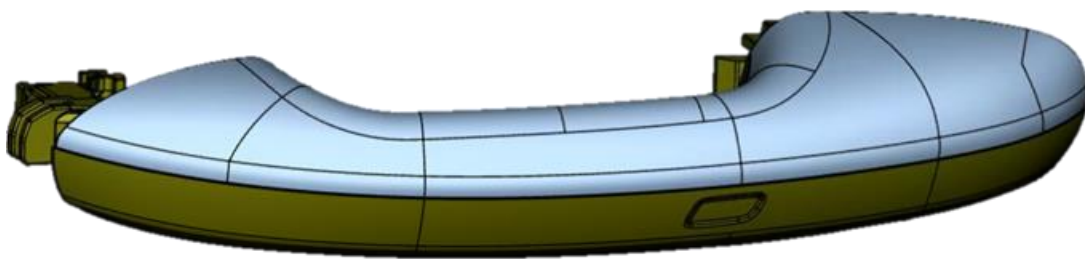




**Technical Description  
and  
User's Manual  
of the  
Door-Handle with NFC**

**Model: HUF13145**





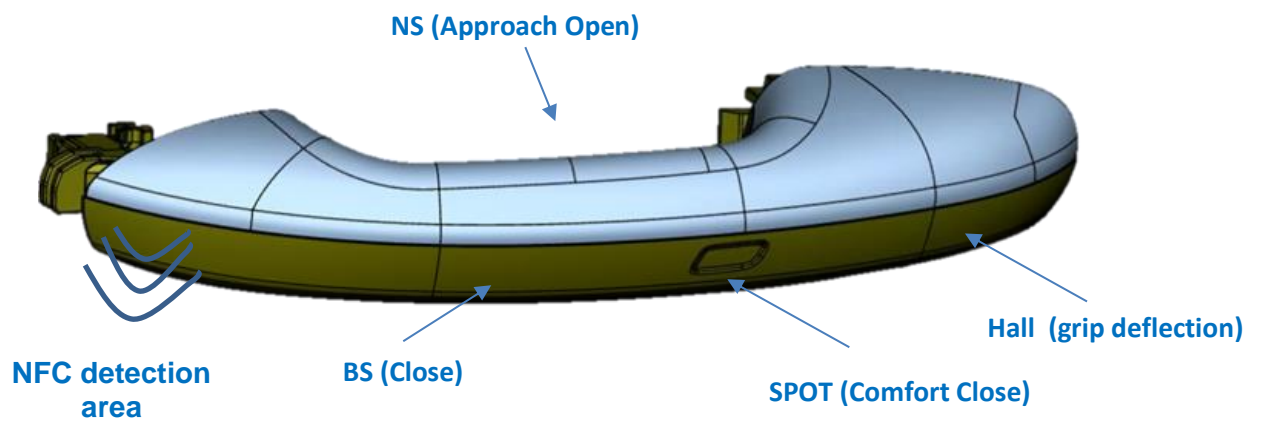
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## 1 General description of the door-handle

The Door-Handle HUF13145 with NFC is equipped with sensors that enable users of a car with passive entry system to lock/unlock the doors by carrying the key fob or an authorised NFC-Device with them.



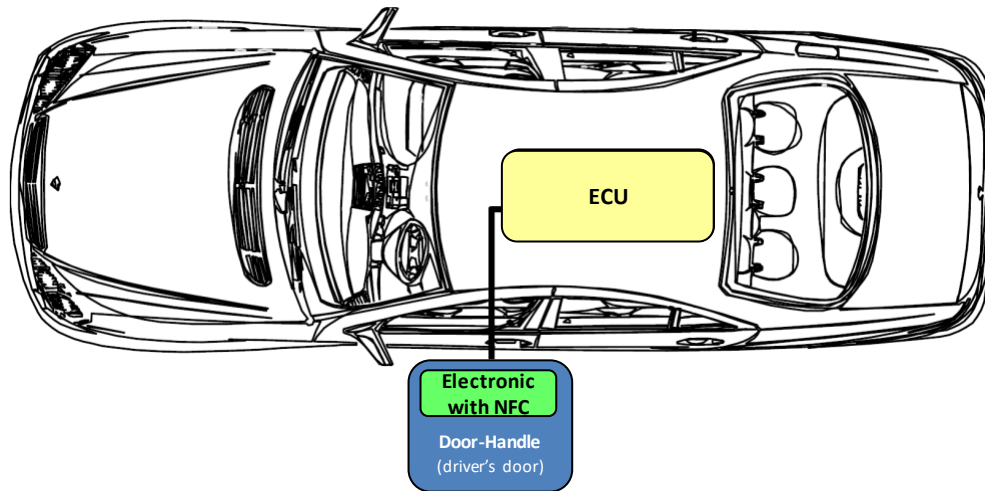
### NFC-Reader:

When an NFC-Device approaches to the NFC-Antenna, the door handle sends a signal to the electronic control unit to initiate the authorisation sequence for unlocking or locking the door.

