Functional Description of "ego TALK" Handsfree System

The "ego TALK" handsfree system supports communication with a Bluetooth-compatible mobile phone. It furthermore enables streaming music via Bluetooth in coordination with an appropriate audio device. The handsfree system is directly connected to the audio system and the on-board vehicle power supply.
The handsfree system is controlled via a wired control unit and is connected with the telephone using Bluetooth radio communication.
There are two basic options for the connection to the vehicle (illustration 1 and illustration 2).

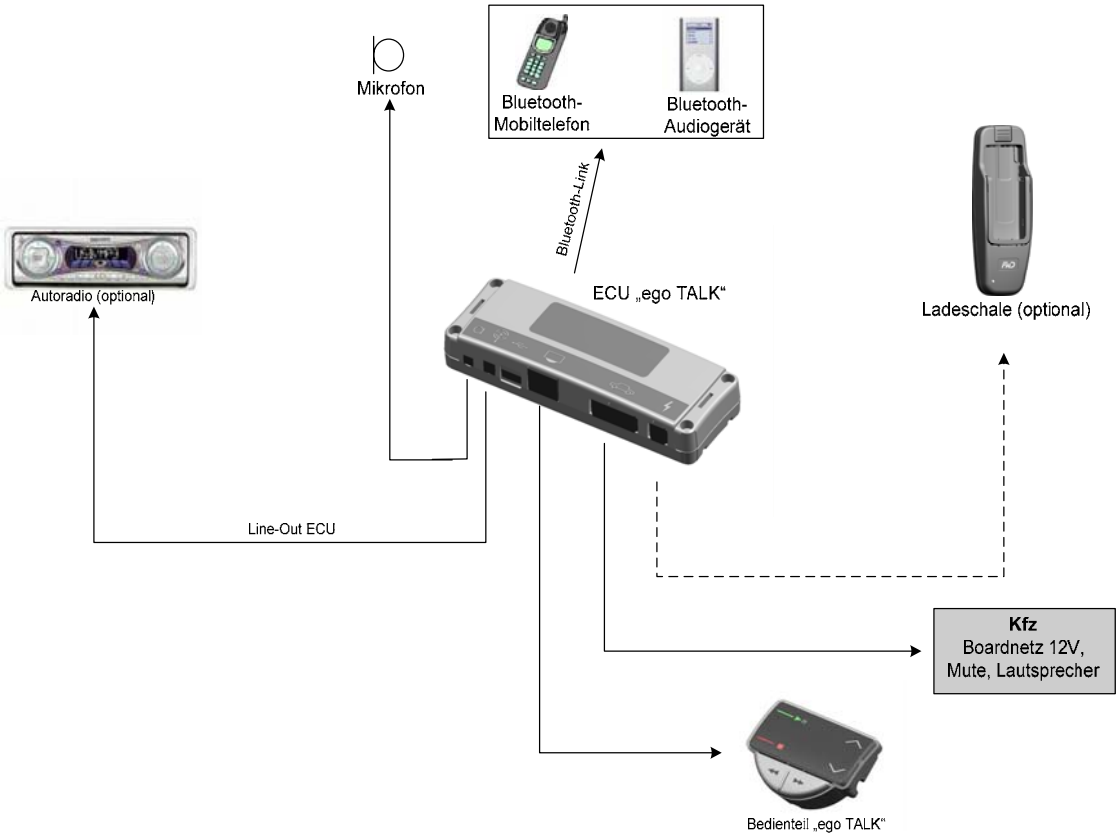


Illustration 1

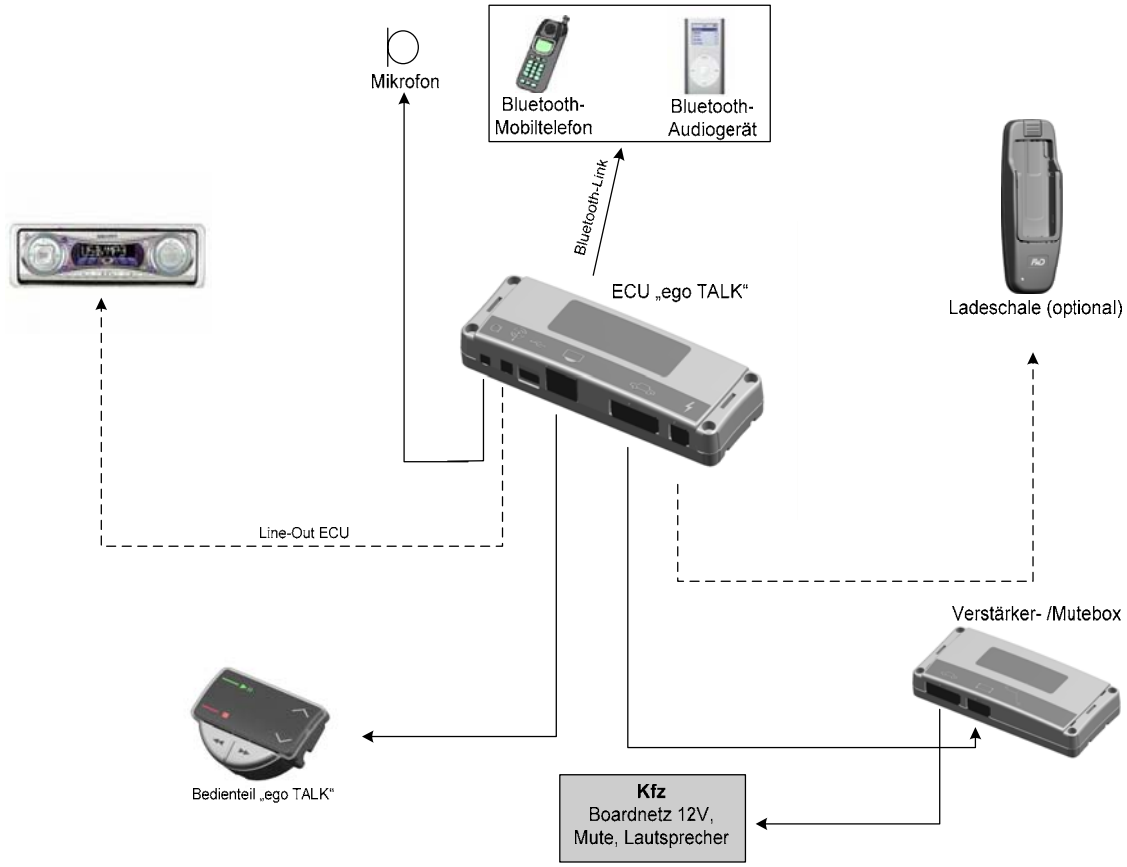


Illustration 2

Illustration 1 shows the direct connection of the power supply and the audio channels in the vehicle. Illustration 2 shows the connection to the vehicle by means of an external amplifier box with an integrated mute function as an aid.

