Mercedes-Benz

W211 Networking

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To help avoid personal injury to you or others, and to avoid damage to the vehicle on which you are working, you must always refer to the latest Mercedes-Benz Technical Publication and follow all pertinent instructions when testing, diagnosing or making repair. Illustrations and descriptions in this training reference are based on preliminary information and may not correspond to the final US version vehicles. Refer to the official introduction manual and WIS when available.
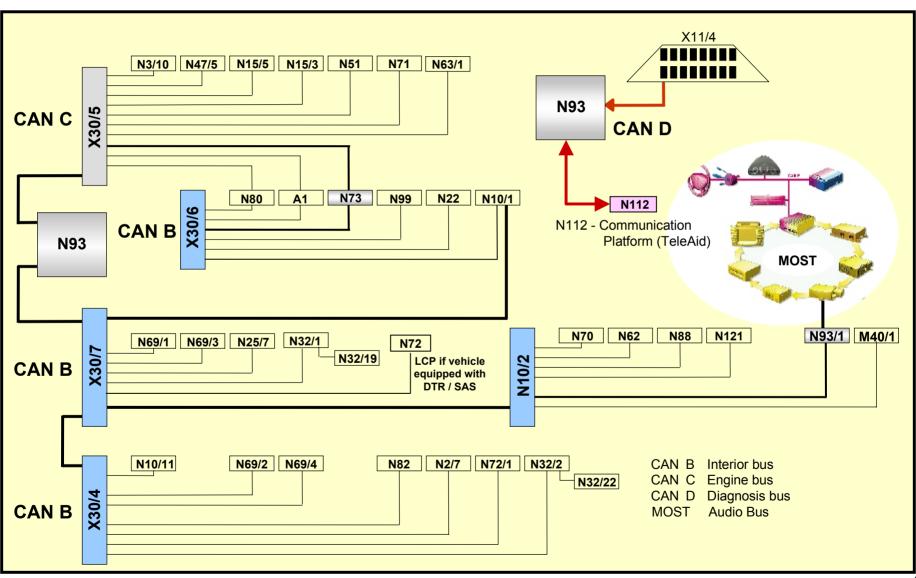
Communication Networks

The W211 uses many control modules that share information, control consumers and self diagnostics. There are 3 vehicle communication networks and 1 dedicated diagnostic network.

CAN B - Interior databus (sometimes called body CAN)

CAN C - Engine databus (sometimes called chassis CAN)

MOST   - Digital fiber optic databus (replaces D2B)
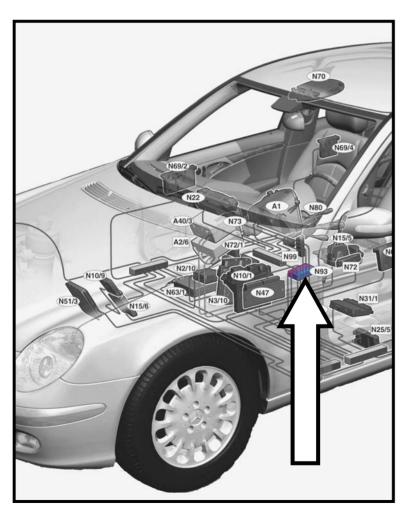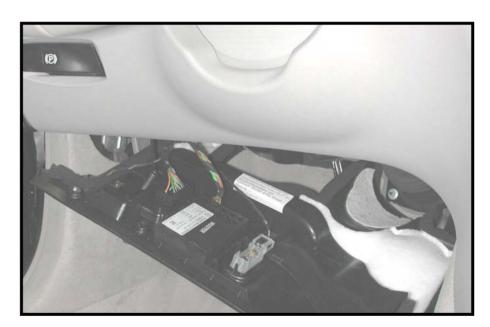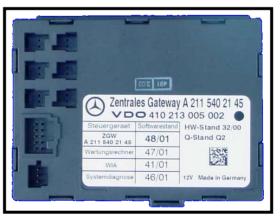
CAN D - Diagnostic databus

