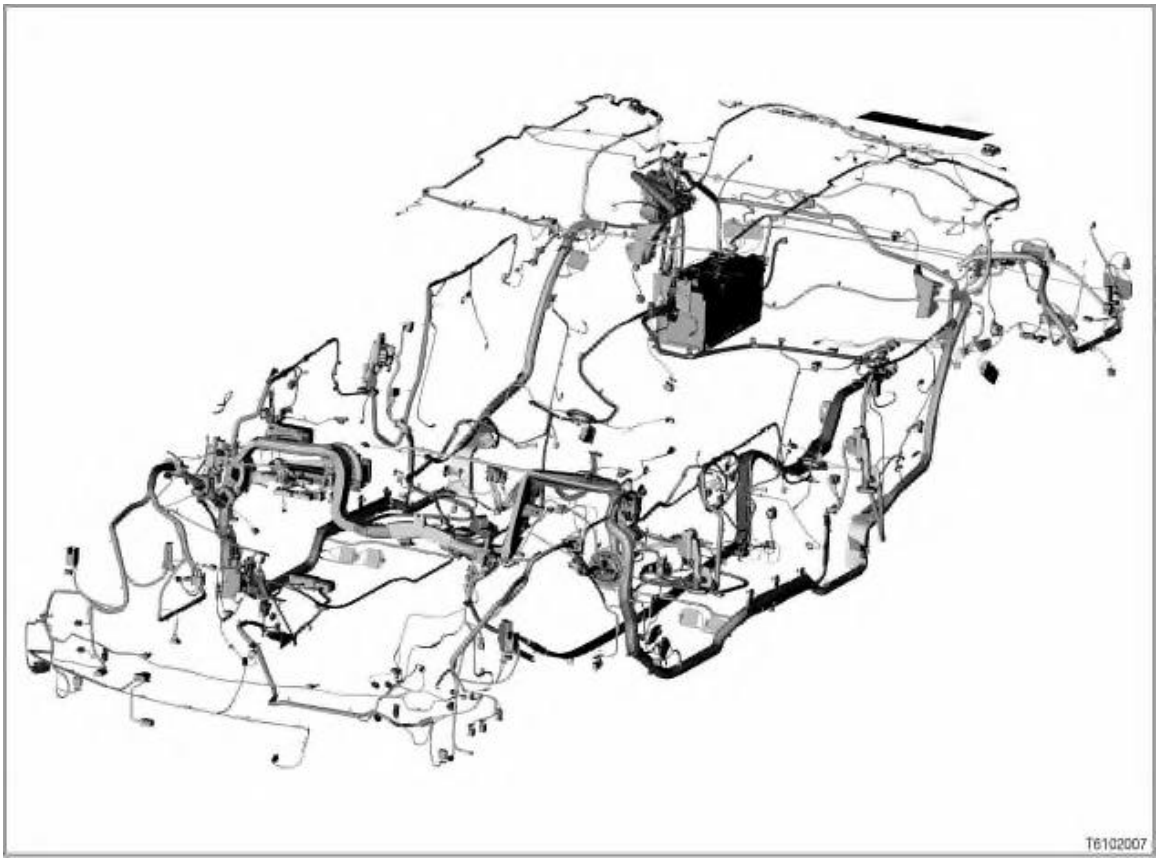
# Car Access System CAS

## E60




**Introduction**

The Car Access System CAS controls access to the vehicle. The CAS is the master control unit for the central locking and the electronic immobiliser, for example. [System overview ...]
The CAS in the E60 is a development of the CAS in the E65. However, the CAS and the ignition starter switch are 2 separate components in the E60.

**Brief description of components**

The CAS consists of the following components:

- **CAS control unit**
  The control unit for the CAS is connected directly to the K CAN (body CAN). [more ...]
- **Ignition starter switch**
  The ignition starter switch switches the individual terminals of the ignition lock.
  4 Hall sensors are installed in the ignition starter switch. The Hall sensors read the status of the terminals.
  [more ...]

**System functions**

The CAS comprises the following functions:

- terminal control for the ignition lock

- convenient starting system with electronic immobiliser
- remote control
- centralised control of the central locking system
- centralised control of the power windows
- MOST wake-up on the K CAN for a telematics service
- centralised data source and redundant data storage (e.g. vehicle order)

**Terminal control**

The CAS controls the following ignition lock terminals:

- Terminal R

  To reduce the off-load current and thus maintain the starting capability of the vehicle, the CAS shuts down terminal R automatically. Terminal R is shut down after 30 minutes if the driver's door is closed and no seat is occupied.

