



User Manual

ESTABLISHED BY  
MOBASE ELECTRONICS

MBECNWPC2503

SPEC NO.  
H/W Version : 1.0

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## 1. GENERAL INFORMATION

### 1.1Description of WPC UNIT

WPC UNIT provides the following functions.

- MAX 15W Wireless Charging
- NFC Vechicle Start status
- Wireless Charging : 114~116kHz (5W, 15W) / 119~121kHz (7.5W)
- NFC Reader : 13.56MHz



Picture 1: System configuration



## 1.2 Systemoverview

Wireless charging controller <LP, MP> – System for charging mobile phone wirelessly in vehicle using electromagnetic induction between coils

- ① After inputting IGN1 power, the reception coil (cell phone RX Coil)
- ② Confirmation of non-mobile NFC mounting via NFC Multi Tagging <MP + NFC>
- ③ (TX side charging pad: wireless charger side) Current flows in the transmission coil
- ④ The magnetic field generated by the current of the transmission coil is guided to the receiving coil and induction current is generated in the receiving coil
- ⑤ The charging current starts to be charged through PMIC (Power module IC) of mobile phone

NFC Communication Controller <MP + NFC> – Vehicle start, key registration, and vehicle information transmission / reception device through mutual communication with NFC (near field communication) installed in mobile phone and ECU.

- ① After inputting B + power, put Smart Phone on top of ECU
- ② When charging C\_WPCNFCcmd = 0x01 (NFCSearchingOnHCE) from the authentication unit, stop wireless charging && NFC Start
- ③ PhoneKeyAuth Mode (SmartPhone ↔ WPC ↔ BDC AUTH certification)
- ④ RTC SYNC MODE (RTC synchronization)
- ⑤ CertificateChain SYNC MODE (Certificate Synchronization)
- ⑥ PhoneKey Sync MODE MODE (Synchronize PhoneKey and Spare Key)
- ⑦ When C\_WPCNFCcmd = 0x02 (NFC Searching Off) is input from the authentication unit NFC Mode Stop && When IGN1 is ON,  
Wireless charging Start

## 2 ELECTRICAL CHARACTERISTICS



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## 2.1 Operating characteristics of MP+NFC

| Item                      | Specification                                       |
|---------------------------|-----------------------------------------------------|
| Rated Supply Voltage      | DC 12V                                              |
| Operating Voltage         | DC 9 ~ 16V                                          |
| Operating Temperature     | - 30 ~ + 75°C                                       |
| Storage temperature range | - 40 ~ + 85°C                                       |
| MP<WPC> Frequency         | 114~116 kHz (WPC 5W, 15W)<br>119~121 kHz (WPC 7.5W) |
| NFC Frequency             | 13.56MHz                                            |
| Standby Current           | Below than 1mA                                      |

Table 2: Electrical characteristics of MP+NFC

## 2.2 UNIT Input/Output Interface

| Pin No. | Description      | Reference                                                    |
|---------|------------------|--------------------------------------------------------------|
| 1       | GND              |                                                              |
| 2       | GND              |                                                              |
| 3       | WC_AMBER_IND_OUT | THESE PORTS(3,4,5, and 6)<br>ARE NOT USED BY<br>MANUFACTURER |
| 4       | WC_GREEN_IND_OUT |                                                              |
| 5       | B_CAN_LOW        |                                                              |
| 6       | B_CAN_HIGH       |                                                              |
| 7       | NC               |                                                              |
| 8       | AUTH_CAN_LOW     | THESE PORTS(8 and 9) ARE<br>NOT USED BY<br>MANUFACTURER      |
| 9       | AUTH_CAN_HIGH    |                                                              |
| 10      | NC               |                                                              |
| 11      | IGN1             |                                                              |
| 12      | BAT+             |                                                              |

This equipment should be installed and operated with minimum 13mm between the radiator and human body.



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## FCC

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.

Any changes or modifications (including the antennas) to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment.

FCC RF Radiation Exposure Statement: This equipment complies with FCC RF Radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment should be installed and operated with a minimum distance of 13 mm between the radiator and your body.

## ISED

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

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

IC RF Radiation Exposure Statement: This equipment complies with Radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment should be installed and operated with a minimum distance of 13 mm between the radiator and your body.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RF du IC d'exposition aux radiations: Cet équipement est conforme à l'exposition de IC rayonnements RF limites établies pour un environnement non contrôlé.

L'antenne pour ce transmetteur ne doit pas être même endroit avec d'autres émetteur sauf conformément à la IC procédures de produits Multi-émetteur.

Cet équipement doit être installé et utilisé avec une distance minimale de 13 mm entre le radiateur et votre corps.