Von
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26.08.2022

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User Manual
MQB 37W BR22
Homologation: Radio Frequency Transceiver

Marketing Name	MQB37W
Equipment Product Code	BR22
Customer	VW AG.
Number offer drawing	F005VS0400
Manifacturer	Robert Bosch GmbH Daimlerstraße 6. 71229 Leonberg Germany

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Functional Description of radio frequency transceiver for MQB BCM

Product: BCM (Body Computer Module)
Brand Name: Bosch
Model Name: BR22
Hardware version: HW35

1 General Description

The radio frequency transceiver is part of a body computer ECU. The ECU incorporates several HW-inputs and HW-outputs, which monitor and control body computer functionalities in a car (e.g. light control and central door locking).
The ECU consists of a plastic housing, PCB, electronic components and connector pins.
The radio frequency transceiver functionality will be explained in more detail in the below documented sections.

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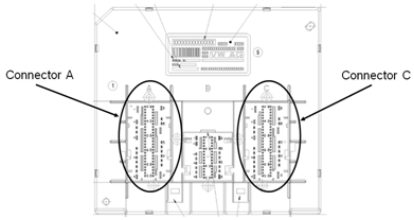
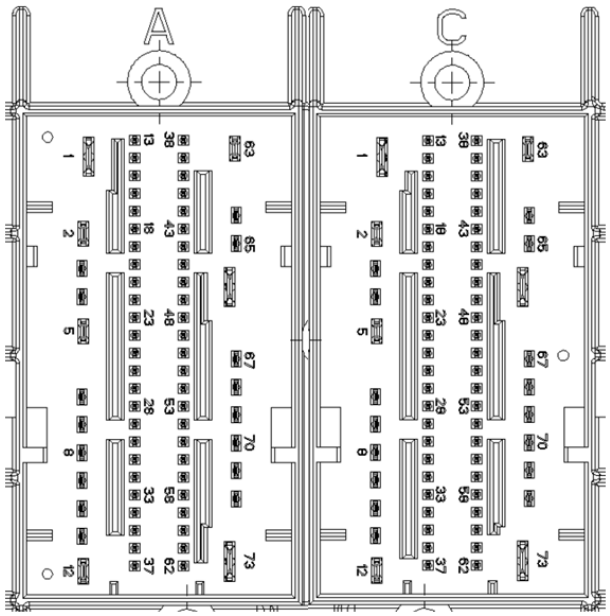
2 HW Interface

The radio frequency transceiver is supplied via the specified connector pins. The antenna of the radio frequency transceiver is a PCB-edge antenna, which is incorporated in the PCB of the ECU.

2.1 Connector Position on housing





2.2 Supply and GND pins:

Supply (+) : Pin-No# A66, A73, C1, C73
GND (-) : Pin-No# A63, C63

LED+ Pin is connected to Pin A59.

2.3 Normal Operating conditions:

Supply Voltage : 9V to 16V, typ. 12V
Environment Temperature : -40°C to +80°C

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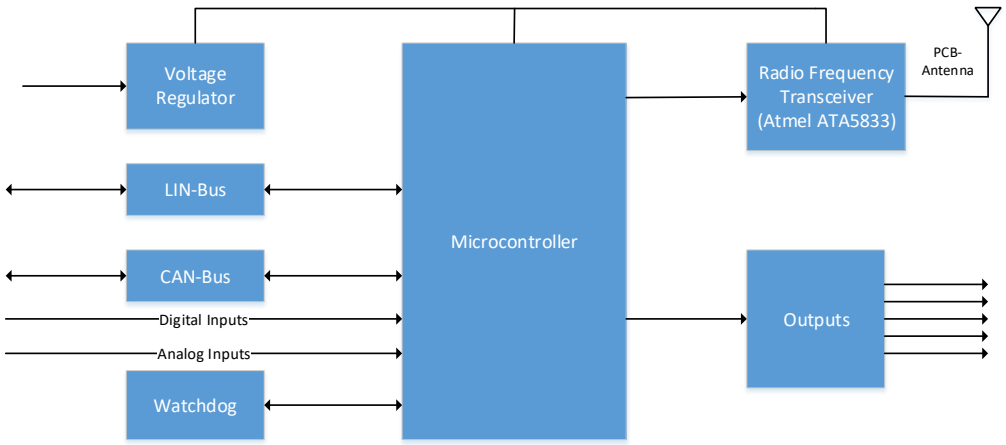
3 System Block Diagramm MQB37W BCM

Below drawn block diagram of the MQB BCM shows the main function blocks of the ECU.



