DE-631

USER MANUAL

DUALi Inc.

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We have our development center in South Korea to provide technical support. For any technical assistance can contact our technical support team as below;

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Revision History

- 2011.05.12 First release
- 2014.02.11 CPU specification change

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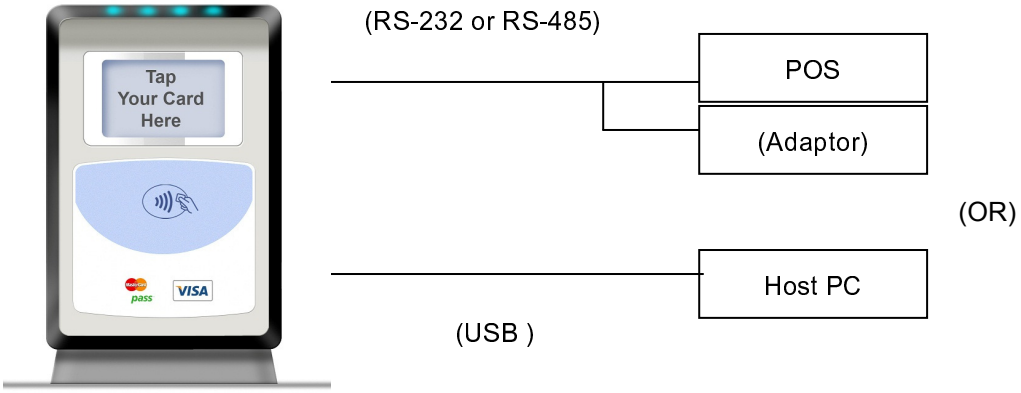
1 Summary

ITEM	Specification	Note
CPU	STM32F103ZET6 (ARM Cortex_M3, 144pin)	ST
Program Memory	512KBytes FLASH (default) Up to 8Mbytes external Flash	On chip Option (1M,2M,4M,8M)
Data Memory	64KBytes SRAM (default) Up to 8Mbytes external PSRAM	On chip Option (1M,2M,4M,8M)
DISPLAY	4 Status LED 128*64 Graphic LCD (Yellow green)	4 color
Communication	RS-232 - default USB 2.0 (**Option)**	Decide when order
BUZZER	Magnetic Buzzer	
RF CARD	Frequency : 13.56MHz Speed : 106,212,424,848Kbps ISO-14443 A/B ,MIFARE, FeliCa, ISO18092 NFC	
SAM	4 SAM slots Class A and B, T=0 and T=1	
Input Power	Adapter DC 7.5V ~ 24V (RS-232, RS-485) Optional DC 5V (USB communication version)	

