



Functional Description / User Manual

for

Comfort Access System



1. Functional Description - Comfort Access System (CA)

2. General system description

The CA-system enables convenient utilization of the vehicle. To use the vehicle, the driver only needs to take the key along with him/her. The vehicle communicates with the system inductively via antennas. These antennas are driven inductively with a frequency of 125 kHz. The system's range is limited in a defined fashion by damping the body sheet metal. In the vehicle interior, the ranges of the various antennas overlap, which enables location of the key.

3. Passive access control

An approximating of the hand to the door handle, as well as by pulling the door handle is recognized over sensors. The door handle give this information over a CAS-Bus telegram to the CAS and at the same time the handle sends over 125 kHz Uplink to the passive key. In the case of a valid authentication the vehicle is unlocked or locked. (Detection radius of approx. 1... 1.5 meters around the door handle)

4. Passive Go (start/stop)

The system provides the function which enables starting/stopping the engine without key actuation.

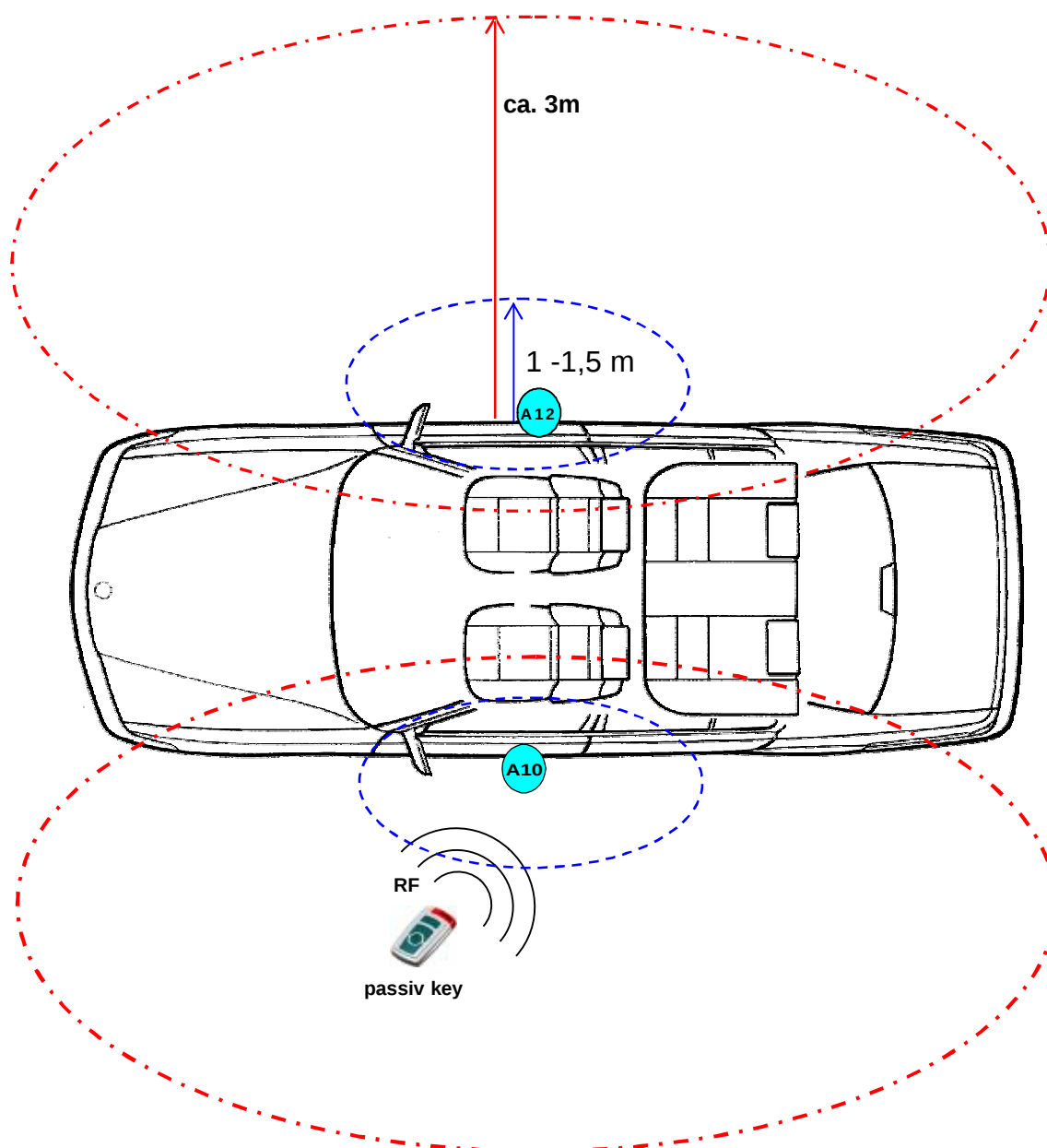
The prerequisite for starting the vehicle is a key allocated to the vehicle, which is taken along by the user and is clearly inside the vehicle. By actuating the starting device, the driver starts the identification process, i.e. the PGS control unit issues a request for a valid key inside the vehicle. The key returns an appropriate response to the PGS control unit. In case of successful identification of the key, the vehicle is started and the immobilizer is deactivated.



