Exhibit E

Description of the system

Description of the immobilizer

The immobilizer is designed for use with motor vehicles as a protection against theft. The module is an electromagnetic HF identification system consisting of a transmitter and a receiver. Use is made of high frequency electromagnetic waves and therefore there is no requirement for a physical link between transmitter and receiver: in other words the system operates without contact. Electromagnetic waves can penetrate a great many different materials with the exception of metal.

The advantages are:

No external energy supply required for the transponder
External interference (e.g. by dirt) with the system will not occur
Rapid identification by means of wireless data exchange
High data density by saving data electronically
High system flexibility by selective saving procedure
No visual contact between transmitter and receiver is required

Properties of the immobilizer

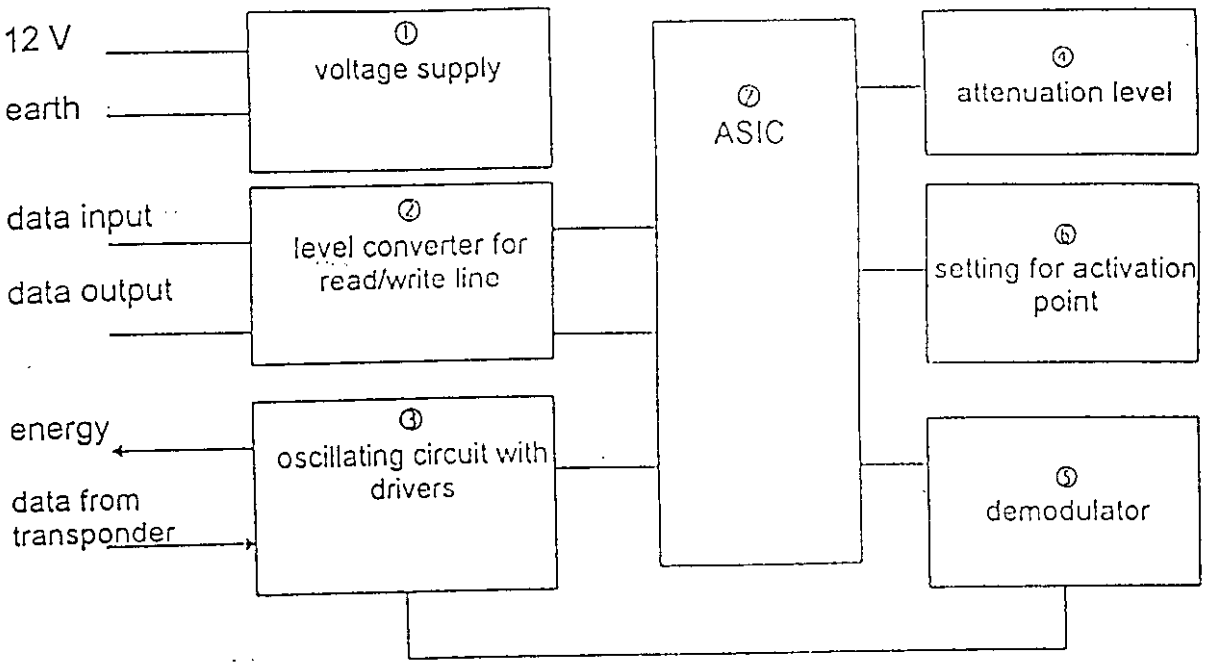
Simple line to any host computer
Bidirectional data exchange using half-duplex mode
Write function for all AM (Amplitude modulation) transponders
Read function for all AM (Amplitude modulation) transponders at a rate of up to 4k bauds

Note:
The maximum range for data transfer (read and/or write) will depend on the application and can be adjusted by modifications to the hardware.

Instructions for activating the immobilizer

In order to activate the control device, Pin M4_3 has to be connect to the supply voltage and Pin M4_4 to earth. The subsequent initialising of the immobilizer is completed in about 5 ms.

As soon as there is a transponder within the magnetic field, the contents of its memory will be modulated up to the carrier signal (125 kHz). On completion of the demodulation process and of the digitalising of the transponder data the results will be emitted to Pin M4_1. The data sheet of the transponder in use should be consulted to obtain the information on the decoding of the signal (e.g. biphase or Manchester code). The transponder can be described by switching the magnetic field on (HIGH at Pin M4_2) and off (LOW at Pin M4_2). The length of the switch-on and switch-off phases will be indicated in the transponder data sheet. The immobilizer will operate only in the half-duplex mode, i.e. simultaneous read and write is impossible.



Terminal allocation

The pin designations for the external lines relate to the circuit diagram. The output is protected against short circuits.

M4_1	read line	(output)
M4_2	write line	(input)
M4_3	supply voltage	(input)
M4_4	earth	(input)

Technical specifications

		min.	type	max.	unit	remarks
read line	output voltage		12	16	V	
	output current			50	mA	R output = 50Ω
write line	input voltage		12	16	V	
	LOW switching threshold			3.0	V	
	HIGH switching threshold	3.5			V	
supply voltage		6.5	12	16	V	up to 27 V for approx. 1 min
input	in the open		115	120	mA	
	mounted on metal			110	mA	dependent on the surrounding
operating temperature		-40		+85	°C	
frequency	carrier	120	125	130	kHz	
	READ	2	2	4	kHz	dependent on transponder
	WRITE	1	1	2	kHz	dependent on transponder

SENTON

■ EMV-Prüfzentrum ■ EMI/EMC-Testcenter ■

Exhibit F

Description of changes

Description of changes:

- reset circuit changed (T15, I3 added; R13, C9 and D3 removed; Pin 2of I1 new connected)
- time constant adjusted (value of capacitor C2 changed)