**F500 Series TA/AC Module**

**Specification**

**Beijing Smackbio Technology Co., Ltd.**

**2014.5**

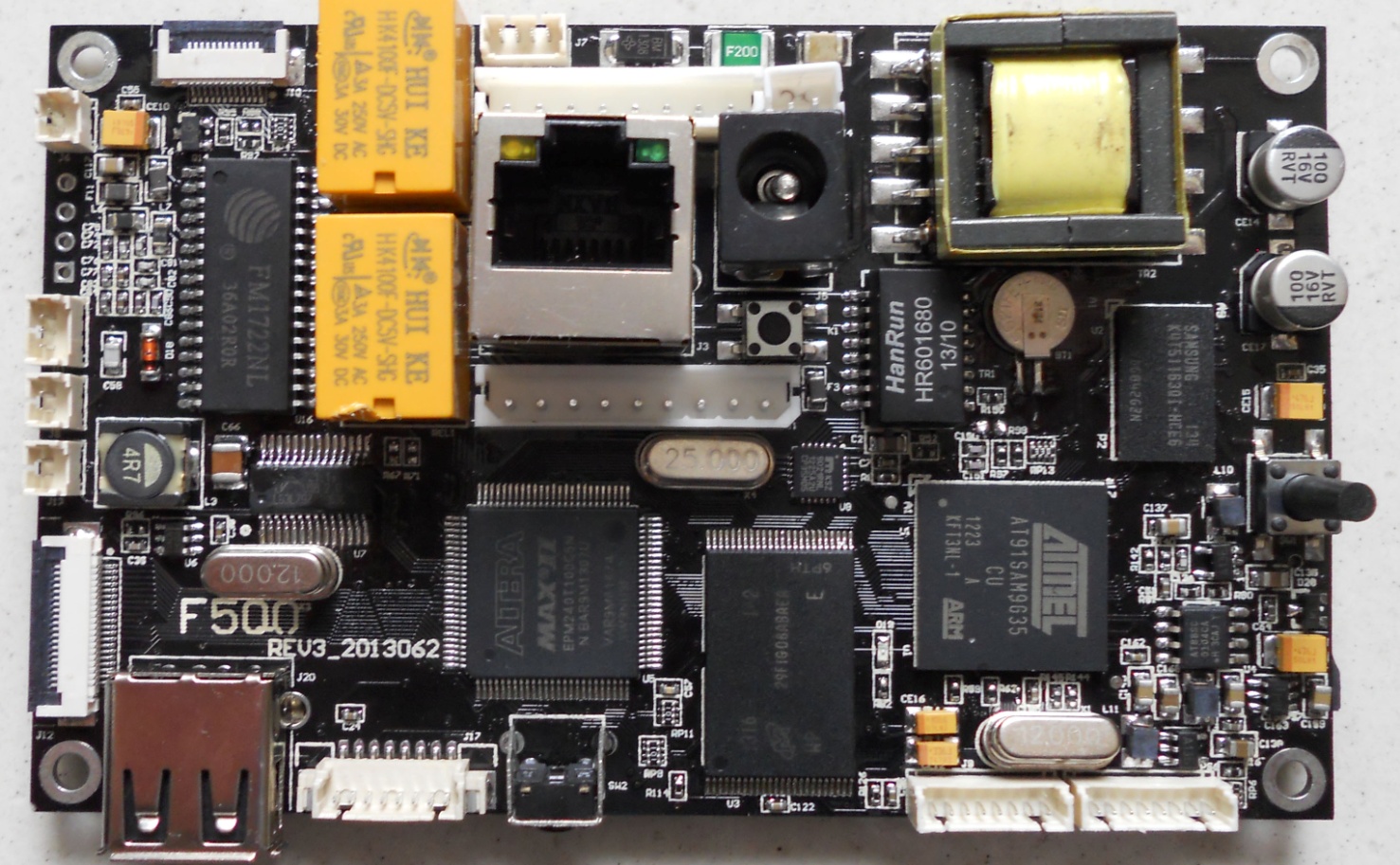
# Specification

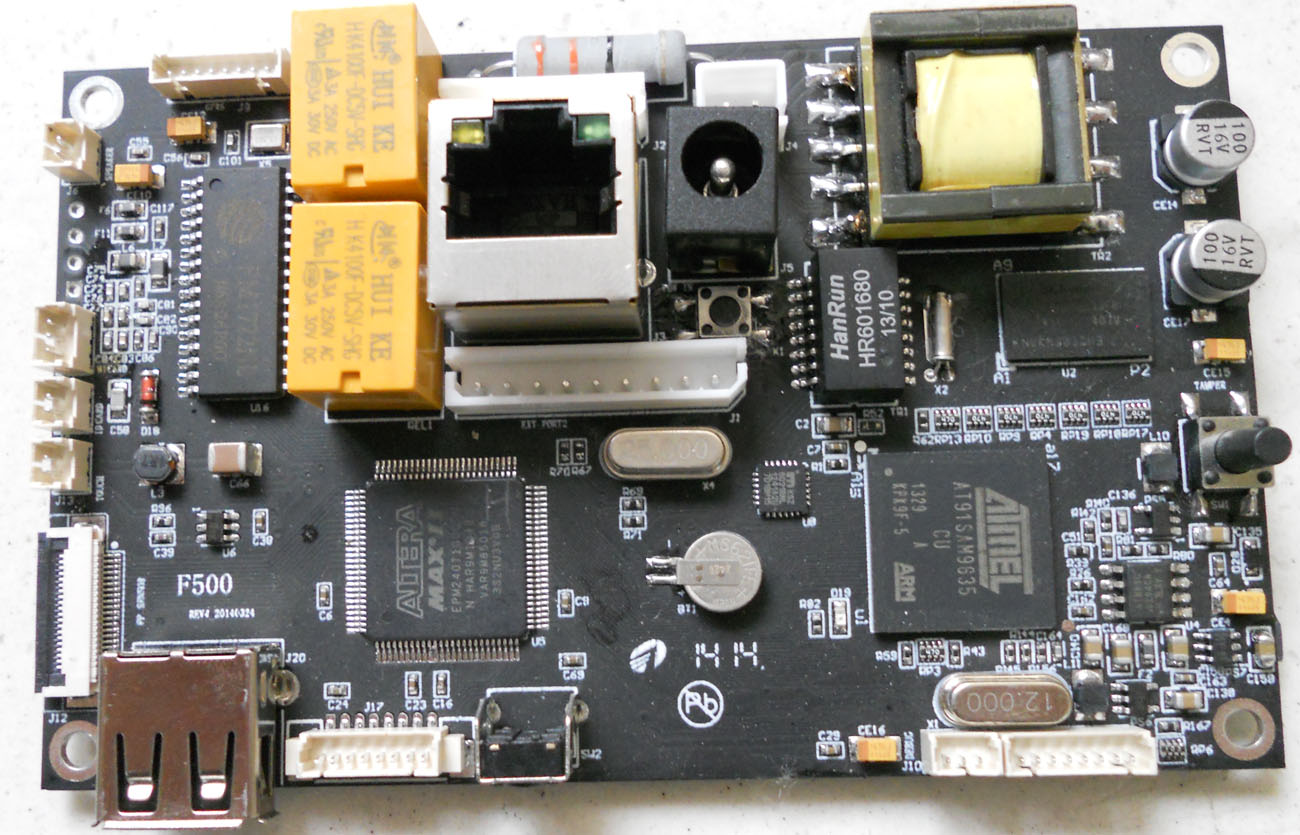
|  |  |  |
| --- | --- | --- |
| **Category** | **Item** | **Description** |
|  | Camera | 2 (VR and IR) |
| Fingerprint sensor | Optical sensor(CEN931) |
| Mifare card | Supported（TYPE A，B） |
| Onboard 125KHz ID card | Option(currently not supported) |
| Display | 2.8” TFT LCD, 4.3” Touch LCD |
| Keyboard | 16 keys touch key(touch panel) |
| Proximity sensor and remote controller | Option(currently not supported) |
| LED | 1 (Red-Green dual color) |
| Fingerprint sensor touch sense | Option(currently not supported) |
| Wiegand input | Inside and outside Wiegand(26/34) |
| Exit button input | Supported |
| Door sensor input | Supported |
| Bell relay | Supported |
| Door relay | Supported |
| Wiegand output | Supported |
| Tamper input | Supported |
| Communication | TCP-IP,WIFI(option),GPRS(option) |
| U-disk | Supported |
| Audio output | Supported (IIS mode) |
| RTC | Supported |
| POE | Supported |
| battery | Supported |
| Working voltage | DC12V ± 5%(current : below 1.5A) |
