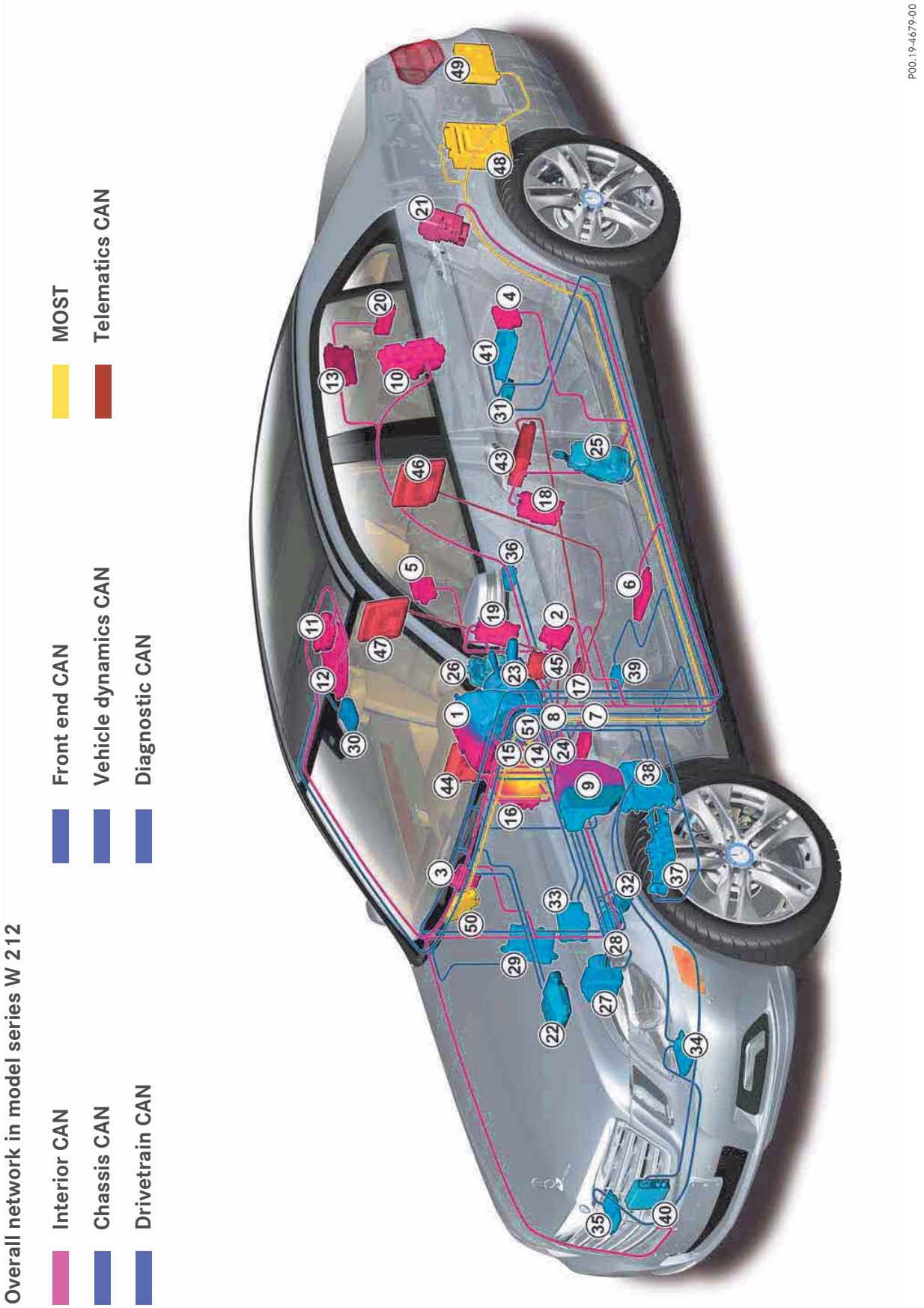
Overall network



Interior CAN

1 *Instrument cluster*
2 *Left front door control unit*
3 *Right front door control unit*
4 *Left rear door control unit*
5 *Right rear door control unit*
6 *Driver seat control unit (with code (275) Memory package for electrically adjustable front seat)*
7 *Front passenger seat control unit (with code (275) Memory package for electrically adjustable front seat)*
8 *Steering wheel heater control unit (with code (443) Steering wheel heater)*
9 *Front SAM control unit with fuse and relay module*
10 *Rear SAM control unit with fuse and relay module*
11 *Panoramic sliding sunroof control module (with code (413) Panoramic glass sunroof with top sliding sunroof)*
12 *Overhead control panel control unit*