W211 Networking Diagram

CAN C

X30/5: N3/10, N47/5, N15/5, N15/3, N51, N71, N63/1

X11/4

N93

CAN D

N93

CAN B

X30/6: N80, A1, N73, N99, N22, N10/1

N112

N112 - Communication Platform (TeleAid)

MOST

CAN B

X30/7: N69/1, N69/3, N25/7, N32/1, N32/19, N72

N72 LCP if vehicle equipped with DTR / SAS

N10/2: N70, N62, N88, N121

N93/1, M40/1

CAN B

X30/4: N10/11, N69/2, N69/4, N82, N2/7, N72/1, N32/2, N32/22

CAN B   Interior bus
CAN C   Engine bus
CAN D   Diagnosis bus
MOST   Audio Bus

W211 Networking Legend

CAN C

N3/10	ME-SFI Control Module
N15/3	ETC - Electronic Transmission Control
N15/5	ESM - Electronic Selector Module
N47/5	ESP - Electronic Stability Program
N51	SAS - Semi-Active Air Suspension
N63/1	DTR - Distronic Control Module
N71	HRA - Headlamp Range Adjustment
N93	CGW - Central Gateway Module

CAN B

M40/1	Pneumatic Pump of Dynamic Seat
N2/7	Supplemental Restraint System
N10/1	SAM-D - Driver-side
N10/2	SAM-R - Rear
N10/11	SAM-P - Passenger-side
N22	AAC - Automatic Air Conditioning Control
N25/7	HS and Seat Ventilation Control Module
N32/1	ESA - Left Front Seat Adjustment
N32/2	ESA - Right Front Seat Adjustment

N32/19	Left Front Dynamic Seat Control
N32/22	Right Front Dynamic Seat Control
N62	PTS - Parktronic Control
N69/1	DCM - Left Front Door Control Module
N69/2	DCM - Right Front Door Control Module
N69/3	DCM - Left Rear Door Control Module
N69/4	DCM - Right Rear Door Control Module
N70	OCP - Overhead Control Panel
N72/1	UCP - Upper Control Panel
N82	BCM - Battery Control Module
N88	TPC - Tire Pressure Monitor Control Module
N93/1	AGW - Audio Gateway Control Module
N99	SWH - Steering Wheel Heater
N121	RTL - Remote Trunk Locking Control Module

CAN C & B

A1	ICM - Instrument Cluster
N73	EIS - Electronic Ignition Switch Control
N80	SCM - Steering Column Module
N93	CGM - Central Gateway Module

Central Gateway Module (N93)

Labels on diagram: N70, N69/4, N69/2, N22, A1, N80, A40/3, N73, A2/6, N72/1, N15/5, N99, N2/10, N10/9, N10/1, N93, N72, N51/3, N63/1, N47, N3/10, N31/1, N15/6, N25/5

Location: Drivers under dash panel

Zentrales Gateway A 211 540 21 45
VDO 410 213 005 002

Steuergeraet	Softwarestand	HW-Stand 32/00
ZGW A 211 540 21 45	48/01	Q-Stand Q2
Wartungsrechner	47/01	
WIA	41/01	
Systemdiagnose	46/01	12V Made in Germany

CGW (N93)

- CGW is the primary gateway between CAN C and CAN B

- Version coding known from EIS (N73) is now contained in CGW (N93)

- CGW contains FSS plus maintenance programs, no longer in ICM

- CGW module replacement
  - CGW module attempts to adapt to vehicle control modules
  - System diagnosis knowledge base updated by flashing

- Incorporates system diagnosis functions
  - CGW replaces system diagnosis module known from (R230)
  - Monitors, evaluates and performs logic assessments of CAN B related components (later production CAN C will be included)

System Diagnosis Functions

- Monitors CAN B control modules for proper operation and faults

    - Provides DTC's related to CAN B communication problems
    - Monitors inputs & outputs of CAN B control modules

- Determines impaired functions and suspicious components

    - Narrows down the list of suspicious components

    - Puts suspicious components in order of likelihood

- Informs DAS via X11/4

    - Requests component activation for evaluation

    - Results of diagnosis

- Provides information on the cause of an ATA triggering event

CAN C Connector (X30/5)

