

## Electrochromic inside mirror

The interior rearview mirror allows the driver to view traffic to the rear of the vehicle. The centre position in the control box means the inside mirror is also suitable to accommodate sensors and buttons.

The rearview mirror can incorporate various system functions depending on equipment specification and national-market version.

### Functional description

The following system functions are described:

- Electrochromic inside mirror
- FLA high-beam assistant, only if no camera-based driver assistance systems (KAFAS) are installed
- Control of the LEDs for the alarm system
- Integrated universal remote control
- Toll function (according to national-market version)

### Electrochromic interior rear-view mirror

The electrochromic inside mirror automatically dims the mirror glass if a light source from the rear is detected.

The electrochromic inside mirror has 2 sensors that measure incident light from the front and the rear. These signals are processed and assessed in the interior rearview mirror's electronic chip. A voltage signal is output (the strength of which depends on the difference in intensity between the light from the front and the rear) if the light from the rear is more intense. The greater the voltage signal, the more the mirror glass is dimmed. Depending upon the vehicle equipment level, the exterior mirrors may also be dimmed.



#### **Note! No dimming when interior lighting is switched on!**

The electrochromic inside mirror does not dim when interior lighting is switched on (exception: reading lights).

### high-beam assistant

The high-beam assistant (FLA) relies on an image sensor to recognise preceding and oncoming vehicles as well as built-up areas with continuous street lighting.

On the basis of further input variables, the Body Domain Controller (BDC) decides whether the high beam will be switched on or off.

### Control of the LEDs for the alarm system

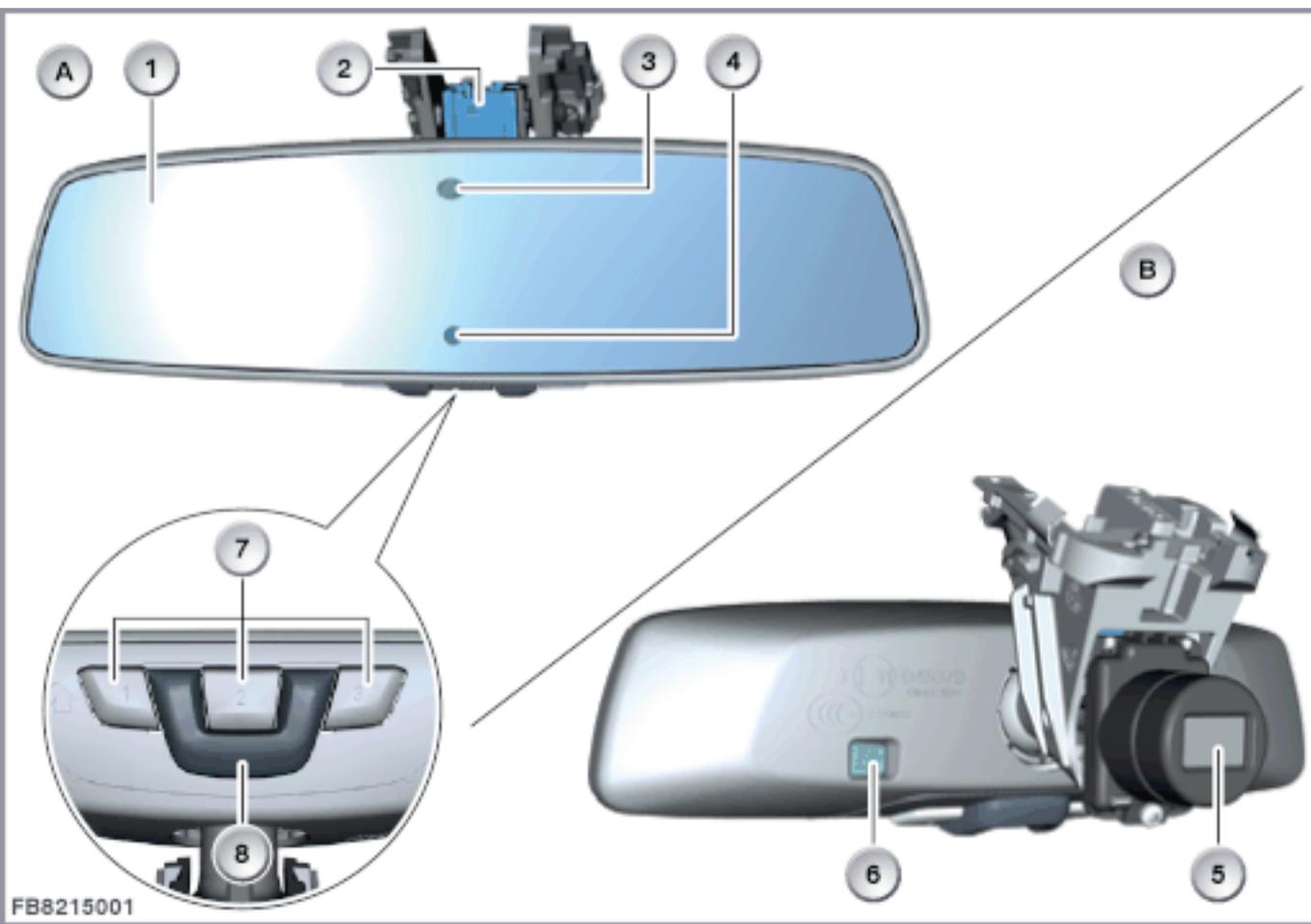
The LED for the alarm system (DWA LED) is controlled by the roof function centre (FZD). The DWA LED indicates the status of the alarm system (armed, error message, etc.). The software of the anti-theft alarm system (DWA) is integrated in the FZD control unit.

