

7 DDEC ECM SOFTWARE FEATURES

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7.1 DDEC ECM SOFTWARE FEATURES

This section is a brief description of DDEC system ECM software features and what is required to activate the feature (DDR, PC, etc.).

NOTE:

For a complete description of features, refer to publication 7SA800, *DDEC III Application and Installation* manual.

7.1.1 Air Compressor Governor System

The air compressor governor system can be set on the mainframe only. This system is similar to the pressure governor system, but for air compressor applications. 6N4C change adjusts the engine speed to compensate for air pressure loads. ECM Software 4.01 is required.

7.1.2 Cruise Control

Cruise control can be set with the DDR or programming station.

- Auto Resume
 - Yes or No. Will re-engage cruise if clutch switch is used to disable. Second press of clutch must be done with 3 seconds of the disengage and cruise will resume at the previously set speed.
- Minimum Cruise Speed
 - Can be set with the DDR or programming station. Normally 20 mph, newer ECM software may allow setting to as low as 10 mph.
- Maximum Cruise Speed
 - Can be set with the DDR or programming station. Limited to the calculated gear bound vehicle speed at rated engine r/min, or if progressive shift = yes, then max cruise speed is limited to high gear r/min. Also limited to vehicle speed limit (if set).
- Engine Brake Cruise
 - Can be set with the DDR or programming station. Refer to engine brake information. Refer to section 7.1.5.

7.1.3 Cruise Switch Variable Speed Governor

The cruise switch can be set with the DDR or programming station. Requires Vehicle Speed Sensor (VSS) set to Yes.

- Initial r/min = 1000 r/min default, initial r/min to ramp up to when set.
- R/min incr = 25 r/min default, r/min increase when res/accl switch is enabled.

7.1.4 Data Pages

Enable data pages on the mainframe (up to 7.00 ECM software). This is automatic with ECM software level 20.xx or higher.

7.1.5 Engine Brake (Jake Brake)

Enabling the engine brake is done on the mainframe. Once turned on, output cavities S3 and T3 are automatically configured to provide voltage to the brake solenoids when the ECM calibrated parameters are met allowing activation.

Also requires two inputs, engine brake low and engine brake med.

Several options are available (programming station or DDR set) relative to engine brake operations:

- Dynamic Fan Braking
 - Enables the cooling fan whenever the engine brake is in high mode. This feature is able to be configured with the programming station or DDR (DDR software level 2.0 or higher).
- Engine Brake / Service Brake
 - This feature forces the operator to, in addition to the normal requirements, press the service brake in order to initiate the engine brake(s). Can be set with the DDR or programming station.
- Engine Brake Minimum MPH
 - This feature allows the customer to set a minimum mph to allow the engine brake to activate. Can be set with the DDR or programming station.
- Engine Brake Cruise
 - Allows engine brakes to activate to programmed levels automatically based on vehicle speed increases. Initial speed is low. The speed of the increments is medium, then high. Level (high, med, low) is limited by dash position switch.
 - Can be set with the DDR or programming station.

7.1.6 Engine Protection Features

Engine protection features can be set with the DDR or programming station. Three features are available:

- Shutdown
- Rampdown
- Warning

7.1.7 Engine Synchro Shift

Engine Synchro Shift™ (ESS) can be set with the programming station. ESS is a joint development between DDC and Rockwell.

The ESS system automatically synchronizes the transmission by matching the engine r/min speed to the road speed of the vehicle, eliminating the need to use the clutch pedal for shifting gears. Refer to publication number 6SE498, *Engine Synchro Shift (ESS) Troubleshooting Manual*.

Requires an ESS transmission type, two inputs (in gear and in neutral), and two outputs (high range solenoid and low range solenoid).

7.1.8 Ether Start

Ether start can be set with the programming station only. Requires ECM software level to be greater than 3.00, and enable output for Ether Start. Refer to *Ether Start* manual, 7SA727.