Location: Drivers rocker panel wiring trough

CAN B Connector (X30/4)
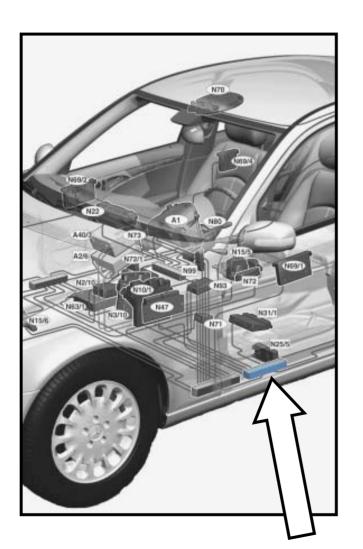

Location: Right side passenger footwell
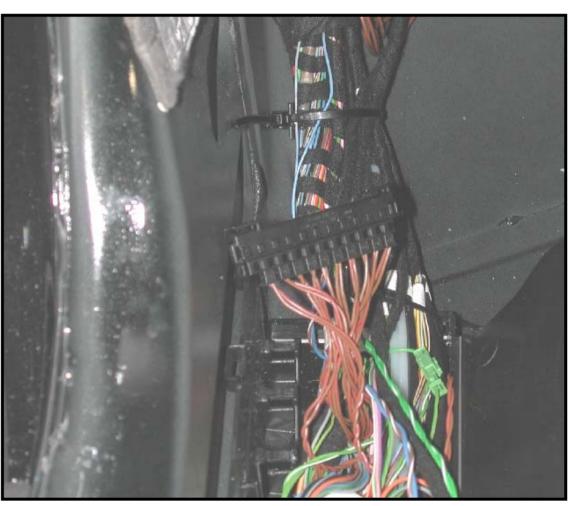
CAN B Connector (X30/6)

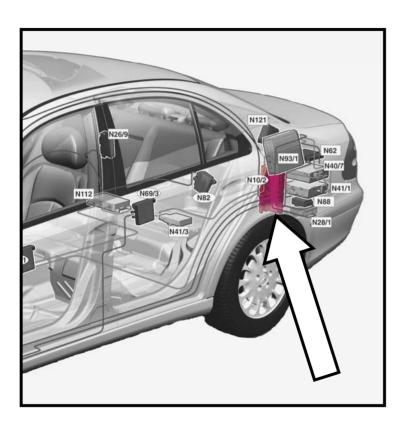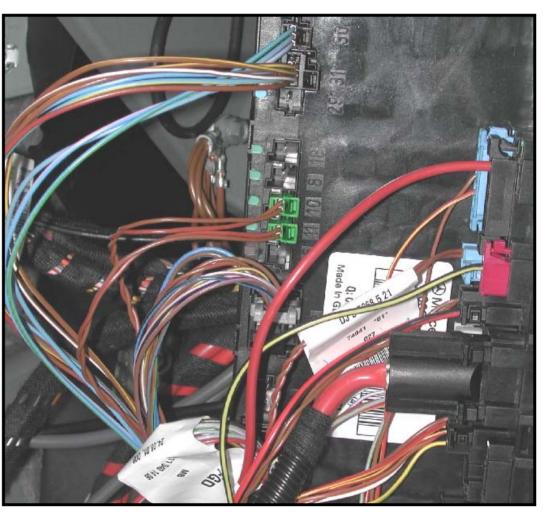Location: Passenger side HVAC case

CAN B Connector (X30/7)

Location: Drivers rocker panel wiring trough
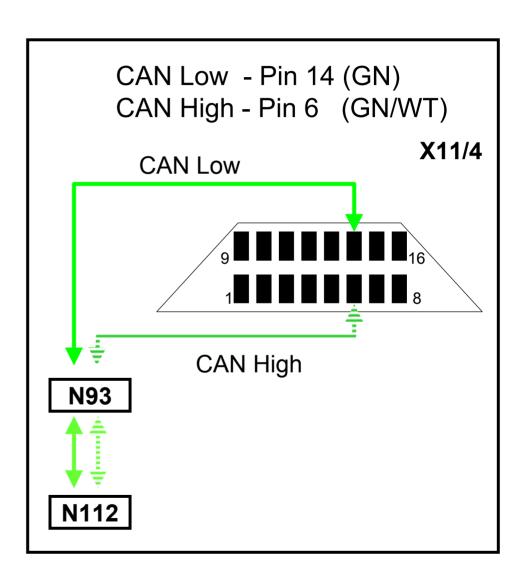
SAM-Rear (N10/2)

