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REMOTE CONTROL SERVICES (FBD)

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REMOTE CONTROL SERVICES (FBD)

Model: E65 - 745i

Production Date: 11/2001 - Start of Production

Objectives:

After completing this module you should be able to:

- Understand how the radio signals from the remote control are interpreted and distributed to the various control units in the vehicle.
- Describe how to use and program the Integrated Universal Remote Control.

Remote Control (FZV)

Introduction

The E65 is equipped with Remote Control Service devices as standard vehicle equipment. The services offered at production start are similar in function to the predecessor model E38:

- Remote control of the DWA and Central Locking system (FZV)
- Convenience open of the windows and sunroof.
- Integrated universal remote control (covered separately)

On the E65, the electronic evaluation unit and receiver unit are combined in a single unit integrated in the antenna amplifier.

This has the following advantages for the customer:

- Higher tamper resistance
- Greater security

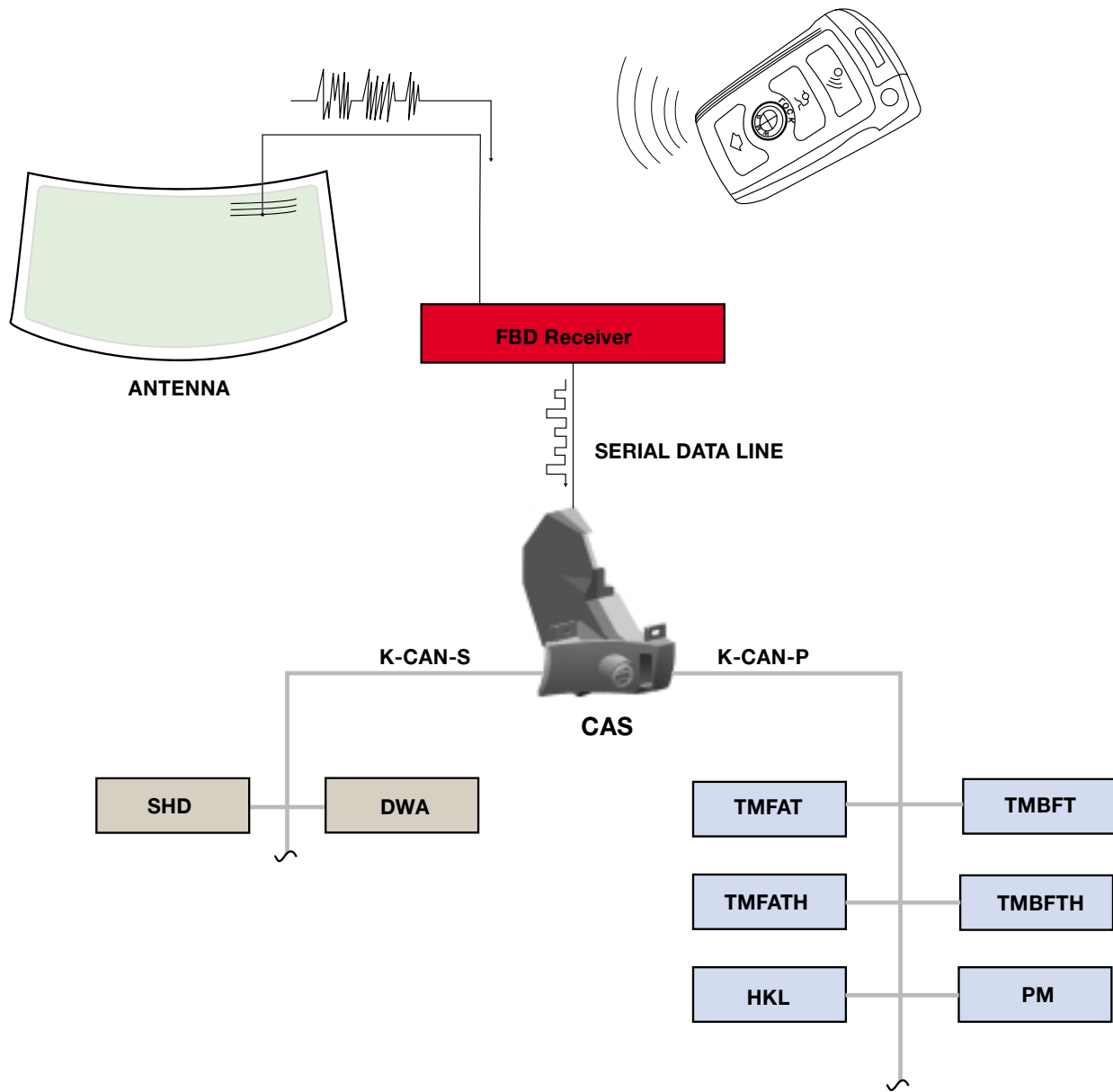
The radio signals of the Remote Control are encrypted by means of a variable (rolling) code. This code prevents the vehicle opening by "monitored and copied signals".

