Calterm III for AEs

Presented by Suresh Uppu

April 12, 2013

Courtesy: Lectora training material w/ modifications

What can you do with Calterm III?

What functions do you think can be performed using Calterm III?

- Perform Installation Quality Assurance testing
- Perform DPF regeneration
- View active and inactive fault codes
- Troubleshoot integration issues
- Troubleshoot calibration issues
- Collect engine/AT test data

All of these statements are TRUE!

Introduction

- Calterm: Calibration Terminal
- Caterm is an engineering development and testing tool used to moniter Electronic Control Module (ECM) for Cummins engine system and to alter the calibration data contained therein.
- It can be used to:
  - monitor ECM or any J1939/Datalink device parameters
  - temporarily change calibrations
  - view and erase fault codes
  - log ECM and J1939/Datalink parameters

Calterm Levels and Security

- **Field Calterm**
  - **Standard:** Calibration Upload, Compare, Data Monitor, Document, Erase Faults, Hold/Cancel Changes, IDL on Secure Modules, Logging, Request/release Change lock, Stop/Start Broadcast, Decimal/Hex/Binary View
  - **Selectable:** Ability to ignore range Limits, Download to Secure Modules
- **Engineering Calterm**
  - **Standard :** Field Calterm (Full) Plus: Assemble, Blok/Unblock selected fault codes, Change Run Location, Divide, Edit, Export, Overlay, Save changes, Unlock Diagnostics, View He/Module Editor
  - **Selectable:** CRC, Send Operations, Speed Upload, Speed Download, Unlock
- **Protected Calterm**
  - Only works with protected engineering config file that provides limit access to engineering parameters

When to use Calterm III and not Insite™?

- There are several instances when Calterm III is a preferred tool over Insite™:
  - Calterm III allows the user to access additional parameters in the ECM
  - Calterm III can log data at a faster rate
  - Calterm III allows user to temporary change calibrations and override parameters during testing

Objectives

- **Tool Installation and Registration**
- **Connecting to an Engine**
- **Monitoring and Logging**
- **Changing Calibrations and Overrides**

- **Tool Installation and Registration**

- Connecting to an Engine

- Monitoring and Logging

- Changing Calibrations and Overrides

Tool Installation and Registration

Field Engineering Calterm III installation and registration process consists of 4 main steps.

1. Install or Upgrade Calterm III

- Order Calterm III from software shelf
- Download installation file
- Install Calterm III

2. Submit Calterm III Request and Get Approval

- Run Calterm III
- Create CaltermRequest.xml file
- Fill out and Submit the Calterm III Order Form for PowerSweep 3

3. Complete Tool Activation

- Upon approval, a license will automatically be generated and e-mailed to you
- Follow the directions in the license e-mail to apply the Calterm III license to the installation

4. Renew license annually

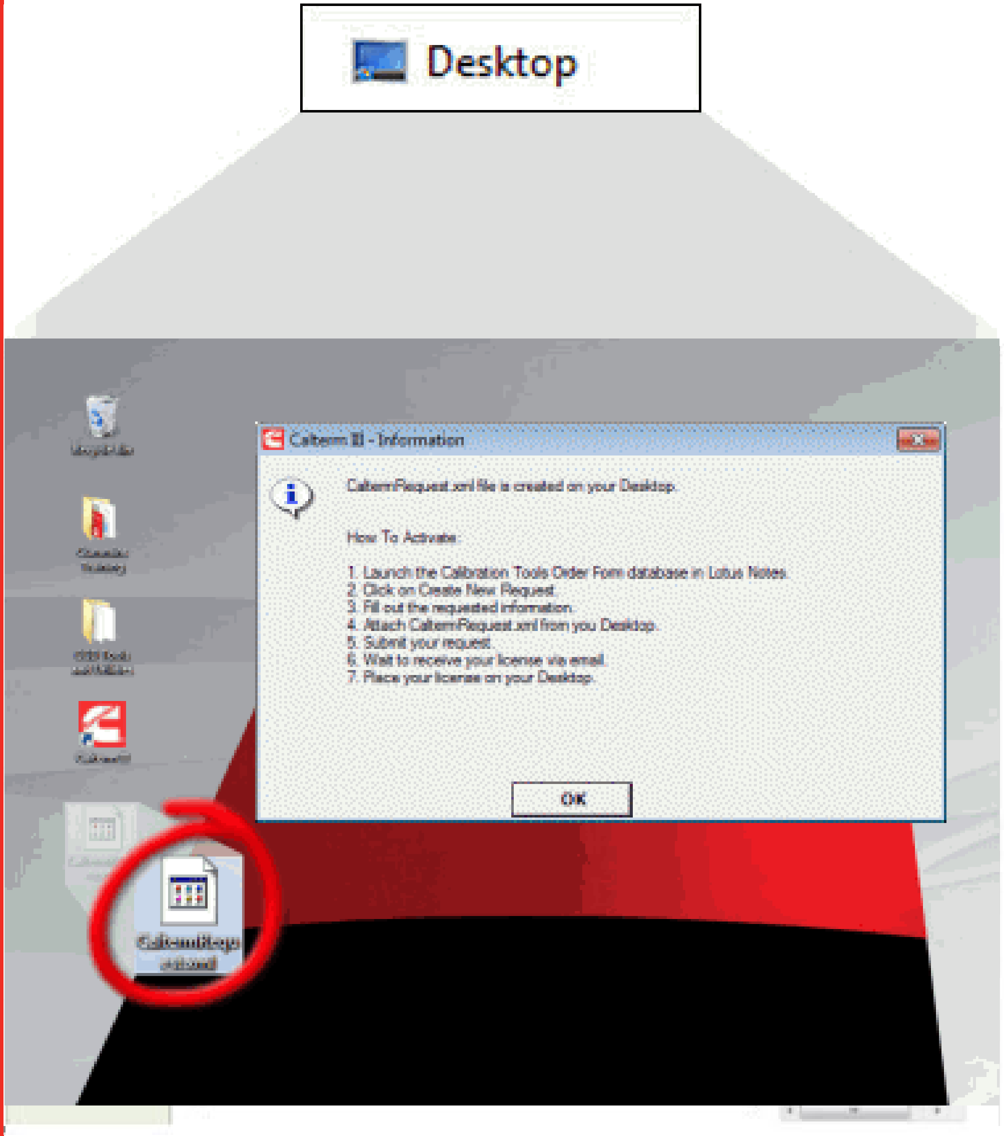
- To renew your Calterm III license repeat steps two and three

Calterm III installation files and installation instructions are located on Calterm Engineering Wiki webpage.

http://www.ctg.cummins.com:8005/display/Calterm/Calterm

Tool Installation and Registration

1. Install or Upgrade Calterm III



CaltermRequest.xml file is created on your Desktop.

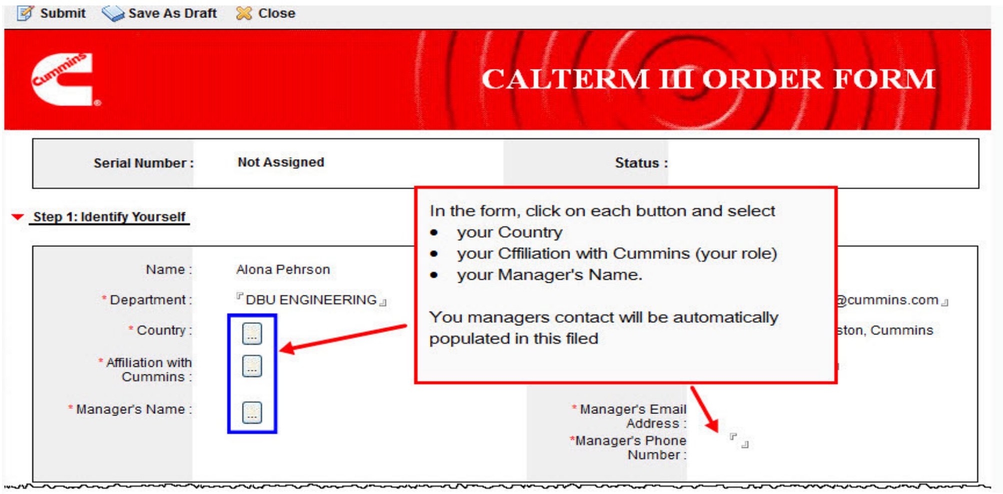
How To Activate:

1. Launch the Calibration Tools Order Form database in Lotus Notes.
2. Click on Create New Request.
3. Fill out the requested information.
4. Attach CaltermRequest.xml from you Desktop.
5. Submit your request.
6. Wait to receive your license via email.
7. Place your license on your Desktop.

- Request Calterm III software from the Software Shelf ("Calterm v3.4.0 or above“) **only for the first installation**
- Wait until Calterm III link appears on your Desktop
- Download and install latest installation file form Calterm III Website
- Create CaltermRequest.xml file by running Calterm III program

Tool Installation and Registration

2. Submit Calterm III Request and Get Approval



Serial Number : Not Assigned

Status :

Step 1: Identify Yourself

Name : Alona Pehrson

* Department : DBU ENGINEERING

* Country :

* Affiliation with Cummins :

* Manager's Name :

@cummins.com

ston, Cummins

* Manager's Email Address :

*Manager's Phone Number :

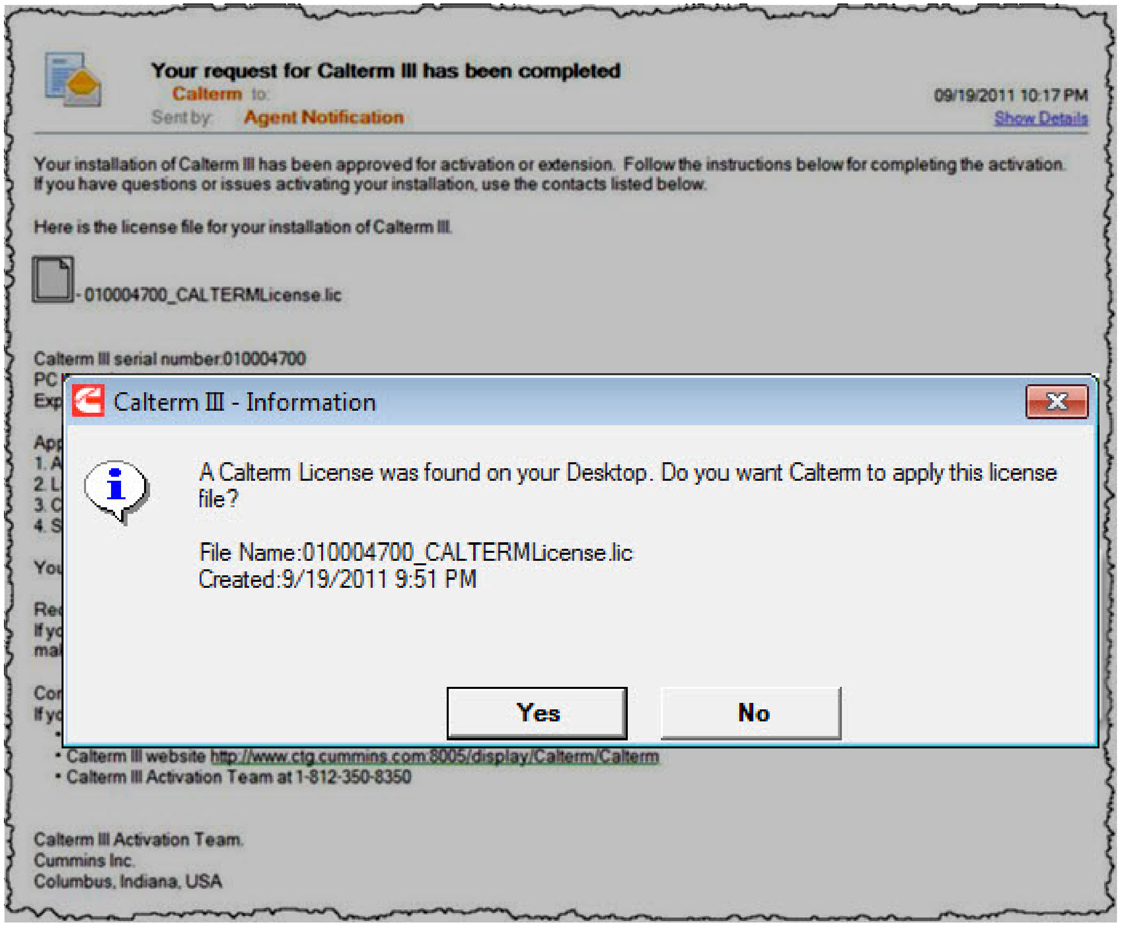
In the form, click on each button and select
- your Country
- your Cffiliation with Cummins (your role)
- your Manager's Name.

You managers contact will be automatically populated in this filed

- Follow the link to Notes Order Form for PowerSweep3 database
- Fill out Calterm III Order Form
  - Make sure to select Field Engineering and <u>ALL</u> “Selectable Features”
  - Attach CaltermRequest.xml file and Submit Form for approval

Tool Installation and Registration

3. Complete Tool Activation



Your request for Calterm III has been completed
Calterm to:
Sent by: Agent Notification
09/19/2011 10:17 PM
Show Details

Your installation of Calterm III has been approved for activation or extension. Follow the instructions below for completing the activation. If you have questions or issues activating your installation, use the contacts listed below.

Here is the license file for your installation of Calterm III.

- 010004700_CALTERMLicense.lic

Calterm III serial number:010004700

Calterm III - Information

A Calterm License was found on your Desktop. Do you want Calterm to apply this license file?

File Name:010004700_CALTERMLicense.lic
Created:9/19/2011 9:51 PM

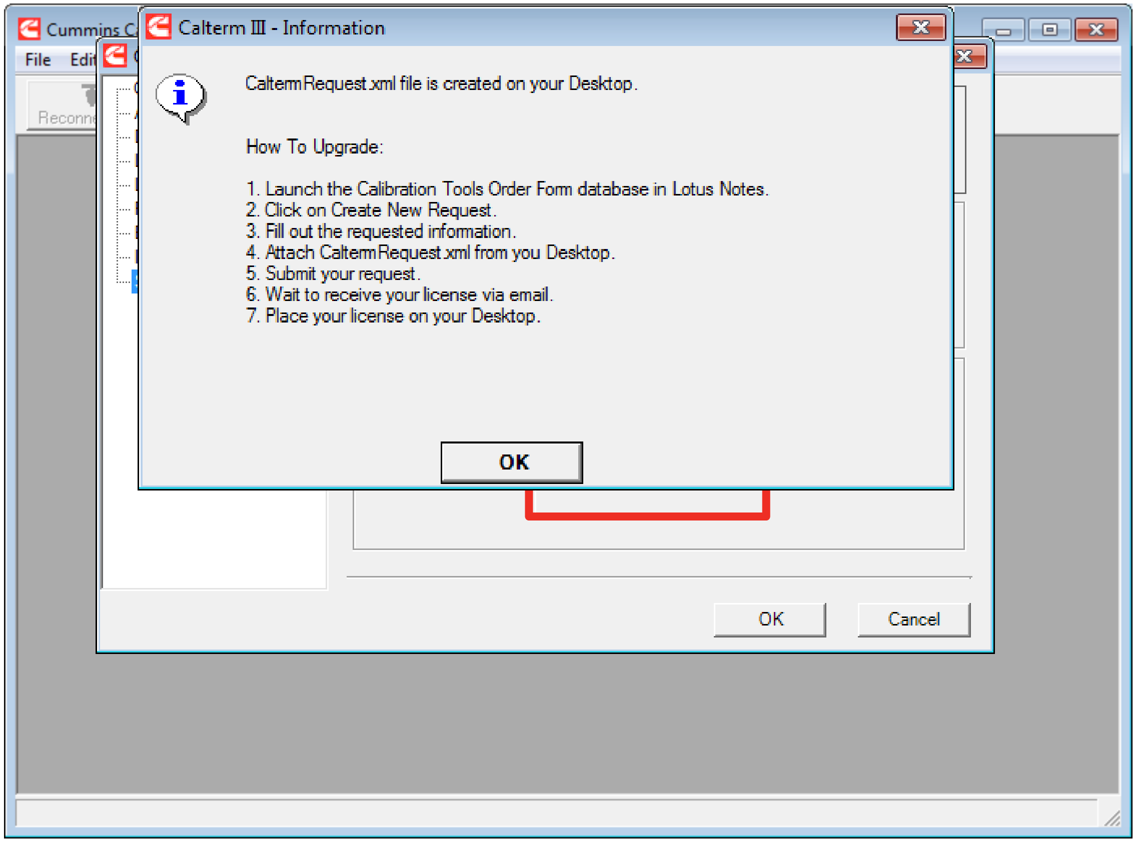
- Calterm III website http://www.ctg.cummins.com:8005/display/Calterm/Calterm
- Calterm III Activation Team at 1-812-350-8350

Calterm III Activation Team.
Cummins Inc.
Columbus, Indiana, USA

- Upon full approval, a license will automatically be generated and e-mailed to you
- Follow the directions in the license e-mail
- Apply the Calterm III license to complete the installation

Tool Installation and Registration

4. Renew license annually



CaltermRequest.xml file is created on your Desktop.

How To Upgrade:

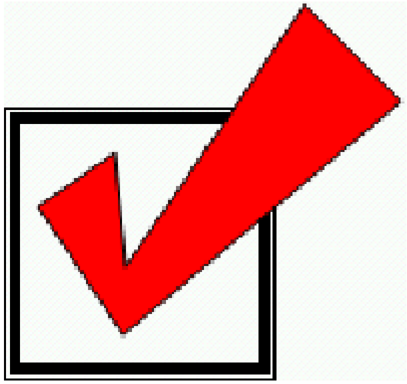
1. Launch the Calibration Tools Order Form database in Lotus Notes.
2. Click on Create New Request.
3. Fill out the requested information.
4. Attach CaltermRequest.xml from you Desktop.
5. Submit your request.
6. Wait to receive your license via email.
7. Place your license on your Desktop.

- To prepare for license renewal Select Tools-> Options from the main menu
- Under Security Options click “Create Calterm Request file”
- New CaltermRequest.xml will be created on your Desktop
- Fill out a <u>NEW</u> Order Form and complete approval process as described in steps 2 and 3

Tool Installation and Registration - Summary

When installing and registering your Calterm III tool, remember to:

- Request the software from the Software Shelf on initial installation
- Fill out a new Calterm III Order Form properly to ensure it goes through approval process quickly
- Start the renewal process few weeks before your license expires
- Upgrade to the latest version of Calterm III to take advantage of new features and bug fixes



- Tool Installation and Registration
- **Connecting to an Engine**
- Monitoring and Logging
- Changing Calibrations and Overrides

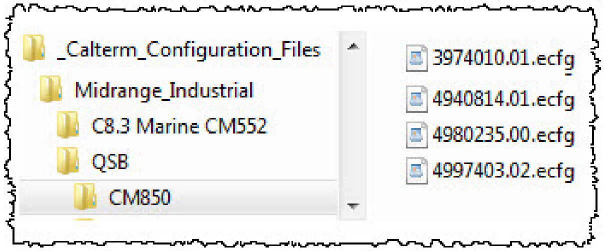
Things You Need

- Laptop with Calterm III installed and activated

- Datalink Adaptor and device driver

- Datalink Adaptor Wiring Harness

- ECM Configuration File

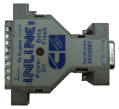


_Calterm_Configuration_Files
Midrange_Industrial
C8.3 Marine CM552
QSB
CM850

3974010.01.ecfg
4940814.01.ecfg
4980235.00.ecfg
4997403.02.ecfg

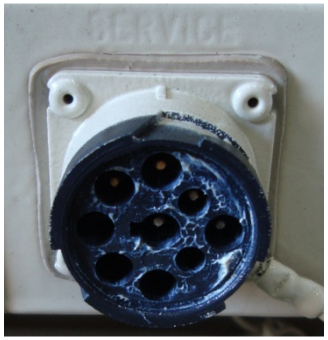
Datalink Adapter

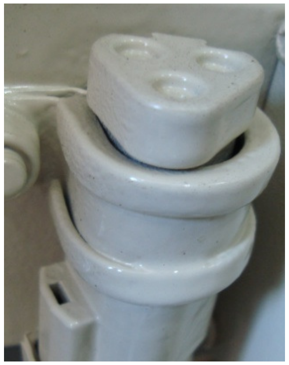
- Datalink adapter is a device that allows communication between a laptop computer and an ECM over engine datalink
- There are several types of datalink adapters available
- Install device drivers for all adapters you plan to use

Adapter	PC Interface	Datalink Type
Inline 6	Serial/USB	J1939/J1708
PEAK	USB	J1939
Inline 5	Serial/USB	J1939/J1708
USB-Link™	USB/Bluetooth	J1939/J1708
Inline 2	Serial	J1939/J1708
Inline 1 	Serial	J1587