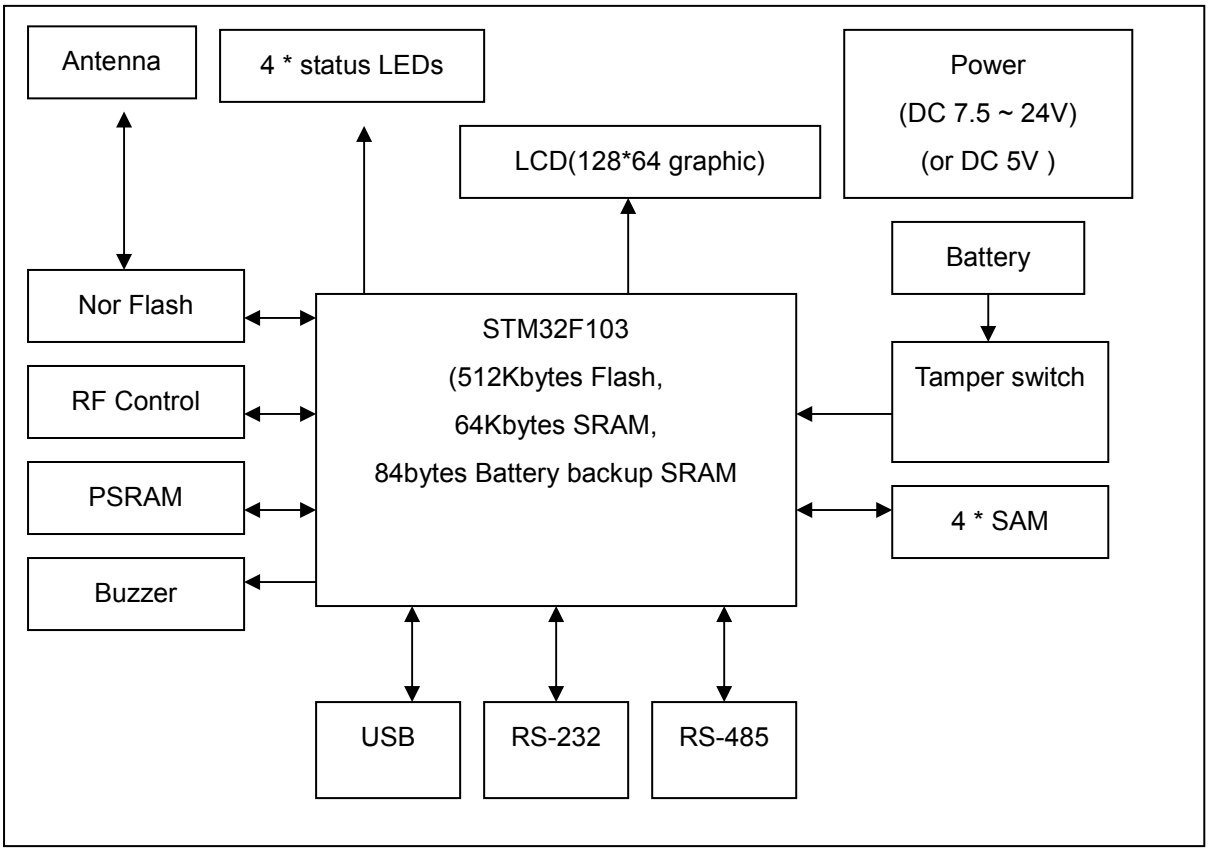
2 Structure

2.1 The Structure of equipment

- DE-631 itself contains all circuits include antenna, 4 SAM connectors.
- User can order RS-232 version or USB version. (Communication Cable is different)



2.2 The block diagram of DE-631



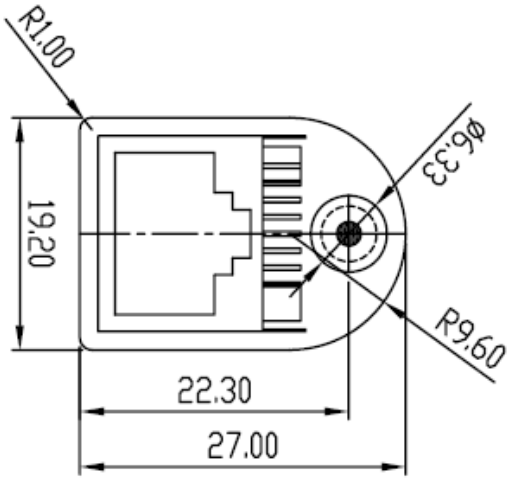
2.3 Description of main Module

- CPU: 32bit RISC ARM core CPU, It is stm32f103 which is ARM-based 32-bit MCU with Flash, USB. This CPU has 512Kbyte Flash memory, 64Kbyte SRAM.
- NXP PN512 RF IC: This RF IC can control RF card like MIFARE card, type A/B card, ISO 18092 NFC & FeliCa simultaneously.
- RS-232 Driver: It's a Communication part for RS-232 communication.
- USB Connector: It's a Communication part for USB communication.
- RS-485 Driver: It's a Communication part for RS-485 communication.
- SAM part: It can control 4 SAMs. And each slot can be operated independently.
- LED: It has 4 LEDs to display status of communication and card process.
- LCD : DE-631 has 128*64 graphic LCD Module
- Battery: It maintains RTC and battery backup SRAM while power is not supplied.
- Tamper switch: Erase security memory when case is opened.
- Nor Flash: optional flash memory for non-volatile data.
- PSRAM: optional SRAM for user memory.

3 Description of Surface

3.1 The picture of device surface

3.2 Communication Cable(RS-232 and RS-485)



(Connector for RS-232 and RS-485 version)

- Default: RS-232 version
- Option1: RS-485 version
- Cable assembly from this connector to POS is optional.

3.3 Communication Cable(USB)

- Option2: USB version – Standard A type connector.

3.4 The size of terminal

- DE-631 :95(W) * 138(L) * 20(H)mm

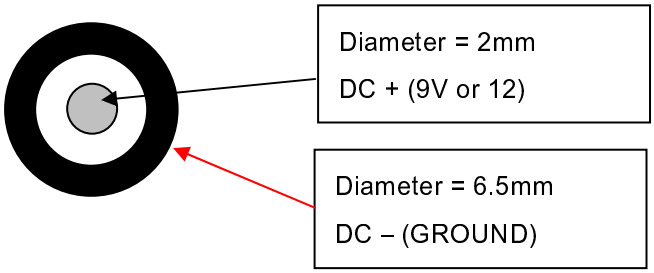
4 Connector Pin Assignment

4.1 RS-232 Connector and Cable

RJ-48

Pin No.	Description	
1	DC POWER(DC9V or 12V)	To DC Jack
2	DC POWER(DC 5V)	
3	TxD(to Host Rx)	
4	NC	
5	RxD(to Host Tx)	
6	NC	
7	GND	To DC Jack
8	NC	

DC JACK



4.2 RS-485 Connector and Cable

RJ-48

Pin No.	Description	
1	DC POWER(DC9V or 12V)	To DC Jack
2	DC POWER(DC 5V)	
3	NC	
4	Data+	
5	NC	
6	Data-	
7	GND	To DC Jack
8	NC	

- Communication type between RS-232 and RS-485 should be decided before making order.