7.1.9 Fan Controls

Fan type is set in the mainframe; None; Single; Dual; Two Speed; are the allowed types. The correct inputs (if any are needed or desired) and outputs must be configured to an available cavity with the programming station.

- Required Outputs: Configure to any output cavity
 - Fan control #1 for Single
 - Fan control #1 and Fan control #2 for Dual or Two-Speed types
- Inputs are optional: Configure to any input cavity with the programming station
 - Auxiliary Fan Control
 - Fan Override

7.1.10 Fuel Economy Incentive

Fuel Economy Incentive (FEI) can be set with the DDR or programming station.

FEI is a DDEC feature that allows vehicle owners to set driver goals of fuel economy while offering the driver an incentive which is a result of his/her good driving habits. The FEI will automatically allow a higher vehicle speed (speed increase is dependent on the customer selected settings) than is set in the road speed limiting area of the ECM. FEI was released with ECM software level 5.00.

There are four items relative to FEI:

- Minimum MPG (MIN MPG)
 - This would be defined as the customer's minimum fuel economy goal. Any fuel economy obtained by the driver greater than this figure would result in a allowed speed increase. Each increase of 0.1 mpg will provide the speed increase dictated by the Conversion factor (or Scaler MPH/MPG).

- Maximum MPH (MAX MPH)
 - This would be the absolute maximum speed increase to which the customer wants the vehicle limited. The value is an increase above the vehicle speed limit. The allowed values are 0 to 20. A value of 0 disables the FEI feature. A value of 1 to 20 enables the FEI feature.
- Conversion Factor (Scaler MPH/MPG)
 - The miles per hour you want to allow for each full mile per gallon above the minimum mpg.
Example: a value of 10 will allow the driver to go 10 mph above the road speed limit for each full (1) mile per gallon above the minimum mpg. If the minimum mpg is 7.0, and the driver is getting 7.1 mpg, then the system will allow one additional mile per hour increase, etc. The unit will still be limited to the maximum MPH.
- Calculation Type (CALC TYPE)
 - Two choices can be found under this item; FILTERED, or TRIP. This is what you want the FEI to use to base its calculations. Filtered bases the calculations on the fuel information, by periodic sampling of fuel consumption, recorded in the ECM. Trip bases the calculations on the *trip* portion of the fuel usage information.

FEI is only able to be set by the customer or service outlet and only with the DDR or programming station. Requires MPSI DDR version 5.0 or higher.

7.1.11 Fuel Pressure Sensor

Fuel pressure sensing is currently only configured for some industrial engines. It is not available on all series. The fuel pressure sensor used is the same as the oil pressure sensor.

7.1.12 Full Power Continuous Override

Full Power Continuous Override allows the operator to override the shutdown protection and maintain full power rather than ramp down to a reduced performance. This is set on the mainframe.

7.1.13 Function Lockout

Function Lockout was added to the release of 4.00 ECM and DDR software.

The purpose of this new option is to allow users to have a selected area or areas of the customer parameters password protected. For example, a customer can now function lockout the cruise control parameters with a user entered password, and still have the other areas accessible with the DDR with no (four zeros) password.

The function lockout parameters are able to be selected and customized to the customers request. The areas that are able to be protected by function lockout are:

- Idle Shutdown
- VSG Configuration
- Engine Protection
- Cruise Control
- Progressive Shift
- Engine Droop
- Engine/Vehicle Options
- Air Compressor
- ESS Transmission

When making changes with the DDR under the Reprogram Calibration section, you will already have entered a password to get past this step. If any of the functions in the selection list are function lockout protected, the DDR will ask for the function lockout password after that selection is made.

7.1.14 Half Engine Enable

Half engine enable can be set with the DDR for ECMs with 7.00 ECM software or higher. A current DDR is required. Half engine options are:

- No half engine – (OFF)
- Half engine when cold air inlet temperature is less than 12.5°C (55°F), with parking brake set – (IF COLD)
- Half engine all the time, whenever park brake is set – (ON)
- N/A is displayed when changing half engine with the DDR or laptop is not allowed in the engine calibration. The engine may have half engine program as part of that engine calibration. View “Diagnostic Data List” to see if the engine is currently operating in half engine mode.

