Bilanaleit

Skilja hlutverk og virkni:

- ③ Hvers hluta tölvukerfisinns (hver stýrir hverjum með hvaða kerfi)
- ③ Eigendastillanlegum kerfum (customized body electronics system)
- ③ MPX

Til að hefja bilanaleit sem á að ná árangri verður að byrja á að kynna sér hvernig hvert kerfi virkar og hvernig það tengist öðrum kerfum og hvaða liðum það stýrir.

Mjög mikilvægt er að vita hvaða kerfi er hægt að stilla að kröfum eigenda í BEAN kerfinu.

Það lítur illa út að eyða löngum tíma í að bilanaleita kerfi sem er stillanlegt.

Í bilanaleit á tölvusamskiptum er ómögulegt að þýða boð sem fara um kerfið. Annað hvort eru samskipti eða ekki. Það er ómögulegt að einskilaboð fari um kerfið en önnur ekki.

Bilanagreining á tölvutengingunum (línunum) er eitt það einfaldasta sem gert er. Athuga þarf:

- Leiðni
- Skammhlaup til jarðar
- Skammhlaup til “+”
- Skammhlaup milli tveggja víra (in case of two-wire communication)

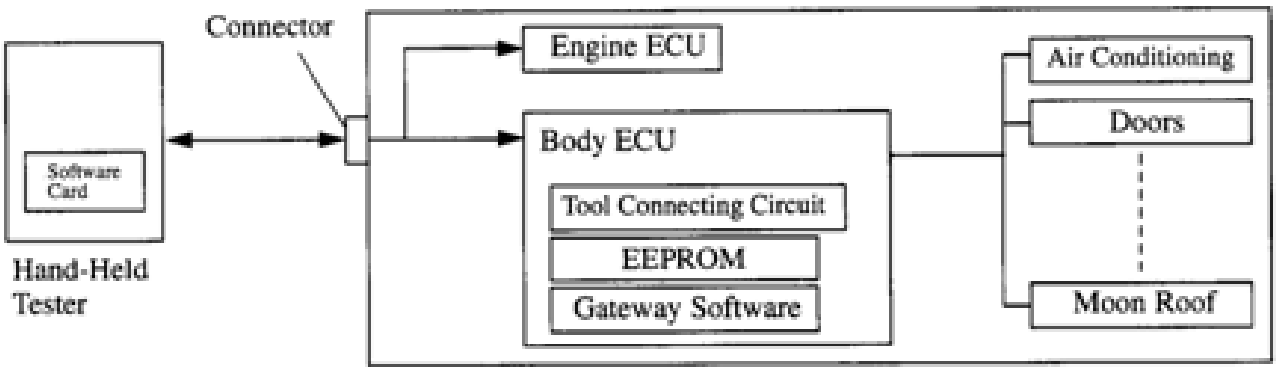
Mælingar á tölvuboðum eru aðeins gagnleg til að:

- Bera saman við þekktar stærðir

Athuga hvort lagnir kerfis leiða og það eru boð á ferðinni á þeim.

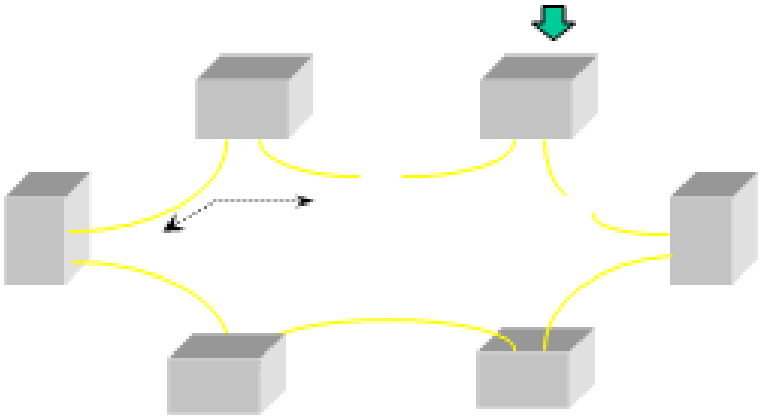
Bilanaleit

③CBES



Eigendastillingar eru gerðar með M-OBD með Intelligent tester í bodítölvu.

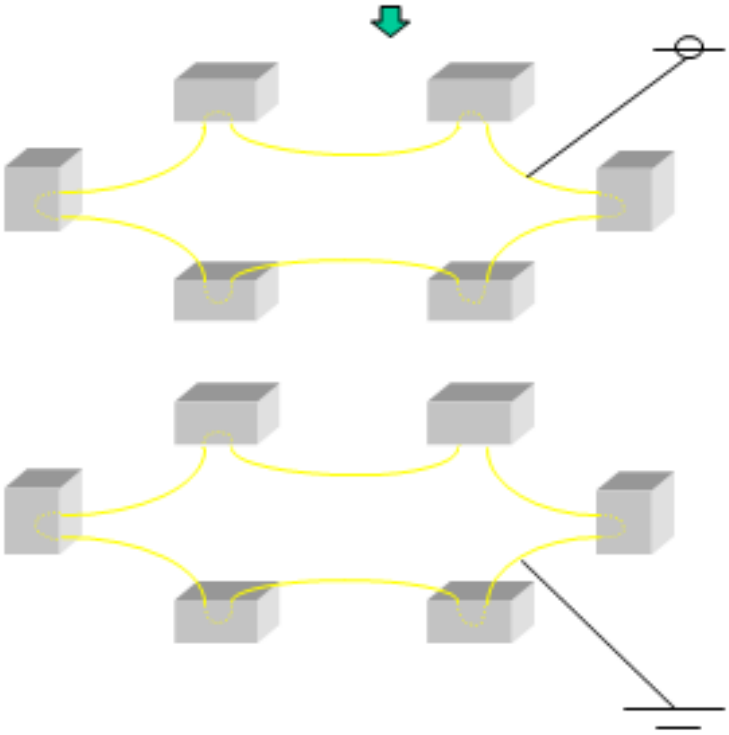
Í bodítölvunni er EEPROM sem er endurforritanlegt. Bodítölvan stýrir öllum eigendastillingum



