

# SKW71 AP/Repeater/UART WiFi Module Datasheet

**Name: 802.11b/g/n AP/Repeater & UART WIFI Module**

**Model No.: SKW71**

**Revision: V3.06**

## Revision History

Revision	Description	Approved	Date
V1.01	Initial Release	George	20130221
V2.01	Update Office Address	George	20130805
V3.01	Add Ordering Information	George	20140215
V3.02	Update Ordering Information	George	20150721
V3.03	Update Photo Information	George	20150723
V3.04	Update Photo Information	George	20160812
V3.05	Change SPI Pins Description to NC	George	20161022
V3.06	Update certification information	George	20170831

## Contents

1. General Description .....	3
2. Applications .....	3
3. Features.....	3
4. Application Block Diagram .....	4
5. Interfaces .....	4
USB .....	4
I2S .....	5
UART .....	5
GPIO.....	5
WAN/LAN .....	5
6. Module Specifications .....	6
7. Module Pinout and Pin Description .....	7
Module Pinout .....	7
Pin Description .....	7
8. PCB Footprint and Dimensions .....	9
9. Electrical Characteristics .....	10
10. Ordering Information.....	11
11. Contact Information .....	11

## 1. General Description

The SKW71 module integrates a 1T1R 802.11n Wi-Fi radio, a MIPS 24K processor, 2-port fast Ethernet PHY, USB2.0 host, I2S and multiple slow IOs. Solution for low power, low-cost, and highly integrated AP router and consumer electronic devices, the module requires only an external 3.3V power supply. It supports 802.11n operating up to 72.2 Mbps for 20 MHz and 150 Mbps for 40 MHz channel respectively, and IEEE 802.11b/g data rates.

The module supports AP mode and client mode and repeater mode and UART WiFi. The high performance module can process advanced applications effortlessly, such as routing, security and VoIP.

## 2. Applications

- ◆ AP WiFi
- ◆ UART WiFi
- ◆ Repeater WiFi
- ◆ IP TV
- ◆ IP DVD(Internet VOD Player)
- ◆ Building Automation
- ◆ Home Automation
- ◆ Gaming Consoles
- ◆ DVR

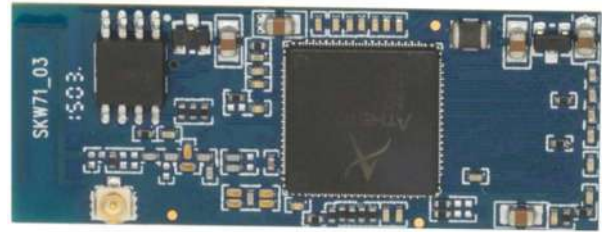


Figure 1: SKW71 Top View

## 3. Features

- ◆ Compliant to IEEE 802.11b/g/n 1x1 WLANs
- ◆ DDR2 memory up to 512Mb
- ◆ Flash memory up to 64Mb
- ◆ 1LAN ports and 1 WAN port
- ◆ High-speed UART
- ◆ USB 2.0 host device mode support
- ◆ Support I2S/SPDIF interface
- ◆ Support AP/Client/Repeater mode
- ◆ Support UART to WiFi transparent
- ◆ Security: WEP 64/128, WPA, WPA2, TKIP, AES, WAPI
- ◆ RoHS compliance meets environment-friendly requirement
- ◆ FCC,CE,IC certificated
- ◆ 45(L) x 17.3(W) x 9.0(H) mm small dimension

