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2000 FORD Mustang OEM Service and Repair Workshop Manual

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Access the DSP (audio digital signal processing module) and monitor the VPWR (Module Supply Voltage) (V) PID (parameter identification)

- TCU (telematic control unit module) :
  Access the TCU (telematic control unit module) and monitor the VPWR (Module Supply Voltage) (V) PID (parameter identification)

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

Yes	For the ACM (audio front control module) , GO to AK7 For the APIM (SYNC module) , GO to AK8 For the DSP (audio digital signal processing module) , GO to AK9 For the TCU (telematic control unit module) , GO to AK10

No	GO to AK5

AK5 CHECK THE MODULE VOLTAGE SUPPLY CIRCUIT FOR HIGH RESISTANCE

- Ignition OFF.
- Disconnect the suspect module.
- Ignition ON.
- Measure and record the battery voltage.
- For the suspect module, measure:
  ACM (audio front control module)

Positive Lead	Measurement / Action	Negative Lead
C240A-1	V	Ground

APIM (SYNC module)

Positive Lead	Measurement / Action	Negative Lead
C2383A-1	V	Ground

DSP (audio digital signal processing module) - 8 Speaker System

- For the suspect module, measure:

ACM (audio front control module)

Positive Lead	Measurement / Action	Negative Lead
C240A-1	V⎓	C240A-4

APIM (SYNC module)

Positive Lead	Measurement / Action	Negative Lead
C2383A-1	V⎓	C2383A-37

DSP (audio digital signal processing module) - 8 Speaker System

Positive Lead	Measurement / Action	Negative Lead
C3154B-4	V⎓	C3154B-1
C3154B-8	V⎓	C3154B-5

DSP (audio digital signal processing module) - 18 Speaker System

Positive Lead	Measurement / Action	Negative Lead
C3155B-4	V⎓	C3155B-1
C3155B-8	V⎓	C3155B-5

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.

AK8 CHECK FOR CORRECT APIM (SYNC MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the APIM (SYNC module) connectors.
- Repair:
  - corrosion (install new connectors or terminals - clean module pins)
  - damaged or bent pins - install new terminals pins
  - pushed-out pins - install new pins as necessary
- Reconnect the APIM (SYNC module) 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 (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, GO to Pinpoint Test AV

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.

AK9 CHECK FOR CORRECT DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the DSP (audio digital signal processing module) connectors.
- Repair:
  - corrosion (install new connectors or terminals - clean module pins)
  - damaged or bent pins - install new terminals pins
  - pushed-out pins - install new pins as necessary
- Reconnect the DSP (audio digital signal processing module) connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

PINPOINT TEST AL : MODULE HIGH VOLTAGE CONCERN (ACM (AUDIO FRONT CONTROL MODULE) , APIM (SYNC MODULE) , DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) , TCU (TELEMATIC CONTROL UNIT MODULE))

Normal Operation and Fault Conditions

The modules monitor the supplied voltage and set a DTC (diagnostic trouble code) if it rises above a threshold.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
ACM (audio front control module) U3003:17	Battery Voltage: Circuit Voltage Above Threshold	Sets in continuous memory and during the on-demand self-test when the ACM (audio front control module) detects the supply voltage is greater than 16 volts.
APIM (SYNC module) U3003:17	Battery Voltage: Circuit Voltage Above Threshold	Sets in continuous memory and during the on-demand self-test when the APIM (SYNC module) detects the supply voltage is greater than 16 volts.
DSP (audio digital signal processing module) U3003:17	Battery Voltage: Circuit Voltage Above Threshold	Sets in continuous memory and during the on-demand self-test when the DSP (audio digital signal processing module) detects the supply voltage is greater than 16 volts.
TCU (telematic control unit module) U3003:17	Battery Voltage: Circuit Voltage Above Threshold	Sets in continuous memory and during the on-demand self-test when the TCU (telematic control unit module) detects the supply voltage is greater than 16 volts.

Possible Sources

- Charging system concern
- ACM (audio front control module)
- APIM (SYNC module)
- DSP (audio digital signal processing module)
- TCU (telematic control unit module)

NOTE

DTC (diagnostic trouble code) U3003:17 may be stored in the module memory due to past battery

Yes	For the ACM (audio front control module) , GO to AL4 For the APIM (SYNC module) , GO to AL5 For the DSP (audio digital signal processing module) , GO to AL6 For the TCU (telematic control unit module) , GO to AL7

No	The system is operating correctly at this time. The DTC (diagnostic trouble code) may have been set previously during battery charging or while jump starting the vehicle.

AL4 CHECK FOR CORRECT ACM (AUDIO FRONT CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the ACM (audio front control module) connectors.
- Repair:
  - corrosion (install new connectors or terminals - clean module pins)
  - damaged or bent pins - install new terminals pins
  - pushed-out pins - install new pins as necessary
- Reconnect the ACM (audio front control module) 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 (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new ACM (audio front control module) . REFER to: Audio Front Control Module (ACM) - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, 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.

AL5 CHECK FOR CORRECT APIM (SYNC MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the APIM (SYNC module) connectors.

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.