5. 1.4 Cabrio function procedure

Since at the cabrio roof no trapping protection is available, it must be guaranteed that a valid passive key is in close range of the vehicle before and/or during the roof closes. With the help of a LF Ping telegram, which is sent over the door handle antennas and the bumper antenna, the CAS looks for the passive key for the start and during the Comfort latches procedure. Detection radius is approx. 3 meters around the door handle. If the passive key leaves the receipt radius, the function is stopped. The function only accomplished if at the key the locking switch is pressed and the key is in the range of the LF antennas.

6. Operating range of the inductive field (LF)



LF Operating range for access control

LF Operating range for *cabrio function*

A10/A12 door handle antennas



7. Technical data

carrier frequency	125kHz
bandwidth	122,50 kHz - 127,50 kHz
transmission power	
access control	< 8 Watt
cabrio function	< 70 Watt
Modulation	100% ASK
Cannel	1
Baudrate	4 kBd
Power supply	9 ... 16 Volt
operating range (LF)	
for access control	< 1,5 m
for cabrio function	< 3 m

8. typical activity profile (for access control / **cabrio function ?**)

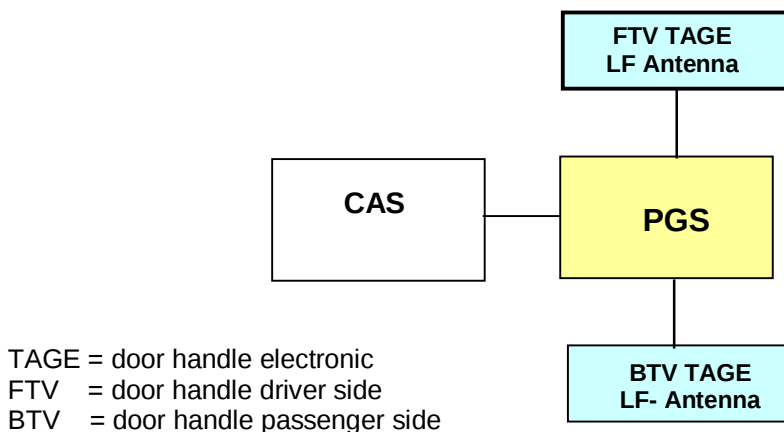
27 handle operations in 24 hour (10.000 operations / year) with a typical transmission period form 39ms.

Transmitter (TAGE) ON 1,053 sec / 24 h

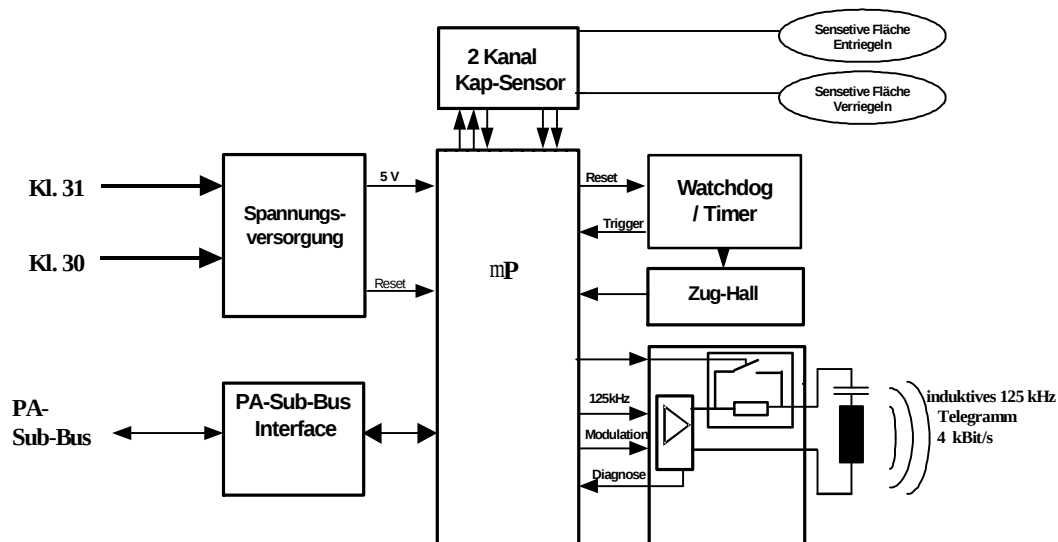
Transmitter(TAGE) OFF 86.398,95 sec / 24 h

Duty Cycle: $T_{\text{EIN}} / T_{(\text{EIN}+\text{AUS})} \times 100\% = 1,053 / 86.399 \times 100 \% = 0,0012 \%$

9. Block diagram of the CA - Systems



10. Block diagram

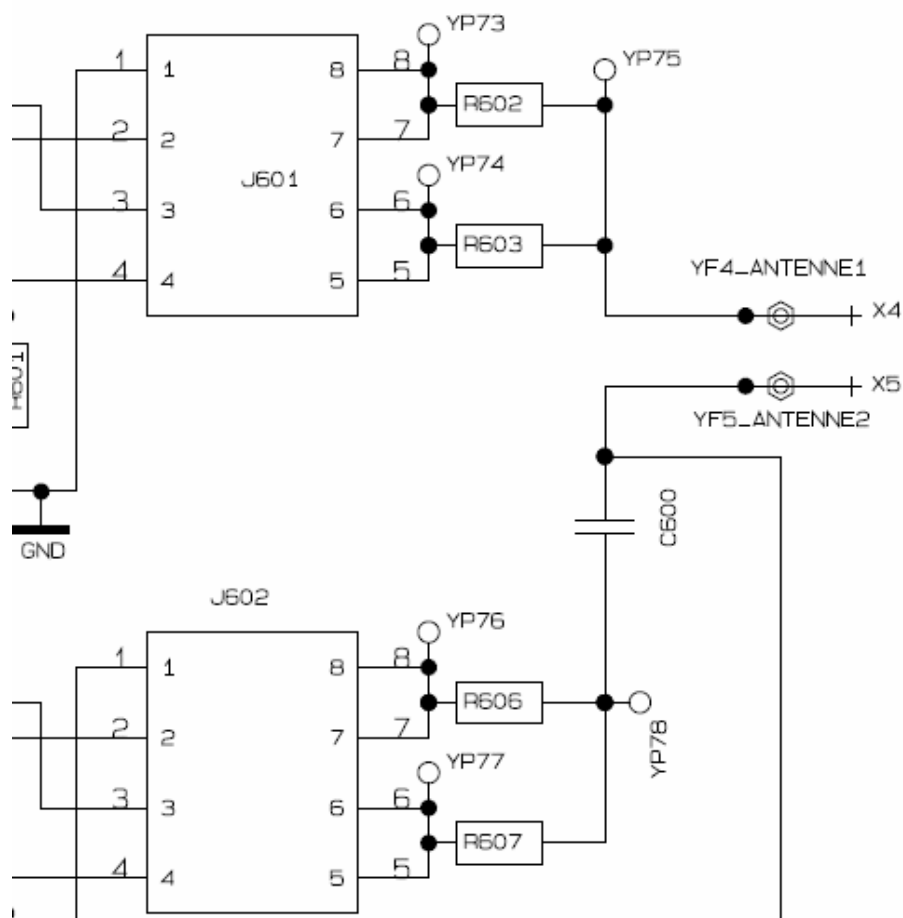


short description

Power supply	:	Stabilize the supply voltage. (Jump Start / Loadump protection ...)
CAS-Bus Interface:		Serial-Interface to CAS/PGS Constructed with ELMOS REBUS IC Data rate 9,6kBaude
2-Canal-Cap-IC:		One capacity proximity sensor for ER function and one sensor for locking function. The Cap-IC works with a 166 kHz and 200 kHz measure signal to load and unload the capacity is based on the electrode surfaces.
Watchdog:		è watchdog function

Inductive amplifier:

Bridge amplifier for the 125 kHz signal antenna.
The amplifier load a inductive antenna with series capacity (C600). The signal is modulated 100 % ASK. Data Transmission rate is 4 kBd.

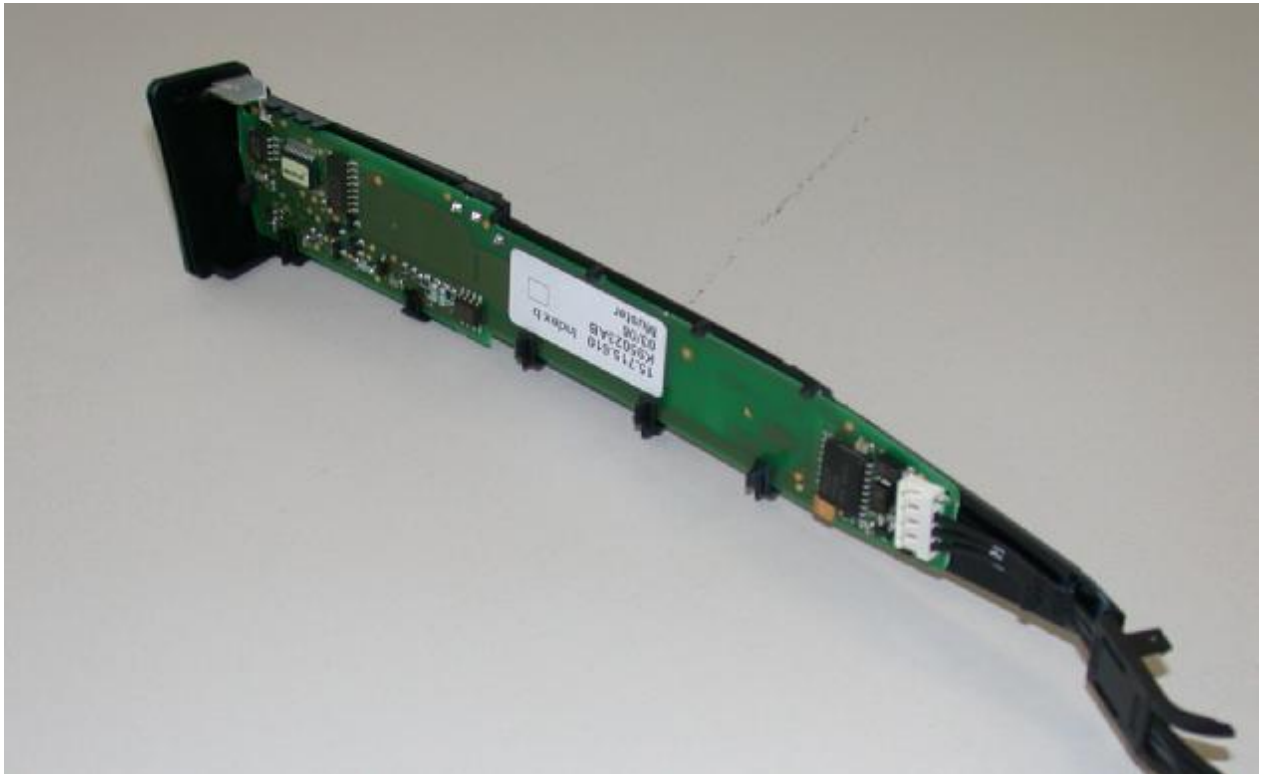




11. Differences E88 to E9x/E8x

- extended FET switch to generate transmission power for two functions :
 - < 8 Watt for access control
 - < 70 Watt for cabrio function
- own PCB and changed layout for E88
- inductive antenna is 250 uH (PL2 500 uH)

9. Picture door handle electronic



left side button



left side top





10 Layout

