Continental NFC 3.0 Near Field Communication Reader User Guide

USER MANUAL Near Field Communication Reader NFC 3.0

Contents

System Description

Continental Near Field Communication Reader is developed for automotive applications under the name NFC 3.0 which includes the following function:
– NFC: Near Field Communication
The NFC 3.0 module and its implementation inside the vehicle is depicted in Fig. 1. Its assembly instruction is done by professional workers. Therefore, the product cannot be moved or switched to another position by the end-user.

Fig. 1: NFC 3.0 module and its implementation inside the vehicle

System overview

NFC 3.0 product is an NFC reader used for establishing a communication with adequate devices at a frequency of 13.56MHz. This communication realized between a base station unit and a mobile device is based on near field magnetic induction between transmitter and receiver coils.

Base station comprises two main functional units, namely a power conversion unit and a Communications & Control unit for delivering, controlling, and regulating the transferred power.

Mobile device comprises a power pick up unit and a communications & control unit for achieving power requirements and establishing an active NFC communication.

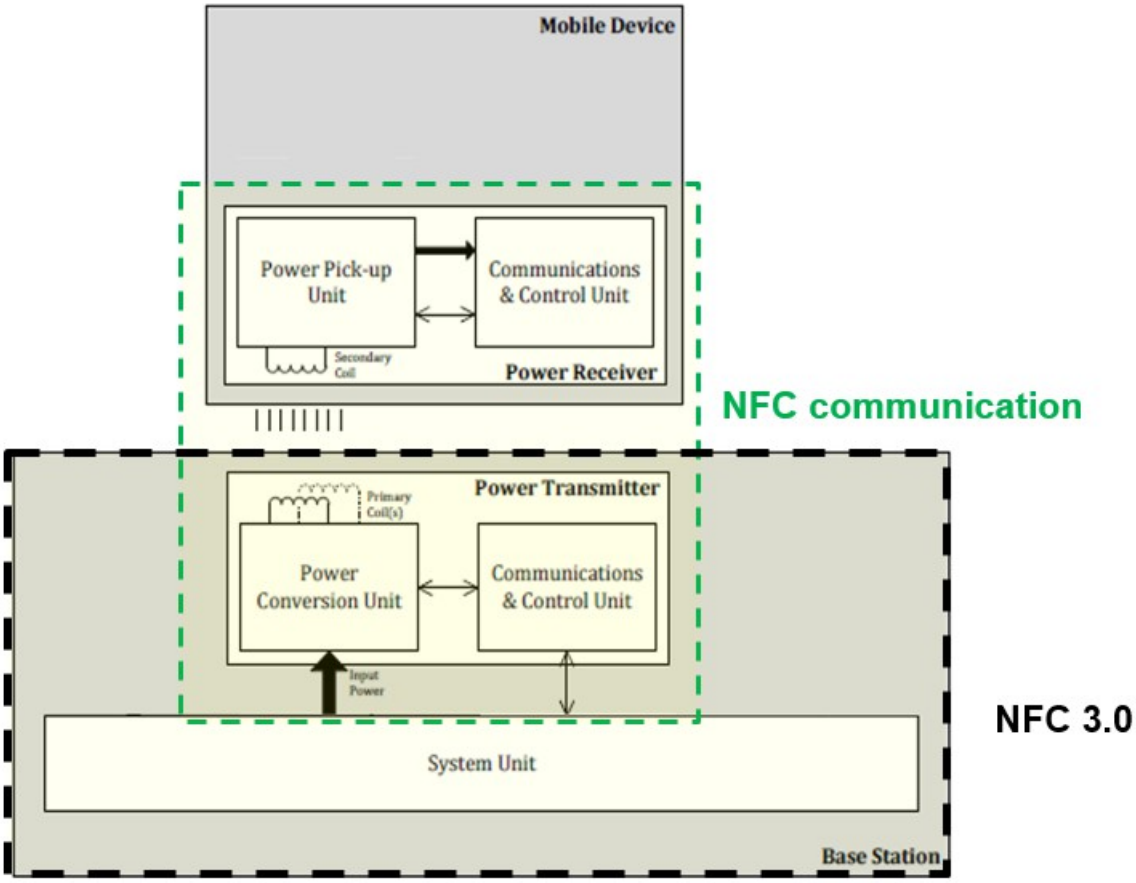

Fig. 2: NFC Wireless power transfer structure

Near Field Communication Reader description

The NFC 3.0 is mainly composed of 4 parts as depicted in Fig.3:

