

PRODUCT SPECIFICATION AND MANUAL

2014.07

| | |
|-----------------|----------------------------------|
| BUYER / PROJECT | SYMC / X100 / MT FLIP 02 |
| BUYER MODEL | PCB PACKAGE ASSY – SMART KEY |
| PART No. | |
| COMPANY | Mototech Co.,. |
| MAKER/NATION | Mototech Co.,./Republic of Korea |
| DRAFT PART | Research Center |
| DRAFTER | K.H CHO |

| Title | Certification Request Document | | |
|---------------------|---------------------------------------|-----------------|-------------------|
| Project Name | X100 | Drawn | 2014-03-28 |
| Model Name | | Released | 2014-07-15 |
| | | Made by | K.H CHO |

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1. Contents

| | |
|-------------|---|
| TYPE | Wireless controller about wireless electronic equipment of specific low output radio station |
| MODEL NAME | |
| USE | Vehicle of door keyless controller what use 133.3KHz & 433.92 MHz frequency |
| SUMMARY | <p>1. This equipment use semiconductor and integrated circuit, so it designs to get high reliability.</p> <p>2. This equipment use oscillation circuit of crystal, so it designs to satisfy about legally frequency an allowable error and bandwidth of exclusive frequency.</p> <p>3. The transmitter has each other specific identification code.</p> <p>4. The power use Li-ion coin Battery (DC 3.0V)</p> |
| COMPOSITION | <p>1. RF Transmitter part</p> <p>2. Pattern Antenna</p> <p>3. LF Receiver</p> <p>4. LF Antenna.</p> |

2. ELECTRONIC SPEC

| List | UNIT | TRANSMITTER(FOB) |
|-----------------------------|------|--|
| Rated voltage | | DC 3.0V |
| Voltage range | | UNIT 2.1 ~ 3.6V (except Battery influence) |
| Operating Temperature range | | -20 ~ +60℃ |
| Storage temperature range | | -30 ~ +80℃ |
| Dark current | | 6.1μA ±0.4uA |

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3. Specification

| | |
|----------------------|---|
| TYPE | TRANSMITTER ASSY – SMART KEY |
| NAME | Wireless controller about wireless electronic equipment of specific low output radio station) |
| Equipment List | RF Transmitter, LF Receiver |
| Frequency | TX: 433.920MHz, RX: 133.3KHz |
| Antenna composition | Pattern ANTENNA, LF ANTENNA |
| Oscillation method | Crystal oscillation |
| Modulation method | FSK |
| Communication method | Two-Way Communication (LF & RF each other) |
| Frequency multiplier | 32 multiplier |

4. Repair of Unit & Circuit Explanation

4.1 Repair of Unit

Exchange an old unit.

4.2 Circuit Explanation

If User presses specific Switch of transmitter, MCU makes inherent serial value and Encryption value, so it print what CPU make data, at the same time , RF IC get to be ENABLE.

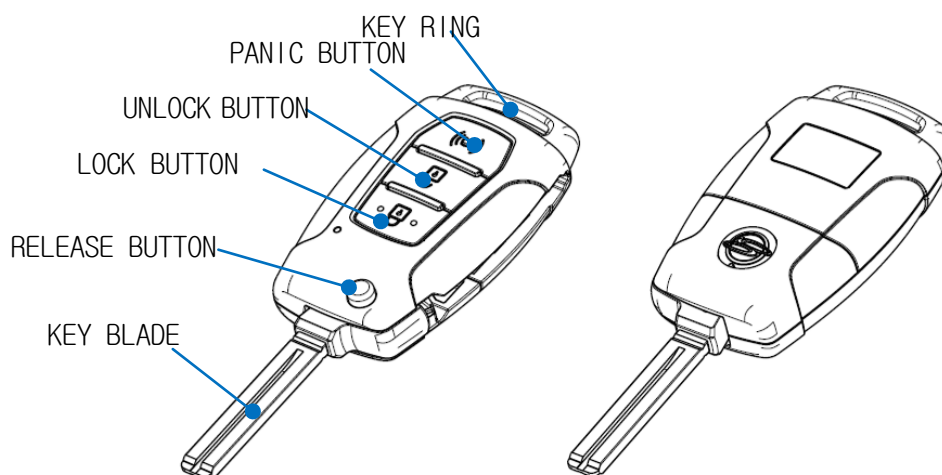
Printing data are falsified into TxIC and it synthesize through CRYSTAL. Compounded frequency is amplified by TxIC and it transmits through antenna from matching circuit diagram of output.


FOB receives RANDOM DATA through LF Antenna and print to encrypt result value from MCU, at the same time RF IC get to be ENABLE. As following, it transmits PATTERN Antenna how to change falsification, synthesis, and multiplier.

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5. The Method of Unit Operating

5.1 REMOTE



|  <p>PICTURE OF UNIT</p> | FUNCTION | | SWITCH FUNCTION |
|--|---------------|--|--|
| | LOCK BUTTON | DOOR LOCK | SHORT PRESSING LOCK BUTTON OVER 0.03s - RED LED flicker once as short time |
| | | ESCORT | LONG PRESSING LOCK BUTTON OVER 1.5s - ESCORT signal output After LOCK signal output, - RED LED flicker once as short time After LOCK LED flicker |
| | UNLOCK BUTTON | DOOR UNLOCK | SHORT PRESSING UNLOCK BUTTON UNDER 0.03s - RED LED flicker once as long time |
| PANIC BUTTON | PANIC | LONG PRESSING PANIC BUTTON OVER 1s - RED LED flicker once as short time | |

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6. The System of Each Unit Code Discrimination

6.1 TRANSMISSION CODE

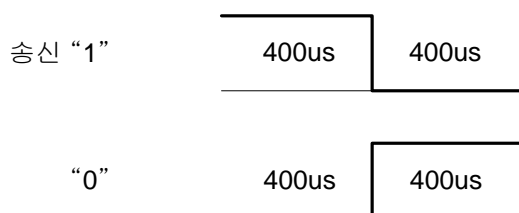
RKE RF DATA : 88 Manchester Code(176bits) + 4개 Bits

- 16 Codes : Preamble
- 4 bits : Header('0000')
- 24 Codes : Signature
- 40 Codes : Random Data
- 8 Codes : Serial & Button Data & Battery Voltage Low Data

AFTER LF RECIVE, RF DATA : 48 Manchester Code(96bits) + 4 Bits

- 16 Codes : Preamble
- 4 bits : Header('0000')
- 24 Codes : Signature
- 8 Codes : Serial & Battery Voltage Low Data

6.2 DATA STRUCTURE ("1", "0")



FCC (Federal Communications Commission)

WARNING: This equipment may generate or use radio frequency energy.

Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual.

The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

This device complies with Part 15 of the FCC's 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 undesirable operation.

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