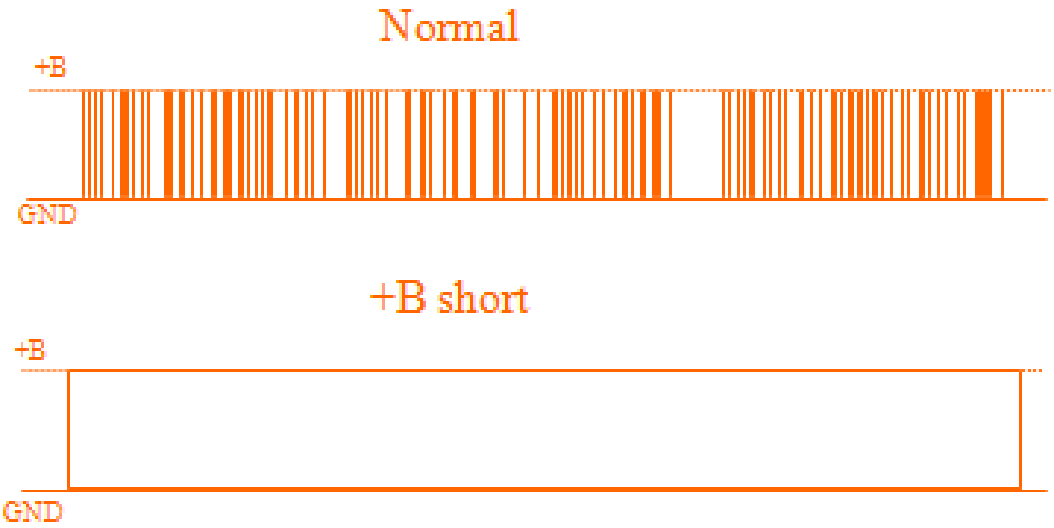
Nokkur atriði til að hafa í huga áður en bilanagreining hefst:

BEAN er á lokari lögn (keðju), sem þýðir að leiðslan þarf að rofna á tveimur stöðum til að samskipti hætti.

Bilanaleit



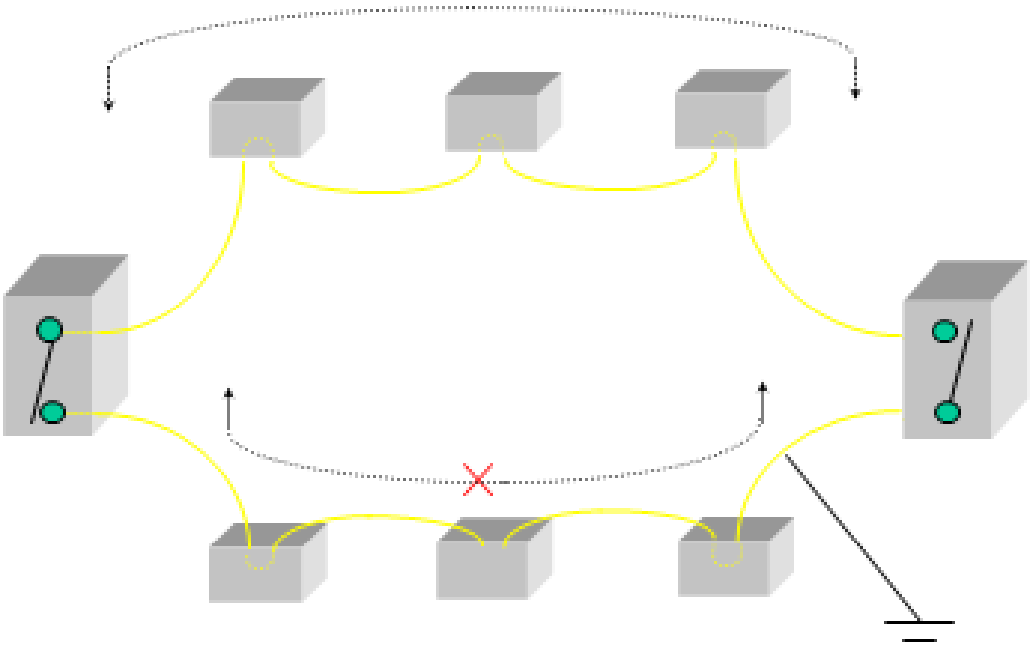
Ef lögnin skammhleypist til jarðar eða í +, hætta öll samskipti á línunni. BEAN liggur alveg niðri nema nema línurofar geti aftengt bilaða hlutann.