### Integrated universal remote control

The integrated universal remote control replaces up to three different hand-held transmitters. The integrated universal remote control can be initialised for use with various devices operated using radio-frequency remote control such as garage doors. The integrated universal remote control detects and learns the signal sent from

each hand-held transmitter. Each hand-held transmitter signal can be programmed onto one of the 3 memory buttons. Once programmed, the memory button can then be used to operate the individual device. An LED in the mirror assembly lights up while signal transmission is in progress. (European version: red LED; US version: yellow LED).

The electrochromic interior mirror communicates with the Body Domain Controller (BDC) via the LIN bus. Status requests and fault memory storage, for example, take place via the Body Domain Controller (BDC).



Item	Explanation	Item	Explanation
A	Electrochromatic rearview mirror, front view	B	Electrochromatic rearview mirror, rear view
1	Mirror glass	2	10-pin plug connection
3	Photosensor, rear brightness for automatic dimming	4	LED for integrated universal remote control
5	Image sensor	6	Photosensor, forward brightness for automatic dimming
7	Buttons for the integrated universal remote control	8	LED for alarm system

### Toll function (Japanese version only)

The toll function provides automatic communication with toll-collection stations on toll roads to facilitate convenient payment.

The interior rearview mirror with the electronic toll function is equipped with a chip and a display that indicates the toll fee. The display is installed in the rearview mirror above the lens. The display indicates the amount to be paid. The toll is paid when the vehicle passes a toll-collection station (by RF transmission through the chip). Data are relayed through a transceiver aerial.

Communications with the toll station are possible when the card that stores toll payments is inserted in its slot. The card contains the user's bank account data for automatic cash-transfer of the toll charge.



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Item	Explanation	Item	Explanation
A	Interior rearview mirror with electronic toll function, frontal view	B	Interior rearview mirror with electronic toll function, rear view
1	Mirror glass	2	Plug connection
3	Plug connection	4	Aerial port for Japan navigation system aerial
5	Display	6	Photosensor, rear brightness for automatic dimming
7	Photosensor, forward brightness for automatic dimming	8	LED for alarm system
9	Eject button	10	Insertion slot

## Structure and inner electrical connection

The modules for the individual functions are integrated on a printed circuit board. The individual function is integrated in the microprocessor.

With some vehicle equipment levels and on some national-market versions, one or more plug connections are present on the electrochromic interior mirror.

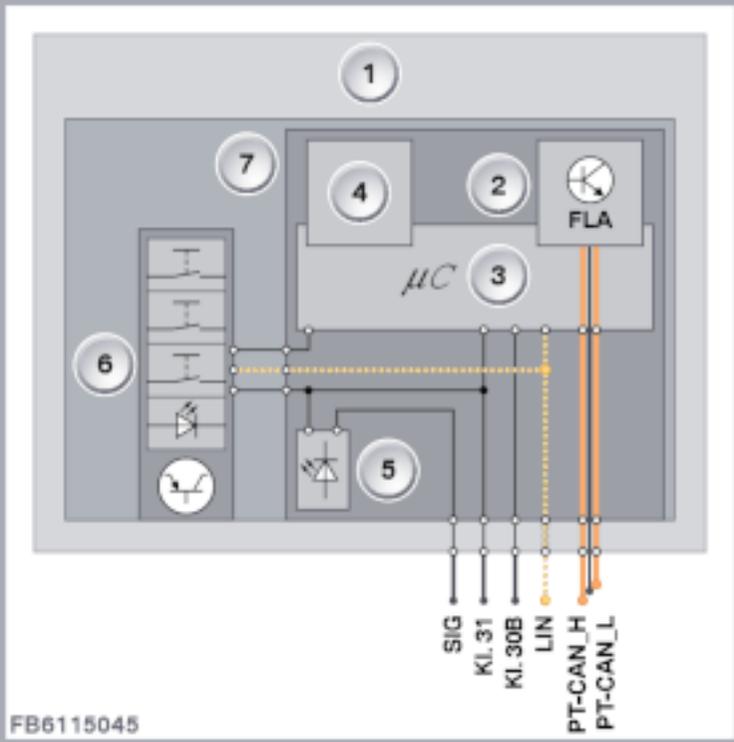


### Note!

Observe the wiring diagram in the diagnosis!

The following graphic provides a simplified illustration of the electrochromic interior mirror without electronic toll function.

The electrochromic interior mirror is connected to the vehicle's electrical system by a 10-pin plug connection.



