

2017 GENERAL INFORMATION**Vehicle Diagnostic Information - Specifications - Encore, Trax****SPECIFICATIONS****BODY CONTROL MODULE SCAN TOOL INFORMATION****Body Control Module Scan Tool Data Parameters**

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON, Vehicle in Park, All Doors Closed			
5 V Ignition Switch	-	Accessory/Key Out	The scan tool displays Off, Accessory, Run, or Crank. This parameter displays the ignition switch mode.
Accent Lighting 1 Command	-	Varies	This parameter displays the interior lighting ambient 1 command as a percentage.
Accent Lighting 2 Command	-	Varies	This parameter displays the interior lighting ambient 2 command as a percentage.
Accessory	-	Active	The scan tool displays Active or Inactive.
Accessory Power Mode Indicator Command	-	Varies	This parameter displays ignition switch accessory LED PWM command as a percentage.
Accessory Relay Command	-	Active	The scan tool displays Active or Inactive.
Accessory/Retained Accessory Power Relay Command	-	Active	The scan tool displays Active or Inactive. This parameter displays the retained accessory power relay status.
All Doors Lock Command	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the door lock status.
Ambient Light Sensor	-	Varies	The scan tool displays volts. This parameter displays the ambient light sensor signal voltage.
Ambient Light Status	-	Night	The scan tool displays Unknown, Night, or Day. This parameter displays the ambient light level status.
Automatic Headlamps Disable Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the headlamp disable switch status.
Automatic Transmission Manual Shift Switch	-	Off	The scan tool displays Off or On. This parameter displays the transmission tap up tap down switch status.
Backup Lamps Relay Command	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the backup lamps relay status.

Parameter	System State	Expected Value	Definition
Battery Current Sensor	-	Varies	The scan tool displays the battery current in amperes.
Battery Low at Start	-	Inactive	The scan tool displays Active or Inactive. This parameter displays Active when the battery level is low when the vehicle starts.
Battery Reconnect Detected	-	No	The scan tool displays No or Yes when a battery disconnect/reconnect event has been detected.
Battery Voltage	-	Varies	The scan tool displays the current battery voltage.
BCM-Controlled Charging Voltage	-	Active	The scan tool displays Active or Inactive.
BCM-Requested Charging Voltage Reduction	-	Inactive	The scan tool displays Active or Inactive. This parameter displays Active when the BCM has detected a low battery voltage condition.
Boot Software Part Number	-	Varies	The scan tool displays the boot software part number.
Brake Lamp Command	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the brake lamp command status.
Brake Pedal Applied	-	Inactive	The scan tool displays Active or Inactive.
Brake Pedal Initial Travel Position Achieved	-	No	The scan tool displays No or Yes.
Brake Pedal Position Sensor	-	Varies	This displays Counts. This numeric value is the current brake pedal position.
Brake Pedal Position Sensor High Voltage During Learn	-	No	The scan tool displays No or Yes.
Brake Pedal Position Sensor Learn	-	No	The scan tool displays No or Yes. This parameter displays Yes when the brake pedal position sensor has learned.
Brake Pedal Position Sensor Learned Home Position	-	Yes	The scan tool displays No or Yes. This parameter displays Yes when the brake pedal position sensor has learned the home position.
Brake Pedal Position Sensor Learned Released Position	-	Yes	The scan tool displays No or Yes. This parameter displays Yes when the brake pedal position sensor has learned the released position.
Brake Pedal Position Sensor Learned Released Position	-	Varies	The scan tool displays volts.
Brake Pedal Position Sensor Learned Released Position	-	Varies	The scan tool displays percentage.
Brake Pedal Position Sensor Low Voltage During Learn	-	No	The scan tool displays No or Yes.
Brake Pedal Position Sensor Move During Learn	-	No	The scan tool displays No or Yes. This parameter displays the brake pedal sensor learn status.
Brake Pedal Position Sensor Pulled Up from Home Position	-	No	The scan tool displays No or Yes.

Parameter	System State	Expected Value	Definition
Brake Pedal Position Sensor Reference	-	Varies	The scan tool displays the brake pedal position as voltage value. This parameter displays the current brake pedal position sensor reference.
Brake Pedal Pulled Up from Home Position	-	No	The scan tool displays No or Yes.
Brake Pedal Pulled Up from Released Position	-	No	The scan tool displays No or Yes.
Brake Transmission Shift Interlock Solenoid Actuator	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the remote start diagnostic status history.
Brake Transmission Shift Interlock Solenoid Actuator Command	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the last remote start diagnostic status history.
Calculated Brake Pedal Position	-	Varies	The scan tool displays volts.
Calculated Brake Pedal Position	-	Varies	The scan tool displays percentage.
Calibration Part Number 1-20	-	Varies	The scan tool displays the software module calibration part number.
Center Brake Lamp Command	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the center brake lamp status.
Center Stop Lamp Command	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the center stop lamp status.
Central Door Lock Switch on Center Console/Passenger Door Lock Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the driver door lock switch status.
Child Security Lock Indicator Command	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the child security lock indicator command status.
Child Security Lock Motors Command	-	Inactive	The scan tool displays Active or Inactive.
Child Security Lock/Window Lockout Switch	-	Inactive	The scan tool displays Active or Inactive.
Child Security Lock/Window Lockout Switch Indicator Command	-	Inactive	The scan tool displays Active or Inactive.
Content Theft Deterrent Alarm Status	-	Disarmed	The scan tool displays Off, Armed, or Disarmed. This parameter displays the content theft alarm status.
Content Theft Deterrent Disarmed Until Vehicle Closed	-	No	The scan tool displays No or Yes. This parameter displays the content theft deterrent system status.
Content Theft Deterrent Mode	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the remote start diagnostic status history or the last remote start diagnostic status history.

Parameter	System State	Expected Value	Definition
Content Theft Deterrent Trigger History 1-3	-	None	The scan tool displays None, Driver door, Passenger door, Left rear door, Right rear door, Rear closure, Midgate, Tonneau Cover, Hood, Ignition Voltage, Intrusion, Inclination, Telematics enhanced service alarm, Battery reconnect detected, Unauthorized PWM change, Security Indicates Tamper, or Glass Breakage. This parameter displays the content theft deterrent trigger history status.
Courtesy Lamps Duty Cycle Command	-	Varies	This parameter displays the interior lights dimming command as a percentage.
Crank Abort	-	Inactive	This parameter displays the remote start diagnostic status history or the last remote start diagnostic status history.
Cruise Charging Set Level	-	Varies	This parameter displays cruise charging set level.
Cruise Control Switch Status	-	OFF	The scan tool displays CANCEL, OFF, ON, RESUME, SET or ERROR. This parameter displays the cruise control switch status.
Current Content Theft Deterrent Trigger	-	None	The scan tool displays None, Driver door, Passenger door, Left rear door, Right rear door, Rear closure, Midgate, Tonneau Cover, Hood, Ignition Voltage, Intrusion, Inclination, Telematics enhanced service alarm, Battery reconnect detected, Unauthorized PWM change, Security Indicates Tamper, Glass Breakage. This parameter displays the content theft deterrent current alarm trigger.
Current Driver	-	1-8	This parameter displays the current driver in vehicle.
Disable Battery Saver Relay Command	-	Inactive	The scan tool displays Active or Inactive.
Dome Lamp Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the dome lamp switch status.
Door Lock Switch	-	Inactive	The scan tool displays Active or Inactive.
Driver Door Ajar Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the driver door Ajar switch status.
Driver Door Key Unlock Switch	-	Inactive	The scan tool displays Active or Inactive.
Driver Door Lock Switch	-	Inactive	The scan tool displays Active or Inactive.
Driver Door Unlatch Command	-	Inactive	The scan tool displays Active or Inactive.

Parameter	System State	Expected Value	Definition
Driver Door Unlock Command	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the driver door unlock command status.
Driver Seat Heating Switch	-	Inactive	The scan tool displays Active or Inactive.
Driver Seat Heating/Venting/Cooling Mode	-	Off	The scan tool displays On or Off.
Driver Seat Ventilation Switch	-	Inactive	The scan tool displays Active or Inactive.
Driver Window Learned	-	Yes	The scan tool displays No or Yes.
Driver Window Main Control Down Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the driver window main control down switch input status.
Driver Window Main Control Express Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the driver window switch express input status.
Driver Window Main Control Up Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the driver window switch UP input status.
Driver Window Motor Mode	-	Local Switch Overridden	The scan tool displays Down, Express Down, Express, Up, Error, Inhibit, or Local Switch Overridden. This parameter displays the driver window motor mode status.
Driver Window Motor Reversing Status	-	No	The scan tool displays No or Yes.
Driver Window Motor Sensing System Fault Status	-	No	The scan tool displays No or Yes.
Driver Window Motor Undervoltage Status	-	No	The scan tool displays No or Yes.
Enable Battery Saver Relay Command	-	Inactive	The scan tool displays Active or Inactive.
End Model Part Number	-	Varies	This parameter displays the end model part number.
Engine Stalled	-	Inactive	This parameter displays the remote start diagnostic status history or the last remote start diagnostic status history.
Environment Identification	-	Unknown	The parameter displays the vehicle environment identification successful status.
Front Fog Lamps Relay Command	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the front fog lamp relay status.
Front Fog Lamps Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the front fog lamp switch status.
Front Passenger Window Main Control Down Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the front passenger window down switch status.

Parameter	System State	Expected Value	Definition
Front Passenger Window Main Control Express Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the passenger window switch express input status.
Front Passenger Window Main Control Up Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the passenger window switch UP input status.
Front Tire Pressure on Placard	-	Varies	The scan tool displays kPa or PSI. This parameter displays the specified tire pressure placard information programmed in the BCM for tire pressure monitoring.
Fuel Economy Mode Inhibited - Low Charging Voltage	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the fuel economy mode status.
Generator Regulator Setpoint	-	Varies	The scan tool displays percentage.
Glove Box Unlatch Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the instrument panel compartment release switch status.
Hazard Lamps Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the hazard lamps switch status.
Hazard Lamps Switch Backlight Command	-	Varies	The scan tool displays percentage. This parameter displays hazard switch backlight level PWM command status.
Headlamps On Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the headlamp on switch status.
Headlamps Flash Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the headlamps flash to pass switch status.
Headlamp Washer Relay Command	-	Inactive	The scan tool displays Active or Inactive.
High Beam Select Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the high beam switch status.
High Beam Command	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the high beam command status.
Hood Ajar Switch	-	Inactive	This parameter display the remote start diagnostic status history or the last remote start diagnostic status history.
Hood Ajar Switch Signal 1	-	Inactive	This parameter display the remote start diagnostic status history or the last remote start diagnostic status history.
Hood Position	-	CLOSED	The scan tool displays CLOSED, AJAR, or OPENED. This parameter displays the hood position.
Horn Relay Command	-	Inactive	The scan tool displays Active or Inactive.

Parameter	System State	Expected Value	Definition
Horn Switch	-	Inactive	The scan tool displays Active or Inactive.
Idle Boost Level 2-3 Counter	-	Varies	This parameter displays the state of the idle boost level as counts.
Idle Charging Set Level	-	Varies	This parameter displays idle charging set level.
Ignition Mode Switch Dimming Command	-	Varies	The scan tool displays percentage.
Ignition Switch Reference	-	Varies	This parameter displays the ignition switch voltage reference.
Ignition Switch Signal Voltage	-	Varies	This parameter displays the ignition switch signal voltage.
Ignition Switch Status	-	Inactive	This parameter displays the ignition switch status.
Immobilizer Allows Engine To Start	-	Unknown	The scan tool displays Unknown, Incorrect, Not Allowed, or Valid. This parameter displays the immobilizer status.
Immobilizer Automatic Learn Timer	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the automatic learn timer status.
Immobilizer Environment Device 1-4	-	Unknown	The scan tool displays Incorrect, Correct, Not Received, Not Programmed or Unknown. This parameter displays the immobilizer source status.
Immobilizer Password Learn	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the password learn status.
Immobilizer Password Learn Scan Tool Delay	-	Varies	This parameter displays the auto learn timer status.
Immobilizer Security Code Accepted	-	No	The scan tool displays No or Yes.
Immobilizer Security Code Lockout	-	No	The scan tool displays No or Yes.
Immobilizer Security Code Programmed	-	Yes	The scan tool displays No or Yes.
In Park Switch Status	-	On	The scan tool displays On or Off. This parameter displays the park switch status.
Inadvertent Load Command	-	Active	The scan tool displays Active or Inactive.
Indicator Dimming Duty Cycle Command	-	Varies	The scan tool displays percentage. This parameter displays indicator lighting PWM command status.
Interior/Courtesy Lighting Master Switch	-	Door	The scan tool displays Door or other lighting switch status.
Interior Trunk Lid/Liftgate Window Unlatch Switch	-	Inactive	The scan tool displays Active or Inactive.
Key Capture Solenoid Actuator	-	Active	The scan tool display Active or Inactive. This parameter displays column lock input status.
Key Fob 1-4 Battery Status	-	OK	The scan tool displays OK or other key fob battery status. This parameter displays the key fob battery status.

Parameter	System State	Expected Value	Definition
Key Fob 1-4 Function	-	Undefined	The scan tool displays Inactive, Lock, Unlock Driver Door, All Door Unlock, Release Rear Closure, Actuate Left Sliding Door, Actuate Right Sliding door, Panic Alarm, Release Fuel door, Actuate Power Windows, Actuate Folding Top, Start Engine, Stop Engine, Programmed, Locator Alarm, Close Liftgate, Open Liftgate, Stop Liftgate While Closing, Stop Liftgate While opening, Deadlock All Doors, Stop Liftgate Motion, Start Liftgate Motion, Stop Left Sliding Door Motion, Stop Right Sliding Door Motion, Comfort open, or Comfort close. This parameter displays the key fob function status.
Key Fob in Vehicle	-	Inactive	This parameter displays the current key fob in the vehicle.
Key In Cylinder Switch	-	Active	The scan tool displays Active or Inactive.
Key In Cylinder Switch/Key Fob in Vehicle	-	Yes	The scan tool displays No or Yes.
Key in Ignition Status	-	Inactive	The scan tool displays Key Out or Key In. This parameter displays the key in ignition status.
Key Part Number	-	Varies	This parameter displays the key part number.
Key Type	-	Master Key	The scan tool displays Unknown, Master Key, Valet Key, Fleet Key, or Unconfigured. This parameter displays the key type.
Last Door Lock Function	-	All Doors Lock	The scan tool displays NO Action, PC UNDB Lock, PC Unlock, Unlock, Unlock Driver, Unlock Passenger, Unlock Left Rear, Unlock Right Rear, Unlock Cargo Liftgate, Unlock Driver Side, Unlock Passenger Side, Unlock Non Driver, Unlock All, Lock All, DBL Lock, or UNDBL Lock.
LED Backlight Dimming Command	-	Varies	The scan tool displays as a percentage. This parameter displays LED backlight dimming PWM command status.
Left Brake Lamp Command	-	Varies	The scan tool displays percentage. This parameter displays left brake lamp command status.
Left Dedicated Daytime Running Lamp Command	-	Varies	The scan tool displays percentage. This parameter displays left dedicated daytime running lamp command status.
Left Front Tire Pressure	-	Varies	This parameter displays left front tire pressure in PSI.

Parameter	System State	Expected Value	Definition
Left Front Tire Pressure Sensor Identification	-	Varies	This parameter displays left front tire pressure sensor ID.
Left Front Tire Pressure Sensor Location Learned	-	Yes	The scan tool displays No or Yes. This parameter display tire pressure monitor system learned status.
Left Front Tire Pressure Sensor Mode	-	Learn Mode - Pressure Triggered	The scan tool parameter displays Learn Mode, Undefined, Remeasure Data Mode, Rolling Mode, Enter Off Mode, Exit Off Mode, or Learn Mode Pressure Triggered.
Left Front Tire Pressure Status	-	Normal	The scan tool displays Unknown, Normal, Very Low Pressure, Low, Weak Signal, or High.
Left Front Turn Signal Bulb Out Feedback	-	Inactive	The scan tool displays Active or Inactive.
Left Front Turn Signal/Hazard Lamp Command	-	Inactive	The scan tool displays Active or Inactive.
Left Low Beam/Daytime Running Lamp Command	-	Varies	The scan tool displays percentage. This parameter displays left low beam/daytime running lamp status.
Left Park Lamps Command	-	Varies	The scan tool displays percentage. This parameter displays rear exterior lighting status.
Left Rear Child Security Lock Switch	-	Inactive	This parameter displays Active or Inactive.
Left Rear Door Ajar Switch	-	Inactive	This parameter displays Active or Inactive. This parameter displays the left rear door ajar switch status.
Left Rear Tire Pressure	-	Varies	This parameter displays left rear tire pressure in PSI.
Left Rear Tire Pressure Sensor Identification	-	Varies	This parameter displays left rear tire pressure sensor ID.
Left Rear Tire Pressure Sensor Location Learned	-	Yes	The scan tool displays No or Yes. This parameter displays tire pressure monitor system learned status.
Left Rear Tire Pressure Sensor Mode	-	Stationary	The scan tool displays Learn Mode, Undefined, Remeasure Data Mode, Rolling Mode, Enter Off Mode, Exit Off Mode, or Learn Mode Pressure Triggered.
Left Rear Tire Pressure Status	-	Normal	The scan tool displays Unknown, Normal, Very Low Pressure, Low, Weak Signal, or High.
Left Rear Turn Signal Bulb Out Feedback	-	Inactive	The scan tool displays Active or Inactive. The parameter displays turn lamp outage status.
Left Rear Turn Signal/Hazard Lamp Command	-	Inactive	The scan tool displays Active or Inactive.
Left Rear Window Learned	-	Yes	The scan tool displays No or Yes.

Parameter	System State	Expected Value	Definition
Left Rear Window Main Control Down Switch	-	Inactive	The scan tool display Active or Inactive. This parameter displays driver window switch inputs.
Left Rear Window Main Control Express Switch	-	Inactive	The scan tool display Active or Inactive. This parameter displays driver window switch inputs.
Left Rear Window Main Control Up Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays driver window switch inputs.
Left Rear Window Motor Mode	-	Local Switch Overridden	The scan tool displays Down, Express, Up, Inhibit, or Local Switch Overridden.
Left Rear Window Switch at Door	-	Inactive	The scan tool displays Active or Inactive.
Left Stop Lamp Command	-	Varies	The scan tool display percentage.
Left Turn Signal Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the left turn signal switch status.
License Plate Lamps Command	-	Inactive	The scan tool displays Active or Inactive.
Load Reduction Level 2-3 Counter	-	Varies	The scan tool display as counts.
Low Beam Relay Command	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the headlamp low beam relay status.
Manufacturers Enable Counter	-	Varies	This parameter tool displays various counter values.
Master Keys Learned	-	Varies	This parameter displays the total number of master keys learned.
Module Diagnostic Address	-	Varies	This parameter displays module diagnostic address.
Number of Key Fobs In Vehicle	-	1	This parameter displays the number of fobs located in the vehicle.
Odometer	-	Varies	This parameter displays the vehicle mileage.
Outside Rear View Mirror Courtesy Lamp Command	-	Inactive	The scan tool displays Active or Inactive. This parameter displays front exterior lighting status.
Park Brake Switch	-	Active	The scan tool displays Active or Inactive. This parameter displays front exterior lighting status.
Park Lamps Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays Active when the parklamp switch is activated.
Passenger Door Ajar Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the passenger door ajar switch status.
Passenger Door Lock Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the passenger door lock switch status.

Parameter	System State	Expected Value	Definition
Passenger Door Unlock Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the passenger door unlock switch status.
Passenger Door(s) Unlatch Command	-	Inactive	The scan tool displays Active or Inactive.
Passenger Door(s) Unlock Command	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the passenger door unlock status.
Passenger Seat Heating Switch	-	Inactive	The scan tool displays Active or Inactive.
Passenger Seat Heating/Venting/Cooling Mode	-	Off	The scan tool displays On or Off.
Passenger Seat Ventilation Switch	-	Inactive	The scan tool displays Active or Inactive.
Passenger Window Learned	-	Yes	The scan tool displays No or Yes. This parameter displays the passenger window learned status.
Passenger Window Motor Mode	-	Local Switch Overridden	The scan tool displays Down, Express, Up, Inhibit, or Local Switch Overridden.
Passenger Window Switch at Door	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the passenger window switch status.
Pickup Bed Cargo Lamp Command	-	Varies	The scan tool displays percentage. This parameter displays pickup bed cargo lamp command status.
Previous Key Type	-	Unknown	This parameter displays previous driver identification device type.
Primary Key Status	-	Yes	The scan tool displays No or Yes.
Push Button Ignition Switch	-	Inactive	The scan tool displays Active or Inactive.
Push Button Ignition Switch Voltage	-	Varies	This parameter displays the push button ignition switch voltage.
Rain Sensor	-	Inactive	The scan tool displays Active or Inactive.
Rear Closure Ajar Switch	-	Active	The scan tool displays Active or Inactive.
Rear Closure Cylinder Lock Switch	-	Inactive	The scan tool displays Active or Inactive.
Rear Closure Cylinder Unlock Switch	-	Inactive	The scan tool displays Active or Inactive.
Rear Tire Pressure on Placard	-	Varies	This parameter displays the rear tire pressure in kPa or PSI. This parameter displays the specified tire pressure placard information programmed in the BCM for tire pressure monitoring.
Regulated Voltage Control Mode	-	Voltage	The scan tool displays voltage.
Remote Vehicle Start Attempts Exhausted	-	Varies	This parameter displays the remote start diagnostic status history or the last remote start diagnostic status history or remaining start attempts.