Several control modules are connected to the CAN B network via N10/2.
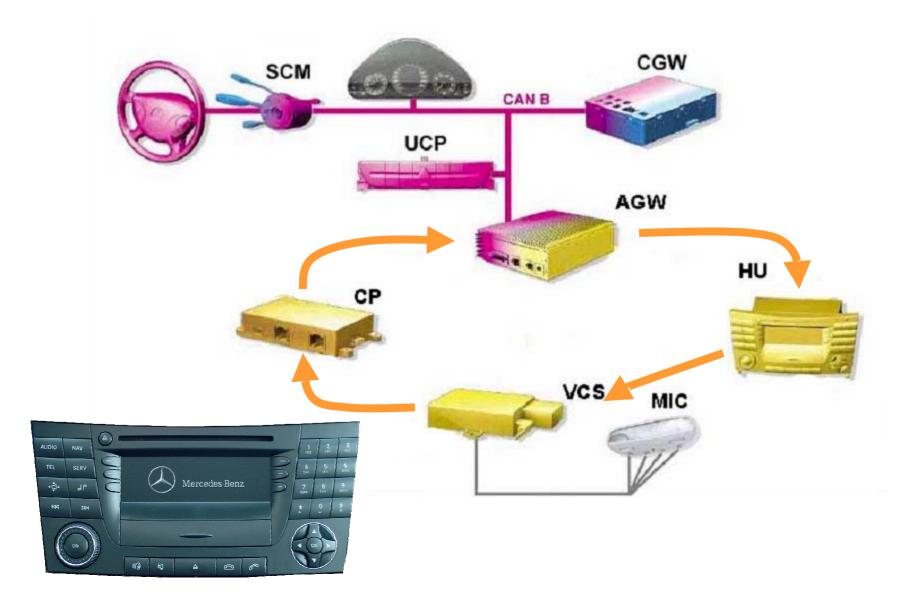

Location: Left side trunk

W211 CAN D

- Is the diagnostic link between Central Gateway Module (N93), Communications Platform (N112) and SDS / DAS

- CAN D voltage
  High = 2.5v
  Low = 2.5v

- CAN D voltage awake
  High = activity to 3.5v
  Low = activity to 1.5v

- All modules on CAN B are diagnosed by SDS / DAS through CAN D

CAN Low - Pin 14 (GN)
CAN High - Pin 6   (GN/WT)

X11/4

CAN Low

CAN High

N93

N112

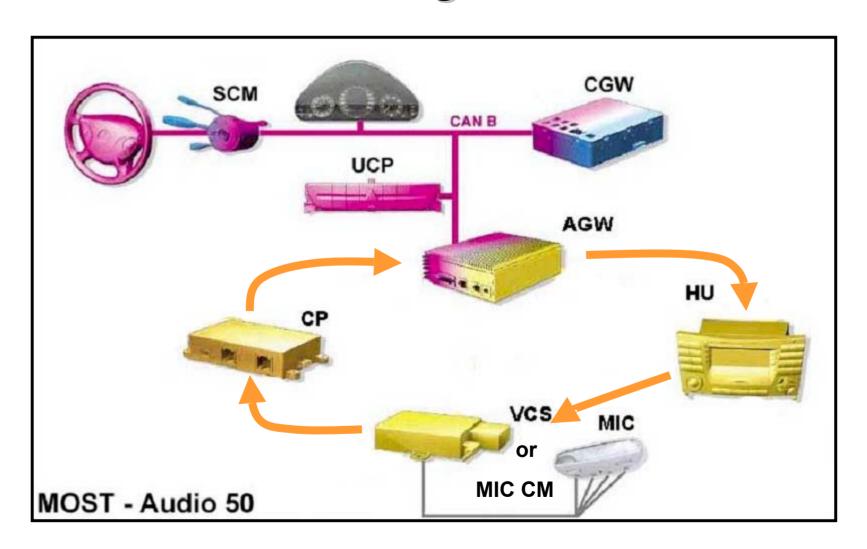# Audio / Communication Network

What is MOST?