Mæling á línunum á glærunni hér fyrir ofan gæti verið hver og ein af þessum mælingum:

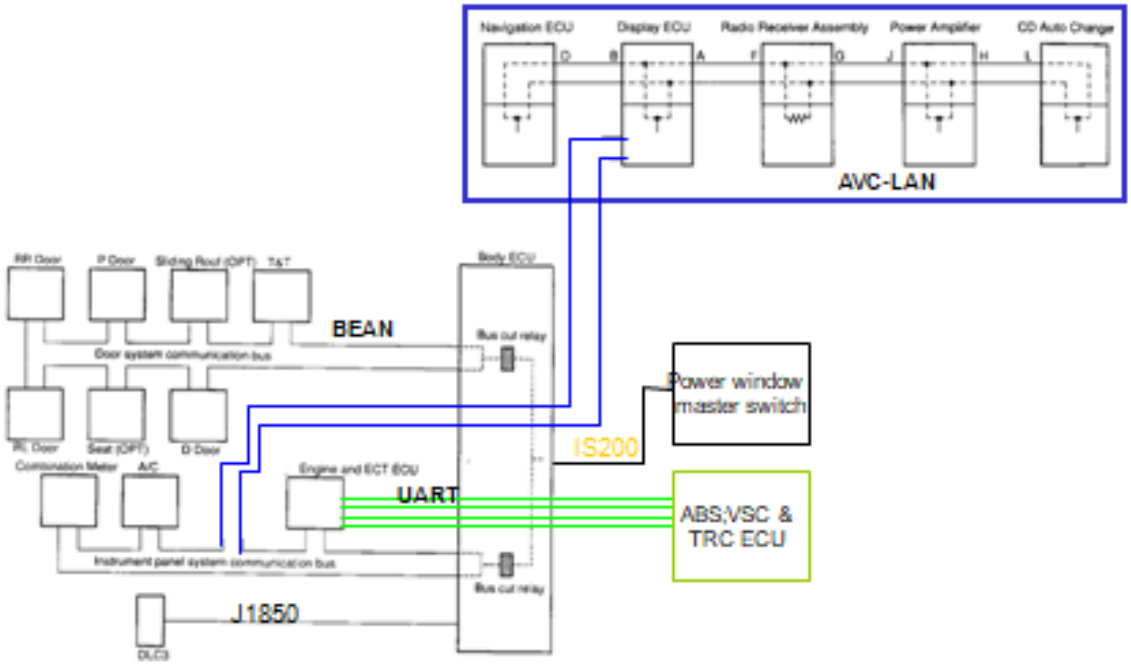
-Eðlilegt -stöðugur + -stöðug jörð

Bilanaleit



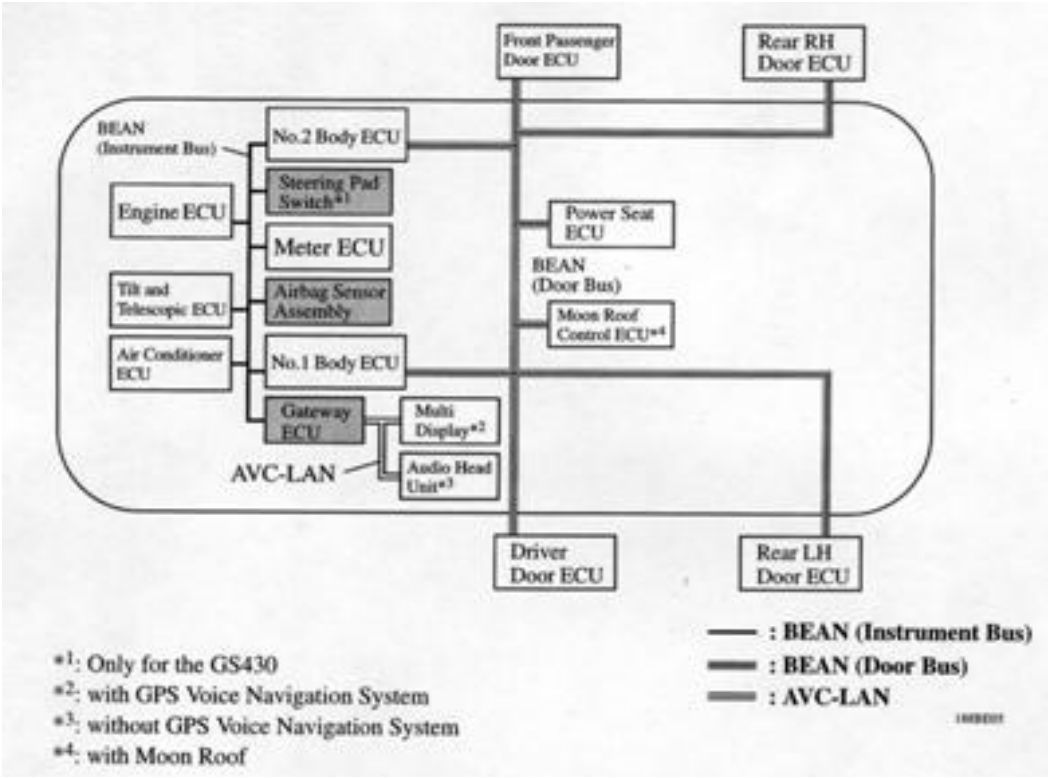
Með línurofunum er hægt að aftengja hálft kerfið og það gerist ef bilun verður í því.

Hinn helmingurinn heldur áfram að virka.



Skýrt yfirlit af kerfinu og tengingum þess við önnur kerfi geta aðstoðað við hnitmiðaða bilanagreiningu.