Parameter	System State	Expected Value	Definition
Remote Vehicle Start Crank Time	-	Inactive	This parameter displays the remote start diagnostic status history or the last remote start diagnostic status history.
Remote Vehicle Start Disabled by Driver	-	Inactive	This parameter displays the remote start diagnostic status history or the last remote start diagnostic status history.
Remote Vehicle Start Source	-	Ignition Switch Start	The scan tool displays Ignition Switch Start or Remote Vehicle Start.
Remote Vehicle Starts Exhausted	-	Varies	This parameter displays the remote start diagnostic status history or the last remote start diagnostic status history or remaining remote starts.
Right Brake Lamp Command	-	Varies	The scan tool display percentage. This parameter displays right brake lamp PWM command status.
Right Dedicated Daytime Running Lamp Command	-	Varies	The scan tool display percentage. This parameter displays right dedicated DRL PWM command status.
Right Front Tire Pressure	-	Varies	This parameter displays right front tire pressure in PSI.
Right Front Tire Pressure Sensor Identification	-	Varies	This parameter displays right front tire pressure sensor ID.
Right Front Tire Pressure Sensor Location Learned	-	Yes	The scan tool displays No or Yes.
Right Front Tire Pressure Sensor Mode	-	Stationary	The scan tool displays Learn Mode, Undefined, Remeasure Data Mode, Rolling Mode, Enter Off Mode, Exit Off Mode or Learn Mode Pressure Triggered.
Right Front Tire Pressure Status	-	Normal	The scan tool displays Unknown, Normal, Very Low Pressure, Low, Weak Signal, or High.
Right Front Turn Signal Bulb Out Feedback	-	Inactive	The scan tool displays Active or Inactive.
Right Front Turn Signal/Hazard Lamp Command	-	Inactive	The scan tool displays Active or Inactive.
Right Low Beam/Daytime Running Lamp Command	-	Varies	The scan tool displays percentage. This parameter displays right low beam/daytime running lamp status.
Right Park Lamps Command	-	Varies	The scan tool displays percentage. This parameter displays rear exterior lighting status.
Right Rear Child Security Lock Switch	-	Inactive	The scan tool displays Active or Inactive.
Right Rear Door Ajar Switch	-	Inactive	The scan tool displays Active or Inactive.
Right Rear Tire Pressure	-	Varies	This parameter displays right rear tire pressure in PSI.

Parameter	System State	Expected Value	Definition
Right Rear Tire Pressure Sensor Identification	-	Varies	This parameter displays right rear tire pressure sensor ID.
Right Rear Tire Pressure Sensor Location Learned	-	Yes	The scan tool displays No or Yes.
Right Rear Tire Pressure Sensor Mode	-	Learn Mode - Pressure Triggered	The scan tool displays Learn Mode, Undefined, Remeasure Data Mode, Rolling Mode, Enter Off Mode, Exit Off Mode, or Learn Mode Pressure Triggered. This parameter displays the pressure sensor mode status.
Right Rear Tire Pressure Status	-	Normal	The scan tool displays Unknown, Normal, Very Low Pressure, Low, Weak Signal or High. This parameter displays the right rear tire pressure status.
Right Rear Turn Signal Bulb Out Feedback	-	Inactive	The scan tool displays Active or Inactive.
Right Rear Turn Signal/Hazard Lamp Command	-	Inactive	The scan tool displays Active or Inactive.
Right Rear Window Main Control Down Switch	-	Inactive	The scan tool displays Active or Inactive.
Right Rear Window Main Control Express Switch	-	Inactive	The scan tool displays Active or Inactive.
Right Rear Window Main Control Up Switch	-	Inactive	The scan tool displays Active or Inactive.
Right Rear Window Motor Mode	-	Local Switch Overridden	The scan tool displays Down, Express, Up, Inhibit, or Local Switch Overridden.
Right Rear Window Switch at Door	-	Inactive	The scan tool displays Active or Inactive.
Right Stop Lamp Command	-	Varies	The scan tool displays percentage.
Right Turn Signal Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the right turn signal switch status.
Run Abort	-	Inactive	This parameter displays the remote start diagnostic status history or the last remote start diagnostic status history.
Run Relay Command	-	Active	The scan tool displays Active or Inactive.
Run/Crank	-	Inactive	The scan tool displays Active or Inactive.
Run/Crank Relay Command	-	Active	The scan tool displays Active or Inactive.
Run/Crank Power Mode Indicator Command	-	Varies	The scan tool displays percentage. This parameter displays ignition switch run LED PWM command status.
Secondary Key Status	-	No	The scan tool displays No or Yes.
Security Indicator Command	-	Varies	The scan tool displays percentage. This parameter displays security LED PWM command status.

Parameter	System State	Expected Value	Definition
Selected Front Tire Type	-	Standard Load	The scan tool displays No Tire Type, Metric Standard Load, Metric Extra Load, Load Range C, Load Range D, or Load Range E. This parameter displays the front tire type.
Selected Rear Tire Type	-	Standard Load	The scan tool displays No Tire Type, Metric Standard Load, Metric Extra Load, Load Range C, Load Range D, or Load Range E. This parameter displays the rear tire type.
Start-Up State of Charge	-	Varies	The scan tool displays percentage. This parameter displays startup state of charge status.
State of Charge	-	Varies	The scan tool displays percentage. This parameter displays state of charge status.
Sunroof Enabled	-	Active	The scan tool displays Active or Inactive.
Sunroof Motor Overtemperature	-	Inactive	The scan tool displays Active or Inactive.
Sunroof Not Learned	-	Inactive	The scan tool displays Active or Inactive.
Sunroof Position	-	Closed	The scan tool displays Closed, Open, Venting, Comfort Open, Closing, Opening. This parameter displays the current sunroof position.
Sunroof Remote Command	-	Inactive	The scan tool displays Sunroof Secure Close, Venting, Close, or Open. This parameter displays the last sunroof remote command.
Sunroof Slide Switch	-	Inactive	The scan tool displays Inactive, Express Open, Open, Express Close, Close, Short to Ground, Short to Battery, or Stuck. This parameter displays the sunroof slide switch status.
Sunroof Tilt Switch	-	Inactive	The scan tool displays Inactive, Open, Close, Short to Ground, Short to Battery or Stuck. This parameter displays the sunroof tilt switch status. When the switch experiences a malfunction Short to Ground, Short to Battery or Stuck will be displayed.
Sunroof/Sunshade Motor Overtemperature	-	Inactive	The scan tool displays Active or Inactive.
Sunroof/Sunshade Switch	-	Inactive	The scan tool displays Inactive, Express Open, Open, Express Close, Close, Short to Ground, Short to Battery, or Stuck. This parameter displays the sunroof or sunshade switch status.
Sunshade Enabled	-	Active	The scan tool displays Active or Inactive.

Parameter	System State	Expected Value	Definition
Sunshade Not Learned	-	Inactive	The scan tool displays Active or Inactive.
Sunshade Position	-	Closed	The scan tool displays Ajar, Closed, Opened, Closing, or Opening. This parameter displays the sunshade position status.
Sunshade Remote Command	-	Inactive	The scan tool displays Close or Open. This parameter displays the last sunshade remote command.
Tamper Status	-	No	The scan tool displays No or Yes.
Telematics Enhanced Service Override Active	-	No	The scan tool displays No or Yes. This parameter displays vehicle theft deterrent system status.
Total Keys Learned	-	Varies	This parameter displays the number of keys learned.
Traction Control Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays Active when the traction control switch is active.
Transponder Authentication	-	Initializing	The scan tool displays Inactive, Initializing, ID Received, Password Received, Data Reception Complete, or Data Transmission Complete. This parameter displays the transponder key communication status.
Transponder Key Status	-	OK	The scan tool displays OK, LIN Bus Initialization Malfunction, Antenna Initialization Malfunction, Password Error, No Valid Key Detected, LIN Bus Communication Malfunction, or Antenna Malfunction. This parameter displays the transponder key communication error status.
Trunk Lamp Command	-	Varies	The scan tool displays as percentage.
Trunk Lid/Liftgate Window Exterior Unlatch Switch	-	Inactive	The scan tool displays Active or Inactive.
Trunk Lid/Liftgate Window Unlatch Command	-	Inactive	The scan tool displays Active or Inactive.
Valet Keys Learned	-	Varies	This parameter displays the number of valet keys learned.
Valet Mode Status	-	Inactive	This parameter displays the remote start diagnostic status history or the last remote start diagnostic status history.
Valet switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays Active when the valet switch is on.
Vehicle Identification Number (VIN)	-	Varies	This parameter displays the vehicle identification number.
Window Lockout Switch	-	Inactive	The scan tool displays Active or Inactive.

Parameter	System State	Expected Value	Definition
Window Lockout Switch Indicator Command	-	Inactive	The scan tool displays Active or Inactive.
Windshield Washer Relay Command	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the windshield washer relay status.
Windshield Washer Switch	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the windshield washer switch status.
Windshield Wiper Park Switch	-	Active	The scan tool displays Active or Inactive.
Windshield Wiper High Speed Relay Command	-	Inactive	The scan tool displays Active or Inactive.
Windshield Wiper High Speed Switch	-	Inactive	The scan tool displays Active or Inactive.
Windshield Wiper Motor Relay Command	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the windshield wiper relay status.
Windshield Wiper Stalled During Sweep	-	Inactive	The scan tool displays Active or Inactive.
Windshield Wiper Stalled in Park Position	-	Inactive	The scan tool displays Active or Inactive. This parameter displays the windshield wiper stalled status.
Windshield Wiper Switch	-	Off	The scan tool displays Off, Delay 1, Delay 2, Delay 3, Delay 4, Delay 5, or Low. This parameter displays the windshield wiper switch status.

Body Control Module Scan Tool Output Controls

Scan Tool Output Control	Description
Accent Lighting 1	The BCM activates the accent lighting when you select On. The value should be 100%. All accent lighting should illuminate until commanded Off.
Accent Lighting 2	The BCM activates the accent lighting when you select On. The value should be 100%. All accent lighting should illuminate until commanded Off.
Accessory Power Mode Indicator	The BCM activates the accessory indicator when you select On. The value should be 100%. The yellow LED accessory indicator on start button should illuminate until commanded Off.
Accessory Power Relay	The BCM actuates the accessory power relay when you select On. The accessory power relay should turn on allowing specific vehicle functions to operate.
Accessory/Retained Accessory Power Relay	The BCM actuates the retained accessory power relay when you select On. The retained accessory power relay should turn on allowing specific vehicle functions to operate.
All Doors Lock	The BCM activates all doors lock when you select Lock. All doors should lock.
All Doors Lock/Unlock	The BCM activates all doors lock/unlock when you select Lock/Unlock.
Auxiliary Ignition Run Relay	The BCM controls the Ignition Run Coil Control circuit to turn it On and Off.

Scan Tool Output Control	Description
Backup Lamps	The BCM actuates the backup lamps relay when you select On. The backup lamps should illuminate until commanded Off. Engine must be running.
Battery Saver Relay	The BCM activates the battery saver relay when you select Enable. This command sets the low power mode relay in the state in which it does not supply power to the non-essential parts of the vehicle. This is used to prevent the battery from being depleted when the vehicle is not used for a long period of time.
Brake Pedal Position Sensor Learn	The BCM activates the brake pedal position sensor learn when you select Learn. The brake pedal position sensor learn procedure should start.
Brake Transmission Shift Interlock Solenoid Actuator	The BCM activates the transmission shift interlock solenoid actuator when you select On.
Brake Transmission Shift Interlock Indicator	The BCM activates the transmission range indicator when you select On. The transmission range indicator at the shifter should illuminate until commanded Off.
Center Brake Lamp	The BCM activates the center brake lamp when you select On. The center brake lamp should illuminate until commanded Off.
Center Stop Lamp	The BCM activates the center stop lamp when you select On. The center stop lamp should illuminate until commanded Off.
Child Security Lock Indicator	The BCM activates the child security lock indicator when you select On. The child security lock indicator should illuminate until commanded Off.
Child Security Lock Motors	The BCM actuates the child security door motor when you select Lock. The child security doors should lock.
Child Security Lock/Window Lockout Switch Indicator	The BCM activates the child security lock/window lockout switch indicator when you select On. The child security lock/window lockout switch indicator should illuminate until commanded Off.
Clear Driver Window Learned Values	When you select Clear the clear driver window learn procedure should start.
Clear Passenger Window Learned Values	When you select Clear the clear left rear window learn procedure should start.
Courtesy Lamps	The BCM activates the courtesy lamps when you select On. The value should be 100%. The courtesy lamps should illuminate until commanded Off.
Driver Door Unlatch	The BCM activates the output circuit to unlatch the driver door with a passive entry passive start when you select Unlatch. There is NO door handle on this type of vehicle to open the door. Instead, there is a pad that you press to unlatch the door.
Driver Door Unlock	The BCM pulses the driver door unlock motor when you select Unlock. The driver door should unlock.
Driver Window Motor	The BCM activates the driver window motor when you select Up/Down/Stop/Express Up/Express Down. The driver window should follow the appropriate command.
Driver Window Motor Mode	The BCM activates the driver window motor when you select Up/Down/Stop/Express Up/Express Down. The driver window should follow the appropriate command.
Front Fog Lamps	The BCM actuates the front fog lamps relay when you select On. The front fog lamps relay should turn on.
Generator Regulator Setpoint	The BCM changes the output of the generator.
Hazard Lamps Switch Backlight	The BCM activates the hazard lamps switch when you select On. The value should be 100%. The hazard lamps switch backlight should illuminate until commanded Off.

Scan Tool Output Control	Description
High Beams	The BCM activates the high beam command when you select On. The high beam lights should illuminate. The headlamps have to be on.
Horn Relay	The BCM activates the horn when you select On. The horn should sound.
Inadvertent Load	The BCM activates the inadvertent load command when you select On. (It is an electronic request to shut down an electrical or electronic device that is drawing power from the battery at a time when there should be no activity, usually after the key has been removed from the ignition for a period of time.)
Incandescent Dimming	The BCM activates the incandescent light dimming when you select On. The values should be 100%. The incandescent light dimming should illuminate until commanded Off.
Indicator Dimming	The BCM activates the indicator dimming when you select On. The values should be 100%. The indicator should illuminate until commanded Off.
LED Backlight Dimming	The BCM activates the LED backlight dimming when you select On. The values should be 100%. The LED backlight dimming for control switches should illuminate until commanded Off.
Left Brake Lamp	The BCM activates the left brake lamp when you select On. The values should be 100%. The left brake lamp should illuminate until commanded Off.
Left Dedicated Daytime Running Lamp	The BCM activates the left dedicated daytime running lamp when you select ON. The value changes to 100%. The left daytime running lamp should illuminate.
Left Front Park Lamp	The BCM activates the left front park lamp when you select ON with a value of 100%. The left front park lamp should illuminate.
Left Front Park Lamp/Daytime Running Lamp	The BCM activates the left front park lamp/daytime running lamp when you select ON with a value of 100%. The left front park lamp/daytime running lamp should illuminate.
Left Front Turn Signal Lamp	The BCM activates the left front turn signal lamp when you select On. The left front turn signal lamp should illuminate until commanded Off.
Left Headlamp Lamp Low Beam	The BCM activates the left headlamp low beam when you select On. The values should be 100%. The left headlamp low beam should illuminate until commanded Off.
Left Park Lamps	The BCM activates the left park lamps when you select ON with a value of 100%. The left park lamps should illuminate.
Left Rear Park Lamp	The BCM activates the left rear park lamp when you select ON with a value of 100%. The left rear park lamp should illuminate.
Left Rear Stop/Park Lamp	The BCM activates the left rear stop/park lamp when you select ON with a value of 100%. The left rear stop/park lamp should illuminate.
Left Rear Turn Signal Lamp	The BCM activates the left rear turn signal lamp when you select On. The left rear turn signal lamp should illuminate until commanded Off.
Left Rear Turn Signal/Stop Lamp	The BCM activates the left rear turn signal/stop lamp when you select On. The left rear turn signal/stop lamp should illuminate until commanded Off.
Left Rear Window Motor	The BCM activates the left rear window motor when you select Up/Down/Stop/Express Down. The left rear window should follow the appropriate command.
Left Stop Lamp	The BCM activates the left stop lamp when you select ON with a value of 100%. The left stop lamp should illuminate.
Left Trailer Turn Signal Lamp	The BCM activates the left trailer turn signal lamp when you select ON with a value of 100%. The left trailer turn signal lamp should illuminate.
License Plate Lamps	The BCM activates the license plate lamps when you select On. The license plate lights should turn on until commanded Off.
Liftgate Unlatch	The BCM actuates the rear compartment lid release actuator when you select Unlatch. The trunk or liftgate should open.
LIN Bus Device Identification Data	When you select Update the LIN Bus Device part number and calibration part number should be updated.

Scan Tool Output Control	Description
Low Beam Lamps	The BCM activates the low beam lamps when you select On. The low beam lamps should turn on.
Low Beam Relay	The BCM activates the low beams when you select On. The low beam lights should turn on.
Outside Rear View Mirror Courtesy Lamp	The BCM activates the outside rear view mirror courtesy lamp when you select On. The outside rear view mirror courtesy lamp (at the bottom) should illuminate.
Passenger Door(s) Unlatch	The BCM activates the output circuit to unlatch the passenger door with a passive entry passive start when you select Unlatch. There is NO door handle on this type of vehicle to open the door. Instead, there is a pad that you press to unlatch the door.
Passenger Door(s) Unlock	The BCM pulses the passenger door unlock motor when you select Unlock. The passenger door should unlock.
Passenger Window Motor	The BCM activates the passenger window motor when you select Up/Down/Stop/Express Up/Express Down. The passenger window should follow the appropriate command.
Pickup Bed Cargo Lamp	The BCM activates the pickup bed cargo lamp when you select On. The values should be 100%. The pickup bed cargo lamp should illuminate until commanded Off.
Rear Fog Lamp(s) Relay	The BCM activates the rear fog lamps when you select On. The rear fog lamps should turn on.
Right Brake Lamp	The BCM activates the right brake lamp when you select On. The value should be 100%. The right brake lamp should illuminate until commanded Off.
Right Dedicated Daytime Running Lamp	The BCM activates the right dedicated daytime running lamp when you select On. The value should be 100%. The right daytime running lamp should illuminate.
Right Front Park Lamp	The BCM activates the right front park lamp when you select ON with a value of 100%. The right front park lamp should illuminate.
Right Front Park Lamp/Daytime Running Lamp	The BCM activates the right front park lamp/daytime running lamp when you select ON with a value of 100%. The right front park lamp/daytime running lamp should illuminate.
Right Front Turn Signal Lamp	The BCM activates the right front turn signal lamp when you select On. The right front turn signal/hazard lamp should illuminate.
Right Headlamp Low Beam	The BCM activates the right headlamp low beam when you select On. The right headlamp low beam should illuminate.
Right Park Lamps	The BCM activates the right park lamps when you select ON with a value of 100%. The right park lamps should illuminate.
Right Rear Park Lamp	The BCM activates the right rear park lamp when you select ON with a value of 100%. The right rear park lamp should illuminate.
Right Rear Stop/Park Lamp	The BCM activates the right rear stop/park lamp when you select ON with a value of 100%. The right rear stop/park lamp should illuminate.
Right Rear Turn Signal Lamp	The BCM activates the right rear turn signal/hazard lamp when you select On. The right rear turn signal lamp should illuminate until commanded Off.
Right Rear Turn Signal/Stop Lamp	The BCM activates the right rear turn signal/stop lamp when you select On. The right rear turn signal/stop lamp should illuminate until commanded Off.
Right Rear Window Motor	The BCM activates the right rear window motor when you select Up/Down/Stop/Express Down. The right rear window should follow the appropriate command.
Right Stop Lamp	The BCM activates the right stop lamp when you select ON with a value of 100%. The right stop lamp should illuminate.
Right Trailer Turn Signal Lamp	The BCM activates the right trailer turn signal lamp when you select ON with a value of 100%. The right trailer turn signal lamp should illuminate.

Scan Tool Output Control	Description
Run Relay	The BCM actuates the run relay when you select On. The run relay should turn on.
Run/Crank Relay	The BCM actuates the run/crank relay when you select On. The run/crank relay should turn on.
Run/Start Power Mode Indicator	The BCM activates the run/start lamp when you select On. The value should be 100%. The green LED on engine start/stop button should illuminate until commanded Off.
Security Indicator	The BCM activates the security indicator command when you select On. The security indicator at center of dash (or at DRL sensor) should illuminate until commanded Off.
Stop Lamps	The BCM activates the stop lamps when you select ON with a value of 100%. The stop lamps should illuminate.
Tire Pressure Sensors Learn	The BCM activates the tire pressure sensor learn procedure when you select Learn.
Tire Type/Pressure Selection	When you select OK, you can change tire type and load range.
Trailer Backup Lamps	The BCM activates the trailer backup lamps when you select ON with a value of 100%. The trailer backup lamps should illuminate.
Trailer Park Lamps	The BCM activates the trailer park lamps when you select ON with a value of 100%. The trailer park lamps should illuminate.
Transmission Range Indicator	The BCM activates the transmission range indicator when you select On. The transmission range indicator at the shifter should illuminate until commanded Off.
Trunk Lamp	The BCM activates the trunk lamp when you select On. The value should be 100%. The trunk lamp should illuminate until commanded Off.
Trunk Lid Unlatch	The BCM activates the trunk lid unlatch when you select On. The trunk lid should unlatch.
Window Lockout Switch Indicator	The BCM activates the window lockout switch indicator when you select On. The window lockout switch indicator should illuminate until commanded Off.
Windshield Washer Relay	The BCM actuates the windshield washer relay when you select On. The windshield washer relay should turn on.
Windshield Wiper High Speed Relay	The BCM actuates the windshield wiper high speed relay when you select On. The windshield wiper high speed relay should turn on.
Windshield Wiper Motor Relay	The BCM actuates the windshield wiper motor relay when you select On. The windshield wiper motor relay should turn on.

CHASSIS CONTROL MODULE SCAN TOOL INFORMATION

Chassis Control Module (CCM) Scan Tool Data Parameters for Fuel System

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine Idling at Normal Operating Temperature/Vehicle is in Park or Neutral			
Desired Fuel Pressure	-	306.8 kPa (44.5 psi)	This displays kPa (psi). This is the desired fuel pressure.
Fuel Pump Command	-	On	The scan tool displays On or Off. This is the current state of the fuel pump command.
Fuel Pump Signal Command	-	Varies	This displays %. This is the commanded fuel pump signal measured in percentage.

Parameter	System State	Expected Value	Description
Fuel Pressure Sensor	-	296.4-310.3 kPa (43-45 psi)	This displays kPa (psi). This is the current pressure at the fuel pressure sensor.
Fuel Pressure Sensor	-	2.00-3.00 Volts	This voltage can vary depending on the engine application, engine load, operating conditions and other factors. This display is in Volts. This is the fuel pressure sensor voltage.
Ignition 1 Signal	-	Varies	This displays Volts. This is the current ignition 1 signal.
LT Fuel Pump Trim	-	Varies	This displays a numeric value. This is the long term (LT) fuel pump trim.
ST Fuel Pump Trim	-	Varies	This displays a numeric value. This is the short term (ST) fuel pump trim.

