涂鸦智能
Tuya Smart

TuyaSmartWi-Fi Module

1. Product Overview

TYAUX_J is a low power consumption module with built-in Wi-Fi connectivity solution designed by Hangzhou Tuya Information Technology Co., Ltd. for serial communication between 12V level and 3.3V level. The Wi-Fi Module consists of a highly integrated wireless radio chip RTL8710BN and some extra flash that has been programed with Wi-Fi network protocol and plenty of software examples. TYAUX_J in cludea ARM CM4F, WLAN MAC, 1T1R WLAN, maximum frequency reaches 125MHz, 256K SRAM, 2M byte flash and various peripheral resources.

TYAUX_J is a RTOS platform, embedded with all the Wi-Fi MAC and TCP/IP protocol function examples, users can customize their Wi-Fi product by using these software examples.

1.1 Features

- Integrated low power consumption 32-bit CPU, also known as application processor
- Basic frequency of the CPU can support 125 MHz
- Supply voltage range: 12V
- Peripherals: 1 UART
- Wi-Fi connectivity:
  - 802.11 B/G/N20/N40
  - Channel 1 to 11 @ 2.4GHz
  - Support WPA/WPA2
  - +18±1dBm output power
  - Support SmartConfig function for both Android and IOS devices
  - Pass CE, FCC, SRRC certifications
  - Operating temperature range: -20℃ to 85℃

1.2 Main ApplicationFields

- Intelligent Building
- Intelligent home, Intelligent household applications
- Healthy devices
- Industrial wireless control
- Baby monitor
- Webcam
- Intelligent bus

