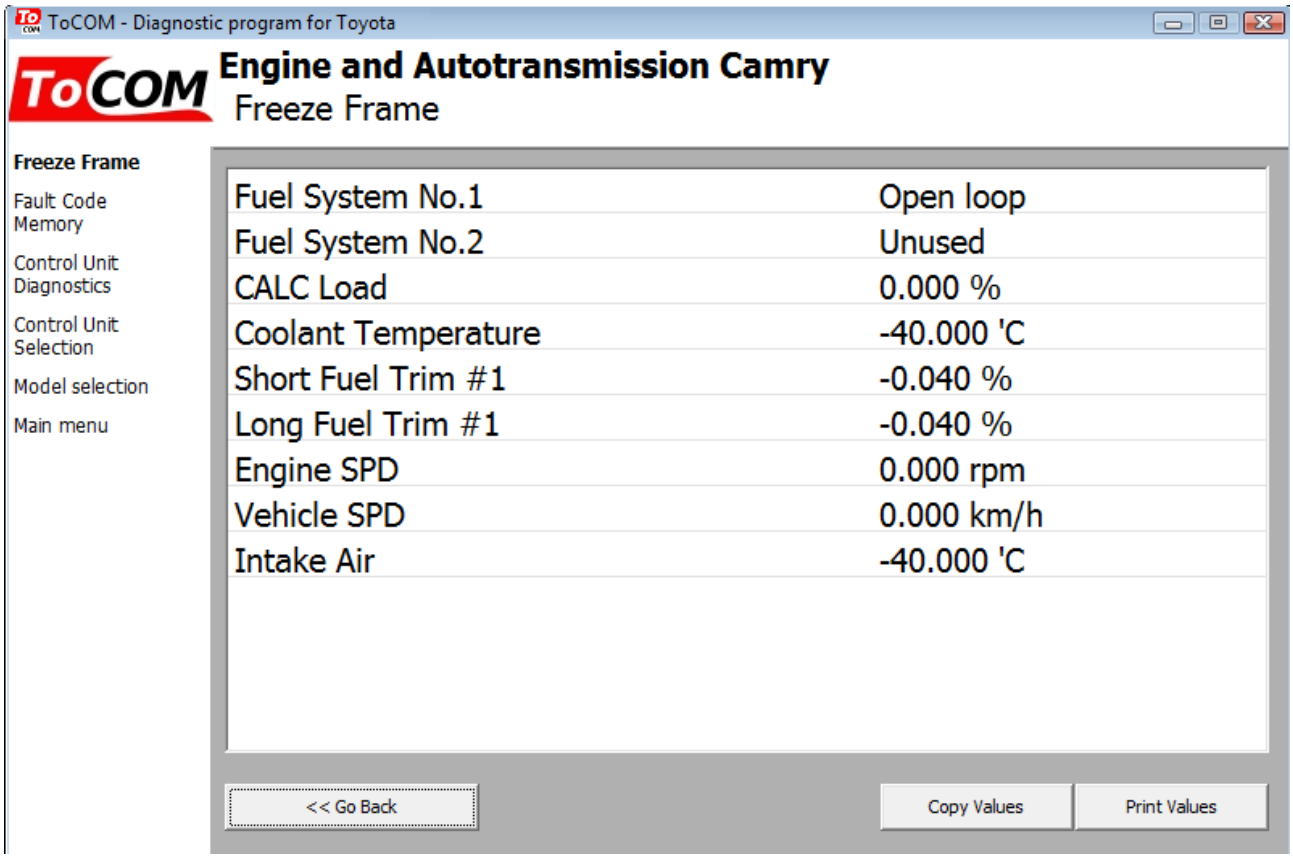
This function clears fault code stored in ECU memory.

Fault codes might appear again or under some conditions isn't possible to clear fault codes at all. It's possible that in the presence of some faults control unit doesn't allow to clear fault codes or fault is in no time written back to memory.

It is recommended to read memory by clicking *Re-read fault codes* button again.