Chassis Control Module (CCM) Scan Tool Output Controls for Fuel System

Output Control	Description
Fuel Pressure Control	This output control is used to control the fuel pressure.
Fuel Pump	This output control is used to command the fuel pump ON and OFF.
Fuel Pump Trim Reset	This output control is used to reset the fuel pump trim.

CCM Scan Tool Parameters for Active Grille Air Shutters (If Equipped)

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine Idling at Normal Operating Temperature/Vehicle is in Park or Neutral			
Active Grille Air Shutter Position Command (Single Shutter System)	-	Varies	This displays %. This is the commanded active grille air shutter position.
Active Grille Air Shutter Position (Single Shutter System)	-	Varies	This displays %. This is the actual active grille air shutter position.
Active Grille Air Shutter 1 Position Command (Dual Shutter System)	-	Varies	This displays %. This is the commanded active grille air shutter position.
Active Grille Air Shutter 1 Position (Dual Shutter System)	-	Varies	This displays %. This is the actual active grille air shutter position.
Active Grille Air Shutter 2 Position Command (Dual Shutter System)	-	Varies	This displays %. This is the commanded active grille air shutter position.
Active Grille Air Shutter 2 Position (Dual Shutter System)	-	Varies	This displays %. This is the actual active grille air shutter position.

CCM Scan Tool Output Controls for Active Grille Air Shutters (If Equipped)

Output Control	Description

Output Control	Description
Active Grille Air Shutter System (Single Shutter System)	This output control is used to perform the Active Grille Air Shutter Actuator test. It is used to cycle the active grille air shutter open and closed. The test result will display pass or fail based on the ability of the louvers to cycle open and closed.
Active Grille Air Shutter 1 (Dual Shutter System)	This output control is used to perform the Active Grille Air Shutter Actuator test. It is used to cycle the active grille air shutter open and closed. The test result will display pass or fail based on the ability of the louvers to cycle open and closed.
Active Grille Air Shutter 2 (Dual Shutter System)	This output control is used to perform the Active Grille Air Shutter Actuator test. It is used to cycle the active grille air shutter open and closed. The test result will display pass or fail based on the ability of the louvers to cycle open and closed.

CCM Scan Tool Parameters for Active Engine Mounts (If Equipped)

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine Idling at Normal Operating Temperature/Vehicle is in Park or Neutral			
Engine Mount Actuator Output 1	-	On/Off	The scan tool will display On/Off. This is the engine mount actuator commanded state.
Engine Mount Actuator Output 2	-	On/Off	The scan tool will display On/Off. This is the engine mount actuator commanded state.
Engine Mount Actuator Control Circuit 1 Status (2014 model year only)	-	Passed	The scan tool displays Passed/Short to Battery/Short to Ground/Open This is the engine mount actuator control circuit 1 condition.
Engine Mount Actuator Control Circuit 2 Status (2014 model year only)	-	Passed	The scan tool displays Passed/Short to Battery/Short to Ground/Open This is the engine mount actuator control circuit 2 condition.

CCM Scan Tool Output Controls for Active Engine Mounts (If Equipped)

Output Control	Description
Engine Mount Actuator Output 1	This output control is used to turn the engine mount actuator 1 On and Off.
Engine Mount Actuator Output 2	This output control is used to turn the engine mount actuator 2 On and Off.

CCM Scan Tool Parameters for Exhaust Flow Control Valves (If Equipped)

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine Idling at Normal Operating Temperature/Vehicle is in Park or Neutral			
Exhaust Flow Control Valve Command	-	Open/Closed	Exhaust Flow Valve Commanded State
Exhaust Flow Control Valve Command	-	%	Exhaust Flow Valve Commanded Duty Cycle (0%-100%)
Exhaust Flow Control Valve Performance Mode	-	Active/Inactive	Exhaust Flow Valve Control Status

Parameter	System State	Expected Value	Description
Exhaust Flow Control Valve Rumble Mode	-	Active/Inactive	Exhaust Flow Valve Control Status
Exhaust Flow Control Valve	-	Active/Inactive	Exhaust Flow Valve Control Status
Cylinder Deactivation Exhaust Flow Valve Command	-	Open/Closed/Disabled	Exhaust Flow Valve Commanded State
Cylinder Deactivation Exhaust Flow Control Valve	-	Active/Inactive	Exhaust Flow Valve Control Status
Cylinder Deactivation Exhaust Flow Control Valve 1 Position	-	Open range is 4 - 28 degrees Closed range is 64 - 93 degrees	Cylinder Deactivation Exhaust Flow Control Valve 1 actual position in degrees
Cylinder Deactivation Exhaust Flow Control Valve 2 Position	-	Open range is 4 - 28 degrees Closed range is 64 - 93 degrees	Cylinder Deactivation Exhaust Flow Control Valve 2 actual position in degrees

CCM Scan Tool Output Controls for Exhaust Flow Control Actuators (If Equipped)

Output Control	Description
Exhaust Flow Control Valve Command	This output control is used to cycle the exhaust flow control valve open and closed.
Cylinder Deactivation Exhaust Flow Valve Command	This output control is used to cycle the cylinder deactivation exhaust flow control valve open and closed.

CCM Scan Tool Parameters for Trailer Brake Control System (If Equipped)

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine Idling at Normal Operating Temperature/Vehicle is in Park or Neutral			
ABS Active Signal	-	OK	The scan tool displays Ok/Not Ok. The scan tool displays Ok when no problems are found with the ABS Active Signal serial data message from the electronic brake control module to the chassis control module.
Antilock Braking System	-	Inactive	The scan tool displays Active/Inactive. The scan tool displays Inactive when the ABS system is not functioning.
Automatic Brake Control Gain Request From EBCM	-	0-100%	The scan tool displays a number between 0-100%.
Automatic Brake Request From EBCM	-	No	The scan tool displays Yes/No. This is a request from the EBCM to apply the trailer brakes.
Automatic-Brake Torque	-	Nm	The scan tool displays a numerical value.
Automatic-Brake Torque Signal	-	Ok	The scan tool displays Ok/Not Ok. The scan tool displays Ok when no problems are found with the Automatic Brake Torque Signal serial data message to the chassis control module.

Parameter	System State	Expected Value	Description
Automatic Braking Active Signal	-	Ok	The scan tool displays Ok/Not OK. The scan tool displays OK when no problems are found with the Automatic Braking Active Signal serial data message to the chassis control module.
Automatic Braking Event	-	Not Detected	The scan tool displays Detected/Not Detected. This parameter represents a command to apply the trailer brakes from the adaptive cruise control system.
Brake Master Cylinder Pressure Sensor	-	Varies	The scan tool will display brake fluid pressure in the master cylinder. The scan tool will display a kPa or psi signal received from the chassis control module.
Brake Pressure Signal	-	OK	The scan tool will display Ok/Not Ok. The scan tool will display a serial data message received from the chassis control module.
Brake Request from EBCM	-	Ok	The scan tool displays Ok/Not Ok. The scan tool displays Ok when no problems are found with the Brake Request signal serial data message from the electronic brake control module to the chassis control module.
Desired Trailer Brake Control Duty Cycle	-	0-100%	The scan tool displays a number between 0-100%. This number represents a duty cycle request signal from the chassis control module to the trailer brake power module.
Deviation Between Manual Trailer Brake Apply Request Signal 1 and 2	-	Varies	The scan tools displays a percentage difference between the Apply Request Signal 2 and Redundant Request Signal 1.
Driver Initiated Brake Event	-	Not Detected	The scan tool displays Detected/Not Detected. The scan tool detects when the driver has applied the trailer brakes.
Induced Voltage by Trailer Brake Coil	-	0-20 V	The scan tool displays a voltage. This number represents the actual voltage supplied by the trailer brake power module to the trailer brakes.
Manual Trailer Brake Apply Request Signal 1	-	Varies	The scan tool displays a percentage. This represents a brake apply signal between the chassis control module and the trailer brake power module.
Manual Trailer Brake Apply Request Signal 2	-	Varies	The scan tool displays a percentage. This represents a brake apply signal between the chassis control module and the trailer brake power module.

Parameter	System State	Expected Value	Description
Stop Lamp Signal	-	Not Requested	The scan tool displays Requested/Not Requested. This is the brake pedal position sensor signal from the BCM to the chassis control module.
Trailer Brake Automatic Control State	-	Normal	The scan tool displays Normal/Active/Temporarily Inhibited/Temporarily Limited/Permanently Failed/Communication Failed/Disabled by Calibration. This represents the operational state of the chassis control module.
Trailer Brake Control Duty Cycle	-	0-100%	The scan tool displays a percentage. This is the pulse width modulated output signal from the trailer brake power module to the trailer brakes.
Trailer Brake Control Output Circuit	-	Okay	The scan tool displays Unknown/Short to Battery/Short to Ground/Okay. This represents the state of health of the output circuit from the trailer brake power module to the trailer brakes.
Trailer Brake Control Output Circuit	-	0-20 V	The scan tool displays a voltage. This represents the voltage supplied by the trailer brake power module to the trailer brakes.
Trailer Brake Power Control Module	-	De-Energized	The scan tool displays Energized/De-Energized. This represents the state of the trailer brake power module.
Trailer Brake Power Control Module Battery Voltage	-	Varies	The scan tool displays a voltage. This represents the battery voltage supplied to the trailer brake power module.
Trailer Brake Type	-	Undefined	The scan tool displays Undefined when a trailer is not connected to the vehicle. The scan tool displays Electromagnetic Brakes or Electrohydraulic Brakes when a trailer is connected to the vehicle. The type displayed is based on what is detected by the chassis control module.
Trailer Brake User Gain	-	Varies	The scan tool displays percent of full gain setting. The scan tool displays 0-100%. Each full gain setting represents an increment of approximately 10 percent of full gain setting. Approximately 40% will be indicated with a gain setting of 4.0, 65% will be indicated with a gain setting of 6.5, etc.

Parameter	System State	Expected Value	Description
Trailer Brake User Gain Switch	-	Varies	The scan tool displays percent of full gain setting. The scan tool displays 0-100%. Each full gain setting represents an increment of approximately 10 percent of full gain setting. Approximately 40% will be indicated with a gain setting of 4.0, 65% will be indicated with a gain setting of 6.5, etc.
Vehicle Speed	-	Varies	The scan tool displays 0-327 km/h (0-204 mph). The scan tool displays 0 km/h (0 mph) when the vehicle is not moving. This is the vehicle speed serial data message from the ECM.
Vehicle Stability Enhancement System Signal	-	Ok	The scan tool displays Ok/Not Ok. The scan tool displays Ok when no problems are found with the Vehicle Stability Enhancement System signal to the chassis control module.
Wheel Speed Signal	-	Ok	The scan tool displays Ok/Not Ok. The scan tool displays Ok when no problems are found with the Wheel Speed signal from the EBCM to the chassis control module.

Chassis Control Module (CCM) Scan Tool Output Controls for Trailer Brake Control System (If Equipped)

Output Control	Description
Trailer Brake Control Signal	This output control is used to turn the trailer brake power control module on and off.
Trailer Brake Duty Cycle	This output control is used to control the trailer brake apply signal from trailer brake power control module.

CCM Scan Tool Parameters for Vehicle Level Control (If Equipped)

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON			
Left Rear Vehicle Level Position Sensor	-	.25-4.75 Volts	This displays Volts. This is the level position sensor voltage.
Right Rear Vehicle Level Position Sensor	-	.25-4.75 Volts	This displays Volts. This is the level position sensor voltage.
Vehicle Level Control Compressor Over Temperature	-	No	This displays Yes or No. This will display Yes if the compressor is overheated.
Excessive Compressor Activity	-	No	This displays Yes or No. This will display Yes if the compressor activity is excessive.
Vehicle Level Control Status	-	Normal	This displays Normal/Uneven Surface or Hoisted/Overloaded/Failed.
Vehicle Level Control Compressor	-	Varies	This displays On or Off. This will display if the compressor is on or off.
Vehicle Level Control Exhaust Valve	-	Varies	This displays Open or Closed. This will display if the exhaust valve is open or closed.

Parameter	System State	Expected Value	Description
Vehicle Level Control Pressure Sensor	-	.4-4.8 Volts	This displays Volts. This is the level control pressure sensor voltage.
Vehicle Leveling Sensors Supply Voltage	-	4.9-5.1 Volts	This displays Volts. This is the leveling sensors supply voltage.
Vehicle Level Control Pressure Sensor Supply Voltage	-	4.9-5.1 Volts	This displays Volts. This is the level control pressure sensor supply voltage.
Vehicle Level Trim Height Status	-	Learned/Not Learned	This displays if the level trim height status

CCM Scan Tool Output Controls for Vehicle Level Control (If Equipped)

Output Control	Description
Suspension Position Sensor Trim Height	This output control is used to learn the trim height.
Vehicle Level Control Compressor Relay	This output control is used to command the compressor ON and OFF.
Vehicle Level Control Exhaust Valve	This output control is used to command the exhaust valve ON and OFF.

CCM Scan Tool Parameters for Transmission Cooling Fan (If Equipped)

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine Idling at Normal Operating Temperature/Vehicle is in Park or Neutral			
Transmission Cooling Fan Circuit High Voltage Test Status	-	OK	Malfunction/Not Run/OK
Transmission Cooling Fan Circuit Open Test Status	-	OK	Malfunction/Not Run/OK
Transmission Cooling Fan Circuit Low Voltage Status	-	OK	Malfunction/Not Run/OK
Transmission Cooling Fan Command	-	Yes/No	The scan tool displays Yes/No. This shows if the transmission cooling fan is being commanded ON.
Transmission Cooling Fan Duty Cycle	-	0 - 100%	The scan tool displays a percentage. This is the transmission cooling fan ON duty cycle.

CCM Scan Tool Output Controls for Transmission Cooling Fan (If Equipped)

Output Control	Description
Transmission Cooling Fan Duty Cycle	This output control is used to control the transmission cooling fan.

SEAT MEMORY CONTROL MODULE SCAN TOOL INFORMATION

Seat Position Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		

Parameter	Expected Value	Definition
Driver Seat Back Switch	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed, the scan tool displays the direction for which the switch is pressed.
Driver Seat Back Direction Command	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat recline motor.
Driver Seat Back Position	Varies	The scan tool displays 0-65,535 counts. The hall effect sensor provides a determined number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat back is in the forward position, while low count values indicate that the seat back is in the rearward position.
Driver Seat Cushion Front Vertical Direction Command	Inactive	The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat front vertical motor.
Driver Seat Cushion Front Vertical Position	Varies	The scan tool displays 0-65,535 counts. The hall effect sensor provides a determined number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat front vertical is in the up position, while low count values indicate that the seat front vertical is in the down position.
Driver Seat Cushion Front Vertical Switch	Inactive	The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed, the scan tool should display the direction for which the switch is pressed.
Driver Seat Cushion Rear Vertical Direction Command	Inactive	The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat rear vertical motor.
Driver Seat Cushion Rear Vertical Position	Varies	The scan tool displays 0-65,535 counts. The hall effect sensor provides a determined number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat rear vertical is in the up position, while low count values indicate that the seat rear vertical is in the down position.
Driver Seat Cushion Rear Vertical Switch	Inactive	The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed, the scan tool should display the direction for which the switch is pressed.

Parameter	Expected Value	Definition
Driver Seat Horizontal Direction Command	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat horizontal motor.
Driver Seat Horizontal Position	Varies	The scan tool displays 0-65,535 counts. The hall effect sensor provides a determined number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat horizontal position is forward, while low count values indicate that the seat horizontal position is rearward.
Driver Seat Horizontal Switch	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed, the scan tool should display the direction for which the switch is pressed.
Driver Seat Lumbar Support Horizontal Switch	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool should display the direction for which the switch is pressed.
Driver Seat Lumbar Support Horizontal Direction Command	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar horizontal motor.
Driver Seat Lumbar Support Vertical Switch	Inactive	The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool should display the direction for which the switch is pressed.
Driver Seat Lumbar Support Vertical Direction Command	Inactive	The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar vertical motor.
Driver Seat Memory Recall Switches	Inactive	The scan tool displays Inactive, Memory 1, Memory 2, or Exit. When a memory function switch is pressed, the scan tool should momentarily display the function selected.
Driver Seat Memory Set Switch	Inactive	The scan tool displays Inactive/Active. When the memory SET switch is pressed, the scan tool should display Active.
Driver Seat Bulkhead Limit Switch	Inactive	The scan tool displays Inactive/Active. When the seat is moved rearward and the seat back comes in contact with the bulkhead limit switch, the scan tool should display Active.
Driver Seat Back Unlock Switch	Inactive	The scan tool displays Inactive/Active. When the seat back is folded forward, the seat back unlock switch is closed to voltage and the scan tool should display Active.
Driver Seat Back Side Bolster Direction	Inactive	The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool displays the function the memory control module is commanding the seat lumbar/bolster pump.

Parameter	Expected Value	Definition
Driver Seat Back Side Bolster Switch	Inactive	The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool should display the function for which the switch is pressed.
Seat Massage Switch	Inactive	The scan tool displays Inactive/Active. When the seat massage switch is pressed, the scan tool should display Active.

Mirror Memory Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Mirror Select Switch	None	The scan tool displays None, Driver Door, or Passenger Door. The scan tool displays the current state of the mirror select switch.
Mirror Direction Switch	Inactive	The scan tool displays Inactive/Up/Down/Left/Right/Folding/Extending. The scan tool displays the current state of the power mirror switch as pressed.
Driver Mirror Direction Command	Inactive	The scan tool displays Inactive/Up/Down/Left/Right. When the power mirror switch is being used or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the driver mirror motors.
Driver Mirror Vertical Position	Varies	The scan tool displays 0-5 V. The voltage displayed represents the position of the driver vertical motor. High voltage values indicate the mirror position is up, while low count values indicate the mirror position is down.
Driver Mirror Horizontal Position	Varies	The scan tool displays 0-5 V. The voltage displayed represents the position of the driver horizontal motor. High voltage values indicate the mirror position is to the right or in, while low count values indicate the mirror position is to the left or out.
Passenger Mirror Direction Command	Inactive	The scan tool displays Inactive/Up/Down/Left/Right. When the power mirror switch is being used or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the passenger mirror motors.
Passenger Mirror Vertical Position	Varies	The scan tool displays 0-5 V. The voltage displayed represents the position of the passenger vertical motor. High voltage values indicate the mirror position is up, while low count values indicate the mirror position is down.
Passenger Mirror Horizontal Position	Varies	The scan tool displays 0-5 V. The voltage displayed represents the position of the passenger horizontal motor. High voltage values indicate the mirror position is to the right or in, while low count values indicate the mirror position is to the left or out.

Steering Column Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Steering Column Direction Switch	Varies	The scan tool displays Inactive, Forward, Rearward, Up, or Down. When the steering column switch is pressed, the scan tool should display the direction for which the switch is pressed.

Parameter	Expected Value	Definition
Steering Column Vertical Position	Varies	The scan tool displays 0-5 V. The voltage displayed is an input to the seat memory control module from the steering column vertical position sensor. Higher voltage readings indicates the steering wheel position is up while lower voltage readings indicate the steering wheel position is down.
Steering Column Horizontal Position	Off	The scan tool displays 0-5 V. The voltage displayed is an input to the seat memory control module from the steering column vertical position sensor. Higher voltage readings indicates the steering wheel position is forward toward the front of the vehicle or away from the driver while lower voltage readings indicate the steering wheel position is rearward toward the driver.

Adjustable Pedals Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Adjustable Pedal Control Switch	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the adjustable pedal switch is pressed, the scan tool should display the direction for which the switch is pressed.
Adjustable Pedals Direction Command	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the adjustable pedal switch is pressed or when a memory recall occurs, the scan tool displays the direction the seat memory control module is commanding the adjustable pedal motor.
Adjustable Pedals Horizontal Position	Varies	The scan tool displays 0-5 V. The voltage displayed is an input to the seat memory control module from the adjustable pedal position sensor. Higher voltage readings indicates the pedals are forward toward the front of the vehicle or away from the driver while lower voltage readings indicate the pedals are rearward toward the driver.

Seat Memory Scan Tool Control Functions

Control Functions	Description
Driver Seat Back Horizontal Movement	This output control is used to command the driver seat back recline position Forward and Rearward.
Driver Seat Cushion Front Vertical Movement	This output control is used to command the driver seat cushion front vertical position Up and Down.
Driver Seat Cushion Rear Vertical Movement	This output control is used to command the driver seat cushion rear vertical position Up and Down.
Driver Seat Horizontal Movement	This output control is used to command the driver seat horizontal position Forward and Rearward.
Driver Seat Back Side Bolster Movement	This output control is used to command the driver seat back side bolster support to Inflate or Deflate.

Control Functions	Description
Driver Seat Lumbar Support Horizontal Movement	This output control is used to command the driver seat lumbar horizontal position Forward and Rearward.
Driver Seat Lumbar Support Vertical Movement	This output control is used to command the lumbar vertical position Up and Down.

Mirror Memory Scan Tool Control Functions

Control Functions	Description
Driver Mirror Fold	This output control is used to command the driver mirror to fold and unfold.
Driver Mirror Movement	This output control is used to command the driver mirror up and down or left and right.
Passenger Mirror Fold	This output control is used to command the passenger mirror to fold and unfold.
Passenger Mirror Movement	This output control is used to command the passenger mirror up and down or left and right.

Adjustable Steering Column Scan Tool Control Functions

Control Functions	Description
Steering Column Tilt Up Command	This output control is used to command the steering column to the up position.
Steering Column Tilt Down Command	This output control is used to command the steering column to the down position.
Steering Column Telescope Forward Command	This output control is used to command the steering column to the forward position.
Steering Column Telescope Rearward Command	This output control is used to command the steering column to the rearward position.

Adjustable Pedals Scan Tool Control Functions

Control Functions	Description
Adjustable Pedals Forward/Rearward	This output control is used to command the adjustable pedal position forward and rearward.