7.1.15 Idle Shutdown

Idle shutdown can be set with the DDR or programming station.

- Enabled: Yes/No
- Time: 01 – 99 minutes
- Enabled on VSG: Yes/No; this determines if you want the idle timer to shut the engine down during idle only
 - No
 - Yes (Idle and High Idle)
- Override:
 - Yes/No, will flash the CEL 90 seconds before shutdown to allow the driver to press the pedal that will cancel the idle shutdown, and run until the key is cycled or by pressing the pedal again.
 - Ambient Air Temp disallows override: Can be set with the DDR or programming station. (Override Temp Disable) Lower Limit = XX; Upper Limit =XX. (When upper and lower limits are set, the operator will only be able to override ISD if the calculated ambient air temperature is above or below these temperatures. Upper and lower limit both set to 167°F=disables the feature.
- Adding Ambient Temp Sensor: DDC offers an *actual* ambient temperature sensor

NOTE:

If the override temperature disable function is wanted by a customer, it is recommended that this be added (Kit P/N: 23518521, with instructions 18SP397).

7.1.16 Idle Speed

Idle speed can be set on the mainframe for some industrial applications to a maximum of 1000 r/mins. It is a fixed speed for on-highway engines.

7.1.17 Idle Speed Offset

The Idle Speed Offset is read by the DDR as Idle Adjust.

Idle speed offset can be adjusted from + 100 r/min, to – 25 r/min using the DDR. Maximum combined speed for automatic transmission applications is 700 r/min. (Some special applications allow 750 r/min.)

7.1.18 Injector Calibration Codes

Injector calibration codes can be set with the DDR or programming station only. Codes are password protected. Allowed range is 01 – 99.

7.1.19 Input Functions

DDEC has twelve digital input ports listed in Table 7-1, located on the Vehicle Interface Harness. These digital inputs can be configured for various functions, listed in Table 7-2. These functions can be ordered at the time of engine order. Any digital input function is able to be customized by programming the ECM with a the programming station.

Input Cavities		Input Cavities	
E1	#451	G2	#543
F1	#542	H2	#524
G1	#528	J2	#531
H1	#523	K2	#583
J1	#541	G3	#545
F2	#544	K3	#979

Table 7-1 Input Cavities

Functions	Functions	Functions
None	Limiting Torque Curve	Trans Retarder Status
Engine Brake Low	Diagnostic Request	Dual Throttle (LSG)
Engine Brake Med	Alt Min VSG/Fast Idle	A/C Fan Status
Aux Shutdown #1	Service Brake Release	Aux CLS
Aux Shutdown #2	Clutch Released	Fan Control Override
Park Brake / ISD	Set Coast OFF DDEC II	VSG Station Change
Idle Validation	Set / Coast ON	VSG Station Complement
Pressure / RPM Mode	Resume/Accel OFF DDEC II	Air Load Switch
Throttle Inhibit	Resume / Accel ON	In Neutral Switch
RPM Sync (Marine)	Cruise Enable	In Gear Switch
RPM Freeze (Marine)	PGS System Enable	KD Brake
Rating Switch #1	SEO / DIAG Request	Gas Valve Diagnostic
Rating Switch #2	Engine Brake Disable	—

Table 7-2 Available Input Functions

7.1.20 Jake Brake (See Engine Brake)

For information on the Jake Brake®, refer to section 7.1.5.

7.1.21 Optimized Idle Feature

The Optimized Idle® feature can be set with the mainframe. Refer to the *Optimized Idle Installation and Troubleshooting Manual, 7SA734*, for all required information.

7.1.22 Output Functions

The DDEC system has three digital output ports located on the vehicle interface harness and three digital output ports located on a pigtail off the engine sensor harness. These digital outputs can be configured for various functions. The digital output cavities are listed in Table 7-3. These functions can be ordered at the time of engine order. The digital output functions available are listed in Table 7-4. Any digital output function can be customized by programming the ECM with the programming station.