- The MOST acronym is derived from it's definition as a "<u>M</u>edia <u>O</u>riented <u>S</u>ystem <u>T</u>ransport"

- Fiber optics manufactured with greater durability than D2B

- Communication standard created by DCAG, Becker, and other corporations

- The configuration of the system is a combination of ring and star topology similar to D2B

MOST Component Functions

- AGW, audio gateway (N93/1) *Harman-Becker:*
  - MOST master
  - Tuner
  - Amplifier
  - CAN B to MOST gateway

- CP, communication platform (N112) *Motorola:*
  - HSE
  - TeleAid
  - GPS (location of car for TeleAid)

- VR, voice recognition (A35/11) *Temic/Motorola*

  or

  MIC CM, Microphone in mirror module (A35/1) *AKG*

- CDC compact disc changer (A2/6) *Alpine*

- HU head unit (A2/56) or later COMAND *Harman-Becker*

MOST Ring Network

MOST - Audio 50

SCM • CGW • CAN B • UCP • AGW • HU • CP • VCS • or • MIC • MIC CM

MOST Bus Legend

MOST

A2/56   - Audio 50 head unit (HU)

A35/1   - Microphone module (MIC CM)

A35/11 - Voice recognition module (VR)

B25   - Microphones in mirror (MIC)

N93/1   - Audio gateway module (AGW)

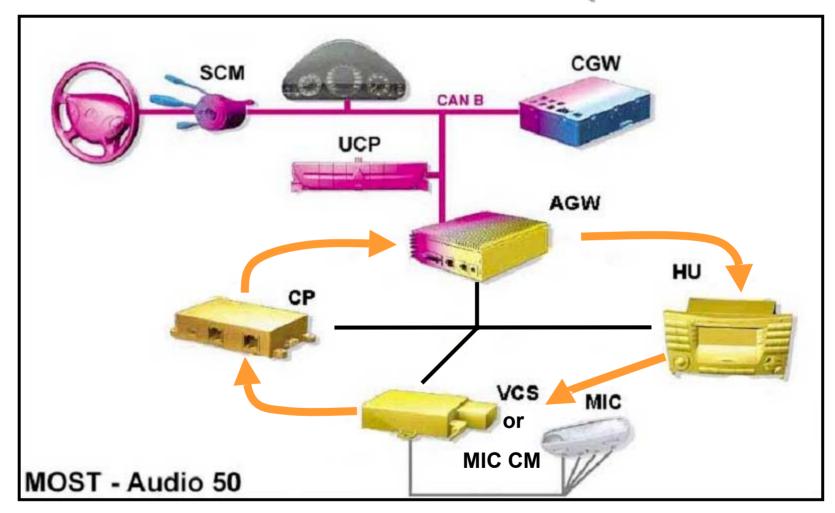N112   - Communication platform (CP)

CAN B

A1   - Instrument cluster (ICM)

N72/1   - Upper control panel (UCP)

N80   - Steering column module (SCM)

N93   - Central gateway module (CGW)

MOST Wake-Up

- 12 volt electrical wakeup

- Components will still wake up using optical ring
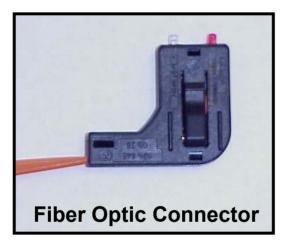
MOST Wake-Up Bus Connector
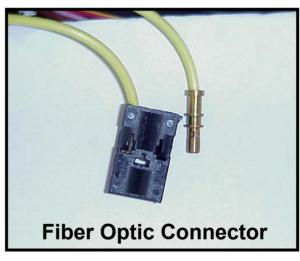

