泰芯半导体
TaiXin Semiconductor

TaiXin AH Module Development Board Guide

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Revision History

Date	Version	Revision Notes	Reviser
2024-5-22	V1.4	Added instructions for V1.6 dev board;	WY/LPX
2023-02-07	V1.3	Added firmware and print port details;	WY
2022-02-18	V1.2.1	Revised logo;	XYJ
2021-10-20	V1.2	Modified sdio/usb interface switching description;	WY
2021-06-07	V1.1	Added SVCC description;	WY
2021-05-24	V1.0	Initial version;	WY

Table of Contents

1. Overview

TX-AH-Rx00Pxx series of module designed by TaiXin Semiconductor (referred to as TX-AH-Rx00P hereafter) is an industry leading Wi-Fi module compliant with IEEE 802.11ah standard. It provides an optimized solution for wide range of IOT applications.

The TX-AH-Rx00P integrates the TXW83xx 802.11ah SOC, operates at a frequency range between 730M~950M, providing greater transmission ranges than 2.4GHz and 5GHz Wi-Fi at the same transmission power. The module supports a channel bandwidth of 1/2/4/8MHz, offering physical throughput ranging from 150Kbps to 32.5Mbps, supporting applications ranging from low-rate sensors to multi-stream high-rate surveillance camera.

TX-AH-Rx00P can be interfaced with the application processor via USB, SDIO, SPI, UART and other custom interfaces. Example applications include wireless IP camera, drone video streaming, smart home and smart grid. It also provides an RMII interface for low cost single module wireless network bridge application.

The internal architecture and external connection diagram of the chip/module are shown in Figure 1-1.