Output Cavities		Output Cavities	
VIH		ESH	
A1	#988	W3	#563
A2	#555	X3	#564
F3	#499	Y3	#565

Table 7-3 Output Cavities

Functions	Functions	Functions
No Function	Fan Control #2	Turbo Recirc Valve
Low DDEC Volt	Deceleration Light	Optimized Idle Active
RPM Sync Active	Engine Brake Active	Low Range Solenoid (ESS)
PGS Active Light	VSG Active Indication	High Range Solenoid (ESS)
Vehicle Power Down	Oil Pressure Low Light	Shift Solenoid (Top2)
Starter Lockout	Oil Temp High Light	Shift Lockout (Top2)
Ext Brake Enable	Coolant Temp High Light	Gas Throttle Actuator
Trans Retarder Enable	Air Comp Solenoid	Fuel Supply Solenoid
Coolant Level Low Light	Crankcase Pressure High	KD Brake Solenoid
Cruise Active Light	Coolant Pressure Low	–
Fan Control #1	Ether Start	–

Table 7-4 Available Output Functions

7.1.23 Passwords

DDEC ECMs have the ability to have unique and separate passwords in the following areas:

- Update customer calibration (calibration change)
- Rating change
- Function lockout (4.00 or higher ECM software function)
- Injector calibration (Only the DDR will change this password)

7.1.23.1 Changing Passwords Using the Diagnostic Data Reader

DDR software level **must** be 2.00 or higher.

1. In the event a customer loses or forgets his/her password, contact a Detroit Diesel Regional Office, or the Detroit Diesel Technical Service Department with the engine serial number. These contacts can provide an alternate (backdoor) password. You should also ensure that there is not any "maximum" or "rating" security enabled on the mainframe for that unit.
2. Using the DDR select the Password Change option in the area that you need to change.
Password changing for Customer Password can be found in the "ENGINE" section, under "Calibration Change". Changing the password for engine rating and function lockout is found under their respective headings under the "Reprogram Cal" menu. Changing the injector password is found in the "ENGINE" section, under "Fuel Injector Information".
3. Enter the alternate password as the current password. The alternate password is a six character alpha numeric code. Enter alpha characters with the DDR by using the up or down arrow keys, that scroll you through the alphabet. Use the side arrow keys to move the cursor to the next position, or to back up to correct an entry.
4. Once all six positions are filled press the enter key.
5. Enter the new password you wish to enter (maximum four positions). Press enter.
6. Depending on the area you are changing, you will get a message that the password is successfully changed, or prompt you to confirm that this is what you really want to do.
7. Turn the ignition off, unplug the DDR.

7.1.24 Pressure Governor System (Fire Truck)

The pressure governor system allows the engine speed to fluctuate to maintain a steady water pump outlet pressure.

NOTE:

This system can be set on the mainframe only (Fire Truck Applications 6N4C change).

The system requires the mainframe to be set to enable the feature. A pressure transducer is required.

NOTE:

The same transducer is used for DDEC II systems and III systems.

Control of the system can be done with switches/Mastermind for DDEC II systems or with Switches/Mastermind or Electronic Fire Commander (EFC) for DDEC III systems. Basic operation is the same for all systems.

The mastermind part number differs for DDEC II systems vs. DDEC III systems.

7.1.25 Progressive Shift Configuration

Progressive shift configuration can be set with the DDR or programming station and can be used to force shifting. It is also useful to limit engine r/min in certain gears, to force shifting to a higher gear. Use Spec Manager to determine values to enter.

7.1.26 Rating Selections

Ratings can be selected with DDR or programming station. Selections are limited to ratings available within the 6N4D group.

7.1.27 Top 2 (Eaton)

Top 2 can be set with the programming station. Two outputs are required – shift solenoid and shift lockout. The transmission type is manual.

