

GENERAL INFORMATION

3.8 DOOR MODULES

A multiplexed Driver Door Module (DDM) is located in the driver door. The DDM controls the following features:

- power door locks
- automatic (rolling) door locks
- driver front window and driver rear window, including express down for both
- a window lockout feature for all passenger power windows
- memory recall functions (radio, adjustable pedals, memory seats and driver mirror)
- driver memory mirror
- driver power mirror
- driver heated mirror
- door key cylinder disarm (driver door only)
- door lock inhibit
- switch learning features
- central lock from the key cylinder (driver door only)
- central unlock from the key cylinder and auto unlock on exit (driver door only)

A multiplexed Passenger Door Module (PDM) is located in the front passenger door. The PDM controls the following features:

- power door locks
- passenger front window and passenger rear window, including express down for both
- passenger memory mirror
- passenger power mirror
- passenger heated mirror

Reduced wiring complexity is a key advantage of using multiplexed door modules. These modules are addressable with the DRBIII® from the "Body" menu to facilitate faster and easier diagnosis. In addition, the door nodes offer:

- battery protection
- door lock inhibit – this feature disables the door lock functions if the key is in the ignition and either front door is ajar. Pressing the RKE lock/unlock button under these conditions will result in normal lock/unlock activation.

3.8.1 POWER WINDOWS

The driver can control all of the power windows from the Driver Door Module (DDM) while each passenger can control their own power window from the power window switch in their respective door. The DDM also has a lockout switch that prevents power window operation from the power

window switch in each passenger door. When in lockout mode, the lockout switch illuminates in red and each passenger window switch LED turns off indicating the respective switch is inactive. Another feature allows power window operation to continue from any power window switch for 45 seconds after turning off the ignition, but only if the front doors remain closed. Still another power window feature is the Express Down feature. This feature works on all four windows and is activated by pressing the power window switch into the second detent. Once activated, the operator can release the power window switch and the power window will travel to the full open position. To stop the Express Down feature, momentarily pull the switch in the up direction.

When a rear seat passenger actuates a rear power window switch, the respective door module, DDM or PDM, receives a multiplex signal. In turn, the door module supplies 12 volts and ground, in the appropriate direction, to the up and down window motor circuits of the respective rear door power window.

3.8.2 POWER DOOR LOCKS

The power door locks operate:

- From the front door lock switches.
- From remote keyless entry.
- From the auto (rolling) door lock feature. This feature will lock all of the door locks, if all of the doors are closed and the vehicle speed goes above 15 mph (24 km/h).
- From the auto unlock on exit feature.
 - ▶ This feature will unlock all of the door locks when the vehicle is stopped, the transmission is in neutral or park and the driver door is opened.
- From the central unlock from the key cylinder feature.
 - ▶ This feature will unlock all of the door locks if the operator turns the key cylinder toward the front of the vehicle twice within 5 seconds. The first time the operator turns the key cylinder toward the front of the vehicle the feature will unlock only the driver door lock. If within 5 seconds the operator releases the key cylinder and again turns it toward the front of the vehicle all of the passenger door locks will unlock.
- From the central lock from the key cylinder feature.
 - ▶ This feature will lock all of the door locks if the operator turns the key cylinder toward the rear of the vehicle. When either the Driver Door Module (DDM) or the Passenger Door

Module (PDM) receives input for a lock request from a door lock switch, RKE (through the BCM), or a cylinder lock switch (only with VTSS), they will turn the lock drivers on for 375 msec. If the request is present beyond 375 msec, the door nodes consider the door lock signal stuck. Once a door lock or unlock signal is stuck for longer than 10 seconds, the appropriate door module will set a trouble code and the signal input is ignored until the stuck condition disappears. The door lock switches provide a variable amount of resistance thereby dropping the voltage of the multiplexed (MUX) circuit and the PDM will respond to that command. The DDM lock switch is a digital input not analog.

3.8.3 DOOR LOCK INHIBIT

When the key is in the ignition (in any position) and either front door is open, the door lock switches LOCK functions are disabled. The UN-LOCK functions are still functional. This protects against locking the vehicle with the key still in the ignition. The RKE key fob will still lock the doors as usual. After the key is removed from the ignition or the doors are closed, the power door locks will operate normally.

3.8.4 REMOTE KEYLESS ENTRY

The RKE transmitter uses radio frequency signals to communicate with the SKREEM module. The SKREEM is on the PCI bus. When the operator presses a button on the transmitter, it sends a specific request to the SKREEM. In turn the SKREEM sends the appropriate request over the PCI Bus to the:

- Driver Door Module (DDM) to control the driver front door lock and unlock functions, the arming and disarming of the Vehicle Theft Security System (if equipped), and the activation of illuminated entry.
- Integrated Power Module (IPM) to activate the park lamps, the headlamps, and the horn for horn chirp.

If requested, the DDM sends a request over the PCI Bus to the:

- Passenger Door Module (PDM) to control the passenger front, rear driver, and rear passenger door lock and unlock functions.
- Power Liftgate Module (PLGM) to control the liftgate lock and unlock functions.

After pressing the lock button on the RKE transmitter, all of the door locks will lock, the illuminated entry will turn off (providing all doors are closed), and the vehicle theft security system (if equipped) will arm. After pressing the unlock but-

ton, on the RKE transmitter, one time, the driver door lock will unlock, the illuminated entry will turn on the courtesy lamps, and the vehicle theft security system (if equipped) will disarm. After pressing the unlock button a second time, the remaining door locks will unlock. The EVIC or the DRBIII® can reprogram this feature to unlock all of the door locks with one press of the unlock button. If the vehicle is equipped with the memory system, the memory message will identify which transmitter (1 or 2) sent the signal.

