

Antitheft Alarm System (DWA)

The antitheft alarm system (DWA) monitors the doors and lids as well as the ignition lock, the vehicle tilt and the vehicle interior.

An acoustic and visual alarm is triggered in the event of alarm.

The DWA is controlled by the general module.

Operation

The antitheft alarm system is activated automatically when the vehicle is arrested. (Arrest = Switch off ignition, open and close driver's door, lock vehicle via lock cylinder or remote control.)

The coding data determines whether the DWA is armed and disarmed via the remote control only or by means of remote control and the lock cylinder.

If the antitheft alarm system (DWA) is only to be operated by way of remote control, an alarm is triggered when the vehicle is unlocked via the door lock.

The inputs are monitored after arming and a waiting period of approx. 3 seconds. This waiting time makes it possible, for example, to close a door shortly after arming the antitheft alarm system (DWA).

The status LED flashes for 10 seconds if one or several input signals are not in rest setting (e.g. door open) after arming. A switch which is not in rest position is not included in the monitoring function.

If the DWA is again armed within 10 seconds of being armed, the tilt sensor and the remote interior protection (remote interior protection as of 9/95) in the basic module are masked (special mode for inclined garages or motorail trains).

The "DWA armed or disarmed" status is stored in the general module independent of the power supply. Disconnecting and reconnecting the battery does not result in the system being disarmed.

Status LED

An LED which serves as a visual indicator signals the DWA status.

DWA LED	DWA status
OFF	Disarmed
Permanent rapid flashing	Armed
Flashes for 10 seconds followed by permanent rapid flashing	Input not in rest status
Lights for 1 second followed by permanent rapid flashing	Subsequent arming (= Tilt sensor and remote interior protection are deactivated)
Flashes for 5 minutes followed by permanent rapid flashing	Alarm triggering
10 minutes steady light, then OFF	Emergency disarming
Flashes for 10 seconds then OFF	Disarming after alarm

Additional signalling

Additional signalling during arming and disarming can be encoded (country-specific)

DWA status	Hazard warning lights acknowledgment	Horn acknowledgment
Arming	Warning flash once	1 short tone signal
Disarming	Warning flash twice	2 short tone signals

Radio interior protection (FIS) from 9/95 to 9/98, E39 touring to 3/98

From 9/95 to 9/98 (E39 touring to 3/98) a radio interior protection facility (FIS) was installed instead of the window monitor with glass break detection.

The radio remote interior protection monitors the vehicle interior using ultrasonic radio waves. A body moving in the vehicle changes the reflection of the radio waves. The radio remote interior protection facility triggers an alarm.

The radio remote interior protect module is installed in the roof headlining. The housing features ribs which direct the radio waves in a certain direction. This ensures that the sensing range of the radio waves is limited to the vehicle interior. For this reason, the installation direction of the module is predefined.

Different versions of the radio remote interior protection module are adapted for the different vehicle models. The different versions can be identified by means of the labelling on the housing and part number.

On **series E39 touring models** two radio remote interior protection modules are installed. The front module monitors the passenger compartment, the rear the luggage compartment. Both modules are installed under the roof headlining.

After arming the antitheft alarm system, radio remote interior protection is activated by the general module after a delay of 30 seconds. The radio remote interior protection system is not activated or deactivated under following conditions:

- Vehicle door, boot lid/tailgate or rear window (E39 touring) open
- Convenient opening for window or sunroof active
- Boot lid is opened by remote control with DWA armed
- Emergency arming of DWA active

The radio remote interior protection is again activated after a delay of 30 seconds, if the conditions for switching off are no longer present.

To eliminate the risk of the system triggering incorrectly due to the radio remote interior protection under certain conditions (e.g. motorail trains or ship transport), the radio remote interior protection can be masked in the basic module when the DWA is armed. This is done by arming the DWA a second time within the space of 10 seconds (lock the vehicle twice via the lock cylinder or the radio key). The tilt sensor is also deactivated. The status LED indicates that deactivation has taken place by lighting briefly.