## 4. Application Block Diagram

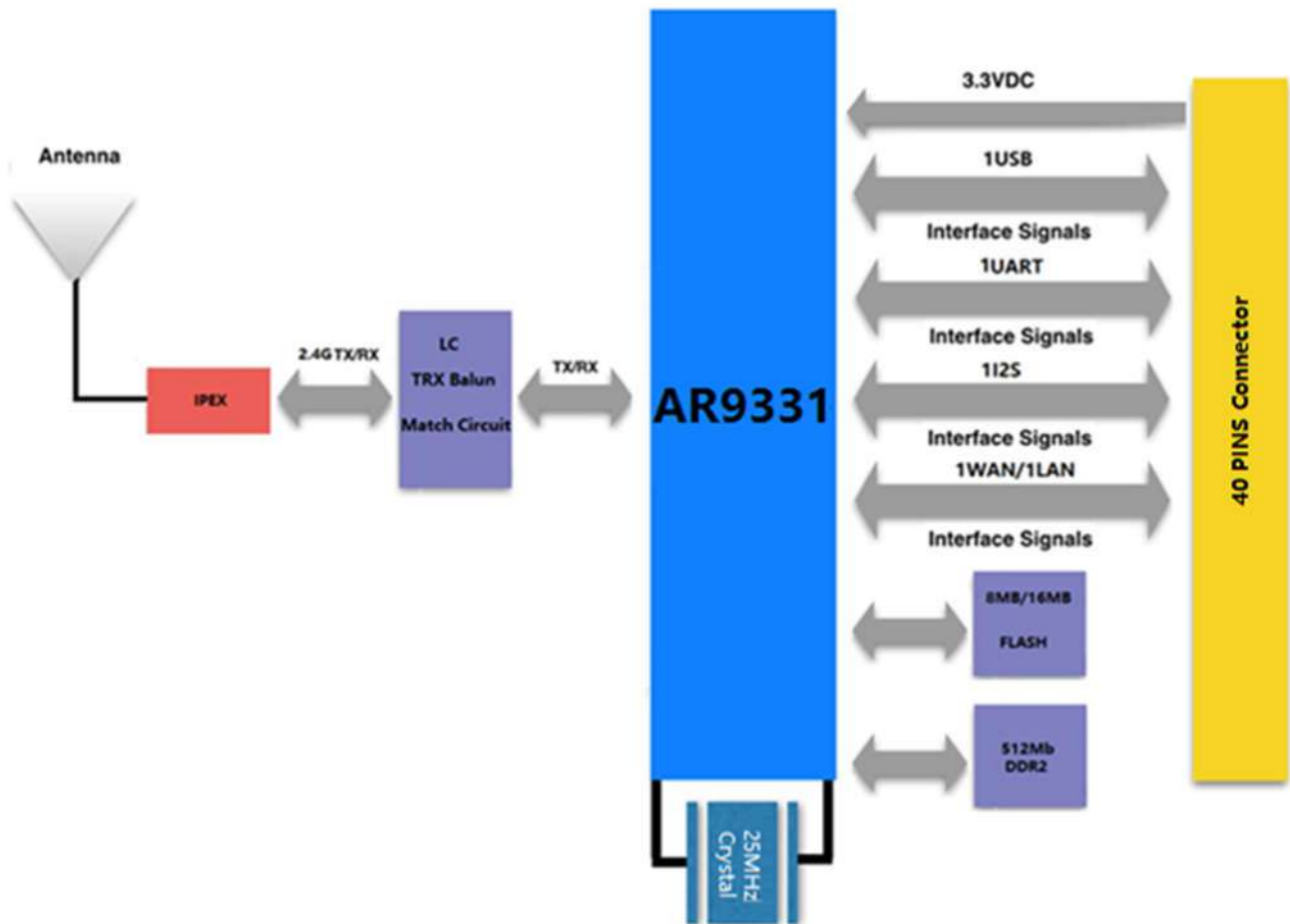


Figure 2: SKW71 Block Diagram

## 5. Interfaces

### USB

The USB interface support USB slave devices for USB disk and USB 3G/4G dongle and USB camera.

## I2S

I2S/SPDIF out audio interface that support up to 48KHz sampling clock and a serial clock of more than 512\* sampling frequency. It also supports seamless switching of the audio out stream from I2S to SPDIF. I2S MIC is also supported.

## UART

The UART default baud rate is 115200bps.

## GPIO

SKW71 Pin Number	GPIO	Description	Share function
3	GPIO23	SPDIF_OUT	SPDIF_OUT
5	GPIO19	I2S_WS	I2S
7	GPIO22	I2S_MICIN	
9	GPIO21	I2S_MCK	
11	GPIO20	I2S_SD	
13	GPIO18	I2S_CK	
22	GPIO12	RESET_CONFIG	
21	GPIO11	JUMPSTART	
19	GPIO27	LED7/SYSTEM LED	LED
21	GPIO26	LED8/JMP_START LED	
16	GPIO17	LED6/WLAN LED	
15	GPIO13	LED2/LAN_PORT0_LED	
14	GPIO1	LED1/USB LED	
13	GPIO0	LED0/Wireless LED	

## WAN/LAN

The SKW71 module integrates 2-port 10/100Mbps fast Ethernet switch.