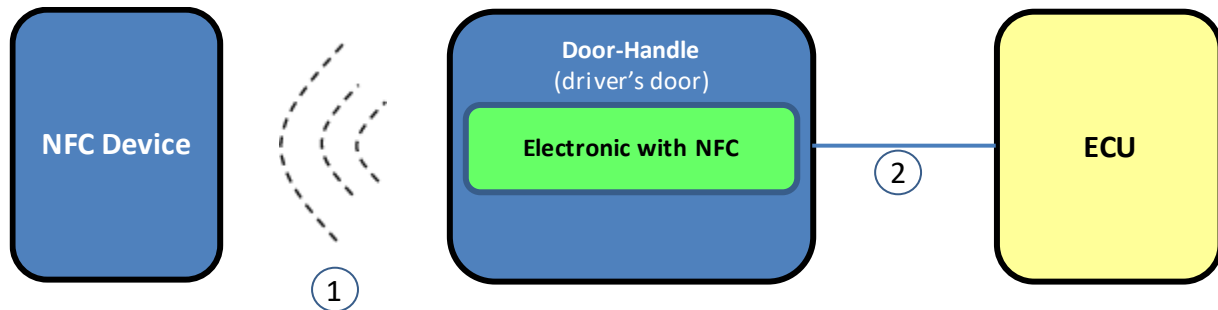


## 2 Communication Interfaces

Following picture shows a simplified diagram of the system.



The door-handle communicates with the Electronic Control Unit (ECU) by using one-wire interface and with the NFC-Device by using Near Field Communication.



### Communication with the NFC-Device ①

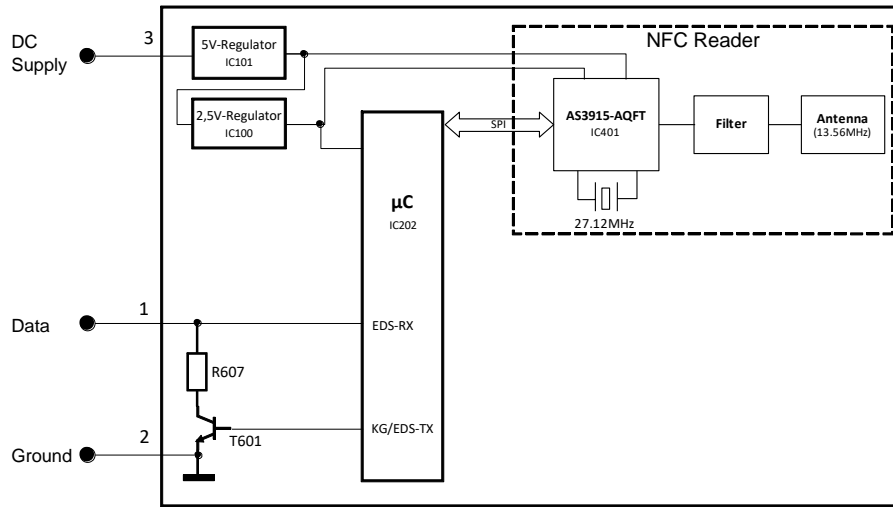
Near Field Communication between the door-handle and the NFC-Device.

