

Central locking system

E60, E61, E63, E64



Introduction

The Car Access System (CAS) monitors all the processes in the central locking system. The CAS control unit is the master control unit for the central locking.

Up to 09/2005, the central locking system on the front doors is actuated by the door modules (driver's door module and front passenger door module).

> From 09/2005

The door modules are discontinued. The central locking system on the front doors is actuated by the body gateway module (KGM).

[system overview ...]

The following central locking drives are actuated by the body basic module (KBM).

- Rear doors (E60, E61 only)
- Rear lid
- Fuel filler flap
- Rear window (E61 only)

The CAS control unit uses the requests from various operating points (e.g. lock cylinder, remote control) to decide what needs to be done:

- Locking/deadlocking the central locking system
- Unlocking the central locking system

Brief description of components

The following components supply an input signal for the central locking system:

- **Driver's door lock cylinder**

The driver's door lock cylinder allows manual locking/deadlocking and unlocking of the vehicle. If the vehicle's electrical system fails, the driver's door can be unlocked manually using the ignition key.

- **Interior boot lid pushbutton in the driver's footwell**

The interior boot lid pushbutton allows the boot lid to be opened while the vehicle is stationary (terminal R OFF).

- **Central locking button**

The central locking button allows the vehicle to be locked/unlocked from the passenger compartment. The fuel filler flap is not locked.

- **Remote control**

The remote control allows the vehicle to be locked/deadlocked via radio (aerial interface). The radio signals from the remote control are received by the FBD receiver (receiver for remote control) and transferred to the CAS control unit.

- **Lock cylinder on the boot lid**

The boot lid lock cylinder allows the boot lid to be opened manually (E60, E63, E64 only).

On the E60 the hotel position is also applied via the lock cylinder.

On the E63/E64 the hotel position is applied in the rear stowage compartment in the centre console (hotel position switch). This means that, in addition to the boot lid, the front stowage compartment can also be uncoupled from the central locking system.

- **External boot lid pushbutton**

The external boot lid pushbutton allows the boot lid to be opened while the vehicle is unlocked and stationary (hotel position not applied).

Via the BMW badge on the E63/E64.

- **Rear window switch (E61 only)**

The rear window switch allows the rear window to be opened while the vehicle is unlocked and stationary (hotel position not applied). The rear window switch is integrated in the rear window wiper.

- **Door contacts**

The signals from the door contacts are analysed by different systems.

For example, the anti-theft alarm DWA requires the signals to monitor the doors.

The following control units are involved in the central locking system:

- **CAS: Car Access System**

All the rules for controlling the central locking are integrated in the Car Access System. The commands are transferred by the CAS control unit via the K-CAN.⇒

- **SGM: Safety and gateway module**

>up to 09/2005

The safety and gateway module (SGM) forms the bus interface between K-CAN and **byteflight**.

- **TMFA and TMBF: Driver's door module and front passenger door module**

>up to 09/2005

The door modules are a component of the passive safety system ASE (= Advanced Safety Electronics). The door modules control the central locking system for the front doors.

[more ...]

- **KGM: Body gateway module**

>from 09/2005

The door modules and the **byteflight** are discontinued.

The body gateway module (KGM) actuates the central locking in the front doors. Moreover, the KGM is the central gateway to the bus system.

[more ...]

- **Body basic module**

The body basic module (KBM) controls the central locking system on the rear doors (not on the E63, E64). It also controls the central locking drives on the fuel filler flap, the boot lid and the rear window (E61).

[more ...]

The following actuators are controlled by the central locking system:

- **Motors in the door locks**

There are 2 motors in each door lock. The locking mechanism can be brought into the following position by the motors:

- Lock: Door can still be opened from the inside
- Deadlock: Door cannot be opened from the inside or from the outside
- Unlock: Door can be opened from the inside and outside

[more ...]

- **Motor for the fuel filler flap**

The motor locks/unlocks the fuel filler flap.

- **Motor for the boot lid lock**

The motor locks/unlocks the boot lid.

It is not possible to operate the central locking system via the boot lid lock.

The boot lid can only be unlocked manually via the boot lid lock.

On the E61 the boot lid lock is supported by an automatic soft-close mechanism.

- **Motor for the rear window (E61 only)**

The motor locks/unlocks the rear window.

