

PRODUCT SPECIFICATION AND MANUAL

2014.07

BUYER / PROJECT	SYMC / A155 / MT FOBG 04
BUYER MODEL	TRANSMITTER 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	A155	Drawn	2014-03-28
Model Name		Released	2014-07-15
		Made by	K.H CHO

Table of Contents

1. CONTENTS.....	3
2. ELECTRONIC SPEC.....	3
3. SPECIFICATION	4
4. REPAIR OF UNIT & CIRCUIT EXPLANATION.....	4
5. THE METHOD OF UNIT OPERATING.....	5
6. THE SYSTEM OF EACH UNIT CODE DISCRIMINATION	6

Title	Certification Request Document		
Project Name	A155	Drawn	2014-03-28
Model Name		Released	2014-07-15
		Made by	K.H CHO

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

Title	Certification Request Document		
Project Name	A155	Drawn	2014-03-28
Model Name		Released	2014-07-15
		Made by	K.H CHO

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.

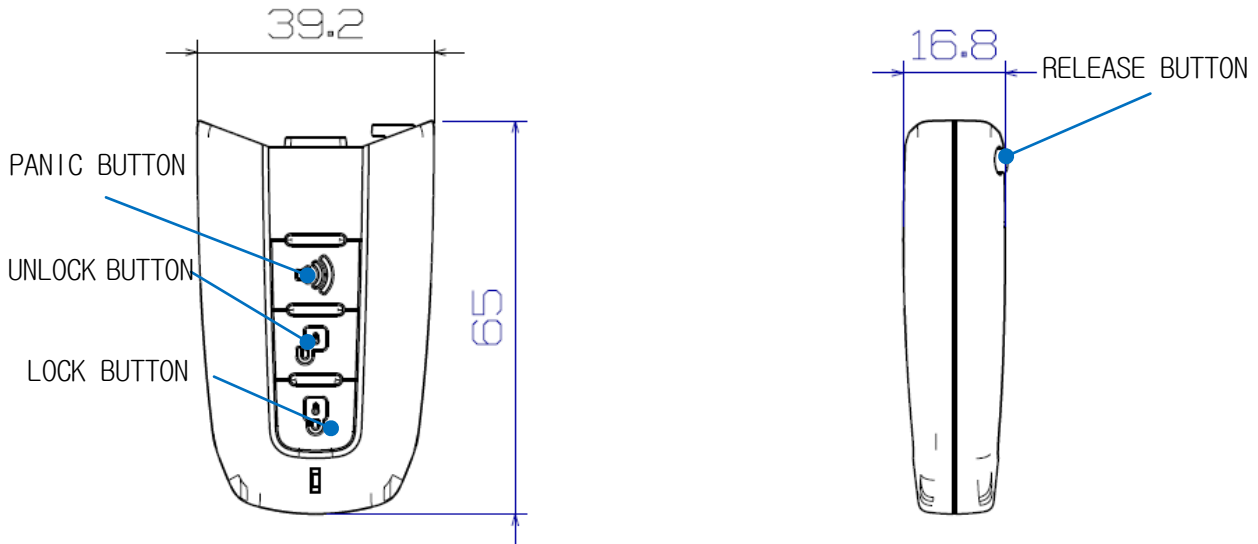
Printing data are falsified into TxIC and it synthesize through CRYSTAL. Compounded frequency is amplified by TxIC and it transmits through antenna from matching circuit diagram of output.


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.

Title	Certification Request Document		
Project Name	A155	Drawn	2014-03-28
Model Name		Released	2014-07-15
		Made by	K.H CHO

5. The Method of Unit Operating

5.1 REMOTE



 PICTURE OF UNIT	FUNCTION		SWITCH FUNCTION
	LOCK BUTTON	DOOR LOCK	
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

Title	Certification Request Document		
Project Name	A155	Drawn	2014-03-28
Model Name		Released	2014-07-15
		Made by	K.H CHO

6. The System of Each Unit Code Discrimination

6.1 TRANSMISSION CODE

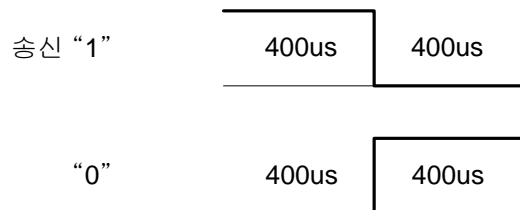
RKE RF DATA : 88 Manchester Code(176bits) + 4개 Bits

- 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.

Title	Certification Request Document		
Project Name	A155	Drawn	2014-03-28
Model Name		Released	2014-07-15
		Made by	K.H CHO