7.1.28 Transmission Type

Transmission type can be set with the programming station only. Choices at time of print (may be limited by the application code) are listed in Table 7-5.

TRANSMISSION		TRANSMISSION		TRANSMISSION	
00	Manual	14	Other Automatic	20	Rockwell RSX9-R
01	Allison Hydraulic	15	GE Statex III	21	Rockwell RS10
03	Voith	16	Autoshift / J1939	22	Rockwell RSX10
04	Z-F Ecomat	17	Rockwell RS9	23	Reserved – RSX10-C
09	Allison Electronic	18	Rockwell RSX9-A		–
12	Allison WT	19	Rockwell RSX9-B		–

Table 7-5 Available Transmission Selections

7.1.29 Vehicle Overspeed Parameters

Vehicle overspeed parameters can be set with the DDR or programming station. Customer decided parameters log vehicle overspeed codes. The parameter is typically set for +3 mph and +5 mph greater than the current vehicle speed limit; e.g. vehicle speed limit 65. Maximum overspeed limit is 68 and maximum speed no fuel is 70. Setting both to zero disables the function.

NOTE:

Remember to review these figures if Fuel Economy Incentive is activated.

7.1.30 Vehicle Speed Limiting

Vehicle speed limiting can be set with the DDR or programming station.
Requires VSS set to Yes.

Vehicle Speed Limit = Yes/No

Maximum speed = XX mph.

Limited to the calculated gear bound vehicle speed at rated engine r/min, or if progressive shift = yes, then max cruise speed is limited to high gear r/min.
(XX refers to customer selections.)

7.1.31 Variable Speed Governor or Limited Speed Governor Vehicle Speed Limiting Diagnostics

If low side diagnostics need to be enabled or disabled, this is set on the mainframe.

Low side diagnostics refers to throttle position sensor (TPS) or variable speed governor (VSG) "low volt" codes. This occurs when an ECM is configured to be looking for a signal at one of these items, but nothing is wired to it.

7.1.32 Vehicle Speed Sensor Anti-Tamper

Vehicle Speed Sensor (VSS) anti-tamper can be set with the DDR, or special ECM software available via parts.

Once set, VSS anti-tamper requires 5.0 level DDR or higher to disable.

7.2 DDEC FEATURE SUMMARY

The “x” in a column indicates that this feature has always been available. The numbers indicate the software release that the feature was introduced. A number in the DDR column represents the ECM software release that made the feature available, or able to be changed with the tool listed in the comments column. Parameters that are configured in the Application Code Only are listed in Table 7–6.

Parameter Name	APPL Code 6N4C Only	Mainframe Only	Prog Station	DDR/ DDDL	Comments
Air Compressor Governor System	4	–	–	–	–
Air Temp Sensor	x	–	–	–	–
Air Temp Torque Reduction	3	–	–	–	–
Barometric Pressure Sensor	x	–	–	–	–
Coolant Level Sensor	x	–	–	–	–
Coolant Pressure Sensor	x	–	–	–	–
Crankcase Pressure Sensor	x	–	–	–	–
Cruise MIN r/min	x	–	–	–	Typically 1100 r/min
Disable EOP on VSG	x	–	–	–	Typically fire trucks only
Dual Fuel BOI	x	–	–	–	Methanol engines; replaces fuel pressure sensor
Enable Engine Brakes	x	–	–	–	May be Jakes, KD (S55) or DVB (S55) beginning w/R4
Engine Overtemp Protection	x	–	–	–	Engine power limiting based on high engine temps OTS, CTS, ICTS
Engine Protection Configuration	x	–	–	–	Temp limits F& amt of power/speed reduction
Engine Sync	x	–	–	–	–
Engine Sync Pulses	x	–	–	–	Typically 12
Fan Control Configuration	x	–	–	–	Includes activation temps
Fuel Pressure Sensor	x	–	–	–	–
Glow Plugs	x	–	–	–	Methanol engines
Idle Operation at Zero VSG	x	–	–	–	Typically set for on-highway applications
Intercooler Temp Sensor	x	–	–	–	–
LSG Low Side Diagnostics (Code 22)	x	–	–	–	–
LSG Override VSG	x	–	–	–	–
Oil Pressure Sensor	x	–	–	–	–
Oil Temp Sensor	x	–	–	–	–
Pressure Governor System	x	–	–	–	Fire truck applications
PWM Fan Control	3	–	–	–	Assigned to PWM4 w/R3; can be programmed for PWM2 or PWM4 w/R4*
PWM Fan Control Configuration	3	–	–	–	Includes duty cycle levels and temperatures