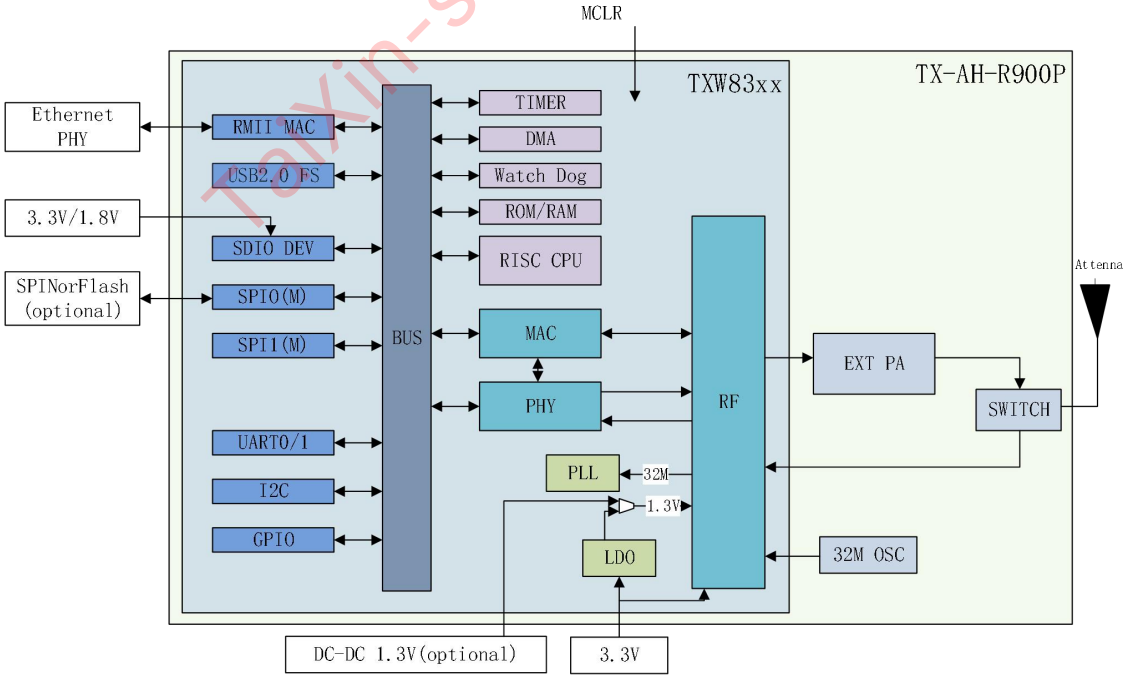

Figure 1-1.Diagram of Chip/Module Internal Architecture and External Connection

2. Development Board Introduction

The TX-AH-MODULE development board built-in TF card and USB connector. By default, it is loaded with SDIO/SPI firmware. For SDIO interface development the board can be directly plugged into the host controller board's TF card slot and external power can be supplied by the micro USB connector (5V@500mA).

For other interface development, load the corresponding firmware then switch the UART jumper location. Use the USB connector for USB interface. For more detail information please read the explanation below.

The figure below shows the main view of the TaiXin AH module development board.