Seat Cushion Haptic Motors Scan Tool Control Functions

Control Functions	Description
Driver Seat Cushion Left Rear Haptic Movement	This output control is used to Enable and Disable the driver seat cushion left rear haptic motor function.
Driver Seat Cushion Right Rear Haptic Movement	This output control is used to Enable and Disable the driver seat cushion right rear haptic motor function.

DRIVER SEAT AND PASSENGER SEAT HEATER CONTROL MODULE SCAN TOOL INFORMATION

Front Seat Heating Control Module Scan Tool Data Parameters

Parameter	Expected Value	Description
Operating Conditions: Engine Running		
Driver Seat Cushion Heating Command	Inactive	The scan tool displays Inactive or Active. This parameter displays the commanded output from the seat heating control module to the seat heater elements.

Parameter	Expected Value	Description
Driver Seat Cushion Temperature Sensor	Varies	The scan tool displays 0 - 5 V. The voltage displayed is an input to the seat heating control module from the seat cushion temperature sensor. Higher voltage readings indicate cooler seat temperatures while lower voltage readings indicate warmer seat temperatures.
Driver Seat Heating/Venting/Cooling Level	Off	The scan tool displays Off, High Medium, or Low. When the heated seat is active, this parameter displays the selected temperature setting.
Driver Seat Heating/Venting/Cooling Mode	Off	The scan tool displays Off or Back & Cushion Heat. This parameter indicates the heated seat mode of operation.
Passenger Seat Cushion Heating Command	Inactive	The scan tool displays Inactive or Active. This parameter displays the commanded output from the seat heating control module to the seat heater elements.
Passenger Seat Cushion Temperature Sensor	Varies	The scan tool displays 0 - 5 V. The voltage displayed is an input to the seat heating control module from the seat cushion temperature sensor. Higher voltage readings indicate cooler seat temperatures while lower voltage readings indicate warmer seat temperatures.
Passenger Seat Heating/Venting/Cooling Level	Off	The scan tool displays Off, High Medium, or Low. When the heated seat is active, this parameter displays the selected temperature setting.
Passenger Seat Heating/Venting/Cooling Mode	Off	The scan tool displays Off or Back & Cushion Heat. This parameter indicates the heated seat mode of operation.

Front Seat Heating Control Module Scan Tool Output Controls

Control Functions	Description
Operating Conditions: Engine Running	
Driver Seat Cushion Heating	This output control is used to command the driver seat heater elements On.
Passenger Seat Cushion Heating	This output control is used to command the passenger seat heater elements On.

ELECTRONIC BRAKE CONTROL MODULE SCAN TOOL INFORMATION

The electronic brake control module (EBCM) scan tool data parameters list contains all ABS related parameters that are available on the scan tool. The list is arranged in alphabetical order. A given parameter may appear in any one of the data lists.

Electronic Brake Control Module Scan Tool Data Parameter

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON			
ABS Pump Motor Voltage	-	0 V	The scan tool displays the pump motor voltage.
Antilock Braking System	-	OK	The scan tool displays OK or Malfunction. Malfunction is displayed when the ABS is defective.

Parameter	System State	Expected Value	Description
Brake Fluid Level Sensor	-	Panic Brake Assist Status	The scan tool displays OK when the brake fluid is at correct level and Low when the brake fluid is low.
Brake Pedal Position Sensor	Brake pedal released	Inactive	The scan tool displays Inactive or Active depending on the state of the brake pedal.
	Brake pedal applied	Active	
Brake Pressure Sensor	Brake pedal released	0-1 V	The scan tool displays 0-5 V depending on the applied hydraulic brake pressure.
	Brake pedal applied	1-5 V	
Dynamic Rear Proportioning Status	-	OK	The scan tool displays OK or Malfunction. Malfunction is displayed when the dynamic rear proportioning system is defective.
Lateral Acceleration	-	Varies	The scan tool displays the current lateral acceleration in m/s^2 .
Longitudinal Acceleration	-	Varies	The scan tool displays the current longitudinal acceleration in m/s^2 .
Left Front Inlet Solenoid Valve Feedback	-	Inactive	The scan tool displays Inactive or Active. Active is displayed when the left front inlet solenoid valve is commanded ON.
Left Front Outlet Solenoid Valve Feedback	-	Inactive	The scan tool displays Inactive or Active. Active is displayed when the left front outlet solenoid valve is commanded ON.
Left Front Wheel Speed Sensor	-	0 km/h	The scan tool displays km/h depending on the current speed of the left front wheel speed sensor.
Left Rear Inlet Solenoid Valve Feedback	-	Inactive	The scan tool displays Inactive or Active. Active is displayed when the left rear inlet solenoid valve is commanded ON.
Left Rear Outlet Solenoid Valve Feedback	-	Inactive	The scan tool displays Inactive or Active. Active is displayed when the left rear outlet solenoid valve is commanded ON.
Left Rear Wheel Speed Sensor	-	0 km/h	The scan tool displays km/h depending on the current speed of the left rear wheel speed sensor.
Panic Brake Assist Status	-	OK	The scan tool displays OK or Malfunction. Malfunction is displayed when the panic brake assist system is defective.
Pump Motor Relay Feedback	-	Inactive	The scan tool displays Inactive or Active. Active is displayed when the pump motor is commanded ON.
Primary Isolation Solenoid Valve Feedback	-	Inactive	The scan tool displays Inactive or Active. Active is displayed when the isolation solenoid valve is commanded ON.
Primary Prime Solenoid Valve Feedback	-	Inactive	The scan tool displays Inactive or Active. Active is displayed when the prime solenoid valve is commanded ON.

Parameter	System State	Expected Value	Description
Right Front Inlet Solenoid Valve Feedback	-	Inactive	The scan tool displays Inactive or Active. Active is displayed when the right front inlet solenoid valve is commanded ON.
Right Front Outlet Solenoid Valve Feedback	-	Inactive	The scan tool displays Inactive or Active. Active is displayed when the right front outlet solenoid valve is commanded ON.
Right Front Wheel Speed Sensor	-	0 km/h	The scan tool displays km/h depending on the current speed of the right front wheel speed sensor.
Right Rear Inlet Solenoid Valve Feedback	-	Inactive	The scan tool displays Inactive or Active. Active is displayed when the right rear inlet solenoid valve is commanded ON.
Right Rear Outlet Solenoid Valve Feedback	-	Inactive	The scan tool displays Inactive or Active. Active is displayed when the right rear outlet solenoid valve is commanded ON.
Right Rear Wheel Speed Sensor	-	0 km/h	The scan tool displays km/h depending on the current speed of the right rear wheel speed sensor.
Secondary Isolation Solenoid Valve Feedback	-	Inactive	The scan tool displays Inactive or Active. Active is displayed when the isolation solenoid valve is commanded ON.
Secondary Prime Solenoid Valve Feedback	-	Inactive	The scan tool displays Inactive or Active. Active is displayed when the prime solenoid valve is commanded ON.
Steering Wheel Angle	-	Varies	The scan tool displays $\tilde{A}, \hat{A}^\circ$. This is the current position of the steering angle sensor.
System Voltage	-	11-14 V	The scan tool displays V. This is the current battery voltage.
Traction Control System	-	OK	The scan tool displays OK or Malfunction. Malfunction is displayed when the traction control system is defective.
Vehicle Stability Enhancement System Relay Feedback	-	Inactive	The scan tool displays Inactive or Active depending on the state of the stability control.
Vehicle Stability Enhancement System Switch	Traction control switch released	Active	The scan tool displays Active or Inactive depending on the status of the TCS/ESC switch.
	Traction control switch pressed	Inactive	
Vehicle Stability System	-	OK	The scan tool displays OK or Malfunction. Malfunction is displayed when the vehicle stability enhancement system is defective.
Yaw Rate Signal	-	Varies	The scan tool displays the current yaw rate in $\tilde{A}, \hat{A}^\circ/s$

Electronic Brake Control Module Scan Tool Output Controls

Output Control	Description
ABS Pump Motor	Commands the ABS pump motor Increase or Decrease.

Output Control	Description
Front Traction Control Isolation Valve	Commands the solenoid valve ON or OFF.
Front Traction Control Prime Valve	Commands the solenoid valve ON or OFF.
Left Front ABS Solenoid Valves	Commands the solenoid valves ON or OFF.
Left Rear ABS Solenoid Valves	Commands the solenoid valves ON or OFF.
Rear Traction Control Isolation Valve	Commands the solenoid valve ON or OFF.
Rear Traction Control Prime Valve	Commands the solenoid valve ON or OFF.
Right Front ABS Solenoid Valves	Commands the solenoid valves ON or OFF.
Right Rear ABS Solenoid Valves	Commands the solenoid valves ON or OFF.

FRONT VIEW CAMERA MODULE SCAN TOOL INFORMATION

Front View Camera Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Lane Departure Warning ON			
System Voltage	-	Varies	The scan tool displays the system voltage depending of the current battery voltage.
System Power Mode	-	Varies	The scan tool displays Off, Accessory, Running, Cranking or Undefined. This is the state of the ignition switch.
Power Mode Controlled by Backup Device	-	Varies	The scan tool displays Off, Accessory, Running or Cranking depending of the current power mode.
Frontview Camera System Status	-	Varies	The scan tool displays Normal, Malfunction or Undefined depending on the state of the lane departure warning system.
Frontview Camera Calibration Status	-	Varies	The scan tool displays Not Calibrated, Calibrated, Dynamically Calibrated or Undefined. This is the current state of the calibration.
Frontview Camera Learn Mode Status	-	Varies %	The scan tool displays varies percentage between 0-100% depending on the state of the frontview camera learn mode.
Lane Departure Warning Status	-	Varies	The scan tool displays Off, Disabled, Not Ready to Assist, Ready to Assist, Malfunction, Unknown or Undefined depending on the state of the lane departure warning system.
Lane Departure Warning Switch Status	-	On	The scan tool displays On or Off depending on the state of the lane departure warning switch.
Lane Departure Warning Indicator Status	-	Varies	The scan tool displays Off, On, Malfunction, Unknown or Undefined depending on the state of the lane departure warning system.
Forward Collision Alert Function Status	-	Varies	The scan tool displays Off, On, Malfunction, Unknown or Undefined depending on the state of the lane departure warning system.
Intelligent Light Ranging Status	-	Varies	The scan tool displays Off, Disabled, Malfunction, Enabled, Unknown or Undefined depending on the state of the intelligent light ranging system.

Parameter	System State	Expected Value	Description
Automatic High Beam Activation Status	-	Varies	The scan tool displays Disabled, Enabled or Undefined depending on the state of the automatic high beam assist system.
Following Distance Indicator Status	-	Varies	The scan tool displays Off, Disabled, Not Ready to Assist, Ready to Assist or Undefined depending on the state of the following distance indicator status.
Frontview Camera Disable History 1-4	-	Varies	The scan tool displays Empty, Lane Departure Warning Indicator Malfunction, Lane Departure Warning Switch Malfunction, Sensors Obstructed, Accelerator Pedal Position Out of Range, Driven Wheel Speed Signal Invalid, Non-Driven Wheel Speed Invalid, Brake Pedal Moderate Travel Signal Invalid, Brake Pedal Initial Travel Position Achieved, Lost Communication with Steering Wheel Angle Sensor Module, Invalid Data Received From Steering Wheel Angle Sensor Module, Forward Collision Alert Switch Malfunction, Clutch Pedal Position (CPP) Sensor Performance, Transmission Gear Engaged, Acceleration Sensor Longitudinal Signal, Invalid Data Received From Yaw Rate Sensor Module, Power Mode Controlled by Backup Device, System Power Mode, Overvoltage, Undervoltage or Undefined depending on the history data of the frontview camera disable history.

Front View Camera Module Scan Tool Output Controls

Output Control	Description
Clear Disable History Data	The frontview camera control module clears all disable history buffers when commanded from the scan tool.
Forward Collision Alert Switch	The frontview camera control module switches the forward collision alert system to Near, Medium or Far when commanded from the scan tool.
High Beams	The frontview camera control module switches the high beams On or Off when commanded from the scan tool.
Lane Departure Warning Indicator	The frontview camera control module switches the lane departure warning indicator On or Off when commanded from the scan tool.
Lane Departure Warning Switch	The frontview camera control module switches the lane departure warning system On or Off when commanded from the scan tool.
Vehicle Direction Camera Learn	The frontview camera control module initializes the service point calibration of the frontview camera and switches into the learn mode when commanded from the scan tool.

HEATING, VENTILATION AND AIR CONDITIONING CONTROL MODULE SCAN TOOL INFORMATION

Heating Ventilation and Air Conditioning Control Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Vehicle in Service Mode			

Parameter	System State	Expected Value	Description
A/C Button/Switch	A/C Button released	Inactive	The scan tool displays Active or Inactive depending on the state of the A/C switch.
	A/C Button pressed	Active	
A/C Compressor Refrigerant Solenoid Valve Command	-	0-100%	The scan tool displays % depending on the command for compressor displacement. The value increases stepwise from 0-100% depending on the command/request.
A/C Indicator	A/C Off	Off	The scan tool displays On or Off depending on the state of the A/C mode.
	A/C On	On	
A/C Evaporator Temperature Sensor	-	-40 to +80 Å, Å°C (-40 to +176 Å, Å°F)	The scan tool displays Å, Å°C (Å, Å°F). This is the current temperature at the A/C evaporator temperature sensor.
A/C Request Signal	A/C Off	Inactive	The scan tool displays Active or Inactive depending on the state of the A/C mode.
	A/C On	Active	
Air Inlet Door Actuator Command	-	Varies	The scan tool displays Counts. This is the desired position of the actuator.
Air Inlet Door Actuator Direction	-	Stop	The scan toll displays Stop, Outside Air, Increase, Recirculation, Decrease or Not Used depending on the state of the recirculation door. During the movement of the door, the scan tool shows Increase or Decrease depending on the movement direction.
Air Inlet Door Actuator Learn Status	-	Complete	The scan tool displays Not Running, In Progress, Complete, or Failed depending on the actuator calibration status.
Air Inlet Door Actuator Position	-	Varies	The scan tool displays Counts. This is the actual position of the actuator.
Air Quality Sensor/Odor (AQS) Button/Switch	Button released	Inactive	The scan tool displays Active or Inactive depending on the state of the A/C switch.
	Button pressed	Active	
Air Quality/Odor (AQS) Sensor	-	Varies	The scan tool displays counts. The value increases with the increasing of the pollution of the ambient air.
Air Quality Sensor/Odor (AQS) Indicator	AQS Off	Off	The scan tool displays On or Off depending on the state of the AQS indicator command
	AQS On	On	
Air Recirculation Button/Switch	Button released	Inactive	The scan tool displays Active or Inactive depending on the state of the air recirculation mode switch.
	Button pressed	Active	
Air Recirculation Door Actuator Command	-	Varies	The scan tool displays Counts. This is the desired position of the actuator.

Parameter	System State	Expected Value	Description
Air Recirculation Door Actuator Direction	-	Stop	The scan tool displays Stop, Outside Air, Increase, Recirculation, Decrease or Not Used depending on the state of the recirculation door. During the movement of the door, the scan tool shows Increase or Decrease depending on the movement direction.
Air Recirculation Door Actuator Learn Status	-	Complete	The scan tool displays Not Running, In Progress, Complete, or Failed depending on the actuator calibration status.
Air Recirculation Door Actuator Position	-	Varies	The scan tool displays Counts. This is the actual position of the actuator.
Air Recirculation Indicator	Recirculation Off	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Recirculation On	On	
Air Recirculation LED	Recirculation Off	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Recirculation On	On	
Air Recirculation Mode Switch	Air recirculation switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the air recirculation mode switch.
	Air recirculation switch pressed	Active	
Auto HVAC Button/Switch	Auto HVAC button released	Inactive	The scan tool displays On or Off depending on the state of the Auto HVAC button.
	Auto HVAC button pressed	Active	
Auto HVAC Indicator	Auto mode is deactivated	Off	The scan tool displays On or Off depending on the state of the Auto mode command.
	Auto mode is activated	On	
Auto HVAC Switch	Auto HVAC switch released	Inactive	The scan tool displays On or Off depending on the state of the Auto HVAC switch.
	Auto HVAC switch pressed	Active	
Auto Recirculation Button/Switch	-	Inactive	The scan tool displays Up, Down, or Inactive depending on the state of the switch.
Auto Recirculation Indicator	Auto Recirculation is deactivated	Off	The scan tool displays On or Off depending on the state of the Auto Recirculation indicator command.
	Auto Recirculation is activated	On	
Auxiliary Blower Motor Button/Switch	-	Varies	The scan tool displays AUTO, OFF, 1, 2, 3, 4, or 5 depending on the position of the auxiliary blower motor switch.
Auxiliary Blower Motor Speed	-	0-100%	The scan tool displays % depending on the feedback. The value increases stepwise from 0-100% depending on the feedback.
Auxiliary Blower Motor Speed Command	-	0-100%	The scan tool displays % depending on the command. The value increases stepwise from 0-100% depending on the command/request.

Parameter	System State	Expected Value	Description
Auxiliary Blower Motor Speed Indicator	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
Auxiliary Blower Motor Switch - Rotary	-	Varies	The scan tool displays AUTO, OFF, 1, 2, 3, 4, or 5 depending on the position of the auxiliary blower motor switch.
Auxiliary Coolant Pump	-	Varies	The scan tool displays Active or Inactive depending on the requested state of the coolant pump.
Auxiliary Coolant Pump Relay Command	-	Varies	The scan tool displays Active or Inactive depending on the requested state of the relay.
Auxiliary Coolant Pump Speed Command Duty Cycle	-	0-100%	The scan tool displays % depending on the command. The value increases stepwise from 0-100% depending on the command/request.
Auxiliary Coolant Pump Speed Feedback Duty Cycle	-	0-100%	The scan tool displays % depending on the feedback. The value increases stepwise from 0-100% depending on the feedback.
Auxiliary Heater Coolant Pump Fault Status	-	Normal	The scan tool displays Normal, High/Low Current, Flow Restricted, Overvoltage, Over temperature, or Circuit Open/Shorted indicating the status of the coolant pump.
Auxiliary Heater Output Status	-	OK	The scan tool displays OK, or Malfunction indicating the status of the auxiliary heater.
Auxiliary Mode Door Actuator Command	-	Varies	The scan tool displays Counts. This is the desired position of the rear mode actuator.
Auxiliary Mode Door Actuator Direction	-	Stop	The scan toll displays Stop, Increase, or Decrease depending on the state of the rear mode actuator. During the movement of the door, the scan tool shows Increase or Decrease depending on the movement direction.
Auxiliary Mode Door Actuator Learn Status	-	Complete	The scan tool displays Not Running, In Progress, Complete, or Failed depending on the actuator calibration status.
Auxiliary Mode Door Actuator Position	-	Varies	The scan tool displays Counts. This is the actual position of the rear mode actuator.
Auxiliary Mode Switch Indicator	Auxiliary Mode Switch inactive	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Auxiliary Mode Switch active	On	
Auxiliary Mode Switch Position - Knob	-	Varies	The scan tool displays Auto, Floor, Bi-level or Panel depending on the position of the switch.
Auxiliary Mode Switch Position - Toggle	-	Varies	The scan tool displays Auto, Floor, Bi-level or Panel depending on the position of the switch.
Base Model Part Number	-	Varies	Displays the currently installed part number of module.

Parameter	System State	Expected Value	Description
Battery Voltage	-	Varies	The scan tool displays V. This is the current battery voltage.
Bi-Level Button/Switch	Bi-Level Switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Bi-Level Switch pressed	Active	
Bi-Level Indicator	Bi-Level mode selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Bi-Level mode deselected	On	
Blower Motor Speed	-	0-100%	The scan tool displays % depending on the state of the selected blower motor speed. The value increases stepwise from 0-100% depending on the selected speed.
Blower Motor Speed 1 Indicator	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
Blower Motor Speed 2 Indicator	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
Blower Motor Speed 3 Indicator	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
Blower Motor Speed 4 Indicator	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
Blower Motor Speed 5 Indicator	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
Blower Motor Speed 6 Indicator	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
Blower Motor Speed Command	-	0-100%	The scan tool displays % depending on the state of the selected blower motor speed. The value increases stepwise from 0-100% depending on the selected speed.
Blower Motor Switch - Toggle	-	Inactive	The scan tool displays Up, Down or Inactive depending on the state of the blower motor switch.
Date Programmed	-	Varies	The scan tool displays the date the module was last programmed.
Desired Left Temperature	-	Varies	The scan tool displays $\tilde{\Delta}$, $\hat{\Delta}^{\circ}\text{C}$ ($\tilde{\Delta}$, $\hat{\Delta}^{\circ}\text{F}$). This is the currently selected temperature setting.
Desired Rear Temperature	-	Varies	The scan tool displays $\tilde{\Delta}$, $\hat{\Delta}^{\circ}\text{C}$ ($\tilde{\Delta}$, $\hat{\Delta}^{\circ}\text{F}$). This is the currently selected temperature setting.
Desired Right Temperature	-	Varies	The scan tool displays $\tilde{\Delta}$, $\hat{\Delta}^{\circ}\text{C}$ ($\tilde{\Delta}$, $\hat{\Delta}^{\circ}\text{F}$). This is the currently selected temperature setting.
Diagnostic Data Identifier	-	Varies	The scan tool displays the 4 character alphanumeric device ID.
End Model Part Number	-	Varies	The scan tool displays the end software module part number.

Parameter	System State	Expected Value	Description
Enhanced Defrost Button/Switch	Enhanced defrost switch released	Inactive	The scan tool displays On or Off depending on the state of the switch.
	Enhanced defrost switch pressed	Active	
Enhanced Defrost Indicator	Enhanced defrost mode is deactivated	Off	The scan tool displays On or Off depending on the state of the enhanced defrost mode.
	Enhanced defrost mode is activated	On	
Floor Mode Button/Switch	Floor mode switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Floor mode switch pressed	Active	
Floor Mode Indicator	Floor mode Not selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Floor mode selected	On	
Fresh Air Button/Switch	Fresh air switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Fresh air switch pressed	Active	
Fresh Air Indicator	Fresh air not selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Fresh air selected	On	
Front Defog Button/Switch	Front defog switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Front defog switch pressed	Active	
Front Defog Indicator	Front defog not selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Front defog selected	On	
Front Defrost Button/Switch	Defrost switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Defrost switch pressed	Active	
Front Defrost Indicator	Front defrost not selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Front defrost selected	On	
Front HVAC System Status	-	Varies	The scan tool displays Comfort, ECO, or Fan Only depending on the selected operating mode of the HVAC system.

