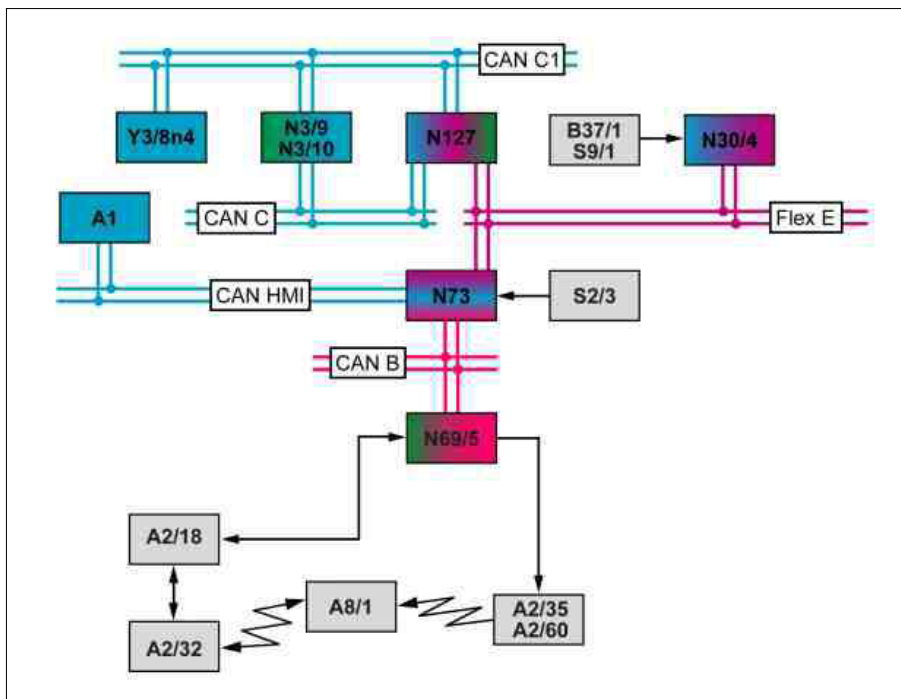


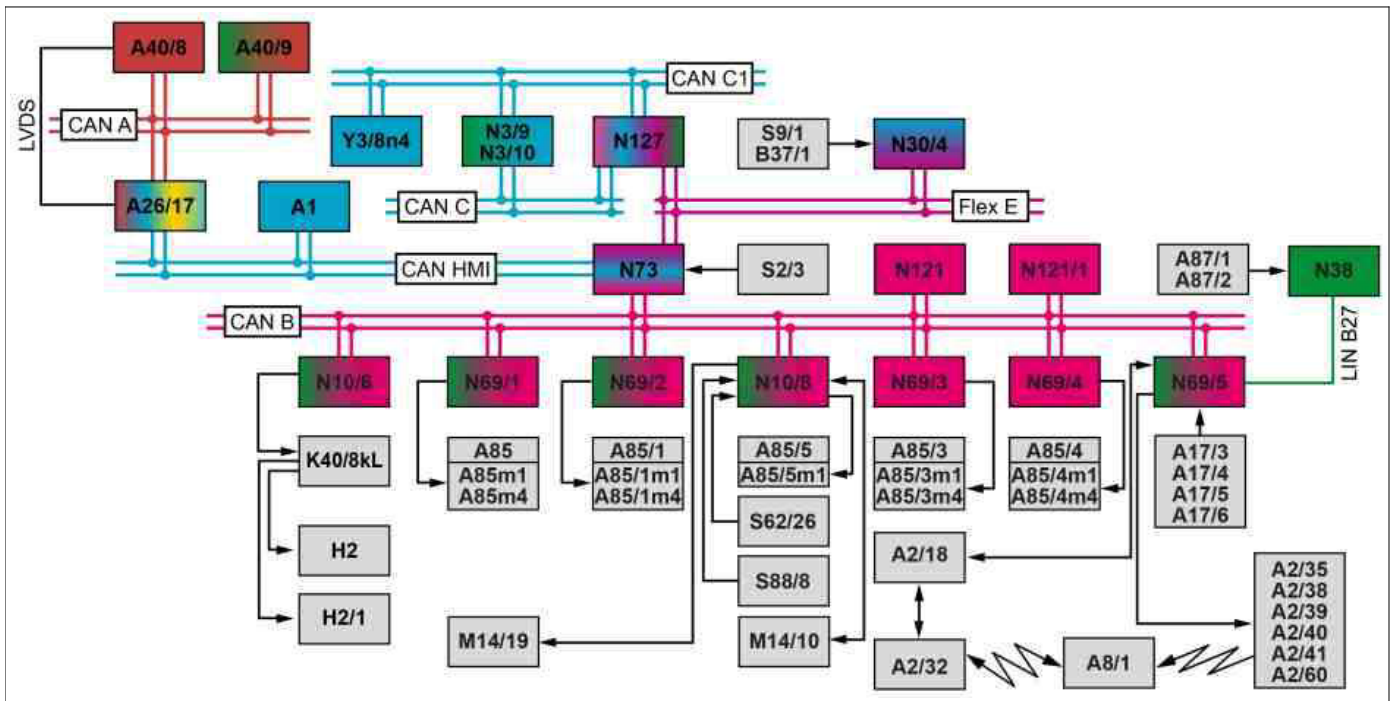
- Model 205**
up to model year 2019
with code 889 (KEYLESS-GO)
- Model 205**
up to model year 2019
with code 893 (KEYLESS-GO)
- Model 253 (except 253.99)**
with code 889 (KEYLESS-GO)
- Model 253 (except 253.99)**
with code 893 (KEYLESS-GO)