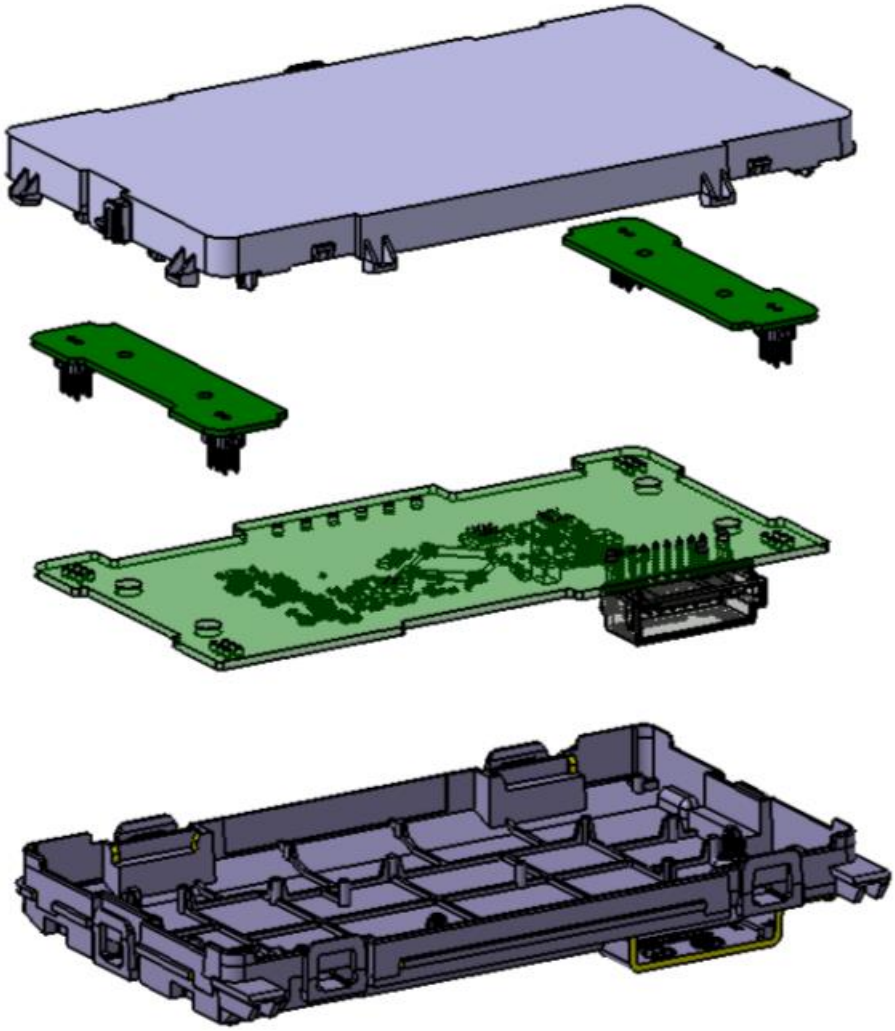

Fig. 3: NFC 3.0 split view

1. Top housing
2. Antenna PCB
3. Main PCB with 8 ways connector

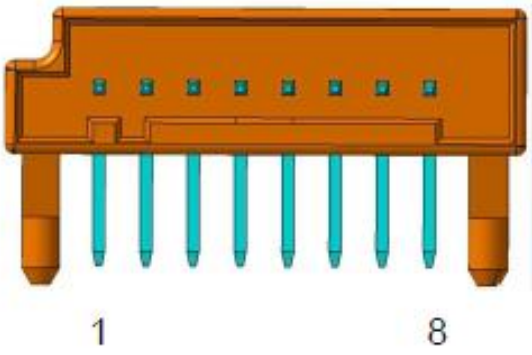

Fig. 4 Connector diagram

Pin No	Function	Type	Description
1	VBAT	Supply	General supply battery connection
2	NC	Nat used	Not used
3	CANJI	Communication	CAN communication high signal
4	CAN_L	Communication	CAN communication low signal
5	NC	Not used	Not used
6	OND BAT	Supply	General supply GND connection
7	NC	Not used	Not used
8	NC	Not used	Not used

Fig. 5 Connector pin description

4. Bottom Housing

A picture of a serial production part is shown in Fig. 6:

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NFC architecture

The NFC 3.0 integrates only one NFC transceiver emitting at a frequency of 13.56MHz. It is connected via switches to a Main NFC antenna and two side NFC antenna (Side 1 and Side 2).