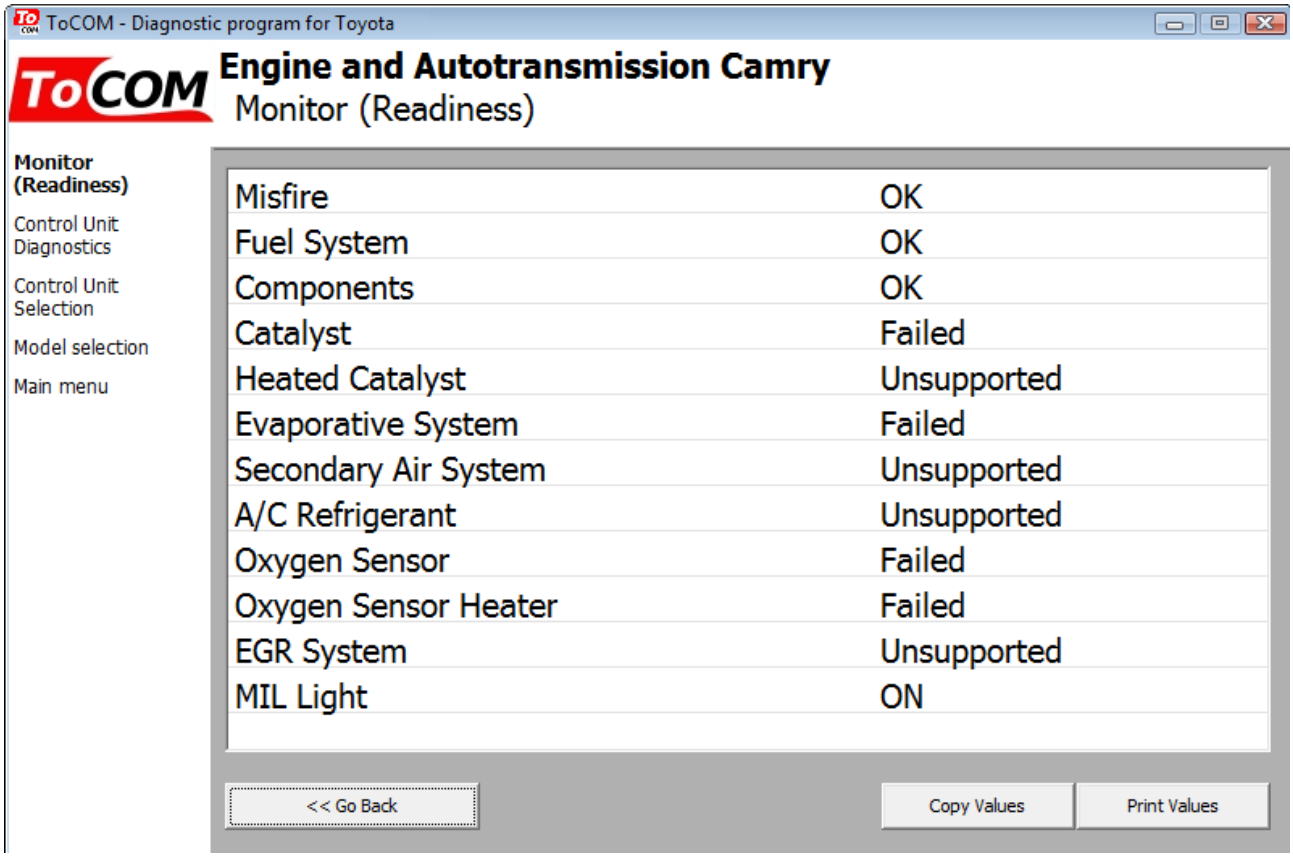
7.4 Freeze Frame

Freeze Frame (also known as Snapshot or Environment data) function display selected measured values as present at occurrence of selected diagnostic fault code (DTC). This function is available from fault codes window.



7.5 Monitor (Readiness)

The function is available only on engine control units. Displays status of engine.