with CODE 893 (KEYLESS-GO start function)

- A1 Instrument cluster
- A2/18 FM 1, AM, CL [ZV] and KEYLESS GO antenna amplifier
- A2/32 Rear window antenna
- A2/35 Trunk KEYLESS GO antenna
- A2/60 Center console KEYLESS-GO antenna
- A8/1 Transmitter key
- B37/1 Pedal angle sensor (hybrid vehicles)
- N3/9 CDI control unit (diesel engine)
- N3/10 ME-SFI [ME] control unit (gasoline engine)
- N30/4 Electronic Stability Program control unit
- N69/5 KEYLESS-GO control unit
- N73 Electronic ignition switch control unit
- N127 Drivetrain control unit
- S2/3 KEYLESS GO start/stop button
- S9/1 Brake light switch (except hybrid vehicles)
- Y3/8n4 Fully integrated transmission control unit (with transmission 722, 724, 725)
- CAN B Interior CAN
- CAN C Engine CAN
- CAN C1 Drive train CAN
- CAN HMI User interface CAN
- Flex E Chassis FlexRay



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With code 889 (KEYLESS-GO)

A1	Instrument cluster	H2	Left fanfare horn
A2/18	FM 1, AM, CL [ZV] and KEYLESS GO antenna amplifier	H2/1	Right fanfare horn
A2/32	Rear window antenna	K40/8kL	Fanfare horn relay
A2/35	Trunk KEYLESS GO antenna	M14/10	Tank cap central locking actuator
A2/38	Left front door KEYLESS-GO antenna (model 205.3/4)	M14/19	Stowage compartment central locking actuator motor (model 205.4)
A2/39	Left rear door KEYLESS-GO antenna (model 205.0/1/2, 253)	N3/9	CDI control unit (diesel engine)
A2/40	Right front door KEYLESS-GO antenna (model 205.3/4)	N3/10	ME-SFI [ME] control unit (gasoline engine)
A2/41	Right rear door KEYLESS-GO antenna (model 205.0/1/2, 253)	N10/6	Front SAM control unit
A2/60	Center console KEYLESS-GO antenna	N10/8	Rear SAM control unit
A8/1	Transmitter key	N30/4	Electronic Stability Program control unit
A17/3	Left rear KEYLESS-GO door handle (model 205.0/1/2, 253)	N38	Rear switching module (with code 871 (HANDS-FREE ACCESS))
A17/4	Right rear KEYLESS-GO door handle (model 205.0/1/2, 253)	N69/1	Left front door control unit
A17/5	Driver door KEYLESS-GO door handle	N69/2	Right front door control unit
A17/6	Front passenger door KEYLESS-GO door handle	N69/3	Left rear door control unit (model 205.0/1/2, 253)
A26/17	Head unit	N69/4	Right rear door control unit (model 205.0/1/2, 253)
A40/8	Audio/COMAND display	N69/5	KEYLESS-GO control unit
A40/9	Audio/COMAND control panel	N73	Electronic ignition switch control unit
A85	Left front door lock	N121	Trunk lid control unit (model 205.0/1/3 with CODE 881 (Remote trunk closing))
A85m1	Left front door central locking motor	N121/1	Liftgate control unit (model 205.2, 253 with CODE 890 (EASY-PACK liftgate))
A85m4	Left front door additional door lock actuator motor (with code (885) Extended theft protection)	N127	Drivetrain control unit
A85/1	Right front door lock	S2/3	KEYLESS GO start/stop button
A85/1m1	Right front door central locking motor	S9/1	Brake light switch (except hybrid vehicles)
A85/1m4	Right front door additional door lock actuator motor (with code (885) Extended theft protection)	S62/26	Trunk lid/liftgate control button (model 205.0/1/3 with CODE 881 (Remote trunk closing) or model 205.2, 253 with CODE 890 (EASY-PACK liftgate))
A85/3	Left rear door lock (model 205.0/1/2, 253)	S88/8	Trunk lid/liftgate external operation switch
A85/3m1	Left rear door central locking motor (model 205.0/1/2, 253)	Y3/8n4	Fully integrated transmission control unit (with transmission 722, 724, 725)
A85/3m4	Left rear door additional door lock actuator motor (model 205.0/1/2, 253 with CODE 885 (Increased theft protection))	CAN A	Telematics CAN
A85/4	Right rear door lock (model 205.0/1/2, 253)	CAN B	Interior CAN
A85/4m1	Right rear door central locking motor (model 205.0/1/2, 253)	CAN C	Engine CAN

