

System Diagram



Item	Description
A	HS-CAN (controller area network) data bus (multimedia)
B	MS-CAN databus
C	HS-CAN databus
D	Terminating resistor
E	LIN (local interconnect network) databus
F	ISO data bus
G	Private HS-CAN data bus
1	audio unit
2	Multi-function display
3	Audio system control unit
4	SYNC module
5	Battery-operated siren
6	Intrusion sensor

7	Instrument Panel Cluster
8	Tachograph
9	GPS (global positioning system) module
10	Interior rear view mirror
11	Fuel fired booster heater
12	Module, trailer towbar
13	IPMB (image processing module B) module
14	Reversing camera
15	Rain sensor
16	Battery monitoring sensor, second battery
17	Battery monitoring sensor, first battery
18	Wiper motor, master
19	Wiper motor, slave
20	Module, speed control system
21	Steering wheel rotation sensor.
22	Front view camera module
23	Parking Aid Module
24	Light control module
25	Vibration motor module
26	Steering wheel module
27	Light switch module
28	BCM (body control module)
29	RCM (restraints control module) module
30	ABS (anti-lock brake system) module
31	PCM (powertrain control module)
32	RKE (remote keyless entry) module
33	Generator module
34	PATS (passive anti-theft system) module

System Operation

Data bus systems

The following data bus systems are used:

- HS-CAN databus
- HS-CAN data bus (multimedia)
- Private HS-CAN data bus
- MS-CAN databus
- LIN databus
- ISO data bus

Gateway modules

Gateway modules act as the interface between the different data bus systems. To do this on the new Transit Custom, the instrument panel cluster act as gateway between the HS-CAN data bus (multimedia) and the MS-CAN data bus, and also the BCM as gateway between the HS-CAN data bus and the MS-CAN data bus.

Component Description

Terminating resistors

8 terminating resistors are installed in total.

The two terminating resistors, 120 ohms each, of the HS-CAN data bus are integrated into the PCM and the BCM. Because the two 120 ohm resistors are connected in parallel, the total resistance is 60 ohms (measured at the DLC). If a control unit is disconnected from the network, 120 ohms must be present between pin 6 and 14 DLC (data link connector).

The terminating resistors of the HS-CAN data bus (multimedia) are in the instrument panel cluster and in the audio unit.

The HS-CAN data bus (multimedia) can be tested via pins 1 and 8.

The RCM module is connected via a private HS-CAN data bus with the ABS module. Two separate termination resistors are installed here.

The terminating resistors of the MS-CAN data bus are in the instrument panel cluster and in the BCM. The total resistance can be measured at the DLC between pins 3 and 11 and should be 60 ohms.

HS CAN

The following HS-CAN data buses are used:

- HS-CAN data bus:
 - Front camera module
 - Proximity warning system module
 - RCM
 - ABS module
 - Steering wheel rotation sensor
 - Parking Aid Module
 - PCM
 - SYNC module
 - BCM
- HS-CAN data bus (multimedia):
 - SYNC module
 - audio unit
 - Audio system control unit
 - Multi-function display
 - Instrument Panel Cluster
- Private HS-CAN data bus:
 - RCM
 - ABS module

The private HS-CAN is used for fast, interference-free data exchange.

The HS-CAN data bus, the HS-CAN data bus (multimedia) and the private HS-CAN data bus have a speed of 500 kBit/s.

MS-CAN databus

- MS-CAN data bus:
 - BCM
 - Instrument Panel Cluster
 - Fuel fired booster heater
 - Trailer Module
 - GPS module
 - Reversing camera module

The MS-CAN bus has a speed of 125 kBit/s.

LIN databus

The following systems are connected to the LIN bus:

- Audio system control unit
- Reversing camera
- Light switch unit
- Steering wheel module

- Vibration motor module
- Intrusion sensors
- Anti-theft alarm horn with own battery
- Battery monitoring sensors
- Rain sensor
- Wiper motor module
- alternator

The transmission speed within the LIN databus system is 9.6 kBit/s. A LIN databus system consists of a LIN master and one or more LIN slaves. The LIN master knows the time sequence of all data which are to be transmitted.

This data is transferred by the corresponding LIN slaves when they are prompted by the LIN master.

The LIN bus is a single conductor databus system, i.e. the data is transmitted on one cable. No terminating resistors are used in the LIN network.

ISO data bus

- RKE module
- Wiper motor, slave