The frequency range for the U.S. has changed from 315Mhz to 868.4Mhz

Depending on equipment fitted and encoding, the following functions are possible:

- Remote control of the central locking system (ZV)
- Arm and disarm anti-theft alarm (DWA)
- Deactivate DWA interior protection and tilt sensor
- Activate panic mode
- Unlock/lock trunk lid
- Open trunk lid
- Switch on interior lights

System Overview



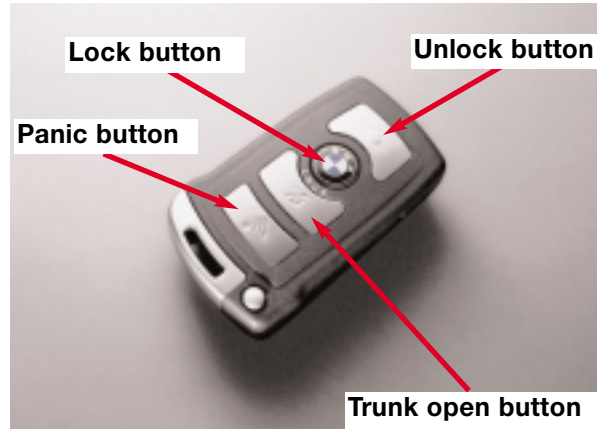
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Components

Remote Controls (Keys)

The Remote Control is comprised of a radio frequency transponder (transmitter+receiver), an EWS transponder and an electronic evaluation unit.

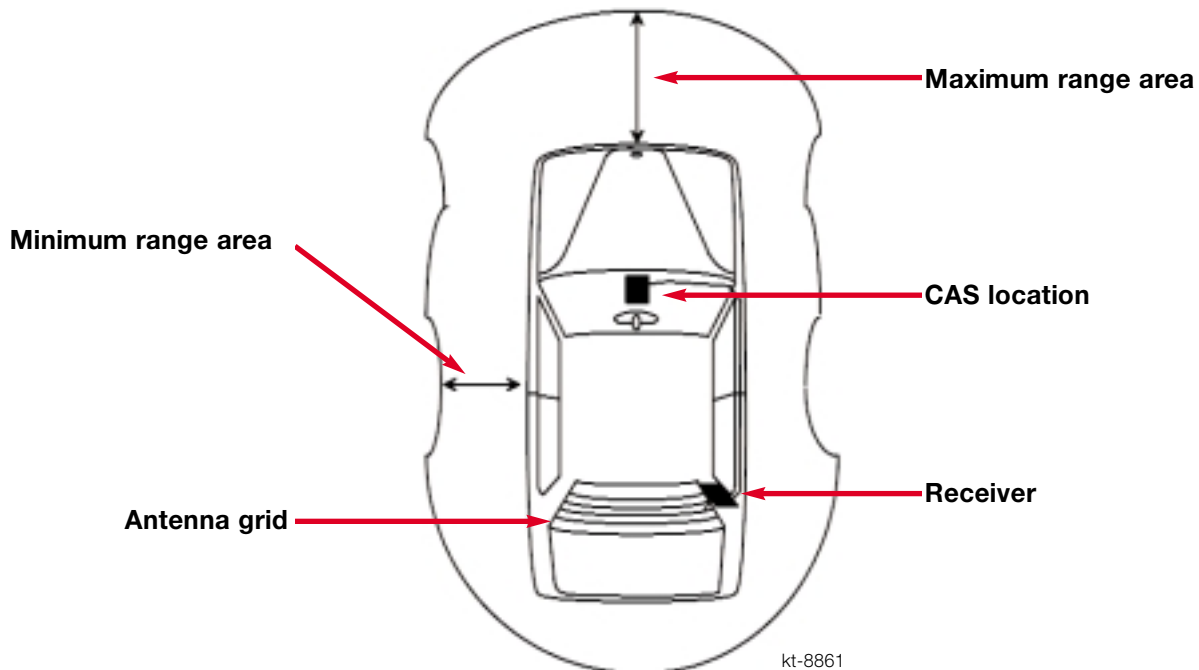
The voltage supply of the Remote Control is provided by an integrated rechargeable battery which is charged during vehicle operation via a 125 kHz interface in the ignition switch (ZAS receptacle) as from terminal R.



The rechargeable battery voltage is monitored independently by the Remote Control and signaled to the CAS.

Up to four Remote Controls may be assigned to the vehicle for remote services (not EWS which may have up to 10). There is no procedure necessary for initialization, once the EWS transponder of the Remote Control is identified by the CAS, the radio frequency transponder is also logged in as valid.