Datalink Adaptor Wiring Harness

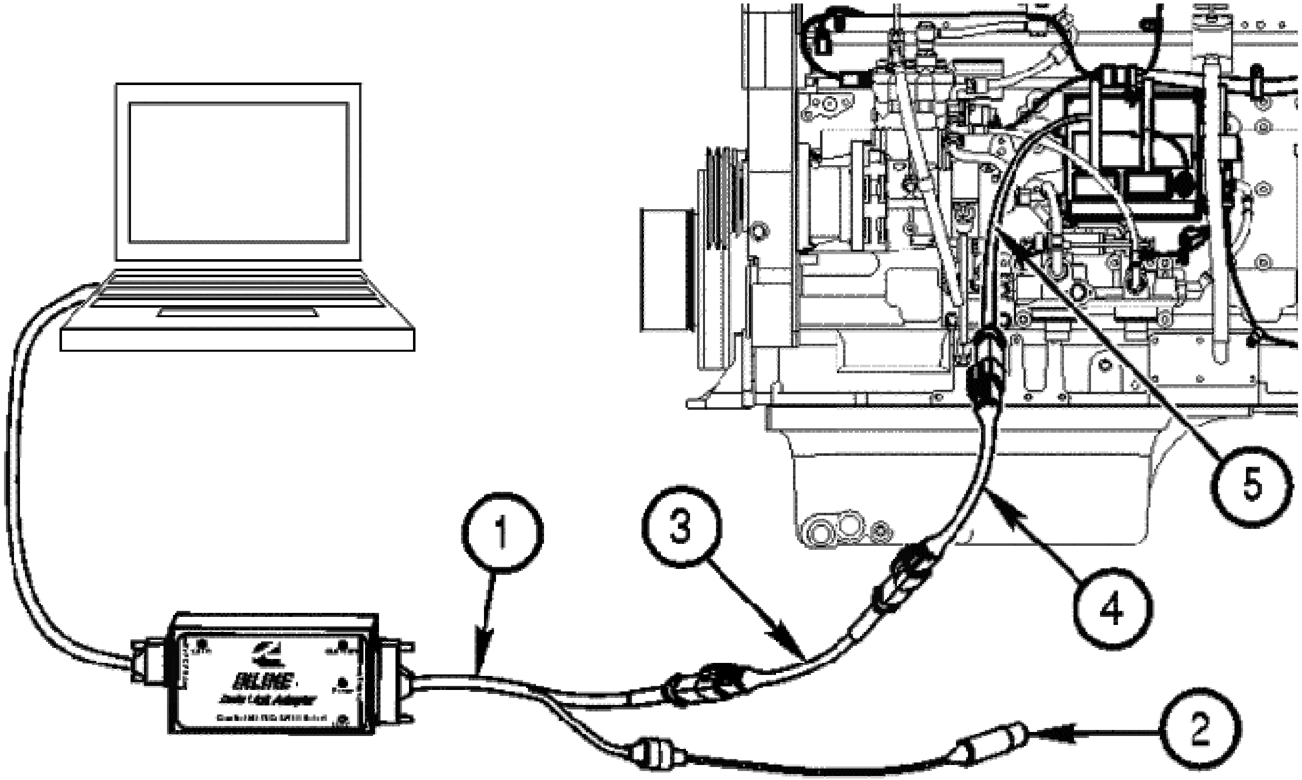
- Using INLINE adapter and cables, connect to the 6-pin or 9-pin Deutsch service connector (if available) or
- Connect to a 3 pin public J1939 connector using mini backbone and adapter harness (can be purchased separately)
- To connect to a standalone ECM , use bench calibration harness with a power supply





Engine Connection Example

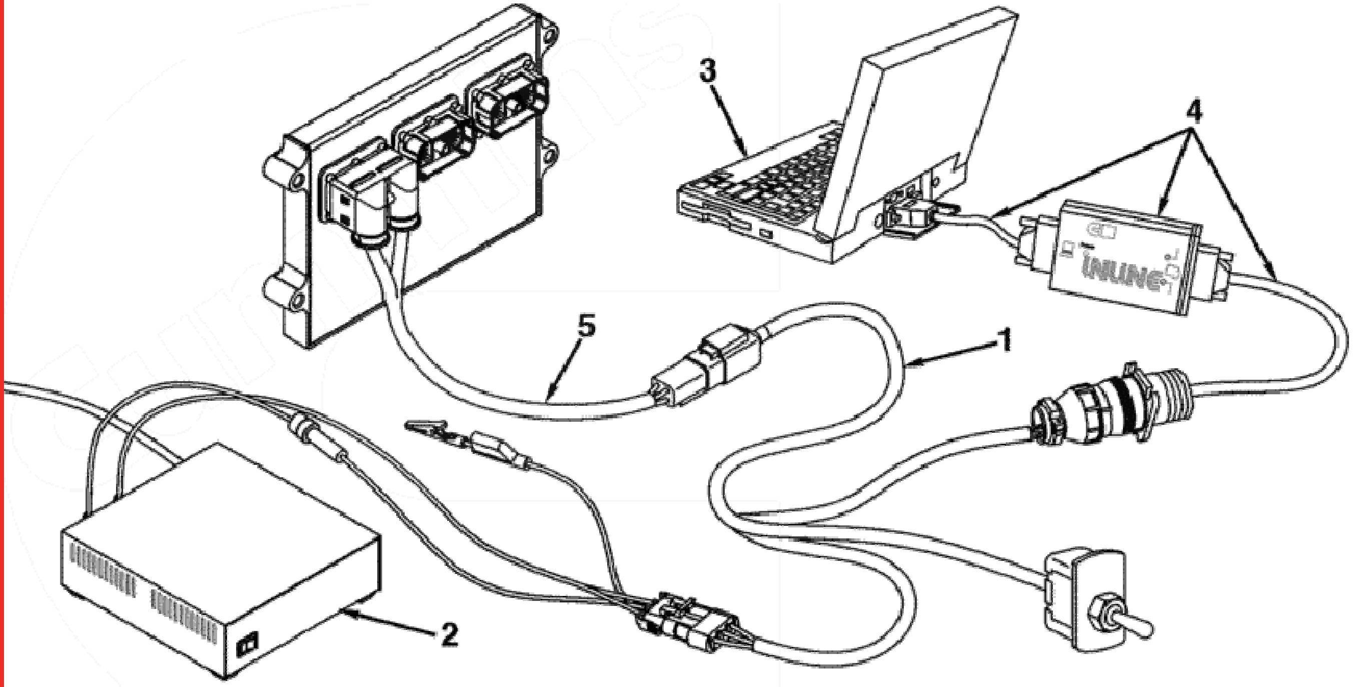
- List of 3-pin Deutsch adapter harness part numbers are available on QuickServe™ Online



1. Datalink adapter cable
2. Power supply
3. Gender changer cable
4. Mini-backbone
5. Engine harness 3-pin connector

Bench Top Connection Example

- List of bench top harness part numbers are available on the Incal DVD or in the service Bulletin 3377791 on QuickServe™ Online



1. Bench calibration base harness
2. Power supply
3. Laptop
4. Data link adapter and cables
5. ECM adapter harness

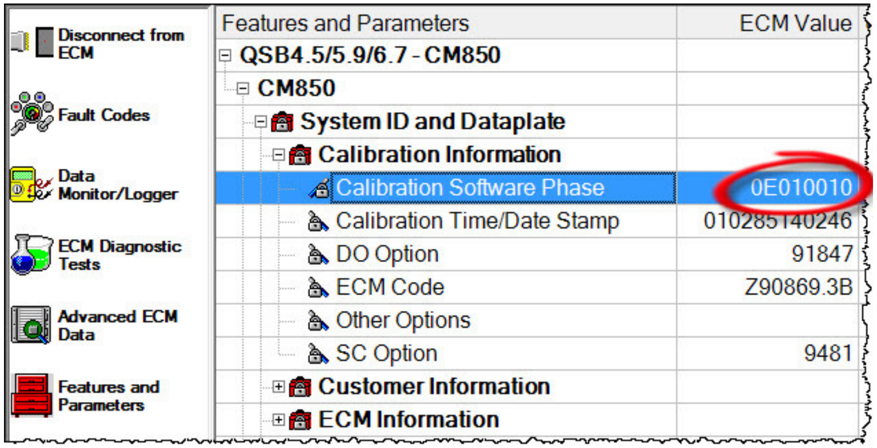
Software Configuration File

- Software configuration file is a text file that defines engine parameters, their scaling and location inside the ECM memory
- There are two types of software configuration files:
  - .e2m (Core 1 products e.g EPA 2004 and below), and
  - .ecfg (Core 2 products e.g Above EPA 2007)
- Each version of software has a unique configuration file
- The version of configuration file **<u>MUST</u>** match software version in the ECM
- When in doubt obtain configuration file from batch file download process or download from the below location.
  - fngroup_ctc(\\CIDCSDFS01\EBU_Data01$\NACTGx)\Service_CT_Config_Calterm_Configuration_Files

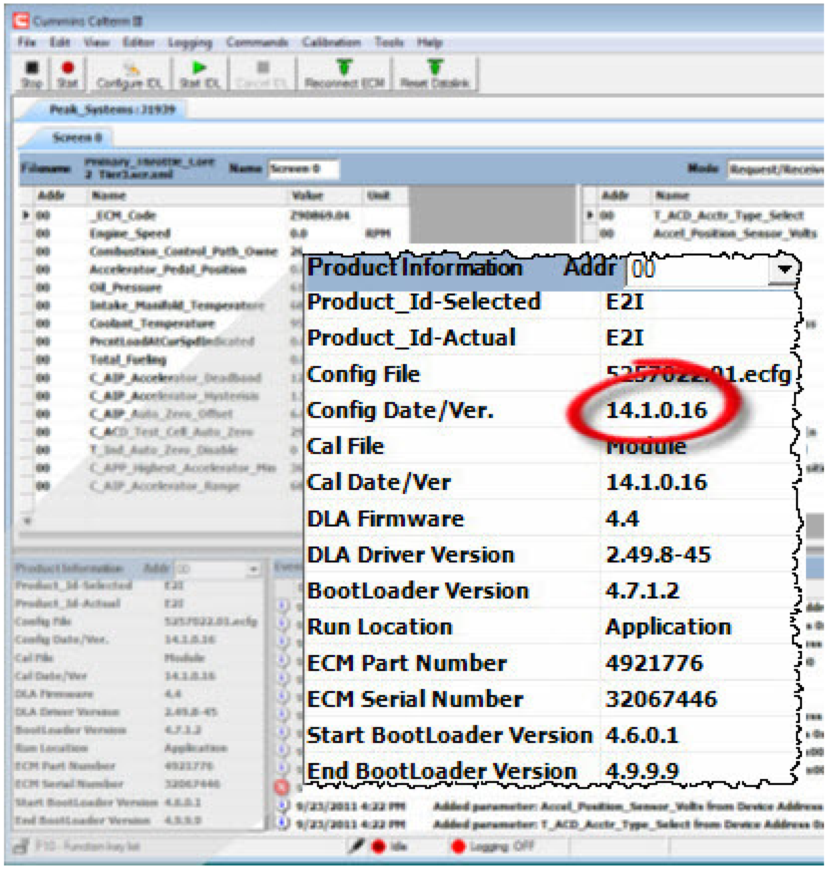
Software Configuration File

There are two ways to find the version of Software Configuration File inside the ECM

- Use the calibration software phase found in Insite™, system ID and ECM data plate (**hexadecimal notation**), or
- Pick what you think is the correct file and verify once you are connected (**decimal notation**)



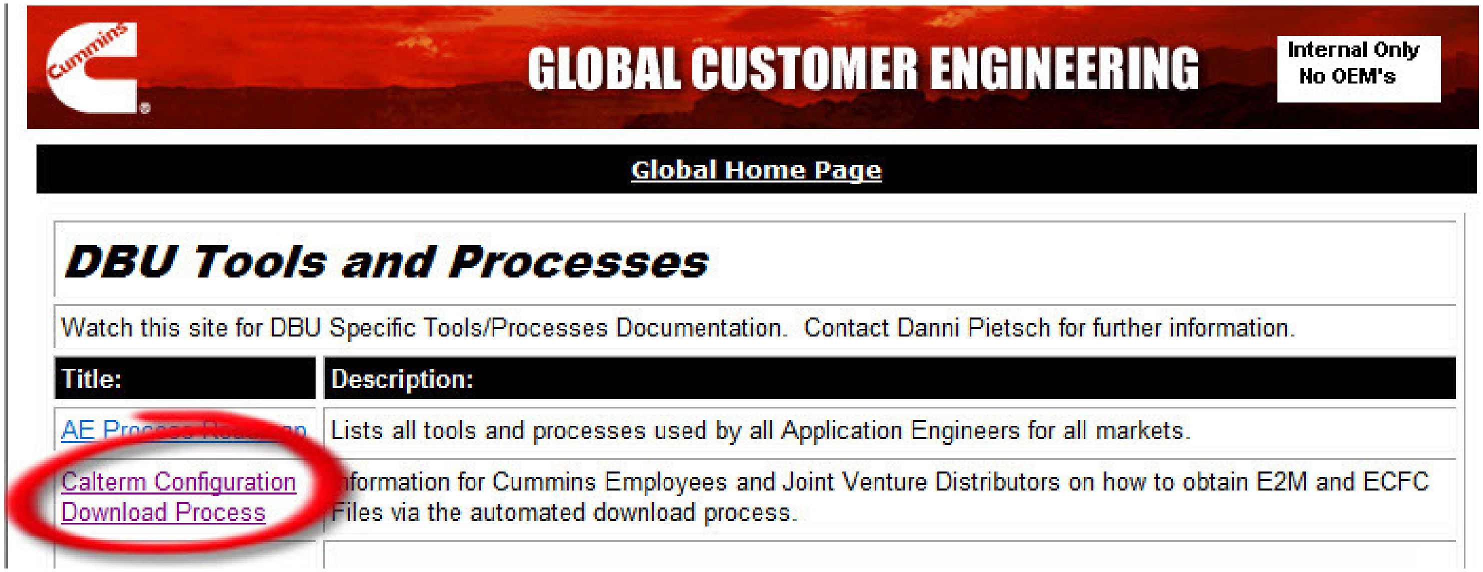
Features and Parameters	ECM Value
QSB4.5/5.9/6.7 - CM850	
CM850	
System ID and Dataplate	
Calibration Information	
Calibration Software Phase	0E010010
Calibration Time/Date Stamp	010285140246
DO Option	91847
ECM Code	Z90869.3B
Other Options	
SC Option	9481
Customer Information	
ECM Information	



Product Information	Addr 00
Product_Id-Selected	E2I
Product_Id-Actual	E2I
Config File	5257022.01.ecfg
Config Date/Ver.	14.1.0.16
Cal File	Module
Cal Date/Ver	14.1.0.16
DLA Firmware	4.4
DLA Driver Version	2.49.8-45
BootLoader Version	4.7.1.2
Run Location	Application
ECM Part Number	4921776
ECM Serial Number	32067446
Start BootLoader Version	4.6.0.1
End BootLoader Version	4.9.9.9

Software Configuration File

- Software configuration files may be obtained through the batch file download process
- Along with software configuration files for different engine platforms the download contains cross reference between software phase and configuration file part number
- For more information on how to request access and use the tool go to GCE DBU website

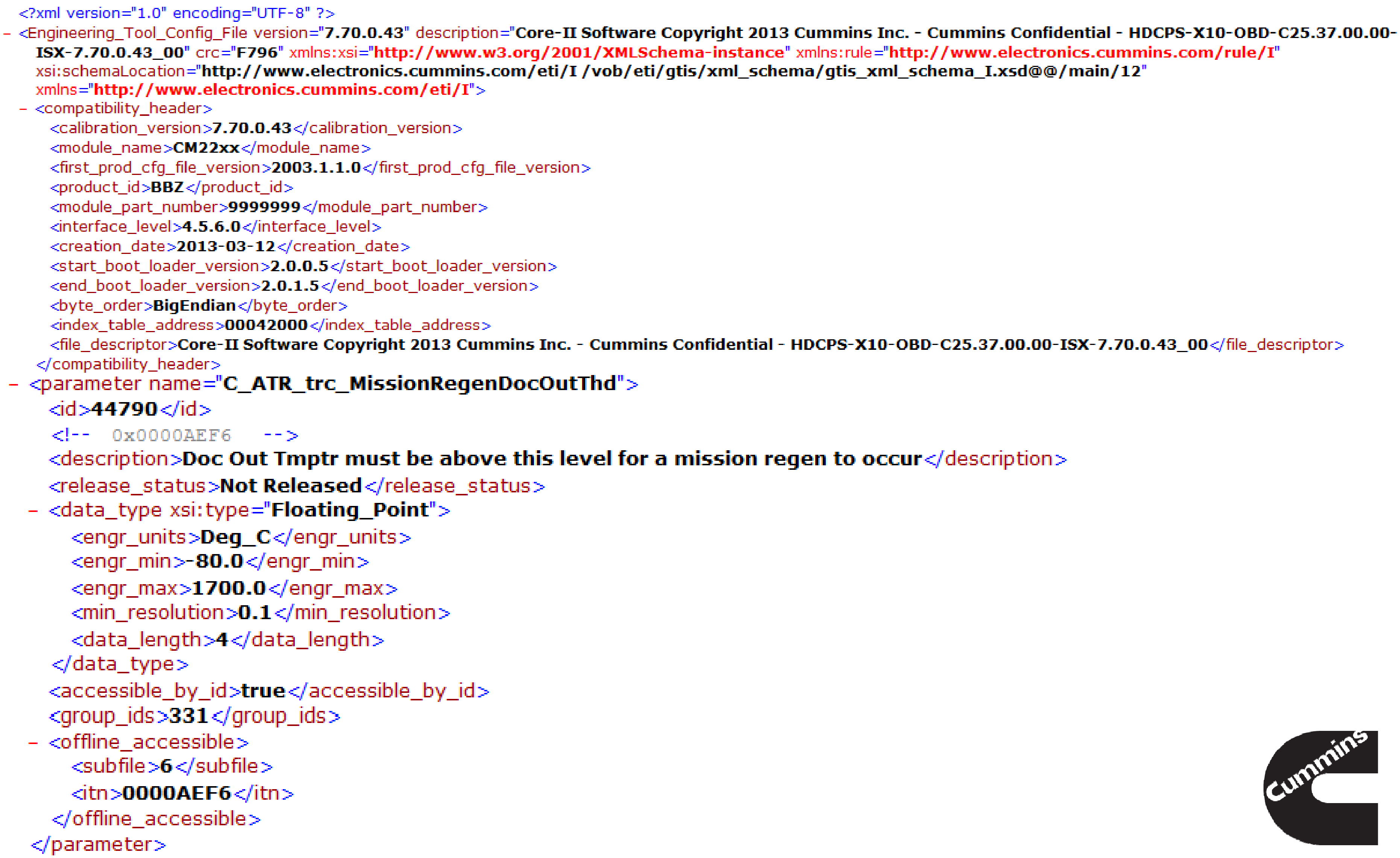


DBU Tools and Processes

Watch this site for DBU Specific Tools/Processes Documentation. Contact Danni Pietsch for further information.

Title:	Description:
AE Process Roadmap	Lists all tools and processes used by all Application Engineers for all markets.
Calterm Configuration Download Process	Information for Cummins Employees and Joint Venture Distributors on how to obtain E2M and ECFC Files via the automated download process.

Peak into a Configuration file

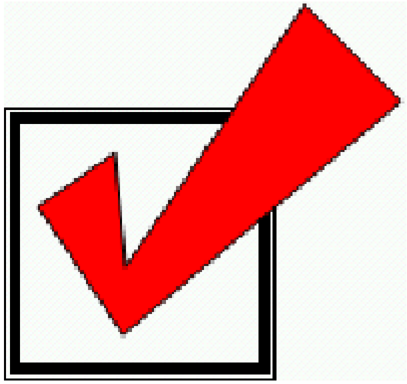


```
  <?xml version="1.0" encoding="UTF-8" ?>
- <Engineering_Tool_Config_File version="7.70.0.43" description="Core-II Software Copyright 2013 Cummins Inc. - Cummins Confidential - HDCPS-X10-OBD-C25.37.00.00-
    ISX-7.70.0.43_00" crc="F796" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:rule="http://www.electronics.cummins.com/rule/I"
    xsi:schemaLocation="http://www.electronics.cummins.com/eti/I /vob/eti/gtis/xml_schema/gtis_xml_schema_I.xsd@@/main/12"
    xmlns="http://www.electronics.cummins.com/eti/I">
  - <compatibility_header>
      <calibration_version>7.70.0.43</calibration_version>
      <module_name>CM22xx</module_name>
      <first_prod_cfg_file_version>2003.1.1.0</first_prod_cfg_file_version>
      <product_id>BBZ</product_id>
      <module_part_number>9999999</module_part_number>
      <interface_level>4.5.6.0</interface_level>
      <creation_date>2013-03-12</creation_date>
      <start_boot_loader_version>2.0.0.5</start_boot_loader_version>
      <end_boot_loader_version>2.0.1.5</end_boot_loader_version>
      <byte_order>BigEndian</byte_order>
      <index_table_address>00042000</index_table_address>
      <file_descriptor>Core-II Software Copyright 2013 Cummins Inc. - Cummins Confidential - HDCPS-X10-OBD-C25.37.00.00-ISX-7.70.0.43_00</file_descriptor>
    </compatibility_header>
- <parameter name="C_ATR_trc_MissionRegenDocOutThd">
    <id>44790</id>
    <!--  0x0000AEF6   -->
    <description>Doc Out Tmptr must be above this level for a mission regen to occur</description>
    <release_status>Not Released</release_status>
  - <data_type xsi:type="Floating_Point">
      <engr_units>Deg_C</engr_units>
      <engr_min>-80.0</engr_min>
      <engr_max>1700.0</engr_max>
      <min_resolution>0.1</min_resolution>
      <data_length>4</data_length>
    </data_type>
    <accessible_by_id>true</accessible_by_id>
    <group_ids>331</group_ids>
  - <offline_accessible>
      <subfile>6</subfile>
      <itn>0000AEF6</itn>
    </offline_accessible>
  </parameter>
```

