

User Manual

Key Fob 6600079509

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1. General Product Information

This document gives an overview of the different device operation modes and the RF transmissions performance of the key model BX11. In this document the device is referenced as "key", even if the mechanical backup key might be separated from it.

2. Operating modes

The key has three main operating modes which differ regarding of the signal transmitting with the RF:

- **Transponder** Immobilizer transponder mode
- **RKE** Remote keyless functionality
- **PASE** Passive key functionality including access, engine start, Welcome lighting, Approach Unlock and Walk Away locking.

2.1 Operating Temperature

Operating Temperature is -40°C +85°C for immobilizer function, -20°C to +60°C for RKE and PASE function.

2.2 Transponder mode

In transponder mode the 3D coil receives a LF transmission from the LF Start authentication antenna and the voltage is rectified by the NCF29A1 microcontroller. The fob receives power exclusively from the rectified voltage of the LF signal from the LF Start authentication antenna. The CR2032 battery of the fob is disconnected by the internal supply switch of the microcontroller. Communication with the vehicle (LF Start authentication antenna) is done via load modulation which dampens the amplitude of the signal transmitted by the LF Start authentication antenna: this is effectively a form of ASK modulation.

The keyfob is only modulating data on the carrier send out of the LF Start authentication antenna.

The keyfob is not sending a LF field back to the LF Start authentication antenna.

2.3 Remote keyless functionality

This mode (RKE) refers to use the key as a remote-control unit to initiate actions on the vehicle such as open or close door latches.

When a button is pressed, the microcontroller wakes up and calculates a unique telegram, which is sent to the vehicle by modulating an RF oscillator. The telegram contains the information, which button is pressed.

After transmitting (buttons released) the key returns into sleep mode to save battery power.

- Lock
- Unlock
- Trunk

2.4 Passive key functionality

For passive key operation (PASE) no user action on the key side is required. Same operating mode is used for vehicle access, passive engine start, welcome lighting function, approach unlock and walk away closing. The trigger is delivered by the vehicle via an LF data telegram. When the key receives a valid LF message, it responds with RF telegrams and the telegram timing in this mode depends on the key configuration data (sort of time slot concept).

- Keyless Less Entry involves ultra-low power active LF interface
- Low Frequency stage is a receiver without oscillator
- Signal is directly decoded in baseband with basic analog functions
- The Low Frequency stage operates at 125 kHz.

3. Regulatory compliance notes

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.

Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.