The range of the Remote Control can vary to a great extent. This is dependent on the location of the Remote Control in relation to vehicle and other physical conditions.



Remote Control Functions

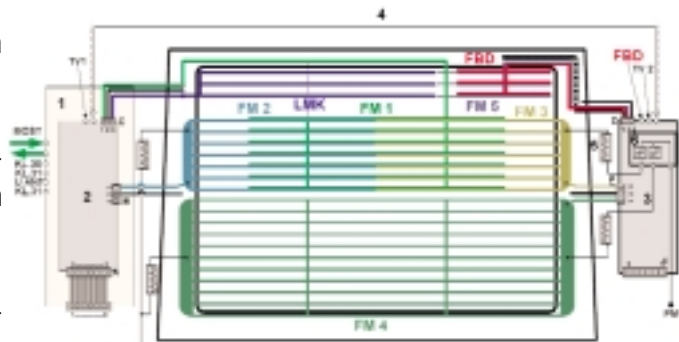
- Double lock/unlock: Press the desired button once.
- Convenience open: Press and hold the unlock button. The operation of opening the windows and sunroof will stop when the button is released.
- Open trunk: Press the trunk open button.
- DWA arming/disarming: Automatically performed when locking or unlocking as long as the criteria for arming is fulfilled.
- Disarm interior protection and tilt sensor: Press lock button again within 10s of locking/arming.
- Interior lights on (search mode): Press lock button with a locked vehicle.
- Panic: Press panic button regardless of vehicle lock status.

Remote Control Receiver

The remote control receiver is located in the antenna amplifier.

The receiver is responsible for intercepting the radio signals and converting them into a digital signal for the CAS.

The CAS receives the signals over a dedicated serial data wire.



Operation

The remote-control telegrams are broadcast as high-frequency signals (HF signals) after pressing a button on the Remote Control key. The signals are received by the rear window antenna, relayed to the remote control receiver, demodulated and encoded.

The operator request, e.g. "unlock central locking system" is then transferred to the CAS via a separate serial data interface.

The function requested by the operator is then communicated to the vehicle electrical system via the K-CAN S and K-CAN P

Integrated Universal Remote Control

The integrated universal remote control replaces up to three hand held transmitters for various devices, (e.g. garage door/gate openers, alarm systems or house lighting systems).

It recognizes and "learns" the signal transmitted by each individual original hand held transmitter.



The signal of an original hand held transmitter can be programmed to one of the three channel buttons. The device is operated with the programmed channel button. The integrated universal remote control uses radio frequencies only (not infrared). Transmission of the signal is indicated by the indicator LED.

During the programming procedure and prior to remote activation of a programmed device it is important to ensure that no persons, animals or objects are located within the range of the device in question (e.g. garage door) as a precaution against injury. The safety precautions for the original hand transmitter must also be complied with.

Original transmitter

If the symbol depicted to the right is on the packaging or in the instructions of the original hand held transmitter, it may be assumed that this original transmitter is compatible with the integrated universal remote control.



Check for random code

The instructions of the original hand held transmitter describe whether or not the original hand transmitter is equipped with a random code system.

Alternatively, a channel button can be programmed to carry out this check. Hold down the programmed channel button on the integrated universal remote control.

If the indicator lamp on the integrated universal remote control flashes quickly for two seconds and then stays on, this means that the original hand transmitter is equipped with a random code system and that the channel buttons can be programmed accordingly.

Programming the integrated universal remote control

To program a channel button with the signal of the original hand transmitter, proceed as follows:

1. Ignition lock position (terminal 15).
2. For initial operation, proceed as follows: press the two outer buttons (1) until the indicator lamp (on the left of the program button) begins to flash, then release the buttons. The three channel buttons are cancelled.
3. Hold the original transmitter max. 5 cm (2in) away from the channel buttons.
4. At the same time, press the transmit button on the original transmitter and the desired channel button on the integrated universal remote control. Release both buttons when the indicator lamp begins to flash quickly.
5. To program additional transmitters, repeat steps 3 and 4.



Programming a random code

To use the integrated universal remote control with a random code system, additional programming steps are necessary. A second person simplifies the programming procedure.

1. Program the integrated universal remote control as described previously.
2. Hold down the programming button on the device receiver for approx. two seconds until the programming lamps on the device come on.
3. Press the desired channel button on the integrated universal remote control three times.

Frequency range

The system operates in the frequency bands 27-40 MHz and 433.2 MHz. Faults and malfunctions may be attributed to radio waves emitted by other transmitters at these frequencies.

Review Questions

1. Which control unit is responsible for distributing the various operational messages transmitted by the Remote Control? _____

2. What additional steps are required when programming the integrated universal remote control with a rolling code transmitter. _____