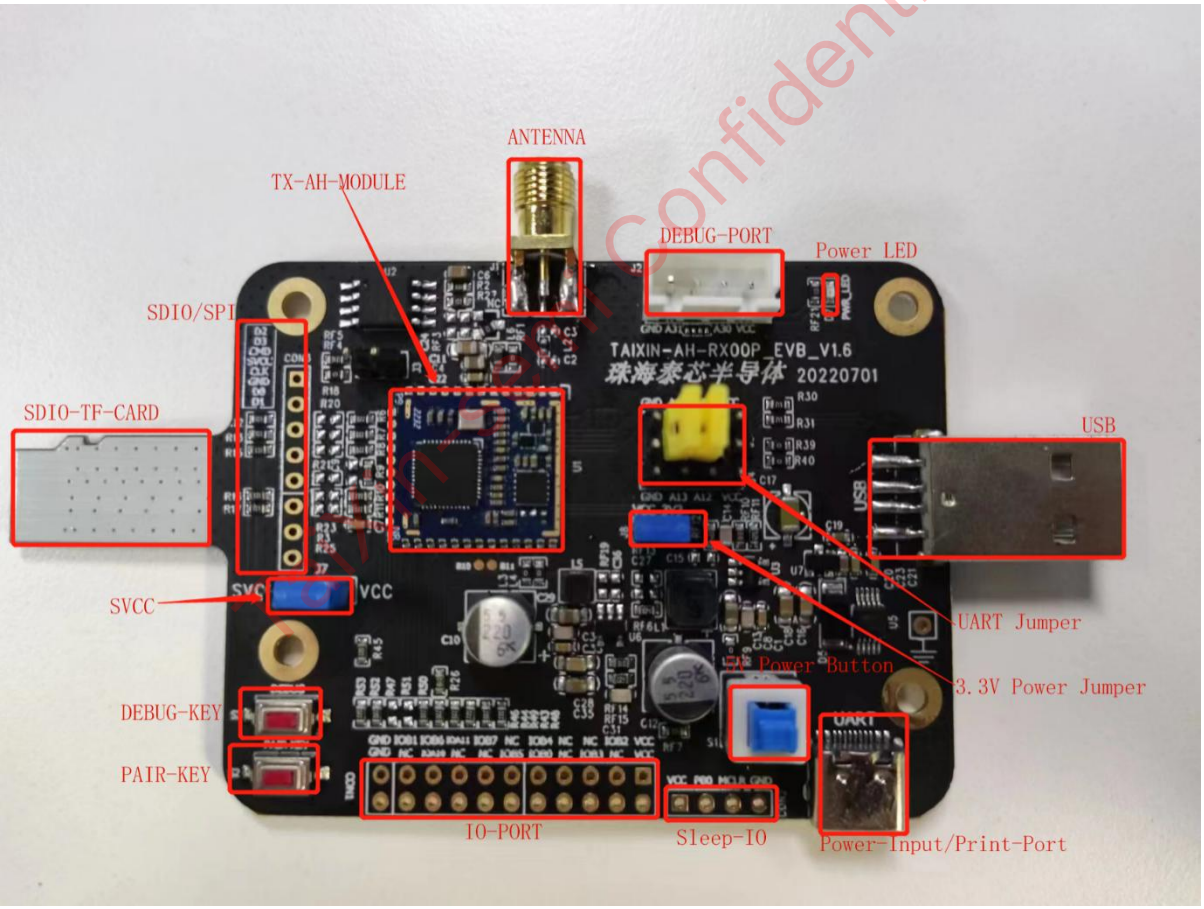

Figure 2-1 Main View of The TaiXin AH Module Development Board (V1.6 version)

- TX-AH-MODULE: TaiXin AH module.
- ANTENNA: AH module SMA antenna interface.
- DEBUG-PORT: AH module CDK debugging port, please refer to the "TaiXin TXW830x

AH-SDK Development Guide".

- Power-Input/Print-Port: USB micro or type C power supply port and USB serial output; please ensure that the USB port has a power supply capacity of 500mA or more; the board is integrated with a USB to serial chip (CH340), with the correct jumper location set, connect the USB port to a PC to view debug information. (serial baud rate is 115200)
- 5V Power Button: 5V power switch for the development board. 5V is supplied via USB connector.
- Power LED: 3.3V power indicator light.
- 3.3V Power Jumper: For power consumption measurement; connect to an external ammeter for current measurement. Short it if measurement is not needed.
- UART Jumper: Used for switching USB to serial chip UART input. When using different communication interfaces, the UART output pin is different. For SDIO/SPI interface, short A12/A13 to the middle row. For USB interface, short A10/A11 to the middle row. For UART interface, A12/A13 are used for debug output by default and A10/A11 are used for communication. So short A12/A13 to the middle row and use jumper wire to connect A10/A11 to the host controller.
- USB: Used for communication with the host controller via USB interface; please refer to the UART Jumper instructions for debug output.
- AH-TF_CARD: Onboard TF-CARD connector for communication with the main control via the SDIO interface; please refer to the UART Jumper instructions for debug output.
- SDIO: Can be used for direct connection to the host controller if a TF card slot is not available or a more secure connection is required. Can also be used for debugging with logic analyzer. (pad R3,R18,R20,R21,R23,R25 need to be populated with 22R resistors)
- SVCC(V1.6): If you want to use host controller to power the development board, move the jumper to SVCC. If you want to use external power supply, move the jumper to VCC.
- SPI: Multiplexed with SDIO pins, corresponding relationships are: SD_CLK/SPI_CLK1, SD_CMD/SPI_MOSI1, SD_D0/SPI_MISO1, SD_D1/SPI_INTIO1, SD_D2/NC, SD_D3/CS1; If you want to use the COM3 header instead of the TF card connector (pad R18/R20/R21/R23/R3/R25 need to be populated with 0R resistor); please refer to the UART Jumper instructions for debug output.
- PAIR KEY: Physical pairing key functionality is enabled by default, it is connected to IOB1 via resistor R45.

- DEBUG KEY: The AH module load firmware from Flash by default. Hold this key during power-on to stop the firmware loading process, allowing debugging via the DEBUG PORT or load firmware via the host controller.
- IO PORT: Rest of the available IO of the AH module are connected to this 2.54MM double-row pin headers.
- Sleep-IO: AH module wake signal output (IOB0) and input (MCLR). For low power sleep mode development.