### Communication with the ECU ②

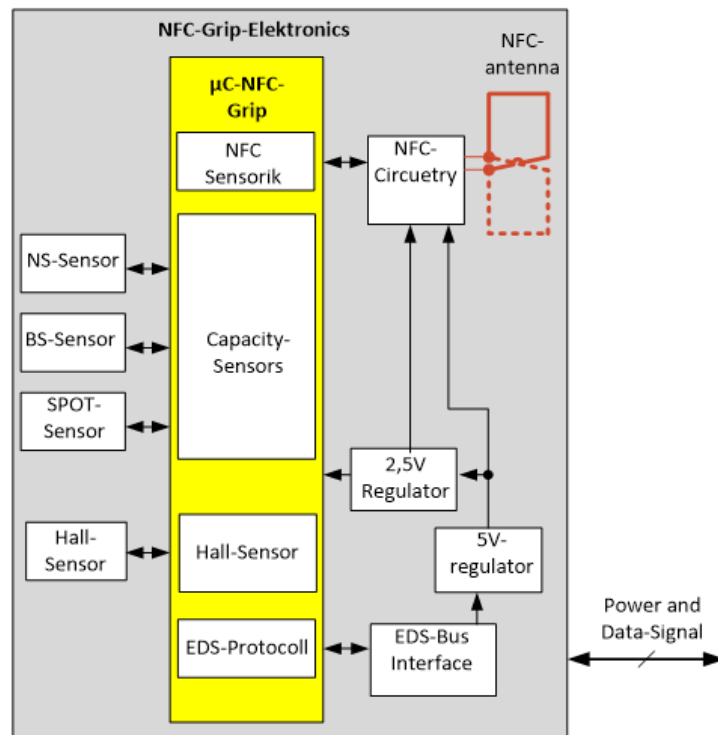
Bidirectional communication with the ECU during the NFC-authorisation sequence



### 3 Block diagram



Door-Handle



Overview over all Sensors



## 4 Technical data

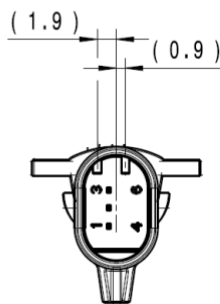
### 4.1 Electrical characteristics

	min.	typ.	max.	Unit
Voltage	8.5	12	16	V
Temperature	-40		+85	°C

Quiescent current:  $I_{\text{quies}} \leq 400\mu\text{A}$  for  
 Active current:  $I_{\text{active}} \leq 250\text{mA}$

### 4.2 Connector definition

Stiftkontakte nach A 213 540 65 00 (ZGS 002)  
 connector pins acc. to A 213 540 65 00 (ZGS 002)



Festlegung der Steckerbelegung Definition of connector pin assignment	
Pin	Funktion operation
1	Versorgung / Signal power supply / signal
2	Masse ground (GND)
3	NFC-Versorgung NFC power supply
4	Masse-Licht ground (GND)
5	----- -----
6	Licht-Versorgung light power supply

Counterpart: TE Nr. 1-2236656-1 6pol Bu-Geh Daimler

### 4.3 General NFC specification

Standards:	ISO 14443-A
Communication role:	Proximity Coupling Device (PCD)
Anti-collision support:	Yes
Communication range:	$\leq 2\text{cm}$ approx. (dependent on Proximity Integrated Circuit Card (PICC))
Type of NFC antenna:	PCB Loop antenna
NFC Frequency rate:	$13.56\text{ MHz} \pm 7\text{ kHz}$
Data rate:	106 kb/s
Type of modulation:	ISO 14443-A $\rightarrow$ Load modulation OOK



## Test Modes

**NFC Field-On:** The Door-Handle produces a high frequency electromagnetic field (13.56 MHz)

**NFC-A Frames:** The Door-Handle produces frames of high frequency electromagnetic field (13.56 MHz) and modulates its amplitude according to ISO 14443-A in order to transmit data. The Inter-frame space is 5ms



## 5 Declaration of Conformity, product Label

### 5.1 Radio equipment authorization to FCC in USA

**FCC ID: YGOHUF13145**

The transmitter will be supplied as an original equipment device to the car manufacturer.

According to 47 CFR 15.19 (labelling requirements) the car manufacturer will print the following text in the appropriate User's Manual of the car:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Usually this is followed by the following FCC caution:

Any changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

### 5.2 Radio equipment authorization to RSS-210 in Canada

**IC: 4008C- HUF13145**

The transmitter will be supplied as an original equipment device to the car manufacturer.

According to RSS-210 (labelling requirements) the car manufacturer will print the following text in the appropriate User's Manual of the car:

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Usually this is followed by the following RSS caution:

Any changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.





## 6 Regulatory Information

### 6.1 USA:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:  
(1) This device may not cause harmful interference, and  
(2) This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

### 6.2 Kanada:

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Any changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

### 6.3 Taiwan

「取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，指依電信管理法規定作業之無線電通信。低功

### 6.4 South Korea

Class A device: 이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라 며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.



## 7 Location of product label

The labelling with radio certification marks, the product model and the manufacturer logo, country code and control identification data can be found at the door-handle.

Position of the labelling is on the back side of the NFC Module:

