

Collision Warning and Collision Avoidance System

DTC Charts

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

HUD DTC Chart

DTC	Description	Action
U0104:00	Lost Communication With Cruise Control Module: No Sub Type Information	GO to Pinpoint Test D
U0146:00	Lost Communication With Gateway "A": No Sub Type Information	GO to Pinpoint Test E
U0405:68	Invalid Data Received From Cruise Control Module: Event Information	This DTC sets when the HUD module receives invalid network data from the CCM with a faulted signal data input. RETRIEVE and REPAIR all non-network Diagnostic Trouble Codes (DTCs) in the other modules on the network.
U0447:68	Invalid Data Received From Gateway "A": Event Information	This DTC sets when the HUD module receives invalid network data from the GWM. RETRIEVE and REPAIR all non-network Diagnostic Trouble Codes (DTCs) in the other modules on the network.

U210A:16	Temperature Sensor: Circuit Voltage Below Threshold	GO to Pinpoint Test G
U210A:17	Temperature Sensor: Circuit Voltage Above Threshold	GO to Pinpoint Test G
U3000:41	Control Module: General Checksum Failure	CLEAR the Diagnostic Trouble Codes (DTCs). REPEAT the self-test. If DTC U3000:41 is retrieved again, INSTALL a new HUD module. REFER to: Head Up Display (HUD) Module (419-03C Collision Warning and Collision Avoidance System, Removal and Installation).
U3003:16	Battery Voltage: Circuit Voltage Below Threshold	GO to Pinpoint Test H
U3003:1C	Battery Voltage: Circuit Voltage Out of Range	GO to Pinpoint Test I

CCM DTC Chart

DTC	Description	Action
C1001:08	Vision System Camera: Bus Signal/ Message Failure	GO to Pinpoint Test B
C1132:4B	Head Up Display: Over Temperature	GO to Pinpoint Test F
All other CCM Diagnostic Trouble Codes (DTCs)	-	REFER to: Cruise Control (419-03 Cruise Control - Vehicles With: Adaptive Cruise Control) .

IPMA DTC Chart

DTC	Description	Action
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C1A67:08	Forward Looking Sensor: Bus Signal/Message Failure	GO to Pinpoint Test B
All other Diagnostic Trouble Codes (DTCs)	-	REFER to: Lane Keeping System (419-07 Lane Keeping System, Diagnosis and Testing).

Symptom Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Symptom Chart

Condition	Possible Sources	Actions
Module does not respond to the diagnostic scan tool	• Fuse • Wiring, terminals or connectors • HUD module	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
The forward collision warning system is inoperative	Refer to the Pinpoint Test	GO to Pinpoint Test A
The pre-collision assist system is inoperative	Refer to the Pinpoint Test	GO to Pinpoint Test B
The HUD module is inoperative	Refer to the Pinpoint Test	GO to Pinpoint Test C
PRE-COLLISION ASSIST NOT AVAILABLE SENSOR BLOCKED SEE MANUAL message in the IPC message center	CCM	REFER to: Cruise Control (419-03B Cruise Control - Vehicles With: Adaptive Cruise Control, Diagnosis and Testing).

FRONT CAMERA LOW VISIBILITY CLEAN SCREEN or FRONT CAMERA MALFUNCTION SERVICE REQUIRED message in IPC message center	• Forward looking camera • IPMA	VERIFY the forward-looking camera is not obstructed or weather conditions are not limiting the function of the camera. If the camera is operating correctly, DIAGNOSE concerns with the IPMA. REFER to: Lane Keeping System (419-07 Lane Keeping System, Diagnosis and Testing).
Too many forward collision warning events occur	• A MyKey® restricted key is in use • Forward collision warning sensitivity is set to the most sensitive value	• VERIFY a MyKey® restricted key is in use. With an admin key, VERIFY forward collision warning system normal operation. • CHECK the forward collision warning sensitivity setting in the message center menu.
Too many pre-collision assist alerts occur	Pre-collision assist alert sensitivity is set to the most sensitive value	CHECK the pre-collision assist alert sensitivity setting in the message center menu.
Unexpected braking	• CCM • Front bumper	The CCM can occasionally detect and respond to objects or vehicles that are out of the direct path of travel, especially on curves, entry/exit ramps or when changing lanes. CHECK the CCM and front bumper for damage or misalignment. REFER to: Cruise Control Radar Alignment (419-03 Cruise Control - Vehicles With: Adaptive Cruise Control) . If no damage or misalignment is observed, RETEST the system.