Interior CAN

13 *KEYLESS-GO control unit (with code (889) Keyless-Go)*
14 *Automatic air conditioning control and operating unit*
15 *Electronic ignition lock control unit*
16 *COMAND controller unit (with code (512) COMAND APS including DVD changer (standard) or with code (528) COMAND APS (with navigation))*
17 *Weight sensing system (WSS)*
18 *Left front dynamic multicontour seat control unit (with code (432) Left and right dynamic multicontour seat)*
19 *Right front dynamic multicontour seat control unit (with code (432) Left and right dynamic multicontour seat)*
20 *Trunk lid control control unit (with code (881) Remote trunk closing (RTC))*
21 *Dynamic multicontour seat pneumatic pump (with code (432) Left and right dynamic multicontour seat)*

Chassis CAN

1 *Instrument cluster*
9 *Front SAM control unit with fuse and relay module*
15 *Electronic ignition lock control unit*
22 *ME-SFI [ME] control unit (M 272, M 273)*
23 *Steering column tube module control unit*
24 *Supplemental restraint system control unit*
25 *Left front reversible emergency tensioning retractor*
26 *Right front reversible emergency tensioning retractor*
27 *Electronic Stability Program control unit*
28 *AIRMATIC control unit*
29 *Night View Assist control unit (with code (610) Night View Assist)*

Chassis CAN

30 *Multifunction camera (with code (476) Automatic lane recognition or code (608) or (P35) Adaptive Highbeam Assist in light package)*
31 *Tire pressure monitor control unit*
32 *PARKTRONIC control unit (with code (230) Exclusive Parking Assist)*
33 *Radar sensors control unit (with code (233) DISTRONIC PLUS)*

Overall network

Front end CAN

9 Front SAM control unit with fuse and relay module
34 Left xenon light control unit (with code (622) Intelligent Light System)
35 Right xenon light control unit (with code (622) Intelligent Light System)

Drivetrain CAN

22 ME-SFI [ME] control unit (M 272, M 273)
36 Fuel system control unit
37 Fully integrated transmission control unit (with transmission 722.9)
38 Intelligent servo module for DIRECT SELECT (with transmission 722.9)

Vehicle dynamics CAN

27 Electronic Stability Program control unit
33 Radar sensors control unit (with code (233) DISTRONIC PLUS)
39 Yaw rate sensor for lateral and longitudinal acceleration
40 DISTRONIC electric controller unit (with code (233) DISTRONIC PLUS)

Diagnostic CAN

9 Front SAM control unit with fuse and relay module
41 Emergency call system control unit

Telematics CAN

16 COMAND controller unit (with code (512) COMAND APS including DVD changer (standard) or with code (528) COMAND APS (with navigation))

Telematics CAN

43 DVD player (with code (864) Rear entertainment system)
44 COMAND display
45 COMAND control panel
46 Left rear display (with code (864) Rear entertainment system)
47 Right rear display (with code (864) Rear entertainment system)

MOST ring

16 COMAND controller unit (with code (512) COMAND APS including DVD changer (standard) or with code (528) COMAND APS (with navigation))
48 Sound system amplifier control unit (with code (810) Sound system)
49 SDAR control unit (with code (536) Sirius satellite radio, full system, including HD radio)
50 Media interface control unit (with code (518) Media interface)

Private bus

2 Left front door control unit
3 Right front door control unit
4 Left rear door control unit
5 Right rear door control unit
9 Front SAM control unit with fuse and relay module
10 Rear SAM control unit with fuse and relay module
14 Automatic air conditioning control and operating unit
15 Electronic ignition lock control unit
23 Steering column tube module control unit
51 Upper control panel

Note

The overall network shows all the control units that can be installed at the time of the market launch and their locations in the vehicle. The vehicle illustrated does not exist as it shows the control units of several equipment variants in the vehicle at the same time.

