PRODUCT SPECIFICATION AND MANUAL

2019.04

BUYER / PROJECT	SYMC / Y415
BUYER MODEL	PCB PACKAGE ASSY – SMART KEY
PART No.	MT FLIP 09
COMPANY	Mototech Co,.
MAKER/NATION	Mototech Co,./Republic of Korea
DRAFT PART	Research Center
DRAFTER	J.Y HAM

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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	1. This equipment use semiconductor and integrated circuit, so it designs to get high reliability. 2. This equipment use oscillation circuit of crystal, so it designs to satisfy about legally frequency an allowable error and bandwidth of exclusive frequency. 3. The transmitter has each other specific identification code. 4. The power use Li-ion coin Battery (DC 3.0V)
COMPOSITION	1. RF Transmitter part 2. Pattern Antenna 3. LF Receiver 4. LF Antenna.

2. ELECTRONIC SPEC

UNIT / List	TRANSMITTER(FOB)
Rated voltage	DC 3.0V
Voltage range	DC 2.7 ~ 3.3V
Operating Temperature range	-20 ~ +60℃
Storage temperature range	-30 ~ +80℃
Dark current	6uA0+0.5Ua

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	433.920MHz, 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.

5. The Method of Unit Operating

5.1 REMOTE

PICTURE OF UNIT

FUNCTION		SWITCH FUNCTION
LOCK BUTTON	DOOR LOCK	SHORT PRESSING LOCK BUTTON OVER 0.03s - RED LED flicker once as short time
UNLOCK BUTTON	DOOR UNLOCK	SHORT PRESSING UNLOCK BUTTON UNDER 0.03s - RED LED flicker once as long time
Headlamp BUTTON	Headlamp ON/OFF	Headlamp PRESSING PANIC BUTTON OVER 1s - RED LED flicker once as short time
PANIC BUTTON	PANIC	LONG PRESSING PANIC BUTTON OVER 1s - RED LED flicker once as short time
TailGate BUTTON	TailGate Open/Close	TailGate BUTTON OVER 1s - RED LED flicker once as short time

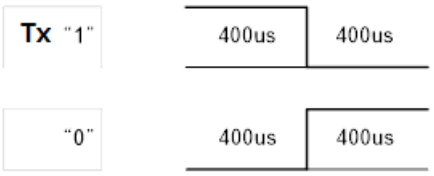
6. The System of Each Unit Code Discrimination

6.1 TRANSMISSION CODE

RKE RF DATA: 88 개 Manchester Code(176bits) + 1.6ms Low signal
- 16 Codes: Preamble
- 1.6ms Low signal: Header
- 24 Codes: Signature
- 40 Codes: Random Data
- 8 Codes: Serial & Button Data & Battery Voltage Low Data

After receiving LF, RF DATA 48 개 Manchester Code(96bits) + 1.6ms Low signal
- 16 Codes: Preamble
- 1.6ms Low signal: Header
- 24 Codes: Signature
- 8 Codes: Serial & Battery Voltage Low Data

6.2 DATA STRUCTURE (“1", "0”)



Part 15.19

This device comply with part15 of FCC rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device & its accessories must accept any interference received, including interference that may cause undesired operation.

Part 15.105

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

Part15.21

Changes or modifications not expressly approved by the manufacturer (or party responsible) for compliance could void the user's authority to operate the equipment