Parameter	System State	Expected Value	Description
Front HVAC System Status Indicator	-	Varies	The scan tool displays: Link Active, AQS Active, Front Off Active, Fan Blower Minus Active, Fan Blower Plus Active, Knob Fan Active, Knob Temp Active, FR Fahrenheit Active, FR Celsius Active, FL Fahrenheit Active, FL Celsius Active, Front Fan 6 Active, Front Fan 5 Active, Front Fan 4 Active, Front Fan 3 Active, Front Fan 2 Active, Front Fan 1 Active, FL Active, Rear Enable Active, Extended Defrost Active, Heat Mode Active, Bi-level Active, Floor Active, Vent Active, Defog Active, Rear Defrost Active, Automatic Active, Fresh Active, Recirculation Active, or A/C Active depending on the current operating mode of the HVAC system.
Heat Mode Button/Switch	Heat switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Heat switch pressed	Active	
Heat Mode Indicator	Heat not selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Heat selected	On	
Heater Core Coolant Temperature Sensor	-	-40 to +215 Å, Å°C (-40 to +419 Å, Å°F)	The scan tool displays Å, Å°C (Å, Å°F). This is the temperature of the coolant at the inlet of the coolant heater
Heating Element 1 Duty Cycle Command	-	Varies	The scan tool displays % from 0-100, depending on the state of the command.
High Voltage Heater Pump Status	-	Varies	The scan tool displays % from 0-100, depending on the feedback.
HVAC Indicator Commanded Status	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
HVAC Actuators Supply Voltage	-	Active	The scan tool displays Active or Inactive. Inactive is displayed if there is a malfunction at the actuators supply voltage circuit.
HVAC Control Switch Activations - Extended	-	Inactive	The scan tool displays Active or Inactive. Active is displayed when a switch is pressed.
HVAC Heater Coolant Pump Speed Command Duty Cycle	-	Varies	The scan tool displays % from 0-100, depending on the state of the command.
HVAC Heater Coolant Pump Speed Feedback Duty Cycle	-	Varies	The scan tool displays % from 0-100, depending on the feedback.
HVAC Mode Status	-	Varies	The scan tool displays: Peak Performance Mode, Normal, Economy Mode, Blower Only Mode, or Heater Economy Mode indicating the currently selected mode.

Parameter	System State	Expected Value	Description
Hybrid/EV Battery Pack Coolant Pump Command	-	Varies	The scan tool displays % from 0-100, depending on the state of the command.
Hybrid/EV Battery Pack Coolant Pump Speed	-	Varies	The scan tool displays % from 0-100, depending on the feedback.
Hydrocarbon Air Quality Sensor	-	Varies	The scan tool displays counts. The value increases with the increasing of the pollution of the ambient air.
Ignition Voltage	-	11-14 V	The scan tool displays the current Ignition voltage.
Instrument Panel Vents Button/Switch	Instrument Panel Vent switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Instrument Panel Vent switch pressed	Active	
Instrument Panel Vents Indicator	Panel Vents not selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Panel Vents selected	On	
Left/Single Solar Sensor	-	Varies	The scan tool displays W/m^2 . This is the current sun heat intensity.
Left Temperature Button/Switch	-	Inactive	The scan tool displays Up, Down, or Inactive depending on the state of the temperature switch.
Left Temperature Door Actuator Command	-	Varies	The scan tool displays Counts. This is the desired position of the actuator.
Left Temperature Door Actuator Direction	-	Varies	The scan tool displays stop, increase, or decrease. This is the current direction of the actuator.
Left Temperature Door Actuator Learn Status	-	Complete	The scan tool displays Not Running, In Progress, Complete, or Failed depending on the actuator calibration status.
Left Temperature Door Actuator Position	-	Varies	The scan tool displays Counts. This is the actual position of the actuator.
Left Temperature Knob Position	-	Varies	The scan tool displays Increase or Decrease when the left temperature knob is rotated.
Lower Left Duct Air Temperature Sensor	-	-40 to +80 $\tilde{A}$, $\hat{A}^{\circ}C$ (-40 to +176 $\tilde{A}$, $\hat{A}^{\circ}F$)	The scan tool displays $\tilde{A}$, $\hat{A}^{\circ}C$ ($\tilde{A}$, $\hat{A}^{\circ}F$). This is the current temperature at the duct temperature sensor.
Lower Rear Duct Air Temperature Sensor	-	-40 to +80 $\tilde{A}$, $\hat{A}^{\circ}C$ (-40 to +176 $\tilde{A}$, $\hat{A}^{\circ}F$)	The scan tool displays $\tilde{A}$, $\hat{A}^{\circ}C$ ($\tilde{A}$, $\hat{A}^{\circ}F$). This is the current temperature at the duct temperature sensor.
Lower Right Duct Air Temperature Sensor	-	-40 to +80 $\tilde{A}$, $\hat{A}^{\circ}C$ (-40 to +176 $\tilde{A}$, $\hat{A}^{\circ}F$)	The scan tool displays $\tilde{A}$, $\hat{A}^{\circ}C$ ($\tilde{A}$, $\hat{A}^{\circ}F$). This is the current temperature at the duct temperature sensor.
Manufacturing Enable Counter	-	0	The scan toll displays 0-255 counts. This counter typically decrements 1 count per ignition cycle. 0 indicates a locked ECU.

Parameter	System State	Expected Value	Description
Manufacturing Traceability Data	-	Varies	This parameter displays the diagnostic module traceability number, which may be up to 16 digits long. This information may be used in certain situations to identify the manufacturer of the component.
Mode Door Actuator Command	-	Varies	The scan tool displays Counts. This is the desired position of the actuator.
Mode Door Actuator Direction	-	Stop	The scan tool displays stop, increase, or decrease. This is the current direction of the actuator.
Mode Door Actuator Learn Status	-	Complete	The scan tool displays Not Running, In Progress, Complete, or Failed depending on the actuator calibration status.
Mode Door Actuator Position	-	Varies	The scan tool displays Counts. This is the actual position of the actuator.
Mode Switch - Toggle	-	Inactive	The scan tool displays Up, Down, or Inactive depending on the state of the mode switch.
Mode Switch Knob Position	-	Varies	The scan tool displays: Rear, Sync, Floor/Vent/Defrost (Tri-Level), Vent/Defrost, Front Defrost, Foot/Defrost 3 (Blend+), Foot/Defrost 2 (Blend), Foot/Defrost 1 (Floor +), Foot (Floor), Bi-level 3 (Bi-level +), Bi-level 2 (Bi-level), Bi-level 1 (Panel +), Face (Panel), or AUTO depending on the position of the switch.
MULTI-ZONE Button/Switch	MULTI-ZONE switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	MULTI-ZONE switch pressed	Active	
MULTI-ZONE Indicator	MULTI-ZONE not selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	MULTI-ZONE selected	On	
Outside Air Temperature Sensor Voltage	-	-40 to +80Ã,Â°C (-40 to +176Ã,Â°F)	The scan tool displays Ã,Â°C (Ã,Â°F). This is the current temperature at the outside air temperature sensor.
Passenger Compartment Air Temperature (Filtered)	-	-40 to +80Ã,Â°C (-40 to +176Ã,Â°F)	The scan tool displays Ã,Â°C (Ã,Â°F). This is the stored temperature of the passenger compartment air temperature sensor.
Passenger Compartment Air Temperature (Unfiltered)	-	-40 to +80Ã,Â°C (-40 to +176Ã,Â°F)	The scan tool displays Ã,Â°C (Ã,Â°F). This is the current temperature at the passenger compartment air temperature sensor.
Passenger Compartment Humidity	-	3-100%	The scan tool displays %. This is the current relative humidity level at the windshield temperature and inside moisture sensor.

Parameter	System State	Expected Value	Description
Passenger Compartment Humidity Sensor Temperature	-	-40 to +80 $\tilde{\text{A}}$, $\hat{\text{A}}^{\circ}\text{C}$ (-40 to +176 $\tilde{\text{A}}$, $\hat{\text{A}}^{\circ}\text{F}$)	The scan tool displays $\tilde{\text{A}}$, $\hat{\text{A}}^{\circ}\text{C}$ ($\tilde{\text{A}}$, $\hat{\text{A}}^{\circ}\text{F}$). This is the current temperature at the humidity sensing element temperature sensor.
Rear Defogger Button/Switch	Rear Defogger switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Rear Defogger switch pressed	Active	
Rear Defogger Deactivation Reason	-	Varies	The scan tool displays: Auto Start Active, Rear Defrost Inhibited, Load Shed Active, Convertible Top Down, or Battery State of Charge Low. This is the reason the defogger has been disabled.
Rear Defogger Indicator	Rear defogger is deactivated	Off	The scan tool displays On or Off depending on the state of the rear defogger.
	Rear defogger is activated	On	
Rear Defogger Status	Rear defogger is deactivated	Off	The scan tool displays On or Off depending on the state of the rear defogger command.
	Vehicle ON/Rear defogger is activated	On	
Rear In Vehicle Temperature Sensor (Filtered)	-	-40 to +80 $\tilde{\text{A}}$, $\hat{\text{A}}^{\circ}\text{C}$ (-40 to +176 $\tilde{\text{A}}$, $\hat{\text{A}}^{\circ}\text{F}$)	The scan tool displays $\tilde{\text{A}}$, $\hat{\text{A}}^{\circ}\text{C}$ ($\tilde{\text{A}}$, $\hat{\text{A}}^{\circ}\text{F}$). This is the stored temperature of the rear passenger compartment air temperature sensor.
Rear In Vehicle Temperature Sensor (Unfiltered)	-	-40 to +80 $\tilde{\text{A}}$, $\hat{\text{A}}^{\circ}\text{C}$ (-40 to +176 $\tilde{\text{A}}$, $\hat{\text{A}}^{\circ}\text{F}$)	The scan tool displays $\tilde{\text{A}}$, $\hat{\text{A}}^{\circ}\text{C}$ ($\tilde{\text{A}}$, $\hat{\text{A}}^{\circ}\text{F}$). This is the current temperature at the rear passenger compartment air temperature sensor.
Rear Temperature Button/Switch	-	Inactive	The scan tool displays Up, Down or Inactive depending on the state of the temperature switch.
Rear Temperature Door Actuator Command	-	Varies	The scan tool displays Counts. This is the desired position of the mode actuator.
Rear Temperature Door Actuator Direction	-	Stop	The scan tool displays stop, increase, or decrease. This is the current direction of the actuator.
Rear Temperature Door Actuator Learn Status	-	Complete	The scan tool displays Not Running, In Progress, Complete, or Failed depending on the actuator calibration status.
Rear Temperature Door Actuator Position	-	Varies	The scan tool displays Counts. This is the actual position of the actuator.
Rear Temperature Knob Position	-	Varies	The scan tool displays Increase or Decrease when the rear temperature knob is rotated.
Repair Shop Code or Tester Serial Number	-	Varies	This number may be used in certain situations to identify the supplier, control module and diagnostic capability of the component.
Right Solar Load	-	Varies	The scan tool displays W/m^2 . This is the current sun heat intensity.

Parameter	System State	Expected Value	Description
Right Solar Sensor	-	Varies	The scan tool displays W/m ² . This is the current sun heat intensity.
Right Temperature Button/Switch	-	Inactive	The scan tool displays Up, Down or Inactive depending on the state of the temperature switch.
Right Temperature Door Actuator Command	-	Varies	The scan tool displays Counts. This is the desired position of the mode actuator.
Right Temperature Door Actuator Direction	-	Stop	The scan tool displays stop, increase, or decrease. This is the current direction of the actuator.
Right Temperature Door Actuator Learn Status	-	Complete	The scan tool displays Not Running, In Progress, Complete, or Failed depending on the actuator calibration status.
Right Temperature Door Actuator Position	-	Varies	The scan tool displays Counts. This is the actual position of the actuator.
Right Temperature Knob Position	-	Varies	The scan tool displays Increase or Decrease when the right temperature knob is rotated.
Security Code Accepted	-	Yes	The scan tool displays Yes or No depending on the current security code status.
Security Code Lockout	-	Security Code Accepted	The scan tool displays Tool Learn Delay Active, Vehicle Assembly Mode Flag, Security Code Lockout Active, Security Code Programmed, Security Code Accepted depending on the current security code status.
Security Code Lockout Active	-	Inactive	When active, the scan tool displays a timer which prohibits programming the security code when a certain number of attempts have been exceeded. The security code is a method of verifying that the module has not been swapped with a module from another vehicle
Security Code Programmed	-	Yes	The scan tool displays Yes or No depending on the current security code status.
Security Code Programming Counter	-	Varies	This parameter indicates the number of times the security code has been programmed. The security code is a method of verifying that the module has not been swapped with a module from another vehicle.
Security Code Reset Counter	-	Varies	This parameter indicates the number of times the security code has been reset. The security code is a method of verifying that the module has not been swapped with a module from another vehicle.
Software Module 1 Identifier	-	Varies	The scan tool displays the software calibration part number 1.
Software Module 2 Identifier	-	Varies	The scan tool displays the software calibration part number 2.

Parameter	System State	Expected Value	Description
Software Module 3 Identifier	-	Varies	The scan tool displays the software calibration part number 3.
Sun Azimuth	-	0-90°, °	The scan tool displays degrees. This is the current angle in the horizontal plane between the sun and the vehicle driving direction.
Sun Elevation	-	0-360°, °	The scan tool displays degrees. This is the current angle in the vertical sun height.
Sunload/Sun Intensity	-	0-1200 W/m ²	The scan tool displays W/m ² . This is the current sun heat intensity.
Upper Left Duct Air Temperature Sensor	-	-40 to +80°, °C (-40 to +176°, °F)	The scan tool displays °, °C (°, °F). This is the current temperature at the upper left duct temperature sensor.
Upper Rear Duct Air Temperature Sensor	-	-40 to +80°, °C (-40 to +176°, °F)	The scan tool displays °, °C (°, °F). This is the current temperature at the rear upper duct temperature sensor.
Upper Right Duct Air Temperature Sensor	-	-40 to +80°, °C (-40 to +176°, °F)	The scan tool displays °, °C (°, °F). This is the current temperature at the upper right duct temperature sensor.
Vehicle Identification Number (VIN)	-	Varies	The scan tool displays the learned vehicle identification number.
Windshield Temperature	-	-40 to +80°, °C (-40 to +176°, °F)	The scan tool displays °, °C (°, °F). This is the current temperature at the windshield temperature sensor.

Heating Ventilation and Air Conditioning Control Module Scan Tool Output Controls

Output Control	Description
A/C Compressor Clutch Enable	This control function enables or disables the A/C Compressor Clutch. The scan tool displays Engaged or Disengaged depending on the state of the A/C compressor clutch.
A/C Compressor Valve Control	This control function increases or decreases the command to the A/C Compressor Solenoid in %. The scan tool displays amperage in % depending on the state of the command for increased/decreased compressor displacement.
Aero Shutter Enable	This control function commands the state of the Aero Shutter between Active and Not Active.
Air Inlet Door Actuator Control	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.
Air Recirculation Door Actuator Direction	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.
Auxiliary Blower Motor Speed	This control function commands the auxiliary blower motor speed from 0 to 100% and back again.
Auxiliary Coolant Pump Speed	The HVAC control module enables or disables the coolant pump, and varies the pump speed when commanded from the scan tool.

Output Control	Description
Auxiliary Heater Output Enable	This control function increases or decreases the command to the Auxiliary Heater in %. The scan tool displays amperage in % depending on the state of the command.
Auxiliary Mode Door Actuator Control	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.
Blower Motor Speed/Command	This control function commands the blower motor speed from 0 to 100% and back again.
Heater Core Pump Relay Control Circuit	This control function commands the heater core pump relay On and Off.
Illuminate All Indicators	The HVAC control module illuminates all the indicators when commanded from the scan tool.
Left Temperature Door Actuator Control	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.
Mode Door Position Control	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.
Rear Defogger	This control function enables or disables the Rear Defogger. The scan tool displays Active or Not Active depending on the state of the rear defogger command.
Rear Temperature Door Actuator Control	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.
Right Temperature Door Actuator Control	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.
Single Zone Temperature Actuator Direction	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.

Heating Ventilation and Air Conditioning Control Module Configuration/Reset Functions

Output Control	Description
HVAC Afterblow Configuration	This control function enables or disables the afterblow configuration. When enabled, the Afterblow mode operates the blower motor after the engine has been turned off and the air conditioning has been used. This operation of the blower motor aids in drying the evaporator core
HVAC Actuators Learn	The HVAC control module executes the Motor Learn Routine when commanded. The actuators are commanded to their extreme travel available at both ends. These values are then used for future reference when determining door position.
Reset Source ID	Resets the communication IDs between modules

Human Machine Interface Control Module Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Battery Voltage	Varies	The scan tool displays volts. This is the voltage at the input to the human machine interface control module.
System Power Mode	Run	The scan tool displays Off, Accessory, Run or Crank Request. This is the vehicle power mode status as received by the human machine interface control module via high speed GMLAN.
Date From GPS	Varies	The scan tool displays the current date (Month, Day, and Year) acquired from the GPS satellites.
Time From GPS	Varies	The scan tool displays the current time acquired from the GPS satellites in 24 hour format HHMMSS
Human Machine Interface Control Module Microphone 1	Not Present	The scan tool displays Present or Not Present. Calibration indication that a primary microphone is present and connected to the human machine interface control module. The microphone input is ported to the MOST buss to the amplifier (for volume compensation, when required) instead of directly wired microphone to the amplifier.
Human Machine Interface Control Module Microphone 2	Not Present	The scan tool displays Present or Not Present. Calibration indication that a secondary microphone is present and connected to the human machine interface control module. The microphone input is ported to the MOST buss to the amplifier (for volume compensation, when required) instead of directly wired microphone to the amplifier.
Human Machine Interface Control Module Powers GPS	Not Present	The scan tool displays Present or Not Present. Calibration Indication that a GPS antenna input is primary to the human machine interface control module and powered by the human machine interface control module instead of shared with another vehicle location module.
Rearview Camera	Varies based on vehicle equipment	The scan tool displays Present or Not Present. Calibration indication that the system is calibrated for rear view camera operation.
Rearview Camera Display	Inactive	The scan tool displays Active or Inactive. Indication that rear camera views are actively being displayed.
Front Touch Screen	Varies based on vehicle equipment	The scan tool displays Present or Not Present. Calibration indication that the system is calibrated for front touch screen operation.
USB Receptacle 1	Varies based on vehicle equipment	The scan tool displays Present or Not Present. Calibration indication that a USB receptacle is connected to the human machine interface control module USB port 1. Does not indicate if a device is connected to the USB receptacle.
USB Receptacle 2	Varies based on vehicle equipment	The scan tool displays Present or Not Present. Calibration indication that a USB receptacle is connected to the human machine interface control module USB port 2. Does not indicate if a device is connected to the USB receptacle.
Memory Card Receptacle	Varies based on vehicle equipment	The scan tool displays Present or Not Present. Calibration indication that a SD Card receptacle input is present. Does not indicate the receptacle is occupied with digital media.

Parameter	Expected Value	Definition
USB Hub 1	Varies based on vehicle equipment	The scan tool displays Present or Not Present. Calibration indication that a hub device is connected to the human machine interface control module USB port 1.
USB Hub 2	Varies based on vehicle equipment	The scan tool displays Present or Not Present. Calibration indication that a hub device is connected to the human machine interface control module USB port 2.
USB Hub 1 Number of Ports	Varies based on vehicle equipment	The scan tool displays the number of receptacles (USB and/or memory card receptacles) present in the hub device connected to the human machine interface control module USB port 1.
USB Hub 2 Number of Ports	Varies based on vehicle equipment	The scan tool displays the number of receptacles (USB and/or memory card receptacles) present in the hub device connected to the human machine interface control module USB port 1.
Valet Mode	Inactive	The scan tool displays Active or Inactive. Actual indication that Valet Parking Mode which limits vehicle features (speed limiting, no disc eject, trunk lock, etc.), is active or inactive.
Human Machine Interface Control Module Theft Protection Armed	VIN Learned	The scan tool displays VIN Learned or No VIN Learned. Actual indication if the human machine interface control module has learned a VIN.
Human Machine Interface Control Module Theft Protection Locked	Inactive	The scan tool displays Active or Inactive. Actual indication the human machine interface control module is in theft protection (limited functionality) mode.
Cooling Fan Speed	Varies	The scan tool displays OFF, or displays the current cooling fan speed expressed in stages from 1 to 6. Higher stages indicate increased speed of the cooling fan.
Control Module Temperature Sensor 1	Varies	The scan tool displays the actual value of the human machine interface control module circuit board temperature sensor 1.
Control Module Temperature Sensor 2	Varies	The scan tool displays the actual value of the human machine interface control module circuit board temperature sensor 2.
End Model Part Number	Varies	The scan tool displays the end software module part number.
Boot Software Part Number	Varies	The scan tool displays the boot software ID number.
Calibration Part Number 1	Varies	The scan tool displays the software calibration part number 1.
Calibration Part Number 2	Varies	The scan tool displays the software calibration part number 2.
Calibration Part Number 3	Varies	The scan tool displays the software calibration part number 3.
Calibration Part Number 4	Varies	The scan tool displays the software calibration part number 4.
Calibration Part Number 5	Varies	The scan tool displays the software calibration part number 5.
Calibration Part Number 6	Varies	The scan tool displays the software calibration part number 6.
Calibration Part Number 7	Varies	The scan tool displays the software calibration part number 7.
Calibration Part Number 8	Varies	The scan tool displays the software calibration part number 8.

