

FINNING

CAT

Previous Screen

< Product: NO EQUIPMENT SELECTED
Model: NO EQUIPMENT SELECTED
Configuration: NO EQUIPMENT SELECTED

Service Information System

Welcome: eve

Troubleshooting

793F and 797F Off-Highway Trucks VIMS, Monitoring, and Payload

Media Number -KENR9023-08

Publication Date -01/09/2015

Date Updated -01/08/2017

i06546188

Diagnostic Code List

SMCS - 7569

Use the Cat® Electronic Technician (Cat ET) service tool or the Advisor to determine the diagnostic codes. After determining the diagnostic codes, refer to the corresponding test procedure for more information. Perform the procedure that corresponds to the Component Identifier (CID) and the Failure Mode Identifier (FMI) of the diagnostic code. Table 1 is a list of possible diagnostic codes for the VIMS™ 3G Main Electronic Control Module (ECM). Table 2 is a list of possible diagnostic codes for the VIMS 3G Application ECM.

Table 1	
Diagnostic Codes For the VIMS 3G Main ECM (MID 161) ⁽¹⁾	
Perform the procedure that corresponds to the CID and the FMI of the diagnostic code during troubleshooting.	
CID / FMI	Description
CID 0168 Electrical System Voltage	
FMI 01	Data valid but below normal operating range
FMI 03	Voltage Above Normal
CID 0246 Proprietary CAN Data Link	
FMI 09	Abnormal Update Rate
CID 296 Transmission Control	
FMI 09	Abnormal Update Rate
FMI 14	Special Instruction
CID 0533 Brake Control	
FMI 09	Abnormal Update Rate
FMI 14	Special Instruction
CID 0590 Engine Control	
FMI 09	Abnormal Update Rate
FMI 12	Bad device or component
CID 768 RS-485 Data Link	
FMI 09	Abnormal Update Rate
CID 800 VIMS Main Control	
FMI 11	Configuration File Needed
CID 0890 Telemetry Data Link	
FMI 09	Abnormal Update Rate
CID 1089 VIMS Application Control	
FMI 09	Abnormal Update Rate
FMI 14	Special Instruction
CID 1273 Chassis Control	
FMI 09	Abnormal Update Rate
FMI 14	Special Instruction
CID 2448 Graphical Display Module	
FMI 02	Data erratic, intermittent, or incorrect
FMI 09	Abnormal Update Rate
FMI 14	Special Instruction

⁽¹⁾ The MID for the VIMS 3G Main ECM is 161. This table pertains only to faults with a MID of 161.

Table 2	
Diagnostic Codes For the VIMS 3G Application ECM (MID 162) ⁽¹⁾	
Perform the procedure that corresponds to the CID and the FMI of the diagnostic code during troubleshooting.	
CID / FMI	Description
CID 0246 Proprietary CAN Data Link	
FMI 09	Abnormal Update Rate
CID 0296 Transmission Control	
FMI 09	Abnormal Update Rate
FMI 14	Special Instruction
CID 0533 Brake Control	
FMI 09	Abnormal Update Rate
FMI 14	Special Instruction
CID 0590 Engine Control	

Illustration 1
Range of possible FMI codes generated from a failed sensor.

g00493694

Table 4

Failure Mode Identifier Definitions	
FMI	"Failure Description"
00	"Data valid but above normal operating range"
01	"Data valid but below normal operating range"
02	"Data erratic, intermittent, or incorrect"
03	"Voltage above normal or shorted high"
04	"Voltage below normal or shorted low"
05	"Current below normal or open circuit"
06	"Current above normal or grounded circuit"
07	"Mechanical system not responding properly"
08	"Abnormal frequency, pulse, or period"
09	"Abnormal update"
10	"Abnormal rate of change"
11	"Failure mode not identifiable"
12	"Bad device or component"
13	"Out of calibration"
14	Special Instruction

Detailed FMI Explanation

FMI 00 Data Valid But Above Normal Operating Range - Every electronic control system has a high limit setting for the expected operating range of the signal. The high limit includes over range signals. A sensor that is still operating but sending a signal above the expected limit will cause an FMI 00 to be recorded.

Following are some of the possible causes of an FMI 00:

- Signal is above normal
- Signal is shorted to the +battery circuit
- Sensor is out of calibration

The following is an example of a sensor that needs calibration. A PWM signal with an 80% duty cycle is a valid signal. If the PWM signal exceeds 80%, the sensor is still working but the signal from the sensor is above range.

FMI 01 Data Valid But Below Normal Operating Range - Every electronic control system sets a low limit for the expected operating range of the signal. A sensor may still be working but is sending a signal below the minimum range.

Following are some of the possible causes of an FMI 01:

- Signal is below the normal range
- Timing is incorrect

The following is an example of a PWM sensor. This sensor is not expected to generate a PWM signal below a duty cycle of 5% with 0 psi air pressure. A sensor that generates a signal with a duty cycle of 4% at 0 psi will work but the signal is below range. FMI 01 will be recorded for this condition.

FMI 02 Data Erratic, Intermittent, or Incorrect - The signal from a component is present. The control that reads the diagnostic information cannot read the signal properly. The signal appears to be unstable or invalid. The data can be intermittent. This condition can relate to communication between controls.

Following are some of the possible causes of an FMI 02:

- Failed connection.
- Signal is intermittent or erratic.
- Software has been changed.
- Signal is noisy.
- Signal is out of range.

FMI 03 Voltage Above Normal or Shorted High - The component or system voltage is higher than the limit. FMI 03 most often relates to a signal circuit.

Following are some of the conditions that could cause an FMI 03:

- Sensor or switch failure
- Harness damage
- ECM failure

Following are some of the possible causes of an FMI 03:

- Sensor has failed and the voltage output is high.
- Wiring harness has a sensor signal wire shorted to a high voltage.
- Wiring harness has an open circuit in the sensor signal wire.
- Control failure.

FMI 04 The Voltage is Below Normal or the Voltage is Shorted Low - The component or system voltage is lower than the limit. FMI 04 most often relates to a signal circuit.

Following are some of the conditions that could cause an FMI 04:

- Sensor or switch failure
- Harness damage
- ECM failure

Following are some of the possible causes of an FMI 04:

- Sensor has failed and the voltage output is low.