

# DOOSAN SMART KEY CONTROLLER User' Manual

2022.10.12

| Prepared(작성) | Reviewed(검토) | Approved(승인) |
|--------------|--------------|--------------|
| Park jeguk   |              |              |

## Revision History

| Rev. | 날짜         | 수정 내용                                                     | 담당         |
|------|------------|-----------------------------------------------------------|------------|
| 1.0  | 2018.12.26 | First Release                                             | Bae wonsik |
| 2.0  | 2022.10.12 | Correct Frequency (433MHz -> 433.92MHz, 134KHz -> 133KHz) | Park jeguk |
|      |            |                                                           |            |

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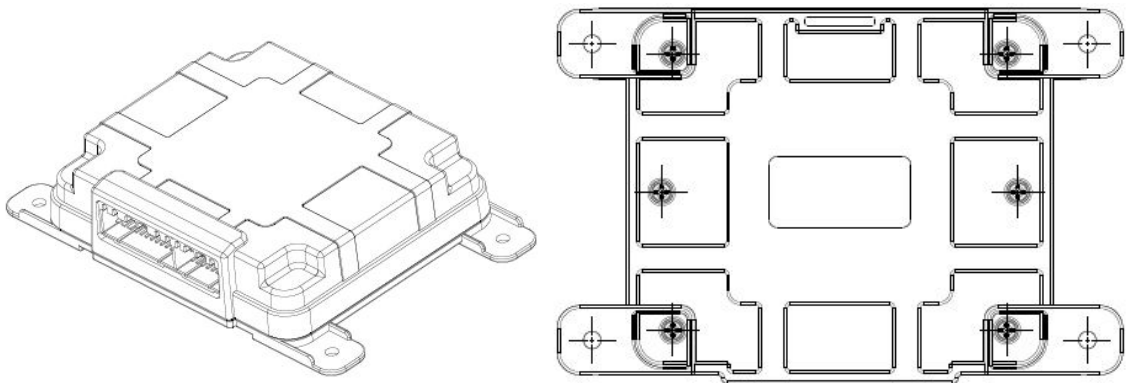
## 1. Synopsis

This document is specifically-written manual for SMART KEY CONTROLLER which is receiver and transmitter of wireless communication, which is to confirm user identifications under engine-start limiting function in heavy equipments.

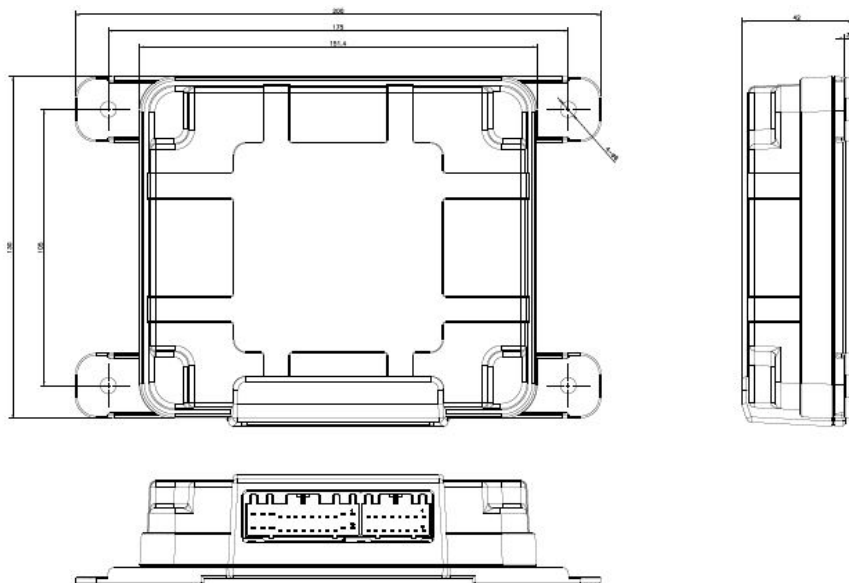
SMART KEY CONTROLLER is defined as followings; SMART KEY CONTROLLER transmits a signal pattern by RFID 133 KHz in order to wake up SMK FOB. And then SMART KEY CONTROLLER communicates with SMK FOB by 433.92MHz wireless signal. SMART KEY CONTROLLER decodes password-secured signals and transfer identification information to certification device which has a function of engine-start limiting, such as Cluster, MCU or ECU, with using CAN protocol

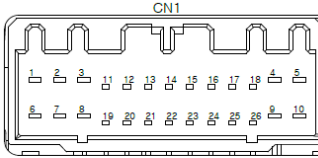
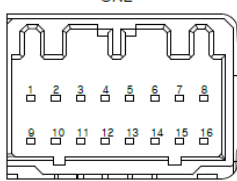
## 2. Product Image

