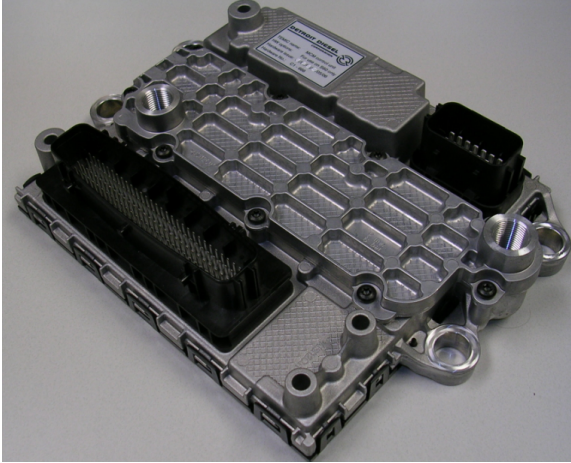


DDRS for DDEC VI – The “Program Device” User’s Guide

This document is designed to assist the user through the basic features of DDEC VI programming.

I. Understanding the DDEC VI Programming Process

The DDEC VI electronics system contains two programmable controllers, the **MCM (Motor Control Module)** and the **CPC (Common Powertrain Controller)**. DDRS 7.0 allows for several options to be performed on each of these controllers. This section contains definitions of terms related to DDEC VI system and an overview of the operations one may perform with DDRS 7.0 on the MCM and CPC.



The **MCM** is the engine-mounted controller. It controls the fuel system of the engine. In addition to controlling the fueling of the engine the controller also monitors the engine sensors that monitor the condition of key engine systems and hardware (oil system, coolant system, engine turbo, etc.). The MCM maintains communication with the CPC via a high speed CAN connection.

The MCM contains **software (also referred to as firmware)** that determines its interaction with the sensors and with the CPC, the **fuel map (also referred to as the dataset)** determines the horsepower and torque characteristics of the engine, and a list of **MCM parameter settings** that inform the MCM of the type of hardware used on the vehicle (type of fan, the engine brake system, whether or not certain sensors are in use, etc.). Two numbers, **the diagnosis version** and **the software version** identify the software level of a MCM. A unique fuel map number identifies each fuel map. All of these identification numbers may be seen on the “Identification” window of DDRS 7.0.

MCM

Device Configuration

Fuelmap Part Number	06N04D7534002
Fuel Map Description	MY2007 EGR ONHWY TRUCK 455 1550
Certification Number	1544
Software Mode	Running in Application

Device Information

Software Version	7.6.0.50
Diagnosis Version	40
ECU Serial Number	4D060001
Hardware Part Number	0044466940001
Software Part Number	0004487535001

Vehicle Identification

VIN	
Engine Serial Number	06R9999235
Engine Type	S60

The DDC Server contains MCM fuel maps and software. It contains configuration information, the original MCM factory settings, any information uploaded from Freightliner VEPS (Vehicle Entry Programming System), or uploaded via DDRS from a Detroit Diesel service location.

In regards to the MCM, The “Program Device” feature in DDRS 7.0 can be used to:

- i. Replace a damaged or faulty MCM module on an existing engine with a new module programmed to the settings of the specific engine and vehicle.
- ii. Change the fuel map (dataset) of an existing MCM to a different horsepower and torque (with approved hardware changes)
- iii. DDRS 7.0 contains the ability to upgrade the software (firmware) of the MCM.
- iv. DDRS 7.0 users may upload the parameter settings currently on the MCM to the DDC Server for future reference.

2. The CPC is the module mounted in the cab of the vehicle. It interacts with all the vehicle systems such as the throttle, cruise control, various PTO systems, fan, brakes, etc. The CPC carries on continuous communication with the MCM.



The CPC contains software (also referred to as firmware) that controls how the interactions with the vehicle systems are performed, the status of engine diagnostic codes, and a list of CPC parameter settings that determine the capabilities and limits of the vehicle systems. Two numbers, **the diagnosis version** and **the software version** identify the software level of a CPC. The ECU part number for the CPC changes whenever the software level changes whether there are any actual changes made to the hardware or not. All of these identification numbers may be seen on the “Identification” window of DDRS 7.0.

CPC2

Device Configuration

Software Mode Running in Application

Device Information

Software Version R01 00 000a

Diagnosis Version 13

ECU Serial Number 00.0000.00000

ECU Part Number 0024464202001

Hardware Part Number

Software Part Number 0104487002001

Software Date 2006/09/20 17:37 GMT

Real Time Clock 2006/December/08 20:03:21 GMT

Vehicle Identification

VIN 0000000000000000

Engine Serial Number 06R9999235

Odometer 0 miles

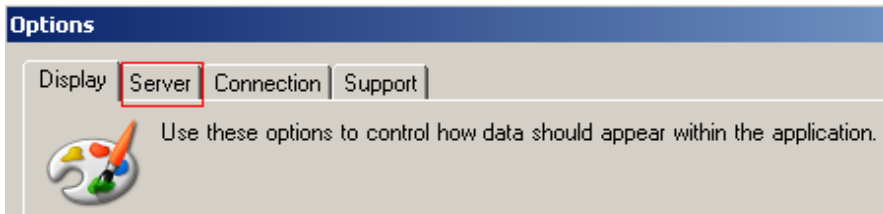
The DDC Server contains configuration information, the original CPC settings uploaded from Freightliner VEPS (Vehicle Entry Programming System), or uploaded via DDRS from a Detroit Diesel service location.

In regards to the CPC, The “Program Device” feature in DDRS 7.0 can be used to:

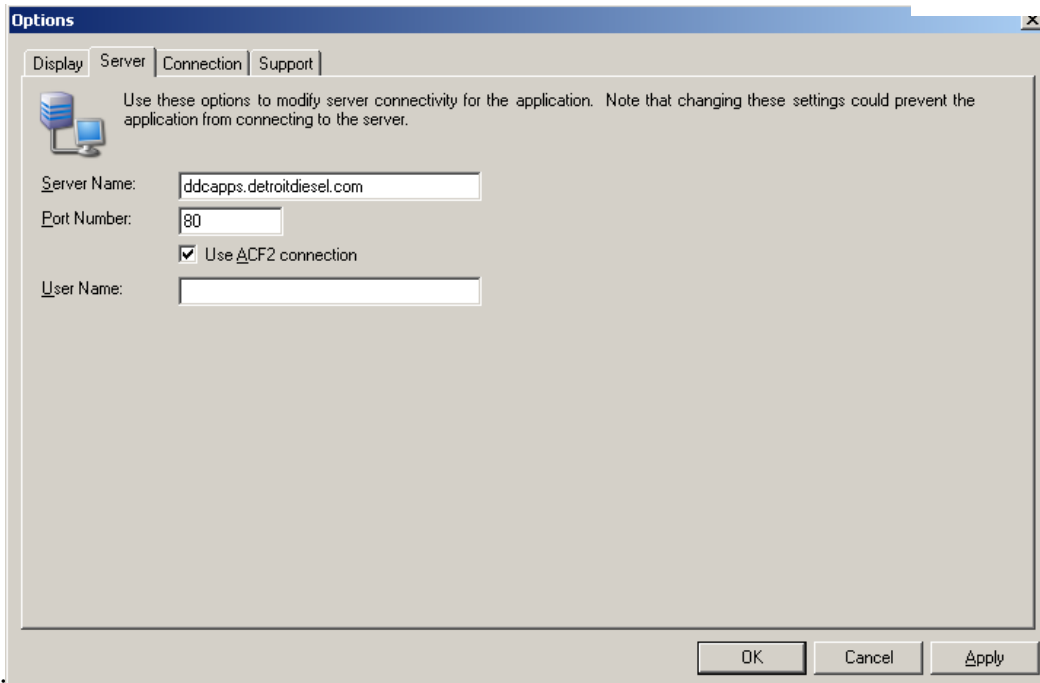
- i. Replace a damaged or faulty CPC module with a new module programmed to the settings of the old module.
- ii. Change the software level (firmware) of an existing CPC to take advantage of new features that may have been added in a more recent release.
- iii. Send the parameter settings currently on the CPC to the DDC Server for future reference.

II. Establishing a Server Connection

Owners of the current Detroit Diesel Programming Station may use their current programming station ID and password to access information on 2007 engines. There are three types of server connections: Internet connection, mainframe connection, or dial-up). To configure DDRS, go to the “Tools” drop-down menu and select options:



Go to the “Server” tab.
Note: The server tab will only be present with DDRS software and your Detroit Diesel hardware key.



You may now fill in the settings based on your particular type of connection. The settings shown at the left are the defaults when the program is installed.

Use the guidelines below to configure DDRS for your type of connection:

[Support for 2007 Settings](#)

Check your current DRS connection type and fill in the proper settings:

[DDC LAN Network or
Distributor Frame Relay or
Dial-up](#)

[Accessing the Server Via Internet](#)

Server Name: 148.99.32.62

Server Name: ddcapps.detroitdiesel.com

Port Number: 80

Port Number: 80

Use ACF2 Connection: checked

Use ACF2 Connection: checked

User Name: Current DRS ID

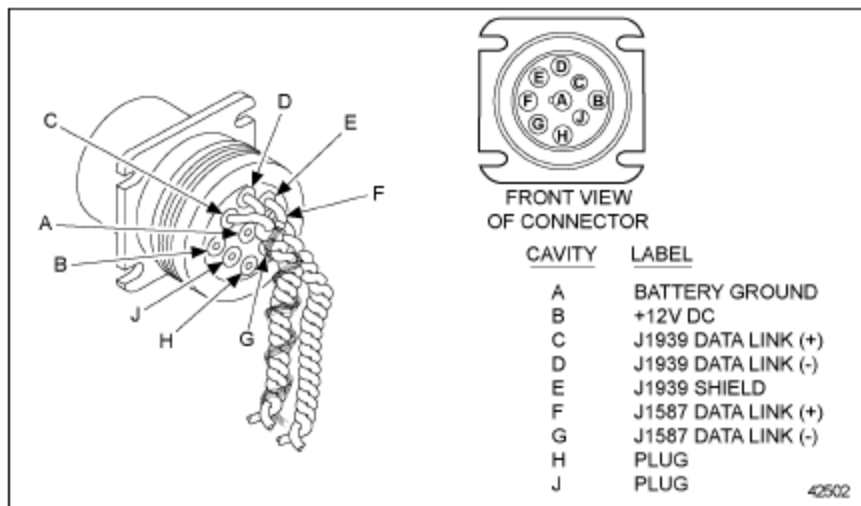
User Name: Current DRS ID

If you have an issue establishing a connection to the server please contact the Detroit Diesel Customer Support Center at 313-592-5800.

IV. Physically Connecting to the MCM and CPC

Here are some key general points to remember when connecting to the MCM and CPC for programming operations:

- All programming operations for both controllers are communicated via CAN communications.
- All 2007 vehicles contain a 9 pin Deutsch connector wired to support both J-1939 / CAN communications and J-1708 communications.
- All programming operations may be carried out on a vehicle that have both the MCM and CPC properly installed. **Note:** There must be a CPC physically present on the vehicle in order for communications to be established with the MCM.
- When plugging into the 9 pin Deutsch connector on the vehicle you must use a mating 9 pin connector fully wired to support J-1939 / CAN communications. The old style 6 to 9 pin Deutsch adapter will not work.



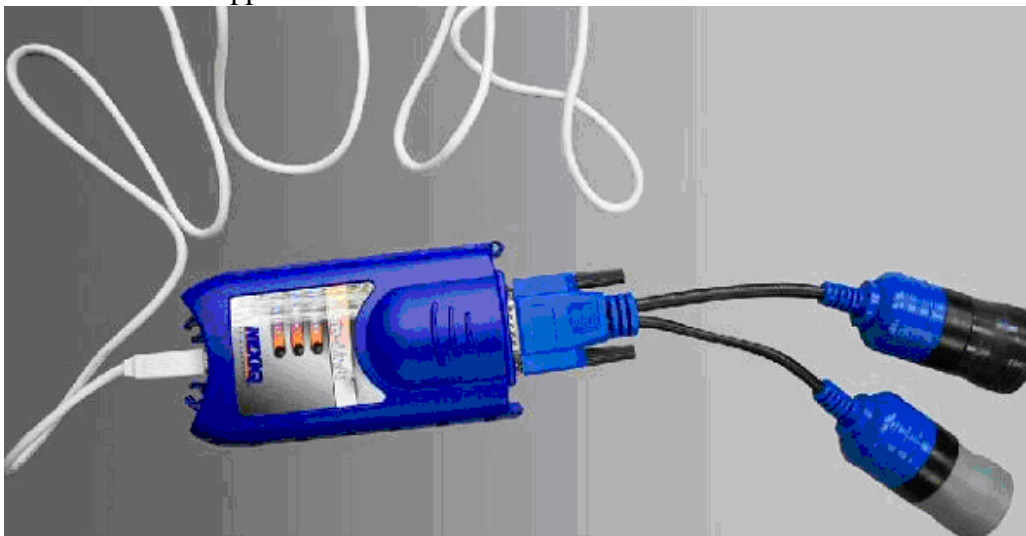
Wiring for 9-pin Data Link Connector

Both controllers may also be programmed using the DDEC VI desktop programming harness (J-48361) that is part of the DDEC VI upgrade kit or will be a standard component inside the 2007 Detroit Diesel Programming Station.