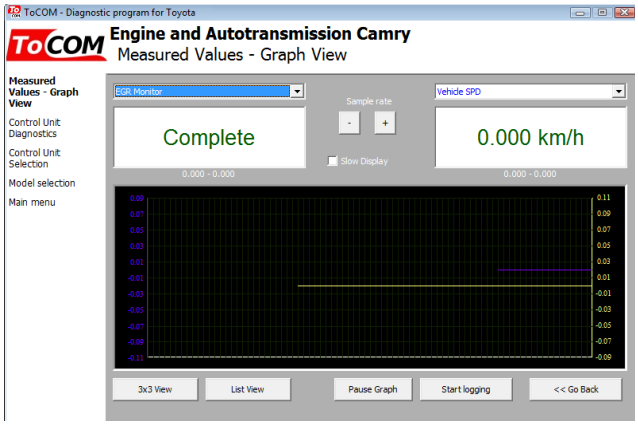


7.6 Measured values

Available live data depend on installed ECU type and it's current configuration.

7.6.1 Graph View

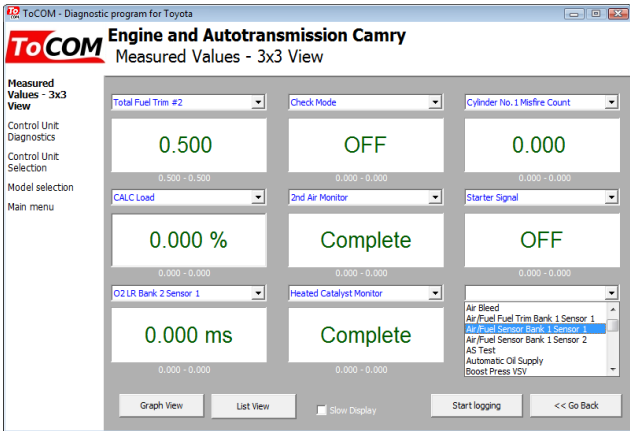
This function displays two measured values (also known as live data or sensor values) simultaneously. Measured parameters can be chosen from selectors at the top of the window.



Buttons – and + allow to accelerate or decelerate speed of graph.

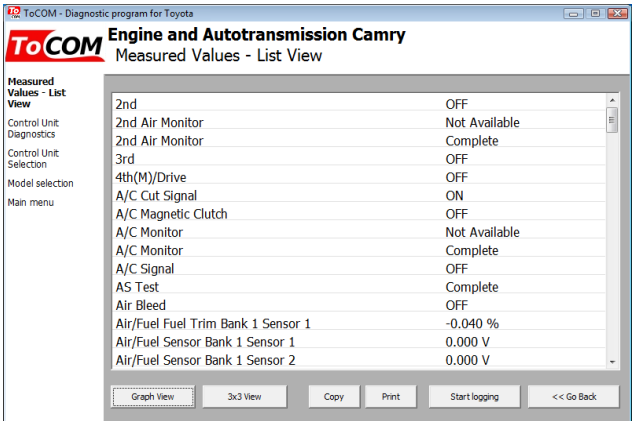
7.6.2 Display 3x3

For measuring 9 value simultaneously, click on *3x3 View* button.



7.6.3 Display list

To measure all available values simultaneously, click *List view* button.