In section 0, the design of the radio frequency transceiver is outlined.

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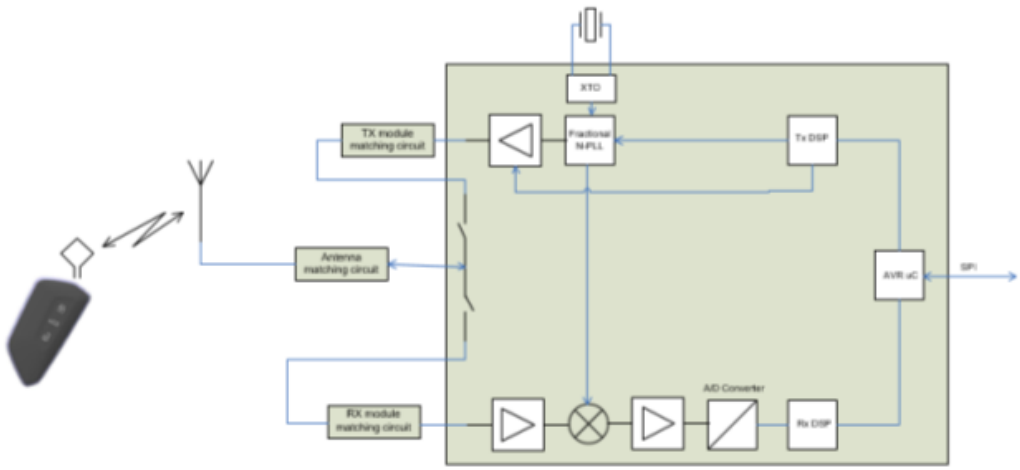
4 Block Diagram of inbuilt Radio Frequency Transceiver



The radio frequency transceiver has the following key data:

Mode	MQB37W			
Transmitter / Receiver	TX / RX			
Modulation	FSK (Manchester encoded)			
Target Market	RdW and NAR			South Korea
Frequencies	Chanel A 433,46 MHz	Chanel B 433,92 MHz	Chanel C 434,36 MHz	Chanel B 433,92 MHz
Transmitter Power	-10,56 dBm	-10,57 dBm	-10,54 dBm	-10,57 dBm
Deviation FSK / Data Rate	FZV + Komfort ±8 kHz/ 7.81 kBit/s	Kessy ±20kHz/ 19.2kBit/s	FZV + Komfort ±8 kHz/ 7.81 kBit/s Kessy ±20kHz/ 19.2kBit/s	FZV + Komfort ±8 kHz/ 7.81 kBit/s Kessy ±20kHz/ 19.2kBit/s
Receiver Function	x	x	x	x
Transmitter Function		x	x	x

Mode	MQB37W		
Transmitter / Receiver	TX / RX		
Modulation	FSK (Manchester encoded)		
Target Market	Japan		
Frequencies	Chanel A 314,60 MHz	Chanel B 314,60 MHz	Chanel C 314,90 MHz
Transmitter Power	-12,0..-8,0 dBm	-12,0..-8,0 dBm	-12,0..-8,0 dBm
Deviation FSK / Data Rate	FZV + Komfort ±8 kHz/ 7.81 kBit/s	Kessy ±20kHz/ 19.2kBit/s	FZV + Komfort ±8 kHz/ 7.81 kBit/s Kessy ±20kHz/ 19.2kBit/s
Receiver Function	x	x	x
Transmitter Function		x	x

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Mode	Legacy		
Transmitter / Receiver	RX		
Modulation	ASK (OOK, Manchester encoded)		
Target Market	RdW	South Korea	NAR
Frequencies	434,42 MHz	433,92 MHz	315 MHz
Deviation FSK / Data Rate	FZV + Komfort: 1.7 kBit/s	FZV + Komfort: 1.7 kBit/s	FZV + Komfort: 1.7 kBit/s
Receiver Function	x	x	x
Transmitter Function			

Functional description

The radio frequency transceiver is part of a remote keyless entry system of a vehicle central door locking system.