Unlike the connection on the vehicle this harness has been designed to communicate on the desktop with just a CPC, just an MCM, or both modules. When connecting only to an MCM you must make sure the switch to select the type of connection is properly set. The desktop harness contains only the 2 CPC connectors necessary for communications and programming purposes. When connecting the desktop harness to the CPC, the blue connector should be plugged into the CPC connection marked ST4 and the gray connector should be plugged into the CPC connection marked ST2. There is a standard 9 pin Deutsch connector on the harness to connect to you USB Link translator.

When programming 2007 controllers the supported translator box is the Nexiq USB Link. The USB Link provides the reliability and speed necessary for carrying out MCM and CPC programming successfully. Using translator hardware for flashing other than USB Link will not be supported.



When the process for pulling down the server information is complete you will notice that the “Status” has changed from “Request Pending” to “OK”

Program Device

Gather Data > Select Operation > Charge/no-charge > Program Device

Unit Data	Software	Diagnosis Descriptions
Unit	Status	
✓ 06R0926822	OK 9	

The process to gather information on the ESN is now completed.

VI. Understanding DDRS Operations with the MCM / CPC

Once the data has been gathered for a specific engine serial number, the user has the option to perform various options for each module.

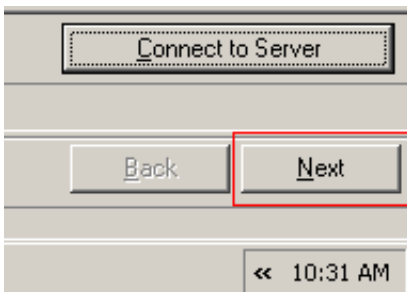
We will now take a look at how each of the options may be selected in DDRS. For our example we’ll be connected to both an MCM and CPC with test serial numbers. We have just finished requesting the ESN information from the server.

Program Device

Gather Data > Select Operation > Charge/no-charge > Program Device

Unit Data	Software	Diagnosis Descriptions
Unit	Status	
✓ 06R0900000 (000000000000000000)	OK	

To view the options available click on the “Next” box at the lower right of the screen.



The next screen to appear is the “Charge / no charge” screen. Choose the option that fits your case. Once these items are filled in the “Next” selection becomes active. Choose “Next” to continue.

Program Device DETROIT DIESEL
A DaimlerChrysler Company

Gather Data > Select Operation > Charge/no-charge > Program Device

The following data will be programmed

Name	Target Data
Device	MCM
Operation	Update Device Software
Software	7.3.3.5
Dataset	455@1550
Settings	Existing Settings
Engine Serial Number	06R0926822

If this is correct, click the Start button

This will be the final screen to appear before the actual programming process begins. It allows the user to review a summary of the choices made on all the previous screens. Carefully check the ESN, programming operation selected, and software level to be used. If everything you have reviewed is correct click on the “Start” box to begin programming.

Once “Start” is selected the process will begin. From this point on there will be no more intervention necessary by the user. The program will go through each step of the process (shown in the lower half of the screen) counting the percentage until completion and then marking each completed section with a checkmark on a green background. The following screens depict the progression of the programming.

Step	Result
Connect to device	Complete
Read existing settings	18.2% Complete
Flash Firmware	
Flash Dataset	
Reset device to default settings	
Write existing settings	
Write Engine Serial Number	
Write Vehicle Identification Number	
Commit settings to permanent memory	
Reconnect to device	

When the “Update Device Software” operation is selected the settings are pulled from the controller and stored. When all stages of the update flashing process are complete the settings are restored to the controller.