Location: Drivers rocker panel wiring trough

Connector cover incorporates bridges connecting all the individual wake-up wires
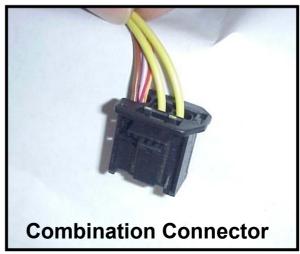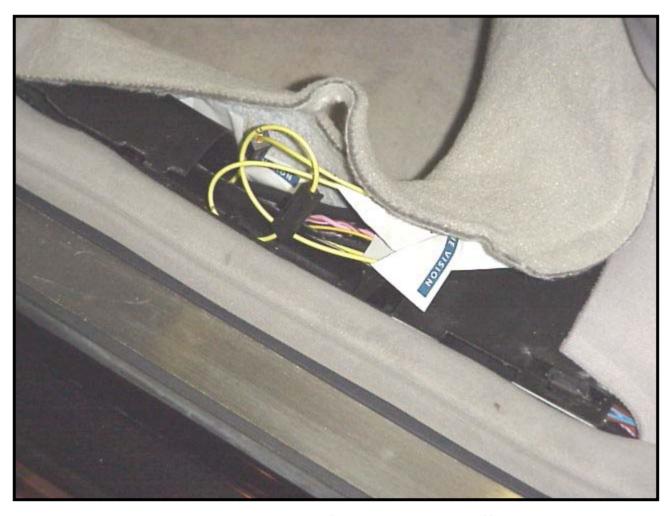
MOST vs. D2B Connector

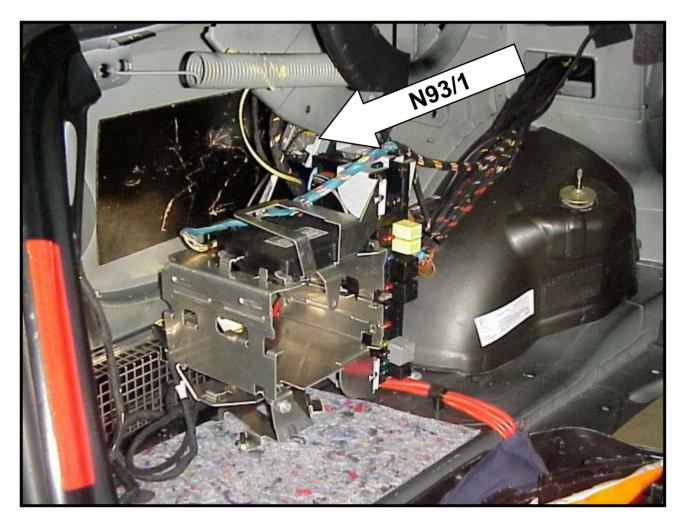**D2B**

MOST

Fiber Optic Connector

Fiber Optic Connector

Combination Connector

Note: MOST fiber optic ends same color
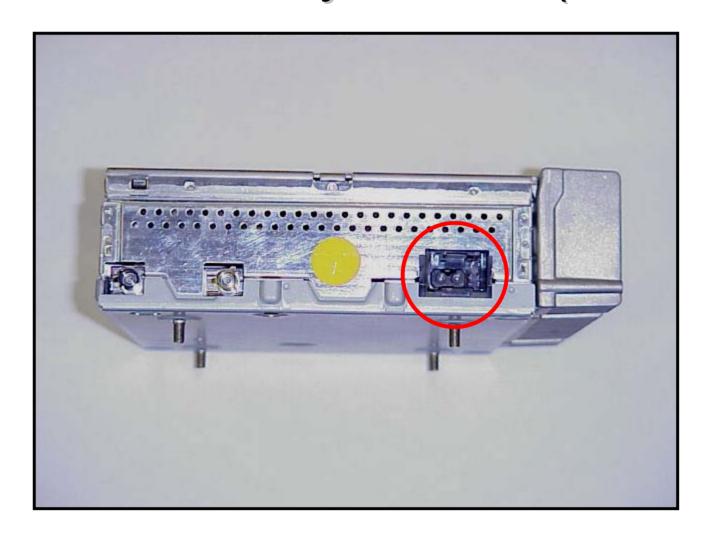
MOST - In Car Connections