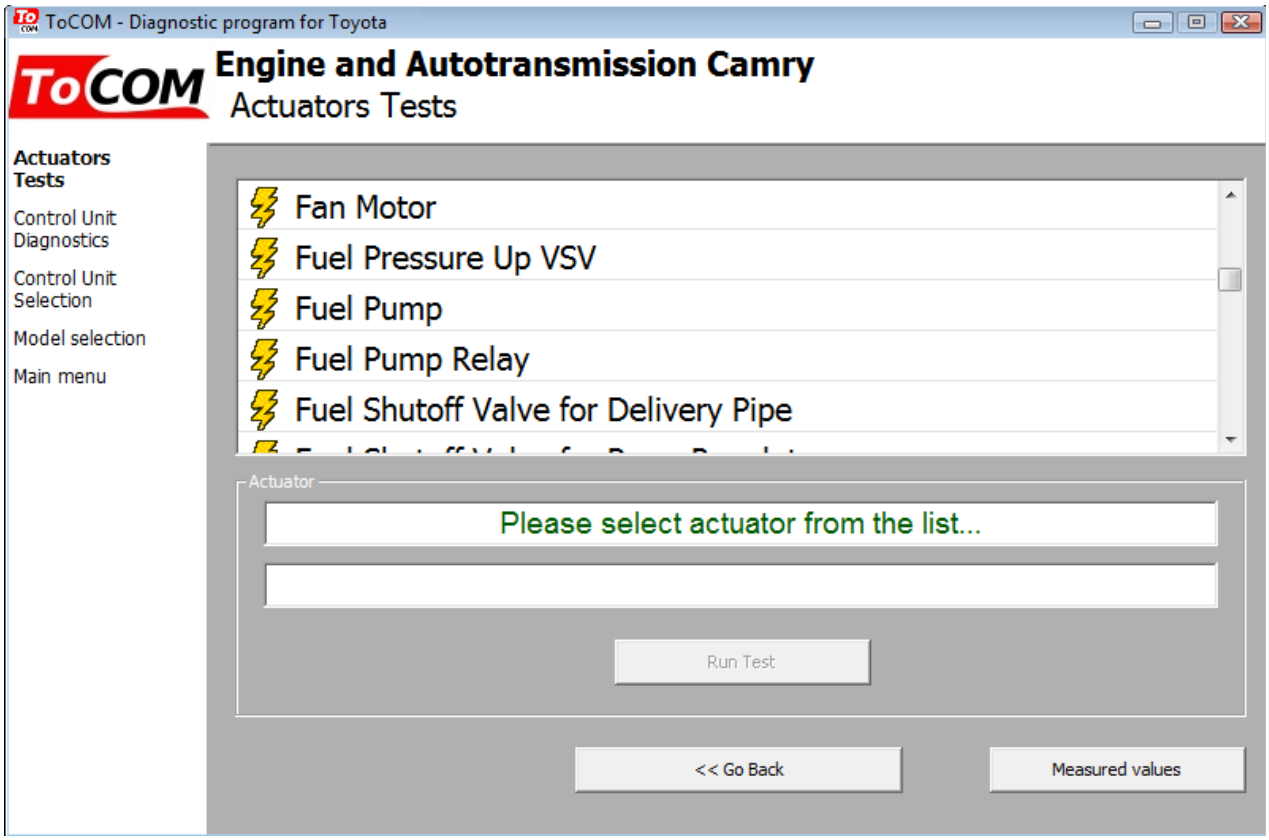
The refresh rate in list display may be very slow on older vehicles, mainly if ECU supports a lot of values.

7.6.4 Save to log

Measured values can be saved/logged to a file by clicking *Start logging* button. The log file is standard csv file and it is compatible with VagScope or can be imported to Microsoft Excel or OpenOffice Calc.

7.6.5 Actuators activation

This function can activate actuators and perform some actuators actions.



Please note that range of actuators depends on installed ECU type and it's current configuration.

Actuator tests are of these types:

1) **Start / Stop (or ON / OFF) actuator**: you can turn component on and off.
   Example: MIL Light actuator

2) **Actuators with states**: You can choose between states to control component(s).
   Example: A/F Control

3) **Value-controlled actuators**: You can enter any desired value within specified range.
   Example: IAC Duty, Injector volume