At the same time, the body basic module controls the locking/unlocking of the luggage compartment cover blind (1 motor each on the left and right D-pillar).

System functions

The central locking system incorporates the following functions:

- Locking
- Deadlocking
- Unlocking
- Hotel position
- Crash unlocking
- Forced deadlock release
- Lock-out protection
- Repeat lock
- Automatic relocking
- Voltage monitoring
- Mechanical asynchronicity

Locking

A locked door cannot be opened from the outside. However, the door can still be opened from the inside. To do this, the door handle must be pulled twice.

Locking is performed in the following ways:

- Operation of the central locking button (condition: front doors must be closed)
- Operation via the driver's door lock cylinder or the remote control, where the conditions for deadlocking are not fulfilled (see "Deadlocking").

Deadlocking

A deadlocked door cannot be opened from the inside or outside.

A door is deadlocked if the vehicle is locked via the driver's door lock cylinder or the remote control.
Conditions:

- Terminal R OFF
- Driver's door or front-passenger door was opened
- Driver's door closed

When the vehicle is deadlocked, the anti-theft alarm DWA is also primed.

Unlocking

An unlocked door can be opened from the inside and the outside.

When the vehicle is unlocked, the anti-theft alarm DWA is also deactivated.

Hotel position

The hotel position is applied via the lock cylinder in the boot lid (E60).

On the E63/E64 the hotel position switch is in the rear stowage compartment of the centre console.

When the hotel position is applied, the boot lid also stays locked after the vehicle is unlocked.

On the E63/E64 the front stowage compartment of the centre console also stays locked.

The boot lid pushbutton in the interior footwell and the outside boot lid pushbutton are deactivated. Application of the hotel position is detected from the position of the boot lid lock cylinder or by the hotel position switch.

Crash unlocking

A crash is detected by the passive safety system ASE (= Advanced Safety Electronics). The crash signal is reported by the safety and gateway module (SGM) to the CAS control unit. The message is sent on the K-CAN. The CAS control unit unlocks the vehicle.

All operating points are disabled when there is a crash signal. This prevents unintentional actions of the central locking system from occurring due to short circuits caused by the accident.

The central locking system can only be reactivated after a crash once terminal R has been switched off for at least 3 seconds.

Forced unlocking

If the CAS detects that a key is engaged in the ignition starter switch, the central locking system is released. The central locking system assumes the "Lock" position.

The anti-theft alarm system is also deactivated during forced release.

Lock-out protection

To protect the driver against unintentionally locking himself out, all operating points are locked when the driver's door is open. This makes any additional mechanical lock-out protection in the door locks unnecessary.

Anti-repeat circuit

To protect the central locking drives (doors, boot lid, fuel filler flap and rear window) against overloading, the CAS monitors repeated operation.

If there are more than 15 attempts at activation within one minute, the drives are not unlocked for a certain time.

Automatic relocking (with activated Car Memory)

Automatic relocking (deadlocking) takes place:

If the central locking system has been unlocked via the remote control and if neither a door nor the boot lid has been opened within two minutes.

Voltage monitoring

The function range for the central locking system is specified as being from 7 to 16 volts. Outside this range, the

drives will not be actuated.

If the power supply is interrupted, the status of the central locking system will not change (anti-theft protection).

Notes for service staff

Service staff should note the following points:

- Service instructions: ---
- Diagnosis: ---
- Encoding: ---
- Programming: ---
- Car & Key Memory: [more ...]

National versions

The following functions are possible for the US version (and some can be set using Car and Key Memory):

- **Single release using the central locking button**

Persons who are accidentally locked in the vehicle can free themselves using the following safety function: When the central locking button is pressed, the central locking system shifts the central locking once from deadlocking to locking.

Then the door can be opened by pulling the inside door handle twice. This does not deactivate the anti-theft alarm.

The alarm is triggered when the door is opened.

- **Speed-dependent locking**

The central locking system is automatically locked from a speed of 16 km/h.

- **Fuel filler flap only locked when vehicle is deadlocked**

The fuel filler flap is only locked when the central locking system is set to deadlock.

- **Selective unlocking**

The first time there is an unlocking command, only the driver's door is unlocked. The central locking system changes all the other doors from deadlocked to locked:

The DWA is deactivated, the doors remain locked.

The other doors are unlocked on the second unlocking command.

Subject to change.