What You Need - Summary

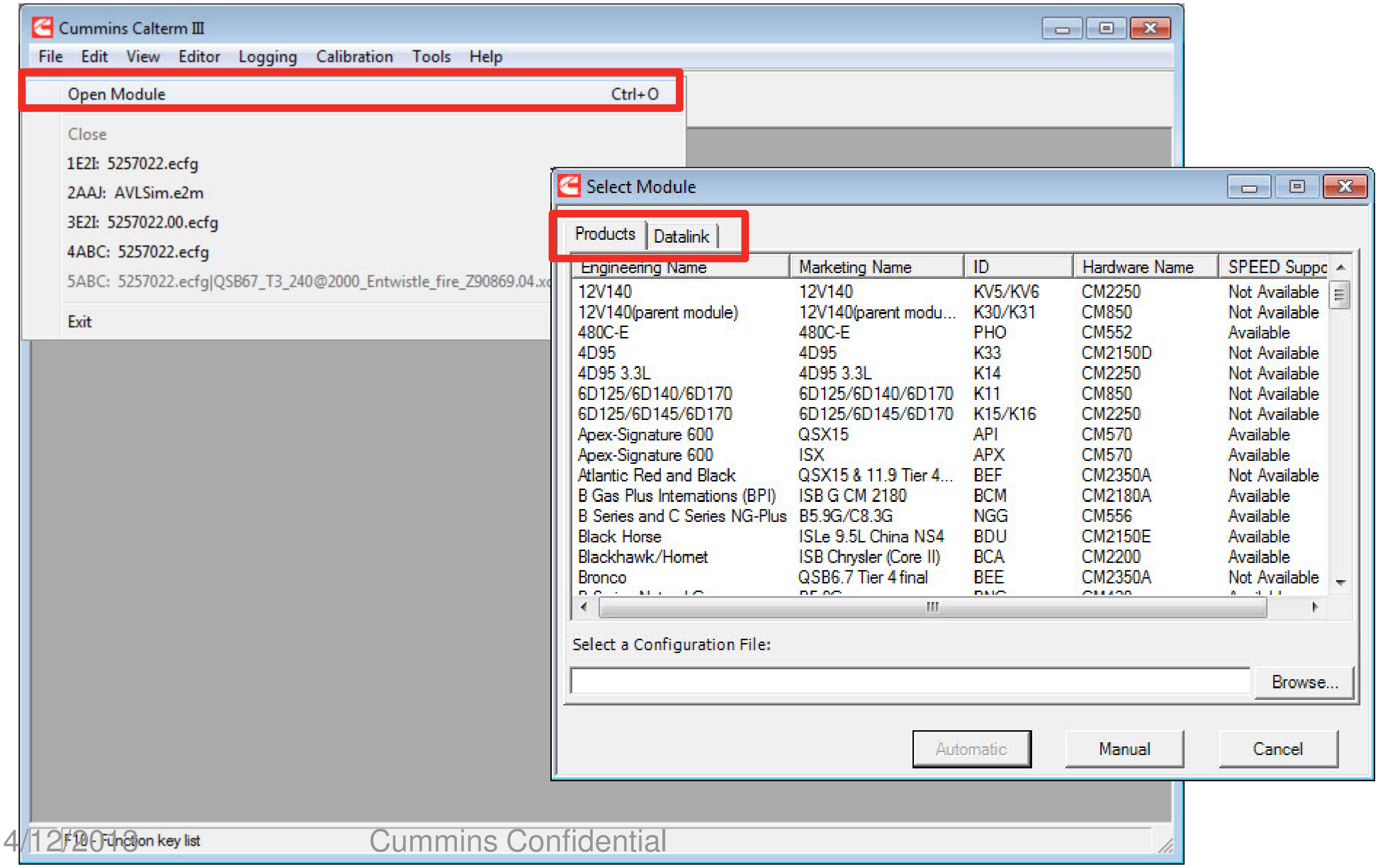
Before traveling to a customer site to perform testing or collect engine data, remember to:

- Check the version of your Calterm III is up to date and license did not expire
- Look for correct software configuration files for the engine you plan to work with
- Verify the device drivers are installed for your datalink adapter
  - Inline (http://inline.cummins.com/downloads/i5driver.html)
  - Peak (http://www.peak-system.com/Support.55.0.html?&L=1)
- Bring necessary wiring harness to make your connection



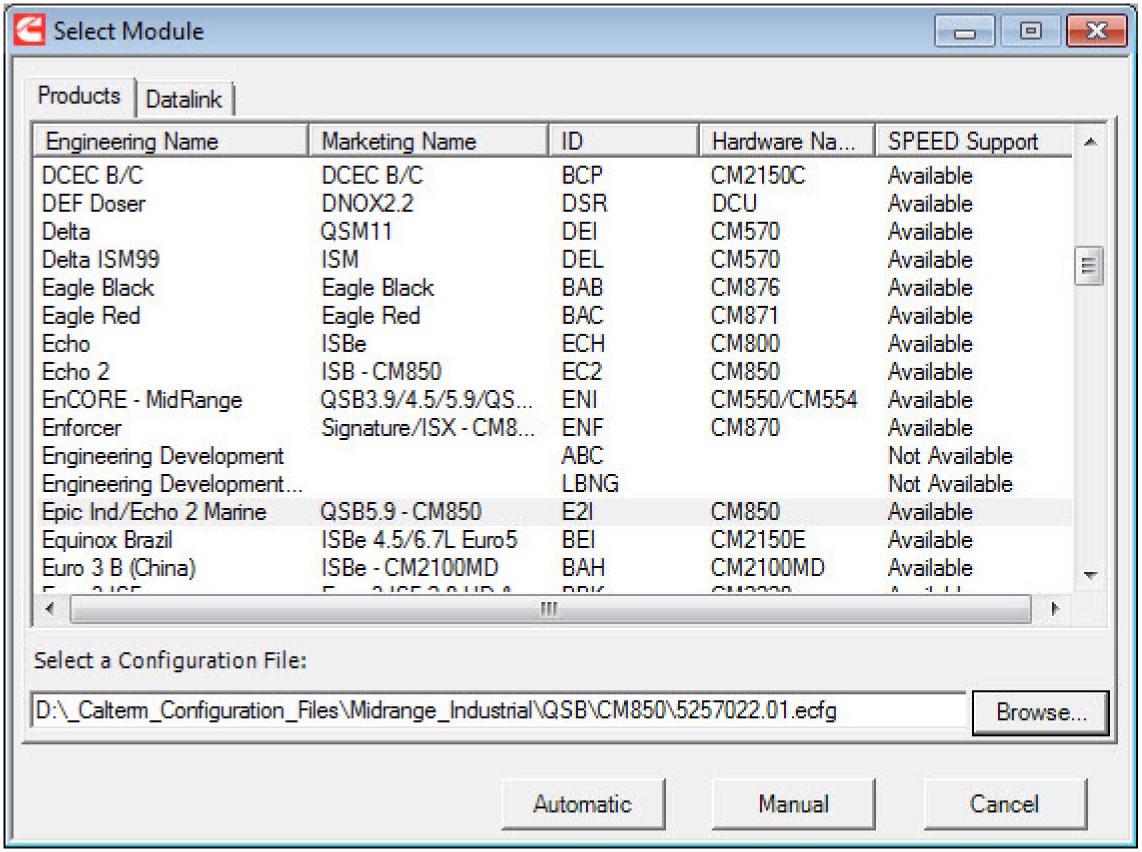
Starting a Connection

- To start a connection from the File Menu bar select Open Module
- Specify Product settings and Datalink settings in the Select Module window (default setting will have open this window on Calterm III start)



Engineering Name	Marketing Name	ID	Hardware Name	SPEED Suppo
12V140	12V140	KV5/KV6	CM2250	Not Available
12V140(parent module)	12V140(parent modu...	K30/K31	CM850	Not Available
480C-E	480C-E	PHO	CM552	Available
4D95	4D95	K33	CM2150D	Not Available
4D95 3.3L	4D95 3.3L	K14	CM2250	Not Available
6D125/6D140/6D170	6D125/6D140/6D170	K11	CM850	Not Available
6D125/6D145/6D170	6D125/6D145/6D170	K15/K16	CM2250	Not Available
Apex-Signature 600	QSX15	API	CM570	Available
Apex-Signature 600	ISX	APX	CM570	Available
Atlantic Red and Black	QSX15 & 11.9 Tier 4...	BEF	CM2350A	Not Available
B Gas Plus Internations (BPI)	ISB G CM 2180	BCM	CM2180A	Available
B Series and C Series NG-Plus	B5.9G/C8.3G	NGG	CM556	Available
Black Horse	ISLe 9.5L China NS4	BDU	CM2150E	Available
Blackhawk/Hornet	ISB Chrysler (Core II)	BCA	CM2200	Available
Bronco	QSB6.7 Tier 4 final	BEE	CM2350A	Not Available

Product Connection Settings



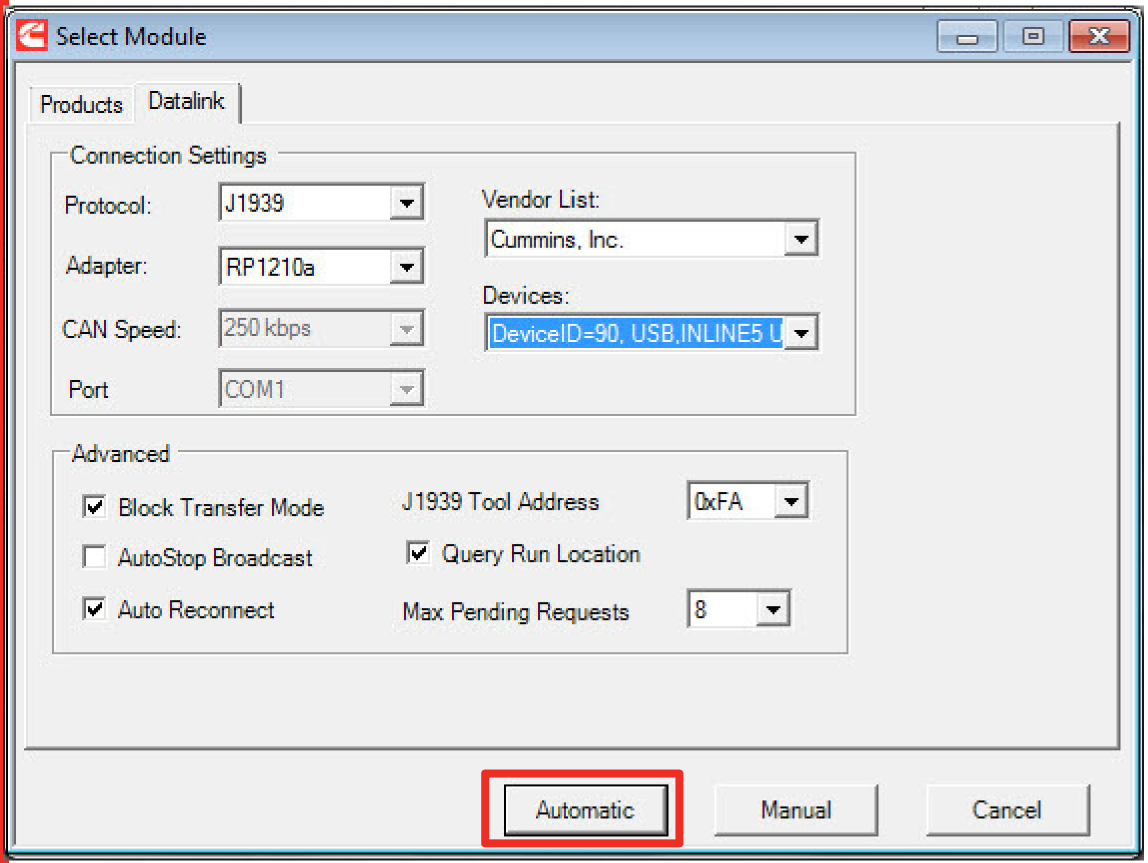
Engineering Name	Marketing Name	ID	Hardware Na...	SPEED Support
DCEC B/C	DCEC B/C	BCP	CM2150C	Available
DEF Doser	DNOX2.2	DSR	DCU	Available
Delta	QSM11	DEI	CM570	Available
Delta ISM99	ISM	DEL	CM570	Available
Eagle Black	Eagle Black	BAB	CM876	Available
Eagle Red	Eagle Red	BAC	CM871	Available
Echo	ISBe	ECH	CM800	Available
Echo 2	ISB - CM850	EC2	CM850	Available
EnCORE - MidRange	QSB3.9/4.5/5.9/QS...	ENI	CM550/CM554	Available
Enforcer	Signature/ISX - CM8...	ENF	CM870	Available
Engineering Development		ABC		Not Available
Engineering Development...		LBNG		Not Available
Epic Ind/Echo 2 Marine	QSB5.9 - CM850	E2I	CM850	Available
Equinox Brazil	ISBe 4.5/6.7L Euro5	BEI	CM2150E	Available
Euro 3 B (China)	ISBe - CM2100MD	BAH	CM2100MD	Available

Select a Configuration File:

D:_Calterm_Configuration_Files\Midrange_Industrial\QSB\CM850\5257022.01.ecfg

- On the Products tab Select the product you want to connect to. (The list can be sorted by any of the columns by clicking on the heading.)
- Browse and Choose the correct Configuration File
- Click Open
- Selected file path will appear

Datalink Connections Settings



Connection Settings

Protocol: J1939
Adapter: RP1210a
CAN Speed: 250 kbps
Port COM1
Vendor List: Cummins, Inc.
Devices: DeviceID=90, USB,INLINE5 U

Advanced

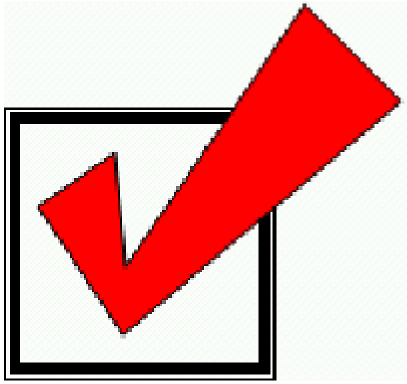
☑ Block Transfer Mode
☐ AutoStop Broadcast
☑ Auto Reconnect
J1939 Tool Address 0xFA
☑ Query Run Location
Max Pending Requests 8

- Click on the Datalink tab.
- Select your Datalink Adaptor
  - Inline 4/5/6: use RP1210a
  - Peak: use Peak_Systems
- Select which port on your PC the Adaptor is connected to in the Devices drop-down.
  - Serial: use COM
  - USB: USB
- Click on Automatic

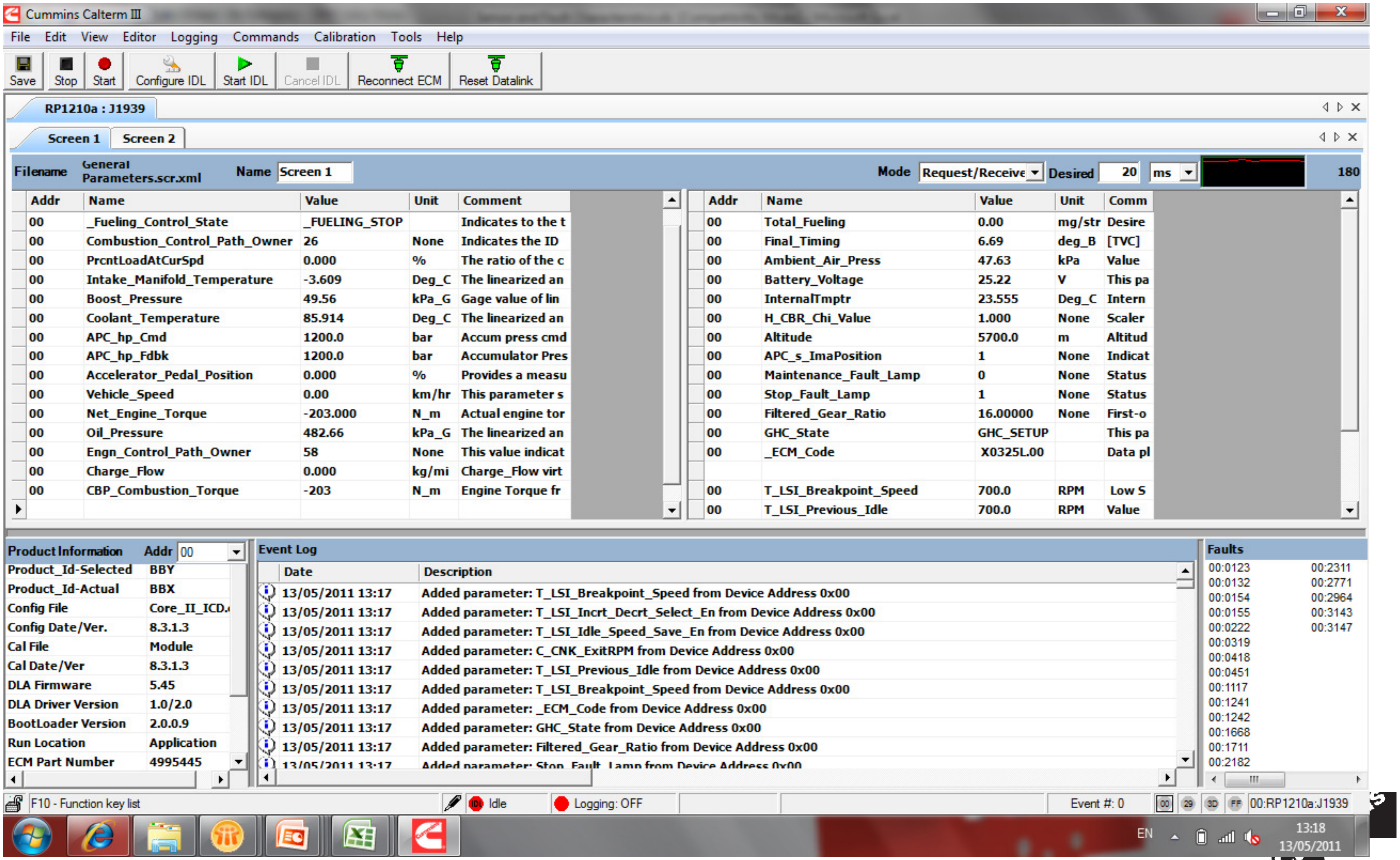
Configuring a Connection - Summary

When configuring engine connection, remember to:

- Specify the correct product type
- Select and verify software configuration file version matched software version in the ECM
- Select the datalink adapter you are using from the list
- Select the correct connection port



Calterm III Window



Filename: General Parameters.scr.xml
Name: Screen 1
Mode: Request/Receive
Desired: 20 ms
180

Addr	Name	Value	Unit	Comment
00	_Fueling_Control_State	_FUELING_STOP		Indicates to the t
00	Combustion_Control_Path_Owner	26	None	Indicates the ID
00	PrcntLoadAtCurSpd	0.000	%	The ratio of the c
00	Intake_Manifold_Temperature	-3.609	Deg_C	The linearized an
00	Boost_Pressure	49.56	kPa_G	Gage value of lin
00	Coolant_Temperature	85.914	Deg_C	The linearized an
00	APC_hp_Cmd	1200.0	bar	Accum press cmd
00	APC_hp_Fdbk	1200.0	bar	Accumulator Pres
00	Accelerator_Pedal_Position	0.000	%	Provides a measu
00	Vehicle_Speed	0.00	km/hr	This parameter s
00	Net_Engine_Torque	-203.000	N_m	Actual engine tor
00	Oil_Pressure	482.66	kPa_G	The linearized an
00	Engn_Control_Path_Owner	58	None	This value indicat
00	Charge_Flow	0.000	kg/mi	Charge_Flow virt
00	CBP_Combustion_Torque	-203	N_m	Engine Torque fr

Addr	Name	Value	Unit	Comm
00	Total_Fueling	0.00	mg/str	Desire
00	Final_Timing	6.69	deg_B	[TVC]
00	Ambient_Air_Press	47.63	kPa	Value
00	Battery_Voltage	25.22	V	This pa
00	InternalTmptr	23.555	Deg_C	Intern
00	H_CBR_Chi_Value	1.000	None	Scaler
00	Altitude	5700.0	m	Altitud
00	APC_s_ImaPosition	1	None	Indicat
00	Maintenance_Fault_Lamp	0	None	Status
00	Stop_Fault_Lamp	1	None	Status
00	Filtered_Gear_Ratio	16.00000	None	First-o
00	GHC_State	GHC_SETUP		This pa
00	_ECM_Code	X0325L.00		Data pl
00	T_LSI_Breakpoint_Speed	700.0	RPM	Low S
00	T_LSI_Previous_Idle	700.0	RPM	Value

Product Information Addr 00

Product_Id-Selected	BBY
Product_Id-Actual	BBX
Config File	Core_II_ICD
Config Date/Ver.	8.3.1.3
Cal File	Module
Cal Date/Ver	8.3.1.3
DLA Firmware	5.45
DLA Driver Version	1.0/2.0
BootLoader Version	2.0.0.9
Run Location	Application
ECM Part Number	4995445