### 1) External Appearance



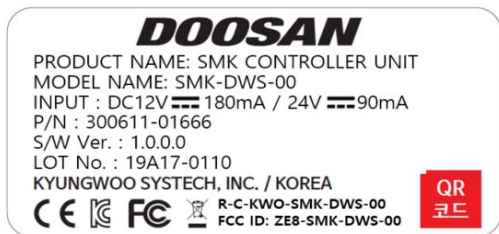
### 2) Dimension



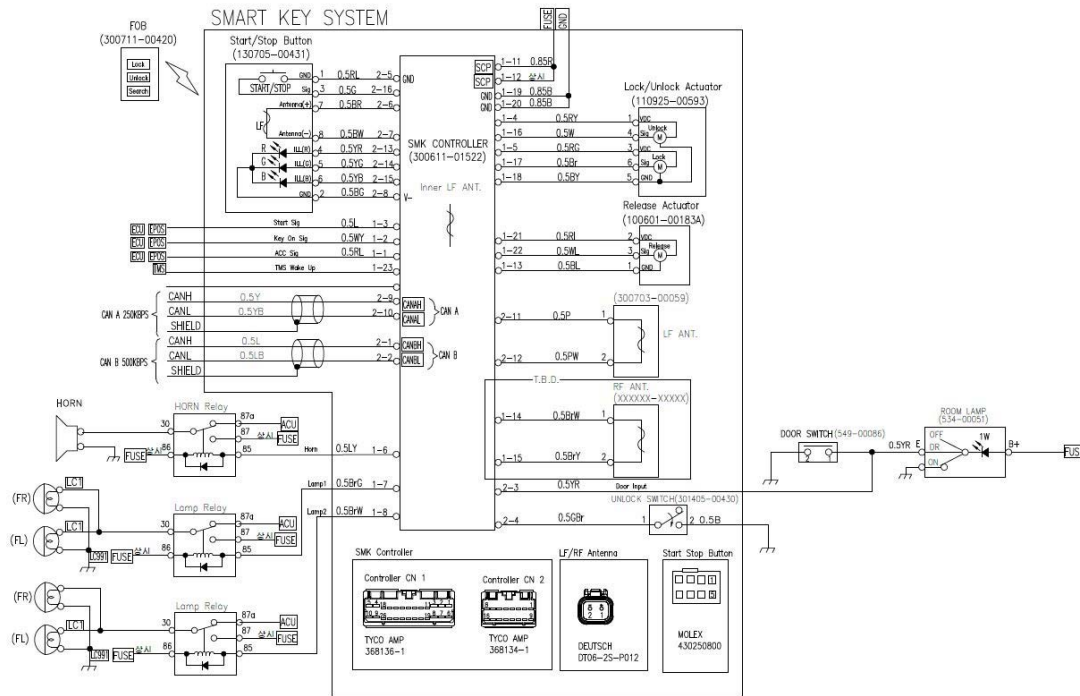
|                 | PIN | Controller Manual            |                                                                                                                     |
|-----------------|-----|------------------------------|---------------------------------------------------------------------------------------------------------------------|
| CN1<br>(26-pin) | 1   | ACC output                   |  <p>MATE : TYCO AMP 368136-1</p> |
|                 | 2   | Key-ON output                |                                                                                                                     |
|                 | 3   | START SIG. output            |                                                                                                                     |
|                 | 4   | Lock Actuator (+)            |                                                                                                                     |
|                 | 5   | Unlock Actuator (-)          |                                                                                                                     |
|                 | 6   | HORN RELAY                   |                                                                                                                     |
|                 | 7   | LAMP 1 RELAY                 |                                                                                                                     |
|                 | 8   | LAMP 2 RELAY                 |                                                                                                                     |
|                 | 9   | N/A                          |                                                                                                                     |
|                 | 10  | N/A                          |                                                                                                                     |
|                 | 11  | Controller 상시전원 (12/24V) (+) |                                                                                                                     |
|                 | 12  | Controller 상시전원 (12/24V) (+) |                                                                                                                     |
|                 | 13  | Release Actuator 전원 (-)      |                                                                                                                     |
|                 | 14  | N/A                          |                                                                                                                     |
|                 | 15  | N/A                          |                                                                                                                     |
|                 | 16  | N/A                          |                                                                                                                     |
|                 | 17  | N/A                          |                                                                                                                     |
|                 | 18  | Actuator signal Com.         |                                                                                                                     |
|                 | 19  | Controller 상시전원 (12/24V) (-) |                                                                                                                     |
|                 | 20  | Controller 상시전원 (12/24V) (-) |                                                                                                                     |
|                 | 21  | Release Actuator 전원 (+)      |                                                                                                                     |
|                 | 22  | Release Actuator signal      |                                                                                                                     |
|                 | 23  | Wake-up port (From TMS)      |                                                                                                                     |
|                 | 24  | N/A                          |                                                                                                                     |
|                 | 25  | N/A                          |                                                                                                                     |
|                 | 26  | N/A                          |                                                                                                                     |
| CN2<br>(16-pin) | 1   | HS CAN                       |  <p>MATE : TYCO AMP 368134-1</p> |
|                 | 2   | HS CAN L                     |                                                                                                                     |
|                 | 3   | In DOOR SIGNAL               |                                                                                                                     |
|                 | 4   | DOOR UNLOCK SWITCH SIGNAL    |                                                                                                                     |
|                 | 5   | Button 전원 (-)                |                                                                                                                     |
|                 | 6   | Button LF (+)                |                                                                                                                     |
|                 | 7   | Button LF (-)                |                                                                                                                     |

