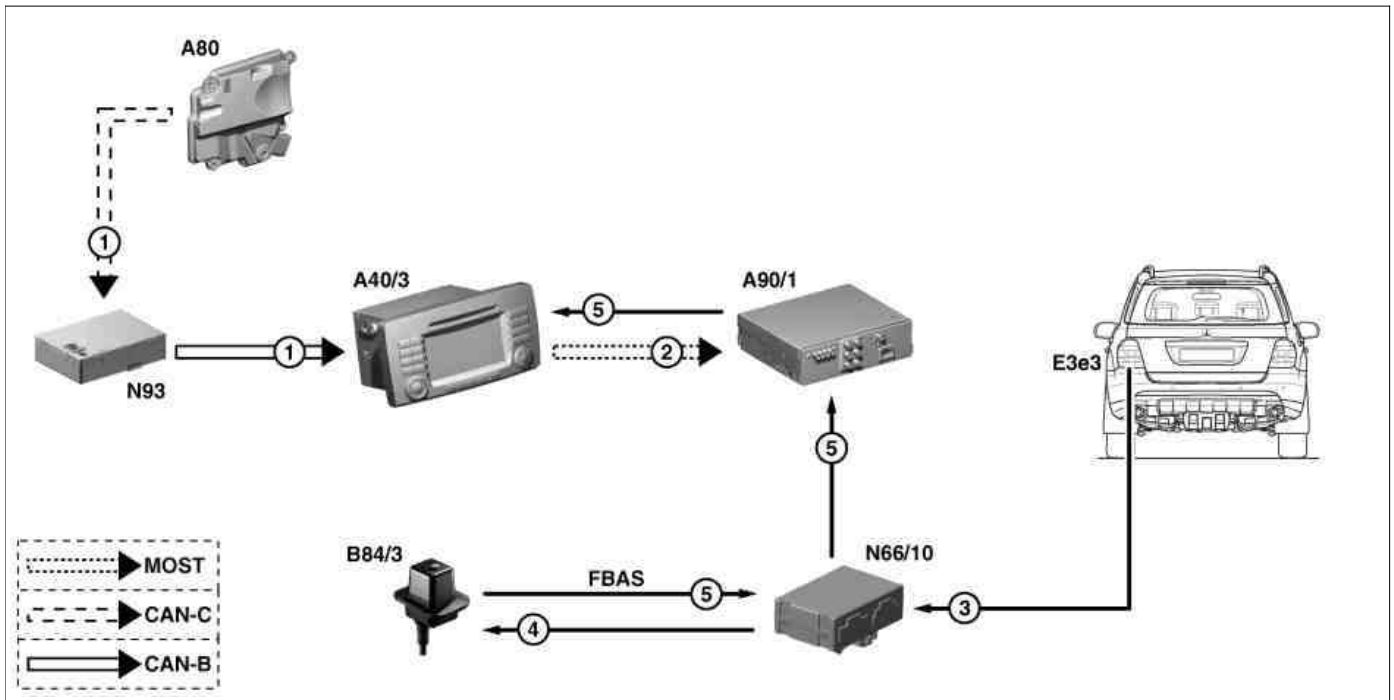


MODEL 164

with CODE (218) Backup camera
 except CODE (494) USA version
 except CODE (498) Japan version
 except CODE (849) Spare wheel holder/spare wheel
 up to Model Year 8

MODEL 251

with CODE (218) Backup camera
 except CODE (494) USA version
 except CODE (498) Japan version
 up to Model Year 8