Parameter Name	APPL Code 6N4C Only	Mainframe Only	Prog Station	DDR/ DDDL	Comments
VSG	x	–	–	–	–
VSG Low Side Diagnostics (Code 11)	x	–	–	–	Typically unset for on-highway applications
VSG Operation at Higher Vehicle Speeds	5	–	–	–	Typically set to 3 mph
VSG Using Foot Pedal	x	–	–	–	Changes scale of r/min per count

* Typically PWM2 for S149; PWM4 for S50/S60

Table 7–6 Parameters That Are Configured in Application Code Only

The parameters that are configured in the mainframe screens only are listed in Table 7–7.

Parameter Name	APPL Code 6N4C Only	Mainframe Only	Program Station	DDR/ DDDL	Comments
6N4C Group	–	x	–	–	–
6N4D Group	–	x	–	–	–
ATI Port	–	4	–	–	None or TURBO SPD or NAT GAS or VSG FREQ (Pin X–1)
Digital Torque Limiting	–	5	–	–	Utilizes selection of a predefined torque curve and/or speed
Fan Type (Digital Output)	–	x	–	–	–
Full Power Continuous Override	–	x	–	–	–
Hot Idle Speed	–	x	–	–	Some industrial only max 1400 r/min
Max Cold Idle Speed	–	3	–	–	Restricted for automatic trans to 700 r/min
Maximum Security	–	x	–	–	–
Override CCPS Faults	–	3	–	–	Intended for EMD
Override OPS Low Faults	–	3	–	–	Intended for EMD
Rating Security	–	x	–	–	–
Starter Lockout Speed Settings	–	5	–	–	Allows use of this out- put for other functions
VSG is Primary	–	x	–	–	–

Table 7–7 Parameters that are Configured in the Mainframe Screens Only

Parameters that can be configured by the OEM, programming station, and/or the DDR are listed in Table 7-8.

Parameter Name	APPL Code 6N4C Only	Mainframe Only	Prog Station	DDR/ DDDL	Comments
ACG Integral Gain	–	4	4	–	Air Compressor Gov
ACG Pressure Increment	–	4	4	–	–
ACG Proportional Gain	–	4	4	–	–
Engine Sensor Harness Outputs (3)	–	x	x	–	–
Fan A/C Timer	–	5	5	–	Typically set to 180 seconds (3 minutes)
PGS Cavitation Time Out	–	x	x	–	–
PGS Engine Speed Increment	–	x	x	–	–
PGS Integral Gain	–	x	x	–	–
PGS Proportional Gain	–	x	x	–	–
PGS Pump Pressure Increment	–	x	x	–	–
Vehicle Interface Harness Inputs (12)	–	x	x	–	–
Vehicle Interface Harness Outputs (3)	–	x	x	–	–
ACG Delta Pressure to Load	–	4	4	4	Air Compressor Gov
ACG Delta Pressure to Unload	–	4	4	4	–
ACG Maximum Pressure – 1,2,3	–	4	4	4	–
ACG Minimum Pressure – 1.2.3	–	4	4	4	–
Auxiliary Stop 1 or 2 Protection Level	–	x	x	x	–
Coolant Level Protection Level	–	x	x	x	–
Crankcase Pressure Protection Level	–	x	x	x	–
Cruise Auto Resume	–	x	x	x	–
Cruise Control Enable	–	x	x	x	–
Cruise Maximum Speed	–	x	x	x	–
Cruise Minimum Speed	–	x	x	x	–
Dynamic Fan Braking	–	x	2	2	–
Engine Brake Cruise	–	x	x	x	–
Engine Brake Increment	–	x	x	x	–
Engine Brake Low	–	x	x	x	–
Engine Brake–Svc Brake Activation	–	–	5	5	When set requires tap of svc brake to activate Jakes
Engine Brake – Minimum mph	–	–	5	5	Allows deactivation of Jakes below a vehicle speed
FEI – Calculation Type	–	5	5	5	Fuel Economy Incentive
FEI Conversion Factor, mph per mpg	–	5	5	5	–
FEI – Maximum mph	–	5	5	5	–
FEI – Minimum mpg	–	5	5	5	–
Feature Password Protection	–	–	5	4	(Function Lockout)