|    |                        |
|----|------------------------|
| 8  | Button 전원 (-)          |
| 9  | CAN H                  |
| 10 | CAN L                  |
| 11 | DOOR ANT (+)           |
| 12 | DOOR ANT (-)           |
| 13 | Red Backlight Signal   |
| 14 | Green Backlight Signal |
| 15 | Blue Backlight Signal  |
| 16 | BUTTON SIG.            |

### 3) Certification LABEL location



### 3. Block Diagram



### 4. Specification

#### 4.1. Operating Specification

- Must transmit a signal of RFID 133 KHz as a wake up pattern signal.
- Must be activated from 12 Vdc/24 Vdc external voltage supply.
- Must be able to analyze the password-secured signal.
- Must be able to use Single channels band of 433.92MHz.

#### 4.2. Power Specification

- Rated Voltage: 12V $\overline{\text{DC}}$  (Max 180mA) / 24V $\overline{\text{DC}}$  (Max 90mA) both available

#### 4.3. General Specification

- Storage Temperature: -40°C ~ 85°C
- Operating Temperature: -30°C ~ 75°C
- Tested Temperature: -30°C ~ 75°C
- Water-Proof Specification: IP65 (Connector Face : None Water-proof)
- Communication with equipment: CAN2.0 250Kbps/500Kbps

(\*It is recommended to use twist shield cable and should be connected through a short distance as possible.)

- Material of Device: PC&ABS

(Substance : LUPOY GN-5001RF BLACK, Flame Class : V0, Manufacturer : LG CHEMICAL)

-. PCB Material

| object/part No.       | manufacturer/ trademark | Layer /Thickness | Flame Class | standard | mark(s) of conformity                                                                  |
|-----------------------|-------------------------|------------------|-------------|----------|----------------------------------------------------------------------------------------|
| SMK-DWS<br>Controller | JM ELECTRONICS CO LTD   | 4Layer /1.6T     | V-0         | UL 796   | JM  |

#### 4.4 RF Specification

| Item                                      |                           | Specification               |
|-------------------------------------------|---------------------------|-----------------------------|
| <b>Wireless Data Communication System</b> | <b>Frequency</b>          | 433.92MHz (Single Channels) |
|                                           | <b>RF Power</b>           | Under 1 mW                  |
|                                           | <b>Modulation Method</b>  | GFSK                        |
|                                           | <b>Tested Temperature</b> | -30 ~ +75°C                 |
| <b>Magnetic Induction System</b>          | <b>Frequency</b>          | 133KHz (Single Channel)     |
|                                           | <b>RF Power</b>           | Under 42 dBμA/m @ 10 meter  |
|                                           | <b>Modulation Method</b>  | ASK                         |

#### 4.5. Product label Explanation of graphic symbols used

| Symbol                                                                              | Description                                |
|-------------------------------------------------------------------------------------|--------------------------------------------|
|  | Korea Certification Marking                |
|  | Communaute Europeenne Marking              |
|  | Electrical waste and electronics equipment |
|  | Federal Communication Commision Marking    |
|  | Direct current                             |

#### 5. Postal address:

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E-mail: [Webmaster@kyungwoo.com](mailto:Webmaster@kyungwoo.com)

#### FCC Compliance Statement

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.

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

#### RED Compliance Statement

This product is CE marked according to the provision of the RED (2014/53/EU). Hereby Kyungwoo Systech Inc. declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU