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## **E65 TELEPHONE**

**Model: E65 - 745i**

**Production Date: 11/2001 - Start of Production**

### **Objective:**

After completing this model you should be able to:

- Understand how the telephone is integrated into the electronics of the E65.
- Recognize the various methods of controlling the telephone.

## Introduction

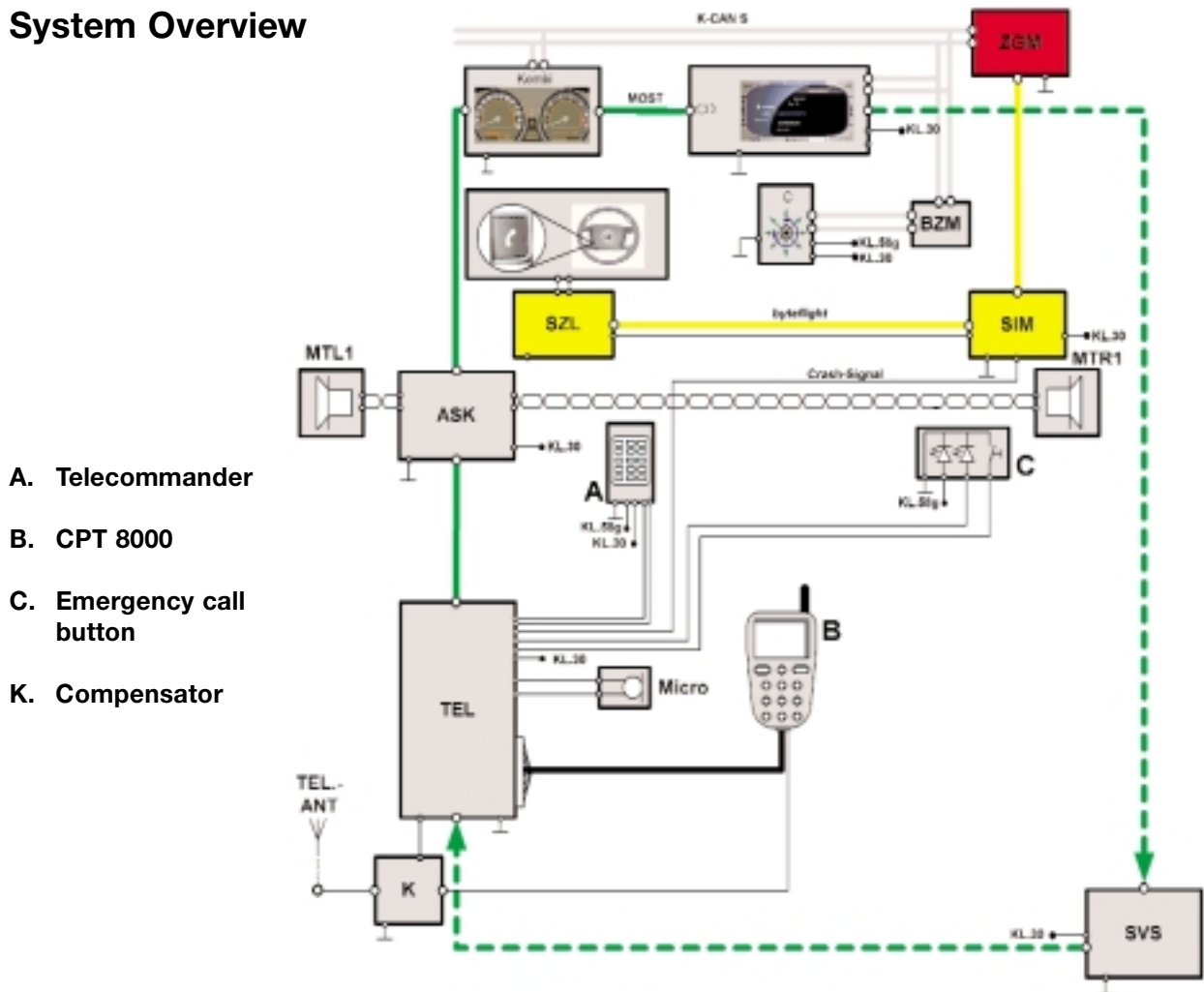
For the E65 the CPT-8000 *Timeport*<sup>®</sup> portable phone will be offered as standard equipment.

To integrate the telephone into the communication network, the telephone control unit (TCU) is equipped with a MOST port. All communication with the vehicle occurs in digital form via the MOST network.

The telephone can be operated with the following devices:

- Handset
- Controller and Control Display
- Telecommander
- Speech Processing System
- Multi-Function Steering Wheel

## System Overview



- A. Telecommander
- B. CPT 8000
- C. Emergency call button
- K. Compensator

## Components

### Handset

The telephone to be introduced with the E65 in the United States will be the Motorola<sup>®</sup> CPT 8000 tri-mode, dual-band portable phone (810 or 1990 Mhz CDMA/TDMA, or analog).

The phone is stowed and charged inside of the center console storage area.



For safety reasons the handset is not operational when the vehicle is in motion.

### Controller and Control Display

The Control Display operated by the Controller can be used to access stored numbers in the address book or view SMS messages. The telephone control unit communicates with the CD and Controller via the MOST network.

1. Top 8 frequently called numbers.
2. Last (most recent call)
3. Search (alphabetically)
4. Search (in stored order)
5. Phone book display
6. Next page



## Telecommander

The Telecommander is located on the left of the center console close to the ASK. If you press on the telecommander it moves outward.

The Telecommander allows control and dialing of the telephone from a 3X5 alpha-numeric key pad.

The ergonomic arrangement in the vehicle allows easy operation of the telephone.



