



# Continental WCA NFC 2.0 Multi-Functional Smartphone Terminal User Manual

[Home](#) » [Continental](#) » Continental WCA NFC 2.0 Multi-Functional Smartphone Terminal User Manual 

## Contents

- [1 Continental WCA NFC 2.0 Multi-Functional Smartphone Terminal](#)
- [2 System Description](#)
- [3 System Overview](#)
- [4 Documents / Resources](#)
  - [4.1 References](#)
- [5 Related Posts](#)



**Continental WCA NFC 2.0 Multi-Functional Smartphone Terminal**



## System Description

Continental Wireless Power Charger is developed for automotive applications under the name WCA NFC 2.0 which includes two functions like:

- WPC: Wireless power charger; WPC Function 126.6kHz
- NFC: Near Field Communication; NFC Function 13.56MHz

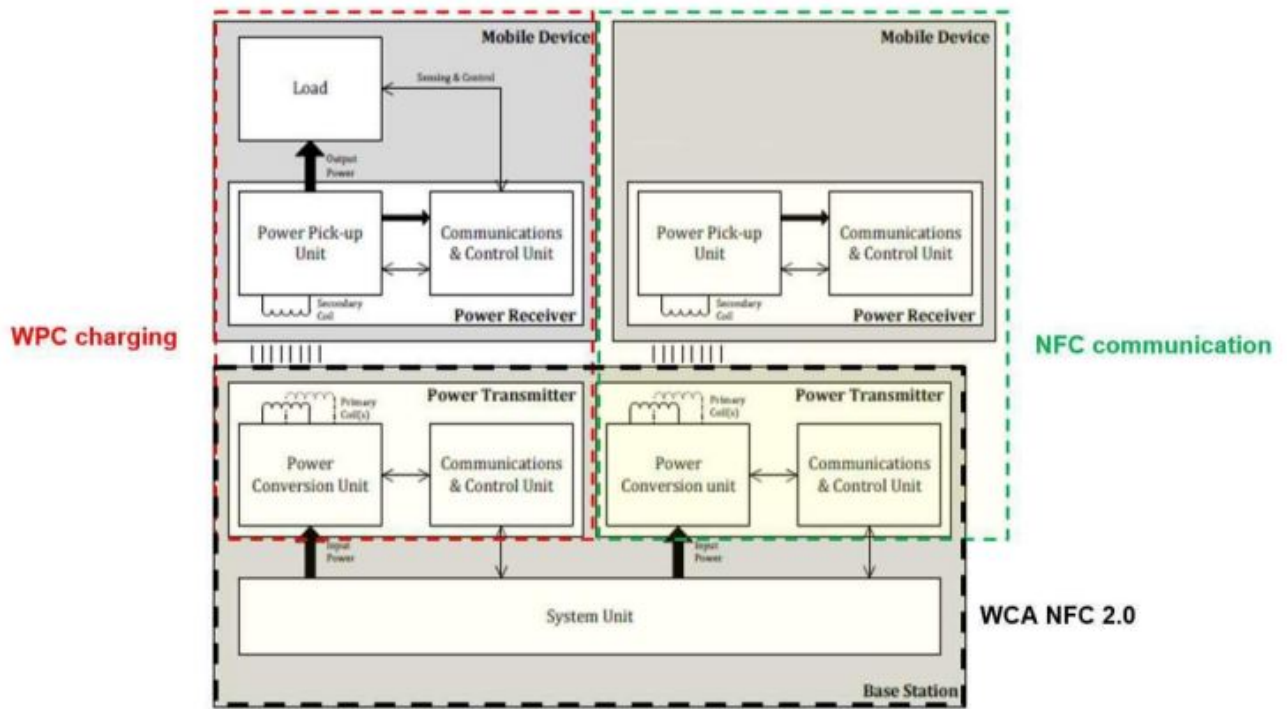
The WCA NFC 2.0 module and its implementation inside the vehicle is depicted in Fig. 1. Its assembly instruction is done by professional workers. Therefore, the product cannot be moved or switched to another position by the end user.



WCA NFC 2.0 charger uses Qi standard of Wireless Power Consortium (WPC) for enabling wireless charging from a base station unit to mobile device. The power transfer method is based on near field magnetic induction between coils.

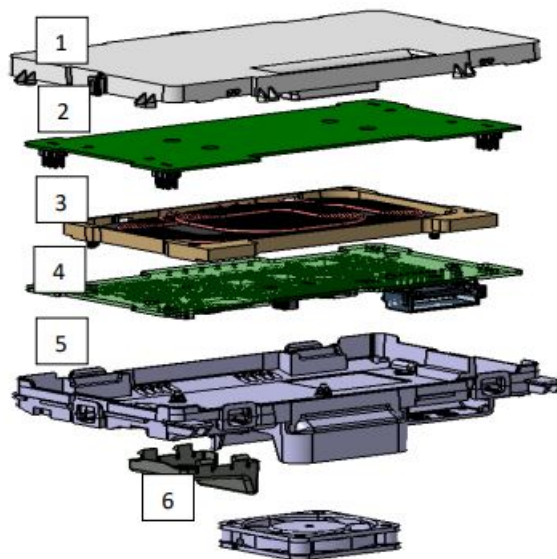
## System Overview

- The structure of wireless power transfer proposed in Fig. 2 shows an overview of the system with two kinds of distinguished devices: Base station and Mobile device.
- Base station comprises two main functional units per mode (WPC and NFC), namely power conversion units and Communications & Control units for delivering, controlling and regulating the transferred power.
- Mobile device (power receiver) comprises a power pick up unit and a communications & control unit for achieving power requirements and charging the device battery if is chargeable device or establishing an active NFC communication.