Location: Left rear door sill
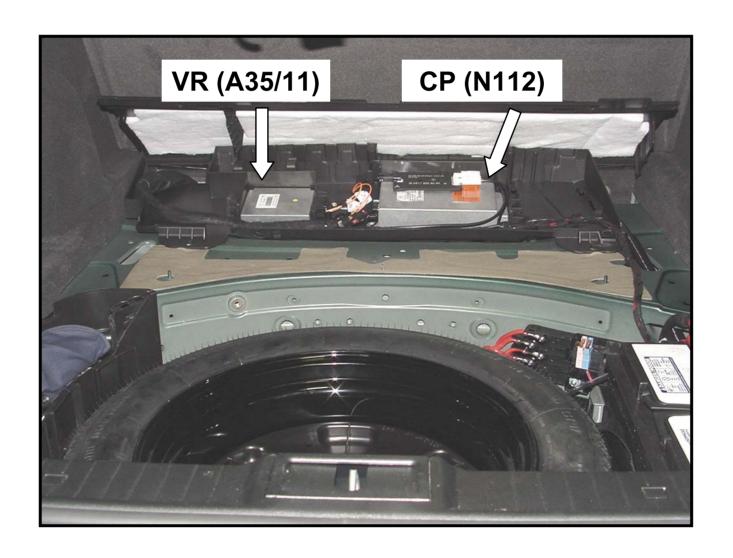
Audio Gateway Module (N93/1)

N93/1

Location: Left side trunk - "buried"

Audio Gateway Module (N93/1)

All MOST components have a watchdog circuit, can default to a repeater.

VR and CP Component Location

VR (A35/11)

CP (N112)

Communication Platform (N112)

Integrates the following systems:

- HSE

- TeleAid

- GPS (location of car for TeleAid)

MIC CM (A35/1) / VR (A35/11)

• Microphone in mirror control module (A35/1)

      - installed with basic equipment

      - TeleAid only

      - Manufactured by *AKG*

• Voice recognition module (A35/11) (optional)

      - control of audio voice commands

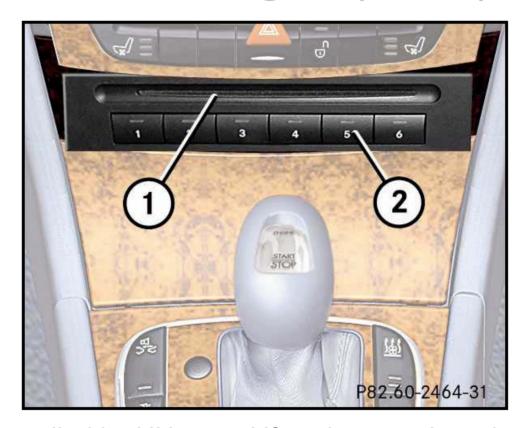   - Manufactured by *Temic / Motorola*

Note: Both control modules have same physical appearance

Head Unit Audio 50 (A2/56)

CD Changer (A2/6)

P82.60-2464-31

- Controlled by HU or multifunction steering wheel

- Single slot disc loading - no magazine (1)

- Six numbered buttons eject each disc (2)

- Only plays music CD's - No Mini Disc, DVD or Navi function

D2B vs. MOST Comparison

D2B

- Speed up to 5.65Mbps
- Maximum of 6 devices
- Orange fiber cable
- Light wavelength = 650 nm (red)
- Max. bend radius of fiber is 25 mm
- 12 volt electrical wake-up
- Created specifically for DCAG $$$
- Limited fiber optic length
  10m w / no inline connectors
  3m w / 3 inline connectors

MOST

- Speed up to 24.8Mbps (future up to 50 Mbps)
- Maximum of 64 devices
- Yellow / orange fiber cable
- Light wavelength = 650 nm (red)
- Not critical, but do not kink
- 12 volt electrical and optical wake-up
- Shared communication standard
- Limited fiber optic lengths
  up to 100m w / unlimited inline connectors
- CP replaces HSE, TeleAid
- Head Unit does not contain radio receiver or amplifier (no radio codes).
- Special MOST connectors