

DESCRIPTION AND OPERATION > CHARGING SYSTEM - 2.7L ECOBOOST (238KW/324PS) - SYSTEM OPERATION AND COMPONENT DESCRIPTION > NETWORK MESSAGE CHART

Module Network Input Messages - Body Control Module (BCM)

Broadcast Message	Originating Module	Message Purpose
Alternator fault	PCM	The PCM has detected a fault in the generator or generator circuits.

Module Network Input Messages - Instrument Panel Cluster (IPC)

Broadcast Message	Originating Module	Message Purpose
Power system status	BCM	Reports any generator/charging system faults. Used for charging system fault indicator.
Load Shed Request	BCM	Used to indicate what level of load shed is commanded.

Module Network Input Messages - Powertrain Control Module (PCM)

Broadcast Message	Originating Module	Message Purpose
Load Shed Request	BCM	Used to indicate what level of load shed is commanded.

DESCRIPTION AND OPERATION > CHARGING SYSTEM - 2.7L ECOBOOST (238KW/324PS) - SYSTEM OPERATION AND COMPONENT DESCRIPTION > CHARGING SYSTEM

The PCM controlled Smart Charge charging system determines the optimal voltage setpoint for the charging system and communicates this information to the voltage regulator. The Smart Charge charging system sets Diagnostic Trouble Codes (DTCs) when a charging system fault is present. All of the Diagnostic Trouble Codes (DTCs) can set continuous faults, but not all Diagnostic Trouble Codes (DTCs) set as on-demand faults.

This system uses 2 communication lines between the PCM and the generator/voltage regulator: A generator communication (GENCMD) line communicates the desired setpoint from the PCM to the voltage regulator, and a generator monitor (GENMON) line communicates the generator load and error conditions to the PCM. Both of these use PWM. The PCM sends the GENCMD command only when it is necessary to adjust the voltage setpoint. If the setpoint does not need to be changed, several seconds may elapse between PCM GENCMD commands. This normal operation appears in the PID as occasional bursts of pulse-width commands. In addition to these two circuits, a third pin on the voltage regulator, the "A" circuit pin, is dedicated to monitor, or sense, the battery voltage.

The PCM simultaneously controls and monitors the generator output. When the current consumption is high or the battery is discharged, the PCM raises engine speed as needed to increase generator output. The generator charges the battery and at the same time supplies power for all of the electrical loads. The