Lack of active braking	● CCM ● Front bumper	The CCM may not detect and respond to vehicles or moving objects, such as bicycles, performing close cut-ins or on tight curves (especially on the passenger side) due to limited CCM field of view. CHECK the CCM and front bumper for damage or misalignment. REFER to: Cruise Control Radar Alignment (419-03 Cruise Control - Vehicles With: Adaptive Cruise Control) . If no damage or misalignment is observed, RETEST the system.
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Pinpoint Tests

The Forward Collision Warning System Is Inoperative

Refer to Wiring Diagrams Cell 146 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Cruise Control - System Operation and Component Description](#) (419-03B Cruise Control - Vehicles With: Adaptive Cruise Control, Description and Operation).

Possible Sources

- Wiring, terminals or connectors
- CCM
- HUD module
- IPC

PINPOINT TEST A : THE FORWARD COLLISION WARNING SYSTEM IS INOPERATIVE

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

A1 VERIFY THE CCM (CRUISE CONTROL MODULE) AND HUD (HEAD UP DISPLAY) MODULE PASS THE NETWORK TEST

- Using a diagnostic scan tool, perform the network test.

Do both the CCM and the HUD module pass the network test?

Yes	GO to A2
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

A2 CHECK THE DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE CONTINUOUS AND ON-DEMAND HUD (HEAD UP DISPLAY) MODULE SELF-TESTS

- Using a diagnostic scan tool, perform the HUD module self-test.

Are any HUD module Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to the HUD Module DTC Chart.
No	GO to A3

A3 CHECK THE CCM (CRUISE CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, perform the CCM self-tests.

Are any CCM Diagnostic Trouble Codes (DTCs) recorded?

Yes	If DTC C1001:08 or C1132:4B is present, refer to the CCM Diagnostic Trouble Codes (DTCs), REFER to: Cruise Control (419-03B Cruise Control - Vehicles With: Adaptive Cruise Control, Diagnosis and Testing).
No	GO to A4

A4 CHECK THE MESSAGE CENTER FOR CORRECT OPERATION

- Check the IPC message center for correct operation.

Does the message center operate correctly?

Yes	GO to A5
No	REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes, Diagnosis and Testing).

A5 CHECK FOR CORRECT HUD (HEAD UP DISPLAY) OPERATION

- Ignition OFF.
- Disconnect and inspect HUD module connector and related in-line connectors.
- Repair:
 - corrosion (install new connector or terminals - clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect the HUD module connector and related in-line connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, follow TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new HUD module. REFER to: Head Up Display (HUD) Module (419-03C Collision Warning and Collision Avoidance System, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

The Pre-Collision Assist System Is Inoperative

Refer to Wiring Diagrams Cell 146 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Collision Warning and Collision Avoidance System - System Operation and Component Description](#) (419-03C Collision Warning and Collision Avoidance System, Description and Operation).

DTC Fault Trigger Conditions - CCM

DTC	Description	Fault Trigger Conditions
C1001:08	Vision System Camera: Bus Signal/Message Failure	This continuous memory and on-demand DTC sets in the CCM when the pre-collision assist forward-looking camera status message from the IPMA on the private CAN is missing.

DTC Fault Trigger Conditions - IPMA

DTC	Description	Fault Trigger Conditions
C1A67:08	Forward Looking Sensor: Bus Signal/ Message Failure	This continuous memory and on-demand DTC sets in the IPMA when the pre-collision assist range status, yaw rate and vehicle velocity messages from the CCM on the private CAN are missing.

Possible Sources

- Wiring, terminals or connectors
- CCM
- HUD module
- IPMA
- IPC

PINPOINT TEST B : THE PRE-COLLISION ASSIST SYSTEM IS INOPERATIVE

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

B1 PERFORM THE NETWORK TEST

- Using a diagnostic scan tool, perform the network test.

Do the CCM, IPMA and the HUD module pass the network test?

Yes	GO to B2
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

B2 CHECK THE IPMA (IMAGE PROCESSING MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, perform the IPMA self-test.

Are any IPMA Diagnostic Trouble Codes (DTCs) recorded?

Yes	DIAGNOSE all IPMA Diagnostic Trouble Codes (DTCs). If DTC C1A67:08 is recorded, GO to B6 For all other Diagnostic Trouble Codes (DTCs), REFER to: Lane Keeping System (419-07 Lane Keeping System, Diagnosis and Testing).
No	GO to B3

B3 CHECK THE CCM (CRUISE CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, perform the CCM self-test.