| Working temperature | -10℃~ +60℃ |
| Working humidity(RH) | 20% ~ 80% |
| **Software** | Face capacity | 500（1500） |
| Fingerprint capacity | 5000(10000,50000) |
| Max Attendance log/  Management log | 300,000/10,000 |
| Identify mode | Face, Fingerprint, card, password and combinations |
| Display language | Multilingual |
| Search attendance log | Support (After authentication, user can look his/her attendance logs.) |
| Door control | Directly control of door lock / Indirectly control of door lock via Wiegand access controller.  time-zone 50 pcs, assignment identification mode per time-zone. Anti-pass function. |
| Self-test function | Supported |
| Power management | Sleep |
| **Face**  **Identification algorithm** | Engine version | **Smack Face V2.0** |
| FAR/ FRR | 0.001/1(%) |
| Identify speed | ≤1.0 seconds |
| Intelligent adaptation function | Support |
| Matching mode | Supports 1:N |
| **Fingerprint**  **Identification algorithm** | Engine version | **Smack Finger V3.0** |
| FAR/ FRR | 0.00001/0.1(%) |
| Identify speed | ≤1.0 second (when enrolled 50000 fingerprints) |
| Fingerprint input angle | 360°(any angle) |
| Intelligent adaptation function | Support |
| Matching mode | Support 1:N |

