
AIFA TECHNOLOGY CORP.

WiFi Module

WiFi-R03s

Manual

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1. Introduction

AIFA TECHNOLOGY WiFi-R03s is designed to function as a Wi-Fi module, containing a powerful processing unit, a storage capacity of Wi-Fi chips, and added PCB antenna design, oscillator and memory, for use in networking-related products, Wi-Fi technology-related applications.

Product Features

- Small size, easy to install on each product
- I / O port ready, easy to design even more product features
- Built-in antenna, eliminating the need for external antennas or antenna matching and tuning
- Built-in 32-Mbit FLASH ROM
- Supports IEEE 802.11 b/g/n
- Supports UART interface
- Low power consumption in standby mode

2. Applications

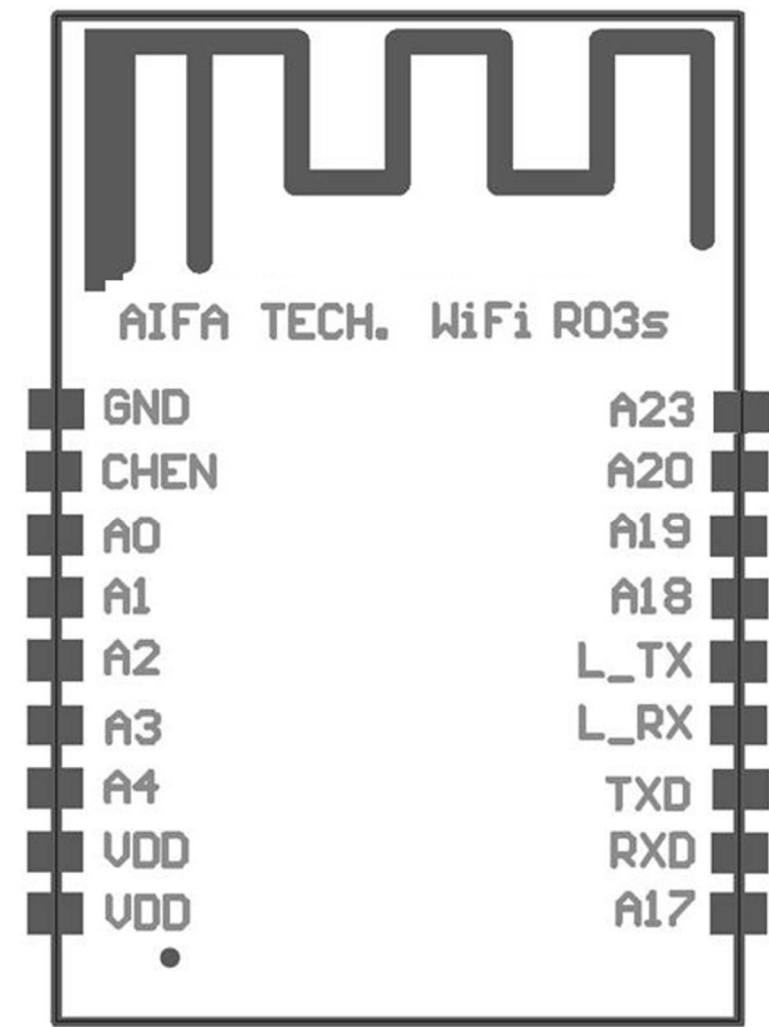
- Air conditioning Wi-Fi remote control
- Smart home IR appliance controller
- Smart plugs
- Smart home appliances
- Industrial wireless control
- Network cameras
- Wi-Fi sensors
- Wearable electronic devices
- Other IoT-related products

3. Product Specifications

A. Hardware / Software Specifications

Operating Voltage	3.0V~3.6V
Working current (Steady-state mode)	Mean: < 45 mA Peak: 300 mA Standby: < 200 μ A
Operating current (Continuous transmission mode)	Mean: < 160 mA Peak: 300 mA
IC Operating Temperature	0°C–70°C
Storage Environment	Temperature: < 40°C Relative Humidity: < 90% R.H.
Network Type	STA / AP / STA+AP
Encryption mode	WEP / WPA / WPA2 / WPS

B. I / O Port Pin Layout



I / O port pin definition table

PIN	Pin Name	Pin assignment	PIN	Pin Name	Pin assignment
1	GND	GND	13	PA15	I/O / L_RX
2	CHEN	Enable pin. High=on, Low = off	14	PA16	I/O / L_TX
3	PA0	I/O port	15	PA18	SPI mode
4	PA1	I/O port	16	PA19	SPI mode
5	PA2	I/O port	17	PA20	I/O port
6	PA3	I/O port	18	PA23	I/O port
7	PA4	I/O port			
8	VDD	Power(+3.3V)			
9	VDD	Power(+3.3V)			
10	PA17	I/O port			
11	PA13	I/O / RXD			
12	PA14	I/O / TXD			

C. WiFi-R03s Dimensions

1: PCB Dimensions (L × W): 14.1 mm × 20.7 mm



2: PCB Thickness: 1 mm

Shielding Cover Height: 1.6 mm

Shielding Cover Dimensions (L × W): 14.23 mm × 11.98 mm

D. Power

The following power consumption data were measured at a 3.3 V supply voltage and an ambient temperature of 25°C.

