

Central locking

General information

Thefts of vehicles with keyless systems are well known to the public. The actual theft is usually achieved using the so-called relay technique. This involves extending the radio signal from the remote control key, making it possible to steal the car.

Audi has continued to develop the convenience key function and added additional security features. For example, customers can manually deactivate the “Open with convenience key” function before leaving Audi models with convenience key.

The Audi A8 (type 4N) was the first vehicle in which an additional sensor was integrated in the vehicle key. If the vehicle key is not moved for a long period, the convenience system central control unit J393 decides, using the information “key moved” or “key not moved”, whether the function “open” should be allowed or disallowed.

On the Audi A3 (type 8Y), this function has been enhanced so that the key is completely deactivated after a specified period of time. The vehicle can then no longer be started.

RSAD UWB on the Audi A3 (type 8Y)

The Audi A3 (type 8Y) is the first vehicle which measures the distance between the ignition key and the vehicle. This is done by measuring the time a signal takes to travel in the gigahertz frequency. This function is available as optional equipment. The function “Open with convenience key” is only possible and permitted within a defined distance. There is no communication between the key and the vehicle outside the defined area.

The technology is called RSAD UWB. This stands for **Relay Station Attack Detection** via **Ultra Wide Band**.

At Audi, RSAD modules are referred to as “control units for break-in protection”. These are control units 2 - 5 for break-in protection (J1192 - J1195).

They send UWB signals. The distance between the sender and the receiver is determined using the signal travel time and stored in the ignition key.

Put simply, the system measures the time between sending the signal and receiving the response. The time measured is referred to as the time of flight (ToF). If the time measured (a few nanoseconds) is multiplied by the propagation velocity of the radio waves (almost the speed of light), the result is the distance between the vehicle and the key, correct to within a few centimetres.