Bilanaleit



Kerfismynd af GS430 eins og hún byrtist í NCF

Bilanaleit

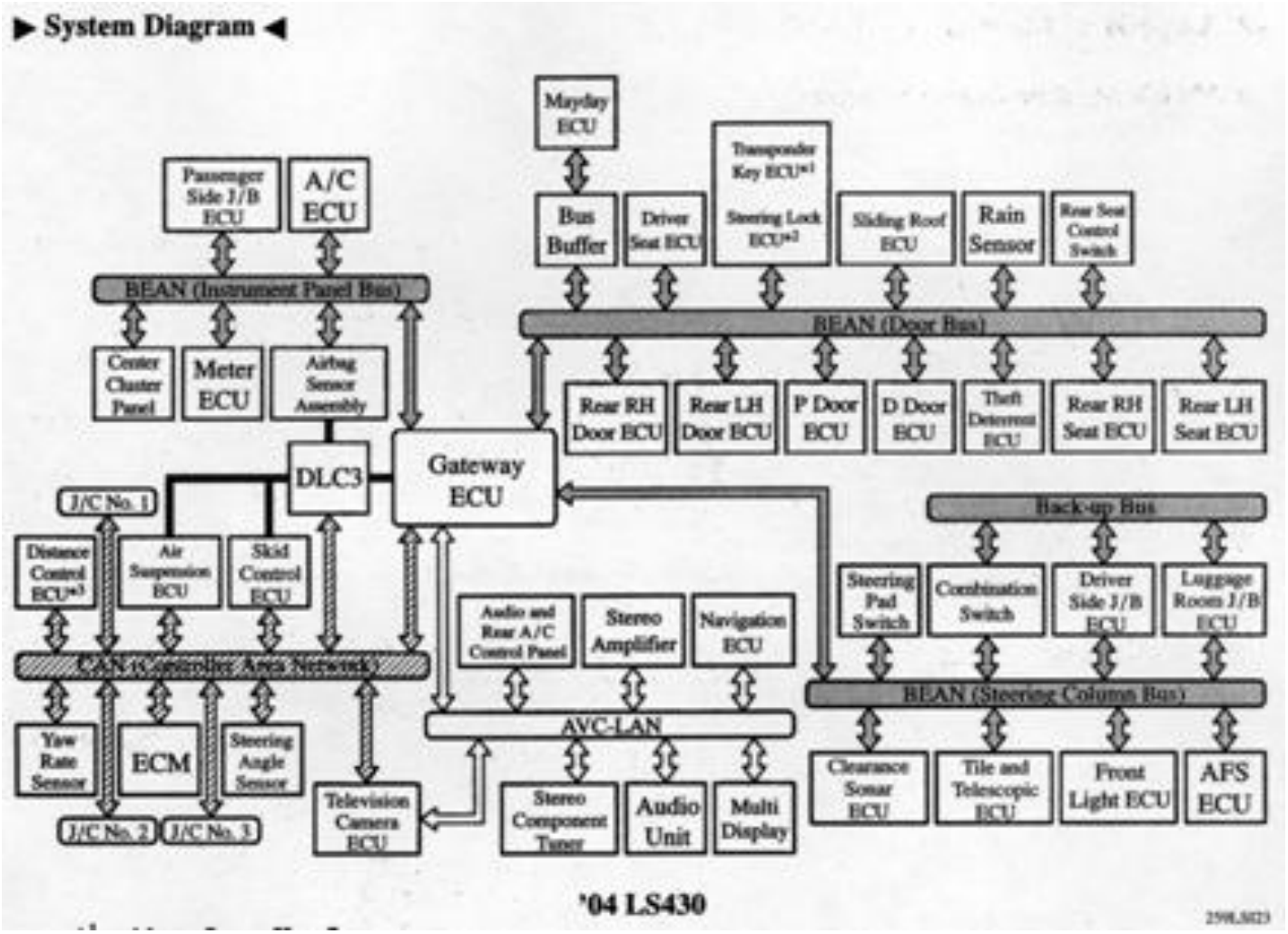
Item	Door Bus								Instrument Panel Bus						
	No.1 Body ECU	No.2 Body ECU	Driver Door ECU	Front Passenger Door ECU	Rear RH Door ECU	Rear LH Door ECU	Seat ECU	Moon Roof ECU	Engine ECU	Meter ECU	Air Conditioner ECU	Airbag Sensor Assembly	Tilt and Telescopic ECU	Steering Pad Switch	Gateway ECU
Power Window	△	△	○	△	△	△		△							
Door Lock Control	○	△	△	△	△	△				△		△			
Wireless Door Lock Remote Control	○	△	△	△	△	△		△							
Light Auto Turn-Off		○	△	△	△	△									
Automatic Light Control		○	△							△					
Theft Deterrent	○	△	△	△	△	△									
Illuminated Entry		○	△	△	△	△									
Key Reminder Buzzer		○	△												
Trunk Lid Open	○														
Mirror Control	△	△	○	○											
Front and Rear Fog Lights Control		○								△					
Customized Body Electronics	○		△	△	△	△		△			△				
Diagnosis	○	△	△	△	△	△	△	△		△	△		△	△	
Memory Adjust			△	△			○						△		
Seat Belt Warning	△	△								○		△			
ECT Signal Processing	△								○	△					
Air Conditioner Control	△								△		○				△
Displays of Various Meters	△	△	△	△	△	△		△	△	○	△	△			
Displays of Various Types of Vehicle Information									△	○					△
Audio Switch Operation														△	△

○: Master control (The ECU, which has a central role in controlling each system, outputs the signals to other ECUs to activate motors or other applicable components.)