Product parameters

Below in table 1, the technical parameters of the NFC 3.0 product are specified:

Parameters	Values
Supply voltage	12V battery
Voltage supply range	8V < Vbat < 16V
Max. power consumption	6W
Product Operating temperature range	-40°C < Temp < 85°C
Max. Current consumption	250 mA
Vehicle fuse protection	7.5 A
Product Weight	104 g
Dimensions (X/Y/Z in mm)	139/80/17.5 (25 at Power supply connector)

Table 1: Product parameters of NFC 3.0

NFC technical parameters

Below in table 2, the technical parameters of the NFC feature of NFC 3.0:

Parameters	Values
Carrier frequency	13.56 MHz
Modulation type	Amplitude Shift Keying (ASK)
Data rate max.	848 kbps
NFC chipset brand	NXP Semiconductors
NFC chipset model number	NCF3340EHN
Max H field @10m (@13.56MHz)	1.5 dBµA/m
Max output power (EIRP)	2.32µW

Table 2: NFC technical parameters of NFC 3.0

NFC antenna

The NFC block is composed of three antennas: Main, Side1 and Side 2 antenna.
The electrical parameters of the NFC antenna are listed in the following tables:

Main NFC antenna:

Parameters	**Values**
Antenna type	Planar printed coil on PCB
Number of turns	3
Antenna size	110mm x 62 mm
Antenna Gain (dBi) @ 13.56MHz	-4420.00%

Table 3: Main NFC antenna technical parameters

Side 1 NFC antenna:

Parameters	Values
Antenna type	Planar printed coil on PCB
Number of turns	3
Antenna size	60mm x 13.8mm x 10mm
Antenna Gain (dBi) @ 13.56MHz	-5707.00%

Table 4: Side 1 NFC antenna technical parameters

Side 2 NFC antenna:

Parameters	**Values**
Antenna type	Planar printed coil on PCB
Number of turns	3
Antenna size	60mm x 13.8mm x 10mm
Antenna Gain (dBi) @ 13.56MHz	-5858.00%

Table 5: Side 2 NFC antenna technical parameters

Variants and versions of “NFC 3.0”

NFC 3.0: includes NFC function with only one version as described below:

Ref	NFC	Top View	Bottom V
NFC 3.0	**Yes**		

Table 6: NFC 3.0 overview

LABEL CONTENT

BRAZIL

ANATEL

Agência Nacional de Telecomunicações

HHHHH-AA-FFFFF

CANADA

This device complies with part 15 of the FCC Rules and 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.

SINGAPORE

Complies with IMDA Standards (Dealer's Licence No)	Gomplies with IMDA Standards DB123456

SOUTH AFRICA

TA-YEAR/XXXX

TAIWAN
Taiwan regulatory information(NCC)

Article 12
Without permission granted by the NCC, any company, enterprise, or user is not allowed to change frequency, enhance transmitting power or alter original characteristic as well as performance to a approved low-power radio-frequency devices.

Article 14
The low power radio-frequency devices shall not influence aircraft security and interfere legal communications; If found, the user shall cease operating immediately until no interference is achieved.
The said legal communications means radio communications is operated in compliance with the Telecommunications Act.
The low-power radio-frequency devices must be susceptible with the interference from legal communications or ISM radio wave radiated devices.

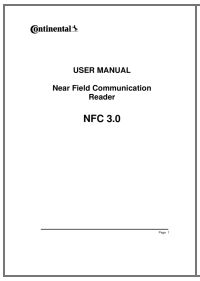
USA
“This device complies with part 15 of the FCC Rules and Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

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

FCC § 15.21 Information to user
“Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.”

RF Exposure Requirements
To comply with FCC RF exposure compliance requirements, the device must be installed to provide a separation distance of at least 20 cm from all persons.

Documents / Resources

	Continental NFC 3.0 Near Field Communication Reader [pdf] User Guide NFC30, KR5NFC30, NFC 3.0, Near Field Communication Reader