WPU User’s Manual

Ver：1.1
Date：2015.01.21

1 PRODUCT OVERVIEW

1.1 General Description

WPU is a device with high precision sensor. It measures field temperature and humidity, and also transfers data to Data Centre for processing and display. Data Centre is able to manage several WPUs, display real-time data, and create graphs to show temperature and humidity fluctuation.

1.2 Device Features

- High precision sensor
- Universal 2.4G Hz Wi-Fi communication technology
- Charge acceptance and long battery life
- Highlight OLED
- Breath-lamp-like LED
- Streamlined and dainty design

1.3 Device Parameters

Operating Temperature:	-20℃~+60℃（Discharge）
	0~+40℃（Charge）
Operating Humidity：	0~95%RH（Non-condensing）
Charging Voltage：	4.8~5.5VDC
Charging Current：	<1.25A @ 5VDC
Charging Time(Std.)：	~4.0 hours
Operating Current：	Average：~20mA，Peak：~200mA
Charging & Communication Interface：	
	miniUSB，9600bps 8 N 1
Battery：	3.6V Lithium Ion Battery，Nominal Capacity(Minimum)：2500mAh
Operating Time(Typical)：	>48 hours(with a sample rate of 2s)
Standby Time(Typical)：	3 months
Wireless Standard：	802.11 b/g/n
Frequency Range：	2.412GHz~2.484GHz
Transmit Power：	802.11b：＋16 ±2dBm（@11Mbps）
	802.11g：＋14 ±2dBm（@54Mbps）
	802.11n：＋13 ±2dBm（@HT20,MCS7）
Receiver Sensitivity：	802.11b：-93dBm（@11Mbps,CCK）
	802.11g：-85dBm（@54Mbps,OFDM）
	802.11n：-82dBm（@HT20,MCS7）

Probe Type：	HC2-HS
Probe Quantity：	10/Sets
T Measuring Range：	-50~100℃
T Accuracy：	±0.3℃
H Measuring Range：	0~100%RH
H Accuracy：	±0.5%RH
Logging Interval：	2 seconds~24 hours
Memory Size：	250,000/1,000,000
Start Mode：	Software Start/Remote Start
Software：	EVS/Customized
Networking Features：	Unlimited expansion via AP
Test Report: Available	
Software:	Self-defined inspection rules based on JQ211 standards. Refresh interval can be user-defined. Original data can be saved, edited or modified. Support data transmission supplement.
Wireless Adaptor:	High performance AP
Install Accessory:	Available
Portable Transfer Case:	Available
Industrial Tablet PC:	Available

1.4 Safety Precautions

This device complies with Part 15 of the FCC 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 undesired operation.

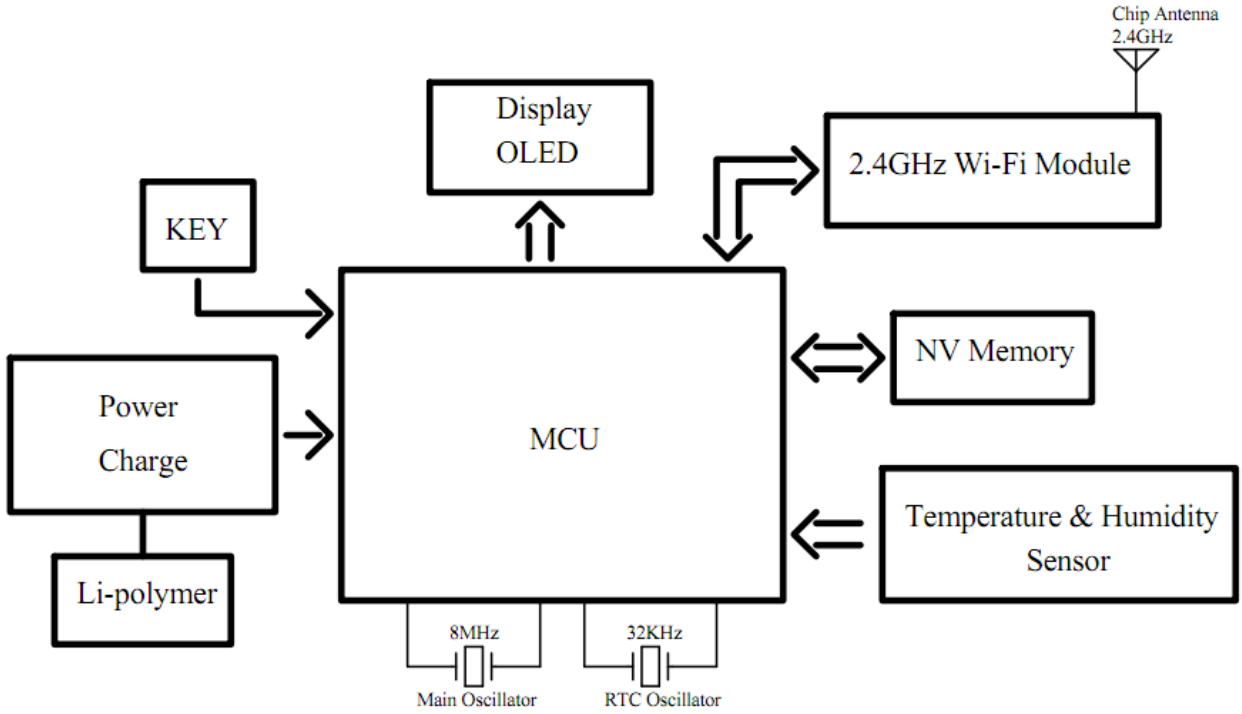
Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