Are any CCM Diagnostic Trouble Codes (DTCs) recorded?

Yes	If DTC C1001:08 is present, GO to B6 If DTC C1132:4B is present, REFER to the CCM DTC Chart. For all other CCM Diagnostic Trouble Codes (DTCs), REFER to: Cruise Control (419-03B Cruise Control - Vehicles With: Adaptive Cruise Control, Diagnosis and Testing).
No	GO to B4

B4 CHECK THE HUD (HEAD UP DISPLAY) MODULE DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, perform the HUD module self-test.

Are any HUD module Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to HUD Module DTC Chart.
No	GO to B5

B5 CHECK THE MESSAGE CENTER FOR CORRECT OPERATION

- Check the IPC message center for correct operation.

Does the message center operate correctly?

Yes	GO to B6
No	REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes, Diagnosis and Testing).

B6 CHECK THE PRIVATE CAN (CONTROLLER AREA NETWORK) CIRCUITS FOR A SHORT TO VOLTAGE

- Disconnect CCM C1897.
- Disconnect IPMA C9224.
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1897-2		Ground
C1897-3		Ground

Is any voltage present?

Yes	REPAIR the circuit in question.
No	GO to B7

B7 CHECK THE PRIVATE CAN (CONTROLLER AREA NETWORK) CIRCUITS FOR A SHORT TO GROUND

- Ignition OFF.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1897-2	Ω	Ground
C1897-3		Ground

Are the resistances greater than 10,000 ohms?

Yes	GO to B8
No	REPAIR the circuit in question.

B8 CHECK THE PRIVATE CAN (CONTROLLER AREA NETWORK) CIRCUITS FOR A SHORT TOGETHER

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1897-2	Ω	C1897-3

Is the resistance greater than 10,000 ohms?

Yes	GO to B9
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No	REPAIR the circuits.
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B9 CHECK THE PRIVATE CAN (CONTROLLER AREA NETWORK) CIRCUITS FOR AN OPEN

Are the resistances less than 3 ohms?

Yes	GO to B10
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No	REPAIR the circuit in question.
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B10 CHECK FOR CORRECT CCM (CRUISE CONTROL MODULE) OPERATION

- Disconnect and inspect CCM connector and related in-line connectors.
- Repair:
 - corrosion (install new connector or terminals - clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect the CCM connector and related in-line connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, follow TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new CCM. REFER to: Cruise Control Module (CCM) (419-03 Cruise Control - Vehicles With: Adaptive Cruise Control) . If the concern is still present, GO to B11
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No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.
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B11 CHECK FOR CORRECT IPMA (IMAGE PROCESSING MODULE A) OPERATION

- Disconnect and inspect IPMA connector and related in-line connectors.
- Repair:
 - corrosion (install new connector or terminals - clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect the IPMA connector and related in-line connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, follow TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new IPMA. REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

The HUD Module Is Inoperative

Refer to Wiring Diagrams Cell 146 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Collision Warning and Collision Avoidance System - System Operation and Component Description](#) (419-03C Collision Warning and Collision Avoidance System, Description and Operation).

Possible Sources

- CCM
- HUD module

PINPOINT TEST C : THE HUD (HEAD UP DISPLAY) MODULE IS INOPERATIVE

C1 CHECK FOR HUD (HEAD UP DISPLAY) MODULE LED PROVE OUT TEST

NOTE: Remove the vehicle from the extreme heat source or sunload condition prior to testing the vehicle.

- Ignition ON.
- With the ignition in RUN, observe the HUD module Light Emitting Diodes (LEDs).

Does the HUD module Light Emitting Diodes (LEDs) illuminate?

Yes	The HUD module Light Emitting Diodes (LEDs) are operating correctly at this time. The concern may have been caused by extreme temperatures.
No	GO to C2

C2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform the network test.

Does the HUD module pass the network test?

