

User Manual

Continental

RF Transmitter

FMC B479 SCU PK CGEA1.3

Type

A2C17105000

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1 General Description

The FMC B479 SCU PK CGEA 1.3 key is remote unit with Transponder, PASE and Remote Keyless Entry functionality. The transponder function is based on the Immo frontend inside the microcontroller and one of the external LF coils. The PASE function is part of the PEPS protocol (Passive Entry and Passive Start) that provides enhanced customer convenience and security via a customer carried, passively or actively enabled Passive Key (PK) communicating with the vehicle through an RF Receiver (RFM) to the BCM with an integrated PEPS microcontroller.

1.1 Variant Overview

Variant Description		Characteristic
FORD	Continental	
K1BT-14K601-DA	A2C17105000	USA & Canada 3 Button variant (434MHz Multi channel) with ST Logo

1.2 Multichannel characteristic

Frequency channel 1: 434,251 MHz $\pm$ 43 kHz

Frequency channel 2: 433,589 MHz $\pm$ 43 kHz

2 Main components

2.1 UHF-Transmitter Token

The Token NCF29A1 is an extremely single chip solution that incorporates a Security Transponder, UHF Transmitter RISC controller on the same chip. The device provides a fully integrated fractional-N phase locked loop (PLL) frequency synthesizer and a power amplifier to drive an external antenna. The Token is especially designed for use in the ISM frequency bands.

2.2 Microcontroller FXLS8962AF

The FXLS8962AF is a compact 3-axis MEMS accelerometer designed for use in a wide range of automotive (convenience and security), industrial, and medical IOT applications that require ultra-low-power wake-up on motion.

FXLS8962AF is available in a 2 mm x 2 mm x 0.95 mm 10-pin DFN package with 0.4 mm pitch and wettable flanks. The device is qualified to AEC-Q100 and operates over the extended -40 °C to +105 °C temperature range.

The combination of sensor performance, system power-saving features and extended overtemperature-range performance makes FXLS8962AF an ideal accelerometer for motion sensing in the automotive industry.

3 Functionality

3.1 Remote keyless entry

- Lock, Unlock, Trunk unlock
- Generating and transmitting an RF bit stream for remote entry functions

3.2 Transponder Start authentication

Communicating bi-directionally, LF/LF for authentication / remobilization if keyless vehicle not work due to flat battery.

3.3 Passive Entry and Passive Start

3.3.1 Passive Entry

Passive entry process is the authentication of the PK and BCM to enable **unlocking** and **locking** of the vehicle among other functions requiring a PK search on the interior of the vehicle.

The vehicle can be unlocked or locked as follows:

- Trunk open function: PK shall be on the outside rear of the vehicle
- Trunk close: No PK inside the trunk OR if there is a PK inside the trunk, the vehicle shall not be in the armed state.
- Right side entry/locking: PK shall be on the outside right of the vehicle
- Left side entry/locking: PK shall be on the outside left of the vehicle

3.3.2 Passive Start

The Passive Start process is the authentication of the PK and the BCM for enabling the power pack.

For the Passive Entry Passive Start, key authorization time must be less than or equal to 285ms from the initial customer start command to sending the authorization to the BCM

3.4 Mechanical key

Key blade is inside the key.

3.5 Remote Keyless Entry function

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.

3.6 Transponder function

The transponder function is part of the immobilizer system and allows authenticating the key and starting the engine independent from the key battery voltage level.

For that the key will be inserted in the ignition lock with immobilizer base station. The immobilizer base station will charge the transponder with an LF field and send an authentication request. After having received sufficient energy the transponder will answer the request. This is recognized by the immobilizer base station and decoded. If the data stream transmitted by the transponder fits to the expected data stream the immobilizer base station will send a start engine message to the engine control.

4 Test Modes

The samples with test-software are marked with label "CW-mode". The keys with applications software are marked with label "Application mode" or "App mode".

The test-software allows setting the key in CW-mode for around 2 minutes. The testsoftware operations are described in "Functional description of test setup" document.

5 Technical description

Carrier frequency	CH1: 434,251 MHz CH2: 433,589 MHz
Frequency FSK deviation	+/-10 kHz (+/- 500Hz tolerance)
Number of channels	2 for Multichannel
Type of modulation	FSK
Baud rate	2.1 kbps
Rated Output Power	Typ. -16.5dBm $\pm$ 2dBm EIRP (Taiwan)
Averaging Factor for Taiwan variant	5.3dB*
Antenna	Internal PCB loop antenna
Voltage supply	CR2032 external battery
Voltage supply range	2,2 up to 3,3V

AF calculation is done in a separate document.

5.1 90° view

Key blade not part of Continental

ST Logo



5.2 Single component view



FCC

The Federal Communications Commission (FCC) warns the users that changes or modifications to the unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

IC Canada

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

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

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;
- 2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.