- Its default communication method is RS-232.
- DC jack's connection is same with RS-232 version.

4.3 USB Connector

Pin No.	Description
1	VCC(DC5V)
2	USB D-
3	USB D+
4	GND

- USB communication method is for firmware development.
- The current in this USB mode is not enough so the LCD would blink when you access RF card.

5 Description of Electricity

5.1 The Description of power

- Input power1 : 12V Adaptor (higher than 300mA)
- Input power2 : 5V (USB Bus Powered)

5.2 The using electric current

- Normal 12V, 130mA under
- MAX 12V, 200mA under

5.3 The Description of USB communication

- USB V2.0 FULL SPEED (12Mbps)

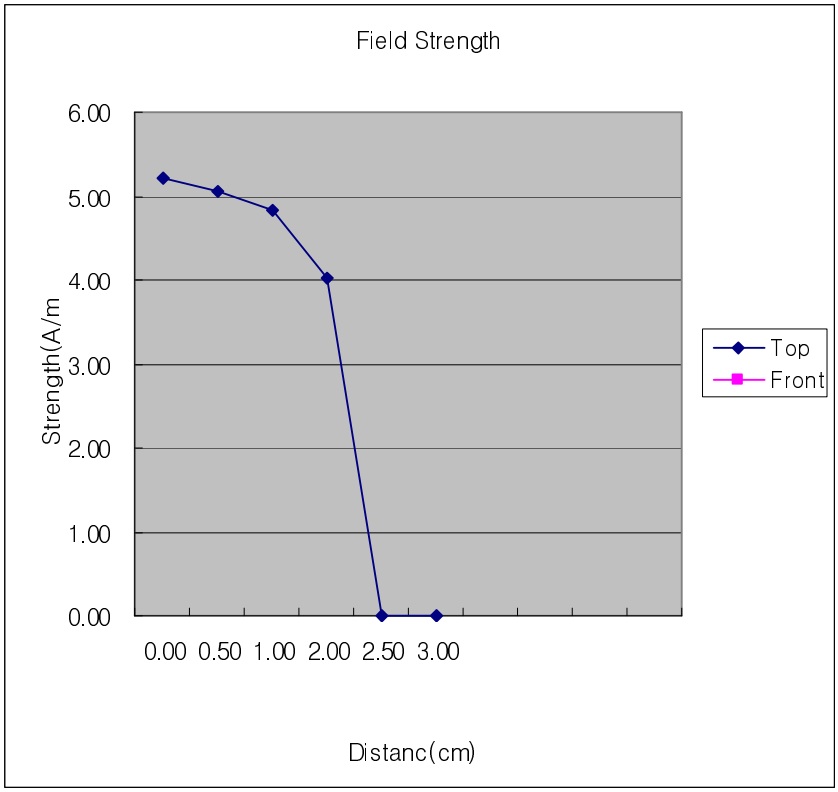
5.4 The Description of RS-232 communication

- 115200bps, 8 data, no parity, 1 stop bit

6 RF Characteristics

6.1 Power Output of Antenna

- Field strength : Min 1.5H (A/m) to Max 7.5



6.2 Frequency band

- Tolerance of the carrier frequency: 13.56 MHz +/- 0.01% = +/- 1.356 kHz.
- Frequency bandwidth: +/- 7 kHz.

  It is comply with FCC limits for 13.56MHz frequency band

7 Description of Function

7.1 Protocol Specification

Refer to protocol specification for detail function. (Provide on request)

7.2 Firmware Download

Refer download manual. (Provide on request)

8 Property

8.1 Environment to use

- Temperature to use : -10 ~ 60 ℃
- Humidity to use : 30 ~ 90 % (relative humidity)

8.2 Environment to keep

- Temperature to keep : -20 ~ 80 ℃
- Humidity to use : 30 ~ 90 % (relative humidity)

9 Warning and Notice

- For indoor use only.
- This product is affected by an element like metal or Magnetism. So one has to take precautions.
- This device is not waterproof.

10 Warranty & Service

Warranty and Repair service

- DUALi Inc. warrants to the original consumer or other end user that this product, DE-631, is free from defects in materials and workmanship for a period of 1 year from the date of purchase.

※ **Note** Warranty/non-warranty repair fees do not include any shipping charges.

The damages(defaults) prescribed below are NOT to be covered by warranty.

- User's misuse of part/component.
- Fault by the unqualified user's own intention of repairs.
- Product's inspection requirement.
- Adding certain functions or extension of system.
- Fault by User's misuse against the product's manual.

***Please contact our service team for the technical/ sales supports.**

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