Yes	GO to C3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

C3 CHECK THE DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE HUD (HEAD UP DISPLAY) MODULE SELF-TEST

- Using a diagnostic scan tool, perform a HUD module self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to the HUD Module DTC Chart.
No	GO to C4

C4 CHECK THE DIAGNOSTIC TROUBLE CODES (DTCs) FROM THE CCM (CRUISE CONTROL MODULE) SELF-TEST

- Using a diagnostic scan tool, perform a CCM self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	If DTC C1001:08 or C1132:4B is present, refer to the CCM Diagnostic Trouble Codes (DTCs), REFER to: Cruise Control (419-03B Cruise Control - Vehicles With: Adaptive Cruise Control, Diagnosis and Testing).
No	GO to C5

C5 CHECK FOR CORRECT HUD (HEAD UP DISPLAY) OPERATION

- Ignition OFF.
- Disconnect and inspect HUD module connector and related in-line connectors.
- Repair:
 - corrosion (install new connector or terminals - clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect the HUD module connector and related in-line connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, follow TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new HUD module. REFER to: Head Up Display (HUD) Module (419-03C Collision Warning and Collision Avoidance System, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

U0104:00

Refer to Wiring Diagrams Cell 146 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Collision Warning and Collision Avoidance System - System Operation and Component Description](#) (419-03C Collision Warning and Collision Avoidance System, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U0104:00	Lost Communication With Cruise Control Module: No Sub Type Information	Sets in the HUD module if data messages received from the CCM are missing.

Possible Sources

- CCM
- HUD module

PINPOINT TEST D : U0104:00

D1 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform the network test.

Does the CCM pass the network test?

Yes	GO to D2
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

D2 RETRIEVE THE RECORDED DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE CCM (CRUISE CONTROL MODULE) SELF-TEST

- Using a diagnostic scan tool, perform a CCM self-test.

Is DTC C1132:4B recorded?

Yes	If DTC C1132:4B is recorded, GO to Pinpoint Test F For any other Diagnostic Trouble Codes (DTCs), REFER to: Cruise Control (419-03B Cruise Control - Vehicles With: Adaptive Cruise Control, Diagnosis and Testing).
No	GO to D3

D3 RETRIEVE THE RECORDED DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE HUD (HEAD UP DISPLAY) MODULE SELF-TEST

- Using a diagnostic scan tool, perform a HUD module self-test.

Is DTC U3003:16 or U3003:1C recorded?

Yes	If DTC U3003:16 is recorded, GO to Pinpoint Test H If DTC U3003:1C is recorded, GO to Pinpoint Test I
No	GO to D4

D4 RECHECK THE HUD (HEAD UP DISPLAY) MODULE DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs). Repeat the HUD module self-test.

Is DTC U0104:00 still present?

Yes	INSTALL a new CCM. REFER to: Cruise Control Module (CCM) (419-03 Cruise Control - Vehicles With: Adaptive Cruise Control) . CLEAR the Diagnostic Trouble Codes (DTCs). REPEAT the HUD module self-test. If DTC U0104:00 is still present, INSTALL a new HUD module. REFER to: Head Up Display (HUD) Module (419-03C Collision Warning and Collision Avoidance System, Removal and Installation).
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

U0146:00

Refer to Wiring Diagrams Cell 146 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Collision Warning and Collision Avoidance System - System Operation and Component](#)

[Description](#) (419-03C Collision Warning and Collision Avoidance System, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U0146:00	Lost Communication With Gateway "A": No Sub Type Information	Sets in the HUD module if data messages received from the GWM are missing.

Possible Sources

- HUD module
- GWM

PINPOINT TEST E : U0146:00

E1 VERIFY THE CUSTOMER CONCERN	
• Ignition ON. • Verify there is an observable concern.	
Is an observable symptom present?	
Yes	GO to E2
No	The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.
E2 CHECK THE COMMUNICATION NETWORK	

- Using a diagnostic scan tool, perform the network test.

Does the GWM pass the network test?

Yes	GO to E3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

E3 CHECK GWM (GATEWAY MODULE A) CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Using a diagnostic scan tool, retrieve GWM Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Continuous Memory Diagnostic Trouble Codes (CMDTCs) recorded?

Yes	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
No	GO to E4

E4 PERFORM THE HUD (HEAD UP DISPLAY) MODULE SELF-TEST

- Using a diagnostic scan tool, perform a HUD module self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to DTC Charts.
No	GO to E5

E5 RECHECK THE HUD (HEAD UP DISPLAY) MODULE DIAGNOSTIC TROUBLE CODES (DTCS)

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI or the PMI may not have been performed.*

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs).
- Wait 10 seconds.
- Repeat the HUD module self-test.

Is DTC U0146:00 still present?

Yes	GO to E6
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

E6 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0146:00 SET IN OTHER MODULES

- Using a diagnostic scan tool, clear all Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Retrieve the Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.

Is DTC U0146:00 set in other modules?