## 6. Module Specifications

Hardware Features	
Model	SKW71
Antenna Type	IPEX connector or PCB antenna
Chipset solution	AR9331
Voltage	3.30V+/-10%
Dimensions(W×D)	45mm*17.3mm
Wireless Features	
Wireless Standards	IEEE 802.11n, IEEE 802.11g, IEEE 802.11b
Frequency Range	2.400GHz---2.4835GHz
Data Rates	IEEE 802.11 b Standard Mode: 1,2,5.5,11Mbps
	IEEE 802.11g Standard Mode: 6,9,12,18,24,36,48,54Mbps
	IEEE 802.11n : 65Mbps @ HT20
	150Mbps @ HT40
Receiver Sensitivity	135M: -65dBm@10% PER(MCS7)
	72.2M: -70dBm@10% PER(MCS7)
	54M: -75dBm@10% PER
	11M: -86dBm@ 8% PER
Modulation Technique	802.11 Legacy b/g
	DSSS (DBPSK, DQPSK, CCK)
	OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
Wireless Security	WPA/WPA2, WEP, TKIP, and AES
Transmit Power	IEEE 802.11n: 14dBm @HT40 MCS7
	IEEE 802.11b: 18dBm
Work Mode	Ad-Hoc / Infrastructure mode/AP/Repeater/UART
Others	
Certification	CE, FCC, IC, RoHS
Environment	Operating Temperature:-20°C~70°C
	Storage Temperature: -65°C~150°C

	Operating Humidity: 10%~90% non-condensing
	Storage Humidity: 5%~90% non-condensing

## 7. Module Pinout and Pin Description

### Module Pinout:

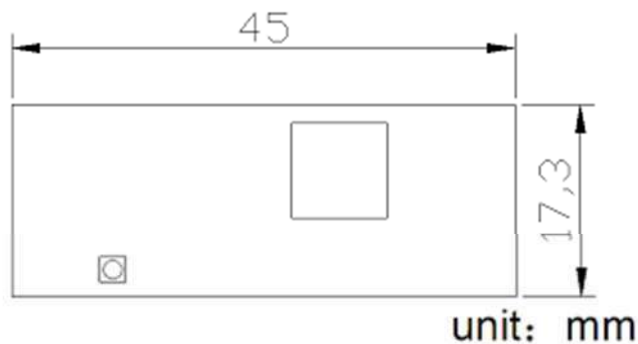


Figure 3: SKW71 Dimensions

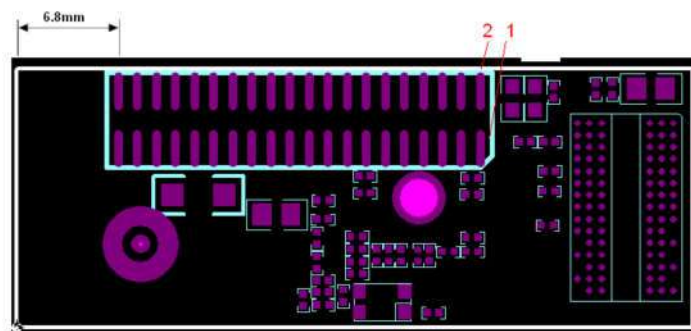


Figure 4: SKW71 Pin Package

### Pin Description:

1	VDD_3.3V	3.3V input 1000mA, recommended voltage 3.3V, Min2.97V, MAX 3.63V
2	GND	Ground
3	GPIO_23	KEY_INPUT, be free for customer defined.
4	WAN_PORT_RX+	Ethernet port

5	I2S_WS(GPIO_19)	Word select for stereo
6	WAN_PORT_RX-	Ethernet port
7	I2S_MICIN(GPIO_22)	I2S Data input
8	WAN_PORT_TX+	Ethernet port
9	I2S_MCK(GPIO_21)	Master clock
10	WAN_PORT_TX-	Ethernet port
11	I2S_SD(GPIO_20)	Serial data input/output
12	LAN_PORT0_RX+	Ethernet port
13	I2S_CK(GPIO_18)	Stereo clock
14	LAN_PORT0_RX-	Ethernet port
15	USB +	USB signal, carries USB data to and from the USB 2.0 PHY
16	LAN_PORT0_TX+	Ethernet port
17	USB -	USB signal, carries USB data to and from the USB 2.0 PHY
18	LAN_PORT0_TX-	Ethernet port
19	LED7(GPIO_27)	SYSTEM LED
20	GND	Ground
21	LED8(GPIO_26)	JMP_START LED
22	VDD_2.0V OUTPUT	Power supply output for peripheral network transformer
23	RESET_CONFIG (UART_CTS) (GPIO_12)	resets the firmware to its default configuration, it has a internal 10k drop down resistance, and trigger while Pulling up
24	VDD_2.0V OUTPUT	Power supply output for peripheral network transformer
25	JUMPSTART (UART_RTS) (GPIO_11)	KEY_INPUT to start WPS function, it has a internal 10k drop down resistance, and trigger while Pulling up
26	GND	Ground
27	GND	Ground
28	NC	Not connect
29	VDD_3.3V	3.3V input 1000mA, recommended voltage 3.3V,Min2.97V, MAX 3.63V