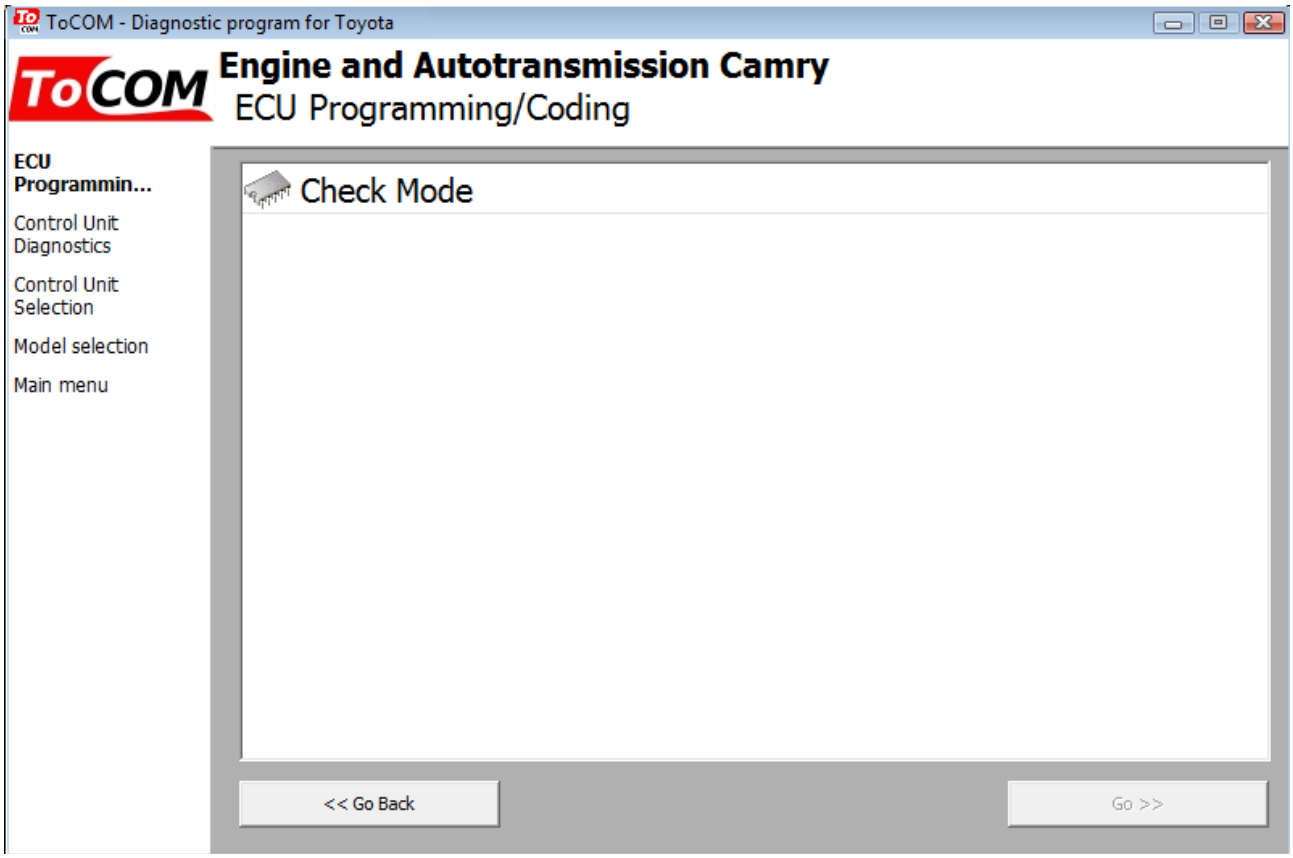
On most ECUs it is possible to view live data using “Measured values” button while actuator is active.

Please make sure you understand consequences of activating ECU components. Also make sure that activation conditions (engine idle, engine running, etc.) are met. Always consult all tests with car repair handbook.

7.7 Coding and programming functions (Utility)

This function is used to perform various operations on the control unit, such as re-coding installed components, re-setting ECU adaptation values, performing checks, etc.

Important notice: Current ToCOM version may also display coding/utility functions that do not apply to currently connected ECU (e.g. diesel coding functions are shown for petrol ECU). Please consult service manual(s) before performing any coding function. We're working on resolution of this issue.



Important notice: this function is currently under development, new functions are added as time allows. In case you need some function that is not present in the latest version, please provide data as described at the end of this manual.

More information about programming functions is available at www.obdtester.com/downloads . Most common generic coding/utility functions are described below.

7.7.1 Check Mode

This function will do the following allow 2 trip logic DTCs to be set in one trip and tighten the DTC detection criteria so DTCs will set easier. To exit Check mode, cycle the ignition off for 20 seconds and back on.

7.7.2 Signal check

This function will set DTCs for the system that is selected. DTCs will be erased if normal operating conditions are confirmed.

