Document: **User Manual**

Product: BCM (Body Control Module)

HFM C1A

Model: HFMC1A01

Date: November 22, 2017

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VERSIONS LIST

Version	Date	Author	Comment, Description
V1	05/07/2017	Jérôme Lee	Creation
V2	22/11/2017	Jérôme Lee	General update

RELATED DOCUMENTS

Document	Version	Date	Author	Comment, Description

ABBREVIATION REGISTER

Abbreviation	Description
As	**As**sistant
ASK	**A**mplitude **S**hift **K**eying
BCM	**B**ody **C**ontrol **M**odule
HFM	**H**and **F**ree **M**odule
CW	**C**ontinuous **W**ave
DR	**Dr**iver
FCC	**F**ederal **C**ommunication **C**ommission
FSK	**F**requency **S**hift **K**eying
LF	**L**ow **F**requency
RF	**R**adio **F**requency
RKE	**R**emote **K**eyless **E**ntry

Author:	Jerome lee	USER MANUAL	
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1 SYSTEM OVERVIEW

1.1 Scope of Document

The aim of this document is to provide a short overview on the HFM Hand free system BCM (Body Control Module) HFM C1A model HFMC1A01.

1.2 Short Description of the complete system including HFM

The HFMC1A01 is a radio frequency transmitter-receiver used in vehicle access systems.

The vehicle access system includes:

- ✓ Key fob, which is a remote device

  It includes a 315 MHz or 433.92 MHz transmitter, a 125 kHz LF receiver and a 125 kHz transponder

- ✓ LF Antennae

- ✓ Kazashi includes a coil antenna for 125 kHz transponder communication

- ✓ Hand Free Module (HFM):

  It includes a 125 kHz LF long range and transponder transmitters and a 433.92 MHz receiver. The HFM drives 6 external dedicated antennae for the 125 kHz transmission. Two are located in the doors trims, one in the Bumper, two within the vehicle cockpit and one in the trunk. It includes also an integrated RF receiver for 433.92 MHz. The receiver is designed in direct placement.

The system interacts with other modules such as:

- ✓ Push Engine Start
- ✓ Body Control Module
- ✓ ESCL (Electronic Steering Lock Control)
- ✓ USM

The main functions performed by the system are:

- ✓ RKE functions (key less features)
- ✓ Hand Free functions for vehicle access and engine start
- ✓ Immobilizer
- ✓ LF antennae management

2 Car Access

There are two ways to Lock or Unlock the doors of the vehicle:

1. The first way is to use the remote key functionality (RKE) by pressing one of the "Lock" or "Unlock" buttons on the ID Key. Data frames are then transmitted at 315 MHz or 433.92 MHz from the key fob ID of the car. The HFM processes the frames received and when the security code is correct, the doors are locked or unlocked automatically.

   Car access functions by remote control are allowed using any key fob type

2. The second way is to use the free hand mode

✓ Unlocking the vehicle:

If the car is locked, when the door request switch located in the door is pressed by car user which has a car key fob, the HFM transmits data frames at 125 kHz. When the key fob receives the data and recognizes the content of the inquiry, it transmits the code to the car at 433.92 MHz or 315 MHz (depending of key fob frequency type). The HFM processes the frames received and when the code is correct, the doors are automatically unlocked.

✓ Locking the vehicle:

If the car is unlocked, when the door request switch located in the door is pressed by car user which has a car key fob, the HFM transmits data frames at 125 kHz. When the key fob receives the data and recognizes the content of the inquiry, it transmits the code to the car at 433.92 MHz or 315 MHz (depending of key fob frequency type). The HFM processes the frames received and when the code is correct, the doors are automatically locked.

Car access functions by hand free are allowed using any key fob type.

Remarks:

The operating free hand mode range of the product model named HFMC1A01 is less than 15 meters.

The maximum operational distance using the hand free mode of this product is: 3 meters

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3 Engine Start

There are two ways to start the Engine:

1. When the Hand free functions are disabled

First User has to hold the key fob in front of Immobilizer antenna for at least than 30s after one of the following action: press of the "START" button on the dashboard, open or close a door or press vehicle brake pedal. Each key fob has a transponder. When the key fob is hold in front of Immobilizer antenna, the HFM sends a 'transponder" recognition order to the key fob throw the Immobilizer antenna. The HFM performs a 'transponder" authentication using 125 kHz transceiver. The key fob sends the authentication result to the HFM. Then the HFM sends on the CAN bus a message to the central unit and engine control unit to allow or not the START of the engine.