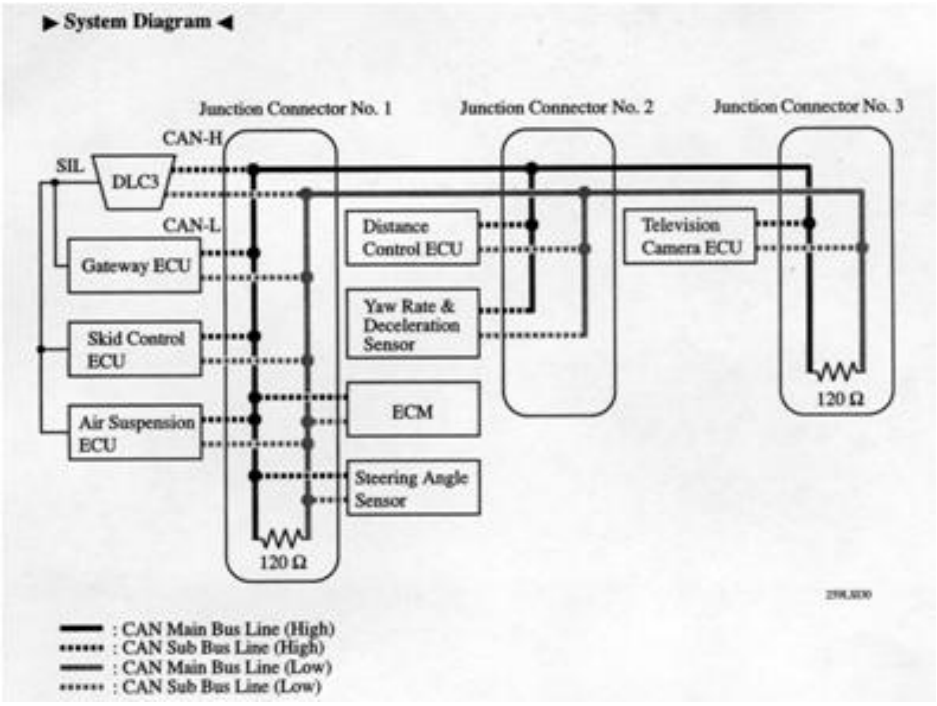
△: Sub control (The ECU which has a supporting role in controlling each system, outputs control signals to the master control, or receives signals from the master control to activate motors or other applicable components.)

Upptalning á master og sub tölvum í GS430 NCF

Bilanaleit



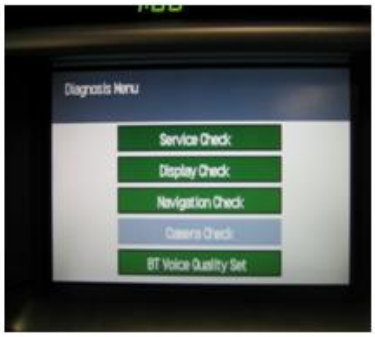
Yfirlits mynd af tölvukerfi í LS430 úr NCF



CAN kerfi í LS430 úr NCF

Bilanaleit

AVC-LAN communication



③ Diagnosis Menu (Overview)

- Service Check (To check communication between the Audio/Visual equipment).
- Display Check (To check if the touch panel screen related functions work properly).
- Navigation Check (To check navigation related functions work properly).
- Camera Check (Optional)
- BT Voice Quality Set (To check BT voice quality)

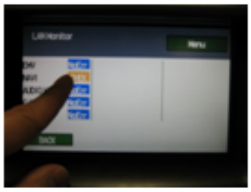
The AVC-LAN system has an on-board diagnosis system. The example shown is with the use of the EMV to perform the diagnosis. In case of absence of an EMV diagnosis can be performed with the Audio head unit (please check the service manual for procedure).

AVC-LAN communication

③How to Enter the Diagnostic Mode

- Model and supplier dependant. Some use a combination of switches, others by touching the screen on certain locations. Since there are many different possibilities, please check the repair manual.

③System Check and LAN Monitor screens



From the System check and LAN monitor screens you can request the error codes by selecting the buttons marked with ‘Check’.

AVC-LAN communication

③How to read the code

01 - dc – **178** - e2 - **2**
(1) (2) (3)

No use

•BREAKDOWN OF THE CONTENTS
(1) 01-dc : “Transmission Error” in “Communication Control”
(2) 178 : Physical address “178” for Nav ECU.
(3) 2 : The same trouble recurred 2 times.

•INTERPRETATION OF DIAGNOSTIC RESULT
“The AVX tried sending data to the Nav ECU, but failed 2 consecutive times.”

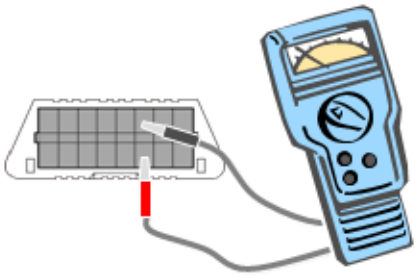
Bilanaleit

CAN

③Inspection Procedure

1. Bus Check

2. CAN Bus Line Check



Two inspection procedures:

1.Bus check with tester to check communication condition of nodes in CAN

2.CAN Bus line check with circuit tester bus line condition check directly.