7.7.3 Reset memory

This function is used to clear the learned memory of the ECU if the following components are replaced:

- ABS ECU

- ABS Yaw rate / G sensor

Vehicle is stopped and ignition is on

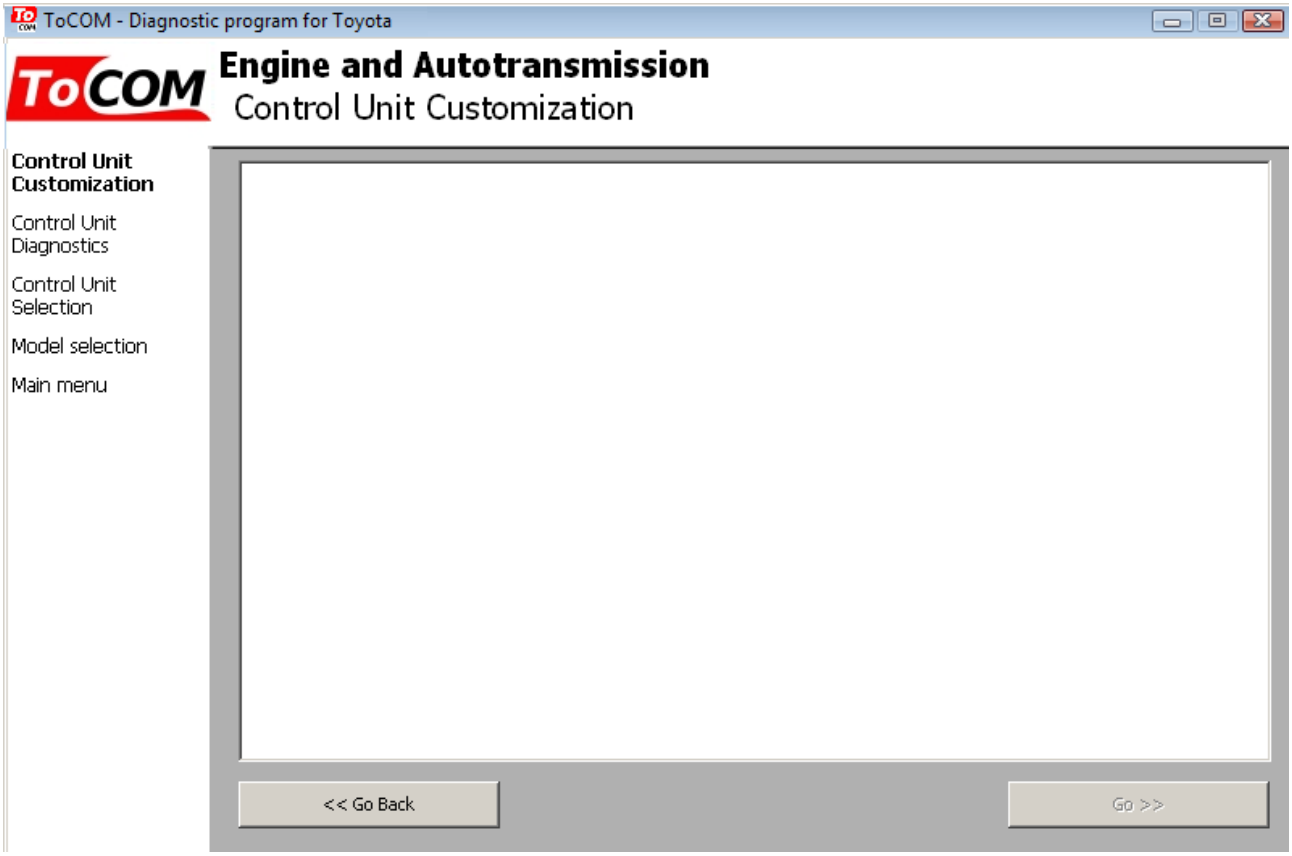
7.7.4 Inspection Mode

This function disables VSC and TRAC control systems.

7.8 ECU Configuration (Customization)

This function is used to configure (customize) ECU behavior, enable newly installed components, etc. ECUs that supports this feature displays a list of customizable parameters.

