

# WG231 WIFI module User Manual

## General Description

The WG231 Wi-Fi Module is a small form-factor, single stream, 802.11b/g/n WiFi module with on-board low power application processor. It is a low cost serial WiFi module, support UART-WiFi - Ethernet data transmission. The WG231 has been optimized for client applications in the home, enterprise, smart grid, home automation and control that have lower data rates and transmit or receive data on an infrequent basis. The WG231 Wi-Fi Module also enables rapid application development of ultra low power devices with the complete application SW on-chip . This combination makes the WG231 Wi-Fi Module an ideal solution for low power automation and sensor solutions because of its high efficiency and low power consumption.

The WG231 Wi-Fi Module can be used to design applications using 802.11b/g/n communication protocols. All features are enhanced by a built-in antenna, external antenna connector and an interface port to the carrier board. This interface port includes power supply pins, GPIO ports and UART ports.

## Applications

- ◆ IoT (internet of things)
- ◆ Network Consumer Device
- ◆ Metering
- ◆ Building Automation
- ◆ Home Automation
- ◆ Smart Home Gateway
- ◆ Smart Lighting
- ◆ Smart Plugs and Lights
- ◆ Baby Monitors
- ◆ Mesh Network
- ◆ Sensor Network
- ◆ Industry Control

## Features

- ◆ 802.11 b/g/n/e/i
- ◆ 802.11 n (2.4 GHz), up to 72.2 Mbps
- ◆ 802.11 e: QoS for wireless multimedia technology
- ◆ AT Set, Cloud Server, App
- ◆ A-MPDU and A-MSDU aggregation
- ◆ Network Protocols: IPv4, TCP/UDP/HTTP/FTP
- ◆ Fragmentation and defragmentation
- ◆ Automatic Beacon monitoring/scanning

- ◆ 802.11 i security features: pre-authentication and TSN
- ◆ Wi-Fi Protected Access (WPA)/WPA2/WPA2-Enterprise/Wi-Fi Protected Setup (WPS)
- ◆ Infrastructure BSS Station mode/Soft AP mode
- ◆ Wi-Fi Direct (P2P), P2P Discovery, P2P Group Owner mode and P2P Power Management
- ◆ UMA compliant and certified

## Module Pinout

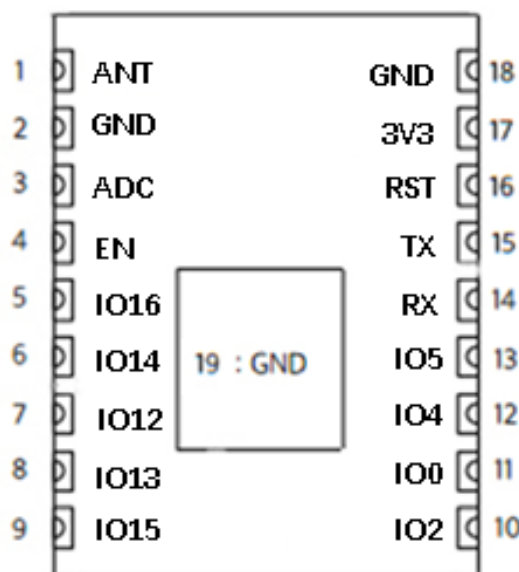


Figure 1: WG231 Pin Name

## Pin Description

NO	Name	Function
1	GND	GND
2	VDD33	3.3 V power supply (VDD)
3	ADC	ADC Pin can be used to check the power voltage of VDD33
4	EN	Chip enable pin. Active high.
5	IO16	GPI16, Deep-Sleep Wakeup
6	IO14	MTMS, GPI14, HSPI_CLK
7	IO12	MTDI, GPI12, HSPI_MISO

8	IO13	MTCK, GPIO13, HSPI_MOSI, UART0_CTS
9	IO15	MTDO, GPIO15, HSPI_CS, UART0_RTS
10	IO2	GPIO2, UART TX during flash programming
11	IO0	GPIO0, SPI_CS2
12	IO4	GPIO4
13	IO5	GPIO5
14	RXD0	GPIO3, U0RXD
15	TXD0	GPIO1, U0TXD
16	RST	Reset Signal (Active Low)
17	VDD33	3.3 V power supply (VDD)
18	GND	GND