CAN

③Bus Check

– Bus Check Procedure (Communication Bus Check)

CAN

③Bus Check

– Bus Check Procedure (Communication Bus Check)

Bilanaleit

CAN

③Bus Check

– Bus Check Procedure (Communication Bus Check)

CAN

③Bus Check

– Bus Check Procedure (Communication Bus Check)

CAN

③Bus Check

– Bus Check Procedure (Communication Bus Check)

Bilanaleit

CAN

③Bus Check

– Bus Check Procedure (Communication Malfunction DTC)

CAN

③Bus Check

– Bus Check Procedure (Communication Malfunction DTC)

CAN

③Bus Check

– Bus Check Procedure (Communication Malfunction DTC)

CAN

③Bus Check

– Bus Check Procedure (Communication Malfunction DTC)

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③Bus Check

– Bus Check Procedure (Communication Malfunction DTC)

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③Bus Check

– Bus Check Procedure (Communication Malfunction DTC)

Bilanaleit

CAN

③Bus Check

– Bus Check Procedure (Communication Malfunction DTC)

CAN

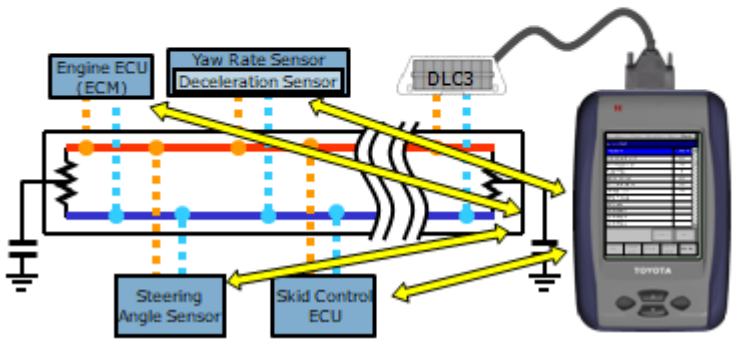
③Bus Check

– Bus Check Procedure (Communication Malfunction DTC)

CAN

③Bus Check

– Check communication with ECUs and sensors



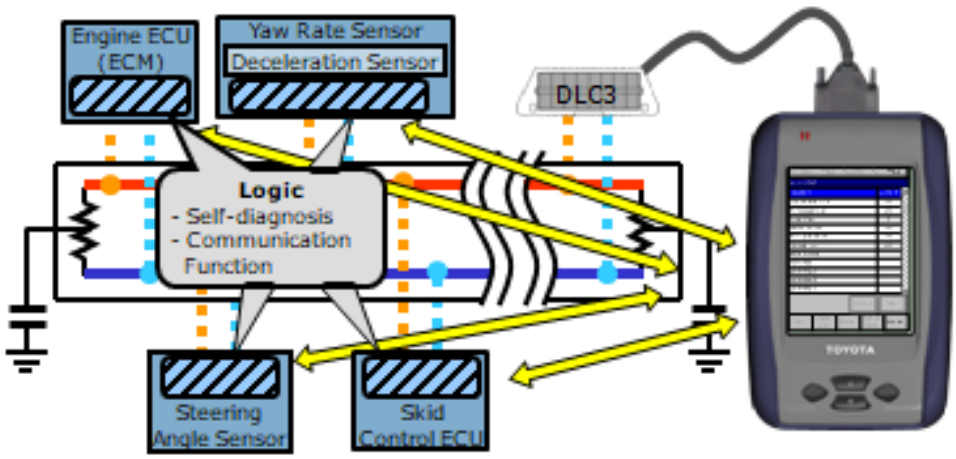
Tester directly access to nodes and receive their response to check the communication condition.

Bilanaleit

CAN

③Bus Check

– Both ECUs and sensors on CAN have self-diagnosis and communication function

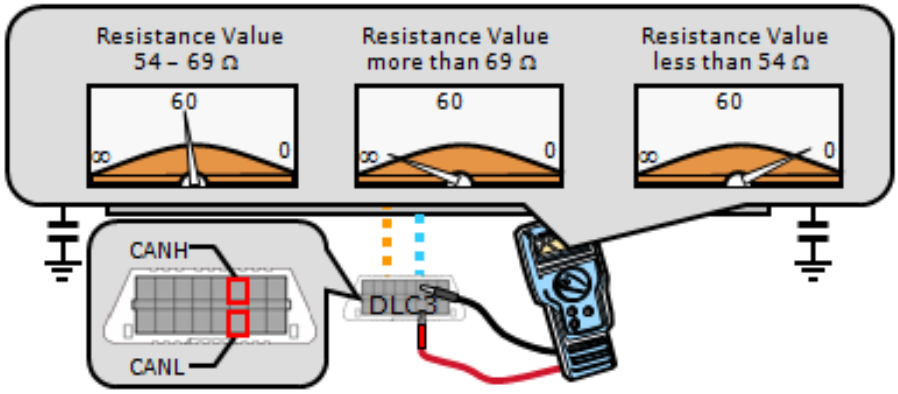


Both ECU and sensor in CAN have the logic for self-diagnosis and communication function

CAN

③CAN Bus Line Check

– Measure the resistance value between CANH and CANL with IG switch OFF



DLC3 has CANH and CANL terminals for CAN diagnosis. The main bus line condition as open /short circuit can be checked by measuring the resistance value between these terminals.

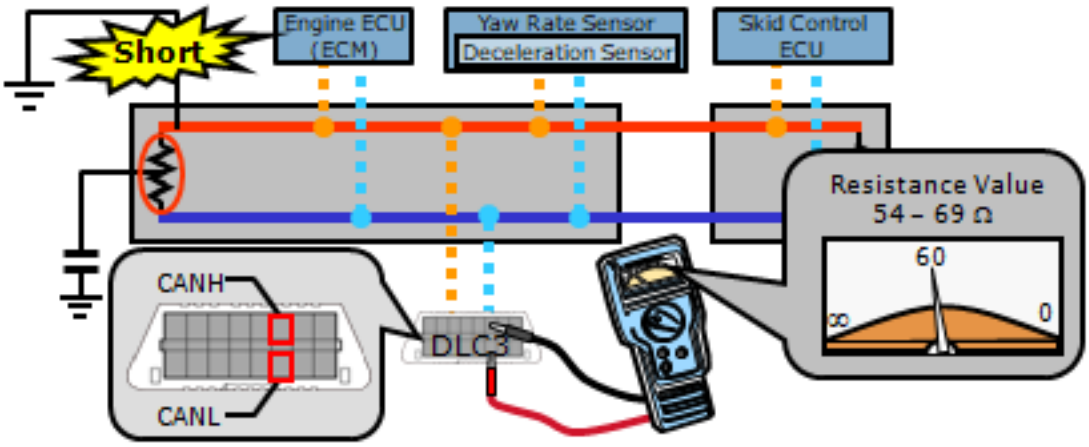
Bilanaleit

CAN

③CAN Bus Line Check

– Resistance Value between 54 and 69 Ω

• Possible cause



[Resistance Value between 54 and 69 Ω]