This vehicle central door locking system consist out of

- Remote control key with UHF transmitter (NOT part of the MQB BCM)
- Radio frequency transceiver with PCB-Antenna (part of the MQB BCM)
- Door ECU, which can drive the car door locks to lock or unlock the car (NOT part of the MQB BCM)
- Door locks for the central door locking functionality (NOT part of the MQB BCM)

The transceiver has a self-polling mode and is permanently scanning for valid key data, with matching characteristics.
(Note: This data are typically received, when a valid remote control key is in range and one of its push-buttons is pressed.)

When the data are matching the characteristics, the transceiver will hand over this data to the micro controller of the MQB BCM.
With the help of this micro controller, it is validated, whether this data have been transmitted from the authorized remote control key. When the validation was successful, the MQB BCM will send this information via a CAN-network to the door ECU.
This door ECU will drive the connected door lock according to the wish of the operator, who pressed the push button of the remote control key. Hence the doors will be locked or unlocked.

The MQB BCM needs to be programmed by the OEM, after installing the ECU into the car. Once programmed, the transceiver is operable directly after applying power to the connector pins.

5 Regulatory notice

for FCC

§15.19:

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.

for USA

§15.21:

NOTICE:
Changes or modifications made to this equipment not expressly approved by Robert Bosch GmbH may void the FCC authorization to operate this equipment.

for Canada

RSS-GEN, 8.4:

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. *This device may not cause interference.*
2. *This device must accept any interference, including interference that may cause undesired operation of the device.*

CNR-GEN, 8.4:

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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;*
2. *L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

6 Product pictures

Top side:

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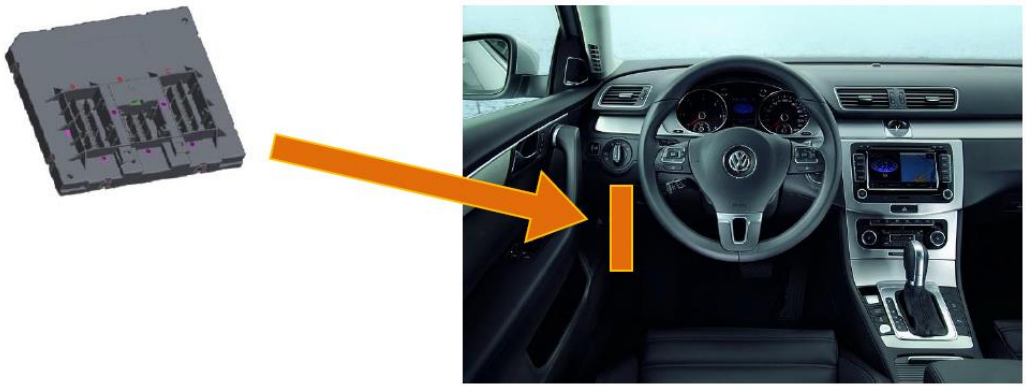
Bottom side:

7 Installation position in vehicle



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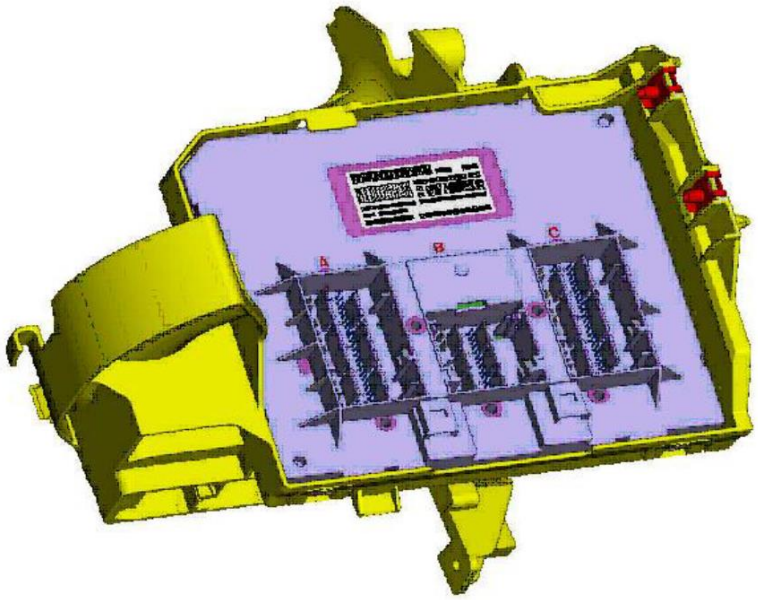
8 BCM with mounting bracket



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