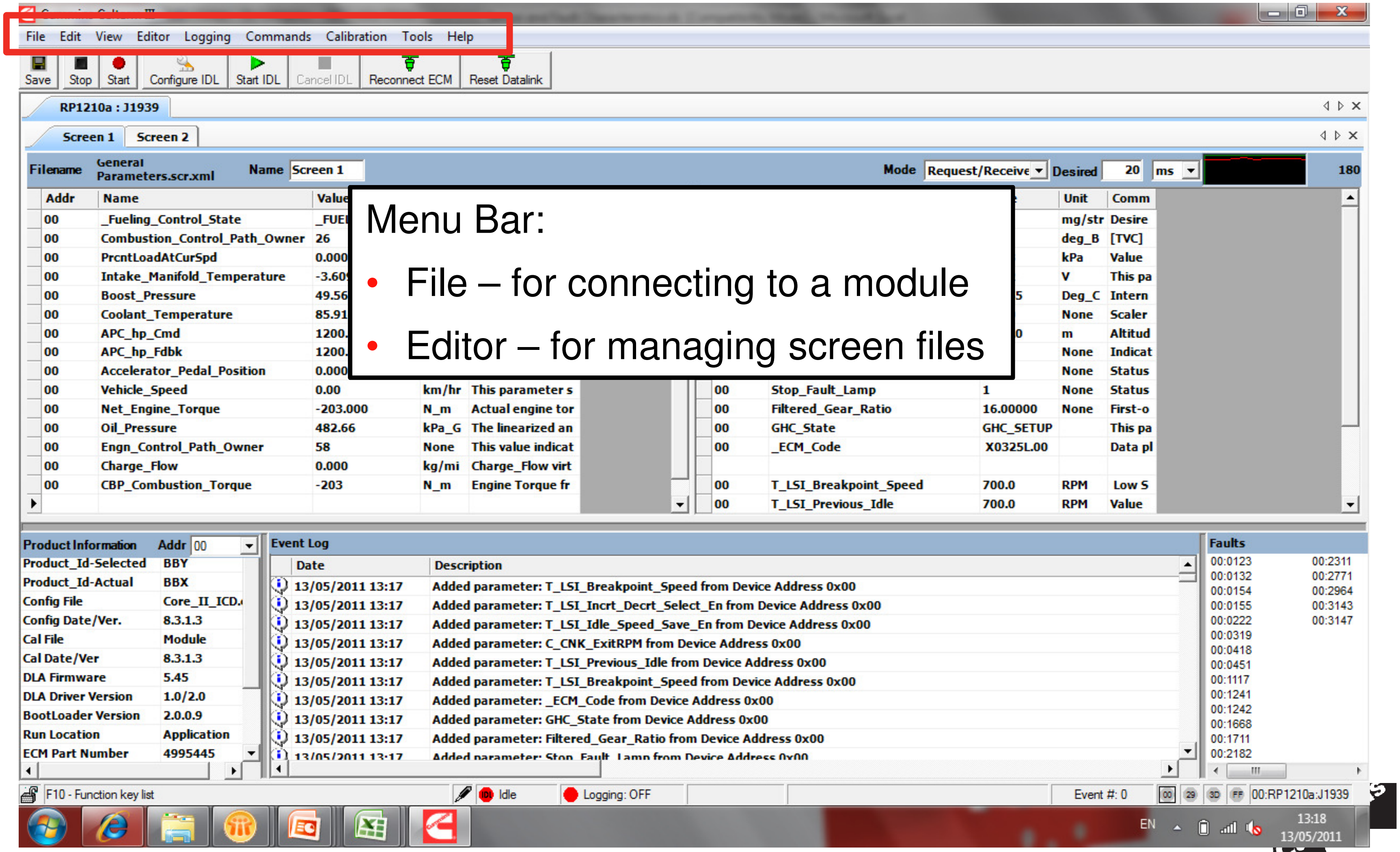
Event Log

Date	Description
13/05/2011 13:17	Added parameter: T_LSI_Breakpoint_Speed from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Incrt_Decrt_Select_En from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Idle_Speed_Save_En from Device Address 0x00
13/05/2011 13:17	Added parameter: C_CNK_ExitRPM from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Previous_Idle from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Breakpoint_Speed from Device Address 0x00
13/05/2011 13:17	Added parameter: _ECM_Code from Device Address 0x00
13/05/2011 13:17	Added parameter: GHC_State from Device Address 0x00
13/05/2011 13:17	Added parameter: Filtered_Gear_Ratio from Device Address 0x00
13/05/2011 13:17	Added parameter: Stop_Fault_Lamp from Device Address 0x00

Faults

00:0123
00:0132
00:0154
00:0155
00:0222
00:0319
00:0418
00:0451
00:1117
00:1241
00:1242
00:1668
00:1711
00:2182
00:2311
00:2771
00:2964
00:3143
00:3147

Calterm III Window – Menu Bar



Filename: General Parameters.scr.xml
Name: Screen 1
Mode: Request/Receive
Desired: 20 ms
180

Addr	Name	Value		
00	_Fueling_Control_State	_FUEL		
00	Combustion_Control_Path_Owner	26		
00	PrcntLoadAtCurSpd	0.000		
00	Intake_Manifold_Temperature	-3.60		
00	Boost_Pressure	49.56		
00	Coolant_Temperature	85.91		
00	APC_hp_Cmd	1200.		
00	APC_hp_Fdbk	1200.		
00	Accelerator_Pedal_Position	0.000		
00	Vehicle_Speed	0.00	km/hr	This parameter s
00	Net_Engine_Torque	-203.000	N_m	Actual engine tor
00	Oil_Pressure	482.66	kPa_G	The linearized an
00	Engn_Control_Path_Owner	58	None	This value indicat
00	Charge_Flow	0.000	kg/mi	Charge_Flow virt
00	CBP_Combustion_Torque	-203	N_m	Engine Torque fr

Addr	Name	Value	Unit	Comm
			mg/str	Desire
			deg_B	[TVC]
			kPa	Value
			V	This pa
		5	Deg_C	Intern
			None	Scaler
		0	m	Altitud
			None	Indicat
			None	Status
00	Stop_Fault_Lamp	1	None	Status
00	Filtered_Gear_Ratio	16.00000	None	First-o
00	GHC_State	GHC_SETUP		This pa
00	_ECM_Code	X0325L.00		Data pl
00	T_LSI_Breakpoint_Speed	700.0	RPM	Low S
00	T_LSI_Previous_Idle	700.0	RPM	Value

Menu Bar:

- File – for connecting to a module
- Editor – for managing screen files

Product Information	Addr 00
Product_Id-Selected	BBY
Product_Id-Actual	BBX
Config File	Core_II_ICD.
Config Date/Ver.	8.3.1.3
Cal File	Module
Cal Date/Ver	8.3.1.3
DLA Firmware	5.45
DLA Driver Version	1.0/2.0
BootLoader Version	2.0.0.9
Run Location	Application
ECM Part Number	4995445

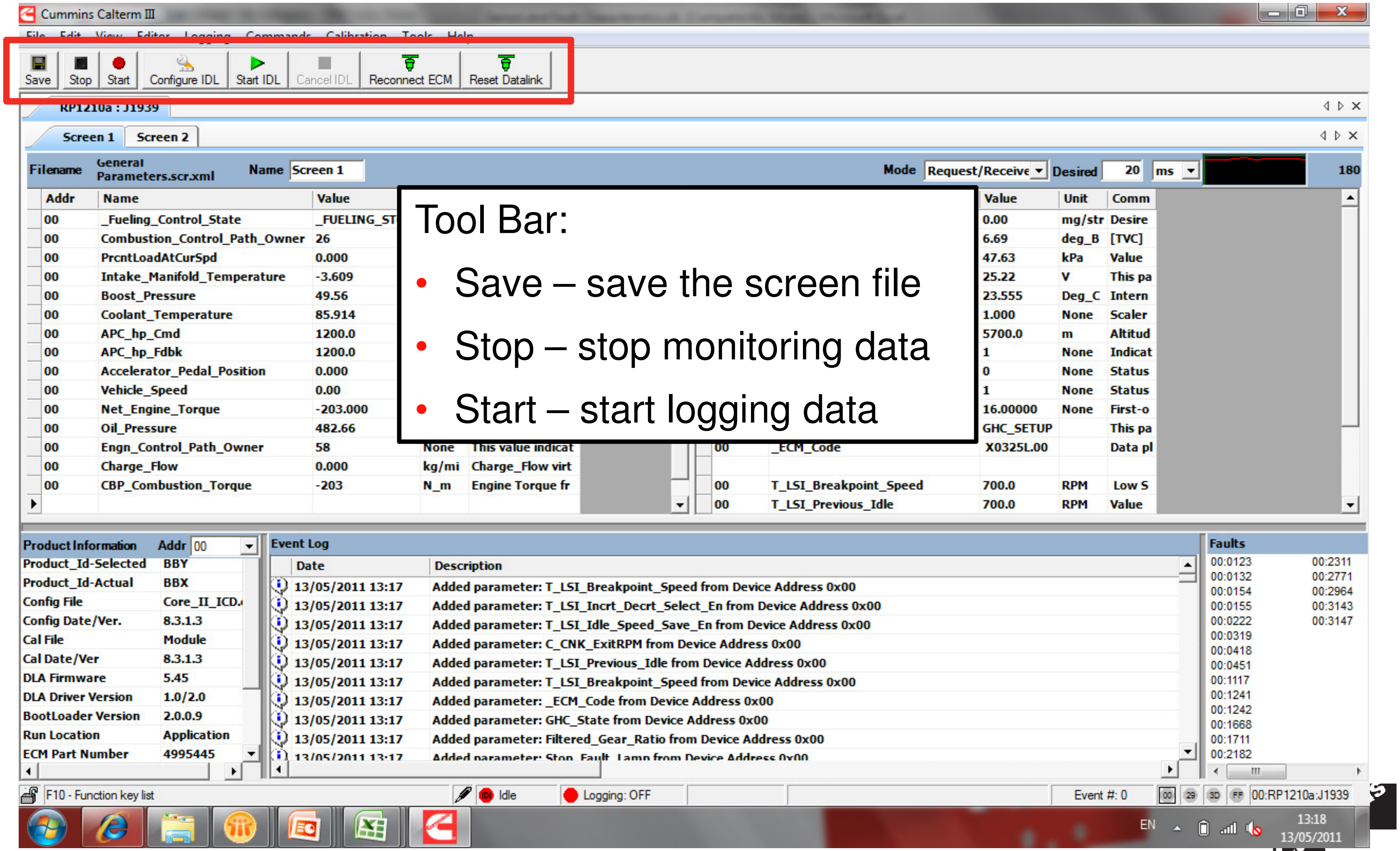
Event Log

Date	Description
13/05/2011 13:17	Added parameter: T_LSI_Breakpoint_Speed from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Incrt_Decrt_Select_En from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Idle_Speed_Save_En from Device Address 0x00
13/05/2011 13:17	Added parameter: C_CNK_ExitRPM from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Previous_Idle from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Breakpoint_Speed from Device Address 0x00
13/05/2011 13:17	Added parameter: _ECM_Code from Device Address 0x00
13/05/2011 13:17	Added parameter: GHC_State from Device Address 0x00
13/05/2011 13:17	Added parameter: Filtered_Gear_Ratio from Device Address 0x00
13/05/2011 13:17	Added parameter: Stop_Fault_Lamp from Device Address 0x00

Faults

00:0123
00:0132
00:0154
00:0155
00:0222
00:0319
00:0418
00:0451
00:1117
00:1241
00:1242
00:1668
00:1711
00:2182
00:2311
00:2771
00:2964
00:3143
00:3147

Calterm III Window – Tool Bar



Tool Bar:

- Save – save the screen file
- Stop – stop monitoring data
- Start – start logging data

Filename General Parameters.scr.xml Name Screen 1 Mode Request/Receive Desired 20 ms 180

Addr	Name	Value	Unit	Comm
00	_Fueling_Control_State	_FUELING_ST		
00	Combustion_Control_Path_Owner	26		
00	PrcntLoadAtCurSpd	0.000		
00	Intake_Manifold_Temperature	-3.609		
00	Boost_Pressure	49.56		
00	Coolant_Temperature	85.914		
00	APC_hp_Cmd	1200.0		
00	APC_hp_Fdbk	1200.0		
00	Accelerator_Pedal_Position	0.000		
00	Vehicle_Speed	0.00		
00	Net_Engine_Torque	-203.000		
00	Oil_Pressure	482.66		
00	Engn_Control_Path_Owner	58	None	This value indicat
00	Charge_Flow	0.000	kg/mi	Charge_Flow virt
00	CBP_Combustion_Torque	-203	N_m	Engine Torque fr

Addr	Name	Value	Unit	Comm
		0.00	mg/str	Desire
		6.69	deg_B	[TVC]
		47.63	kPa	Value
		25.22	V	This pa
		23.555	Deg_C	Intern
		1.000	None	Scaler
		5700.0	m	Altitud
		1	None	Indicat
		0	None	Status
		1	None	Status
		16.00000	None	First-o
		GHC_SETUP		This pa
00	_ECM_Code	X0325L.00		Data pl
00	T_LSI_Breakpoint_Speed	700.0	RPM	Low S
00	T_LSI_Previous_Idle	700.0	RPM	Value

Product Information	Addr 00
Product_Id-Selected	BBY
Product_Id-Actual	BBX
Config File	Core_II_ICD.
Config Date/Ver.	8.3.1.3
Cal File	Module
Cal Date/Ver	8.3.1.3
DLA Firmware	5.45
DLA Driver Version	1.0/2.0
BootLoader Version	2.0.0.9
Run Location	Application
ECM Part Number	4995445

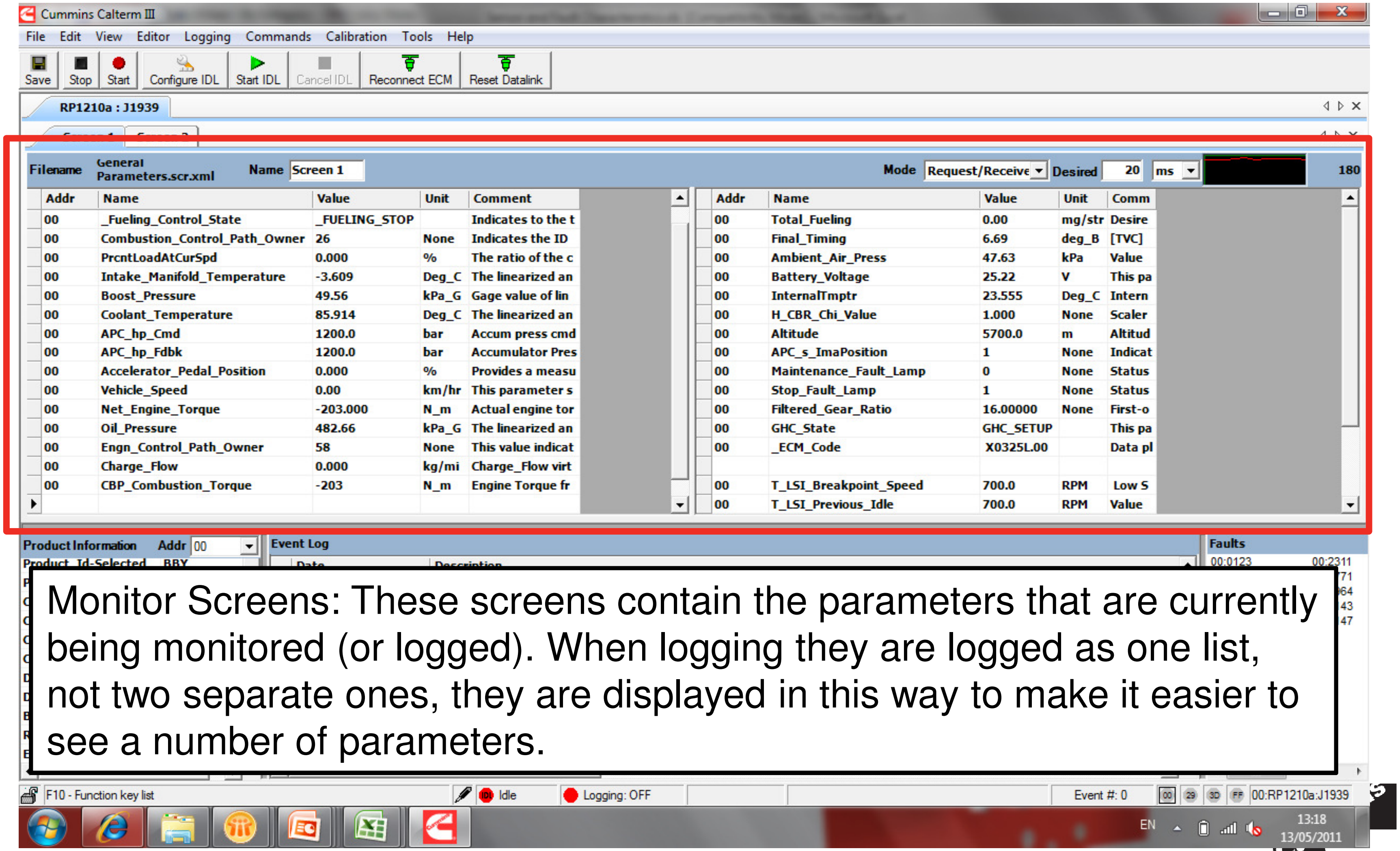
Event Log

Date	Description
13/05/2011 13:17	Added parameter: T_LSI_Breakpoint_Speed from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Incrt_Decrt_Select_En from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Idle_Speed_Save_En from Device Address 0x00
13/05/2011 13:17	Added parameter: C_CNK_ExitRPM from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Previous_Idle from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Breakpoint_Speed from Device Address 0x00
13/05/2011 13:17	Added parameter: _ECM_Code from Device Address 0x00
13/05/2011 13:17	Added parameter: GHC_State from Device Address 0x00
13/05/2011 13:17	Added parameter: Filtered_Gear_Ratio from Device Address 0x00
13/05/2011 13:17	Added parameter: Stop_Fault_Lamp from Device Address 0x00

Faults

00:0123	00:2311
00:0132	00:2771
00:0154	00:2964
00:0155	00:3143
00:0222	00:3147
00:0319	
00:0418	
00:0451	
00:1117	
00:1241	
00:1242	
00:1668	
00:1711	
00:2182	

Calterm III Window – Monitor Screen



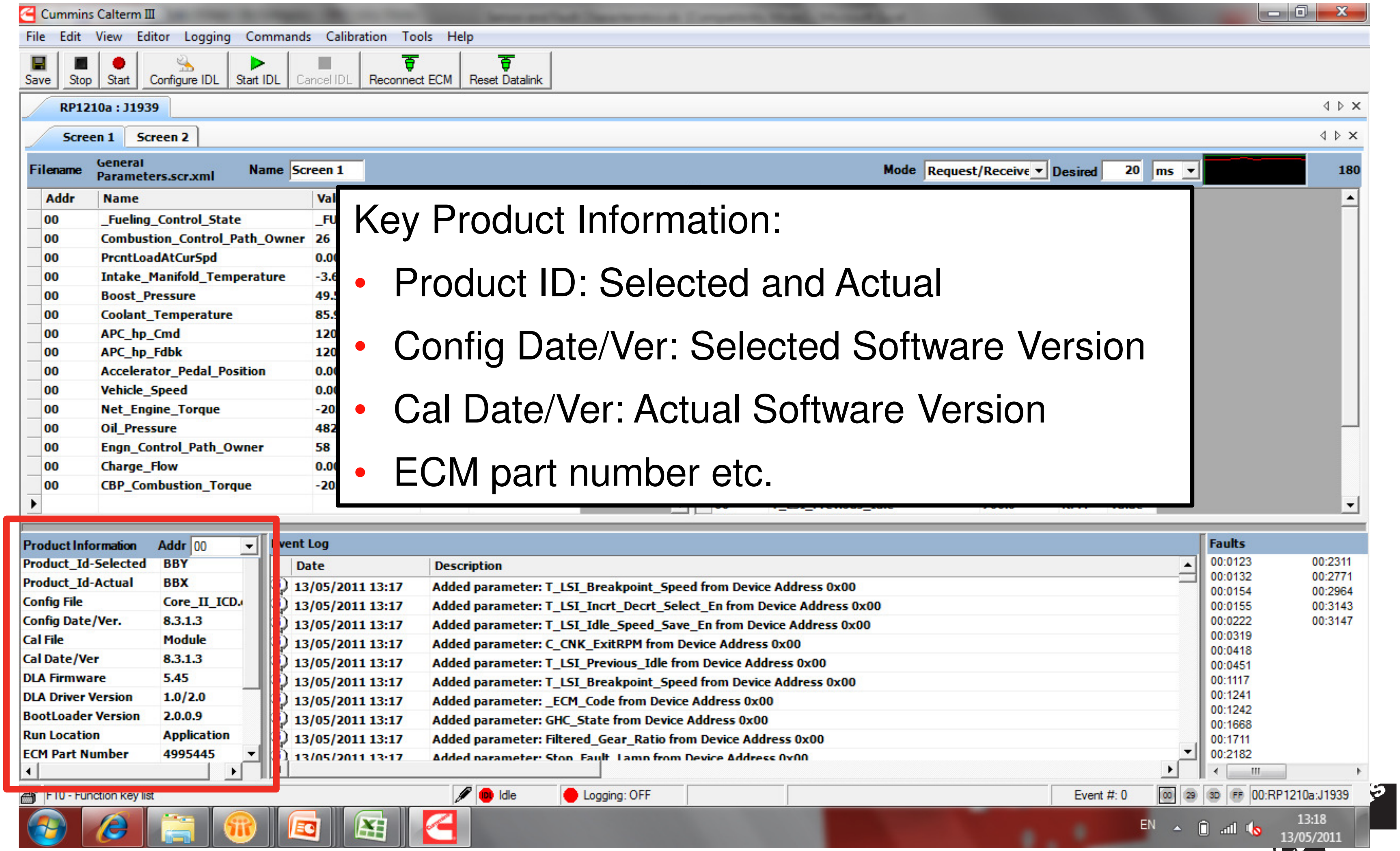
Filename: General Parameters.scr.xml
Name: Screen 1
Mode: Request/Receive
Desired: 20 ms
180

Addr	Name	Value	Unit	Comment
00	_Fueling_Control_State	_FUELING_STOP		Indicates to the t
00	Combustion_Control_Path_Owner	26	None	Indicates the ID
00	PrcntLoadAtCurSpd	0.000	%	The ratio of the c
00	Intake_Manifold_Temperature	-3.609	Deg_C	The linearized an
00	Boost_Pressure	49.56	kPa_G	Gage value of lin
00	Coolant_Temperature	85.914	Deg_C	The linearized an
00	APC_hp_Cmd	1200.0	bar	Accum press cmd
00	APC_hp_Fdbk	1200.0	bar	Accumulator Pres
00	Accelerator_Pedal_Position	0.000	%	Provides a measu
00	Vehicle_Speed	0.00	km/hr	This parameter s
00	Net_Engine_Torque	-203.000	N_m	Actual engine tor
00	Oil_Pressure	482.66	kPa_G	The linearized an
00	Engn_Control_Path_Owner	58	None	This value indicat
00	Charge_Flow	0.000	kg/mi	Charge_Flow virt
00	CBP_Combustion_Torque	-203	N_m	Engine Torque fr

Addr	Name	Value	Unit	Comm
00	Total_Fueling	0.00	mg/str	Desire
00	Final_Timing	6.69	deg_B	[TVC]
00	Ambient_Air_Press	47.63	kPa	Value
00	Battery_Voltage	25.22	V	This pa
00	InternalTmptr	23.555	Deg_C	Intern
00	H_CBR_Chi_Value	1.000	None	Scaler
00	Altitude	5700.0	m	Altitud
00	APC_s_ImaPosition	1	None	Indicat
00	Maintenance_Fault_Lamp	0	None	Status
00	Stop_Fault_Lamp	1	None	Status
00	Filtered_Gear_Ratio	16.00000	None	First-o
00	GHC_State	GHC_SETUP		This pa
00	_ECM_Code	X0325L.00		Data pl
00	T_LSI_Breakpoint_Speed	700.0	RPM	Low S
00	T_LSI_Previous_Idle	700.0	RPM	Value

Monitor Screens: These screens contain the parameters that are currently being monitored (or logged). When logging they are logged as one list, not two separate ones, they are displayed in this way to make it easier to see a number of parameters.