The connection of the Telecommander to the telephone control unit is made via a CAN sub-bus.



## Antenna

The telephone antenna always includes a multiple-band antenna for the telephone and a GPS antenna (Global Positioning System) for the navigation system.

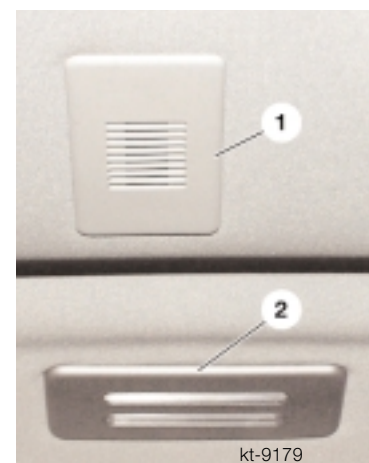
In the U.S. models two telephone antennas are installed for ranges of 810 Mhz and 1990 Mhz as well as a GPS. The U.S. antenna is recognizable by its three plug connections.

## Hands-Free Microphone

In the head liner, two covers (1) for the hands-free microphone are mounted on the left and on the right close to the sun visors.

The hands-free microphone is always mounted on the driver's side, the right side cover is a blank (Right side cover is used for RHD vehicles).

The microphone is an active microphone with input sensitivity of 75 mV/74 dB.



Hands-free operation takes place via the microphone and the audio system via the ASK. The ASK provides the audio channels and switches off all other audio sources during hands-free operation.

This is a digital full duplex transmission. It means that the AF (audio frequency) is enabled for both parties (speaking and listening simultaneously in both directions). An echo compensation avoids feedback.

The hands-free microphone is also used for voice input for the Speech Processing System. In the telephone control unit, the analog signals from the microphone are converted to digital signals and forwarded to the SVS via the MOST.

### Multi-Function Steering Wheel

The left side button pad of the MFL contains controls that can be used for the telephone system. The push-to-talk button activates the SVS menu. The +/- rocker switch allows adjustment of the telephone handsfree volume via the ASK and the send/end (phone icon) button allows accepting, initiating or ending a hands free call.

On the right side button pad the “up/down” rocker buttons allow scrolling through the telephone address book.

Communication with the MFL is via the *byteflight*-ZGM-K-CAN-CD-MOST connection.



kt-8304

### Manual Emergency Call Button



kt-9180

The manual emergency call button (1) is a direct input (hardwired) to the telephone control unit. When a call is made the LED (2) illuminates.

Once the call is initiated there is no way to cancel.

The automatic emergency call is made by the SIM after a collision, based on the severity. The signal from the SIM to the TCU is passed on over a dedicated circuit. Refer to the ISIS chapter for more detail.

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## Audio System Controller (ASK)

The Audio System Controller controls the entire audio system. During hands-free operation, all audio signals are suppressed (muted) and the audio signals from the caller are delivered to the front left and right mid-range speakers.

## Speech Processing System (SVS)

The microphone signal supplied by the TCU on the MOST bus can be used by the SVS. The Speech Processing System provides control for different telephone functions. For details, see the module on the Speech Processing System.

## Compensator

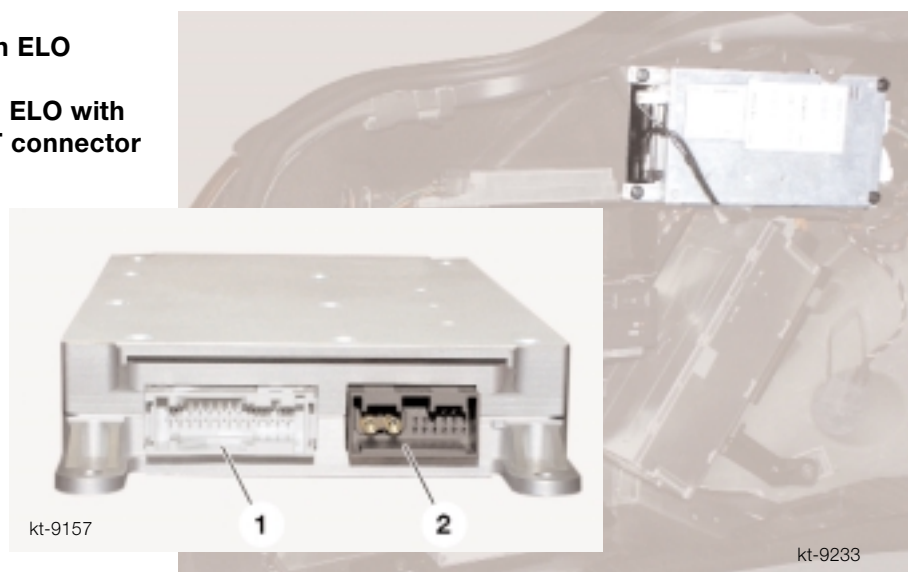
A compensator is installed in-line between the vehicle antenna and the Telephone Control Unit. The compensator ensures that the antenna signal is not degraded before reaching the TCU. The compensator is located in the left side of the luggage compartment.

## Telephone Control Unit

The telephone control unit is located in the left side of the luggage compartment. It is responsible for:

- Executing the automatic and manual emergency call (integrated with navigation).
- Controlling charging and cycling of the handset batteries when plugged into the vehicle.
- Providing the microphone signal as a MOST bus telegram.
- Integration of the telephone into the vehicle iDrive system via the MOST network.

1. 26 pin ELO
2. 12 pin ELO with MOST connector



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## Review Questions

1. From what control device can a hands-free call be initiated or accepted? Describe the signal path necessary for that function to occur. \_\_\_\_\_

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2. How is the hands-free microphone made available to the SVS? \_\_\_\_\_

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