The engine starts function is allowed using any key fob type.
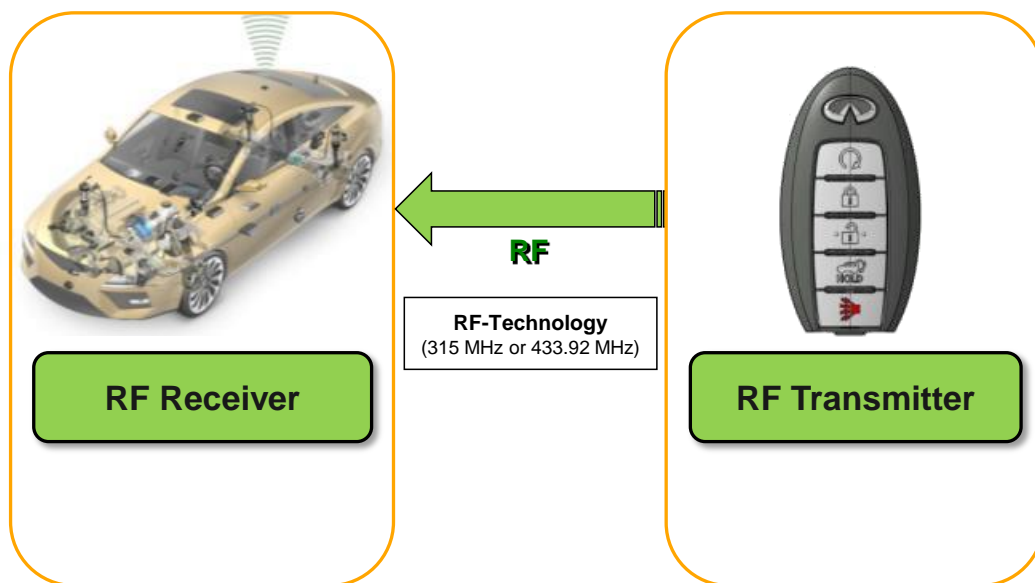
2. When the Hand free functions are enabled

The user does not need to hold the key fob in front of the Immobilizer antenna. The key fob should only be inside the vehicle. When the "START" button is pushed, the HFM sends a recognize message at 125 kHz link via internal LF antennas. Receiving this message, the key fob sends an authentication message at 433.92 MHz or 315 MHz (depending of the key fob frequency type) to the HFM. Then the HFM sends on the CAN bus a message to the central unit and engine control unit to allow or not the START of the engine.

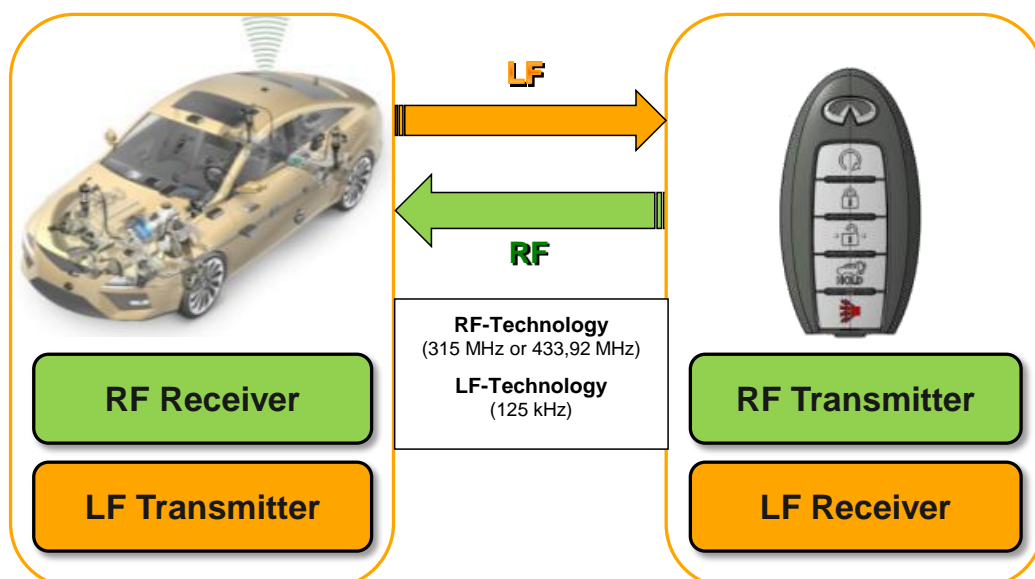The engine start function is allowed using any key fob type.