2. Dimensions and Footprint

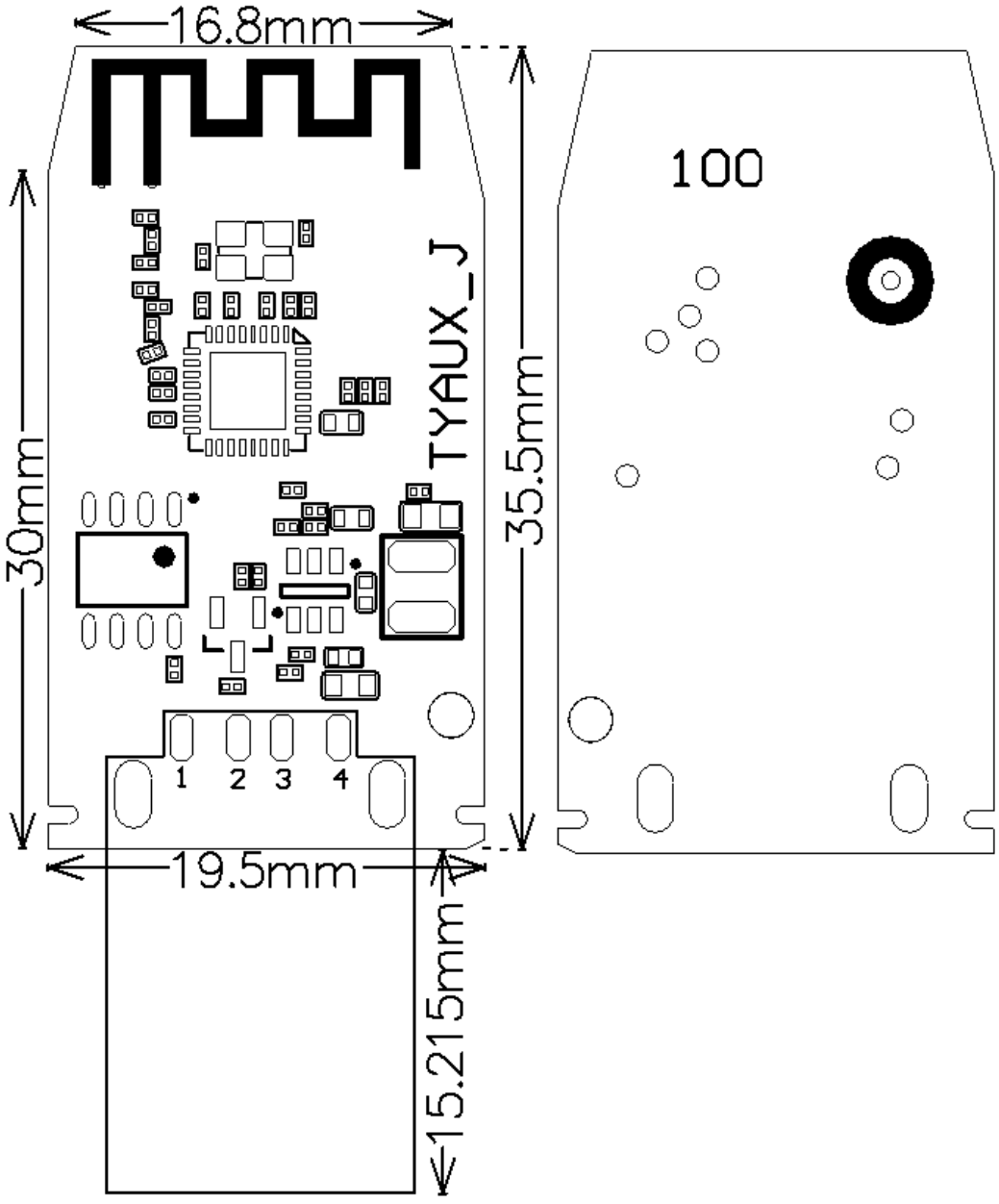
2.1Dimensions

TYAUX_J has 2 columns of Pins (2*7).The distance between each Pin is 2 mm.

Size of TYAUX_J: 37.8mm(W)*21.7mm(L)*4.8mm(H)

Figure 2 shows the dimensions of TYAUX_J.

Figure 2.1. The dimensions of TYAUX_J



2.2 Pin Definition

Table 1 shows the generalpin attributes of TYAUX_J

Table 1. The typical pin definitionof TYAUX_J

PIN NO.	NAME	TYPE	DISCREPTION
1	GND	P	Ground
4	TX	I/O	UART0_TXD
5	RX	I/O	UART0_RXD
12	VIN	P	Module 12V power input pin

Note: P: Power supply pins; I/O: Digital input or output pins;

3. Electrical Characteristics

3.1 Absolute Maximum Ratings

Table 3.1. Absolute Maximum Ratings

PARAMETERS	DESCRIPTION	MIN	MAX	UNIT
Ts	Storage temperature	-40	125	℃
VCC	Supply voltage	-0.3	18	V
Static electricity voltage (human model)	TAMB-25℃	-	2	KV
Static electricity voltage (machine model)	TAMB-25℃	-	0.5	KV

3.2 Electrical Conditions

Table 3.2. Electrical Conditions

PARAMETERS	DESCRIPTION	MIN	TYPICAL	MAX	UNIT
Ta	Working temperature	-20	-	85	℃
VIN	Working voltage	4.5	-	18	V
VIL	IO low level input	-0.3	-	0.8	V
VIH	IO high level input	2.47	-	3.6	V
VOL	IO low level output	-	-	0.34	V
VoH	IO high level output	2.64	-	3.4	V
Imax	IO drive current	-	-	16	mA
Cpad	Input capacitor	-	2	-	pF

3.3 Wi-Fi Transmitting Current Consumptions

Table 3.3. Wi-Fi TX current consumption

PARAMETERS	MODE	RATE	Transmitting power	TYPICAL	UNIT
IRF	11b	1Mbps	+18.12dBm	287	mA
IRF	11g	6Mbps	+18.89dBm	255	mA
IRF	11n-HT20	MCS0	+18.72dBm	244	mA
IRF	11n-HT40	MCS0	+18.85dBm	220	mA

3.4 Wi-Fi Receiving CurrentConsumptions

Table 3.4. Wi-Fi RX currentconsumption

PARAMETERS	MODE	TYPICAL	UNIT
IRF	CPU sleep	90	mA
IRF	CPU active	120	mA

3.5 Working Mode CurrentConsumptions

Table 3.5. The module working currentconsumption

WORK MODE	AT TA=25℃	TYPICAL	MAX*	UNIT
EZ Mode	TYAUX-F is under EZ paring mode, Wi-Fi indicator light flashes quickly	115	125	mA
Standby Mode	TYAUX-F is connected, Wi-Fi indicator light is on	60	209	mA
Operation Mode	TYAUX-F is connected, Wi-Fi indicator light is on	118	198	mA
Disconnection Mode	TYAUX-F is disconnected, Wi-Fi indicator light is off	34	192	mA

Note: peak continuous time is about 5us.

The parameter shown above will vary dependingon different firmware functions.

4. WLAN Radio Specification

4.1 Basic Radio Frequency Characteristics

Table 41.Basic Radio frequency characteristics

PARAMETERS	DESCRIPTION
Frequency band	2.400GHz to 2.462GHz
Wi-Fi standard	IEEE 802.11n/g/b (Terminal 1-11)
Data transmitting rate	11b:1,2,5.5,11(Mbps)
	11g:6,9,12,18,24,36,48,54(Mbps)
	11n:HT20,MCS0~7
	11n:HT40,MCS0~7
Antenna type	On-board PCB Antenna

4.2Wi-Fi Receiving Sensitivity

Table 4.2. Wi-Fi Receiving sensitivity

PARAMETERS		MIN	TYPICAL	MAX	UNIT
PER<8%, Receiving sensitivity, 802.11b CCK Mode	11M	-	-91	-	dBm
PER<10%, Receiving sensitivity, 802.11g OFDM Mode	54M	-	-75	-	dBm
PER<10%, Receiving sensitivity, 802.11n OFDM Mode	MCS7	-	-72	-	dBm

5. Antenna Information

5.1 Antenna Type

Antenna can be connectedusing On-board PCB antenna.