AL7 CHECK FOR CORRECT TCU (TELEMATIC CONTROL UNIT MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the TCU (telematic control unit module) connectors.
- Repair:
  - corrosion (install new connectors or terminals - clean module pins)
  - damaged or bent pins - install new terminals pins
  - pushed-out pins - install new pins as necessary
- Reconnect the TCU (telematic control unit module) 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 (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new TCU (telematic control unit module) . REFER to: Telematics Control Unit (TCU) Module (415-00 Information and Entertainment System - General Information, 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.

PINPOINT TEST AM : BUS OFF

Refer to Wiring Diagrams Cell 131for schematic and connector information.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
DSP (audio digital signal processing module) U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	Sets when the DSP (audio digital signal processing module) receives invalid network data from the BCM (body control module) .
DSP (audio digital signal processing module) U0423:00	Invalid Data Received from Instrument Panel Cluster Control Module: No Sub Type Information	Sets when the DSP (audio digital signal processing module) receives invalid network data from the IPC (instrument panel cluster) .
TCU (telematic control unit module) U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	Sets when the TCU (telematic control unit module) receives invalid network data from the BCM (body control module) .

Possible Sources

- Suspect module

AN1 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE MODULE SENDING INVALID DATA

- Ignition ON.
- Using a diagnostic scan tool, carry out the self-test for the module in question sending the invalid data.

Are any Diagnostic Trouble Codes (DTCs) present from the module sending the invalid data?

Yes	DIAGNOSE the module sending the invalid data. REFER to the appropriate section in the Workshop Manual.

No	DIAGNOSE the observable symptom present. REFER to the appropriate Symptom chart in this section.

PINPOINT TEST AO : MODULE CONFIGURATION FAULT

DTC Fault Trigger Conditions

module) U201A:51		(programmable module installation) .
DSP (audio digital signal processing module) U2024:41	Control Module Cal-Config Data: General Checksum Failure	Sets due to an incomplete or incorrect DSP (audio digital signal processing module) PMI (programmable module installation) .
DSP (audio digital signal processing module) U2024:48	Control Module Cal-Config Data: Supervision Software Failure	Sets due to an incomplete or incorrect DSP (audio digital signal processing module) PMI (programmable module installation) .
DSP (audio digital signal processing module) U2024:51	Control Module Cal-Config Data: Not Programmed	Sets due to an incomplete or incorrect DSP (audio digital signal processing module) PMI (programmable module installation) .
DSP (audio digital signal processing module) U2100:00	Initial Configuration Not Complete: No Sub Type Information	Sets due to an incomplete or incorrect DSP (audio digital signal processing module) PMI (programmable module installation) .
DSP (audio digital signal processing module) U2101:00	Control Module Configuration Incompatible: No Sub Type Information	Sets due to an incomplete or incorrect DSP (audio digital signal processing module) PMI (programmable module installation) .
TCU (telematic control unit module) U1A01:09	Communication Link: Component Failures	Sets due to an internal fault, incomplete or incorrect TCU (telematic control unit module) PMI (programmable module installation) .
TCU (telematic control unit module) U2100:00	Initial Configuration Not Complete: No Sub Type Information	Sets due to an incomplete or incorrect TCU (telematic control unit module) PMI (programmable module installation) .
TCU (telematic control unit module) U2101:00	Control Module Configuration Incompatible: No Sub Type Information	Sets due to an incomplete or incorrect TCU (telematic control unit module) PMI (programmable module installation) .
TCU (telematic control unit module) U2101:56	Control Module Configuration Incompatible: Invalid/Incompatible Configuration	Sets due to an incomplete or incorrect TCU (telematic control unit module) PMI (programmable module installation) .

Possible Sources

- Incomplete or incorrect module PMI (programmable module installation)

		fault.
ACM (audio front control module) U3000:96	Control Module: Component Internal Failure	Sets when the ACM (audio front control module) detects an internal fault.
DSP (audio digital signal processing module) U3000:41	Control Module: General Checksum Failure	Sets when the DSP (audio digital signal processing module) detects an internal fault.
DSP (audio digital signal processing module) U3000:42	Control Module: General Memory Failure	Sets when the DSP (audio digital signal processing module) detects an internal fault.
TCU (telematic control unit module) B116C:04	External SIM Cable/SIM Card: System Internal Failures	Sets when the TCU (telematic control unit module) detects an internal fault.
TCU (telematic control unit module) B116C:57	External SIM Cable/SIM Card: Invalid/Incompatible Software Component	Sets when the TCU (telematic control unit module) detects an internal fault.
TCU (telematic control unit module) U1A01:92	Communication Link: Performance Or Incorrect Operation	Sets when the TCU (telematic control unit module) detects an internal fault.
TCU (telematic control unit module) U1A01:93	Communication Link: No Operation	Sets when the TCU (telematic control unit module) detects an internal fault.
TCU (telematic control unit module) U1A4B:52	Control Module Processor B: Not Activated	Sets when the TCU (telematic control unit module) detects an internal fault.
TCU (telematic control unit module) U2200:00	Control Module Configuration Memory Corrupt: No Sub Type Information	Sets when the TCU (telematic control unit module) detects an internal fault.
TCU (telematic control unit module) U3000:09	Control Module: Component Failures	Sets when the TCU (telematic control unit module) detects an internal fault.