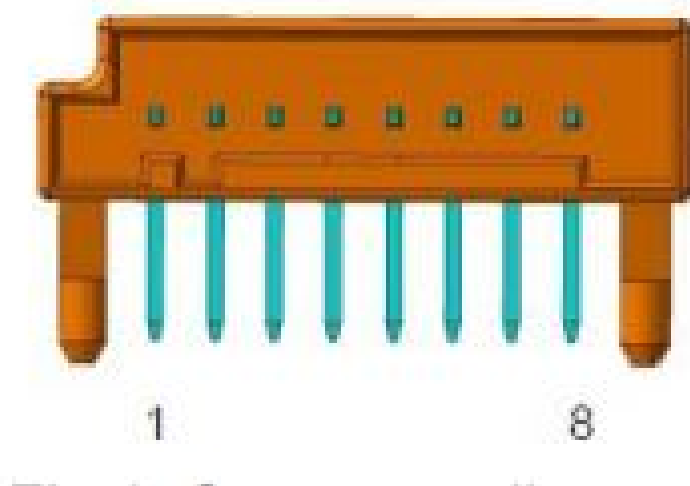


### Wireless Power Charger Description

The WCA NFC 2.0 is mainly composed of 6 parts as depicted in Fig.3.



1. Top housing
2. Antenna PCB
3. WPC coil + Ferrite + Plastic Holder
4. Main PCB with 8 ways connector: diagram below in Fig 4, pins description in Table1.



Pin No.	Function	Type	Description
1	<b>VBAT</b>	Supply	General supply battery connection
2	<b>NC</b>	Not used	Not used
3	<b>CAN_H</b>	Communication	CAN communication high signal
4	<b>CAN_L</b>	Communication	CAN communication low signal
5	<b>DETECTION_F<sup>1</sup></b>	Digital	Front version selection
6	<b>GND_BAT</b>	Supply	General supply GND connection
7	<b>DETECTION_R<sup>1</sup></b>	Digital	Rear version selection
8	<b>NC</b>	Not used	Not used

Obs. <sup>1</sup>Depending on the variant Pin no. 5 will be switched to GND for Front variant or Pin no.7 will be switched to GND for Rear variant.

- 5. Bottom Housing + Fan cover
- 6. Fan

A picture of a serial production part is shown in Fig. 5.



(a)



(b)

## WCA NFC 2.0 modes

According to the Qi standard, a simple operational description of wireless power transfer can be summarized in two principle operational modes:

- The first mode with a defined burst sequence allows the transmitter to detect an object on the charging surface: IDLE mode
- The second mode allows the power transfer from the base station to the mobile device, placed on the charging surface: Charging mode

The transition between these two modes is realized through a transient mode: Detection mode. which only occurs when the Mobile device is placed on the charging surface.

## Product parameters

Below in table 2, the technical parameters of the WCA NFC 2.0 product are specified:

Parameters	Values
Supply voltage	12V battery
Voltage supply range	8V < Vbat < 16V
Max. power consumption	30W
Product Operating temperature range	-40°C < Temp < 85°C
Max.current consumption	3A
Vehicle fuse protection	7.5A
Product weight	230 g
Dimensions (X/Y/Z in mm)	139/80/17.5 (31.5 at FAN level)

## WPC parameters

Below in table 3, the technical parameters of the WPC feature are specified:

Parameters	Values
Carrier frequency	126.6 kHz
Frequency shift	+/- 6 kHz
WPC chipset brand	IDT
Data rate max (FSK)	0.247 kbps
WPC litz coil	MPA21 Triple coil according to Qi Standard
WPC litz coil gain @ 126.6kHz	-108.4 dBi
Max. output power	15W
Max. H field @10m (@ 126.6kHz)	7.3 dBμA/m

## NFC Parameters

Below in table 4, the technical parameters of the NFC feature of WCA NFC 2.0:

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 (@ 13.56 MHz)	4 dB $\mu$ A/m

## 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 (5,6 and 7):

### Main NFC antenna:

Parameters	Values
Antenna type	Planar printed coil on PCB
Number of turns	3
Antenna size	106mm x 52 mm
Antenna Gain (dBi) @ 13.56MHz	-51.38
Table 5: Main NFC antenna technical parameters	



### Side 1 NFC antenna:

Parameters	Values
Antenna type	Planar printed coil on PCB
Number of turns	3
Antenna size	59mm x 13.8mm x 10mm
Antenna Gain (dBi) @ 13.56MHz	-58.58


### Side 2 NFC antenna

Parameters	Values
Antenna type	Planar printed coil on PCB
Number of turns	3
Antenna size	59mm x 13.8mm x 10mm
Antenna Gain (dBi) @ 13.56MHz	-57.07

**Overview of “WCA NFC 2.0”**  
 Here below the product overview of “WCA NFC 2.0”:

Ref	WPC	NFC	Top View	Bottom View
WCA NFC 2.0	Yes	Yes		

Documents / Resources

<div>  </div> <div> <div>USER MANUAL</div> <div>Multi-Functional Smartphone Terminal</div> <div>WCA NFC 2.0</div> </div>	<div> <a href="#">Continental WCA NFC 2.0 Multi-Functional Smartphone Terminal</a> [pdf] User Manual WCANFC20, KR5WCANFC20, WCA NFC 2.0 Multi-Functional Smartphone Terminal, WCA NFC 2.0, Multi-Functional Smartphone Terminal         </div>
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References

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[Continental Automotive - Passenger Cars Home](#)