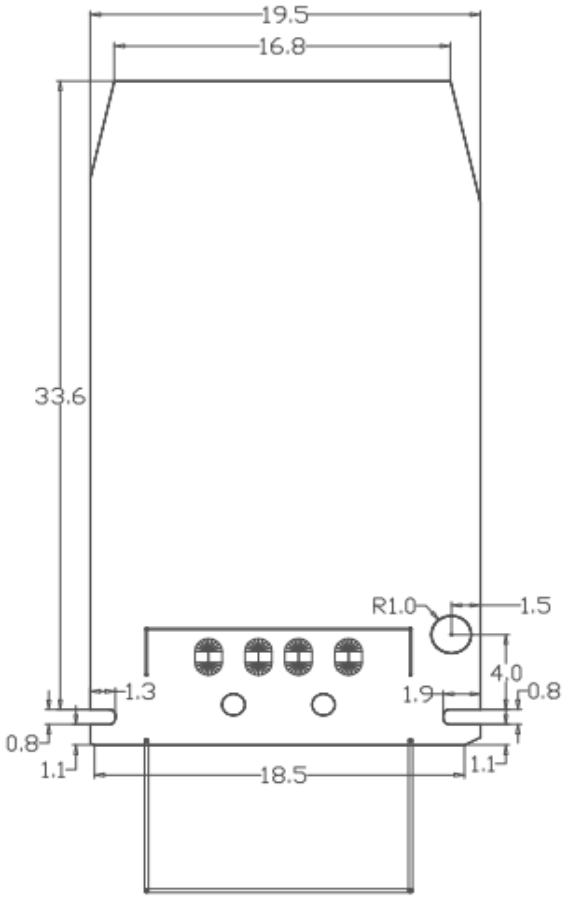
5.2 Reduce Antenna Interference

While using the On-board PCBantenna, in order to have the best Wi-Fi performance, it’s recommended to keep a minimum15mm distance between the antenna part and the other metal pieces.

6. Packaging Information And Production Guide

6.1 Mechanical Dimensions

Figure 6.1. Top view of the module



6.2 Production Guide

✧ The storage for the delivered module should meet the following condition:

1. The anti-moisture bag should be kept in the environment withtemperature< 30℃ and humidity< 85% RH.

2. The expiration date is 6 months since the dry packaging products was sealed.

✧ Cautions:

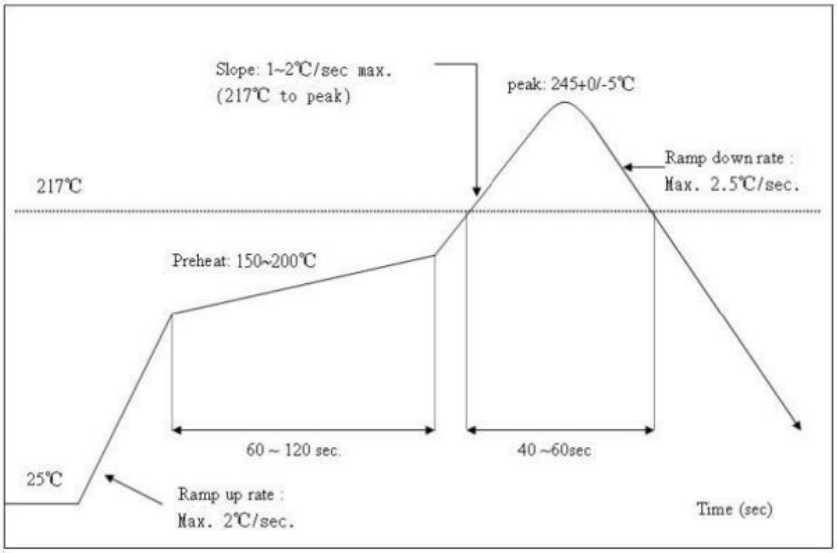
1. All the operators should wear electrostatic ringin the whole process of production.

2. While operating, water and dirt should not have any contact with the modules.

6.3 Recommended furnace temperature curve

Figure 6.4. PCB Package DrawingRecommended furnace temperature curve

Refer to IPC/JEDEC standard ; Peak Temperature : <250°C ; Number of Times: ≤2 times ;



FCC Statement

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.

Caution: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

NOTE: This equipment 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 equipment 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 equipment 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.

Information for the OEM Integrators

This device is intended for OEM integrators only. Please see the full grant of equipment document for restrictions.

Label Information to the End User by the OEM Integrators

If this certified module is installed inside the host device, then the outside of the host must be labeled with “Contains FCC ID: 2ANDL-TYAUX-J”.

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation.
To ensure compliance, operations at closer than this distance is not recommended