# F500 mainboard Note

F500\_REV4

## PCB size and connectors’ arrangement





External Connector ,

”J1”,”J2”(2.5mm pitch)

Network ConnectorJ3

Tamper Switch SW1

Power supply

connector J5

(1.25mm pitch/3pin)

Battery connector J4

Speaker J6

M1 Card

antennaJ11

Refresh button K1

FingerPrinterSensorconnectorJ12(0.5mm pitch/20pin)

RESET SW2

USB HOST J20

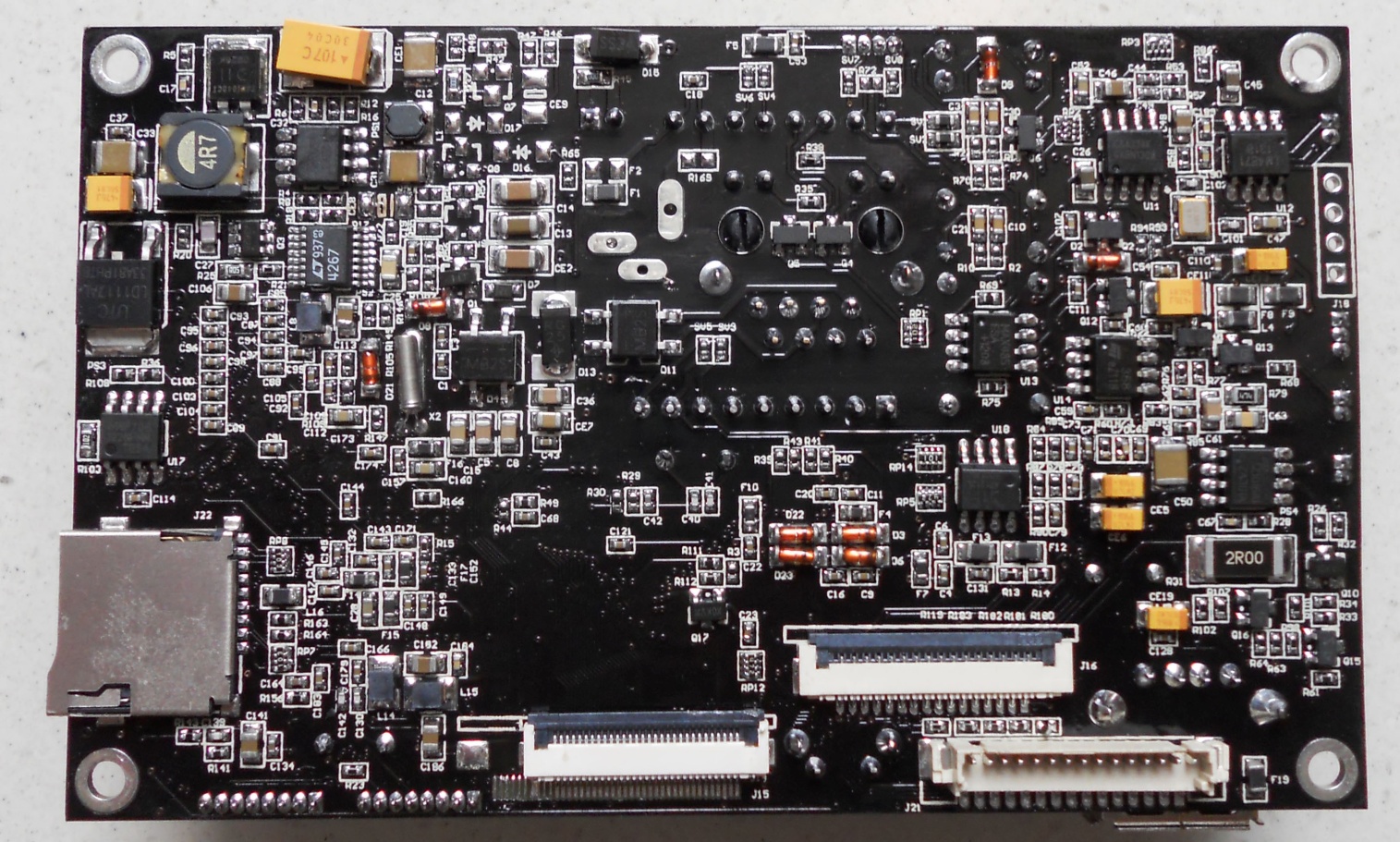
125KHz EM Card antenna

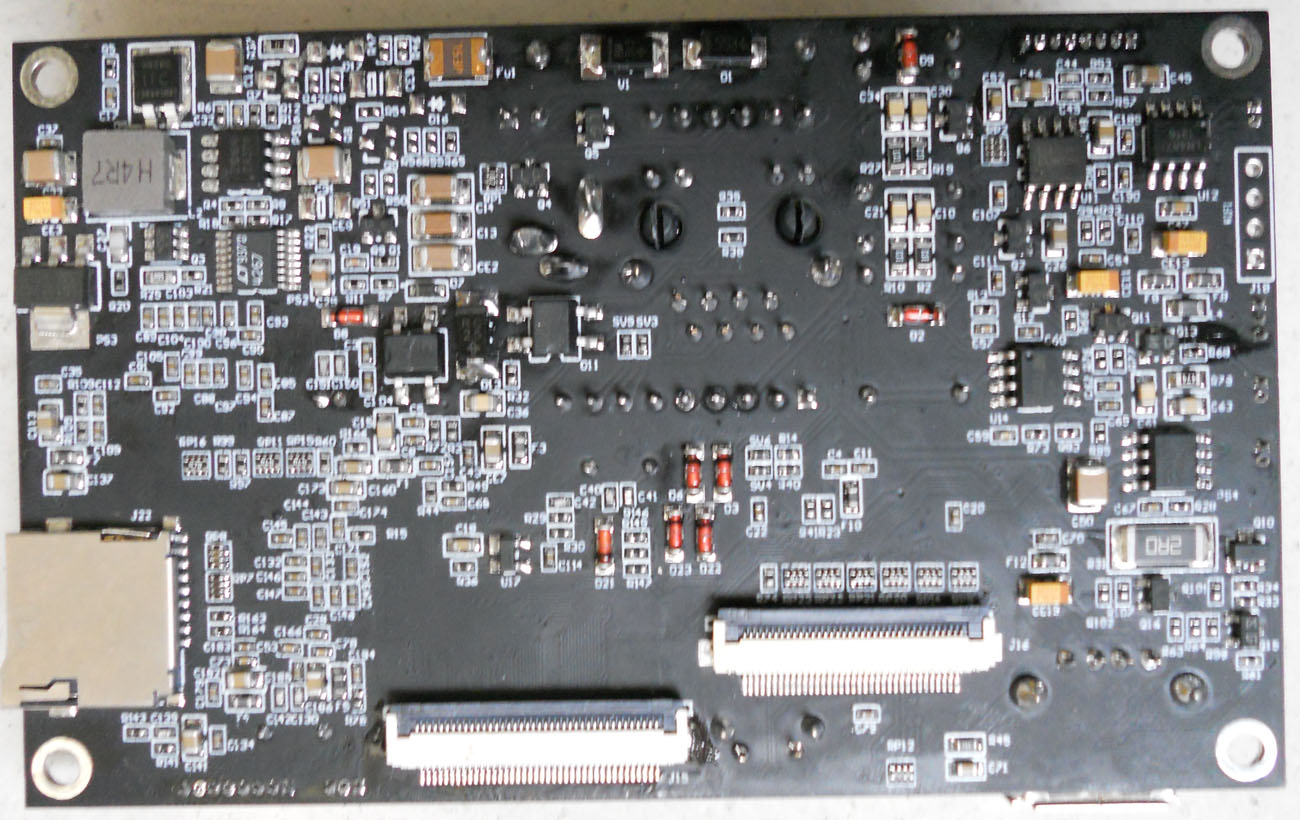
J8

GPRS connector J9

Finger printer touch sensor connector J13

Fig 1. Front-Side





WIFI module connector J18

SD Card

connector J22

LCD connector

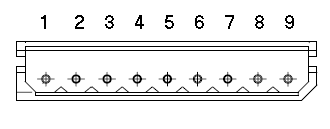
40 pin J15

CAMERA 36pin connector J16

Fig 2. Backside

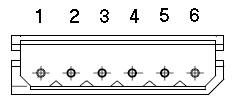
## Connector Note

### -J1 (External Connector)

2.5mm pitch/9pin vertical connector