Parameter Name	APPL Code 6N4C Only	Mainframe Only	Prog Station	DDR/ DDDL	Comments
Half Engine Enable	–	–	–	7	Enable/disable Half engine idle, Off, If Cold, On, N/A
Idle Shutdown Override	–	x	x	x	–
Idle Speed Offset	–	–	–	x	Idle Adjust Normal +100 to –25 rpms
Idle Timer	–	x	x	x	–
Idle Timer Operates ON	–	x	x	x	Idle Gov only, or Idle and VSG Governor
Idle Timer Override Defeat, max temp	–	2	2	2	–
Idle Timer Override Defeat, min temp	–	2	2	2	–
Idle Timer Shutdown	–	x	x	x	–
Injector Calibration Codes	–	–	–	x	–
Intercooler Temp Protection Level	–	x	x	x	–
LSG Droop	–	x	x	x	–
Max Vehicle Overspeed with Fuel	–	x	x	x	–
Max Vehicle Overspeed w/o Fuel	–	x	x	x	–
Oil Pressure Protection Level	–	x	x	x	–
Oil Temp Protection Level	–	x	x	x	–
Progressive Shift Configuration	–	x	x	x	–
Rating Selection (Rating Override)	–	6N4M	x	x	–
Transmiccion Type (PWM #1)	–	x	x	x	–
Unit Number	–	–	–	4	–
Vehicle Speed Limiting	–	x	x	x	–
Vehicle Speed Max	–	x	x	x	–
Vehicle Speed Sensor	–	x	x	x	–
VIN	–	–	x	x	–
VSG Alt Min RPM	–	x	x	x	–
VSG Cruise Init Speed	–	x	x	x	–
VSG Cruise RPM Increment	–	x	x	x	–
VSG Droop	–	x	x	x	–
VSG Maximum RPM	–	x	x	x	–
VSG Minimum RPM	–	x	x	x	–
VSG Using Cruise Switch	–	x	x	x	–
VSS Anti Tamper	–	–	7	5	–
VSS Axle Ratio	–	x	x	x	–
VSS Final Gear Ratio	–	x	x	x	–
VSS Number of Teeth	–	x	x	x	–
VSS Sensor Type	–	x	x	x	Typically tailshaft; also wheel or J1939

Parameter Name	APPL Code 6N4C Only	Mainframe Only	Prog Station	DDR/ DDDL	Comments
VSS Signal Type	–	2	2	2	Typically magnetic; also open-collector/switch
VSS Tire Revolutions	–	x	x	x	–

Table 7–8 Parameters that can be Configured by the OEM, Programming Station, and/or the DDR

DDEC Features, code 6N5, are listed in Table 7–9.

Parameter Name	Code	Mainframe Only	Program Station	DDR	Comments
No DDEC Feature	6N5–NONE	–	–	–	–
ECM Data Pages Only	6N5–0001	–	–	–	–
Optimized Idle Only	6N5–0002	–	–	–	–
Data Pages and Optimized Idle	6N5–0003	–	–	–	–

Table 7–9 6N5 – DDEC Features