

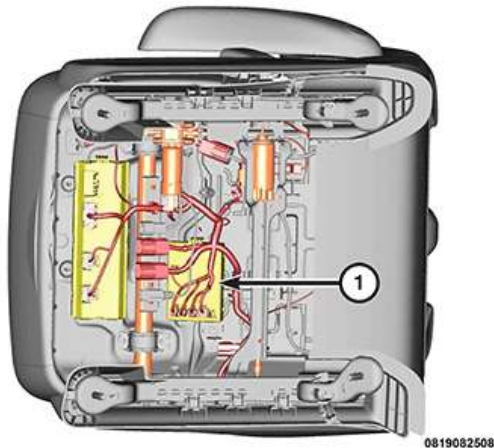
YOUR CURRENT VEHICLE

2018 Chrysler Pacifica

Description & Operation

DESCRIPTION AND OPERATION

DESCRIPTION



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The Heated Seat Module (HSM) (1) is located under the passenger front seat. It has a multiple electrical connectors (CAN + POWER, Front Heat, Front Vent and Heated Steering Wheel connections) and a push pin style retainer that secures it to the seat pan. The module can be accessed from under the passenger seat with the seat in the full back and up position.

The HSM is a CAN-IHS bus microcontroller providing outputs to the power seats, heated seat pads, heated steering wheel, and ventilating up to two seats. The HSM receives commands over the CAN IHS BUS from the various modules. The seat thermistor is hard wired to the HSM.

Heated Seats - The HSM uses a Pulse Width Modulation (PWM) to provide power to the seat cushion and back heating elements. The temperature sensor thermistor is located in the seat cushion. The thermistor sensor feedbacks from each seat heating element to the HSM to regulate the heater outputs to prevent any seat temperature to rise above set points. Seat heating has two selectable heat settings which are HI and LO. Depending on thermistor reading, the HSM will start the heater output by adjusting the PWM heat level according to the calibration table.

Vented Seats - The seat venting has two selectable speeds for the fans. For seat venting, each press of the switch button will cause the seat to change venting modes. The HSM has a single low side control signal to control each vented seat. The HSM does not directly drive the vent motors.

Heated Steering Wheel - The HSM provides power to the steering wheel heating element. The heated steering wheel is standard when the vehicle is equipped with front heated seats. During normal operation, the HSM will switch on the power for the heated wheel only if the engine is running. The heated steering wheel temperature sensor sends that information over a LIN Bus through the Steering Column Control Module (SCCM) to the BCM. The thermistor sensor feedbacks from the steering wheel heating element via the CAN Internal High Speed (IHS) bus to the HSM regulating the heater output to prevent the wheel temperature to rise above the maximum threshold temperature set point.

OPERATION

Heated Systems Modules:

- The Heated Seat Module (HSM) controls the heated seat system.
- The Steering Column Control Module (SCCM) is the interface between the heated steering wheel and the vehicle.
- The Steering Wheel Switch (SWS) converts hard wired sense and return information into a LIN bus message and sends to the SCCM.
- The Body Control Module (BCM) gates messages between the CAN C bus and the CAN IHS. Additionally the BCM provides vehicle information to the HSM.

([Refer to Electrical/Steering Wheel/Description and Operation](#)) for heated steering wheel information.

Heated Seats:

- The heated seat system operates on battery current received through fused ignition switch output (Run) circuits and will only operate when the engine is running.
- The HSM directly provides power to the seat heating elements in the seat cushions and seat backs for seat heating.
- The driver seat heat system and passenger seat heat system each consist of a cushion element connected in parallel with a back element.
- A thermistor sensor feedback from each seat heating element to the HSM is used to regulate the heater outputs to prevent any seats temperature from rising above the set points. If a seat temperature exceeds the set point the HSM automatically disables the system.
 - The high level cutoff value range is from 50° - 60° C (120° - 140° F) in increments of 1 degrees Fahrenheit. The typical value is 54° C (129° F).
 - The low level cutoff value range is from 50° - 60° C (120° - 140° F) in increments of 1 degrees Fahrenheit. The typical value is 55° C (131° F).
- The HSM will also turn off the heated seat elements if an open or short in the heating element circuit is detected.
- Each time a heated seat request signal is received by the HSM, the heated seat output will cycle from Off to High, High to Low and Low to Off. (i.e. the first press cycles from Off to High, the next press cycles from High to Low and the next press cycles from Low to Off.)
- When the HSM receives the actuation request, the HSM activates the heating element output at the high level and transmits a message on the CAN-IHS bus to indicate the current output state is high.
- The HSM automatically transitions the output from high to low after a maximum period of 60 minutes has elapsed and transmits a message on the CAN-IHS bus to indicate the current output state is low.
- The HSM automatically transitions the output from low to off after a maximum period of 45 minutes has elapsed and transmits a message on the CAN-IHS bus to indicate the current output state is off.

When pressing the heated seat switch:

- A CAN-I bus message request is generated.
- The HSM receives the "Heated Seat request" from the CAN-IHS bus.
- The HSM broadcasts a confirmation of actuation message over the CAN-IHS bus.
- The HSM energizes an integral solid-state relay, which supplies Pulse Width Modulated (PWM) current to the heating elements of the designated seat(s).
- The HSM monitors the seat temperature.

The HSM is diagnosed using a scan tool and will automatically turn off the heating elements if it detects an open or low short in a heating element circuit ([Refer to 28 - DTC-Based Diagnostics/MODULE, Heated Seat \(HSM\) - Diagnosis and Testing](#)).