Mode	Normal Value	Unit
802.11b/g/n transmitted signal	160~223	mA
802.11b/g/n reception signal	110~112	mA

E. RF Specifications:

The following data were measured at room temperature with a voltage of 3.3 V.

Description	Min	Normal value	Maximum	Unit
Input Frequency	2412		2462	MHz
Input impedance		50		Ω
Input reflection			-10	dB
Power Amplifier (PA) Output Power			9.84	dBm

4. Contact Information

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5. 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.

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

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.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

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

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This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Country Code selection feature to be disabled for products marketed to the US. This device is intended only for OEM integrators under the following conditions:

1. The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2. The transmitter module may not be co-located with any other transmitter or antenna, For all products market in Us, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band
3. by supplied firmware programming tool. OEM shall not supply any tool or info to the end -user regarding to Regulatory Domain change. (if modular only test Channel 1-11)

As long as the three conditions above are met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing, their end-product for any additional compliance requirements required with this module installed.

Important Note:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the fcc authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate fcc authorization.

Labeling

If the product is sold separately in the United States, product must be labeled in a visible area with the following FCC ID: 2BYD VWIFI-R03S.

If it is used in other products and meets FCC regulations, The final end product must be labeled in a visible area with the following

Contains FCC ID: 2BYD VWIFI-R03S"

6. Integration instructions for host product manufacturers according to KDB 996369 DO3 OEM Manual V01

2.2 List of applicable FCC rules

CFR 47 FCC Part 15 Subpart C has been investigated and is applicable to the modular transmitter.

2.3 Specific operational use conditions

This module is granted under Limited Modular Approval. For all products marketed to the United States market, the OEM integrator shall lock the Wi-Fi operating channels strictly within CH1–CH11 via the supplied firmware programming tool at the factory. End users shall NOT be given access to modify the regulatory domain or channel settings.

If the end product involves multiple simultaneously transmitting conditions or different operational conditions for a stand-alone modular transmitter in a host, the host manufacturer must consult with the module manufacturer for the installation method in the end system.

2.4 Limited module procedures

The module is intended for use in automation and IoT applications to transmit small packets of command-and-control information. Typical host products include light switches, thermostats, temperature sensing devices and similar IoT equipment.

Host integration constraints:

1. The host shall provide a well-regulated DC supply to the module. The host power supply must maintain the supply voltage within the module rated range (3.0–3.6 V DC) with a maximum ripple not exceeding 50 mV. If the host power supply cannot meet the voltage/ripple requirements above, the modular FCC authorization becomes invalid and the end product shall apply for a new FCC ID certification. The host should also isolate switching-mode power supply noise from the module VDD power pin.
2. This transmitter module shall NOT be co-located or operated simultaneously with any other radio transmitter inside the host, unless the complete end product is re-evaluated and obtains a separate FCC authorization.
3. Only the antennas specified in this module grant may be used. No antenna modification or replacement is permitted.
4. The host equipment shall provide adequate shielding and proper RF grounding. The module RF ground shall be connected to the host main board ground with low impedance, and no large metal plane shall block the module PCB antenna area.

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5. If the host contains other radio transmitters, simultaneous transmission evaluation shall be performed.

6. The host shall comply with FCC labeling and user manual requirements.

7. No modification to the radio module circuitry is permitted.

2.5 Trace antenna designs

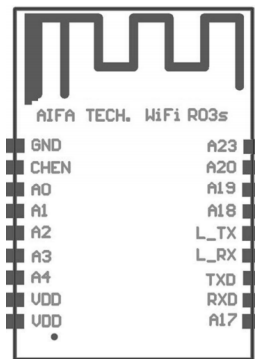
Not applicable

2.6 RF exposure considerations

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and the user's body. This requirement is documented in the OEM integration manual.

2.7 Antenna:

This product has a fixed PCB trace antenna permanently integrated on the module. The antenna connection details are shown in the module datasheet. The manufacturer is unable to design or modify the antenna. Antenna gain: 2.41 dBi (to be confirmed by the module manufacturer). No external antenna connector is available, and no antenna modification or replacement is permitted.



2.8 Label and compliance information

The final end product must be labeled in a visible area with the following: "Contains FCC ID: 2BYDVWIFI-R03S."

2.9 Information on test modes and additional testing requirements

The host manufacturer is strongly recommended to confirm compliance with the FCC requirements for the transmitter when the module is installed in the host.

2.10 Additional testing, Part 15 Subpart B disclaimer

The host manufacturer is responsible for compliance of the host system, with the module installed, with all other applicable requirements for the system such as FCC Part 15 Subpart B.

Manual Information to the End User

The OEM integrator must be aware not to provide information to the end user regarding how to install or remove this RF module in the user ' s manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warnings as shown in this manual. The module is typically used in automation applications where it transmits small packets of command and control information, for example turning a light switch on or off, adjusting a thermostat, reading temperature information, IoT products, etc.