Calterm III Window – Product Information



Filename: General Parameters.scr.xml
Name: Screen 1
Mode: Request/Receive
Desired: 20 ms
180

Addr	Name	Val
00	_Fueling_Control_State	_FU
00	Combustion_Control_Path_Owner	26
00	PrcntLoadAtCurSpd	0.0
00	Intake_Manifold_Temperature	-3.6
00	Boost_Pressure	49.
00	Coolant_Temperature	85.
00	APC_hp_Cmd	120
00	APC_hp_Fdbk	120
00	Accelerator_Pedal_Position	0.0
00	Vehicle_Speed	0.0
00	Net_Engine_Torque	-20
00	Oil_Pressure	482
00	Engn_Control_Path_Owner	58
00	Charge_Flow	0.0
00	CBP_Combustion_Torque	-20

Key Product Information:

- Product ID: Selected and Actual
- Config Date/Ver: Selected Software Version
- Cal Date/Ver: Actual Software Version
- ECM part number etc.

Product Information	Addr 00
Product_Id-Selected	BBY
Product_Id-Actual	BBX
Config File	Core_II_ICD.
Config Date/Ver.	8.3.1.3
Cal File	Module
Cal Date/Ver	8.3.1.3
DLA Firmware	5.45
DLA Driver Version	1.0/2.0
BootLoader Version	2.0.0.9
Run Location	Application
ECM Part Number	4995445

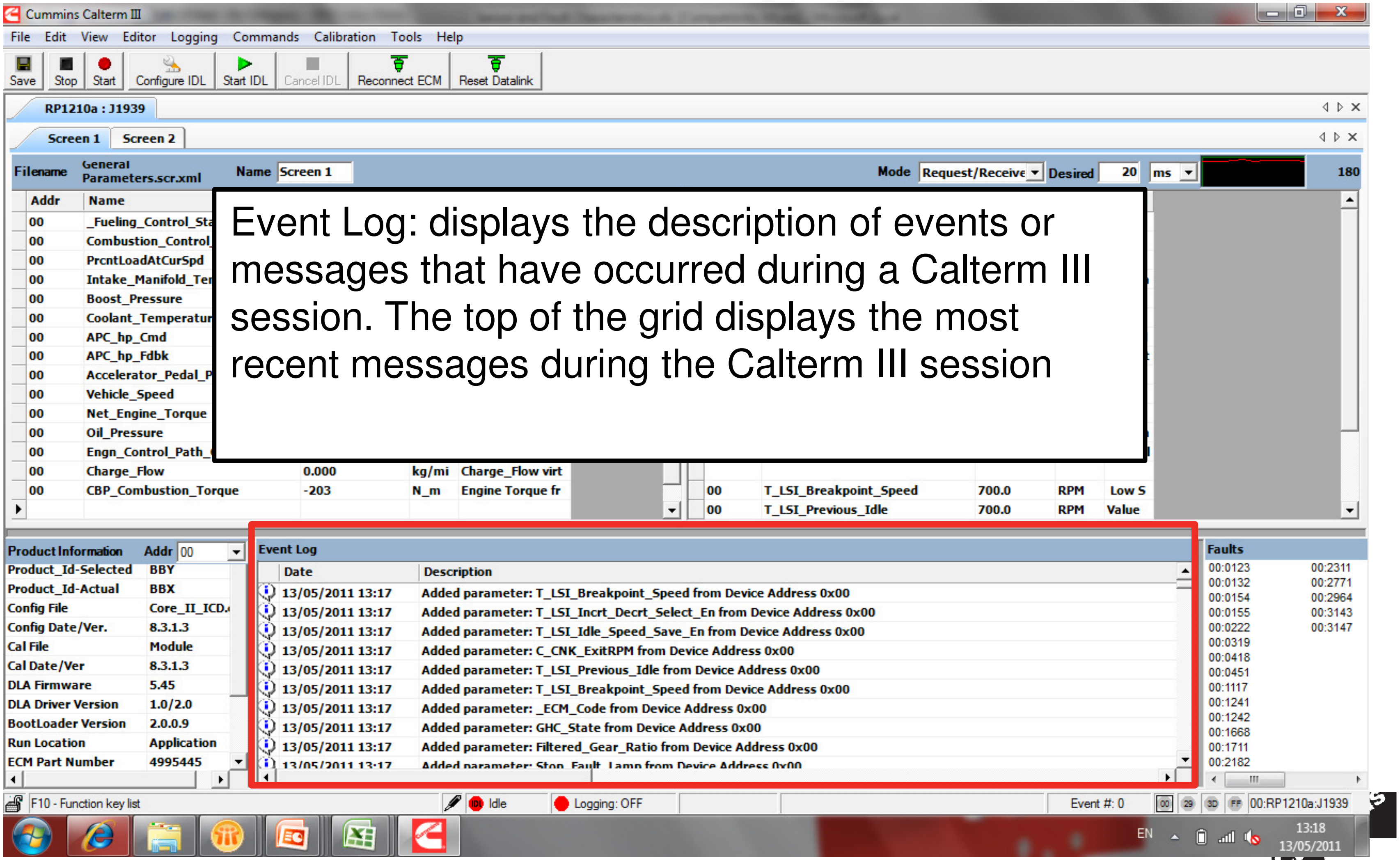
Event Log

Date	Description
13/05/2011 13:17	Added parameter: T_LSI_Breakpoint_Speed from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Incrt_Decrt_Select_En from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Idle_Speed_Save_En from Device Address 0x00
13/05/2011 13:17	Added parameter: C_CNK_ExitRPM from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Previous_Idle from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Breakpoint_Speed from Device Address 0x00
13/05/2011 13:17	Added parameter: _ECM_Code from Device Address 0x00
13/05/2011 13:17	Added parameter: GHC_State from Device Address 0x00
13/05/2011 13:17	Added parameter: Filtered_Gear_Ratio from Device Address 0x00
13/05/2011 13:17	Added parameter: Stop_Fault_Lamp from Device Address 0x00

Faults

00:0123	00:2311
00:0132	00:2771
00:0154	00:2964
00:0155	00:3143
00:0222	00:3147
00:0319	
00:0418	
00:0451	
00:1117	
00:1241	
00:1242	
00:1668	
00:1711	
00:2182	

Calterm III Window – Event Log



Event Log: displays the description of events or messages that have occurred during a Calterm III session. The top of the grid displays the most recent messages during the Calterm III session

Filename: General Parameters.scr.xml
Name: Screen 1
Mode: Request/Receive
Desired: 20 ms
180

Addr	Name			
00	_Fueling_Control_Sta			
00	Combustion_Control_			
00	PrcntLoadAtCurSpd			
00	Intake_Manifold_Ter			
00	Boost_Pressure			
00	Coolant_Temperatur			
00	APC_hp_Cmd			
00	APC_hp_Fdbk			
00	Accelerator_Pedal_P			
00	Vehicle_Speed			
00	Net_Engine_Torque			
00	Oil_Pressure			
00	Engn_Control_Path_			
00	Charge_Flow	0.000	kg/mi	Charge_Flow virt
00	CBP_Combustion_Torque	-203	N_m	Engine Torque fr

00	T_LSI_Breakpoint_Speed	700.0	RPM	Low S
00	T_LSI_Previous_Idle	700.0	RPM	Value

Product Information Addr 00

Product_Id-Selected	BBY
Product_Id-Actual	BBX
Config File	Core_II_ICD.
Config Date/Ver.	8.3.1.3
Cal File	Module
Cal Date/Ver	8.3.1.3
DLA Firmware	5.45
DLA Driver Version	1.0/2.0
BootLoader Version	2.0.0.9
Run Location	Application
ECM Part Number	4995445

Event Log

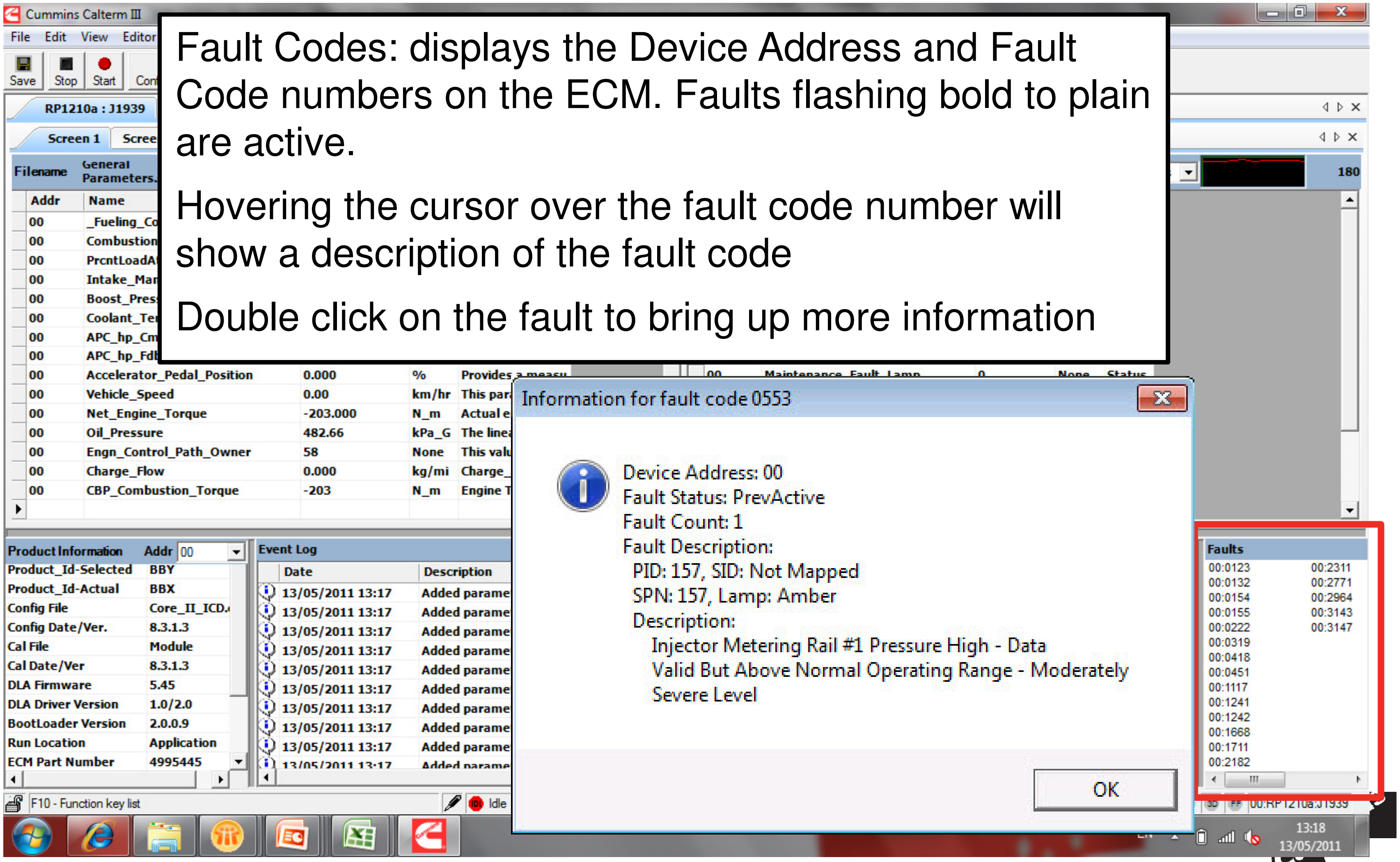
Date	Description
13/05/2011 13:17	Added parameter: T_LSI_Breakpoint_Speed from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Incrt_Decrt_Select_En from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Idle_Speed_Save_En from Device Address 0x00
13/05/2011 13:17	Added parameter: C_CNK_ExitRPM from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Previous_Idle from Device Address 0x00
13/05/2011 13:17	Added parameter: T_LSI_Breakpoint_Speed from Device Address 0x00
13/05/2011 13:17	Added parameter: _ECM_Code from Device Address 0x00
13/05/2011 13:17	Added parameter: GHC_State from Device Address 0x00
13/05/2011 13:17	Added parameter: Filtered_Gear_Ratio from Device Address 0x00
13/05/2011 13:17	Added parameter: Stop_Fault_Lamp from Device Address 0x00

Faults

00:0123	00:2311
00:0132	00:2771
00:0154	00:2964
00:0155	00:3143
00:0222	00:3147
00:0319	
00:0418	
00:0451	
00:1117	
00:1241	
00:1242	
00:1668	
00:1711	
00:2182	

F10 - Function key list
Idle
Logging: OFF
Event #: 0
00:RP1210a:J1939

Calterm III Window - Faults



Fault Codes: displays the Device Address and Fault Code numbers on the ECM. Faults flashing bold to plain are active.

Hovering the cursor over the fault code number will show a description of the fault code

Double click on the fault to bring up more information

Information for fault code 0553

Device Address: 00
Fault Status: PrevActive
Fault Count: 1
Fault Description:
PID: 157, SID: Not Mapped
SPN: 157, Lamp: Amber
Description:
Injector Metering Rail #1 Pressure High - Data Valid But Above Normal Operating Range - Moderately Severe Level

OK

Filename: General Parameters.

Addr	Name			
00	_Fueling_Co			
00	Combustion			
00	PrcntLoadAt			
00	Intake_Man			
00	Boost_Pres			
00	Coolant_Te			
00	APC_hp_Cm			
00	APC_hp_Fdb			
00	Accelerator_Pedal_Position	0.000	%	Provides a measu
00	Vehicle_Speed	0.00	km/hr	This para
00	Net_Engine_Torque	-203.000	N_m	Actual e
00	Oil_Pressure	482.66	kPa_G	The linea
00	Engn_Control_Path_Owner	58	None	This valu
00	Charge_Flow	0.000	kg/mi	Charge_
00	CBP_Combustion_Torque	-203	N_m	Engine T

00	Maintenance_Fault_Lamp	0	None	Status

Product Information — Addr: 00

Product_Id-Selected	BBY
Product_Id-Actual	BBX
Config File	Core_II_ICD.
Config Date/Ver.	8.3.1.3
Cal File	Module
Cal Date/Ver	8.3.1.3
DLA Firmware	5.45
DLA Driver Version	1.0/2.0
BootLoader Version	2.0.0.9
Run Location	Application
ECM Part Number	4995445

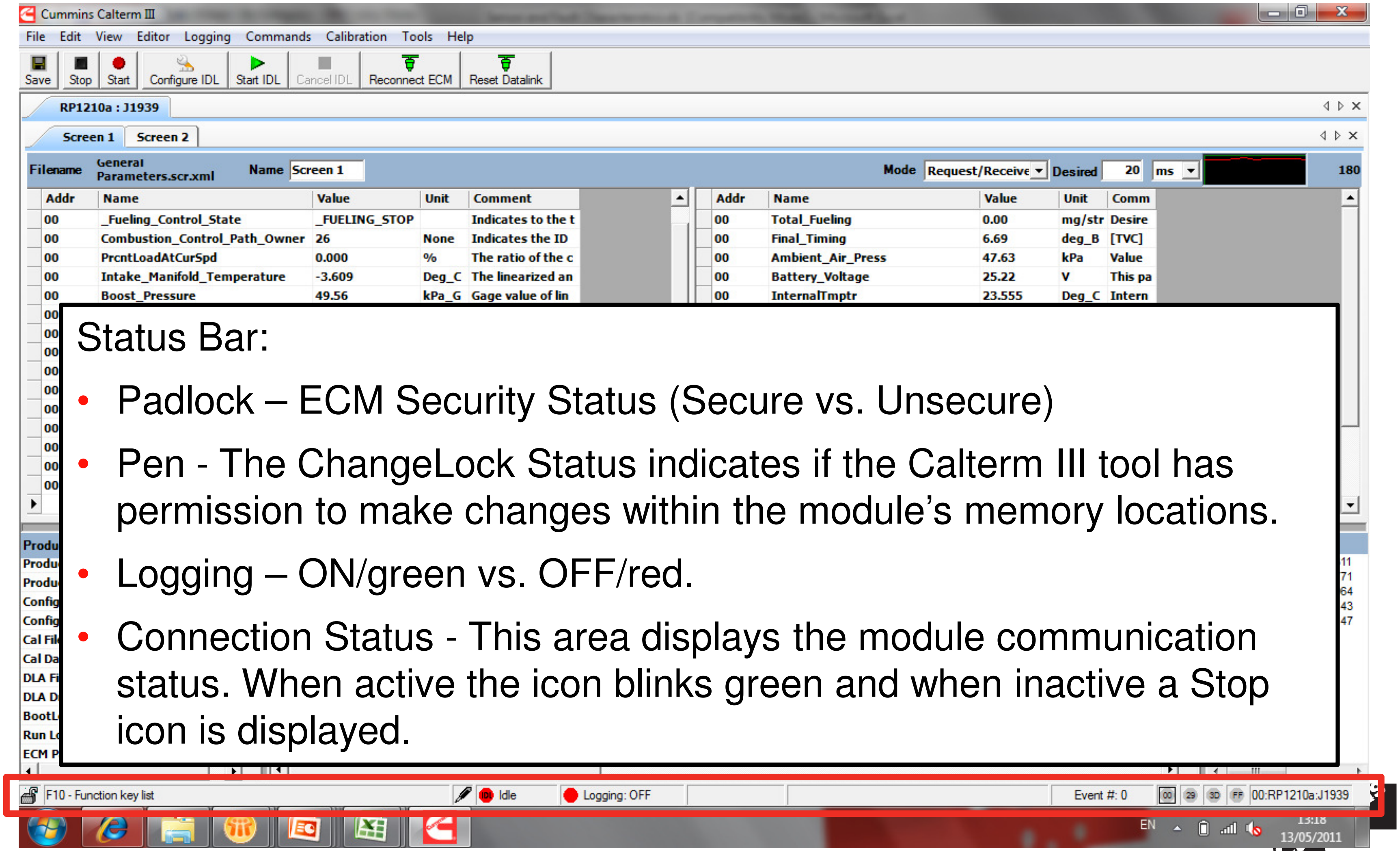
Event Log

Date	Description
13/05/2011 13:17	Added parame
13/05/2011 13:17	Added parame
13/05/2011 13:17	Added parame
13/05/2011 13:17	Added parame
13/05/2011 13:17	Added parame
13/05/2011 13:17	Added parame
13/05/2011 13:17	Added parame
13/05/2011 13:17	Added parame
13/05/2011 13:17	Added parame
13/05/2011 13:17	Added parame

Faults

00:0123
00:0132
00:0154
00:0155
00:0222
00:0319
00:0418
00:0451
00:1117
00:1241
00:1242
00:1668
00:1711
00:2182
00:2311
00:2771
00:2964
00:3143
00:3147

Calterm III Window – Status Bar



Filename: General Parameters.scr.xml Name: Screen 1 Mode: Request/Receive Desired: 20 ms 180

Addr	Name	Value	Unit	Comment
00	_Fueling_Control_State	_FUELING_STOP		Indicates to the t
00	Combustion_Control_Path_Owner	26	None	Indicates the ID
00	PrcntLoadAtCurSpd	0.000	%	The ratio of the c
00	Intake_Manifold_Temperature	-3.609	Deg_C	The linearized an
00	Boost_Pressure	49.56	kPa_G	Gage value of lin

Addr	Name	Value	Unit	Comm
00	Total_Fueling	0.00	mg/str	Desire
00	Final_Timing	6.69	deg_B	[TVC]
00	Ambient_Air_Press	47.63	kPa	Value
00	Battery_Voltage	25.22	V	This pa
00	InternalTmptr	23.555	Deg_C	Intern

F10 - Function key list | Idle | Logging: OFF | Event #: 0 | 00:RP1210a:J1939

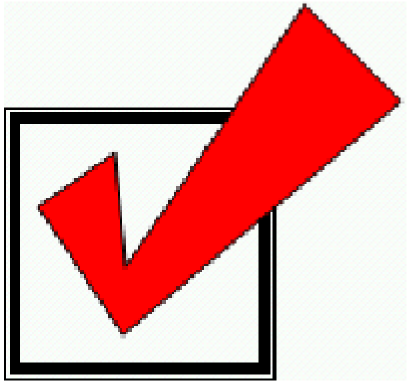
Status Bar:

- Padlock – ECM Security Status (Secure vs. Unsecure)
- Pen - The ChangeLock Status indicates if the Calterm III tool has permission to make changes within the module's memory locations.
- Logging – ON/green vs. OFF/red.
- Connection Status - This area displays the module communication status. When active the icon blinks green and when inactive a Stop icon is displayed.