Parameter	Expected Value	Definition
Calibration Part Number 9	Varies	The scan tool displays the software calibration part number 9.
Calibration Part Number 10	Varies	The scan tool displays the software calibration part number 10.
Calibration Part Number 11	Varies	The scan tool displays the software calibration part number 11.
Software Module 11 Identifier Alpha Code	Varies	The scan tool displays a two character software identifier.
Calibration Part Number 12	Varies	The scan tool displays the software calibration part number 12.
Software Module 12 Identifier Alpha Code	Varies	The scan tool displays a two character software identifier.
Calibration Part Number 13	Varies	The scan tool displays the software calibration part number 13.
Calibration Part Number 14	Varies	The scan tool displays the software calibration part number 14.
Software Module 14 Identifier Alpha Code	Varies	The scan tool displays a two character software identifier.
Calibration Part Number 15	Varies	The scan tool displays the software calibration part number 15.
Calibration Part Number 16	Varies	The scan tool displays the software calibration part number 16.
Calibration Part Number 17	Varies	The scan tool displays the software calibration part number 17.
Calibration Part Number 18	Varies	The scan tool displays the software calibration part number 18.
Calibration Part Number 19	Varies	The scan tool displays the software calibration part number 19.
Software Freeze Date	Varies	The scan tool displays the software date in DD.MM.YYYY format.
Hardware Production Date	Varies	The scan tool displays the ECU hardware production date in DD.MM.YYYY format.
Manufacturer Enable Counter	0	The scan tool displays the counter value. This counter is used for manufacturing purposes only.
VIN Digits 2-17	Varies	The scan tool displays the learned VIN digits 2-17.
Diagnostic Data Identifier	Varies	The scan tool displays the 4 character alphanumeric device ID.

Wireless Access Data Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Number of Paired Bluetooth Devices Present	Varies	Number of paired (authenticated) devices detected and present but may or may not be connected.
Bluetooth Device Connection Status	Varies	The scan tool displays Connected or Not Connected. The parameter indicates if a Bluetooth device is currently connected to the system.
Bluetooth Device Hands Free Call Status	Varies	The scan tool displays Call Active or Inactive. Indicates if the currently connected Bluetooth device is actively in a hands free phone call.
Bluetooth Device Audio Streaming Status	Varies	The scan tool displays Active or Inactive. Indicates if the currently connected Bluetooth device is actively streaming audio.

Parameter	Expected Value	Definition
Bluetooth Device Internet Connection Status	Varies	The scan tool displays Active or Inactive. Indicates if the currently connected Bluetooth device is actively connected to the Internet via the device's internet connection.
Bluetooth Device Supports Hands Free	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports the Bluetooth Hands Free profile.
Bluetooth Device Supports Phone Book Access	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports the Bluetooth Phone Book Access profile.
Bluetooth Device Supports Text Message Access	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports the Bluetooth Text Message Access profile.
Bluetooth Device Supports Serial Port	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports the Bluetooth Serial Port profile.
Bluetooth Device Supports Navigation	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports the Bluetooth Portable Navigation profile.
Bluetooth Device Supports Audio Streaming using Audio Video Remote Control Profile 1.0	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports the Bluetooth Audio Streaming AVRCP (Audio/Video Remote Control Profile) 1.0. The Audio/Video Remote Control Profile is a Bluetooth profile that allows Bluetooth devices to control media playback on remote devices. It is typically used with A2DP devices for next/previous track selection and pause/play functions.
Bluetooth Device Supports Audio Streaming using Audio Video Remote Control Profile 1.3	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports the Bluetooth Audio Streaming AVRCP (Audio/Video Remote Control Profile) 1.3. The Audio/Video Remote Control Profile is a Bluetooth profile that allows Bluetooth devices to control media playback on remote devices. It is typically used with A2DP devices for next/previous track selection and pause/play functions.
Bluetooth Device Supports Internet Access - Dial-Up Network	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports internet access only though the device's dial-up network.
Bluetooth Device Supports Internet Access - Personal Area Network	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports internet access only though the device's personal area network.
Bluetooth Device Supports Internet Access - Dial-Up/Personal Area Network	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports internet access though the device's dial-up or personal area network.
Bluetooth Device Class - Phone	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device class is identified as a phone.
Bluetooth Device Class - Audio/Video	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device class is identified as an audio and/or video device.
Bluetooth Device Class - Computer	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device class is identified as a computing device.

Parameter	Expected Value	Definition
Bluetooth Device Class - LAN or Network Access Point	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device class is identified as a Local Area Network (LAN) or Network Access Point (NAP) device.
WLAN Link Quality	Counts	The scan tool displays the connection quality in counts, with higher numbers indicating a better connection.
App 1 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 1
App 1 Version	Varies	The scan tool displays the version number for the installed internet application number 1
App 2 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 2
App 2 Version	Varies	The scan tool displays the version number for the installed internet application number 2
App 3 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 3
App 3 Version	Varies	The scan tool displays the version number for the installed internet application number 3
App 4 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 4
App 4 Version	Varies	The scan tool displays the version number for the installed internet application number 4
App 5 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 5
App 5 Version	Varies	The scan tool displays the version number for the installed internet application number 5
App 6 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 6
App 6 Version	Varies	The scan tool displays the version number for the installed internet application number 6
App 7 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 7
App 7 Version	Varies	The scan tool displays the version number for the installed internet application number 7
App 8 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 8
App 8 Version	Varies	The scan tool displays the version number for the installed internet application number 8

Human Machine Interface Scan Tool Output Controls

Scan Tool Output Control	Description
Info Display Test	This output control will command the test of the Info Display.
Speech Recognition	This output control will command the various Speech Recognition prompts.
Cooling Fan	This output control will command the speed of the Cooling Fan.
Control Module Reset	This output control will command the reset of the Control Module.

INFLATABLE RESTRAINT PASSENGER PRESENCE SYSTEM SCAN TOOL INFORMATION

Passenger Presence Module Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		

Parameter	Expected Value	Definition
Base Model Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the PPS module which is stored in non volatile memory.
Battery Voltage	Volts	The scan tool will display battery voltage.
Calibration Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the calibration file in the PPS module.
End Model Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the PPS module in production.
Manufacturer's Traceability Number	Varies, 16 Digit Number	The scan tool displays the 16 digit traceability number in the PPS module.
Passenger Air Bag Enable/Disable Request by Passenger Presence Module	Disable	The scan tool displays the Passenger Air Bag Enable/Disable Request by Passenger Presence Module.
Passenger Presence Module Primary Key	Hex Value	The scan tool indicates the primary key Hex value.
Passenger Presence System Reporting DTC(s)	Yes/No	The PPS module will report if there are DTCs set in the passenger presence module.
Passenger Seat Occupancy Status	Empty Seat	The scan tool displays Undefined, Empty Seat, Occupied, or Invalid. This is the state of the passenger seat if it is occupied or empty and monitored by the passenger presence system.
Power Mode	Off/Accessory/Run/Crank Request	The scan tool will display the power mode of the vehicle.
Primary Key Status	Valid/Invalid	The scan tool displays Valid if the primary key matches what is stored to memory in the PPS module.
Received Primary Key	Hex Value	The scan tool displays a Hex value indicating the PPS module received primary key data.
Software Part Number	Varies, 8 Digit Number	The scan tool displays the software part number in the PPS module.

INFLATABLE RESTRAINT SENSING AND DIAGNOSTIC MODULE SCAN TOOL INFORMATION

Sensing and Diagnostic Module Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Air Bag Malfunction Indicator	On/Off/Flashes	The scan tool will display On or Flashes if there is a problem with the SIR system. Any problems within the SIR system will illuminate the air bag indicator. The indicator will either flash or stay on.
Base Model Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the SDM which is stored in non volatile memory.
Calibration Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the calibration file in the SDM.

Parameter	Expected Value	Definition
Deployment Loop 1-18 Enable Status	Enabled/Disabled	The scan tool displays Enabled or Disabled. This is the status of the air bag or pretensioner.
Deployment Loop 1-18 Learn Status	Learned/Not Learned	The scan tool displays Learned or Not learned. Learned is displayed if the SDM has defined the number loop programmed from an air bag or pretensioner.
Deployment Loop 1-18 Resistance	1.44-4.25 Ohms	The scan tool displays the resistance of the learned loop of the air bag or pretensioner when connected to the SDM.
Deployment Loop 1-18 Type	Varies	The scan tool displays the name of the air bag or pretensioner associated with the loop type 1-18.
Driver Seat Belt Reminder Indicator	On/Off	The scan tool displays On if this indicator is on. If the indicator is on it means the seat belt has not been buckled.
Driver Seat Belt Status	Buckled/Unbuckled	The scan tool displays Buckled or Unbuckled. This is the state of the driver seat belt switch when the seat belt is buckled or unbuckled.
End Model Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the SDM in production.
Impact Sensor 1-3 Enable Status	Enabled/Disabled	The scan tool displays Enabled or Disabled This is the status of the impact sensor.
Impact Sensor 1-3 Learn Status	Learned/Not Learned	The scan tool displays Learned or Not learned. Learned is displayed if the SDM has learned and has assigned a number to that impact sensor.
Impact Sensor 1-3 Type	Equipped/Not Equipped	The scan tool displays the name of the impact sensor associated with the type 1-8.
Inflatable Restraint Sensing and Diagnostic Module Primary Key	Hex Value	The scan tool indicates the primary key Hex value.
Manufacturer's Traceability Number	Varies, 16 Digit Number	The scan tool displays the 16 digit traceability number in the SDM.
Module Setup	Incomplete/Complete	The scan tool indicates if the SDM is set up.
Power Mode	Off/Accessory/Run/Crank Request	The scan tool will display the power mode of the vehicle.
Primary Key Status	Valid/Invalid	The scan tool displays Valid if the primary key matches what is stored to memory in the SDM.
Primary Key Status Last Ignition Cycle	Invalid/Valid	The SDM checks to see if the primary key data received is valid.
Received Primary Key	Hex Value	The scan tool displays a Hex value indicating the SDM received primary key data.
Rollover Sensor Enable Status	Disabled/Enabled	The scan tool displays if the rollover sensor is enabled to the SDM.
Rollover Sensor Learn Status	Learn/Unlearn	The scan tool displays Learned or Not Learned. Learned is displayed if the rollover sensor has been learned by the SDM.

Parameter	Expected Value	Definition
Security Code Accepted	Yes/No	The SDM either accepts the security code or it does not. The scan tool displays Yes if the security code has been accepted by the SDM.
Security Code Lockout	Yes/No	The scan tool displays Yes if the SDM has been locked out because of the security code not being accepted.
Security Code Lockout Active Timer	Random Value	The SDM uses a timer before the security code is locked in the SDM.
Security Code Programmed	Yes/No	The scan tool displays Yes if the SDM has been programmed with the security code.
Security Code Programming Counter	Random Value	The SDM uses a counter for the value of the security code programming.
Security Code Reset Counter	Random Value	The SDM uses a counter to reset the value of the security code.
Software Part Number	Varies, 8 Digit Number	The scan tool displays the software part number in the SDM.
Vehicle Identification Number	Varies, 17 Digit Number	The VIN number of the vehicle programmed into the SDM.
VIN Programmed	Yes/No	The scan tool displays Yes if the VIN has been programmed into the SDM.
VIN Programming Counter	Random Value	The SDM uses this counter while programming the VIN.

INSTRUMENT CLUSTER SCAN TOOL INFORMATION

Instrument Cluster Scan Tool Data Parameters

Parameter	Expected Value	Description
Operating Conditions: Ignition ON		
Battery Voltage	12-14 V	The scan tool displays Volts. This is the current battery voltage signal.
Key in Ignition Status	Active/Inactive	The scan tool displays Active or Inactive. This is the state of the key in ignition switch.
Driver Information Center Switch	Varies	The scan tool displays Volts. This is the current driver information center switch input voltage.
Driver Information Center Switch	Inactive	The scan tool displays either Inactive, Up, Down, or Menu. This is the state of the driver information center switch.
Reset Switch	Active/Inactive	The scan tool displays Active or Inactive. This is the state of the reset switch.
Ambient Air Temperature	15Å, Å°C	The scan tool displays outside temperature in Å, Å°C.
Washer Fluid Level Switch	Open	The scan tool displays either Open, Closed, or Not Available.
Odometer Lock Status	Active/Inactive	The scan tool displays Active or Inactive depending on the state of the odometer.
Engine Speed	0 RPM	The scan tool displays the filtered value of engine speed.
Vehicle Speed	0 km/h	The scan tool displays the filtered vehicle speed value.
Fuel Level Sensor	-	The scan tool displays the filtered value of the fuel level.
Engine Coolant Temperature	-	The scan tool displays the filtered value of the engine coolant temperature.

Parameter	Expected Value	Description
Engine Oil Pressure	-	The scan tool displays the filtered value of the engine oil pressure.
Head-Up Display Dimming Level	percentage	The scan tool displays the current dimming intensity level.
Head-Up Display Switch	Head-Up Display Movement, Head Up Page Switch, Head-Up Display Dimming Level	The scan tool displays the current HUD button being pushed.
Steering Wheel Control Switches	Left, Select, Right, Volume UP, Volume Down	The scan tool displays the current steering wheel controls button being pushed.

Instrument Cluster Scan Tool Output Controls

Output Control	Description
Instrument Cluster Gauge Sweep	This function is used to command the gauges to sweep from minimum to maximum.
Driver Information Center Dimming	This function is used to command the dimming of the driver information display to Increase or Decrease by 10%.
Instrument Panel Dimmer Switch	This function is used to command the dimming of the instrument cluster to Increase or Decrease by 10%.
Driver Information Center Segments	This function is used to command the driver information center segments ON and OFF.
All Indicators	This function is used to command all the indicators ON or OFF.
Driver Information Center Options	This function is used to command the driver information center buttons using the scan tool.
CAN Bus Configuration Learn	This function is used to Reset the source ID for low speed CAN Bus communications.
Head Up Display Dimming Level	This function is used to command the dimming of the head up display to Increase or Decrease.
Head Up Display Pattern Check	This function is used to command the head up display to display a striped test pattern.

PARKING ASSIST CONTROL MODULE SCAN TOOL INFORMATION

NOTE: Due to software and hardware variations, not all information may be applicable.

Parking Assist Control Module Scan Tool Data Parameters - Identification Information

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Parking Assist ON			
Vehicle Identification Number (VIN)	-	Varies	The scan tool displays the Vehicle Identification Number
Diagnostic Data Identifier	-	Varies	The scan tool displays the Diagnostic Data Identifier
XML Configuration Compatibility Identifier	-	Varies	The scan tool displays the XML Configuration Compatibility Identifier
XML Data File Part Number	-	Varies	The scan tool displays the XML Data File Part Number
XML Data File Alpha Code	-	Varies	The scan tool displays the XML Data File Alpha Code
Module Diagnostic Address	-	Varies	The scan tool displays the Module Diagnostic Address
Manufacturer's Traceability Number	-	Varies	The scan tool displays the Manufacturer's Traceability Number

Parameter	System State	Expected Value	Description
Software Part Number	-	Varies	The scan tool displays the Software Part Number
Calibration Part Number 2	-	Varies	The scan tool displays the Calibration Part Number 2
End Model Part Number	-	Varies	The scan tool displays the End Model Part Number
Base Model Part Number	-	Varies	The scan tool displays the Base Model Part Number
Software Module 1 Identifier Alpha Code	-	Varies	The scan tool displays the Software Module 1 Identifier Alpha Code
End Model Part Number Alpha Code	-	Varies	The scan tool displays the End Model Part Number Alpha Code
Base Model Part Number Alpha Code	-	Varies	The scan tool displays the Base Model Part Number Alpha Code
GMLAN Identification Data - Bus 1 Type	-	Varies	The scan tool displays the GMLAN Identification Data - Bus 1 Type
GMLAN Identification Data - Data Dictionary 1 Version	-	Varies	The scan tool displays the GMLAN Identification Data - Data Dictionary 1 Version
GMLAN Identification Data - GMLAN Kernel 1 Version	-	Varies	The scan tool displays the GMLAN Identification Data - GMLAN Kernel 1 Version
Date Programmed	-	Varies	The scan tool displays the date the module was programmed

Parking Assist Control Module Scan Tool Data Parameters - Park Assist System Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Parking Assist ON			
Power Mode	-	Run	The scan tool displays Off, Accessory, Run or Crank. This is the state of the ignition switch.
Battery Voltage	-	11-14 V	The scan tool displays V. This is the current battery voltage.
Parking Assist System Status	-	Enable	The scan tool displays Disable, Enable, Inhibited or Failed. This is the state of the parking assist system.
Parking Assist Chime	-	Varies	The scan tool displays On or Off. On is displayed if there is an object within the measuring range of the object sensors.
Parking Assist Sensors	-	ON	The scan tool displays On or Off.
Calculated Transmission Range	Transmission in reverse	Park	The scan tool displays Park, Reverse, Neutral, Drive or Unknown depending on the state of the commanded gear.
Parking Assist Switch	-	Active/Inactive	The scan tool displays Active or Inactive depending on the state of the parking assist switch.
Advanced Parking Assist Switch	-	Active/Inactive	The scan tool displays Active or Inactive depending on the state of the advanced parking assist switch.
Parking Assist Sensors Reference Voltage	-	7.3-12.1 V	The scan tool displays V. This is the amount of voltage being sent to the object sensors.

Parameter	System State	Expected Value	Description
Parking Assist Switch LED	-	Varies	The scan tool displays On or Off depending on the state of the parking assist switch LED.
Right Side Object Detection Indicator	-	Varies	The scan tool displays a blank, On or Off depending on the state of the right side object detection indicator command status.
Left Side Object Detection Indicator	-	Varies	The scan tool displays a blank, On or Off depending on the state of the left side object detection indicator command status.
Advanced Parking Assist Status	-	Standby	The scan tool displays Standby, Active, or Inactive depending on the state of the advanced parking assist.

Parking Assist Control Module Scan Tool Data Parameters - Parking Assist Sensor Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Parking Assist ON			
Parking Assist Sensors	-	ON	The scan tool displays On or Off.
Parking Assist Sensors Reference Voltage	-	7.3-12.1 V	The scan tool displays V. This is the voltage being sent to the object sensors.
Left Front Advanced Parking Assist Side Object Sensor	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Left Front Outer Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Left Front Inner Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Front Advanced Parking Assist Side Object Sensor	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Front Outer Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Front Inner Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Left Rear Advanced Parking Assist Side Object Sensor	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Left Rear Outer Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Left Rear Inner Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Rear Advanced Parking Assist Side Object Sensor	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Rear Outer Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.

Parameter	System State	Expected Value	Description
Right Rear Inner Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.

Parking Assist Control Module Scan Tool Data Parameters - Parking Assist Disable History 1-4 Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Parking Assist ON			
Parking Assist Disable History 1	-	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.
Parking Assist Disable History 2	-	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.
Parking Assist Disable History 3	-	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.
Parking Assist Disable History 4	-	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.

Parking Assist Control Module Scan Tool Data Parameters - Parking Assist Disable History 5-7 Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Parking Assist ON			
Parking Assist Disable History 5	-	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.

Parameter	System State	Expected Value	Description
Parking Assist Disable History 6	-	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.
Parking Assist Disable History 7	-	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.

Parking Assist Control Module Scan Tool Output Controls

Output Control	Description
Park Assist Switch LED	The parking assist control module illuminates the advanced park assist LED of the when commanded from the scan tool.
Clear Disable History Data	The parking assist control module clears the Parking Assist Disable History data when commanded from the scan tool.
Clear Side Object Detection Disable History	The parking assist control module clears the Side Object Detection Disable History data when commanded from the scan tool.
CAN Bus Configuration Learn	The parking assist control module learns the CAN Bus configuration when commanded from the scan tool.
Parking Assist Sensor Learn	The parking assist control module learns the Parking Assist Sensor configuration when commanded from the scan tool.

POWER STEERING CONTROL MODULE SCAN TOOL INFORMATION

The power steering control module scan tool data parameters list contains all power steering related parameters that are available on the scan tool. The list is arranged in alphabetical order. A given parameter may appear in any one of the data lists.

Power Steering Control Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON			
Battery Voltage	-	Varies	This displays battery voltage.
Calculated System Temperature	-	Varies	This is the calculated temperature of the power steering system.
Power Steering Control Module Center Procedure	-	Varies	The scan tool displays if the center procedure has been completed or not.
Power Steering Control Module SPS Calibration Status	-	Varies	The scan tool displays if the calibration status has been completed or not.
Steering Input Torque	-	Varies	This displays N.m. This is the calculated force of the steering shaft, as monitored by the power steering control module.
Steering Wheel Angle	-	Varies	This displays the steering wheel angle in degrees.

RADIO SCAN TOOL INFORMATION (WITH IO5/IO6)

Radio Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Battery Voltage	Varies	The scan tool displays volts. This is the voltage at the input to the radio via high speed GMLAN.
System Power Mode	Run	The scan tool displays Off, Accessory, Run or Crank Request. This is the vehicle power mode status as received by the radio.
Date	Varies	The scan tool displays the current date set in the radio.
Time	Varies	The scan tool displays the current time set in the radio in 24 hour format HHMMSS
Radio Band	Varies	The scan tool displays AM, AM High Definition, FM, FM High Definition, Digital Audio broadcast, or XM. This is the broadcast radio band currently selected.
Audio Source Status	Varies	This parameter displays the currently selected audio source
Current FM Frequency	Varies	When tuned to an FM station, the scan tool displays the currently selected frequency in MHz
Current AM Frequency	Varies	When tuned to an AM station, the scan tool displays the currently selected frequency in kHz
Volume Control	Varies	The scan tools displays the current volume setting in counts.
Mute Status	Off	The scan tool displays On or Off. This is the currently selected audio mute mode.
Surround Sound	Varies	The scan tool displays On or Off. This is the currently selected surround sound mode.
Equalizer Preset	Varies	The scan tool displays the currently selected preset equalizer mode
Radio Power Button	On	The scan tool displays On or Off. This is the currently selected radio power mode.
Remote CD	Varies based on vehicle equipment	The scan tool displays Present or Not Present. This parameter displays present when the infotainment system is equipped with the remote cd player.
Rear Seat Entertainment	Varies based on vehicle equipment	The scan tool displays Present or Not Present. This parameter displays present when the infotainment system is equipped with the rear seat entertainment system.
Remote Enable Circuit	On	The scan tool displays On or Off. This is the current state of the remote enable output as commanded by the radio.
Front 3.5 mm AUX Input	Varies	The scan tool displays Present or Not Present. This parameter displays Present when a device is connected to the front auxiliary input jack.
Rear 3.5 mm AUX Input	Varies	The scan tool displays Present or Not Present. This parameter displays Present when a device is connected to the rear auxiliary input jack.
Front USB Receptacle	Varies	The scan tool displays Present or Not Present. This parameter displays Present when a front USB receptacle is present.
Rear USB Receptacle	Varies	The scan tool displays Present or Not Present. This parameter displays Present when a rear USB receptacle is present.
Front SD Card Receptacle	Varies	The scan tool displays Present or Not Present. This parameter displays Present when a front SD card receptacle is present.

