

# RAK1901 WisBlock Temperature and Humidity Sensor Datasheet

## Overview

### Description

The RAK1901 WisBlock Sensor module, part of the RAK Wireless Wisblock series, is a digital temperature and humidity sensor with I2C interface. Designed to work at low power mode, the average consumption is lower than 0.5  $\mu$ A. The humidity measurement covers the range from 0 to 100 % RH and the temperature measurement covers the range from -40 °C to 125 °C. Measurements accuracy is  $\pm 2$  %RH for humidity and  $\pm 0.2$ °C for temperature.

### Features

- **Temperature sensor accuracy:**  $\pm 2.0$  °C
- **Temperature range:** -40 to +125 °C
- **Humidity sensor accuracy:**  $\pm 2.0$  % RH
- **Humidity range:** 0 to 100%
- **Module size:** 10 x 10 mm

## Specifications

### Overview

### Mounting

The RAK1901 module can be mounted on the slots: A, B, C or D of the WisBase board. Figure 1 shows the mounting mechanism of the RAK1901 on a WisBase module, such as the RAK5005-O.

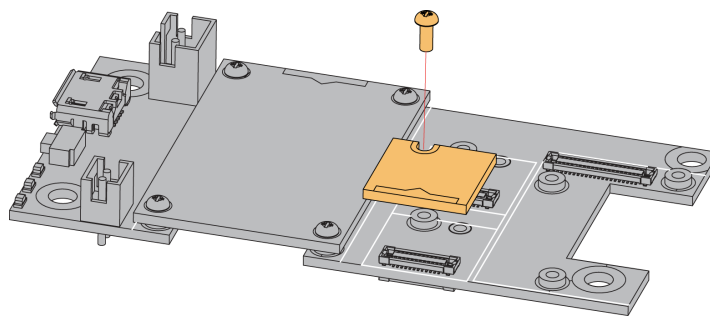


Figure 1: RAK1901 WisBlock Sensor Mounting

## Hardware

### Chipset

Vendor	Part number
Sensirion	SHTC3

### Pin Definition

The RAK1901 WisBlock Sensor module comprises a standard WisIO connector. The WisIO connector allows the RAK1901 module to be mounted on a WisBlock baseboard, such as the RAK5005-O. The pin order of the connector and the pinout definition is shown in Figure 2. Note, only the I2C related pins, VDD and GND are connected to this module.

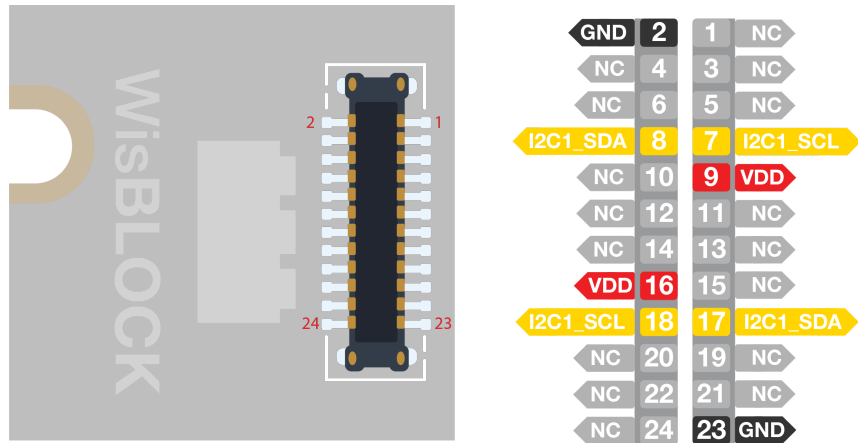


Figure 2: RAK1901 WisBlock Sensor Pinout Diagram

## Sensors

### Temperature Sensor

Parameter	Conditions	Value	Units
Accuracy Tolerance	Typ.	±0.2	°C
Repeatability	-	0.1	°C
Resolution	-	0.01	°C
Specified Range	-	-40 to +125	°C
Response Time	$\tau$ 63%	<5 to 30	s
Long-term Drift	Typ.	<0.2	°C/y

### Humidity Sensor

Parameter	Conditions	Value	Units
Accuracy Tolerance	Typ.	±2.0	%RH
Repeatability	-	0.1	%RH
Resolution	-	0.01	%RH
Hysteresis	-	±1	%RH
Specified Range	extended	0 to 100	%RH
Response Time	$\tau$ 63%	8	s
Long-term Drift	Typ.	<0.25	%RH/y