The figure below shows the main view of the V1.5 version development board:

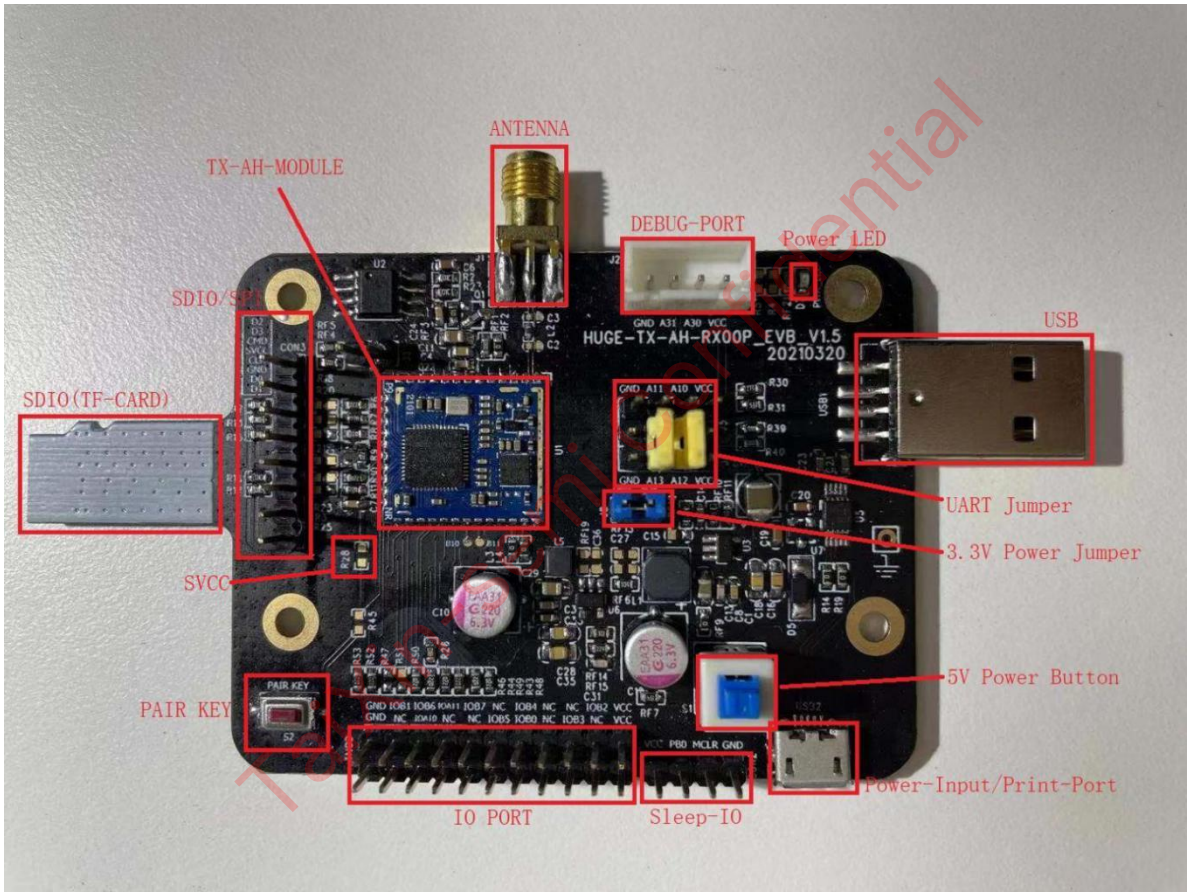

Figure 2-2 Main View of The TaiXin AH Module Development Board (V1.5 Version)

Compared to the new V1.6 version, there are three differences (TypeC connector, DEBUG KEY, SVCC)

- SVCC: Pad R28 is the SVCC power supply selection resistor; When using USB/UART/SPI interface, R28 should be shorted with a 0R resistor. Otherwise IOA6~11 will not be powered. When using SDIO interface, R28 should be left empty, SVCC power is supplied via the host controller through the TF card

connector.

- DEBUG KEY: V1.5 version modules do not have DEBUG KEY.

Note: The SDIO interface and SPI interface share the same firmware. For other communication interface option, different firmware is required. The serial debug output pins are different for each firmware, the pins corresponding to the USB firmware are A10/A11, for other interfaces are A12/A13. Please refer to the UART jumper section for more detail explanation.