30	NC	Not connect
31	VDD_3.3V	3.3V input 1000mA, recommended voltage 3.3V, Min2.97V, MAX 3.63V
32	NC	Not connect
33	LED6 (GPIO_17)	WLAN LED
34	LED2 (GPIO_13)	LAN_PORT0_LED
35	LED1 (GPIO_1)	USB LED
36	LED0 (GPIO_0)	Wireless LED
37	UART_RX (SPI_CS1)	Serial data in
38	UART_TX (SPI_CS2)	Serial data out
39	GND	Ground
40	GND	Ground

## 8. PCB Footprint and Dimensions

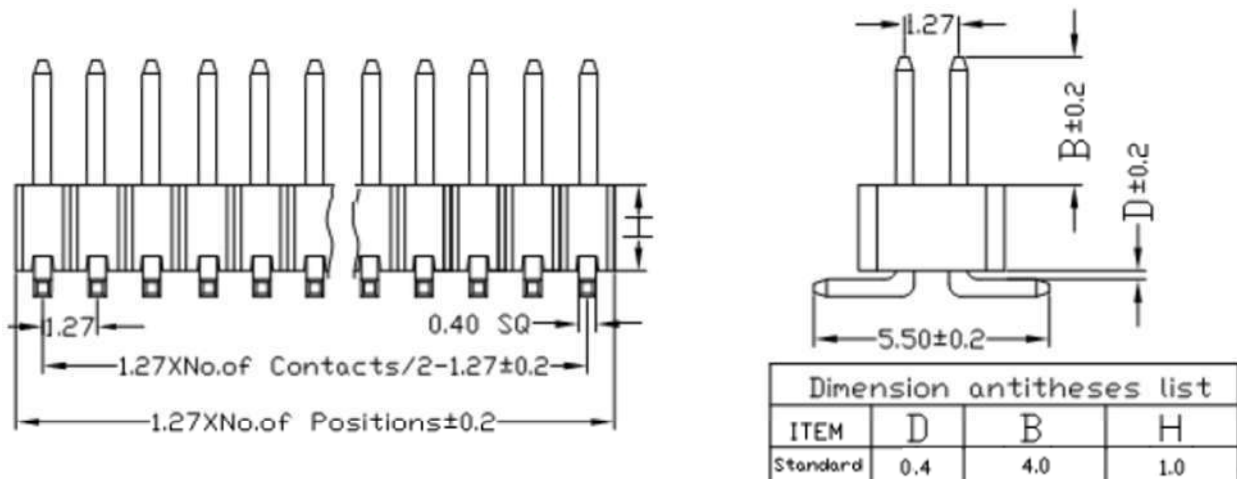


Figure 5: SKW71 Footprint

## 9. Electrical Characteristics

### a) Absolute Maximum Ratings

Parameter	Condition	Min	Typ.	Max.	Unit
Storage temperature range		-65		150	°C
ESD Protection	VESD	/		2000	V
Supply voltage	VDD_3.3V	0		4.0	V
Voltage on any I/O pin		-0.3		4.0	V

Table9-1: Absolute Maximum Ratings

### b) Recommended Operation Ratings

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Extended temp.	TA	-20		70	°C
Power Supply	VDD_3.3V	2.97	3.3	3.63	V
Input Low Voltage	VIL	-0.3		0.8	V
Input High Voltage	VIH	2		3.63	V

Table9-2: Operating Conditions

### c) Measurement Conditions

System state	Current (Typ.)@3.3V
Standby	70 mA
Transmit (2.4g; +15 dBm @ TX HT20 MCS7.)	310 mA
Transmit (2.4g; +18 dBm @ 11b 11Mbps.)	350 mA

Table9-3: Power Consumption in Different States

## 10. Ordering Information

Module No.	Antenna Connector Type	SPI Flash Size
SKW71_E8	IPEX Connector	8M Byte
SKW71_E16	IPEX Connector	16M Byte
SKW71_P8	PCB Antenna	8M Byte
SKW71_P16	PCB Antenna	16M Byte

## 11. Contact Information

Skylab M&C Technology Co., Ltd.

深圳市天工测控技术有限公司

**Address:** 6 Floor, No.9 Building, Lijincheng Scientific & Technical park, Gongye East Road,

Longhua District, Shenzhen, Guangdong, China

**Phone:** 86-755 8340 8210 ( Sales Support )

**Phone:** 86-755 8340 8510 ( Technical Support )

**Fax:** 86-755-8340 8560

**E-Mail:** sales1@skylab.com.cn

**Website:** www.skylab.com.cn      www.skylabmodule.com