Calterm III Window - Summary

When working in Calterm III remember to:

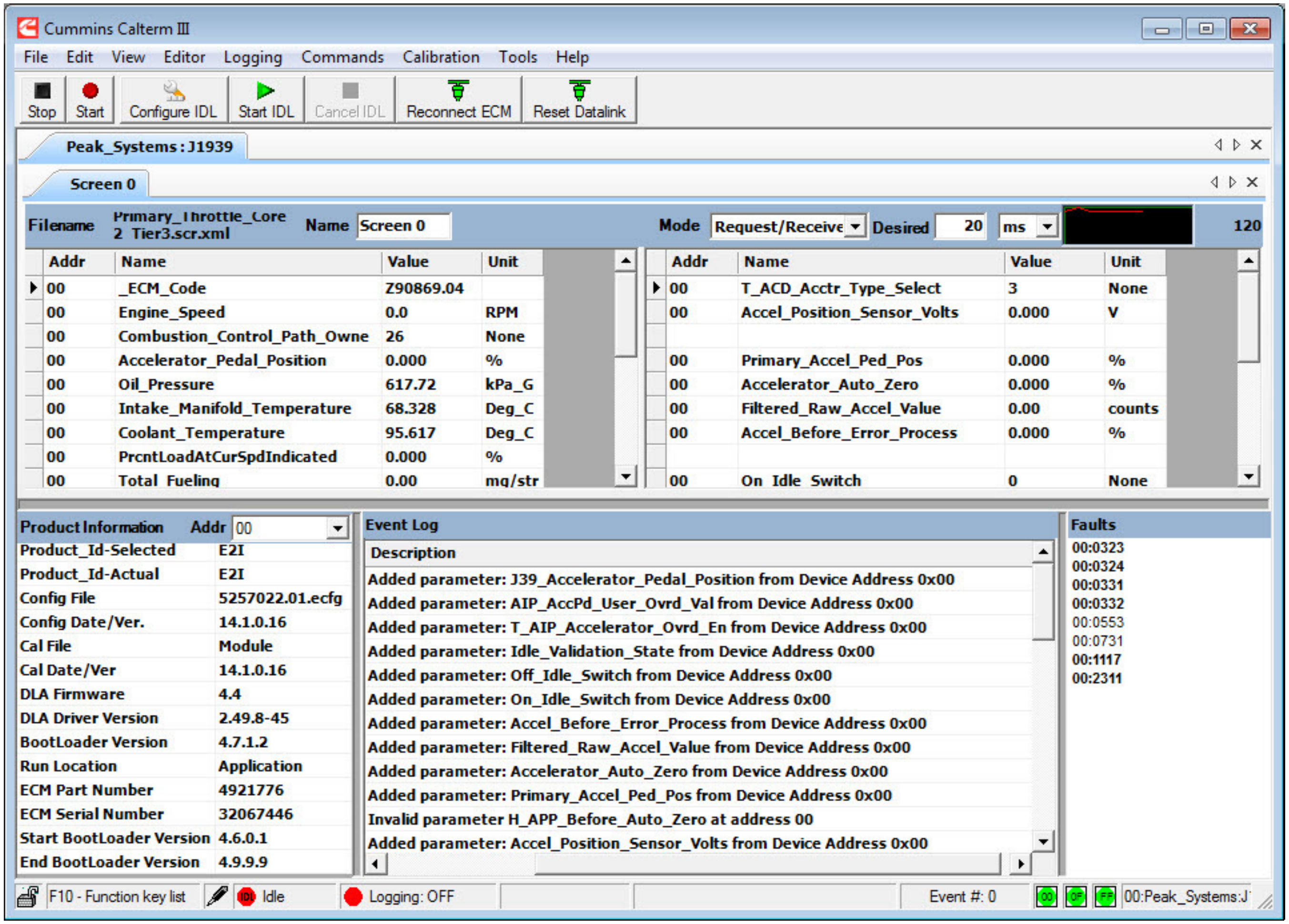
- Ensure Product ID selected matches product ID Actual in Production Information section
- Check the selected software configuration file version matches actual software version in the ECM
- Pay attention to the Event log for valuable tool feedback
- Reference status bar to ensure module connection is active



- Tool Installation and Registration
- Connecting to an Engine
- **Monitoring and Logging**
- Changing Calibrations and Overrides

- In this section we will discuss how to
  - Open an existing screen file
  - Search and add new parameters
  - Save a screen file
  - Add graphical monitor screens
  - Start logging data
  - Save a data log

Opening a Screen File



Filename Primary_Throttle_Core 2 Tier3.scr.xml **Name** Screen 0 **Mode** Request/Receive **Desired** 20 ms 120

Addr	Name	Value	Unit
00	_ECM_Code	Z90869.04	
00	Engine_Speed	0.0	RPM
00	Combustion_Control_Path_Owne	26	None
00	Accelerator_Pedal_Position	0.000	%
00	Oil_Pressure	617.72	kPa_G
00	Intake_Manifold_Temperature	68.328	Deg_C
00	Coolant_Temperature	95.617	Deg_C
00	PrcntLoadAtCurSpdIndicated	0.000	%
00	Total_Fueling	0.00	mg/str

Addr	Name	Value	Unit
00	T_ACD_Acctr_Type_Select	3	None
00	Accel_Position_Sensor_Volts	0.000	V
00	Primary_Accel_Ped_Pos	0.000	%
00	Accelerator_Auto_Zero	0.000	%
00	Filtered_Raw_Accel_Value	0.00	counts
00	Accel_Before_Error_Process	0.000	%
00	On_Idle_Switch	0	None

Product Information **Addr** 00

Product_Id-Selected	E2I
Product_Id-Actual	E2I
Config File	5257022.01.ecfg
Config Date/Ver.	14.1.0.16
Cal File	Module
Cal Date/Ver	14.1.0.16
DLA Firmware	4.4
DLA Driver Version	2.49.8-45
BootLoader Version	4.7.1.2
Run Location	Application
ECM Part Number	4921776
ECM Serial Number	32067446
Start BootLoader Version	4.6.0.1
End BootLoader Version	4.9.9.9

Event Log

```
Description
Added parameter: J39_Accelerator_Pedal_Position from Device Address 0x00
Added parameter: AIP_AccPd_User_Ovrd_Val from Device Address 0x00
Added parameter: T_AIP_Accelerator_Ovrd_En from Device Address 0x00
Added parameter: Idle_Validation_State from Device Address 0x00
Added parameter: Off_Idle_Switch from Device Address 0x00
Added parameter: On_Idle_Switch from Device Address 0x00
Added parameter: Accel_Before_Error_Process from Device Address 0x00
Added parameter: Filtered_Raw_Accel_Value from Device Address 0x00
Added parameter: Accelerator_Auto_Zero from Device Address 0x00
Added parameter: Primary_Accel_Ped_Pos from Device Address 0x00
Invalid parameter H_APP_Before_Auto_Zero at address 00
Added parameter: Accel_Position_Sensor_Volts from Device Address 0x00
```

Faults

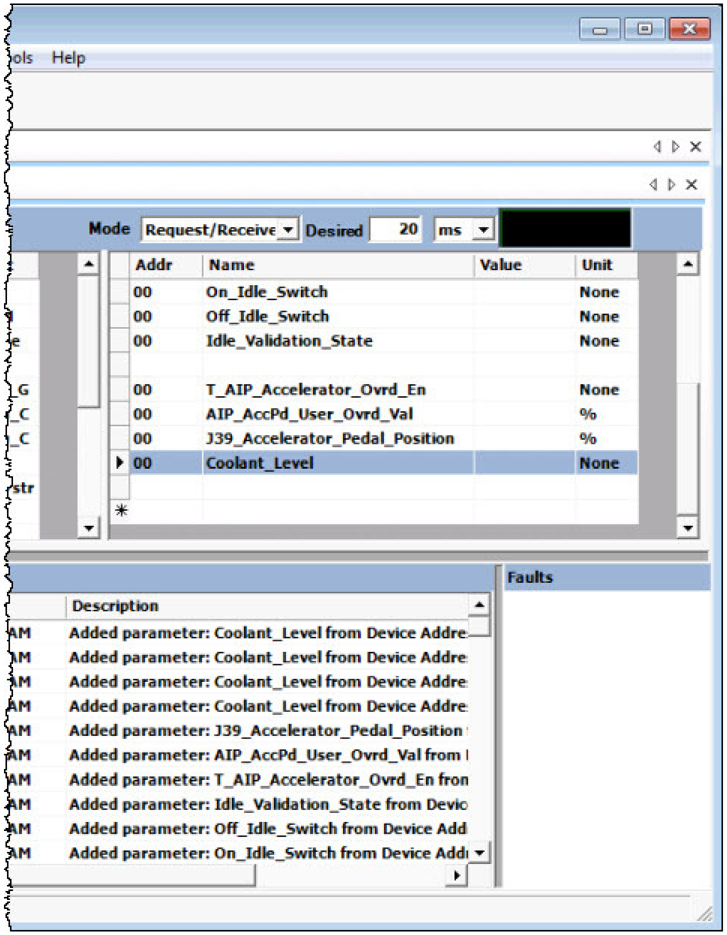
```
00:0323
00:0324
00:0331
00:0332
00:0553
00:0731
00:1117
00:2311
```

Logging: OFF

- Go to the Editor Menu to Open an existing screen file
- Select a Screen file you want to use and Click Open
- The parameters in the screen file will be added to the monitor

Adding ECM Parameters

- To add parameters to a screen file press the F1 Button to access Parameter Query
- Make sure “Display RAM parameters” is checked to view runtime variables
- Type the name of the parameter, or
- Enter a keyword to search the Parameter Name and Comments columns
- Select the parameter by checking the white boxes on the left
- Click Apply to add the selected parameters to the Monitor Screen.
- The variable will appear in the monitor window

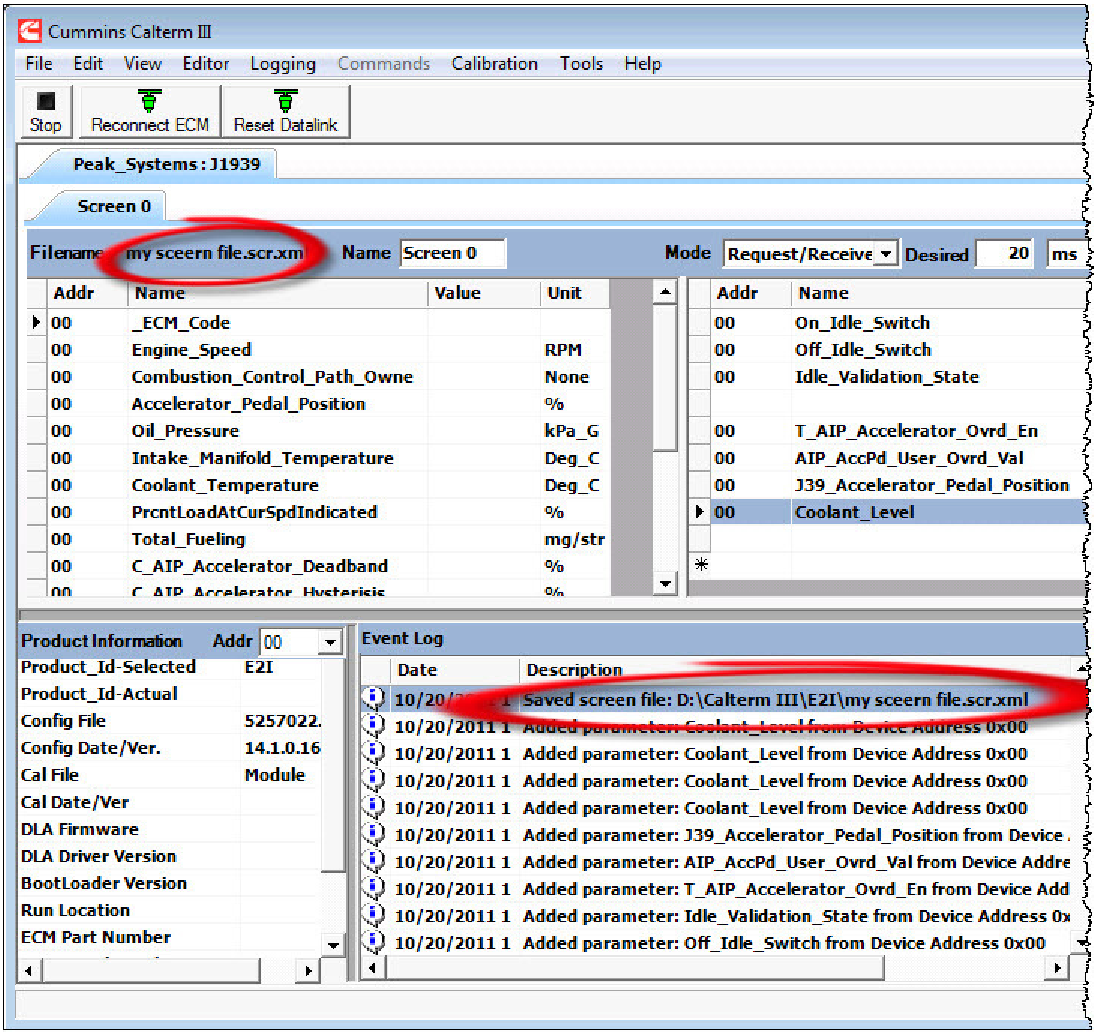


Mode Request/Receive Desired 20 ms

Addr	Name	Value	Unit
00	On_Idle_Switch		None
00	Off_Idle_Switch		None
00	Idle_Validation_State		None
00	T_AIP_Accelerator_Ovrd_En		None
00	AIP_AccPd_User_Ovrd_Val		%
00	J39_Accelerator_Pedal_Position		%
00	Coolant_Level		None

```
      Description
AM    Added parameter: Coolant_Level from Device Addre
AM    Added parameter: Coolant_Level from Device Addre
AM    Added parameter: Coolant_Level from Device Addre
AM    Added parameter: Coolant_Level from Device Addre
AM    Added parameter: J39_Accelerator_Pedal_Position
AM    Added parameter: AIP_AccPd_User_Ovrd_Val from
AM    Added parameter: T_AIP_Accelerator_Ovrd_En fron
AM    Added parameter: Idle_Validation_State from Devic
AM    Added parameter: Off_Idle_Switch from Device Add
AM    Added parameter: On_Idle_Switch from Device Add
```

Saving Screen File



Filename my sceern file.scr.xm Name Screen 0 Mode Request/Receive Desired 20 ms

	Addr	Name	Value	Unit
▶	00	_ECM_Code		
	00	Engine_Speed		RPM
	00	Combustion_Control_Path_Owne		None
	00	Accelerator_Pedal_Position		%
	00	Oil_Pressure		kPa_G
	00	Intake_Manifold_Temperature		Deg_C
	00	Coolant_Temperature		Deg_C
	00	PrcntLoadAtCurSpdIndicated		%
	00	Total_Fueling		mg/str
	00	C_AIP_Accelerator_Deadband		%
	00	C_AIP_Accelerator_Hysterisis		%

	Addr	Name
	00	On_Idle_Switch
	00	Off_Idle_Switch
	00	Idle_Validation_State
	00	T_AIP_Accelerator_Ovrd_En
	00	AIP_AccPd_User_Ovrd_Val
	00	J39_Accelerator_Pedal_Position
▶	00	Coolant_Level
✳		

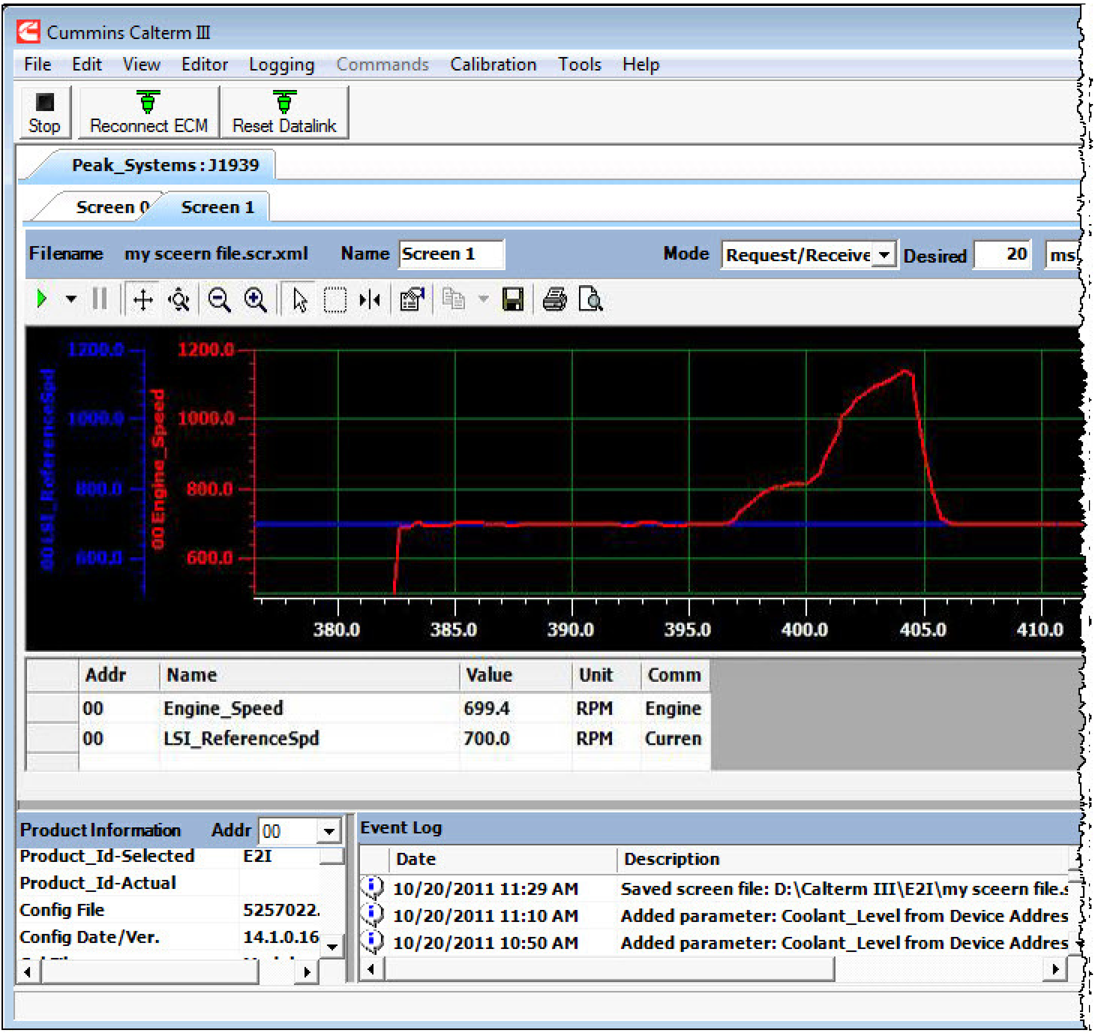
Product Information	Addr 00
Product_Id-Selected	E2I
Product_Id-Actual	
Config File	5257022.
Config Date/Ver.	14.1.0.16
Cal File	Module
Cal Date/Ver	
DLA Firmware	
DLA Driver Version	
BootLoader Version	
Run Location	
ECM Part Number	

Event Log

```
Date          Description
10/20/2011 1  Saved screen file: D:\Calterm III\E2I\my sceern file.scr.xml
10/20/2011 1  Added parameter: Coolant_Level from Device Address 0x00
10/20/2011 1  Added parameter: Coolant_Level from Device Address 0x00
10/20/2011 1  Added parameter: Coolant_Level from Device Address 0x00
10/20/2011 1  Added parameter: Coolant_Level from Device Address 0x00
10/20/2011 1  Added parameter: J39_Accelerator_Pedal_Position from Device .
10/20/2011 1  Added parameter: AIP_AccPd_User_Ovrd_Val from Device Addre
10/20/2011 1  Added parameter: T_AIP_Accelerator_Ovrd_En from Device Add
10/20/2011 1  Added parameter: Idle_Validation_State from Device Address 0x
10/20/2011 1  Added parameter: Off_Idle_Switch from Device Address 0x00
```

- Once you have the parameters you want save your screen file by Clicking on the Editor Menu
- Select Save Screen File As...
- Type the name of the screen file and Click the Save Button
- You will see save confirmation in the Event Log

Add Graphical Monitor Screen



Filename my sceern file.scr.xml Name Screen 1 Mode Request/Receive Desired 20 ms

	Addr	Name	Value	Unit	Comm
	00	Engine_Speed	699.4	RPM	Engine
	00	LSI_ReferenceSpd	700.0	RPM	Curren

Product Information Addr 00

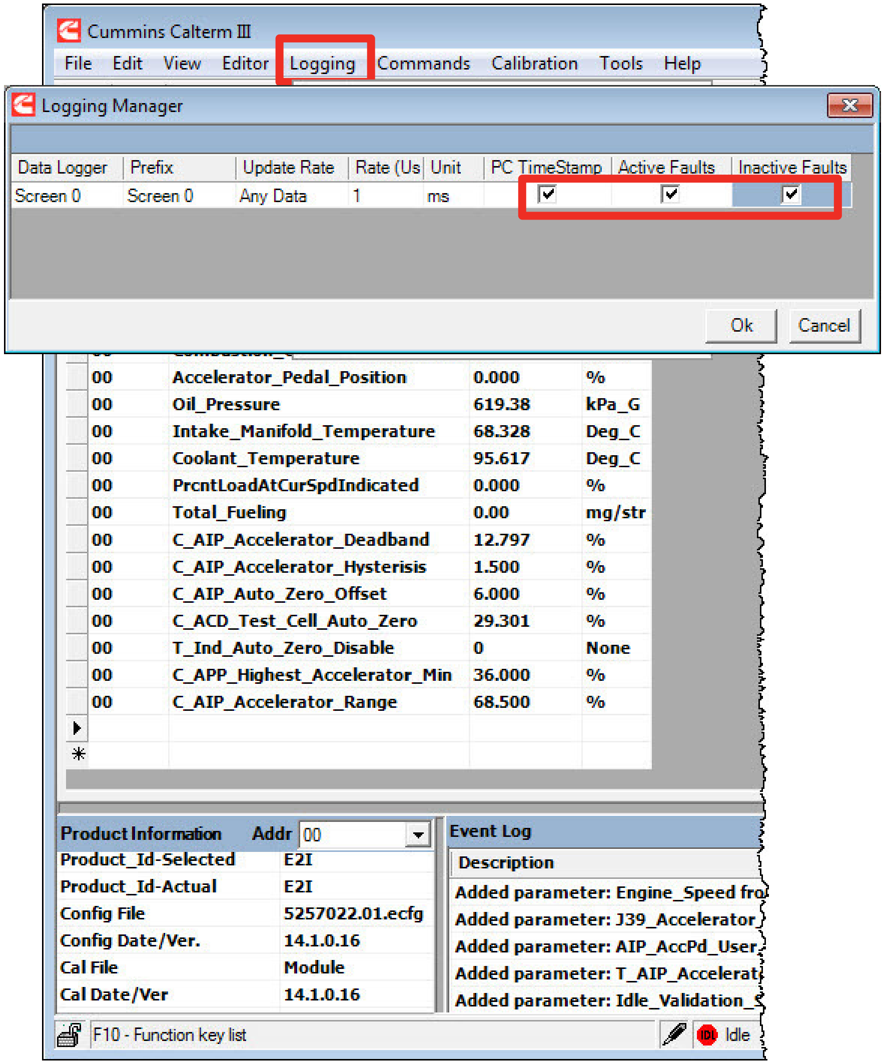
Product_Id-Selected	E2I
Product_Id-Actual	
Config File	5257022.
Config Date/Ver.	14.1.0.16

