Theory of operation	
Product Name	Hotel Card Lock
Model	ALV2 P / ALV2 A type

Version 1.0

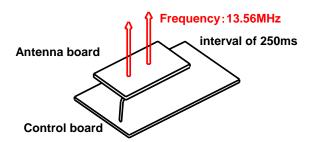
July 12, 2010

Miwa Lock Co., Ltd.

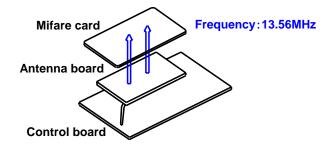
## 1. Outline of the ALV2 Hotel Card Lock

There are two states in this unit.

- (1)State of card waiting
- (2)State of card communication
- (1)This unit radiates frequency of 13.56MHz. for 1ms at interval of 250ms to confirm the presence of the Mifare card. When this unit detects a card ,it stops the radiating frequency of 13.56MHz..
- (2)Once this unit detects a card, the unit starts to communicate on frequency of 13.56MHz.
  - (1) State of card waiting



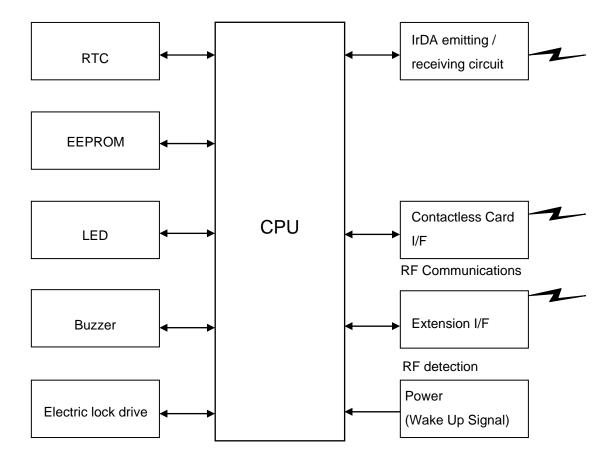
(2) State of card communication



## 2. Device Structure

## 2.1. Block diagram1

The following shows functional block diagram for card lock control components.



2.2. Block diagram2 Note: There are two RF antenna. One is for detection, the other is for communication. They do not work simultaneity. 13MHz RF part Four pieces of AA type Alkaline batteries 3.<u>3</u>VB Main bord are used for main battery and supply 3Vdc. (Series-Parallel connection) Vbat CN1 MPU 3<u>.</u>3RF 3. <u>3</u>RF DC-DC. cnv Power Vref batt $\rightarrow$ 3.3V DVDD POW\_ON TVDD Control P8\_5 VBUS AVDD circuit 7/7 BATŢ PVDD AN0 27. 12MHz 3. 3VXTAL CN2 SVDD Antenna bord Maintenance only Swer P0\_5 NSS OSCOUT XEN P8\_4 Control MOSI CN6 P0\_ MOSI MISO circuit P0\_ MISO TX1 3. <u>3</u>VRF SCK SCK ĮRQ RSTPD IRQ TX2 P0\_1 RSTPD RF\_ON | P8\_3 Communication Control circuit antenna VMID TVSS1 Ι1 5<u>V\_ON</u> P8\_6 Control I0TVSS2 DC-DC. cnv P31 AVSS batt→5V circuit P30 777 CARDEN DVSS CN3 /RESET TESTEN Reset signal form circuit Maintenance only → MODE 3. 3V <del>♦</del> # # 7// EPM\_CLK SSCK **EEPROM** EPM\_Į SSI 777 Detection R1EX25512ATA00A EPM\_O SS0 512Kbit EPM\_CS antenna 7/7 13.56MHz SCS 7// Backup circuit SCL P8\_0 SDA P\_START RTC\_INT RTC\_INT INT3 RTC LED\_GREEN R2025S P6\_2 3. <u>3</u>VB 7// P6\_1 CN4 3.3VB OPEN\_DOOR P2\_6 OUT\_LEVER P2\_5 RXD0 IrDAVCC Wave form IN\_LEVER P2\_4 /CLR VIO generation Electric LEDA<sub>r</sub> circuit KEY\_SW P2\_3 TRB0 RXD IRD\_RXD\_SET INTO TXD DED\_SW P2\_2 Electric lock PWDOWN door IRD\_TXD\_SET **\*** GND 7/ Interrupt lock IrDA\_TXD → INT2 TXD0 P1\_2 signal generation 5V <del>♀</del> circuit P2\_1 Motor driver Buzzer P2\_0 LB1938T BUZZER\_ON 3.3V TRGIOA CN5  $\overrightarrow{m}$ TXD1 Voltage level LED RXD1 shift circuit P6\_0 Expansion 3.3V<->5V RAS\_LED P5\_1 ► P5\_7 3\_3VB *///* Maintenance only Wave form P5\_0 output Maintenance only generation P5\_4 XOUT P5\_3 P5\_2

4 / 5

TEST2

1//

## 3.Other

- % Installation work is done by professional contractors.
- \* This unit is 13.56MHz RF circuit independent.

 RF circuits and RF communication circuits are not detected at the same time keep on moving.