A85/4m4	Right rear door additional door lock actuator motor (model 205.0/1/2, 253 with CODE 885 (Increased theft protection))
A85/5	Trunk lid/liftgate lock
A85/5m1	Trunk lid/liftgate lock motor
A87/1	Rear switching module upper sensor (with code 871 (HANDS-FREE ACCESS))
A87/2	Rear switching module lower sensor (with code 871 (HANDS-FREE ACCESS))
B37/1	Pedal angle sensor (hybrid vehicles)

CAN C1	Drive train CAN
CAN HMI	User interface CAN
Flex E	Chassis FlexRay
LIN B27	KEYLESS-GO LIN
LVDS	Low voltage differential signal

KEYLESS-GO, general

The KEYLESS-GO comfort feature allows keyless locking/unlocking of the vehicle (with code (889) KEYLESS-GO) as well as starting and switching off the engine without inserting the transmitter key into the electronic ignition lock control unit. It is sufficient to just carry the transmitter key.

i Operation of the central locking (CL) and starting and stopping of the engine via the transmitter key remain possible at the same time as the KEYLESS-GO functions.

The KEYLESS-GO system includes the following partial functions:

- Function sequence for position finding of transmitter key
- Function sequence for locking/unlocking (with code (889) KEYLESS-GO)
- Function sequence for engine start/stop

i Model 205
up to model year 2019
with code 551 (Anti-theft warning system)
with code 889 (KEYLESS-GO)

Model 205
up to model year 2019
with code 551 (Anti-theft warning system)
with code 893 (KEYLESS-GO)

Model 253 (except 253.99)
with code 551 (Anti-theft warning system)
with code 889 (KEYLESS-GO)

Model 253 (except 253.99)
with code 551 (Anti-theft warning system)
with code 893 (KEYLESS-GO)

The anti-theft alarm (ATA [EDW]) behaves in the same way as if the car were unlocked and locked with the transmitter key.

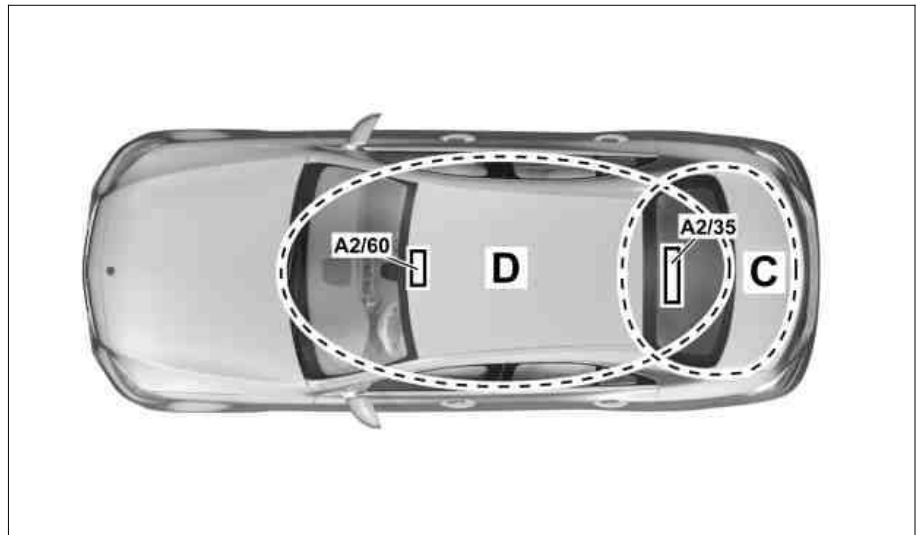
Function sequence for position finding of transmitter key

To reliably or securely realize the locking/unlocking (with CODE 889 (KEYLESS-GO)) and engine start/stop function, it is necessary to determine the position of and authorize the transmitter key .

The following illustration indicates the components with the KEYLESS-GO control unit uses to detect the area around the vehicle or in the vehicle where the transmitter key is located.

Shown on model 205.0 with code (893) KEYLESS-GO start function

A2/35	Trunk KEYLESS GO antenna
A2/60	Center console KEYLESS-GO antenna

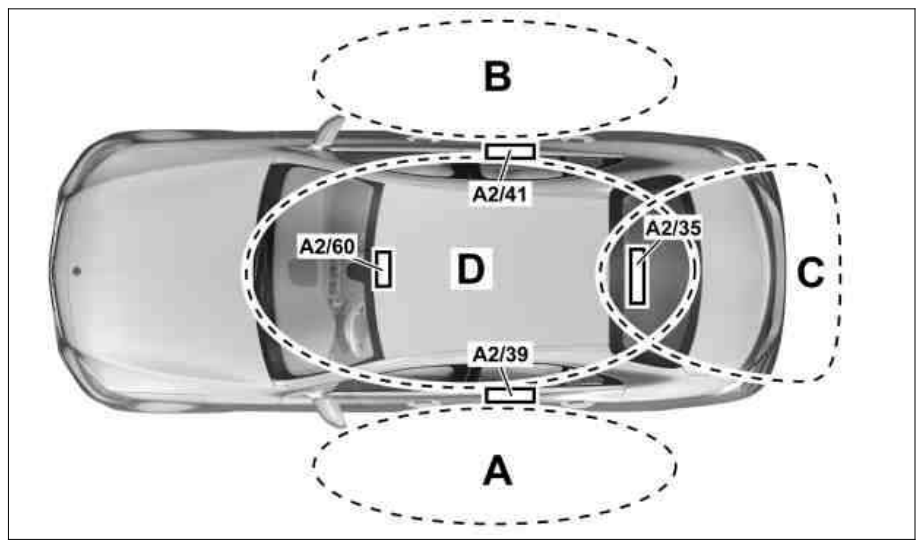


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The KEYLESS-GO control unit transmits coded requests to the transmitter key via the center console KEYLESS-GO antenna and the KEYLESS-GO trunk antenna. The transmitter key decodes these requests and transmits coded responses, when it is in area C or D. The KEYLESS-GO control unit receives the response of the transmitter key via the rear window antenna and the FM 1, AM, CL [ZV] and KEYLESS-GO antenna amplifier, checks the plausibility and sends this via the interior CAN to the electronic ignition lock control unit. If the evaluation is positive, the electronic ignition lock control unit authorizes the transmitter key.

Model 205.0/1/2, 253, shown on model 205.0 with CODE 889 (KEYLESS-GO)

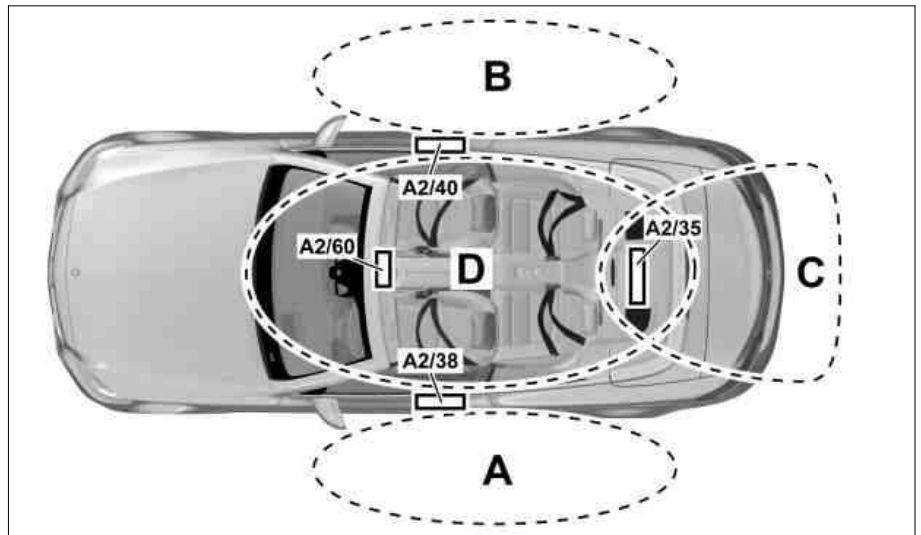
- A2/35 Trunk KEYLESS GO antenna
- A2/39 Left rear door KEYLESS GO antenna
- A2/41 Right rear door KEYLESS GO antenna
- A2/60 Center console KEYLESS-GO antenna



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Model 205.3/4, shown on model 205.4 with CODE 889 (KEYLESS-GO)

- A2/35 Trunk KEYLESS GO antenna
- A2/38 Left front door KEYLESS-GO antenna
- A2/40 Right front door KEYLESS-GO antenna
- A2/60 Center console KEYLESS-GO antenna



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The position is determined when a capacitive sensor in a KEYLESS-GO door handle or the trunk lid/liftgate external operation switch is actuated. The KEYLESS-GO control unit directly reads in the signals from the capacitive sensors.

The rear SAM control unit reads in the status of the trunk lid/liftgate external operation switch directly and sends this via interior CAN to the KEYLESS-GO control unit. Then the KEYLESS-GO control unit transmits coded requests to the transmitter key via the KEYLESS-GO antennas. The transmitter key decodes these requests and transmits coded requests correspondingly when it is located in area A, B, C or D. The KEYLESS-GO control unit receives the response of the transmitter key via the rear window antenna and the FM 1, AM, CL [ZV] and KEYLESS-GO antenna amplifier, checks the plausibility and sends this via the interior CAN to the electronic ignition lock control unit.

Additional function requirements for locking/unlocking (with code (889) KEYLESS-GO)

- Transmitter key outside the vehicle (maximum of approx. $s = 1$ m distance to a control)
- Circuit 15C OFF (circuit 15R permissible when locking):
The electronic ignition lock control unit sends the circuit 15 status over the interior CAN to the KEYLESS-GO control unit.

Function sequence for locking/unlocking (with code (889) KEYLESS-GO)

The locking/unlocking function allows the vehicle to be opened and closed via the CL.

The following control elements are available:

- To lock and unlock:
 - Left front KEYLESS GO door handle
 - Right front KEYLESS GO door handle
 - Left rear KEYLESS-GO door handle (model 205.0/1/2, 253)
 - Right rear KEYLESS-GO door handle (model 205.0/1/2, 253)
- To open/close the trunk lid or the liftgate:

If the evaluation is positive, the electronic ignition lock control unit authorizes the transmitter key (vehicle is locked or unlocked).

i If the vehicle is loaded with unusual material (high volumes of metal) the long wave frequencies emitted by the KEYLESS-GO antennas for the KEYLESS-GO control unit are reflected or absorbed to a high degree, which can lead to erroneous detection. The maximum overlap between the detected inside and outside area (measured at the side window) is approx. $s = 10$ cm. I.E., above $s = 10$ cm position detection is correct and the transmitter key is definitively located in the detected range. Below $s = 10$ cm (Gray area) the position detection for the transmitter key may be faulty, and this means it is not possible to reliably determine, whether the transmitter key is located inside or outside the vehicle.

- Trunk lid/liftgate external operation switch (open only)
- Rear switching module (with CODE 871 (HANDS-FREE ACCESS)) (opening/closing)
- To lock:
 - Trunk lid/liftgate control button (model 205.0/1/3 with CODE 881 (Remote trunk closing) or model 205.2, 253 with CODE 890 (EASY-PACK liftgate))

i The sensor units in the KEYLESS-GO door handles are switched off when circuit 15 is switched on. Activation takes place when circuit 15 is switched off and a door is opened.

The locking/unlocking function comprises the following subfunctions:

- **Function sequence for preadjustment of unlocking mode**
- **Function sequence for locking/unlocking one vehicle door**
- **Function sequence for acoustic locking feedback**
- **Function sequence for optical locking feedback**
- **Function sequence for unlocking and opening trunk lid or liftgate**
- **Function sequence for closing trunk lid or liftgate and locking vehicle**

Function sequence for preadjustment of unlocking mode

Basically the following types of unlocking are differentiated:

- Globally unlocking:

The entire vehicle can be unlocked by reaching into or pulling a KEYLESS-GO door handle.

Function sequence for locking/unlocking one vehicle door

Unlocking possibilities:

- Reaching any KEYLESS-GO door handle
- Pulling any KEYLESS-GO door handle

Option for opening trunk lid or liftgate:

- Operate the trunk lid/liftgate external operation switch
- "Kicking movement" beneath rear bumper (Rear switching module (with code (871) HANDS-FREE ACCESS))

Locking possibilities:

- Touching outside of KEYLESS-GO door handle or
- Actuating sensor on KEYLESS-GO door handle

Example globally unlocking at left front door:

When you reach into the left front KEYLESS-GO door handle, the capacitive sensor (recessed sensor area) in the door handle recognizes this. The KEYLESS-GO control unit reads in the signal from the capacitive sensor and transmits a wake-up signal via the left rear door KEYLESS-GO antenna (model 205.0/1/2, 253) or the left front door KEYLESS-GO antenna (model 205.3/4) to the transmitter key.

The transmitter key sends its access authorization code and its position via the rear window antenna and the FM 1, AM, CL [ZV] and KEYLESS-GO antenna amplifier to the KEYLESS-GO control unit.

The KEYLESS-GO control transmits this data to the electronic ignition lock control unit via the interior CAN. The electronic ignition switch control unit checks the access authorization of the transmitter key.

If it is defined as valid, the electronic ignition lock control unit transmits the request "Open CL" via the interior CAN to the following control units:

- Front SAM control unit (for feedback signal)
- Rear SAM control unit

Function sequence for acoustic locking feedback

The acoustic locking feedback function is selected via the control level in the head unit. The function is selected via the Audio/COMAND control panel and is displayed on the Audio/COMAND display.

The Audio/COMAND control panel sends the adjustment request via telematics CAN to the head unit. The head unit generates the corresponding image data and sends a switch-on request to the Audio/COMAND display via telematics CAN. The image data is sent via the LVDS line to the Audio/COMAND display.

Function sequence for optical locking feedback

After the CL is locked or unlocked successfully, a visual feedback is output via the turn signals.

The electronic ignition lock control unit transmits the request "Lock" or "Unlock" to the front SAM control unit via the interior CAN. The front SAM control unit then activates the hazard warning flasher function. All turn signals are actuated synchronously on the vehicle.

Additional function requirements for unlocking and opening trunk lid or liftgate

- Trunk lid or liftgate locked

Function sequence for unlocking and opening trunk lid or liftgate

Trunk lid/liftgate external operation switch:

- Selective unlock (only possible at the driver door):

Only the driver door is unlocked by reaching into the left front KEYLESS-GO door handle or pulling the left front KEYLESS-GO door handle. The opening request from the fuel filler flap is enabled additionally.

i Operating the trunk lid/liftgate external operation switch only opens the trunk lid or the liftgate.

If a KEYLESS-GO door handle is operated at the front passenger door or one of the rear doors (model 205.0/1/2, 253) during selective unlocking, global opening takes place.

Simultaneously pressing the lock/unlock buttons on the transmitter key for $t = 5$ s switches the system between two types of unlocking. The LED on the transmitter key comes on twice to confirm this change.

-
- Left front door control unit
 - Right front door control unit
 - Left rear door control unit (model 205.0/1/2, 253)
 - Right rear door control unit (model 205.0/1/2, 253)

The left front door control unit unlocks the left front door lock via the left front doors central locking motor. The right front door control unit unlocks the right front door lock via the right front door central locking motor.

Model 205.0/1/2, 253:

The left rear door control unit unlocks the left rear door lock via the left rear door central locking motor. The right rear door control unit unlocks the right rear door lock via the right rear door central locking motor.

Model 205.4:

The rear SAM control unit locks or unlocks the stowage compartment in the center console via the stowage compartment central locking actuator motor.

Opening of the trunk lid or the liftgate via the trunk lid/liftgate external operation switch is enabled accordingly by the rear SAM control unit.

The rear SAM control unit enables the opening request from the tank cap central locking actuator.

On vehicles with code (885) Extended theft protection, the following components are actuated additionally:

- Left front door additional door lock actuator motor in left front door lock
- Right front door additional door lock actuator motor in right front door lock
- Left rear door additional door lock actuator motor (model 205.0/1/2, 253) in left rear door lock (model 205.0/1/2, 253)
- Right rear door additional door lock actuator motor (model 205.0/1/2, 253) in right rear door lock (model 205.0/1/2, 253)

i The vehicle cannot be locked if a door is open.

The head unit sends the status of the acoustic locking feedback function via user interface CAN, electronic ignition lock control unit and chassis CAN to the front SAM control unit.

When the acoustic locking feedback function is activated, the front SAM control unit momentarily actuates the left horn and the right horn via the horn relay after successful locking. For this purpose the electronic ignition lock control unit sends the "Lock" request via interior CAN to the front SAM control unit.

i There is no signal for unlocking. If a door is still open when locking, there is no acoustic feedback.

One flashing cycle is output when unlocking. Three flashing cycles are output when locking.

i If a door is still open when locking, there is no visual feedback.

Operating the trunk lid/liftgate external operation switch unlocks and opens the trunk lid or the liftgate. The rear SAM control unit reads in the status of the trunk lid/liftgate external operation switch directly and sends this via interior CAN to the KEYLESS-GO control unit.

With CODE 871 (HANDS-FREE ACCESS):

The function is actuated by foot motion ("kicking motion") in the rear of the rear switching module below the bumper. The rear switching module directly reads in the signals from rear switching module sensors, evaluates them and transmits the corresponding request to the KEYLESS-GO control unit via the KEYLESS-GO LIN.

In both cases the KEYLESS-GO control unit then actuates the trunk KEYLESS-GO antenna, which transmits a wakeup signal to the transmitter key. The transmitter key sends its access authorization code and its position via the rear window antenna and the FM 1, AM, CL [ZV] and KEYLESS-GO antenna amplifier to the KEYLESS-GO control unit. The KEYLESS-GO control unit transmits the access authorization code via the interior CAN to the electronic ignition lock control unit. If the access authorization is valid, the electronic ignition switch control unit sends request "Open trunk lid/liftgate" to the rear SAM control unit via interior CAN. The rear SAM control unit then actuates the trunk lid/liftgate lock motor in the trunk lid/liftgate lock to unlock the trunk lid or the liftgate.

The rear SAM control unit reads in the status of the trunk lid/liftgate control button directly and transmits it via interior CAN to the trunk lid control unit or the liftgate control unit, which initiates closing of the trunk lid or the liftgate.

With CODE 871 (HANDS-FREE ACCESS):

The function is actuated by foot motion ("kicking motion") in the rear of the rear switching module below the bumper. The rear switching module directly reads in the signals from rear switching module sensors, evaluates them and transmits the corresponding request to the KEYLESS-GO control unit via the KEYLESS-GO LIN.

- **Function sequence for interrogation of transmitter key**
- **Function sequence for starting engine**
- **Function sequence for display of fault messages**
- **Function sequence for circuit switching**
- **Function sequence for shutting off engine**

- When starting off ($v > 0$ km/h), if a door, the trunk lid or the liftgate is not closed.

If the vehicle stops and no door is opened, no new interrogation takes place as well.

i If no valid transmitter key is recognized in the vehicle interior when the transmitter key is queried in order to start the engine, "Please insert key" is displayed on the instrument cluster in white text after the KEYLESS-GO start/stop button has been pressed five times. If a transmitter key is not recognized in the vehicle interior when starting the vehicle, the message "Key not recognized" appears in red lettering in the instrument cluster. In this case it is possible to switch off the engine, however, it cannot be started. The message remains until it is acknowledged by the driver by changing the door status or with circuit 50 OFF.

Function sequence for starting engine

The engine is started when the KEYLESS-GO start/stop button is pressed.

The electronic ignition lock control unit directly reads in this request and transmits the status "Start/stop button pressed" via the interior CAN to the KEYLESS-GO control unit.

The KEYLESS-GO control unit evaluates this and transmits wake-up and location-finding signals to the transmitter key via the center console KEYLESS-GO antenna. The transmitter key sends its drive authorization code and its position via the rear window antenna and the FM 1, AM, CL [ZV] and KEYLESS-GO antenna amplifier to the KEYLESS-GO control unit. The KEYLESS-GO control unit transmits this data to the electronic ignition lock control unit via the interior CAN.