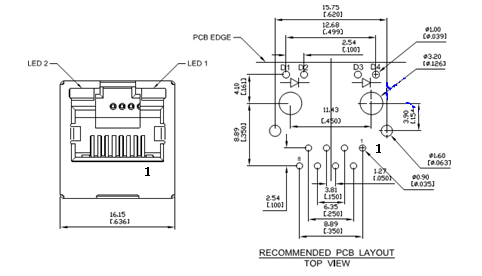
|  |  |  |  |
| --- | --- | --- | --- |
| Pin | Name | I/O | Description |
| 1 | LOCK\_NC | - | Lock relay’s N.C(normal close) terminal. |
| 2 | LOCK\_COM | - | Lock relay’s COM(common) terminal. |
| 3 | LOCK\_NO | - | Lock relay’s N.O(normal open) terminal. |
| 4 | BELL\_NC | - | Bell relay’s N.C(normal close) terminal |
| 5 | BELL\_COM | - | Bell relay’s COM(common) terminal. |
| 6 | BELL\_NO | - | Bell relay’s N.O(normal open) terminal. |
| 7 | Door Sensor | I | Door open/close state Sensor |
| 8 | Exit\_In | I | Door Exit button input signal. |
| 9 | GND |  | Power ground. |

### -J2 (External Connector)

2.5mm pitch/6pin vertical connector

|  |  |  |  |
| --- | --- | --- | --- |
| Pin | Name | I/O | Description |
| 1 | POW\_IN | - | 12V POWER IN |
| 2 | GND | - | GND |
| 3 | WGNOUT1 | O | WiegandOutput Signal1,  open drain output |
| 4 | WGNOUT0 | O | WiegandOutput Signal0,  Open drain output |
| 5 | WGNIN1 | I | Wiegand input1. Internally pull up. |
| 6 | WGNIN0 | I | Wiegand input0. Internally pull up. |

### -J3 (LAN Connector)

RJ45V

vertical RJ-45 connector

|  |  |  |  |
| --- | --- | --- | --- |
| Pin | Name | I/O | Description |
| 1 | TX+ | O | Transmit + |
| 2 | TX- | O | Transmit - |
| 3 | RX+ | I | Receive + |
| 4 | SPARE+ |  | SPARE+ |
| 5 | SPARE+ |  | SPARE+ |
| 6 | RX- | I | Receive - |
| 7 | SPARE- |  | SPARE- |
| 8 | SPARE- |  | SPARE- |
| 9 | Yellow\_LED+ | + | Yellow\_LED+ |
| 10 | Yellow\_LED- | - | Yellow\_LED- |
| 11 | Green\_LED+ | + | Green\_LED+ |
| 12 | Green\_LED- | - | Green\_LED- |