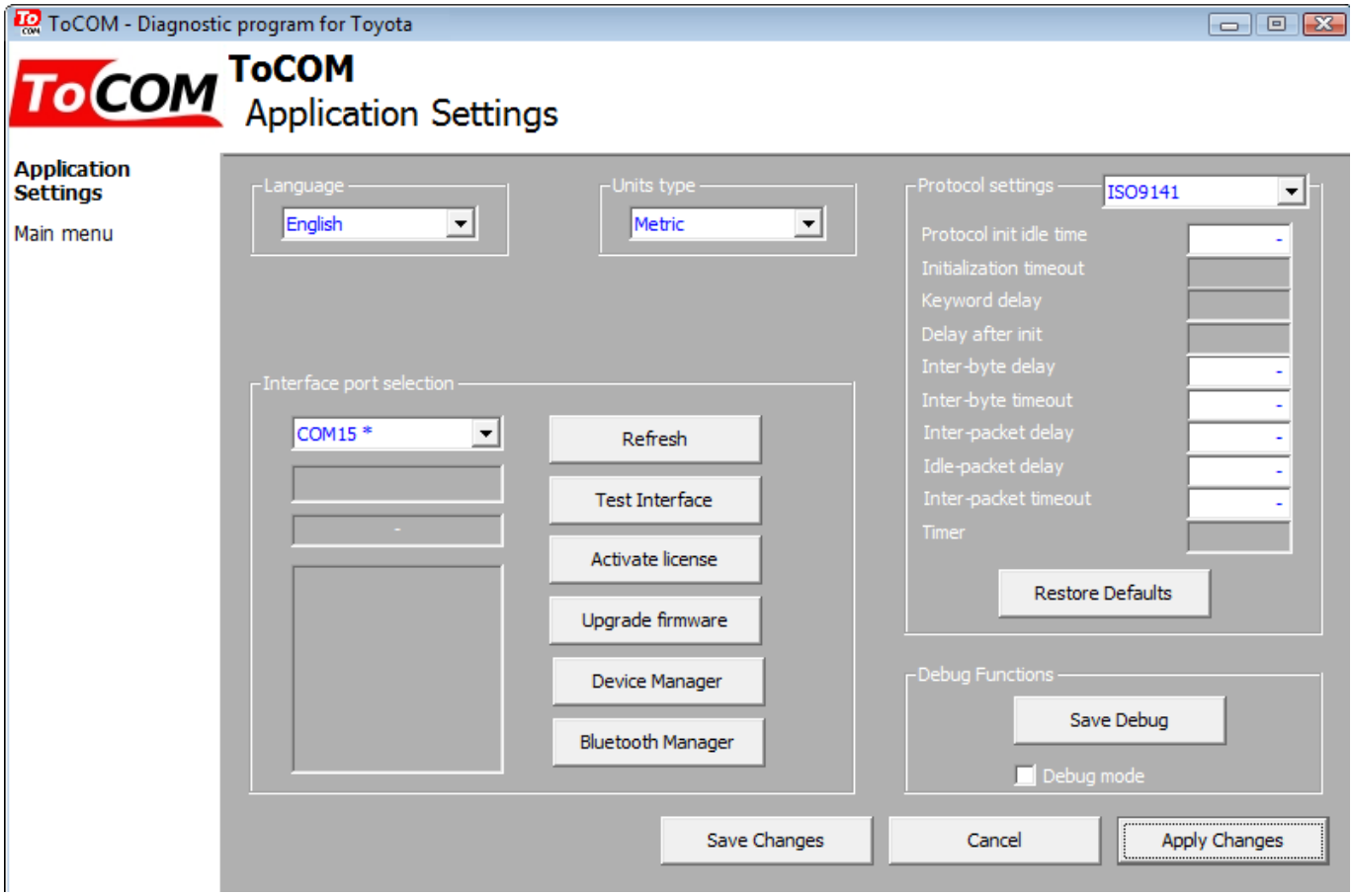
Please note that range of customizable parameters depends on installed ECU type and it's current configuration.



"Save ECU information" available from "Identification" window can be used to save all ECU diagnostic data including current configuration to a XML file. This file then can be used to recover improperly coded ECU. It is highly recommended to save this file before performing any configuration operation on the ECU.

8 Application Settings

ToCom Settings is accessible from main menu.



8.1 Language

Choose program language in the drop down menu.

8.2 Units type

You can choose metric or imperial unit system for measured values.

8.3 Interface port selection

Refresh - this button refreshes COM port selection drop down list. Correct COM port number should be already chosen after connecting diagnostic interface via USB to PC and clicking on *Refresh* button. If not, choose correct COM port number from the list. It is needed in order to perform successful interface test.

Test interface – before each use of program, please test proper function of your connected interface by clicking this button. After successful test, you can see a serial number of your interface displayed below the COM port field, then firmware version and information about active licenses.