Step	Result
Connect to device	Complete
Read existing settings	Complete
Flash Firmware	4.4% Complete
Flash Dataset	
Reset device to default settings	
Write existing settings	
Write Engine Serial Number	
Write Vehicle Identification Number	
Commit settings to permanent memory	
Reconnect to device	

Program Device



Gather Data > Select Operation > Charge/no-charge > Program Device

The following data will be programmed

Name	Target Data
Device	CPC2
Operation	Update Device Software
Software	R01_02_000a
Settings	Existing Settings
Engine Serial Number	06R0900000
Vehicle Identification Number	0000000000000000

If this is correct, click the Start button

Start

This will be the final screen to appear before the actual programming process begins. It allows the user to review a summary of the choices made on all the previous screens. Carefully check the ESN, programming operation selected, and software level to be used. If everything you have reviewed is correct click on the “Start” box to begin programming.

Once “Start” is selected the process will begin. From this point on there will be no more intervention necessary by the user. The program will go through each step of the process (shown in the lower half of the screen) counting the percentage until completion and then marking each completed section with a checkmark on a green background. The following screens depict the progression of the programming.

Connections

☒ CPC2: Reading (15.9%)

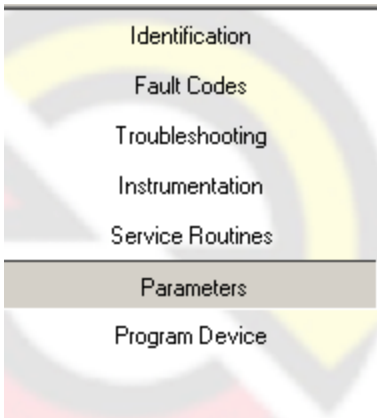
Programming...

Step	Result
☑ Connect to device	Complete
☒ Read existing settings	15.9% Complete
Flash Firmware	
Reset device to default settings	
Write existing settings	
Write Engine Serial Number	
Write Vehicle Identification Number	
Commit settings to permanent memory	
Reconnect to device	

Step	Result
☑ Connect to device	Complete
☑ Read existing settings	Complete
☒ Flash Firmware	39.1% Complete
Reset device to default settings	
Write existing settings	
Write Engine Serial Number	
Write Vehicle Identification Number	
Commit settings to permanent memory	
Reconnect to device	

recommended that the most recent settings be uploaded to the Detroit Diesel server whenever a vehicle happens to be in for some type of service. Follow these steps to upload a set of parameters to the Detroit Diesel server:

From the main function menu in DDRS choose the “Parameters” selection.



When this selection is chosen you will see the application immediately begin to read out all the settings for each connected module. There will be a progress bar visible at the bottom of the “Parameters” window and a numerical count of the progress in the “Connection Status” window in the lower left of the screen.

Parameter	Value	Units
CPC2		
+ PGR001 Communication		
+ PGR002 Vehicle Parameters I		
+ PGR003 Common Limiters		
+ PGR004 Surge Damp		
+ PGR005 Limiters LIM0 and LIM1		
+ PGR006 Limiters AC and LIM2		
+ PGR007 PTO Control on PTO and CC pin		
+ PGR008 Vehicle Speed Sensor		
+ PGR009 Analog Outputs		
+ PGR010 Engine Brake		
+ PGR011 Accelerator Pedal		
+ PGR012 Optimized Idle		
+ PGR013 Inputs		
+ PGR014 Relay 3 and 4		
+ PGR015 Cruise Control		
+ PGR016 Relay 1 and Starter Lockout		
+ PGR017 Idle and PTO Shutdown		
+ PGR018 Engine Protection Shutdown		
+ PGR019 Automatic Fan Activation		
+ PGR020 Remote Accelerator Pedal		
+ PGR021 Droop Control Mode		
+ PGR022 Limiter Governor		
+ PGR023 Limiters II		
+ PGR024 Vehicle Parameters II		
+ PGR025 Transmission		
+ PGR026 Vehicle Identification Number		
+ PGR027 Fleet Management		
+ PGR030 Engine Configuration		
+ PGR031 Vehicle Parameters III		
+ PGR034 SCR System		
+ PGR035 Digital Outputs		

When the parameters have been completely read from the controllers they are now ready to be modified or printed if necessary (for more information on “Parameters” see this section in Help). Two important events automatically occur when a parameter set is read from the controller: 1. The settings are automatically stored on the hard drive as part of the “History Import File” 2. The settings are automatically marked for upload to the server in the Program Device. **Note: Parameters automatically marked for upload will**