Yes	INSTALL a new GWM. REFER to: Gateway Module A (GWM) (418-00 Module Communications Network, Removal and Installation).
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No	INSTALL a new HUD module. REFER to: Head Up Display (HUD) Module (419-03C Collision Warning and Collision Avoidance System, Removal and Installation).
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C1132:4B

Refer to Wiring Diagrams Cell 146 for schematic and connector information.

Normal Operation and Fault Conditions

The HUD module is designed with a temperature sensor internal to the module. Due to extremely hot weather conditions, the temperature sensor circuit allows the HUD module to disable under high temperature conditions, which could damage the HUD module Light Emitting Diodes (LEDs). The HUD module is designed with a LED prove-out test. Upon each ignition cycle when the ignition switch is in RUN, the Light Emitting Diodes (LEDs) illuminate for a period of time indicating the HUD module is functional.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
C1132:4B	Head Up Display: Over Temperature	Sets as a continuous memory and on-demand DTC in the CCM if the HUD module is over-temperature.

Possible Sources

- HUD module
- Environmental conditions

PINPOINT TEST F : C1132:4B

F1 CHECK THE COMMUNICATION NETWORK

- Ignition ON.
- Using a diagnostic scan tool, perform the network test.

Does the HUD module pass the network test?

Yes	GO to F2
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

F2 CHECK FOR HUD (HEAD UP DISPLAY) MODULE LED (LIGHT EMITTING DIODE) PROVE-OUT TEST

NOTE: Remove the vehicle from the extreme heat source or sunload condition prior to testing the vehicle.

- With the ignition in RUN, observe the HUD module Light Emitting Diodes (LEDs).

Do the HUD module light emitting diodes (LEDs) illuminate?

Yes	The HUD module Light Emitting Diodes (LEDs) are operating correctly at this time. The concern may have been caused by extreme temperatures.
No	GO to F3

F3 CHECK THE DTCS FROM THE HUD (HEAD UP DISPLAY) MODULE SELF-TEST

- Using a diagnostic scan tool, perform the HUD module self-test.

Are any HUD module Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to the DTC Chart.
No	GO to F4

F4 CHECK FOR CORRECT HUD (HEAD UP DISPLAY) OPERATION

- Ignition OFF.
- Disconnect and inspect HUD module connector and related in-line connectors.
- Repair:
 - corrosion (install new connector or terminals - clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect the HUD module connector and related in-line connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, follow TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new HUD module. REFER to: Head Up Display (HUD) Module (419-03C Collision Warning and Collision Avoidance System, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

U210A:16 Or U210A:17

Refer to Wiring Diagrams Cell 146 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Collision Warning and Collision Avoidance System - System Operation and Component Description](#) (419-03C Collision Warning and Collision Avoidance System, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U210A:16	Temperature Sensor: Circuit Voltage Below Threshold	Sets in continuous memory in the HUD module when the internal temperature sensor circuit is below the lowest valid temperature value.
U210A:17	Temperature Sensor: Circuit Voltage Above Threshold	Sets in continuous memory in the HUD module when the internal temperature sensor circuit is above the highest valid temperature value.

Possible Sources

- HUD module

PINPOINT TEST G : U210A:16 OR U210A:17

G1 CHECK FOR HUD (HEAD UP DISPLAY) MODULE DIAGNOSTIC TROUBLE CODES (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, clear the HUD module Continuous Memory Diagnostic Trouble Codes (CMDTCs).
- Retrieve Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Is DTC U210A:16 or U210A:17 recorded?

Yes	GO to G2
No	The system is operating normally at this time. The DTC may have been set previously due to an internal intermittent fault with the temperature sensor circuit.

G2 CHECK FOR CORRECT HUD (HEAD UP DISPLAY) OPERATION

- Ignition OFF.
- Disconnect and inspect HUD module connector and related in-line connectors.
- Repair:
 - corrosion (install new connector or terminals - clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect the HUD module connector and related in-line connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, follow TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new HUD. REFER to: Head Up Display (HUD) Module (419-03C Collision Warning and Collision Avoidance System, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

U3003:16

Refer to Wiring Diagrams Cell 146 for schematic and connector information.