### -J4 ( Battery connector)

It can use this connector when internal battery is used.

|  |  |  |  |
| --- | --- | --- | --- |
| Pin | Name | I/O | Description |
| 1 | GND | - | BATTERY - |
| 2 | BAT\_IN | - | BATTERY + |

### -J5 (Power supply connector)Power Jack

Power supply connector.It must be supplied by DC 12V/1.5A.

|  |  |  |  |
| --- | --- | --- | --- |
| Pin | Name | I/O | Description |
| 1 | +12V | - | +12V |
| 2 | GND | - | GND |
| 3 | GND | - | GND |

### -J6 (Speaker connector)

|  |  |  |  |
| --- | --- | --- | --- |
| Pin | Name | I/O | Description |
| 1 | Sound1 | O | speaker output 1 |
| 2 | Sound2 | O | speaker output 2 |

### -J8(Antenna Coil)

This module supports 125KHz ID card read function.

It only needs to connect antenna coil.

Inductance of antenna is 680uH. (Refer to “ID card Antenna Note”)

|  |  |  |  |
| --- | --- | --- | --- |
| Pin | Name | I/O | Description |
| 1 | ANT1 | - | Antenna Coil 1 |
| 2 | ANT2 | - | Antenna Coil 2 |

**ID card Antenna Note**

**1. Electrical parameter**

Inductance: 680uH (tolerance: +/-5%)

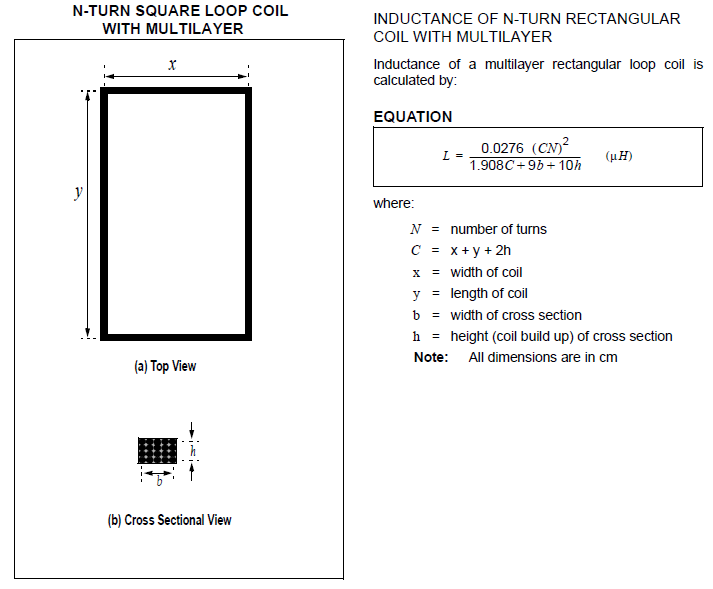
Resistance< 10 ohm

Frequency: 125 KHz

Max voltage: 150V

**2. Mechanical size**

It may be made on any size using following equation.



**Example size:**

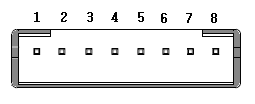
N: 66, x: 55mm, y: 65mm, b: 2.0mm, h: 1.0mm (line diameter: 0.2mm)

C= 5.5+6.5+2\*0.1=12.2

L =0.0276\*(12.2\*66)^2/(1.908\*12.2+9\*0.2+10\*0.1)=686.2(uH)

### -J9 (GPRS module connector)

\*\* GPRS will not be supported in trial products. It is reserved for future use \*\*

1.25mm pitch /8pin

|  |  |  |  |
| --- | --- | --- | --- |
| Pin | Name | I/O | Description |
| 1 | 5V | - | +5V Power |
| 2 | GPRS\_TX | O | UART TX Signal |
| 3 | GPRS\_RX | I | UART RX Signal |
| 4 | GND | - | Power ground |
| 5 | nRESET | O | nRESET output |
| 6 | GPRS\_IO\_0 | I | CTSinput/Debug UART TX |
| 7 | GPRS\_IO\_1 | O | RTS output/Debug UART RX |
| 8 | 3.3V | - | +3.3V Power |

### -J11(M1 Card) antenna connector

This module supports 13.56MHz M1 card.