**PCB Dimensions**

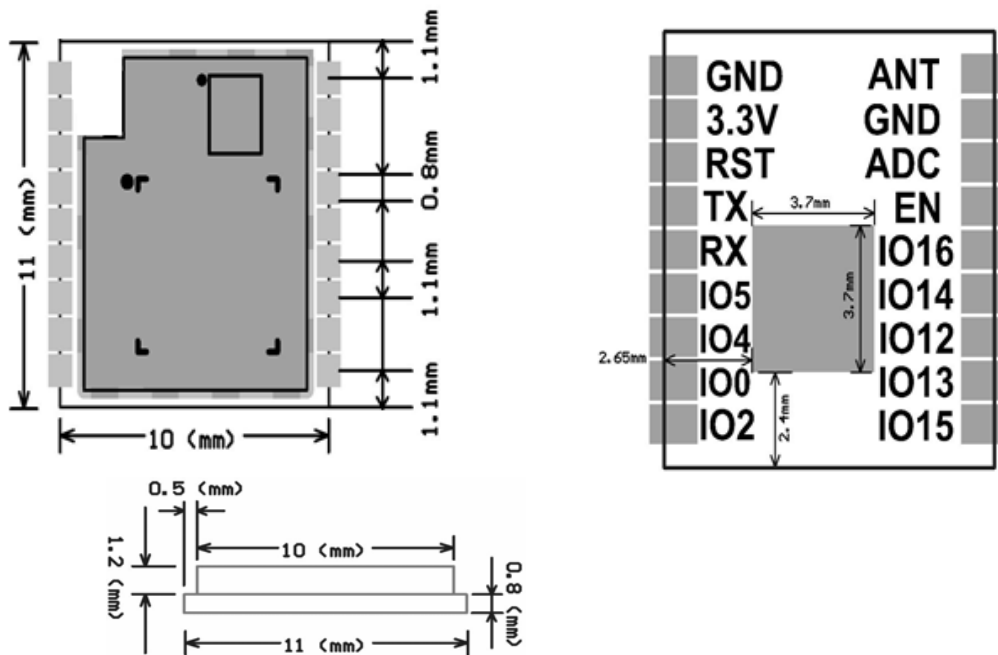


Figure 2: WG231 Dimensions

**CE Statement**

Herby, Skylab M&C Technology Co., Ltd. declares that this WIFI module , WG231 is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. In accordance with Article 10(2) and Article 10(10), this product allowed to be used in all EU member states.

Use the WIFI module in the environment with the temperature between -20 °C and 60 °C

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

Operation Frequency: 2412MHz~2472MHz (802.11b/802.11g/802.11n(HT20))

Max output power: Wifi: 0.0511W

This module requires customers to match the antenna themselves

Available antenna Type: monopole, PIFA, dipole Antenna

Antenna Gain: less than 5dBi.

Manufacturer : Skylab M&C Technology Co., Ltd.

Address : 6/F, Building 9, Lijincheng park, Gongye East Rd, Longhua St, Longhua District, Shenzhen 518109, China

Tel: 860755-83408210

Fax: +860755-83408560

E-mail: sam.chen@skylab.com.cn

**FCC Statement**

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

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 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.

**FCC Radiation Exposure Statement:**

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.

**OEM INTEGRATION INSTRUCTIONS:**

This device is intended only for OEM integrators under the following conditions:

The module must be installed in the host equipment such that 20 cm is maintained between the antenna and users, and the transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the internal on-board antenna that has been originally tested and certified with this module. External antennas are not supported. As long as these 3 conditions above are met, further transmitter test 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 (for example, digital device emissions, PC peripheral requirements, etc.). The end-product may need sDoc testing, Declaration of sDoc testing, a Permissive Class II Change or new Certification. Please involve a FCC certification specialist in order to determine what will be exactly applicable for the end-product.

**Validity of using the module certification:**

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module 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. In such cases, please involve a FCC certification specialist in order to determine if a Permissive Class II Change or new Certification is required.

**Upgrade Firmware:**

The software provided for firmware upgrade will not be capable to affect any RF parameters as certified for the FCC for this module, in order to prevent compliance issues.

**End product labeling:**

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: 2ACOE-WG231".

**Information that must be placed in the end user manual:**

The OEM integrator has to 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/warning as show in this manual.

The host system using this module, should have label in a visible area indicated the following texts: "Contains FCC ID: 2ACOE-WG231"

**Applicable Standards: FCC CFR Title 47 Part 15 Subpart C**

## Declaration of Conformity

I hereby declare that the product

### Product:

Product Name: WIFI module  
Model: WG231  
Brand Name: SKYLAB  
Hardware Version: V1.0  
Software Version: V02.12.01

satisfies all the technical regulations applicable to the product within the scope of Council Directives 2014/35/EU, 2014/30/EU and 2014/53/EU:

EN62311:2008

EN 60950-1:2006+A11:2009+A12:2010+A12:2011+A2:2013

Draft ETSI EN 301 489-17 V3.2.0 (2017-03)

Draft ETSI EN 301 489-1 V2.2.1 (2019-03)

ETSI EN 300 328 V2.2.2 (2019-07)

(Title(s) of regulations, standards, etc.)

All essential radio test suites have been carried out.

NOTIFIED BODY: PHOENIX TEST-LAB GmbH

- Address:

Köningswinkel 10

D-32825 Blomberg

Germany

Identification Number: 0700

MANUFACTURER or AUTHORISED REPRESENTATIVE:

- Address:

Skylab M&C Technology Co., Ltd

6/F, Building 9, Lijincheng park, Gongye East Rd, Longhua St, Longhua District, Shenzhen 518109, China

This declaration is issued under the sole responsibility of the manufacturer and, if applicable, his authorized representative.

Signature:

*Samchen.*

Sep. 03, 2019

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