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions

U3003:16	Battery Voltage: Circuit Voltage Below Threshold	Set by the HUD module in continuous memory if the HUD module detects low battery voltage below 7 volts for more than 500 ms.
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Possible Sources

- Wiring, terminals or connectors
- Battery
- Generator
- PCM
- HUD module

PINPOINT TEST H : U3003:16

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.	
H1 CHECK THE HUD (HEAD UP DISPLAY) MODULE DIAGNOSTIC TROUBLE CODES (DTCS)	
• Ignition ON. • Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs). Repeat the HUD module self-test.	
Is DTC U3003:16 still present?	
Yes	GO to H2
No	The system is operating correctly at this time. The DTC may have been set due to a previous low battery voltage condition.
H2 CHECK FOR CHARGING SYSTEM DIAGNOSTIC TROUBLE CODES (DTCS) IN THE PCM (POWERTRAIN CONTROL MODULE)	

- Using a diagnostic scan tool, perform the PCM KOEO self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	Refer to the appropriate section in Group 303 for the procedure.
No	GO to H3

H3 CHECK THE BATTERY CONDITION AND STATE OF CHARGE

- Check the battery condition and verify the battery is fully charged.
REFER to: [Battery Charging](#) (414-01 Battery, Mounting and Cables, General Procedures).

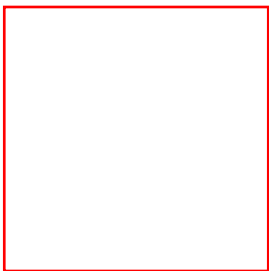
Is the battery OK and fully charged?

Yes	GO to H4
No	REFER to: Battery (414-01 Battery, Mounting and Cables, Diagnosis and Testing).

H4 CHECK THE HUD (HEAD UP DISPLAY) MODULE VOLTAGE SUPPLY

- Ignition OFF.
- Disconnect HUD module C2395.
- Ignition ON.
- Measure and record the voltage at the battery.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2395-4		Ground

C2395-5		Ground
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Is the voltage within 0.2 volt of the recorded battery voltage?

Yes	GO to H5
No	REPAIR the circuit.

H5 CHECK THE HUD (HEAD UP DISPLAY) MODULE GROUND CIRCUIT

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2395-4		C2395-1

Is the voltage within 0.2 volt of the recorded battery voltage?

Yes	GO to H6
No	REPAIR the circuit.

H6 CHECK FOR CORRECT HUD (HEAD UP DISPLAY) OPERATION

- Ignition OFF.
- Disconnect and inspect HUD module connector and related in-line connectors.
- Repair:
 - corrosion (install new connector or terminals - clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect the HUD module connector and related in-line connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, follow TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new HUD module. REFER to: Head Up Display (HUD) Module (419-03C Collision Warning and Collision Avoidance System, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

U3003:1C

Refer to Wiring Diagrams Cell 146 for schematic and connector information.

Normal Operation and Fault Conditions

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions

U3003:1C	Battery Voltage: Circuit Voltage Out of Range	Sets in continuous memory if the HUD module detects battery voltage outside the valid range.
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Possible Sources

- Wiring, terminals or connectors
- Battery
- Generator
- HUD module

PINPOINT TEST I : U3003:1C

NOTE: <i>DTC U3003:1C may be stored in the module memory due to past battery charging or vehicle jump starting events.</i>	
I1 CHECK FOR BATTERY VOLTAGE DTCS SET IN OTHER MODULES	
• Ignition ON. • Retrieve the Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.	
Do any charging system Diagnostic Trouble Codes (DTCs) set in more than one module?	
Yes	Refer to the appropriate section in Group 414 for the procedure.
No	GO to I2
I2 CHECK THE BATTERY VOLTAGE	

- Turn off all the interior/exterior lights and accessories.
- Start and run the engine at approximately 2,000 rpm for 3 minutes while monitoring the battery voltage.

Does the battery voltage rise to 15.5 volts or higher?

Yes	Refer to the appropriate section in Group 414 for the procedure.
No	GO to I3

I3 RECHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U3003:1C

- Ignition OFF.
- Ignition ON.
- Clear the HUD module Continuous Memory Diagnostic Trouble Codes (CMDTCs).
- Using a diagnostic scan tool, perform the HUD module self-test.

Is DTC U3003:1C present?

Yes	GO to I4
No	The system is operating normally at this time. The DTC may have been set previously during battery charging or while jump starting the vehicle.

I4 CHECK FOR CORRECT HUD (HEAD UP DISPLAY) OPERATION

- Ignition OFF.
- Disconnect and inspect HUD module connector and related in-line connectors.
- Repair:
 - corrosion (install new connector or terminals - clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect the HUD module connector and related in-line connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, follow TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new HUD module. REFER to: Head Up Display (HUD) Module (419-03C Collision Warning and Collision Avoidance System, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.