Parameter	Expected Value	Definition
Rear SD Card Receptacle	Varies	The scan tool displays Present or Not Present. This parameter displays Present when a rear SD card receptacle is present.
Radio Theft Lock Status	Unlocked	The scan tool displays Locked or Unlocked. This is the state of the theft lock system.
Theft Lock Armed	VIN Learned	The scan tool displays VIN Learned or No VIN. This is the state of the VIN programming in the radio.
Test Bench Mode	Inactive	The scan tool displays Active or Inactive. This is the state of the test bench mode.
Valet Mode	Inactive	The scan tool displays Active or Inactive. This is the state of the valet mode.
XM Subscription Status	Varies	This parameter displays the country and type of XM service.
High Definition Signal	Varies	The scan tool displays Present or Not Present. This parameter displays Present when a high definition signal is being received.
Digital Audio Signal	Varies	The scan tool displays Present or Not Present. This parameter displays Present when a digital audio signal is being received.
Alternative Frequency Status	Varies	The scan tool displays Active or Inactive. This parameter displays Active if the radio is using an alternative frequency for a radio station broadcasting simultaneously from two different stations.
Last Working MOST ID of Node 1 (Master)	Radio	The scan tool displays the name of the ECU in the MOST BUS Node 1 position that was assigned when the MOST BUS was operational without any faults.
Last Working MOST ID of Node 2	Varies based on vehicle equipment	The scan tool displays the name of the ECU in the MOST BUS Node 2 position that was assigned when the MOST BUS was operational without any faults.
Last Working MOST ID of Node 3	Varies based on vehicle equipment	The scan tool displays the name of the ECU in the MOST BUS Node 3 position that was assigned when the MOST BUS was operational without any faults.
Last Working MOST ID of Node 4	Varies based on vehicle equipment	The scan tool displays the name of the ECU in the MOST BUS Node 4 position that was assigned when the MOST BUS was operational without any faults.
Last Working MOST ID of Node 5	Varies based on vehicle equipment	The scan tool displays the name of the ECU in the MOST BUS Node 5 position that was assigned when the MOST BUS was operational without any faults.
Last Working MOST ID of Node 6	Varies based on vehicle equipment	The scan tool displays the name of the ECU in the MOST BUS Node 6 position that was assigned when the MOST BUS was operational without any faults.
Last Working MOST ID of Node 7	Varies based on vehicle equipment	The scan tool displays the name of the ECU in the MOST BUS Node 7 position that was assigned when the MOST BUS was operational without any faults.
Last Working MOST ID of Node 8	Varies based on vehicle equipment	The scan tool displays the name of the ECU in the MOST BUS Node 8 position that was assigned when the MOST BUS was operational without any faults.

Parameter	Expected Value	Definition
Last Working MOST ID of Node 9	Varies based on vehicle equipment	The scan tool displays the name of the ECU in the MOST BUS Node 9 position that was assigned when the MOST BUS was operational without any faults.
Surrogate MOST Master Node Upstream Position	Numeric	This parameter becomes available when DTC U0028 is current. The number identified is the device furthest upstream from the radio communicating on the MOST BUS when a communication fault is present.
Number of MOST Communication Breaks	Numeric	The number displayed increments each time the MOST BUS cannot communicate successfully.
Number of MOST Configuration Status Messages	Numeric	The number displayed increments each time a MOST BUS configuration status message is sent. A configuration status message is sent when the MOST BUS is initiated, including during or following a communication break.
Number of Short Term MOST Communication Breaks	Numeric	The number displayed increments each time the MOST BUS was temporarily unable to communicate successfully.
Diagnostic Data Identifier	Varies	The scan tool displays the 4 character alphanumeric device ID.
VIN Digits 2-17	Varies	The scan tool displays the learned VIN digits 2-17.
Manufacturer Enable Counter	0	The scan tool displays the counter value. This counter is used for manufacturing purposes only.
Boot Software Part Number	Varies	The scan tool displays the boot software ID number.
Diagnostic Data Identifier	Varies	Identifies a supplier and system specific data stream used by diagnostic testers to interpret a diagnostic data stream.
Calibration Part Number 1	Varies	The scan tool displays the software module ID 1.
Calibration Part Number 2	Varies	The scan tool displays the software module ID 2.
Calibration Part Number 3	Varies	The scan tool displays the software module ID 3.
Calibration Part Number 4	Varies	The scan tool displays the software module ID 4.
Calibration Part Number 5	Varies	The scan tool displays the software module ID 5.
Calibration Part Number 6	Varies	The scan tool displays the software module ID 6.
Calibration Part Number 7	Varies	The scan tool displays the software module ID 7.
Calibration Part Number 8	Varies	The scan tool displays the software module ID 8.
Calibration Part Number 9	Varies	The scan tool displays the software module ID 9.
Calibration Part Number 10	Varies	The scan tool displays the software module ID 10.
End Model Part Number	Varies	The scan tool displays the end model part number.
XM Electronic Serial Number	Varies	Identifies the integrated XM module serial number, if equipped.
HD Decoder Electronic Serial Number	Varies	Identifies the integrated HD decoder serial number, if equipped.
XM Firmware Version and Date	Varies	Identifies the XM module software version and release date, if equipped.
HD Decoder System Version	Varies	Identifies the HD decoder software version, if equipped.

Radio Scan Tool Output Controls

Scan Tool Output Control	Description

Scan Tool Output Control	Description
Active AM/FM Antenna	This output control will command the Active AM/FM Antenna ON and OFF.
Satellite Antenna	This output control will command the Satellite Antenna ON and OFF.
Digital Audio Broadcast Antenna Power	This output control will command the Digital Audio Broadcast Antenna ON and OFF.
MOST Communication Enable Circuit	This output control will command the MOST Communication Enable Circuit ON and OFF.
MOST Bus Diagnostic Starting Point	This output control will initiate the MOST Bus Diagnostic Starting Point Display.
Erase Valet Mode Code	This output control will command the Erase Valet Mode Code function.
Control Module Reset	This output control will command the reset of the Control Module.

RADIO SCAN TOOL INFORMATION (WITH IOA/IP1)

Radio Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Battery Voltage	Varies	The scan tool displays volts. This is the voltage at the input to the radio.
System Power Mode	Run	The scan tool displays Off, Accessory, Run or Crank Request. This is the current power mode of the radio.
Valet Mode	Inactive	Indicates if the system is in Valet mode.
Radio Theft Armed	Learned VIN	The scan tool displays Learned VIN or No VIN. This is the state of the VIN programming in the radio.
Radio Theft Locked	Inactive	The scan tool displays Active or Inactive. This is the state of the theft lock system. Active indicates the radio is locked. Inactive indicates the theft lock system is armed and the radio is unlocked.
Test Bench Mode	Inactive	The scan tool displays Active or Inactive. This parameter indicates if the radio is in bench or user mode.
Radio Power Button	Varies	Indicates if the Radio Power button is in the ON or OFF state.
End Model Part Number	Varies	End Model Part Number is the part number for the hardware of the control module with software and calibrations.
Base Model Part Number	Varies	Base Model Part Number is the part number for the hardware without software and calibrations.
Boot Software Part Number	Varies	The scan tool displays the boot software ID number.
Calibration Part Number 1	Varies	The scan tool displays the software module ID 1.
Calibration Part Number 2	Varies	The scan tool displays the software module ID 2.
Calibration Part Number 3	Varies	The scan tool displays the software module ID 3.
Calibration Part Number 4	Varies	The scan tool displays the software module ID 4.
Calibration Part Number 5	Varies	The scan tool displays the software module ID 5.

Parameter	Expected Value	Definition
Calibration Part Number 6	Varies	The scan tool displays the software module ID 6.
Calibration Part Number 7	Varies	The scan tool displays the software module ID 7.
Calibration Part Number 8	Varies	The scan tool displays the software module ID 8.
Calibration Part Number 9	Varies	The scan tool displays the software module ID 9.
Calibration Part Number 10	Varies	The scan tool displays the software module ID 10.
Vin Digits 2-17	Varies	The scan tool displays the learned VIN digits 2-17.

Radio Scan Tool Output Controls

Scan Tool Output Control	Description
Left Front Speaker	This output control is used to command the speaker ON and OFF. Commanding the speaker ON will generate a test tone to be generated through the selected loudspeaker.
Left Rear Speaker	This output control is used to command the speaker ON and OFF. Commanding the speaker ON will generate a test tone to be generated through the selected loudspeaker.
Right Front Speaker	This output control is used to command the speaker ON and OFF. Commanding the speaker ON will generate a test tone to be generated through the selected loudspeaker.
Right Rear Speaker	This output control is used to command the speaker ON and OFF. Commanding the speaker ON will generate a test tone to be generated through the selected loudspeaker.
Chime Function Test	This output command is used to command the chime ON and OFF.
Rear Camera Display Control	This output control will command the rear camera display ON and OFF. Commanding the rear camera on will display the rear camera image on the info display screen.
Rear Park Assist Steering Wheel Position Control	This output control will command the rear park assist steering wheel position ON and OFF. Commanding the rear park assist steering wheel position ON will display the steering wheel position guide lines on the info display screen.

REAR DIFFERENTIAL CLUTCH CONTROL MODULE SCAN TOOL INFORMATION

Rear Differential Clutch Control Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition is ON, engine OFF, vehicle stationary			
All Wheel Drive	Enabled/Disabled	Disabled	The scan tool displays Enabled when front wheel slippage occurs.
Base Model Part Number	-	Varies	The scan tool displays the base model part number of the module
Base Model Part Number Alpha Code	-	Varies	The scan tool displays the Base Model Part Number Alpha Code
Battery Voltage	-	Varies	The scan tool displays volts. The scan tool displays the battery voltage monitored by the module.
Calculated Rear Differential Clutch Speed Variation	RPM	Varies	The scan tool displays the RPM difference between the front and rear axles.
Date Programed	Julian Date	Varies	The scan tool displays the date the module was programed.

Parameter	System State	Expected Value	Definition
Diagnostic Data Identifier	-	-	The scan tool displays XXXX
End Model Part Number	-	Varies	The scan tool displays the End Model Part Number.
End Model Part Number Alpha Code	-	Varies	The scan tool displays the End Model Part Number Alpha Code.
GMLAN Identification Data - Bus 1 Type	-	Varies	The scan tool displays the GMLAN Identification Data - Bus 1 Type.
GMLAN Identification Data - Data Dictionary 1 Version	-	Varies	The scan tool displays the GMLAN Identification Data - Data Dictionary 1 Version.
GMLAN Identification Data - GMLAN Kernal 1 Version	-	Varies	The scan tool displays the GMLAN Identification Data - GMLAN Kernal 1 Version.
Left Front Wheel Speed Sensor	-	0.0 KPH/MPH	The scan tool displays 0-160 km/h (0-99.5 mph).
Left Rear Wheel Speed Sensor	-	0.0 KPH/MPH	The scan tool displays 0-160 km/h (0-99.5 mph).
Manufacturer Enable Counter	-	Varies	The scan tool displays the Manufacturer Enable Counter.
Manufacturer's Traceability Number	-	Varies	The scan tool displays the Manufacturer's Traceability Character
Rear Differential Actuator Estimated Torque	Ã,Â	XX	The scan tool displays the estimated clutch torque value.
Rear Differential Actuator External Control	Yes/No	No	The scan tool displays Yes when external control is requested, and No when external control is requested.
Rear Differential Actuator Torque Command	Ã,Â	XX	The scan tool displays the Rear Differential Actuator commanded torque value.
Rear Differential Clutch Calibration Factory Value	-	Varies	The scan tool displays the Rear Differential Clutch Calibration Factory Value.
Rear Differential Clutch Calibration Service Value	-	Varies	The scan tool displays the Rear Differential Clutch Calibration Service Value.
Rear Differential Clutch Circuit Voltage	Volts	Varies	The scan tool displays the Rear Differential Clutch Circuit Voltage.
Rear Differential Clutch Temperature	Ã,Â°C (Ã,Â°F)	Varies	The scan tool displays the Clutch Oil Temperature.
Rear Drive Clutch Status	Normal, Temporarily Disabled, Temporarily Limited, Malfunctioned	Temporarily Limited	The scan tool displays Normal/Temporarily Disabled/Temporarily Limited/Malfunctioned.
Rear Drive Clutch Temperature	Ã,Â°C (Ã,Â°F)	Varies	The scan tool displays the Clutch Plate Temperature.
Rear Electronic Limited Slip Differential External Control	Yes/No	No	The scan tool displays the command of the Rear Electronic Limited Slip Differential External Control.

Parameter	System State	Expected Value	Definition
Rear Electronic Limited Slip Differential Mode	Normal/Limited Slip	Normal	The scan tool displays if there is slip detected of the rear wheels.
Rear Electronic Limited Slip Differential Status	Enabled/Disabled	Enabled	The scan tool displays the Rear Electronic Limited Slip Differential Status.
Right Front Wheel Speed Sensor	-	0.0 KPH/MPH	The scan tool displays 0-160 km/h (0-99.5 mph).
Right Rear Wheel Speed Sensor	-	0.0 KPH/MPH	The scan tool displays 0-160 km/h (0-99.5 mph).
Software Module 1 Identifier	-	Varies	The scan tool displays the Software Module 1 Identifier.
Software Module 1 Identifier Alpha Code	-	Varies	The scan tool displays the Software Module 1 Identifier Alpha Code.
Software Module 2 Identifier	-	Varies	The scan tool displays the Software Module 2 Identifier
Software Module 2 Alpha Code	-	Varies	The scan tool displays the Software Module 2 Alpha Code
Subscriber ID	-	Varies	The scan tool displays the Subscriber ID.
System Identification	-	Varies	The scan tool displays the System Supplier ID.
System Name or Engine Type	-	Varies	The scan tool displays the System Name or Engine Type.
Vehicle Identification Number	-	Varies	The scan tool displays the Vehicle Identification Number.
XML Configuration Compatibility Identifier	-	Varies	The scan tool displays the XML Configuration Compatibility Identifier.
XML Data File Alpha Code	-	Varies	The scan tool displays the XML Data File Alpha Code.
XML Data File Part Number	-	Varies	The scan tool displays the XML Data File Part Number.

Rear Differential Clutch Control Module Scan Tool Configuration and Setup

Scan Tool Configuration	Description
Program Rear Differential Clutch Calibration Service Value	Function will enter the Rear Differential Clutch Service Calibration Value.

SIDE OBJECT SENSOR MODULE SCAN TOOL INFORMATION

Side Object Detection Scan Tool Parameters

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Manufacturer's Traceability Number	-	Varies	The scan tool displays the Manufacturer's Traceability Number
Manufacturer Enable Counter	-	Varies	The scan tool displays the Manufacturer Enable Counter
Module Diagnostic Address	-	Varies	The scan tool displays the Software Module 1 Identifier
Software Module 1 Identifier	-	Varies	The scan tool displays the Software Module 1 Identifier

Parameter	System State	Expected Value	Definition
Software Module 2 Identifier	-	Varies	The scan tool displays the Software Module 2 Identifier
End Model Part Number	-	Varies	The scan tool displays the End Model Part Number
Base Model Part Number	-	Varies	The scan tool displays the Base Model Part Number
Software Module 1 Identifier Alpha Code	-	Varies	The scan tool displays the Software Module 1 Identifier Alpha Code
Software Module 2 Identifier Alpha Code	-	Varies	The scan tool displays the Software Module 2 Identifier Alpha Code
End Model Part Number Alpha Code	-	Varies	The scan tool displays the End Model Part Number Alpha Code
Base Model Part Number Alpha Code	-	Varies	The scan tool displays the Base Model Part Number Alpha Code

Side Object Detection Module Output Controls

Scan Tool Output Control	Description
Object Detection Alert Indicators	When commanded by the scan tool, the module will provide power to illuminate the side blind zone indicators in appropriate outside rear view mirror. The outside rear view mirror indicator will illuminate.
Rear Cross Traffic Audible Alert	When commanded by the scan tool, the module will send a signal to the audio system to turn on the rear cross traffic audible alert signal. The audio system will beep.
Rear Cross Traffic Haptic Alert	When commanded by the scan tool, the module will send a signal to the memory seat module to turn on the rear cross traffic haptic alert. The driver's seat will vibrate.
Rear Cross Traffic Visual Alert	When commanded by the scan tool, the module will turn on the rear cross traffic alert indicators on infotainment display. The infotainment display will illuminate with the appropriate rear cross traffic alert.

STEERING COLUMN LOCK MODULE SCAN TOOL INFORMATION

Scan Tool Data Parameters

Parameter	Expected Value	Description
Operating Conditions: Ignition ON		
Column Lock Status	Varies	The scan tool displays Failed, Unknown, Locked and Unlocked. The scan tool displays the current state of the column lock.
Turn Steering Wheel, Start Vehicle Again Display Message	On/Off	The scan tool displays On/Off. If the wheels are against a curb, the lock pin may not be able to pull out. A message for the driver that is displayed on the Driver Information Center. The scan tool displays the need to turn the steering wheel, turn off the vehicle and then restart the vehicle.
Steering Column Lock Indicator	On/Off	The scan tool displays On/Off. The scan tool displays the current state of the column lock.
Steering Column Lock Pin Position	counts	The scan tool displays the current counts of the column lock pin position.

Power Steering Control Module Scan Tool Output Controls

Output Control	Description
Enter Security Code	Triggers the programming for the immobilizer security code.

Telematics Communication Interface Control Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON			
GPS Data			
Dead Reckoning Calibration Status	-	Calibrated or Not Calibrated	Indicates the dead reckoning calibration status.
Position Calibration Method	-	Varies	Indicates the method used to determine current location. (0) GPS, (1) Wheel Speed Dead Reckoning only, (2) Combined Wheel Speed and GPS, (3) Gyro only, (4) Combined Gyro and GPS, (5) No Fix
Month	-	MM	This displays the current month.
Day	-	DD	This displays the current day of the month.
Year	-	YY	This displays the current year.
Hour	-	HH	This displays the GPS current hour (24 hour format - GMT).
Minute	-	MM	This displays the GPS current minute.
Second	-	SS	This displays the GPS current second.
Number of Satellites Tracked	-	Varies	The scan tool displays the number of satellites being tracked by the telematics communication interface control module.
Signal Strength Data			
GSM Signal Strength	-	Varies	The scan tool displays 0-127. This is the telematics communication interface control module signal strength.
Current Public Land Mobile Network	-	Varies	Identifies the cellular communications network currently in use by the telematics communication interface control module. Each network has a unique decimal number assigned to it for identification.
Bluetooth Data			
Bluetooth	-	Enabled	Indicates if the Bluetooth system is enabled or disabled.
Bluetooth Link Status	-	Varies	Indicates the current link status. (0) Unconnected, (1) Connected/Idle, (2) Call active, (3) 3-way calling active

Parameter	System State	Expected Value	Description
Bluetooth Link Quality	-	Varies	The scan tool displays a decimal value between 0 and 255.
Bluetooth Phone to Telematics Communication Interface Control Module Authentication Status	-	Active or Inactive	Displays the bluetooth phone to telematics communication interface control module authentication status.
Bluetooth Phone to Telematics Communication Interface Control Module Communication Status	-	Active or Inactive	Displays the bluetooth phone to telematics communication interface control module status.
Bluetooth Phone Voice Recognition Status	-	Active or Inactive	Displays the bluetooth phone to voice recognition status.

WLAN Device Data

Off-Board Navigation	-	Enabled or Disabled	Indicates if Off-Board Navigation is enabled or disabled
Wireless LAN	-	Enabled or Disabled	Indicates the capability of the wireless communication of the Telematics Communication Interface Control Module
Number of WLAN Devices	-	Varies	Indicates the number of Wireless devices present
Active WLAN 2.4 GHz Channel	-	Varies	Indicates the active Wireless channel being used on the 2.4 GHz frequency
WLAN Link Status	-	Radio System - Never, Remembered but Not Associated or Associated	Indicates the link status of the Telematics Communication Interface Control Module and Infotainment system
GSM Signal Strength	-	Varies	State for Received Signal Strength Indicator
Mobile Communication Standard	-	2G, 3G, 4G or 4G LTE	State for Cellular Data Connection. Indicates the currently used data rate speed
WLAN Password	-	Varies	Indicates the Telematics Communication Interface Control Module Wireless Password
WLAN SSID (Service Set Identifier)	-	Varies	Indicates the Telematics Communication Interface Control Module Wireless Service Name
WLAN Encryption - WPA (Wi-Fi Protected Access)	-	Active or Inactive	Indicates if the WLAN Encryption - WPA (Wi-Fi Protected Access) is Active or Inactive
WLAN Encryption - WPA2 (Wi-Fi Protected Access II)	-	Active or Inactive	Indicates if the WLAN Encryption - WPA2 (Wi-Fi Protected Access II) is Active or Inactive

Parameter	System State	Expected Value	Description
WLAN Encryption - AES (Advanced Encryption Standard)	-	Active or Inactive	Indicates if the WLAN Encryption - AES (Advanced Encryption Standard) is Active or Inactive
WLAN Encryption - TKIP (Temporal Key Integrity Protocol)	-	Active or Inactive	Indicates if the WLAN Encryption - TKIP (Temporal Key Integrity Protocol) is Active or Inactive

Telematics Communication Interface Control Module Scan Tool Output Controls

Output Control	Description
B1000 Information	This shows the data recorded when DTC B1000 was set in the telematics communication interface control module.
Green Indicator	The telematics communication interface control module illuminates the green LED when ON is selected.
Phone Call Test	When ON is selected, telematics communication interface control module commands OnStar to connect to the OnStar Center.
Red Indicator	The telematics communication interface control module illuminates the red LED when ON is selected.
Preferred Roaming List Update	The telematics communication interface control module performs a preferred roaming list (PRL) update when this is selected.
Remote Vehicle Speed Limiting Reset	This function resets the speed limiting feature.