The SKREEM is capable of retaining up to 8 individual access codes (8 transmitters). If the PRNDL is in any position except park, the SKREEM will disable the RKE. The 4 button transmitter uses 1-CR2032 battery. The minimum battery life is approximately 5 years based on 20 transmissions a day at 84°F (25°C). Use the DRBIII® or the Miller Tool 9001 RF Detector to test the RKE transmitter. Use the DRBIII® or the customer programming method to program the RKE system. However, the SKREEM will only allow RKE programming when the ignition is in the on position, the PRNDL is in park position, and the VTSS (if equipped) is disarmed.

3.8.4.1 PANIC FUNCTION

Pressing the panic button on the RKE transmitter will cause the headlamp relay, the park lamp relay, and the horn relay to pulsate, which in turn will cause the exterior lamps to flash and the horn to sound intermittently. It will also cause the courtesy lamp relay to actuate, turning on the courtesy lamps. Pressing the panic button again stops the headlamps and the park lamps from flashing and the horn from sounding. However, the courtesy lamps will remain on until either the BCM times out lamp operation or until the ignition is turned on. The panic feature operates for three minutes at a time, unless the operator cancels it, or the ignition is turned on.

Actuating the headlamp, horn, park lamps, and courtesy lamps with the DRBIII® will verify if the circuits and the Integrated Power Module are OK. If the panic feature is still inoperable with all transmitters, it will be necessary to replace the SKREEM. If the function is inoperable with just one transmitter, then replace only that transmitter.

3.8.4.2 ROLLING CODE

The rolling code feature changes part of the transmitter message each time that it is used. The transmitter message and the receiver message increment together. Under certain conditions with a rolling code system (pressing a button on the RKE transmitter over 255 times outside the re-

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ceiver range, battery replacement, etc.), the receiver and transmitter can fall out of synchronization. Note: The lock function works from the RKE transmitter even in an out of synchronization condition and therefore it could be verified by pressing the LOCK button on the RKE keyfob. To resynchronize, press and release the UNLOCK button on the RKE transmitter repeatedly (it may take up to eight cycles) while listening carefully for the power door locks in the vehicle to cycle, indicating that resynchronization has occurred.

3.8.4.3 PROGRAMMABLE DOOR LOCK FEATURES

- The RKE can be changed to unlock all doors with one press
- The Automatic Door Locks can be enabled/disabled
- Auto Unlock on Exit can be enabled/disabled
- RKE horn chirp on lock can be enabled/disabled
- RKE optical chirp (turn signal lamps) can be enabled/disabled
- Program a new RKE transmitter.
- RKE linked to memory (if equipped with memory system) enabled/disabled (DRBIII® only). Allows memory to be operable only from the driver door switch.

3.8.5 POWER MIRRORS

Each door module controls the movement of the power side view mirrors. The driver power mirror is wired to the Driver Door Module (DDM) and the passenger power mirror is wired to the Passenger Door Module (PDM). The power mirror adjusting switch is integral to the DDM. If the driver selects to adjust the passenger power mirror, the DDM will send a message over the PCI bus to the PDM to adjust the passenger mirror accordingly.

3.8.6 BATTERY PROTECTION FEATURE

The Driver Door Module (DDM) and the Passenger Door Module (PDM) will go into sleep mode 30 seconds after accessory power is removed (reduced IOD). After 8 hours of inactivity (PCI Bus, door ajar, key cylinder) the modules will go into stop mode (greatly reduced IOD).

3.8.7 MEMORY MASTER

The Driver Door Module (DDM) is the memory master. It tells all of the other modules when to set (store) and when to recall their respective component(s) position/setting (1 or 2). The system functions as follows:

- After pressing the Memory Set Switch (#1 or #2), the DDM receives and interprets the analog signal and then sends a PCI Bus message to the Passenger Door Module (PDM), the Memory/Heated Seat Adjustable Pedal Module, and the Audio System to set or recall the:
 - Memory mirror position (1 or 2). The DDM and the PDM store the setting for the respective mirror's position.
 - Memory seat position (1 or 2). The MHSAPM/MSAPM stores the setting for the seat position.
 - Pedal position (1 or 2). The MHSAPM/MSAPM stores the setting for the pedal position.
 - Radio setting (1 or 2). The Audio System stores the setting for the radio.

3.8.8 SWITCH LEARN FEATURE

Since the seat switch is directly connected to the Driver Door Module (DDM), the DDM can determine if memory or other seat functions are present in the vehicle. The DDM will learn if a vehicle is equipped with the memory feature and inform other modules via PCI Bus messages. The DDM also learns if the vehicle has other optional features such as heated seats.

3.9 ELECTRICALLY HEATED SYSTEMS

3.9.1 ELECTRICALLY HEATED SEATS - FRONT ONLY

The heated seat feature is available only with the memory system. The system's control module, known as the Memory Heated Seat Adjustable Pedal Module (MHSAPM), is located under the driver's seat and controls the front heated seats only. The driver heated seat control switch is located on the driver door trim panel. The switch is hardwired to the Driver Door Module (DDM). When the operator actuates the switch on, the DDM sends a message via the PCI Bus to the MHSAPM requesting heated seat operation. The passenger heated seat control switch is located on the front-passenger door trim panel. The switch is hardwired to the Passenger Door Module (PDM). When the operator actuates the switch on, the PDM sends a message via the PCI Bus to the MHSAPM requesting heated seat operation.

The system offers two levels of heat which are High and Low. When the High temperature setting is selected the MHSAPM will run through three levels of duty cycle voltage output to the seat heater elements. The highest heat level will last for 4 minutes then will be reduced to a lower level of high for 120 minutes after which will then change