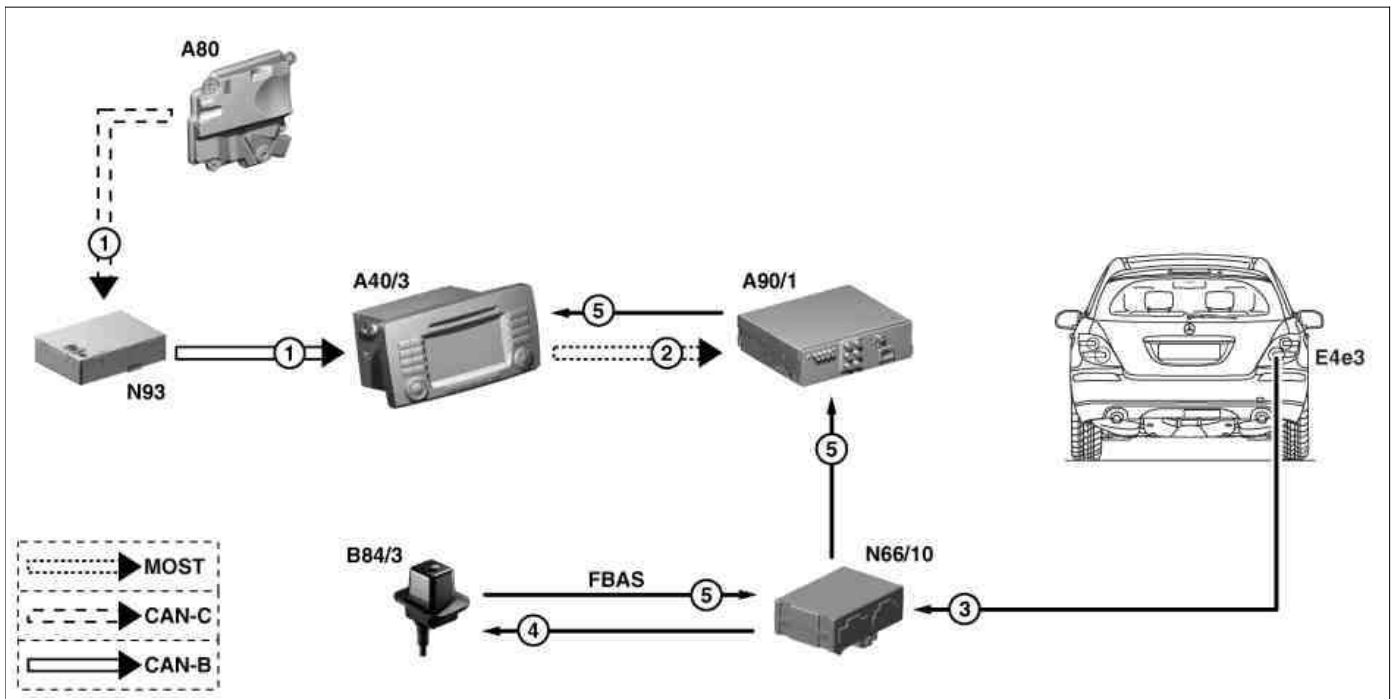
P54.65-3143-09

**Data flow chart shown on model
 designation 164**

- 1 Reverse gear engaged
- 2 Activation of TV tuner
- 3 Activation of backup camera voltage supply module
- 4 Activation of backup camera in rear-end door
- 5 CVBS signals (backup camera)

- A40/3 COMAND operating, display and control unit
 A80 Intelligent servo module for DIRECT SELECT
 A90/1 TV combination tuner (analog/digital)
 B84/3 Backup camera
 E3e3 Left backup lamp

- N66/10 Voltage supply module, backup camera
 N93 Central gateway control unit
 CAN B Interior CAN
 CAN-C Drive train CAN
 MOST Media Oriented System Transport (MOST)



P54.65-3168-09

Data flow chart shown on model designation 251

1	Reverse gear engaged	A40/3	COMAND operating, display and control unit	N66/10	Voltage supply module, backup camera
2	Activation of TV tuner	A80	Intelligent servo module for DIRECT SELECT	N93	Central gateway control unit
3	Activation of backup camera voltage supply module	A90/1	TV combination tuner (analog/digital)	CAN B	Interior CAN
4	Activation of backup camera in rear-end door	B84/3	Backup camera	CAN-C	Drive train CAN
5	CVBS signals (backup camera)	E4e3	Right backup lamp	MOST	Media Oriented System Transport (MOST)

Complete description of backup camera system (RFK)

The backup camera system (RFK) assists the driver when parking and when backing up. With the aid of the backup camera in the rear-end door, the entire surrounding area to the rear of the vehicle is displayed in CVBS format on the display of the COMAND operating, display and controller unit. At the same time as the video is displayed on the screen, warnings appear which urge the driver not to neglect actual events in the area surrounding the vehicle.

If the driver assist system is activated, the backup camera voltage supply component supplies voltage to the backup camera in the rear-end door.

The backup camera then transmits an analog video picture back to the backup camera voltage supply module.

The backup camera voltage supply module loops the video signal through and transfers the video picture to the COMAND operating, display and controller unit via the TV combination tuner (analog/digital) over a screened coaxial line.

i CVBS stands for Composite Video Baseband Signal. This is an analog video signal, which combines all relevant information (e.g. color and brightness values etc.) in just one signal.

i External environmental influences such as darkness, dust, fog or precipitation can restrict the functionality of the backup camera.