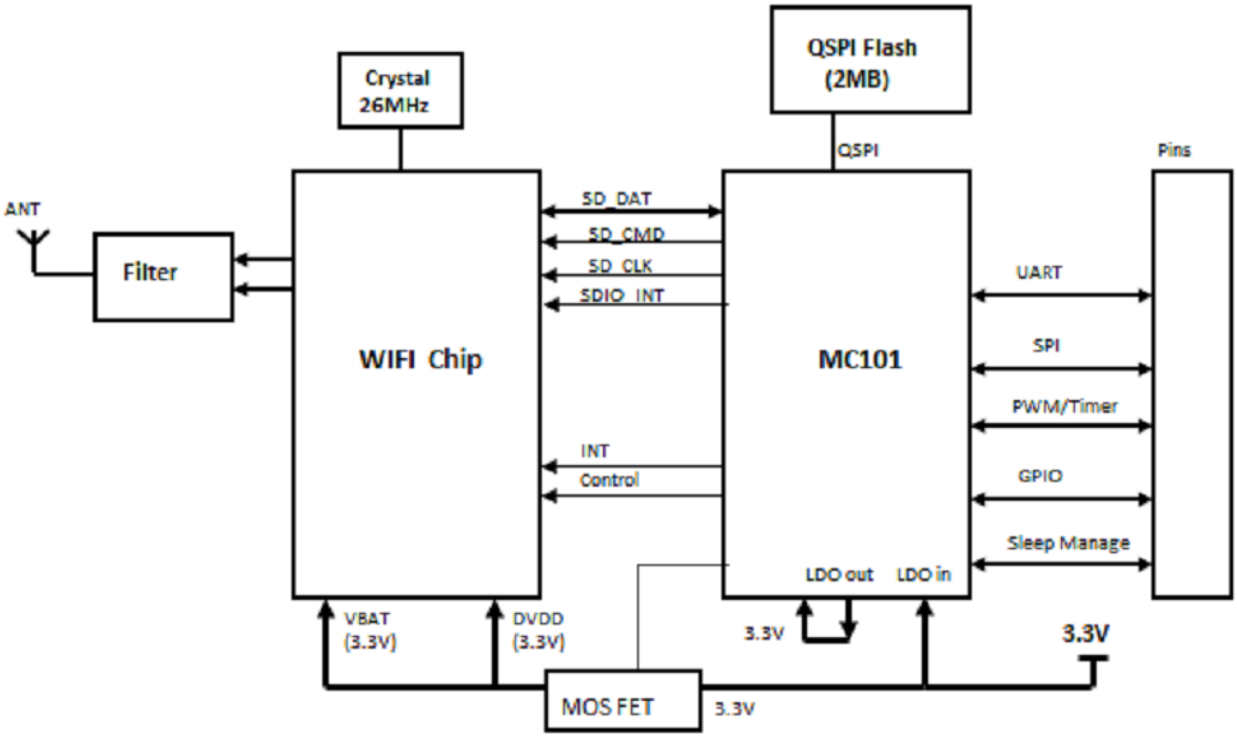
Note: This product has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This product generates, uses, and can radiate 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 product 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.

This equipment should be installed and operated with a minimum distance 20cm between the radiator and your body.