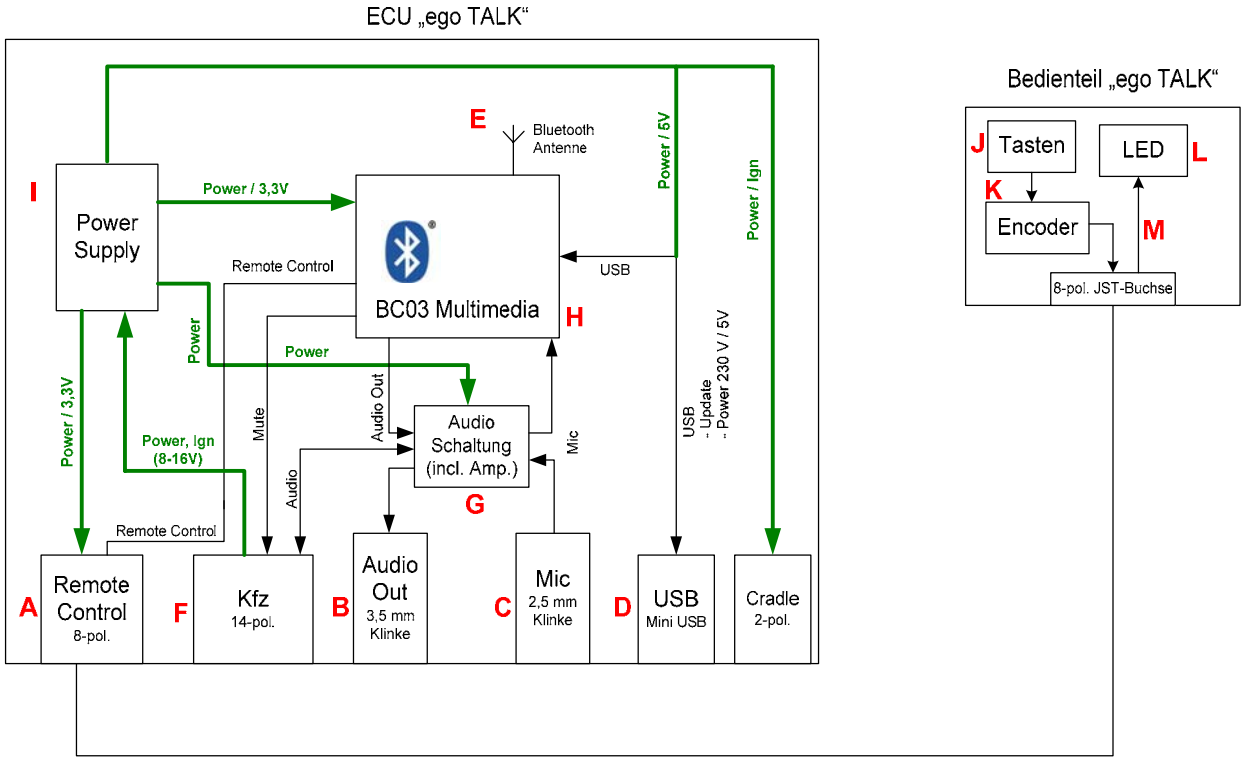
The "ego TALK" handsfree system consists of an electronics box and a wired control unit. The electronics box has the following connection options: (see illustration 3)

- USB – for updates via PC (D)
- 3.5 mm stereo jack for outputting stereo audio signals (B)
- 2.5 mm stereo jack for connecting a microphone (C)
- 8-pin connector for connecting the control unit (A)
- Bluetooth interface for receiving stereo audio signals (E)
- 14-pin connector for connection to the vehicle (power, audio) (F)
- 4-pin Molex Micro-Fit connector for connecting an optional cradle

The required supply voltages (3.3 V, 5 V) for the "ego TALK" handsfree system are provided in the "Power supply" (I) section of the circuit. There are 2 possible channels over which the handsfree system receives its raw voltage:

1. via the connection cable to the handsfree system (connection option in illustration 1) or
2. via the optional connected amplifier box (connection option in illustration 2)

Block diagram:



The BC358239 multimedia Bluetooth chip (H) is the central controller and function unit. It is responsible for controlling the module, for connecting to a Bluetooth device and for communicating with the handsfree system. Within the Bluetooth chip, a DSP undertakes the coding and decoding of the audio signals and processes the audio levels. An appropriate adjustment of the audio signals to and from the handsfree system is implemented by the audio circuit (G).
A wired control unit is attached via jack A for controlling the handsfree system. There is also the option of connecting a cradle via the jack (J). In this case, the cradle receives its voltage supply directly from the vehicle.
The wired control unit has 6 buttons (J) which are converted into a specific bit string via an encoder (J). This bit string is transmitted via an 8-pin JST jack to the electronics box. There are also two LEDs (L) on the control unit for signalling operating statuses. These are operated directly by the electronics box of the handsfree system.