Event Log

Date	Description
10/20/2011 11:29 AM	Saved screen file: D:\Calterm III\E2I\my sceern file.s
10/20/2011 11:10 AM	Added parameter: Coolant_Level from Device Addres
10/20/2011 10:50 AM	Added parameter: Coolant_Level from Device Addres

- In addition to the Normal monitor screen with a list of parameter and their values, graphical screens may be used
- To add a graphical screen Select the Editor Menu
- Click on Add Screen and Select Graphical Screen
- Graphical Screen will appear
- Add parameter you would like to view as a strip chart graph

Logging Data



Data Logger	Prefix	Update Rate	Rate (Us	Unit	PC TimeStamp	Active Faults	Inactive Faults
Screen 0	Screen 0	Any Data	1	ms	☑	☑	☑

00	Accelerator_Pedal_Position	0.000	%
00	Oil_Pressure	619.38	kPa_G
00	Intake_Manifold_Temperature	68.328	Deg_C
00	Coolant_Temperature	95.617	Deg_C
00	PrcntLoadAtCurSpdIndicated	0.000	%
00	Total_Fueling	0.00	mg/str
00	C_AIP_Accelerator_Deadband	12.797	%
00	C_AIP_Accelerator_Hysterisis	1.500	%
00	C_AIP_Auto_Zero_Offset	6.000	%
00	C_ACD_Test_Cell_Auto_Zero	29.301	%
00	T_Ind_Auto_Zero_Disable	0	None
00	C_APP_Highest_Accelerator_Min	36.000	%
00	C_AIP_Accelerator_Range	68.500	%

Product Information	Addr 00
Product_Id-Selected	E2I
Product_Id-Actual	E2I
Config File	5257022.01.ecfg
Config Date/Ver.	14.1.0.16
Cal File	Module
Cal Date/Ver	14.1.0.16

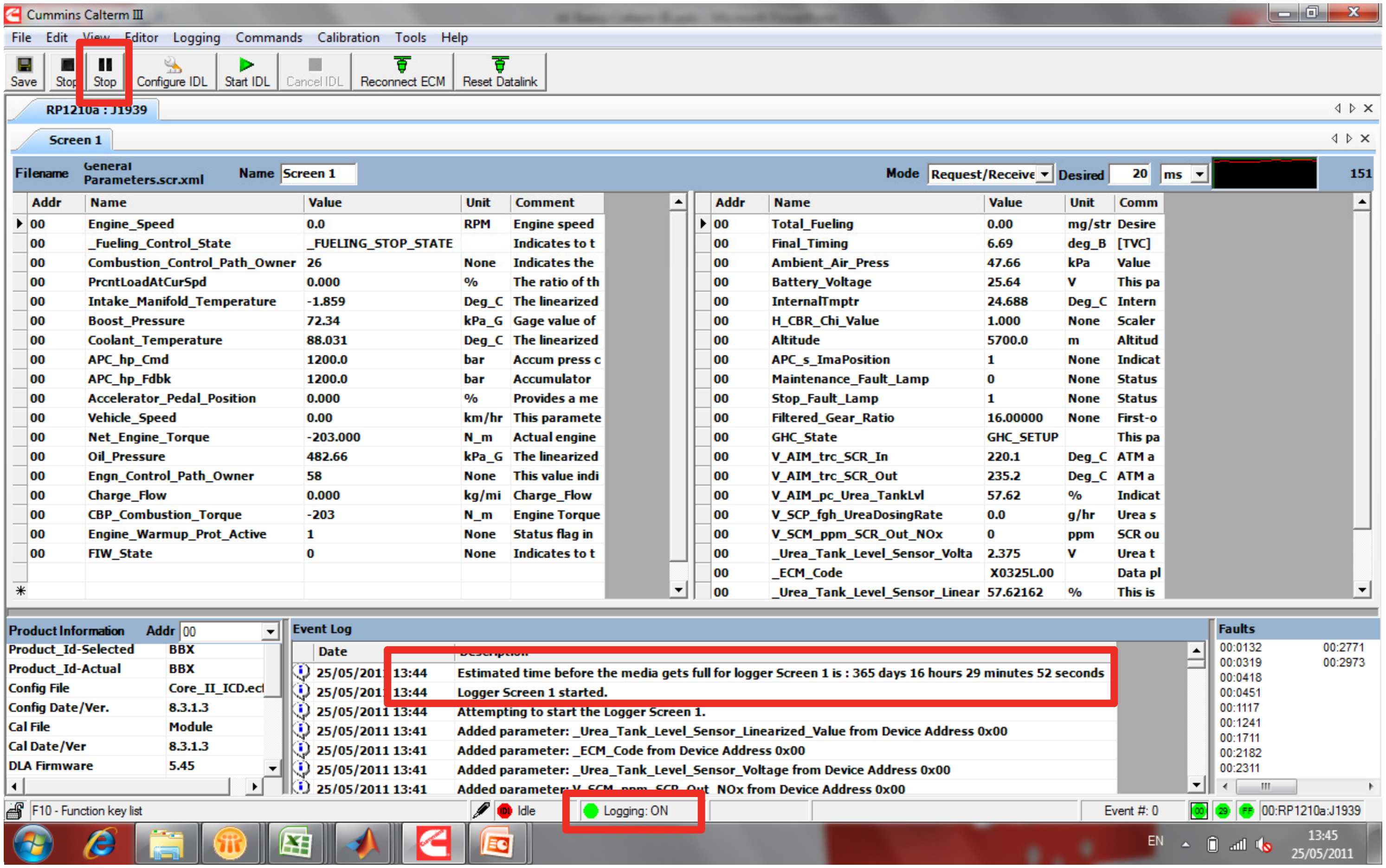
Event Log

Description
Added parameter: Engine_Speed fro
Added parameter: J39_Accelerator
Added parameter: AIP_AccPd_User
Added parameter: T_AIP_Accelerat
Added parameter: Idle_Validation_S

- Before starting to log data, set the data logger configuration
- Click the Logging Menu and Select Configure Data Logger
- Logging Manager window will appear
- Check PC TimeStamp, Active and Inactive Faults to capture PC time and fault data. Click Ok
- The actual logging rate is displayed in the corner and the desired speed can also be set in the monitor window
- The more parameters you have the slower the maximum logging rate will be

Logging Data

- To start logging data, Press the Start Button
- You will see the indication that logger has been started



Filename General Parameters.scr.xml **Name** Screen 1

Mode Request/Receive **Desired** 20 ms 151

Addr	Name	Value	Unit	Comment
00	Engine_Speed	0.0	RPM	Engine speed
00	_Fueling_Control_State	_FUELING_STOP_STATE		Indicates to t
00	Combustion_Control_Path_Owner	26	None	Indicates the
00	PrcntLoadAtCurSpd	0.000	%	The ratio of th
00	Intake_Manifold_Temperature	-1.859	Deg_C	The linearized
00	Boost_Pressure	72.34	kPa_G	Gage value of
00	Coolant_Temperature	88.031	Deg_C	The linearized
00	APC_hp_Cmd	1200.0	bar	Accum press c
00	APC_hp_Fdbk	1200.0	bar	Accumulator
00	Accelerator_Pedal_Position	0.000	%	Provides a me
00	Vehicle_Speed	0.00	km/hr	This paramete
00	Net_Engine_Torque	-203.000	N_m	Actual engine
00	Oil_Pressure	482.66	kPa_G	The linearized
00	Engn_Control_Path_Owner	58	None	This value indi
00	Charge_Flow	0.000	kg/mi	Charge_Flow
00	CBP_Combustion_Torque	-203	N_m	Engine Torque
00	Engine_Warmup_Prot_Active	1	None	Status flag in
00	FIW_State	0	None	Indicates to t

Addr	Name	Value	Unit	Comm
00	Total_Fueling	0.00	mg/str	Desire
00	Final_Timing	6.69	deg_B	[TVC]
00	Ambient_Air_Press	47.66	kPa	Value
00	Battery_Voltage	25.64	V	This pa
00	InternalTmptr	24.688	Deg_C	Intern
00	H_CBR_Chi_Value	1.000	None	Scaler
00	Altitude	5700.0	m	Altitud
00	APC_s_ImaPosition	1	None	Indicat
00	Maintenance_Fault_Lamp	0	None	Status
00	Stop_Fault_Lamp	1	None	Status
00	Filtered_Gear_Ratio	16.00000	None	First-o
00	GHC_State	GHC_SETUP		This pa
00	V_AIM_trc_SCR_In	220.1	Deg_C	ATM a
00	V_AIM_trc_SCR_Out	235.2	Deg_C	ATM a
00	V_AIM_pc_Urea_TankLvl	57.62	%	Indicat
00	V_SCP_fgh_UreaDosingRate	0.0	g/hr	Urea s
00	V_SCM_ppm_SCR_Out_NOx	0	ppm	SCR ou
00	_Urea_Tank_Level_Sensor_Volta	2.375	V	Urea t
00	_ECM_Code	X0325L.00		Data pl
00	_Urea_Tank_Level_Sensor_Linear	57.62162	%	This is

Product Information	Addr 00
Product_Id-Selected	BBX
Product_Id-Actual	BBX
Config File	Core_II_ICD.ecl
Config Date/Ver.	8.3.1.3
Cal File	Module
Cal Date/Ver	8.3.1.3
DLA Firmware	5.45

Event Log

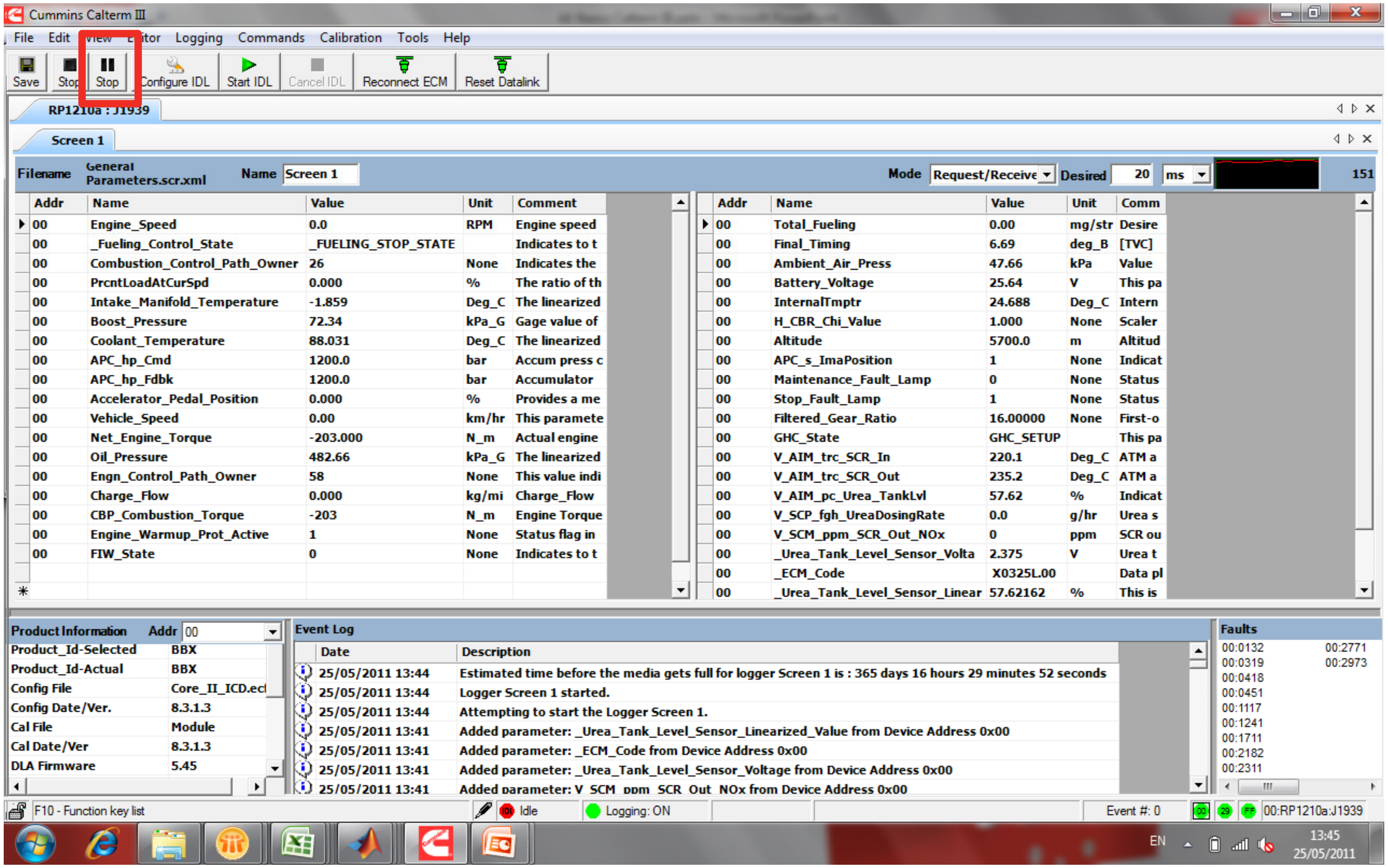
```
Date             Description
25/05/2011 13:44 Estimated time before the media gets full for logger Screen 1 is : 365 days 16 hours 29 minutes 52 seconds
25/05/2011 13:44 Logger Screen 1 started.
25/05/2011 13:44 Attempting to start the Logger Screen 1.
25/05/2011 13:41 Added parameter: _Urea_Tank_Level_Sensor_Linearized_Value from Device Address 0x00
25/05/2011 13:41 Added parameter: _ECM_Code from Device Address 0x00
25/05/2011 13:41 Added parameter: _Urea_Tank_Level_Sensor_Voltage from Device Address 0x00
25/05/2011 13:41 Added parameter: V_SCM_ppm_SCR_Out_NOx from Device Address 0x00
```

Faults

```
00:0132    00:2771
00:0319    00:2973
00:0418
00:0451
00:1117
00:1241
00:1711
00:2182
00:2311
```

Logging Data

- To Stop logging data, Press the Stop Button
- Save As window will appear click Save to save data log



Filename General Parameters.scr.xml Name Screen 1 Mode Request/Receive Desired 20 ms 151

Addr	Name	Value	Unit	Comment
00	Engine_Speed	0.0	RPM	Engine speed
00	_Fueling_Control_State	_FUELING_STOP_STATE		Indicates to t
00	Combustion_Control_Path_Owner	26	None	Indicates the
00	PrcntLoadAtCurSpd	0.000	%	The ratio of th
00	Intake_Manifold_Temperature	-1.859	Deg_C	The linearized
00	Boost_Pressure	72.34	kPa_G	Gage value of
00	Coolant_Temperature	88.031	Deg_C	The linearized
00	APC_hp_Cmd	1200.0	bar	Accum press c
00	APC_hp_Fdbk	1200.0	bar	Accumulator
00	Accelerator_Pedal_Position	0.000	%	Provides a me
00	Vehicle_Speed	0.00	km/hr	This paramete
00	Net_Engine_Torque	-203.000	N_m	Actual engine
00	Oil_Pressure	482.66	kPa_G	The linearized
00	Engn_Control_Path_Owner	58	None	This value indi
00	Charge_Flow	0.000	kg/mi	Charge_Flow
00	CBP_Combustion_Torque	-203	N_m	Engine Torque
00	Engine_Warmup_Prot_Active	1	None	Status flag in
00	FIW_State	0	None	Indicates to t

Addr	Name	Value	Unit	Comm
00	Total_Fueling	0.00	mg/str	Desire
00	Final_Timing	6.69	deg_B	[TVC]
00	Ambient_Air_Press	47.66	kPa	Value
00	Battery_Voltage	25.64	V	This pa
00	InternalTmptr	24.688	Deg_C	Intern
00	H_CBR_Chi_Value	1.000	None	Scaler
00	Altitude	5700.0	m	Altitud
00	APC_s_ImaPosition	1	None	Indicat
00	Maintenance_Fault_Lamp	0	None	Status
00	Stop_Fault_Lamp	1	None	Status
00	Filtered_Gear_Ratio	16.00000	None	First-o
00	GHC_State	GHC_SETUP		This pa
00	V_AIM_trc_SCR_In	220.1	Deg_C	ATM a
00	V_AIM_trc_SCR_Out	235.2	Deg_C	ATM a
00	V_AIM_pc_Urea_TankLvl	57.62	%	Indicat
00	V_SCP_fgh_UreaDosingRate	0.0	g/hr	Urea s
00	V_SCM_ppm_SCR_Out_NOx	0	ppm	SCR ou
00	_Urea_Tank_Level_Sensor_Volta	2.375	V	Urea t
00	_ECM_Code	X0325L.00		Data pl
00	_Urea_Tank_Level_Sensor_Linear	57.62162	%	This is

Product Information Addr 00

Product_Id-Selected	BBX
Product_Id-Actual	BBX
Config File	Core_II_ICD.ecl
Config Date/Ver.	8.3.1.3
Cal File	Module
Cal Date/Ver	8.3.1.3
DLA Firmware	5.45

Event Log

Date	Description
25/05/2011 13:44	Estimated time before the media gets full for logger Screen 1 is : 365 days 16 hours 29 minutes 52 seconds
25/05/2011 13:44	Logger Screen 1 started.
25/05/2011 13:44	Attempting to start the Logger Screen 1.
25/05/2011 13:41	Added parameter: _Urea_Tank_Level_Sensor_Linearized_Value from Device Address 0x00
25/05/2011 13:41	Added parameter: _ECM_Code from Device Address 0x00
25/05/2011 13:41	Added parameter: _Urea_Tank_Level_Sensor_Voltage from Device Address 0x00
25/05/2011 13:41	Added parameter: V_SCM_ppm_SCR_Out_NOx from Device Address 0x00

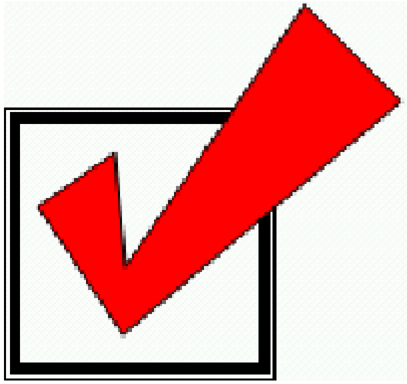
Faults

00:0132
00:0319
00:0418
00:0451
00:1117
00:1241
00:1711
00:2182
00:2311
00:2771
00:2973

Monitoring and Logging - Summary

When monitoring and logging ECM data, remember to:

- Use a predefined screen file if available to ensure all required parameters are selected
- Add new parameters if needed and save the screen file for future use
- Use graphical monitor screen to view fast changing parameters, e.g. Engine Speed
- Select fault logging option before starting logging data
- Use good file naming convention when saving data logs

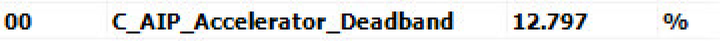


- Tool Installation and Registration
- Connecting to an Engine
- Monitoring and Logging
- **Changing Calibrations and Overrides**

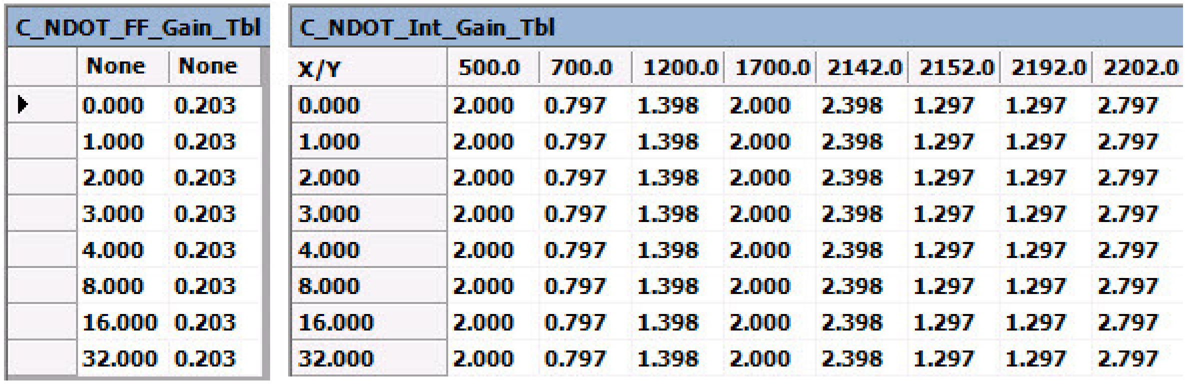
- In this section we will discuss how to
  - Identify different calibration types
  - ensure ECM is correct mode to make changes
  - Temporarily change calibrations
  - Manage calibration changes
  - Use parameter overrides