System components

- COMAND operating, display and control unit
- Voltage supply module, backup camera
- Backup camera (B84/3) in rear-end door
- TV combination tuner (analog/digital)

COMAND operating, display and control unit

The COMAND operating, display and controller unit shows the video pictures from the backup camera in the display as soon as it receives the digital signal "Reverse gear engaged" via CAN B.

The electric signals generated by the driver through the DIRECT SELECT gear selector switch (S16/13) for transmission position "R" are transferred from the steering column module (N80) to the intelligent servo module for DIRECT SELECT via CAN C.

Function requirements

- Circuit 15 ON
- Reverse gear engaged (selector lever position "R") via DIRECT SELECT gear selector switch (S16/13)
- COMAND operating, display and controller unit activated.

The intelligent servo module for DIRECT SELECT then transfers the message "Reverse gear engaged" to the central gateway control unit via CAN C and from there to the COMAND operating, display and controller unit via CAN B.

Voltage supply module, backup camera

The backup camera voltage supply module supplies the backup camera with voltage and transfers the video pictures to the TV combination tuner (analog/digital) over a discrete line.

The basis for activation of the backup camera voltage supply module is the digital signal "Reverse gear engaged".

The intelligent servo module for DIRECT SELECT transmits the position of the DIRECT SELECT gear selector switch to the central gateway control unit via CAN C.

The central gateway control unit transmits the request to switch on the left backup lamp (E3e3) and right backup lamp (E4e3) to the rear SAM control unit (N10/8), which switches on the left backup lamp (model designation 164) and right backup lamp (model designation 251) discretely.

On model designation 164, the activated left backup lamp supplies the electrical pulse to activate the backup camera voltage supply module over a discrete line (on model designation 251 the right backup lamp performs this function). The backup lamp is then supplied with voltage.

Priority management of COMAND operating, display and control unit

A priority management system integrated in the COMAND operating, display and controller unit ensures that the many functions operate in the correct sequence.

Functions of higher priority are carried out before functions of lower priority. A function of lower priority that is currently running (e.g. backup camera system) is automatically deactivated if a function of higher priority (e.g. E-call) is started.

If, for example, a telephone call, an SMS or a TA message is received while the backup camera system is active, this does not cause the backup camera system to abort. In this case, the COMAND operating, display and controller unit displays a pop-up message over the video picture which is immediately removed when the call is accepted or the message is processed.

TV combination tuner (analog/digital)

The TV combination tuner (analog/digital) enables analog and digital TV reception. It also converts the high frequency signals it receives into a signal which can be processed by the video decoder and audio amplifier.

The TV combination tuner (analog/digital) is connected to the COMAND operating, display and controller unit via an interface to the Media Oriented System Transport (MOST). The camera pictures are sent by the TV combination tuner (analog/digital) to the COMAND operating, display and controller unit as a CVBS signal (Composite Video Baseband Signal) over a coaxial line.

Function restrictions

● Rear-end door open

The backup camera in the rear-end door is positioned so that it functions optimally when the rear-end door is closed. If the rear-end door is open, the driver assist function is not deactivated but the sky (for example) is displayed instead of the entire area to the rear of the vehicle.

● Trailer

A trailer does not affect the driver assist function. The display still appears in the COMAND operating, display and controller unit. Particularly with larger trailers and the associated visibility restrictions, it may be the case that the driver does not have a full view of events in the area to the rear of his/her own vehicle.

Driver termination of backup camera system (RFK)

- After terminal change (e.g. Tml. 15 ON to tml. 15R ON)
- Gear change out of reverse gear position (selector lever position "R")
- Selection of another system function via softkey buttons in COMAND operating, display and controller unit.

Termination of backup camera system by COMAND operating, display and controller unit

In case of the following malfunctions, the backup camera system (RFK) is terminated by the COMAND operating, display and controller unit

- Backup camera in rear-end door fails,
- Left backup lamp (model designation 164) defective,
- Right backup lamp (model designation 251) defective.

Backup camera (RFK) location of components	Model 164	GF54.65-P-0005-01GZE
	Model 251	GF54.65-P-0005-01RTE
Backup camera (RFK), block diagram	Model 164	GF54.65-P-0005-02GZE
	Model 251	GF54.65-P-0005-02RTE