TRANSMISSION CONTROL MODULE SCAN TOOL INFORMATION (6T30/6T40/6T45/6T50)

The Transmission Control Module Scan Tool Data List contains all transmission related parameters that are available on the scan tool. The list is arranged in alphabetical order. A given parameter may appear in any one of the data lists, and in some cases may appear more than once, or in more than one data list in order to group certain related parameters together.

The values below represent a typical display recorded from a properly functioning system.

NOTE: Do not use a scan tool that displays faulty data. Report the condition to the scan tool manufacturer. The use of a faulty scan tool can result in misdiagnosis and the unnecessary replacement of components.

Only the parameters listed below are used/referenced in this manual for diagnosis. If a scan tool displays other parameters, those values are not recommended by General Motors for use in diagnosis.

If all values are within the expected range described below, refer to [Symptoms - Automatic Transmission](#) for diagnosis.

The scan tool values from a properly functioning transmission may be used for comparison with the transmission you are diagnosing. The values below represent a typical display recorded from a properly functioning system.

Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Engine at idle, upper radiator hose hot, closed throttle, transmission in Park, closed loop operation, accessories OFF, brake pedal not applied.			
1-2 Shift Time	Varies	Seconds	This parameter displays the actual time of the last adaptable 1-2 shift. The shift time is based on the gear ratio change after the commanded 1-2 shift.

Parameter	System State	Expected Value	Description
2-3 Shift Time	Varies	Seconds	This parameter displays the actual time of the last adaptable 2-3 shift. The shift time is based on the gear ratio change after the commanded 2-3 shift.
3-4 Shift Time	Varies	Seconds	This parameter displays the actual time of the last adaptable 3-4 shift. The shift time is based on the gear ratio change after the commanded 3-4 shift.
4-5 Shift Time	Varies	Seconds	This parameter displays the actual time of the last adaptable 4-5 shift. The actual shift time is obtained by measuring the time required for the input shaft to decelerate from the previous ratio to the current ratio.
5-6 Shift Time	Varies	Seconds	This parameter displays the actual time of the last 5-6 shift. The shift time is base on the gear ratio change after the commanded 5-6 shift.
Brake Pedal Switch	Released	Applied/Released	This parameter displays the status of the brake switch circuit input. Applied indicates a zero voltage input, brake pedal applied. Released indicates a voltage input, brake pedal released. The scan tool displays Applied or Released.
Calculated Throttle Position	Varies	%	This parameter displays a calculated value, which is determined by the accelerator pedal position and the actual throttle position, used to optimize transmission controls. It represents the driver's intended request for torque or acceleration. The range is 0-100%, where 0% represents an idle or coast request and 100% represents a request for wide open throttle (WOT).
Control Module Voltage Signal	9-19	Volts	This parameter displays the system voltage measured at the module wake up signal feed.

Parameter	System State	Expected Value	Description
Driver Shift Control Mode	Inactive	Active/Inactive	This parameter displays Active or Inactive. The scan tool displays Active when the gear selector is in the manual mode (M) position or left of the D position, which enables TAP shift. The scan tool displays Inactive when the gear selector is not in the M or left of D position, TAP shift disabled.
Driver Shift Request	None	Upshift/Downshift/None/Invalid	This parameter displays the current request from the TAP Shift System. This parameter will display up shift, downshift or invalid depending on the amount of voltage measured at the remote shift selector input and also will display none when there is no request.
Engine Coolant Temperature	Varies	°C (°F)	This parameter displays the input signal from the engine coolant temperature (ECT) sensor. ECT is high at 151°C (304°F) when the signal voltage is low (0 V). ECT is low at -40°C (-40°F) when the signal voltage is high (5 V). This parameter value is determined by the engine control module and communicated to the TCM through the High Speed GMLAN Serial Data link.
Engine Speed	Varies	RPM	This parameter displays the rotational speed of the engine expressed as revolutions per minute. This parameter value is determined by the engine control module and communicated to the TCM through the High Speed GMLAN Serial Data link.
Engine Torque	Varies	N.m (lb ft)	This parameter displays a calculated value based on engine load, throttle position, mass air flow, and other engine inputs. This parameter is accurate to within 20 N.m (15 lb ft) of actual measured engine torque. This parameter value is determined by the engine control module and communicated to the TCM through the High Speed GMLAN Serial Data link.

Parameter	System State	Expected Value	Description
Gear Command	1	1, 2, 3, 4, 5, or 6	This parameter displays the current commanded state of the shift solenoid valves. The scan tool displays 1, 2, 3, 4, 5, or 6.
Gear Ratio	Varies	Ratio	This parameter displays the actual transmission gear ratio. The scan tool displays the gear ratio calculated from the automatic transmission (AT) input speed sensor (ISS) and the automatic transmission (AT) output speed sensor (OSS) inputs.
High Side Driver 1	On	On/Off	This parameter displays the state of the High Side Driver 1. The scan tool displays On or Off.
High Side Driver 1 Circuit Low Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to ground exists in the high side driver 1 circuit. The scan tool displays OK, Malfunction, or Not Run.
High Side Driver 1 Circuit High Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to voltage exists in the high side driver 1 circuit. The scan tool displays OK, Malfunction, or Not Run.
High Side Driver 1 Circuit Open Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether an open exists in the high side driver 1 circuit. The scan tool displays OK, Malfunction, or Not Run.
Ignition Voltage	9-19	Volts	This parameter displays the system voltage measured at the ignition feed.
Internal Mode Switch	Park	Park-Drive 1, Open, Invalid	This parameter displays PARK, PARK/REVERSE, REVERSE, REVERSE/NEUTRAL, NEUTRAL, NEUTRAL/DRIVE 4, DRIVE 4, DRIVE 4/DRIVE 3, DRIVE 3, DRIVE 3/DRIVE 2, DRIVE 2, DRIVE 2/DRIVE 1, DRIVE 1 or INVALID. The IMS Range display represents a decoded status of the four inputs from the IMS. The combination of IMS inputs are used to determine what position the manual valve is in at any time.

Parameter	System State	Expected Value	Description
Internal Mode Switch A/B/C/P	Varies	High/Low	This parameter displays the status of the four A/B/C/P inputs from the automatic transmission internal mode switch. HI indicates an ignition voltage signal and LOW indicates a 0 voltage signal. The scan tool will display High/Low, High/Low, High/Low, High/Low.
ISS/OSS Supply Voltage	OK	OK, Out of Range	This parameter displays OK, Out of Range.
Last Shift Time	Varies	Seconds	This parameter displays the actual time of the last up shift. This value is only accurate if the shift was adaptable.
Line Pressure Control Solenoid Valve Control Circuit Low Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to ground exists in the line pressure control valve 2 control circuit. The scan tool displays OK, Malfunction, or Not Run.
Line Pressure Control Solenoid Valve Control Circuit High Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to ground exists in the line pressure control valve 2 control circuit. The scan tool displays OK, Malfunction, or Not Run.
Line Pressure Control Solenoid Valve Performance Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a performance issue exists in the line pressure control solenoid valve control circuit by comparing the commanded current with the expected current. The scan tool displays OK, Malfunction, or Not Run.
Line Pressure Control Solenoid Valve Pressure Command	Varies	kPa (psi)	This parameter displays results in kPa (psi).
Pressure Control Solenoid Valve 2 Control Circuit Low Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to ground exists in the pressure control solenoid valve 2 control circuit. The scan tool displays OK, Malfunction, or Not Run.
Pressure Control Solenoid Valve 2 Control Circuit High Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to voltage exists in the pressure control solenoid valve 2 control circuit. The scan tool displays OK, Malfunction, or Not Run.

Parameter	System State	Expected Value	Description
Pressure Control Solenoid Valve 2 Performance Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a performance issue exists in the pressure control solenoid valve 2 control circuit by comparing the commanded current with the expected current. The scan tool displays OK, Malfunction, or Not Run.
Pressure Control Solenoid Valve 2 Pressure Command	Varies	kPa (psi)	This parameter displays kPa (psi).
Pressure Control Solenoid Valve 3 Control Circuit Low Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to ground exists in the pressure control solenoid valve 3 control circuit. The scan tool displays OK, Malfunction, or Not Run.
Pressure Control Solenoid Valve 3 Control Circuit High Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to voltage exists in the pressure control solenoid valve 3 control circuit. The scan tool displays OK, Malfunction, or Not Run.
Pressure Control Solenoid Valve 3 Performance Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a performance issue exists in the pressure control solenoid valve 3 control circuit by comparing the commanded current with the expected current. The scan tool displays OK, Malfunction, or Not Run.
Pressure Control Solenoid Valve 3 Pressure Command	Varies	kPa (psi)	This parameter displays kPa (psi).
Pressure Control Solenoid Valve 4 Control Circuit Low Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to ground exists in the pressure control solenoid valve 4 control circuit. The scan tool displays OK, Malfunction, or Not Run.
Pressure Control Solenoid Valve 4 Control Circuit High Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to voltage exists in the pressure control solenoid valve 4 control circuit. The scan tool displays OK, Malfunction, or Not Run.
Pressure Control Solenoid Valve 4 Performance Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a performance issue exists in the pressure control solenoid valve 4 control circuit by comparing the commanded current with the expected current. The scan tool displays OK, Malfunction, or Not Run.

Parameter	System State	Expected Value	Description
Pressure Control Solenoid Valve 4 Pressure Command	Varies	kPa (psi)	This parameter displays kPa (psi).
Pressure Control Solenoid Valve 5 Control Circuit Low Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to ground exists in the pressure control solenoid valve 5 control circuit. The scan tool displays OK, Malfunction, or Not Run.
Pressure Control Solenoid Valve 5 Control Circuit High Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to voltage exists in the pressure control solenoid valve 5 control circuit. The scan tool displays OK, Malfunction, or Not Run.
Pressure Control Solenoid Valve 5 Performance Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a performance issue exists in the pressure control solenoid valve 5 control circuit by comparing the commanded current with the expected current. The scan tool displays OK, Malfunction, or Not Run.
Pressure Control Solenoid Valve 5 Pressure Command	Varies	kPa (psi)	This parameter displays kPa (psi).
Replicated OSS CKT Status	OK	OK, Open/Short to GND, Short to Volts, Indeterminate	This parameter displays OK, Open/Short to GND, Short to Volts, Indeterminate.
Shift Solenoid Valve 1	On	On/Off	This parameter displays the commanded state of the reverse, 1st shift solenoid valve (S1). The scan tool displays On/Off.
Shift Solenoid Valve 1 Control Circuit Low Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to ground exists in the shift solenoid valve 1 control circuit. The scan tool displays OK, Malfunction, or Not Run.
1-2 Shift Solenoid Valve Control Circuit High Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to voltage exists in the shift solenoid valve 1 control circuit. The scan tool displays OK, Malfunction, or Not Run.
Shift Solenoid Valve 1 Control Circuit Open Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether an open exists in the shift solenoid valve 1 control circuit. The scan tool displays OK, Malfunction, or Not Run.

Parameter	System State	Expected Value	Description
Steady State TAP 1st Gear	Varies	kPa (psi)	This parameter displays the amount of transmission adaptive pressure (TAP), which modifies the commanded clutch apply pressures.
Steady State TAP 1st Gear TCC Applied	Varies	kPa (psi)	This parameter displays the amount of transmission adaptive pressure (TAP), which modifies the commanded clutch apply pressures.
Steady State TAP 2nd Gear	Varies	kPa (psi)	This parameter displays the amount of transmission adaptive pressure (TAP), which modifies the commanded clutch apply pressures.
Steady State TAP 2nd Gear TCC Applied	Varies	kPa (psi)	This parameter displays the amount of transmission adaptive pressure (TAP), which modifies the commanded clutch apply pressures.
Steady State TAP 3rd Gear	Varies	kPa (psi)	This parameter displays the amount of transmission adaptive pressure (TAP), which modifies the commanded clutch apply pressures.
Steady State TAP 3rd Gear TCC Applied	Varies	kPa (psi)	This parameter displays the amount of transmission adaptive pressure (TAP), which modifies the commanded clutch apply pressures.
Steady State TAP 4th Gear	Varies	kPa (psi)	This parameter displays the amount of transmission adaptive pressure (TAP), which modifies the commanded clutch apply pressures.
Steady State TAP 4th Gear TCC Applied	Varies	kPa (psi)	This parameter displays the amount of transmission adaptive pressure (TAP), which modifies the commanded clutch apply pressures.
Steady State TAP 5th Gear	Varies	kPa (psi)	This parameter displays the amount of transmission adaptive pressure (TAP), which modifies the commanded clutch apply pressures.

Parameter	System State	Expected Value	Description
Steady State TAP 5th Gear TCC Applied	Varies	kPa (psi)	This parameter displays the amount of transmission adaptive pressure (TAP), which modifies the commanded clutch apply pressures.
Steady State TAP 6th Gear	Varies	kPa (psi)	This parameter displays the amount of transmission adaptive pressure (TAP), which modifies the commanded clutch apply pressures.
Steady State TAP 6th Gear TCC Applied	Varies	kPa (psi)	This parameter displays the amount of transmission adaptive pressure (TAP), which modifies the commanded clutch apply pressures.
Steady State TAP Reverse	Varies	kPa (psi)	This parameter displays the amount of transmission adaptive pressure (TAP), which modifies the commanded clutch apply pressures.
TCC Pressure Control Solenoid Valve Control Circuit Low Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to ground exists in the TCC pressure control solenoid valve control circuit. The scan tool displays OK, Malfunction, or Not Run.
TCC Pressure Control Solenoid Valve Control Circuit High Voltage Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a short to voltage exists in the TCC pressure control solenoid valve control circuit. The scan tool displays OK, Malfunction, or Not Run.
TCC Pressure Control Solenoid Valve Performance Test Status	OK	OK, Malfunction, Not Run	This parameter displays whether a performance issue exist in the TCC pressure control solenoid valve control circuit by comparing the commanded current with the expected current. The scan tool displays OK, Malfunction, or Not Run.
TCC Pressure Control Solenoid Valve Pressure Command	Varies	kPa (psi)	This parameter displays results in kPa (psi).

Parameter	System State	Expected Value	Description
TCC Slip Speed	Varies	RPM	This parameter displays the difference between transmission input speed and engine speed. A negative value indicates that the engine speed is less than the input speed, deceleration. A positive value indicates that the engine speed is greater than the input speed, acceleration. A value of zero indicates that the engine speed is equal to the input speed, TCC applied.
TCM Power-Up Temperature	Varies	Ã,Â°C (Ã,Â°F)	This displays the value of the temperature sensor inside the control solenoid and valve assembly.
TCM Temperature	Varies	Ã,Â°C (Ã,Â°F)	This displays the temperature of the TCM. This parameter displays results in Ã,Â°C (Ã,Â°F).
Transmission Fluid Pressure Switch 1	High/Low	High/Low	This parameter indicates the state of the normally closed transmission fluid pressure switch 1. Pressure to the switch is dependent on the position of the 3-5-Reverse clutch regulator valve. The scan tool displays High/Low.
Transmission Fluid Pressure Switch 3	High/Low	High/Low	This parameter indicates the state of the normally closed transmission fluid pressure switch 1. Pressure to the switch is dependent on the position of the 2-6 clutch regulator valve. The scan tool displays High/Low.
Transmission Fluid Pressure Switch 4	High/Low	High/Low	This parameter indicates the state of the normally closed transmission fluid pressure switch 1. Pressure to the switch is dependent on the position of the 1-2-3-4 clutch regulator valve. The scan tool displays High/Low.
Transmission Fluid Pressure Switch 5	High/Low	High/Low	This parameter indicates the state of the normally closed transmission fluid pressure switch 1. Pressure to the switch is dependent on the position of the R1/4-5-6 clutch regulator valve. The scan tool displays High/Low.

Parameter	System State	Expected Value	Description
Transmission Fluid Life	Varies	%	This parameter displays the transmission oil life remaining. The scan tool displays the remaining oil life as a percentage. The transmission oil life is calculated based on fluid temperature and engine run time.
Transmission Fluid Temperature	Varies	°C (°F)	This parameter displays the input signal of the transmission fluid temperature sensor. Transmission fluid temperature is high 151°C (304°F) when signal voltage is low, 0 V, and transmission fluid temperature is low -40°C (-40°F) when signal voltage is high, 5 V.
Transmission Hot Mode	On/Off	On/Off	When The transmission fluid temperature is above a temperature which varies by calibration, the TCM will alter the shift pattern until the temperature drops below a value which varies by calibration.
Transmission ISS	Varies	RPM	This parameter displays the rotational speed of the transmission input shaft. The scan tool displays input shaft speed is revolutions per minute (RPM).
Transmission OSS	Varies	RPM	This parameter displays the rotational speed of the transmission output shaft expressed as revolutions per minute.

Scan Tool Output Controls

Output Control	Description

Output Control	Description
TCC Pressure Control Solenoid Valve	• The transmission control module (TCM) commands the torque converter clutch pressure control (TCC PC) solenoid pressure in order to apply and release the TCC. • When the ignition is ON, and the engine is OFF, there are no limits to this control. The solenoid remains ON until commanded OFF and vice versa. • When the engine is running, the following control limits apply: • If the transmission range is Park, and the transmission is in hot mode, the TCC PC solenoid may not be commanded OFF. If the solenoid is requested OFF, the message "TCC OFF command disabled in Hot Mode" appears on the scan tool display. • The TCC PC solenoid may not be commanded OFF for more than a calibrated amount of time. If the solenoid is commanded OFF, for a certain amount of time, the message "TCC OFF time has been exceeded" appears on the scan tool display.
Shift Solenoid: • Shift Solenoid Valve 1	• The TCM commands Shift Solenoid 1 ON and OFF. • When the ignition is ON, and the engine is OFF, there are no limits to this control. The solenoid remains ON until commanded OFF, and vice versa. When the output control is exited, the solenoid state is determined by the TCM. • When the engine is running, the following control limits apply: • The transmission range must be in Park or Neutral. If the transmission range is not Park or Neutral, the message "Engine running and transmission range is not Park/Neutral" appears on the scan tool display. • The solenoid remains ON until commanded OFF, and vice versa. When the output control is exited, the solenoid state is determined by the TCM. • Transmission range DTCs must not be active. If a transmission range DTC is active, the message "Engine running with transmission DTC present" appears on the scan tool display.

Output Control	Description
Line Pressure Control Solenoid Valve	• The scan tool is used to request pressure in increments of 207 kPa (30 psi) from 0-1862 kPa (0-270 psi). The TCM will then command the solenoid to achieve the requested pressure. • When the ignition is ON, and the engine is OFF, the pressure request may be controlled within calibrated limits. There are no limits to the output control when the engine is OFF. • When the engine is running, the following control limits apply: • When the transmission range is Park or Neutral, the pressure request may be controlled within calibrated limits. The engine speed must be less than 1,500 RPM. If the engine speed is greater than 1,500 RPM, the message "TR in park/neutral and engine speed over 1,500 RPM" appears on the scan tool display. • When the transmission range is not Park or Neutral, the requested pressure can only be controlled equal to or greater than the pressure determined by the TCM. The TCM does not allow a pressure to be selected that may cause damage to the transmission. If the requested pressure is less than allowed by the TCM, the message "Requested pressure for the Line PC Solenoid is too low" appears on the scan tool display. • Transmission range DTCs must not be active. If a transmission range DTC is active, the message "Engine running with transmission DTC present" appears on the scan tool display.
Clutch PC Solenoids: • Pressure Control Solenoid Valve 2 • Pressure Control Solenoid Valve 3 • Pressure Control Solenoid Valve 4 • Pressure Control Solenoid Valve 5	• The TCM commands the pressure control solenoids in order to apply and release the clutches. • When the ignition is ON, and the engine is OFF, there are no limits to this control. The solenoid remains ON until commanded OFF, and vice versa. When the output control is exited, the solenoid state is determined by the TCM. • When the engine is running, the following control limits apply: • The transmission range must be in Park or Neutral. If the transmission range is not Park or Neutral, the message "Engine running and transmission range is not Park/Neutral" appears on the scan tool display. • The solenoid remains ON until commanded OFF, and vice versa. When the output control is exited, the solenoid state is determined by the TCM. • Transmission range DTCs must not be active. If a transmission range DTC is active, the message "Engine running with transmission DTC present" appears on the scan tool display.

Output Control	Description
Shift Transmission Gear	• The TCM commands upshifts and downshifts. The scan tool Commanded Gear parameter should correspond with the shift solenoid combination. Refer to <u>Shift Solenoid Valve State and Gear Ratio</u> . • When the ignition is ON, and the engine is OFF, there are no limits to this control. The scan tool shift solenoid states change to match the Commanded Gear selected. • When the engine is running, the following control limits apply: • The TCM does not allow a shift if it causes the engine RPM to exceed a calibrated limit. If a gear is requested and the engine speed is too high, the message "Engine speed too high" appears on the scan tool display. • The TCM does not allow a 3-2 or 2-1 downshift if the vehicle speed exceeds a calibrated limit. If either downshift is requested and the vehicle speed is too high, the message "Eng. is on and veh. speed too hi for 3-2 or 2-1 downshift" appears on the scan tool display. • The TCM does not allow a 4-3 downshift if the vehicle speed exceeds a calibrated limit. If a 4-3 downshift is requested and the vehicle speed is too high, the message "Vehicle speed too high" appears on the scan tool display. • The TCM does not allow an upshift if the vehicle speed exceeds a calibrated limit. If an upshift is requested and the vehicle speed is too high, the message "Vehicle speed too high" appears on the scan tool display. • The TCM does not allow an upshift that is greater than the current selected transmission range (PRNDL). For example, 3rd gear is not allowed if the transmission range is D2. If an upshift is requested that is greater than the current selected transmission range, the message "Eng. running and gear request is greater than the current TR" appears on the scan tool display.
Transmission Adaptive Values Learn	The TCM commands pressure to the clutches to learn the transmission adaptive values. As the procedure is being performed, the scan tool provides operator instructions. Test may not start or may abort for the following conditions: • Transmission fluid temperature must be between 70-100°C (158-212°F). • Brakes and brake switch must function properly. • Closed throttle and engine speed increases above 1500 RPM. • Park/neutral position switch must be properly adjusted and functioning. • Line pressure control is able to command 1,000 kPa (145 psi). • Vehicle must be stopped. • Vehicle must not be vibrating excessive.