Introduction

The ever increasing demands on the on-board electronic system in the fields of vehicle safety, comfort, communications and diagnosis require wider and wider networking of the existing systems in order to allow the necessary information to be exchanged. To provide complete vehicle networking, a number of control units also function as gateways, i.e. data from the connected bus systems are relayed by these control units.
The following data bus systems are used to exchange the necessary information:

- Controller Area Network (CAN)
- Media Oriented System Transport (MOST)

CAN

The CAN is an electrical bus system that transmits data over two lines.
Each connected control unit can send or receive data (bidirectional bus). A data protocol defines the individual data blocks and specifies which data can be received or transmitted by a control unit. Any errors detected are saved and stored in the fault memory.

The following CAN buses are involved in the overall network:

Telematics CAN (CAN A)

The telematics CAN is responsible for data transfer by the telecommunications systems.
Transfer rate 125 kbit / s.

Interior CAN (CAN B)

The interior CAN is responsible for data transfer in the vehicle interior.
Transfer rate 125 kbit / s.

Drivetrain CAN (CAN C)

The drivetrain CAN is responsible for data transfer by the drive systems.
Transfer rate 500 kbit / s.

Diagnostic CAN (CAN D)

The data link connector cab be used to connect an external tester (e.g. Xentry Diagnostics) to the diagnostic CAN.
Transfer rate 500 kbit / s.

Chassis CAN (CAN E)

The chassis CAN is responsible for data transfer by the chassis and suspension systems.
Transfer rate 500 kbit / s.

Front end CAN (CAN G)

The front end CAN is responsible for data transfer by the front light systems in vehicles with xenon headlamps.
Transfer rate 500 kbit / s.

Vehicle dynamics CAN (CAN H)

The vehicle dynamics CAN is responsible for data transfer of the vehicle dynamic data, e.g. the turn rate or longitudinal acceleration.
Transfer rate 500 kbit / s.

Overall network

MOST

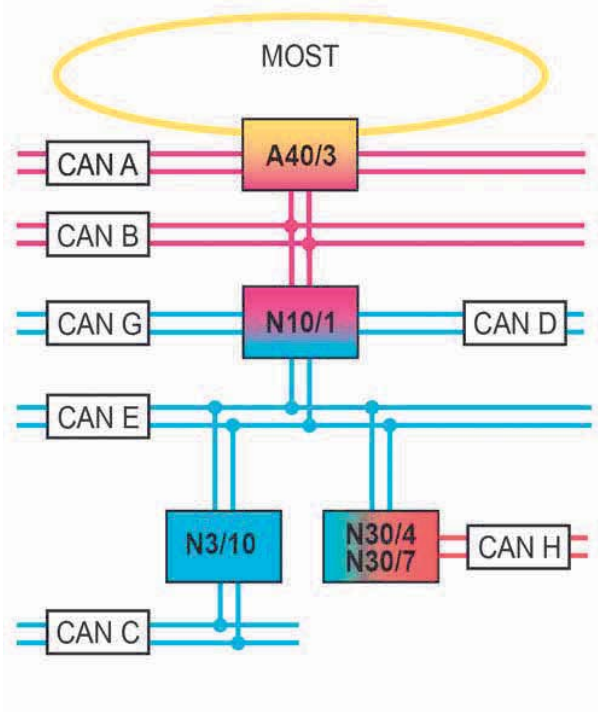
MOST is an optical networking system. Data are transmitted via fiber optic cables between the connected information, navigation and communications components.
Transfer rate 22 Mbit / s.

Front SAM control unit with fuse and relay module with central gateway function

One innovation is the integration of the central gateway with the front SAM control unit with fuse and relay module in a single housing. Both control units feature separate microprocessors, each with a dedicated CAN interface.

Gateway function

Control units with a data bus function can receive signals from more than one data bus and relay them to more than one data bus as they are linked with two or more data buses.



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Control units with gateway function

A40 / 3	*COMAND controller unit*
N3 / 10	*ME-SFI [ME] control unit (with gasoline engine)*
N10 / 1	*Front SAM control unit with fuse and relay module*
N30 / 4	*Electronic Stability Program control unit without code (233)*
N30 / 7	*Electronic Stability Program Premium control unit with code (233)*
CAN A	*Telematics CAN*
CAN B	*Interior CAN*
CAN C	*Drivetrain CAN*
CAN D	*Diagnostic CAN*
CAN E	*Chassis CAN*
CAN G	*Front end CAN*
CAN H	*Vehicle dynamics CAN*
MOST	*Media Oriented System Transport*