Activate license – this button is used for activating new license/s to use the program or special functions. Internet connection is required. Standard license is already activated for all interfaces before purchase.

Upgrade firmware – use this button to upgrade firmware in your diagnostic interface every time after installing the latest software version (available at www.obdtester.com/downloads). Do not disconnect your interface during upgrading the firmware.

Device Manager – is used to finding out correct COM port number, or to reinstall drivers. Your device appears as "ELM-USB Interface (COMx)" under "Ports (COM & LPT)".

Bluetooth Manager – is a preparation to upcoming bluetooth feature. The button is currently inactive.

8.4 Protocol settings

You can set various timings for each communication protocol. This is advanced feature used for example when problems occur with connection to control unit caused by slower ECU response and the like.

Restore Defaults – this button restores all modified timings of all protocols to default values.

Changing protocol settings is not required before normal use of the program. You will be asked to make changes by our tech. support when solving your issue at support@secons.com if necessary.

8.5 Debug functions

By clicking on **Save Debug** button, you can capture the latest data from elapsed communication between control unit and program into one file. Providing this file is required only by our technical support. Based on these data, we are able to monitor the whole process of performed operation and its correctness.

Use of debug function is important for successful resolution of any program failure or verifying its causes. For more information on how to proceed, please read the next chapter 9: Reporting bugs and improvement requests.

9 Reporting bugs and improvement requests

Our customers can take advantage of our full technical support for free. You can contact our technical support at **support@secons.com** with any technical questions and requests.
To speed up resolution of program bugs or requirements to improve the program, please prepare the following data:

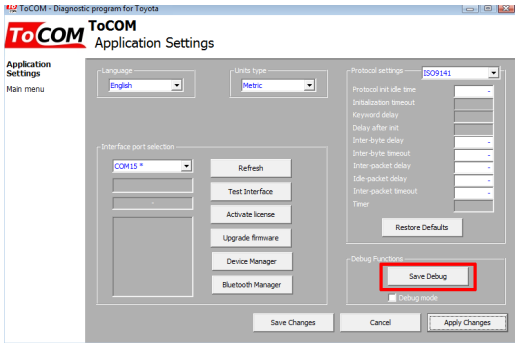
Reporting bugs

In case you encounter to failure of any program functions (eg fault codes reading/clearing, coding functions, connecting to ECU, test interface, …), please, prepare the following data in your email:

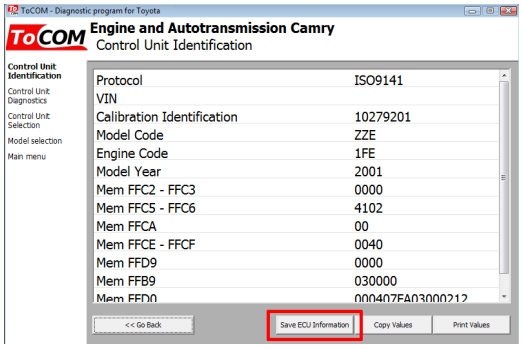
1. Detailed description of failure
2. Vehicle description - VIN code, model, manufacture year, motorization
3. Attach **Debug Log** – this file captures data from the latest communication between program and ECU, so we can detect failure causes.
4. Attach **Snapshot** of tested ECU (if accessible) – this file contains important information about tested control unit

How to create **Debug Log:**
Once failure occurs, go back directly to settings in main menu (do not close the program). Click on "Save Debug" button. Name and save the file into well known directory in your computer.

Enable "Debug mode" check box only at our special request.



How to create ecu **Snapshot:**
After connection to tested control unit, click on "Control Unit Identification". In following screen, click on "Save ECU Information". Choose directory to save the file and confirm. Saving may take a few minutes.



Improvement requests

In case you miss some function or some function does not work sufficiently, please, prepare the following data in your email:

1. Detailed description of your improvement request
2. Vehicle description - VIN code, model, manufacture year, motorization
3. Attach **Snapshot** of tested ECU – this file contains important information about tested control unit
4. Attach **Debug Log** (in case that required function doesn't work properly). This file captures data from the latest communication between program and ECU, so we can detect failure causes.