It only needs to connect antenna .

|  |  |  |  |
| --- | --- | --- | --- |
| Pin | Name | I/O | Description |
| 1 | ANT1 | - | Antenna terminal 1 |
| 2 | RFGND | - | RF Ground |
| 3 | ANT2 | O | Antenna terminal 2 |

### -J12(OPT16 20pinSensor)

It is a fingerprint sensor (Slave) connector.0.5mm pitch/20pin FPC connector

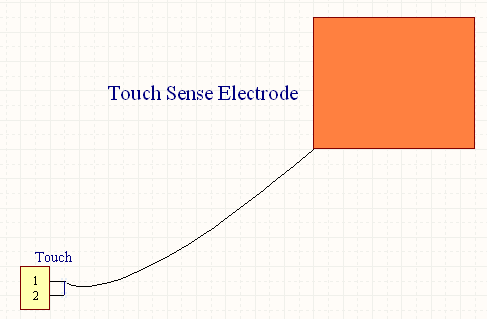
### -J13 (Finger printer sensor Touch Sense)

It is to detect finger proximity to fingerprint sensor.

|  |  |  |  |
| --- | --- | --- | --- |
| Pin | Name | I/O | Description |
| 1 | S\_TOUCH | - | Sense Electrode |
| 2 | S\_TOUCH | - | Sense Electrode |

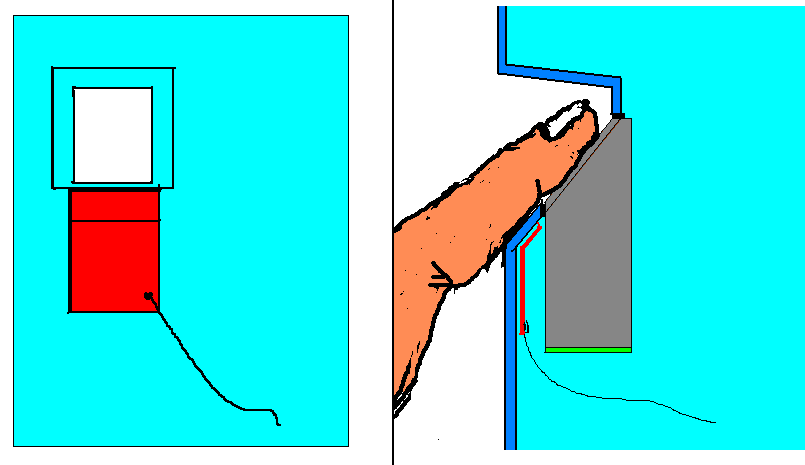
The electrode area is typically 20mm\*20mm.

Also the electrode is located as close as possible to where finger approach optical sensor.



**Mounting Example:**

Inside case Finger proximity outside



### - J15 (LCD Connector)

0.5mm pitch/40pin connector

### - J16(VR/IR Camera connector)

0.5mm pitch/36pin FPC connector

### - J18 (USB connector for WIFI module)

\*\* WIFI will not be supported in trial products. It is reserved for future use \*\*

|  |  |  |  |
| --- | --- | --- | --- |
| Pin | Name | I/O | Description |
| 1 | USB power | - | 5V |
| 2 | USB\_DN | - | D- |
| 3 | USB\_DP | - | D+ |
| 4 | GND | O | Ground |

### - J20 (USB Disk/USB Device)

It can manage a USB disk.

|  |  |  |  |
| --- | --- | --- | --- |
| Pin | Name | I/O | Description |
| 1 | USB power | - | 5V |
| 2 | USB\_DN | - | D- |
| 3 | USB\_DP | - | D+ |
| 4 | GND | O | Ground |

### - J22 (SD card)

### -K1 (Refresh)

This button is for refresh initial state.

### -SW1 (Tamper)

This button is for preventing to remove the device.

### -SW2 (Reset)

This button is for resetting the device.