Ultrasonic interior protection (USIS) from 9/98, E39 touring from 3/98

As from 9/98 (E39 touring 3/98) an ultrasonic interior protection system will be used instead of radio interior protection. In this case, the interior is monitored by means of sound waves.

Two pairs of ultrasonic sensors (receiver and transmitter), the ultrasonic module (installed in the same location as the radio module) monitors the vehicle interior. Any movements in the vehicle interior are detected by the changes in sound reflection (echo).

Boot lid/rear window open

If the boot lid/tailgate or rear window (E39 touring) are opened with the antitheft system armed, the boot lid/tailgate/rear window contact, radio interior protection system and the tilt sensor are blanked out in the control unit. In this case, a signal exchange does not result in the alarm being triggered.

An alarm is also not triggered when the boot lid/tailgate is unlocked with the vehicle key.

The blanked out signals are reactivated 30 seconds after closing the boot lid/tailgate or rear window.

Alarm triggering

The alarm is triggered by the general module. The following acoustic signal generators are used:

- up to 9/95: A horn
- as of 9/95: an emergency siren

The acoustic signal generator is driven for 30 seconds in the case of alarm. The alarm is interrupted immediately when the antitheft alarm system (DWA) is disarmed.

The signal generator can be coded to permanent tone or intermittent tone country-specific.

At the same time as the acoustic signal, and optical alarm is also triggered for about 5 minutes. The lights are switched on via the light module. The general module informs the light module via the K-bus and I-bus what lights are to be switched on.

The lights which are to be activated as part of the visual alarm are coded country-specific in the general module.

Emergency current siren

As of 9/95 an emergency siren is installed instead of the alarm horn.

In contrast to the alarm horn, electronic circuitry and a rechargeable battery are integrated in the emergency current siren. The emergency current siren can therefore be activated independent of the vehicle power supply system.

The emergency current siren is primed and deactivated via a line (connector X253 Pin 20) (the same line also activates and deactivates the tilt sensor and remote interior protection facility). The general module informs the emergency current siren via another line that an alarm has been triggered (same line as for horn, connector X254, Pin 17). With the emergency current siren primed, an alarm can still be triggered when the siren is disconnected from the vehicle electrical system or the vehicle battery is disconnected.

A differentiation is made between two basic versions of the emergency current siren for US and ECE operation. The ECE version can be used for both permanent tone as well as for intermittent tone operation. The mode of operation is coded automatically by means of the general module. When an alarm is triggered, the general module informs the emergency current siren of the coded mode of operation. This is stored in the siren so that the specified mode of operation is maintained even in the event of the siren triggering of its own accord. When the general module is recoded, the mode stored in the siren is also changed the next time the alarm is triggered.

Emergency disarming

It may be possible that the antitheft alarm system (DWA) can no longer be disarmed in the event of the remote control or central locking systems failing. In this case, the DWA must be disarmed, however, this procedure triggers an alarm.

Procedure:

- Unlock driver's door mechanically and open, an alarm is triggered, the status LED flashes.
- Close all doors, the boot lid/tailgate and the bonnet. Also close the windows on vehicles with window monitoring.
- Switch ignition lock from position 0 to position 1 (terminal R ON), the status LED lights.
- The system is disarmed after a waiting time of 10 minutes has elapsed, the status LED goes out.

The emergency disarming procedure is terminated if a door is opened or the ignition lock position changed during this waiting period.

Emergency disarming is restarted when, after closing the door, the ignition lock is switched from "0" to "1".

Immobilization and starter interlock (without EWS)

On vehicles without EWS (electronic immobilizer), the immobilization and starter interlock functions are carried out by the general module when the vehicle is arrested.

The immobilization function is provided by a line from the general module to the DME control unit. The DME is partly deactivated when the vehicle is arrested.

A second line leads from the general module to a starter interlock relay. This relay switches terminal 50 from the ignition lock to the starter. The engine can only be started when the vehicle is released and disarmed and terminal 15 is switched on.

As of 1/95, the EWS system undertakes these functions.