The electronic ignition switch control unit checks the drive authorization code of the transmitter key. If this is defined as valid, the electronic ignition lock control unit sends the status circuit 50 On via the chassis FlexRay, the drive train control unit and engine CAN to the CDI control unit or the ME-SFI [ME] control unit.

- If the search for a key for drive authorization is unsuccessful, the instrument cluster displays the message "Key not recognized" in white text.
- If no transmitter key is recognized in the vehicle interior after five activations of the KEYLESS-GO start/stop button, the message "Please insert key" is displayed on the instrument cluster. The start attempt is not started. The status of the circuit remains unchanged.
- If, after startup ($v > 0$ km/h) a transmitter key is not recognized in the vehicle interior, the instrument cluster outputs the message "Key not recognized".

Function sequence for circuit switching

If the foot brake is not depressed when the KEYLESS-GO start/stop button is actuated, only circuit 15R is switched on. Repeated actuation of the KEYLESS-GO start/stop button activates circuit 15. Actuating again, switches off circuit 15R and circuit 15. When the driver door is closed, circuit 15C remains switched on for $t = 30$ min.

Additional function requirement for closing trunk lid or liftgate and locking vehicle

- Driver door closed

Function sequence for closing trunk lid or liftgate and locking vehicle

Trunk lid/liftgate control button (model 205.0/1/3 with CODE 881 (Remote trunk closing) or model 205.2, 253 with CODE 890 (EASY-PACK liftgate)):

Additional function prerequisites for Engine Start/Stop

- The transmitter key is located in the vehicle interior

Function sequence for engine start/stop

The function engine start/stop enables the engine to be started and switched off via the KEYLESS-GO start/stop button.

The partial function start/stop engine comprises the following partial functions:

Function sequence for interrogation of transmitter key

The KEYLESS-GO control unit starts the check for an authorized transmitter key under the following conditions:

- When the final door is closed

Additional function requirements for starting engine

- Transmission in position "P" or "N":

The fully integrated transmission control unit sends the transmission selector lever position to the electronic ignition lock control unit via drive train CAN, the powertrain control unit and the chassis FlexRay.

- Foot brake actuated:

The electronic stability program control unit transmits the status of the brake light switch (except hybrid vehicles) or the pedal angle sensor signal (hybrid vehicles) to the electronic ignition lock control unit via the suspension FlexRay.

Function sequence for display of fault messages

The KEYLESS-GO control unit transmits the request to output an error message via the interior CAN, electronic ignition lock control unit and user interface CAN to the instrument cluster.

The following situations lead to the output of fault messages:

Function sequence for shutting off engine

When the KEYLESS-GO start/stop button is pressed when the engine is running, the engine is requested to shut down. The electronic ignition lock control unit detects when the KEYLESS-GO start/stop button is pressed and transmits the status "Start/stop button pressed" to the KEYLESS-GO control unit via the interior CAN. The KEYLESS-GO control unit evaluates this and transmits the request "Shut off engine" via the interior CAN, electronic ignition lock control unit and chassis Flex-Ray, drive train control unit and engine CAN to the CDI control unit and ME-SFI control unit.

The CDI control unit or ME-SFI control unit then shuts off the engine depending on the vehicle speed.

Switching off engine depending on vehicle speed:

- Speed $v < 3$ km/h: Engine switched off immediately.
- Speed $v > 3$ km/h: Engine is switched off after pressing KEYLESS-GO start/stop button for a longer period of time ($t > 3$ s).

The vehicle speed is sent by the instrument cluster via user interface CAN, the electronic ignition lock control unit and interior CAN to the KEYLESS-GO control unit.

	Electrical function diagram for Keyless Go	Model 205 up to model year 2019 with code 889 (KEYLESS-GO) Model 253 (except 253.99) with code 889 (KEYLESS-GO)	PE80.61-P-2050-97FBA
	Electrical function schematic for KEYLESS-GO engine start/stop	Model 205 up to model year 2019 with code 893 (KEYLESS-GO) Model 253 (except 253.99) with code 893 (KEYLESS-GO)	PE80.61-P-2052-97FBA
	Overview of system components for theft protection and locking		GF80.00-P-9999RF