1.5 Block Diagram

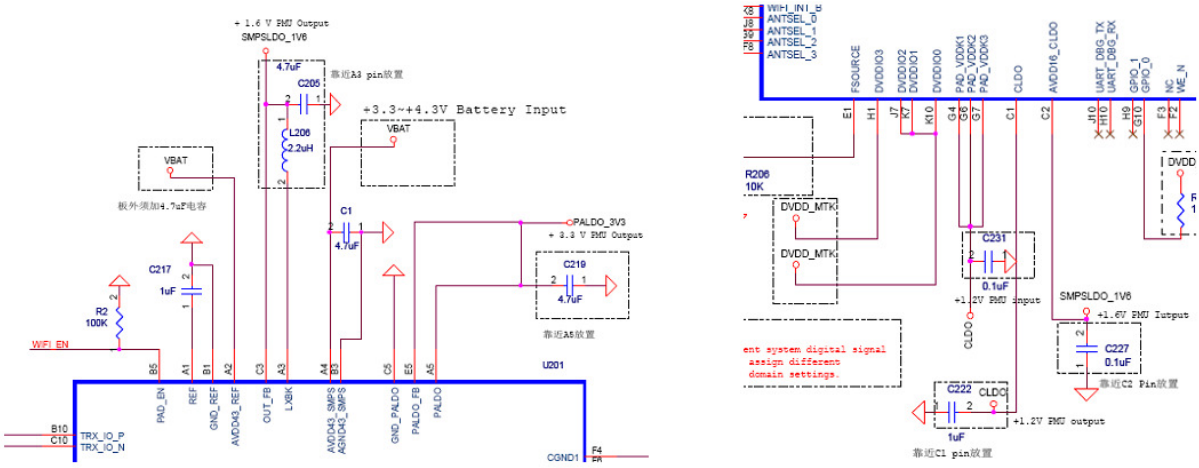




Power Part Circuit:

The Module powered by single 3.3V source and most components which include MC101/Flash use single 3.3V supply. The main chipset MT5931SA has internal switching circuit as following to generate 1.6V supply, which as input to MT5931SA internal LDO. The MT5931SA LDO output 1.2V provides the

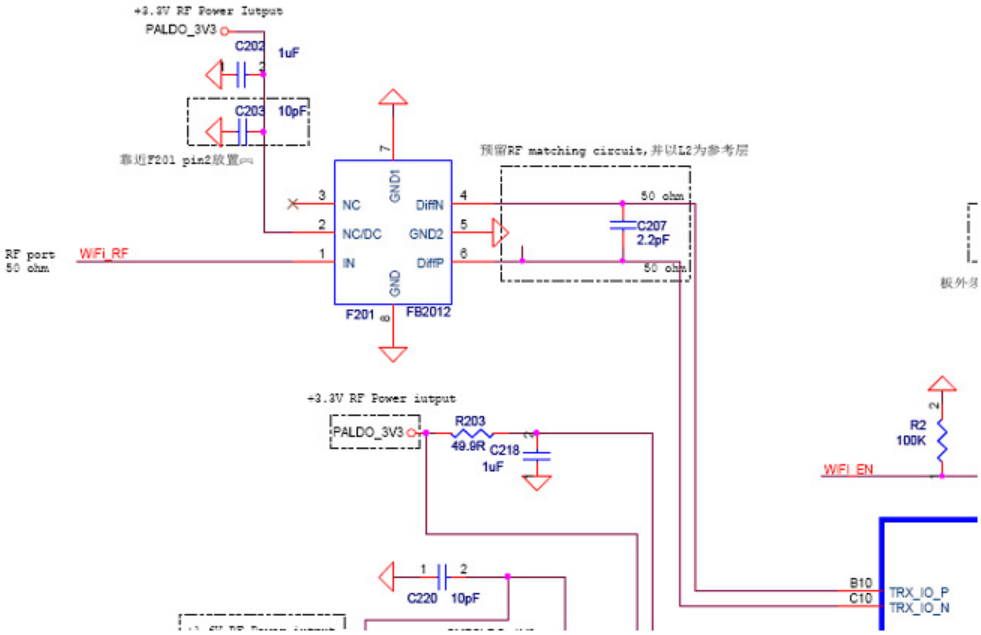
supply for MT5931SA digital and RF core circuit.