- Possible Cause
  - Normal condition
  - Sub bus line open
    - Except DLC3 bus line
    - DTC output
  - Short between bus line – power supply/ground
    - Short in one area
    - DTC output

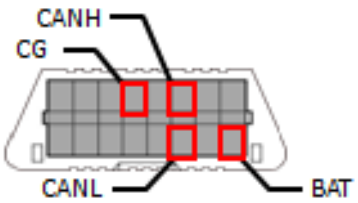
Bilanaleit

CAN

③CAN Bus Line Check

– Resistance Value between 54 and 69 Ω

[Inspection for short between bus line – power supply/ground]



Inspection Item	Resistance Value	Bus Line Condition
CANH – BAT CANL – BAT CANH – CG CANL – CG	more than 1 MΩ	No bus line malfunction if no DTC output
	Less than 1 kΩ	Short between bus line – power supply/ground

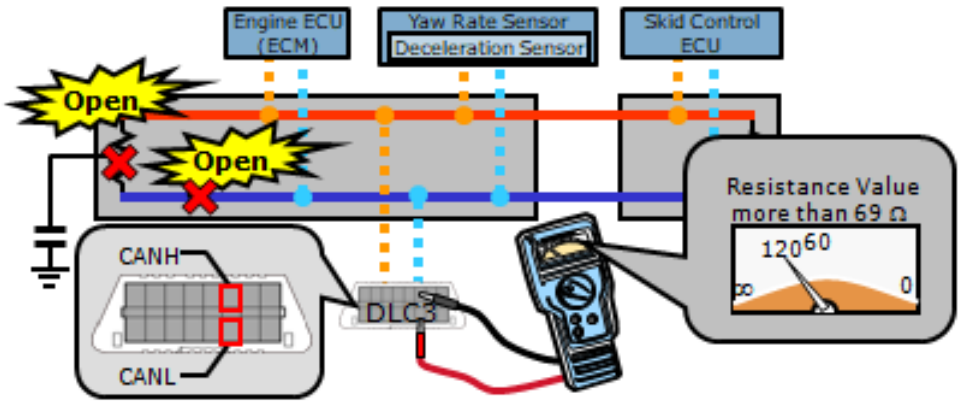
Next step : One of the cause for communication problem as short circuit with CANH or CANL, and the BAT or CG terminal can be checked.

CAN

③CAN Bus Line Check

– Resistance Value more than 69 Ω (Approx. 120 Ω)

• Possible cause



[Resistance Value more than 69 Ω (approx. 120 Ω)]

- Possible Cause
  - Main bus line open
  - Terminus circuit open

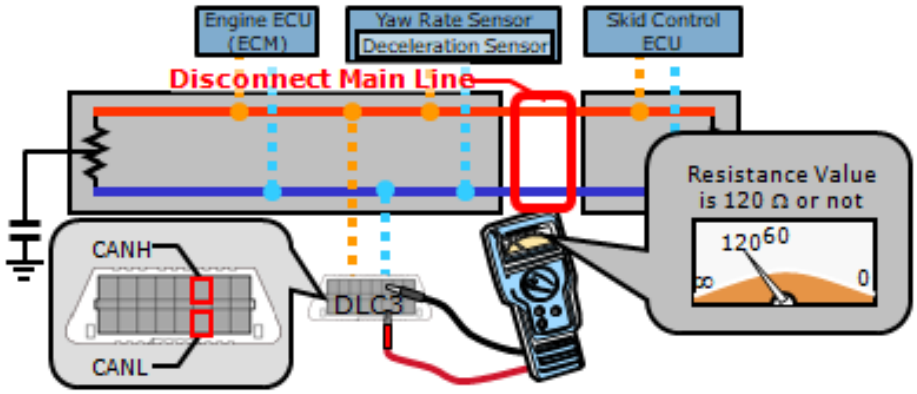
Bilanaleit

CAN

③CAN Bus Line Check

– Resistance Value more than 69 Ω (Approx. 120 Ω)

1. Disconnect main bus line and check resistance



Disconnect the main line and check the resistance of junction connector.

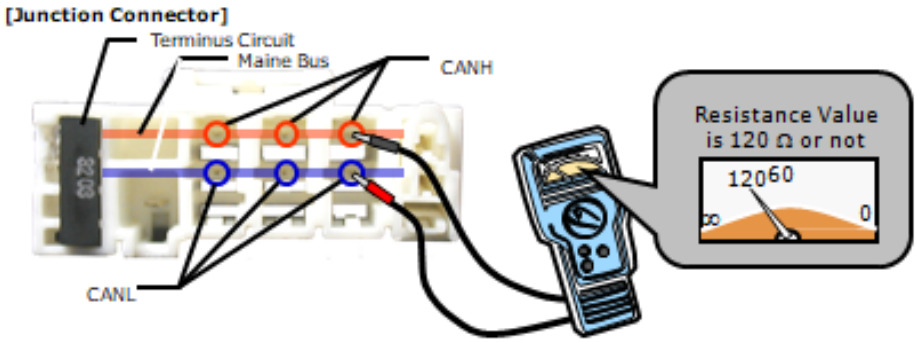
- If resistance value is approx. 120 Ω, check the resistance of other junction connector.
- If resistance value is not approx. 120 Ω, replace the junction connector.