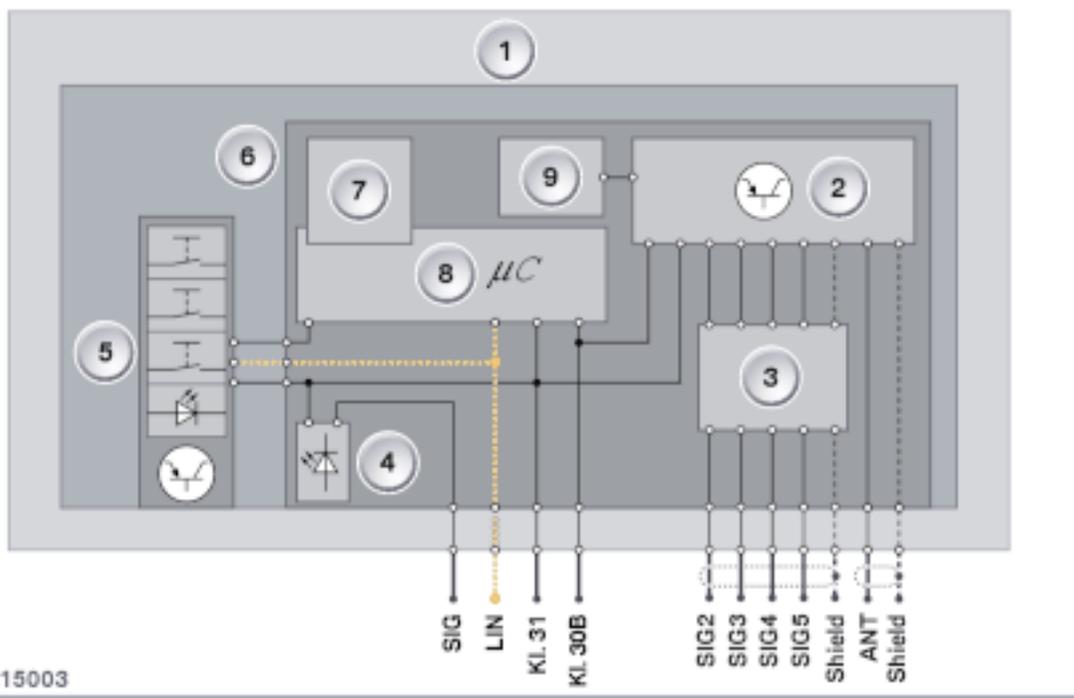
Item	Explanation	Item	Explanation
1	Electrochromic inside mirror	2	High beam assistant (FLA)
3	Microcontroller	4	Module for electrochromatic rearview mirror
5	LED for alarm system (DWA LED)	6	Integrated universal remote control with memory buttons and light-emitting diode
7	Printed circuit board		

- **10-pin plug connection**

Pin	Explanation
Terminal 30B	Terminal 30B, base operation
Kl. 31	Terminal 31 ground connection
LIN	LIN bus
PT-CAN High	Powertrain CAN High
PT-CAN Low	Powertrain CAN Low
SIG	Signal wire for DWA LED

The following graphic provides a simplified illustration of the interior mirror with electronic toll function.

The interior mirror with electronic toll function is connected to the vehicle electrical system via 3 plug connections.



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Item	Explanation	Item	Explanation
1	Interior mirror with electronic toll function	2	Toll function PCB
3	Insertion slot module	4	LED for alarm system (DWA LED)
5	Integrated universal remote control with memory buttons and light-emitting diode	6	Printed circuit board
7	Module for electrochromatic rearview mirror	8	Microcontroller
9	Toll function display		

## Pin assignments

- 4-pin plug connection**

Pin	Explanation
Terminal 30B	Terminal 30B, base operation
Kl. 31	Terminal 31 ground connection
LIN	LIN bus
SIG	Signal wire for alarm system LED, connection to roof function centre Dach (FZD)

- USB connection**

Pin	Explanation
SIG2	Data line +, connection to head unit
SIG3	5-V voltage supply, connection to head unit

SIG4	Data line -, connection to head unit
SIG5	Ground connection to head unit

- **Aerial port for Japan navigation system aerial**

Pin	Explanation
ANT	Aerial line
Shield	Shielding

## Nominal values

Please note the following specification data for the electrochromatic rearview mirror:

Variable	Value
Supply voltage	9 to 16 V
Temperature range	-30 to 85 deg C

## Diagnosis instructions

### Failure of the component

Failure of the electrochromatic rearview mirror is accompanied by the following symptoms:

- Fault code entry in Body Domain Controller (BDC)
- Electrochromatic rearview mirror dimming feature fails

Expect the following response if the FLA control unit fails:

- Fault code entry in the FLA control unit
- Check Control message in the instrument panel
- Automatic activation of the high beams ceases

Failure of the toll function is accompanied by the following symptoms:

- Fault entry in the head unit (only head unit with integrated GPS navigation system for Japanese market)
- Error message in display of interior rearview mirror with electronic toll function

### Function check of the component

The diagnosis system can be used to check operation of the electrochromatic rearview mirror.

Path: Function structure > Body > Mirror > Interior mirror

Path: Function structure > Body > Lighting > High-beam assistant