4 RF and LF System overview

4.1 Remote Keyless Entry System description

RF Receiver

RF

RF-Technology
(315 MHz or 433.92 MHz)

RF Transmitter

4.2 Passive Access & Passive Start System description

LF

RF

RF-Technology
(315 MHz or 433,92 MHz)

LF-Technology
(125 kHz)

RF Receiver

LF Transmitter

RF Transmitter

LF Receiver

5 Pictures
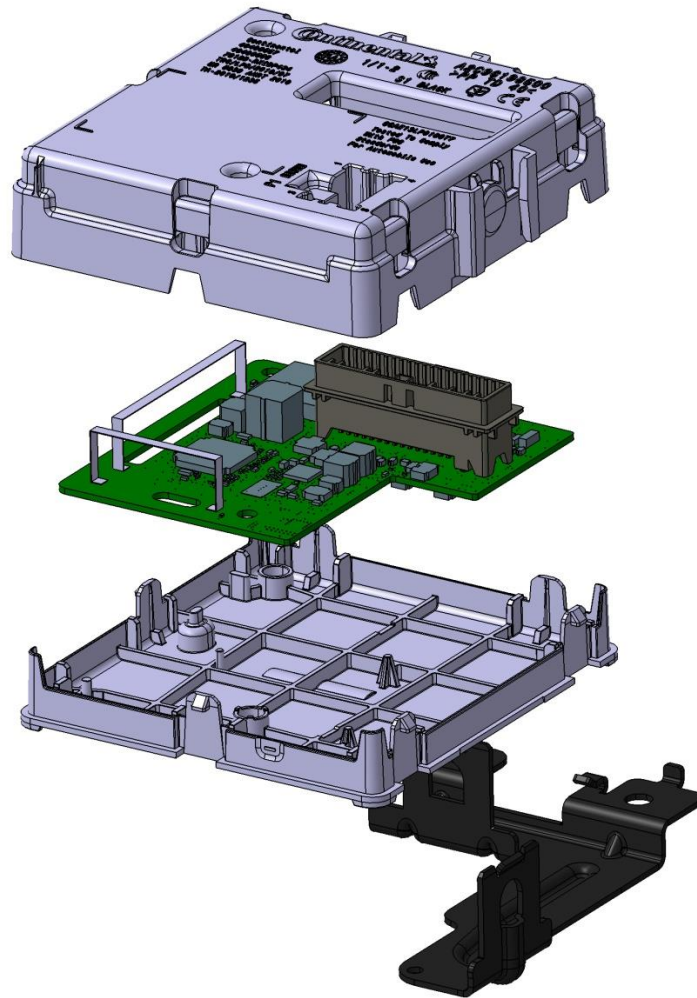
6 Label Information

6.1 EC

C E   Continental
        HFMC1A01

6.2 USA/Canada

Continental
Model: HFMC1A01
FCC ID: KR5HFMC1A01
IC:7812D-HFMC1A01
CAN RSS-Gen/CNR-Gen
IC:7812D-RXIDP434

7 Owner Manual Statements

7.1 Owner manual Canada

IC:7812D–HFMC1A01
CAN RSS-Gen/CNR-Gen
IC:7812D-RXIDP434

This device complies with Industry Canada license-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.

7.2 Owner manual USA

FCC ID: KR5HFMC1A01

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.

Changes or modifications not expressly approved by the party responsible
for compliance could void the user's authority to operate the equipment.

No changes shall be made to the equipment without the manufacturer's permission as this may
void the user's authority to operate the equipment.

END OF DOCUMENT