RF Part Circuit:

The Wi-Fi module support 802.11b/g/n single band 2412-2472MHz and RF part circuit as follows

The module provides outside I-PEX connector for external antenna interface. The RF parameters as following table,



Class	Item	Parameters
Wireless Parameters	Certification	FCC/CE
	Wireless standard	802.11 b/g/n
	Frequency range	2.412GHz-2.484GHz
	Transmit Power	802.11b: +16 +/-2dBm (@11Mbps)
		802.11g: +14 +/-2dBm (@54Mbps)
		802.11n: +13 +/-2dBm (@HT20, MCS7)
	Receiver Sensitivity	802.11b: -93 dBm (@11Mbps ,CCK)
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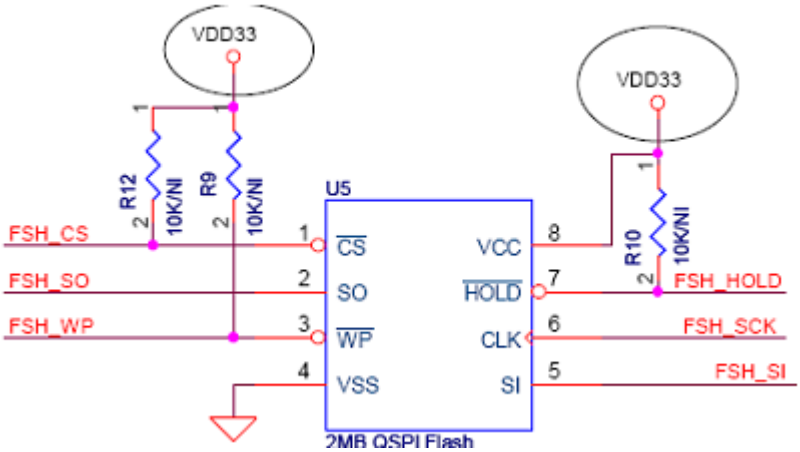
		802.11n: -82 dBm (@HT20, MCS7)

Memory Part Circuit:

The Wi-Fi module provides 2MB QSPI flash program memory, which support FreeRTOS OS and Wi-Fi driver loaded from QSPI flash to MCU SRAM after system boot up.

The memory part circuit as follows:



Clock Part Circuit:

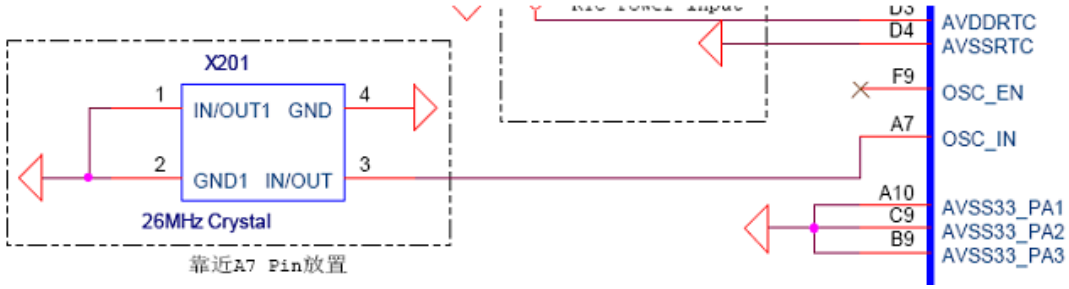
The Wi-Fi Module use single 26MHz crystal as system clock, which also provide RF and Digital part clock. The crystal parameter requirement as follows:

Frequency: 26MHz

Frequency Offset: +/-7ppm

VIH/VIL: VCC-0.3V/0.3V

Duty Cycle: 45%~55%



OPERATION GUIDELINE

Turn On/Off

When WPU is off, press and hold "*" key for 3 seconds to turn it on. In this status, WPU shows temperature value, humidity value, and battery capacity.
When WPU is on, press and hold "*" key for 3 seconds to turn it off. In this status, WPU will not display or will display the charging icon only if it's connecting to charger or PC.

Display switch

In working mode, press "*" key to switch display the below items in cycle:

1. Temperature and humidity value, battery power
2. The preset info of IP, subnet mask and gateway
3. SSID of the access point, password and signal strength
4. The IP and port of server

Caution: Charging icon automatically display when WPU is connected to USB interface.

Charge

WPU will be charged through its USB interface connecting to any charger or PC. It allows a maximum currency of 1A. It takes about 4 hours to finish charging with the assorted charger. Please choose chargers with enough power or it will lead to prolongation of charging time.

In charging mode, the LED will keep showing like a breath lamp until charging finished.