Changing Calibrations

- Engineer often needs to temporarily change ECM calibrations while performing different tests, e.g. engine protection testing, troubleshooting etc.
- Calibrations can be a single value, a 2D array or a 3D array



00	C_AIP_Accelerator_Deadband	12.797	%



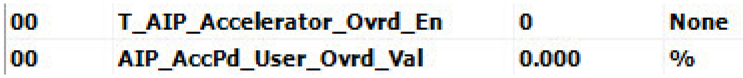
C_NDOT_FF_Gain_Tbl

	None	None
▶	0.000	0.203
	1.000	0.203
	2.000	0.203
	3.000	0.203
	4.000	0.203
	8.000	0.203
	16.000	0.203
	32.000	0.203

C_NDOT_Int_Gain_Tbl

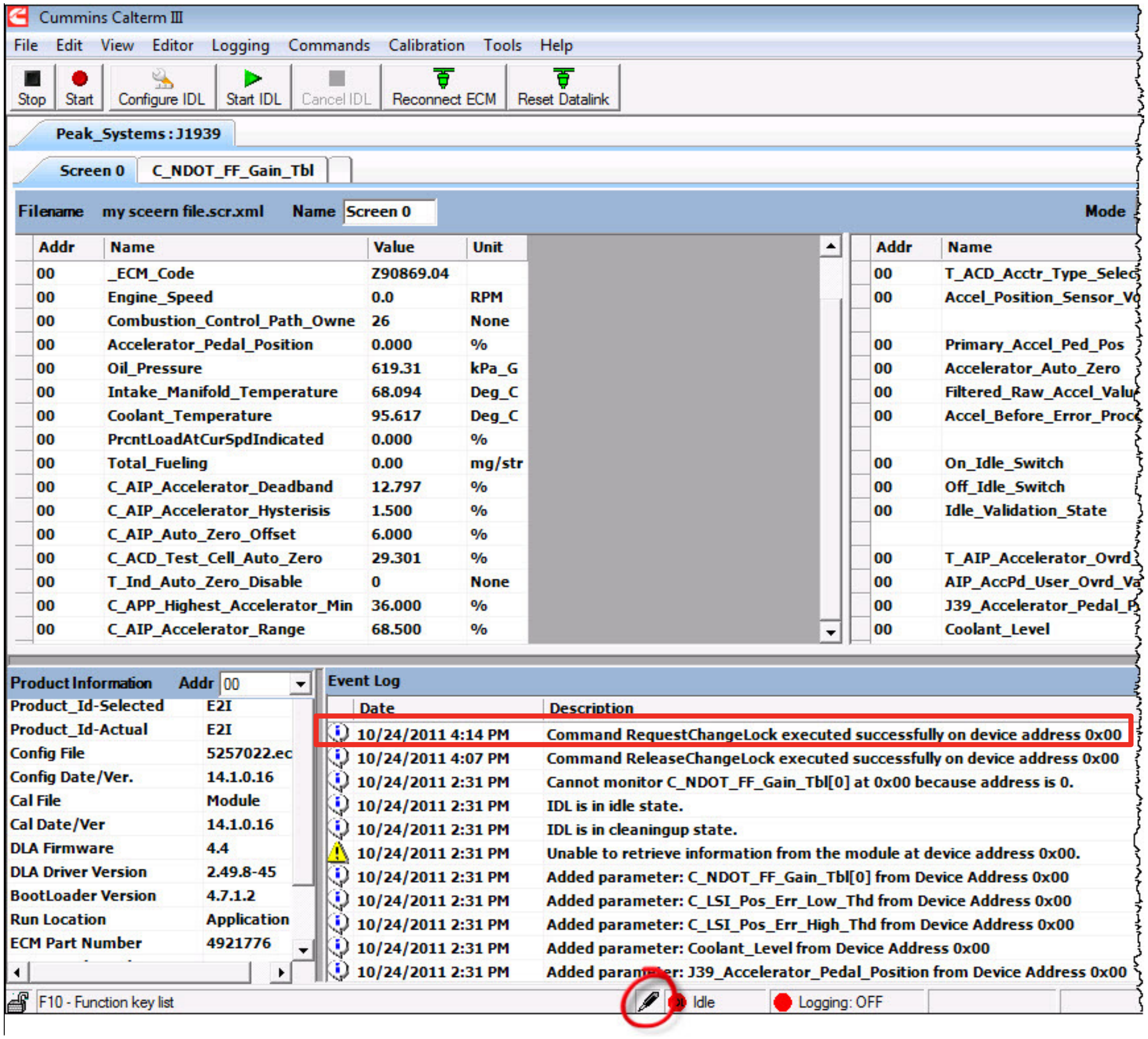
X/Y	500.0	700.0	1200.0	1700.0	2142.0	2152.0	2192.0	2202.0
0.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797
1.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797
2.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797
3.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797
4.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797
8.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797
16.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797
32.000	2.000	0.797	1.398	2.000	2.398	1.297	1.297	2.797

- In addition, there are special calibrations called overrides that allow users to override sensor values, i.e. temperatures, throttle percentage etc.



00	T_AIP_Accelerator_Ovrd_En	0	None
00	AIP_AccPd_User_Ovrd_Val	0.000	%

Requesting ChangeLock



Filename my sceern file.scr.xml **Name** Screen 0

Addr	Name	Value	Unit
00	_ECM_Code	Z90869.04	
00	Engine_Speed	0.0	RPM
00	Combustion_Control_Path_Owne	26	None
00	Accelerator_Pedal_Position	0.000	%
00	Oil_Pressure	619.31	kPa_G
00	Intake_Manifold_Temperature	68.094	Deg_C
00	Coolant_Temperature	95.617	Deg_C
00	PrcntLoadAtCurSpdIndicated	0.000	%
00	Total_Fueling	0.00	mg/str
00	C_AIP_Accelerator_Deadband	12.797	%
00	C_AIP_Accelerator_Hysterisis	1.500	%
00	C_AIP_Auto_Zero_Offset	6.000	%
00	C_ACD_Test_Cell_Auto_Zero	29.301	%
00	T_Ind_Auto_Zero_Disable	0	None
00	C_APP_Highest_Accelerator_Min	36.000	%
00	C_AIP_Accelerator_Range	68.500	%

Addr	Name
00	T_ACD_Acctr_Type_Selec
00	Accel_Position_Sensor_V
00	Primary_Accel_Ped_Pos
00	Accelerator_Auto_Zero
00	Filtered_Raw_Accel_Valu
00	Accel_Before_Error_Proc
00	On_Idle_Switch
00	Off_Idle_Switch
00	Idle_Validation_State
00	T_AIP_Accelerator_Ovrd
00	AIP_AccPd_User_Ovrd_Va
00	J39_Accelerator_Pedal_P
00	Coolant_Level

Product Information **Addr** 00

Product_Id-Selected	E2I
Product_Id-Actual	E2I
Config File	5257022.ec
Config Date/Ver.	14.1.0.16
Cal File	Module
Cal Date/Ver	14.1.0.16
DLA Firmware	4.4
DLA Driver Version	2.49.8-45
BootLoader Version	4.7.1.2
Run Location	Application
ECM Part Number	4921776

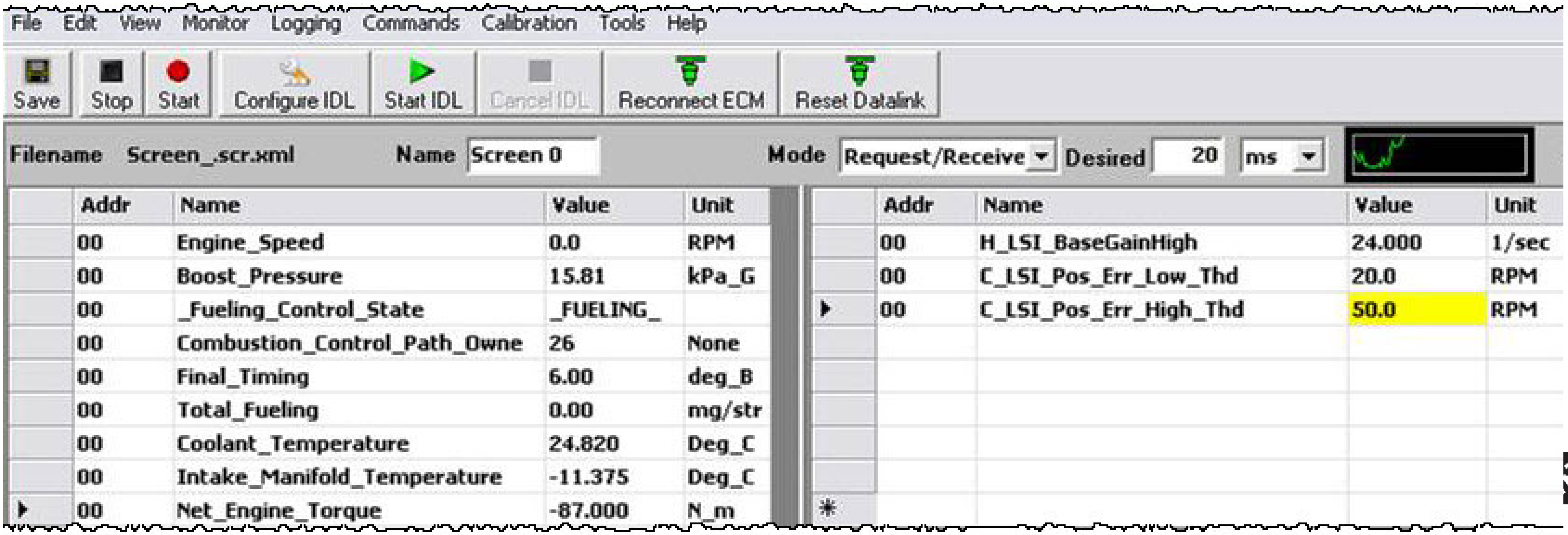
Event Log

Date	Description
10/24/2011 4:14 PM	Command RequestChangeLock executed successfully on device address 0x00
10/24/2011 4:07 PM	Command ReleaseChangeLock executed successfully on device address 0x00
10/24/2011 2:31 PM	Cannot monitor C_NDOT_FF_Gain_Tbl[0] at 0x00 because address is 0.
10/24/2011 2:31 PM	IDL is in idle state.
10/24/2011 2:31 PM	IDL is in cleaningup state.
10/24/2011 2:31 PM	Unable to retrieve information from the module at device address 0x00.
10/24/2011 2:31 PM	Added parameter: C_NDOT_FF_Gain_Tbl[0] from Device Address 0x00
10/24/2011 2:31 PM	Added parameter: C_LSI_Pos_Err_Low_Thd from Device Address 0x00
10/24/2011 2:31 PM	Added parameter: C_LSI_Pos_Err_High_Thd from Device Address 0x00
10/24/2011 2:31 PM	Added parameter: Coolant_Level from Device Address 0x00
10/24/2011 2:31 PM	Added parameter: J39_Accelerator_Pedal_Position from Device Address 0x00

- Before you can make changes, you need to check if the ECM is in a correct mode to make changes
- From Commands Menu Select Request ChangeLock
- You will see a confirmation in the status bar and the Event Log

Changing Calibrations

- To change calibrations, add the parameters you would like to change
- Type in a new value and Press Enter
- The new value will be displayed and highlighted in yellow
- The calibrations will revert to their original values either when the tool is disconnected or on the next key on



Filename Screen_.scr.xml

Name Screen 0

Mode Request/Receive

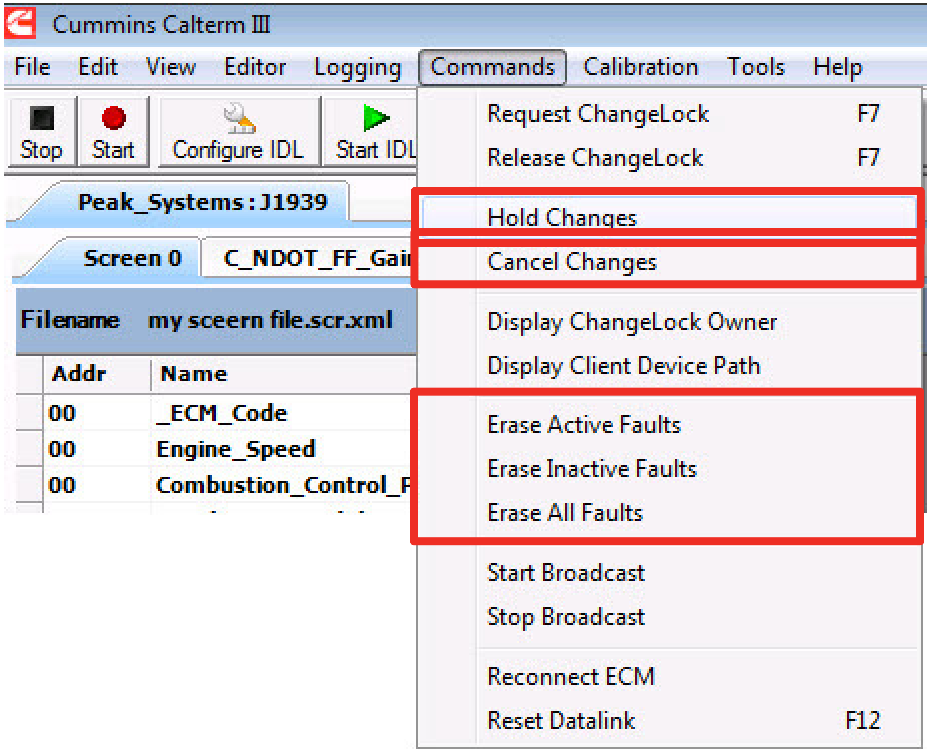
Desired 20 ms

Addr	Name	Value	Unit
00	Engine_Speed	0.0	RPM
00	Boost_Pressure	15.81	kPa_G
00	_Fueling_Control_State	_FUELING_	
00	Combustion_Control_Path_Owne	26	None
00	Final_Timing	6.00	deg_B
00	Total_Fueling	0.00	mg/str
00	Coolant_Temperature	24.820	Deg_C
00	Intake_Manifold_Temperature	-11.375	Deg_C
00	Net_Engine_Torque	-87.000	N_m

Addr	Name	Value	Unit
00	H_LSI_BaseGainHigh	24.000	1/sec
00	C_LSI_Pos_Err_Low_Thd	20.0	RPM
00	C_LSI_Pos_Err_High_Thd	50.0	RPM

Manage Calibration Changes and Faults

There are a few more functions you can perform



Filename **my sceern file.scr.xml**

Addr	Name
00	_ECM_Code
00	Engine_Speed
00	Combustion_Control_F

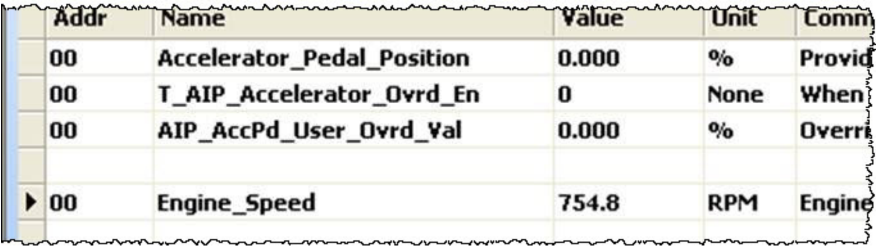
- In the Command Menu:
  - Hold changes will tell the ECM to keep calibration changes in Flash until key off
  - Cancel changes will tell the ECM to revert back to the original values
  - Erase Active/Inactive/All Faults will erase corresponding engine faults

Using Overrides

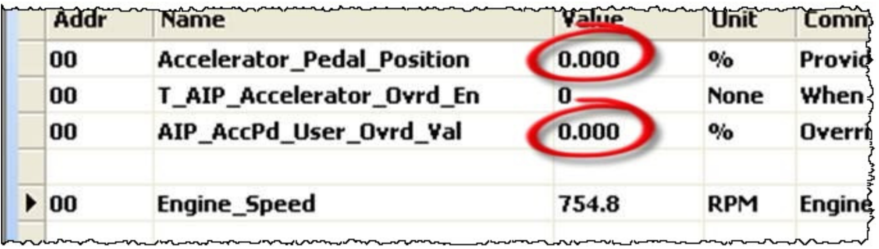
- Sometimes it may be desirable to override an ECM parameter like a switch state and a sensor value
- Each override typically has two calibrations associated with it:
  - Override Enable calibration - turns the override functionality for a specific sensor
  - Override Value calibration – the override value that the ECM will use
- It is a good idea to set the override value to a current value before enabling override to avoid unwanted behaviour

Using Overrides

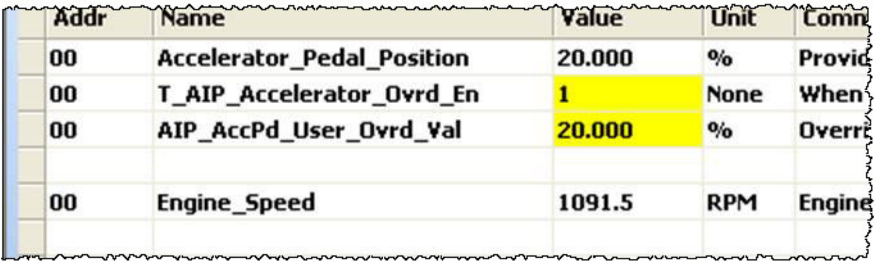
- In this example, it is desired to override throttle to 20%



Addr	Name	Value	Unit	Comm
00	Accelerator_Pedal_Position	0.000	%	Provid
00	T_AIP_Accelerator_Ovrd_En	0	None	When
00	AIP_AccPd_User_Ovrd_Val	0.000	%	Overri
▶ 00	Engine_Speed	754.8	RPM	Engine



Addr	Name	Value	Unit	Comn
00	Accelerator_Pedal_Position	0.000	%	Provid
00	T_AIP_Accelerator_Ovrd_En	0	None	When
00	AIP_AccPd_User_Ovrd_Val	0.000	%	Overri
▶ 00	Engine_Speed	754.8	RPM	Engine



Addr	Name	Value	Unit	Comn
00	Accelerator_Pedal_Position	20.000	%	Provid
00	T_AIP_Accelerator_Ovrd_En	1	None	When
00	AIP_AccPd_User_Ovrd_Val	20.000	%	Overri
00	Engine_Speed	1091.5	RPM	Engine

- The override is initially disabled, the ECM is using the Sensed Parameter as its input.
- Make sure the override value is equal to the current value. Then enable override and change the value to 20
- The value of the Accelerator_Pedal_Position will change to 20% and engine speed will increase

Using Overrides

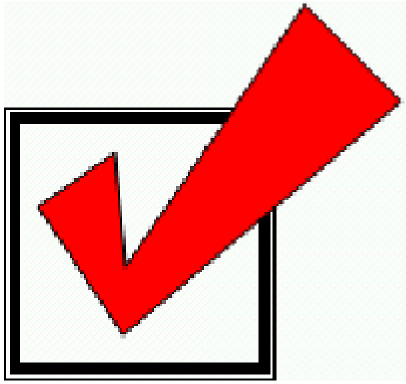
- Here is a list of common overrides:

Parameter	*Override*	*User Value*
Accelerator_Pedal_Position	T_AIP_Accelerator_Ovrd_En	AIP_AccPd_User_Ovrd_Val
Alternate_Idle_Switch	T_DIP_Alternate_Idle_Ovrd_En	DIP_Alternate_Idle_Ovrd_Val
Ambient_Air_Press	T_AIP_AMB_User_Override_En	AIP_AirPress_Override_Value
OEM_Temperature	T_AIP_OEMTmptr_Ovrd_En	AIP_OEMTmptr_Ovrd_Val
Torque_Curve_Selection_Switch	T_AIP_SAT_Switch_Ovrd_En	AIP_SAT_Switch_Ovrd_Val
CC_OnSwitch	T_DIP_CC_OnUserOvrdEn	DIP_CC_OnUserOvrdVal
Coolant_Temperature	T_AIP_CT_User_Override	AIP_Cool_Tmptr_Override_Value
Manual_Fan_Input	T_DIP_Manual_Fan_User_Ovrd_En	DIP_Manual_Fan_User_Ovrd_Val
PTO_1_Switch	T_DIP_PTO_1_Ovrd_En	DIP_PTO_1_Ovrd_Val
PTO_2_Switch	T_DIP_PTO_2_Ovrd_En	DIP_PTO_2_Ovrd_Val
PTO_3_Switch	T_DIP_PTO_3_Ovrd_En	DIP_PTO_3_Ovrd_Val
PTO_Decrement_Switch	T_DIP_PTO_Decrt_Ovrd_En	DIP_PTO_Decrt_Ovrd_Va
PTO_Increment_Switch	T_DIP_PTO_Incrt_Ovrd_En	DIP_PTO_Incrt_Ovrd_Val
Remote_APP_Switch	T_DIP_RMT_APP_SW_User_Ovrd_En	DIP_RMT_Switch_User_Ovrd_Val
Oil_Pressure	T_AIP_OP_User_Override	AIP_Oil_Press_Override_Value
Oil_Temperature	T_AIP_OT_User_Override	AIP_Oil_Tmptr_Override_Value
Remote_Accelerator	T_AIP_Remote_Ovrd_En	AIP_Remote_User_Ovrd_Val

Changing Calibrations - Summary

When changing ECM calibrations, remember to:

- Make sure the Request Change Lock or Run From Development is set
- Change both override calibrations, the override value and the enable
- Set override value equal to current value before enabling the override
- Cycle ignition key to revert to the original calibrations values



How to get help

- Refer to Calterm III WIKI Page

http://www.ctg.cummins.com:8005/display/Calterm/Calterm

- Contact Tools group
  - By sending you questions to calterm@cummins.com
- Contact your EFE Leader
  - For problems with your Calterm III license or approval contact the EFE Leader that you selected on your request form
- Factory AE’s may attend additional training offered at Cummins Tech Center by Logos, Ltd

QUESTIONS?