- Terminal 15

  The CAS controls terminal 15 (= switched positive) for all electrical systems.

- Terminal 15 wake-up line
  When terminal 15 is activated, the control units on the PT CAN are activated (woken up) by the wake up line.

- Terminal 50L and 50E

  During the starting operation, terminal 50L is connected to the starter. Terminal 50E is connected to the DME control unit or the DDE control unit when the start request is made.

- Switched terminal 30g

  Some consumers (e.g. RDC, SZM) are now on terminal 30g rather than directly on terminal 30. Terminal 30g is switched by the CAS. The off-load current is reduced by the consumers on terminal 30g switching off.

**Convenient starting system with electronic immobiliser**

The convenient starting system allows the engine to be started in a user-friendly manner. The starter is controlled until the engine starts up. Repeated operation of the starter (by turning the ignition key again) is prevented.
The CAS contains the rolling code for the electronic immobiliser EWS. This rolling code is transferred between the CAS and the DME control unit or DDE control unit. The DME control unit or DDE control unit does not release the ignition or fuel injection until a valid rolling code (authorised ignition key) is detected.

**Remote control**

The remote control is used to operate the central locking and various additional functions. A radio transmitter is integrated in the remote control.

The rear-window aerial receives the remote control commands in the FBD receiver of the aerial amplifier (FBD = remote control service). The remote control commands are forwarded by the FBD receiver to the CAS.

Radio transmission of the remote control commands is encoded using a rolling code. This encoding rules out any possibility of manipulation.

The CAS manages the rolling codes of up to 4 remote controls.

When the vehicle is unlocked, the personalisation number stored in the remote control is transferred to the CAS. The personalisation number controls the presettings coded in the key memory. The CAS transfers the personalisation number to the control units on the data buses. The key memory-dependent settings are stored in the relevant control units.

**Centralised control of the central locking system**

The CAS is the master control unit for the central locking system.

Depending on the control request, the CAS decides whether the central locking should be unlocked, locked or secured. The central locking of the front doors is controlled by the door modules (TMFA and TMBF). The central locking of the rear doors, the tailgate/boot and the fuel filler cap is controlled by the body basic module KBM. The appropriate commands are delivered on the data buses.

**Centralised control of the power windows**

The CAS is the master control unit for the power windows.

The functions of the power windows depend heavily on coding due to the wide range of national versions.
The power windows in the front doors are controlled by the door modules (TMFA and TMBF).
The power windows in the rear doors are controlled by the body basic module KBM. The appropriate commands are delivered on the data buses.

**MOST wake-up on the K CAN for a telematics service**

The telephone control unit wakes up on a cyclical basis so that it may check for any new request from telematics (e.g. an SMS for switching on the independent heating).

The MOST network is a closed ring only. This means that all bus subscribers in the MOST network must be awake.
Being a MOST subscriber, the telephone control unit is unable to wake the MOST.
The CAS wakes the M-ASK on the K CAN on receipt of a trigger signal from the telephone control unit. The M-ASK then wakes the MOST. The telephone control unit is now able to check whether a telematics service should be performed.

**Centralised data source for the vehicle order and redundant data storage for vehicle data**

The vehicle order is stored in the CAS. The vehicle order describes the vehicle model, the national version and the items of optional equipment.

The following data is stored in the CAS redundantly with the instrument cluster (see also Notes for service staff):

- Vehicle identification number
- Odometer status
- Data for the Condition Based Service CBS)

The vehicle identification number and odometer are used to prevent manipulation. The CBS data is important for service staff and must not be lost.

The CBS data is updated in the vehicle key within a driving cycle.
A driving cycle is defined by:

- Activation of terminal 15 and exceeding/falling below the speed threshold of 50 km/h and 30 km/h
- Subsequent updating after exceeding a distance of 10 kilometres and exceeding/falling below the speed threshold of 50 km/h and 30 km/h

It is also possible to operate a hidden service function for the purposes of updating the CBS data on the vehicle key:

- Insert vehicle key -> press and hold central locking button on "unlock" -> activation of terminal 15

**Notes for service staff**

Service staff should note the following points:

- General note: [more ...]
- Diagnosis: [more ...]
- Encoding/programming: [more ...]
- Car and Key Memory: see SBT for central locking system and power windows

Subject to amendment arising from misprints, errors and technical modifications.