CAN

③CAN Bus Line Check

– Resistance Value more than 69 Ω (Approx. 120 Ω)

2. Check J/C and terminus circuit



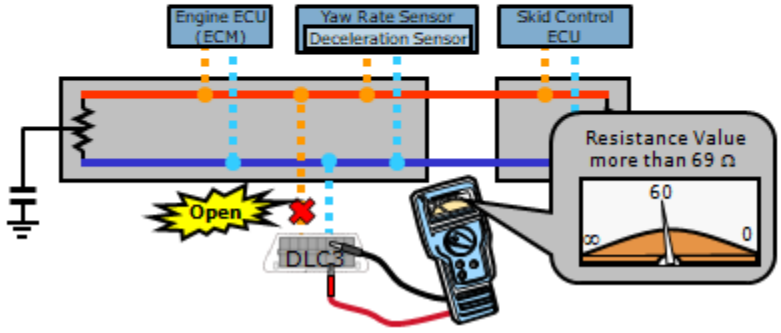
Bilanaleit

CAN

③CAN Bus Line Check

– Resistance Value more than 69 Ω (Approx. ∞)

• Possible cause



[Resistance Value more than 69 Ω (approx. ∞ (infinity))]

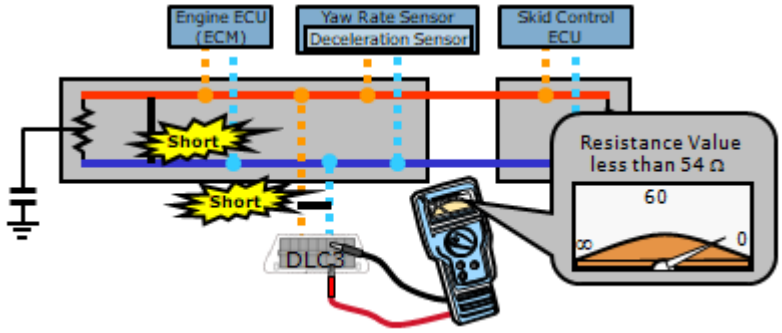
- Possible Cause
  - Sub bus line open
    - Only DLC3 bus line
    - No DTC output

CAN

③CAN Bus Line Check

– Resistance Value less than 54 Ω (Approx. 0 Ω)

• Possible cause



[Resistance Value less than 54 Ω (approx. 0 Ω)]

- Possible Cause
  - Short between bus line

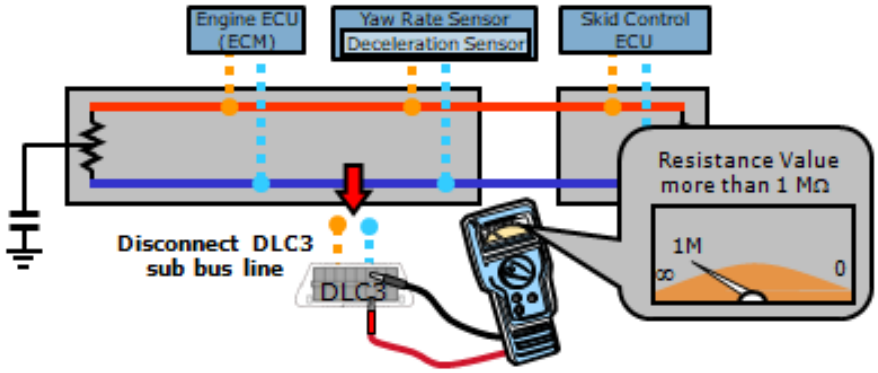
Bilanaleit

CAN

③CAN Bus Line Check

– Resistance Value less than 54 Ω (Approx. 0 Ω)

• Disconnect DLC3 sub bus line and check it



Disconnect the DLC3 sub bus line and measure the resistance value between CANH and CANL

- If resistance value is more than 1 MΩ, check the resistance value of junction connector
- If resistance value is less than 1 MΩ, repair or replace the DLC sub bus line or connector

CAN

③DTC Combination Table

DTC	Output ECU	Trouble Portion (Communication Stop)						
		Skid Control ECU	Steering Angle Sensor	Yaw Rate Sensor	Engine ECU (ECM)		Distance Control ECU	Suspension Control ECU
U0073	ABS/VSC ECU	○	—	○	X		○	X
U0100		—	△*1	—	—		—	—
U0123 U0124 U0126		○	○	○	—	•••	○	○
U0100	Suspension Control ECU	X	—	△*2	○		—	○
U0101		X	—	△*2	○		—	○
U0122		○	—	—	X		○	○
		• • •						
U1000	Engine ECU (ECM)	X	X	X	X		X	X
U0122		△*1	X	X	X		X	△*1

○: Outputs
△: Outputs under the following condition
*1: Controls distance - *2: During driving
X: Not output
—: Undetectable

CAN outputs two or more DTCs simultaneously, when communication malfunction occurs by each ECU or each sensor

1. Part of communication error can be checked through the combination of output DTCs.
2. Error part is indicated on the list as ECU COMMUNICATION STOP MODE of each ECU.
3. Then, check the circuit through the procedures indicated in each section of communication trouble on Repair Manual