## Electrical Characteristics

### Recommended Operating Conditions

Symbol	Description	Min	Nom.	Max	Unit
$V_{DD}$	Power supply for the module	1.6	3.3	3.6	V
$I_{sleep}$	Sleep current	-	0.3	-	uA
$I_{DD}$	Measure current (normal mode)	-	430	-	uA
$I_{DD}$	Measure current (low power mode)	-	270	-	uA

## Mechanical Characteristics

### Board Dimensions

Figure 3 shows the dimensions and the mechanic drawing of the RAK1901 module.

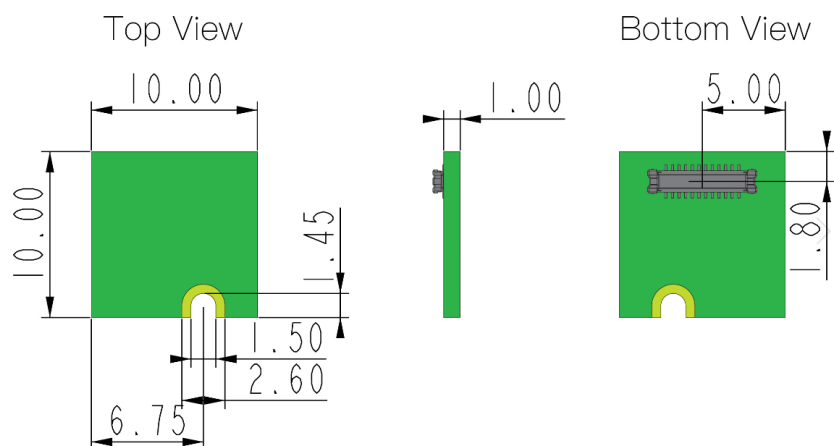


Figure 3: RAK1901 WisBlock Sensor Mechanic Drawing

## WisConnector PCB Layout

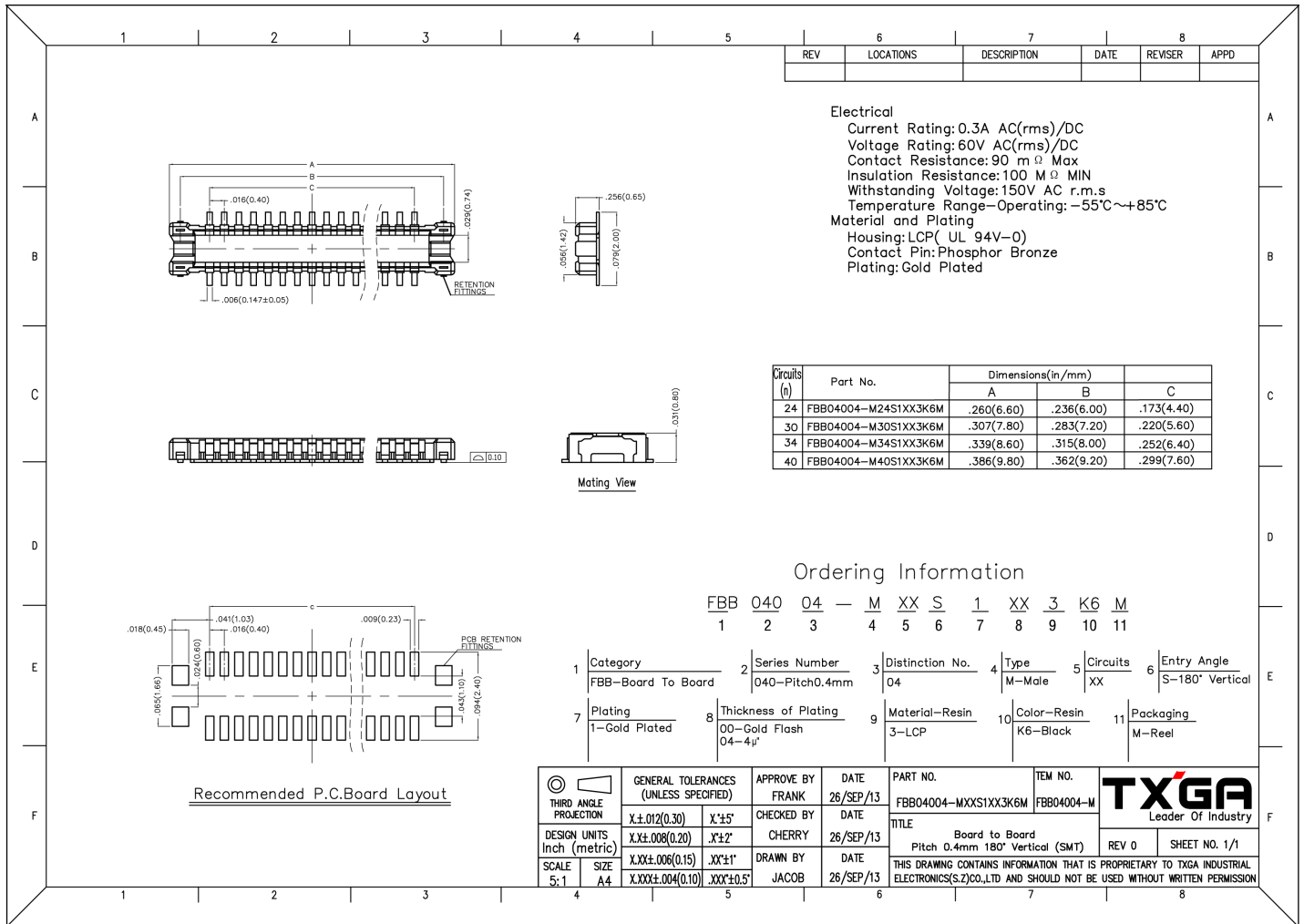


Figure 4: WisConnector PCB footprint and recommendations

## Schematic Diagram

Figure 5 shows the schematic of the RAK1901 module.

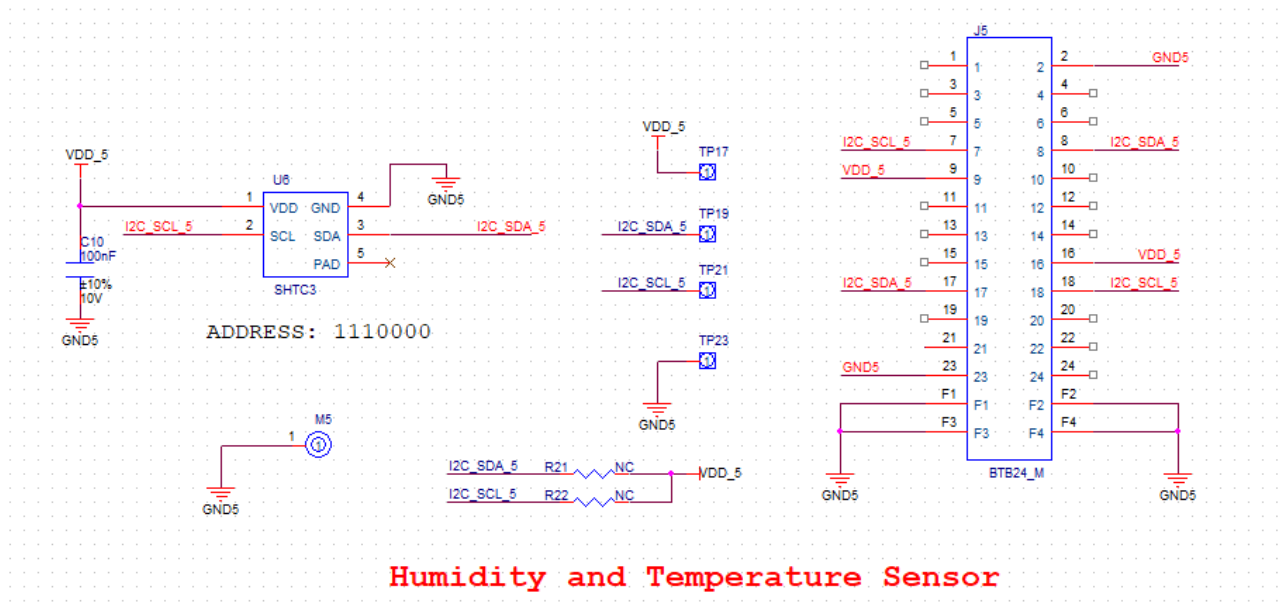


Figure 5: RAK1901 WisBlock Sensor schematics