BC-11AH-A2

Users Manual

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Rev	Date	Author	Description
1	2025/10/22	ryuchi	English edition

1. Introduction

This document provides an overview and technical description of the BC-11AH-A2 board, hereinafter referred to as the board.

2. Overview

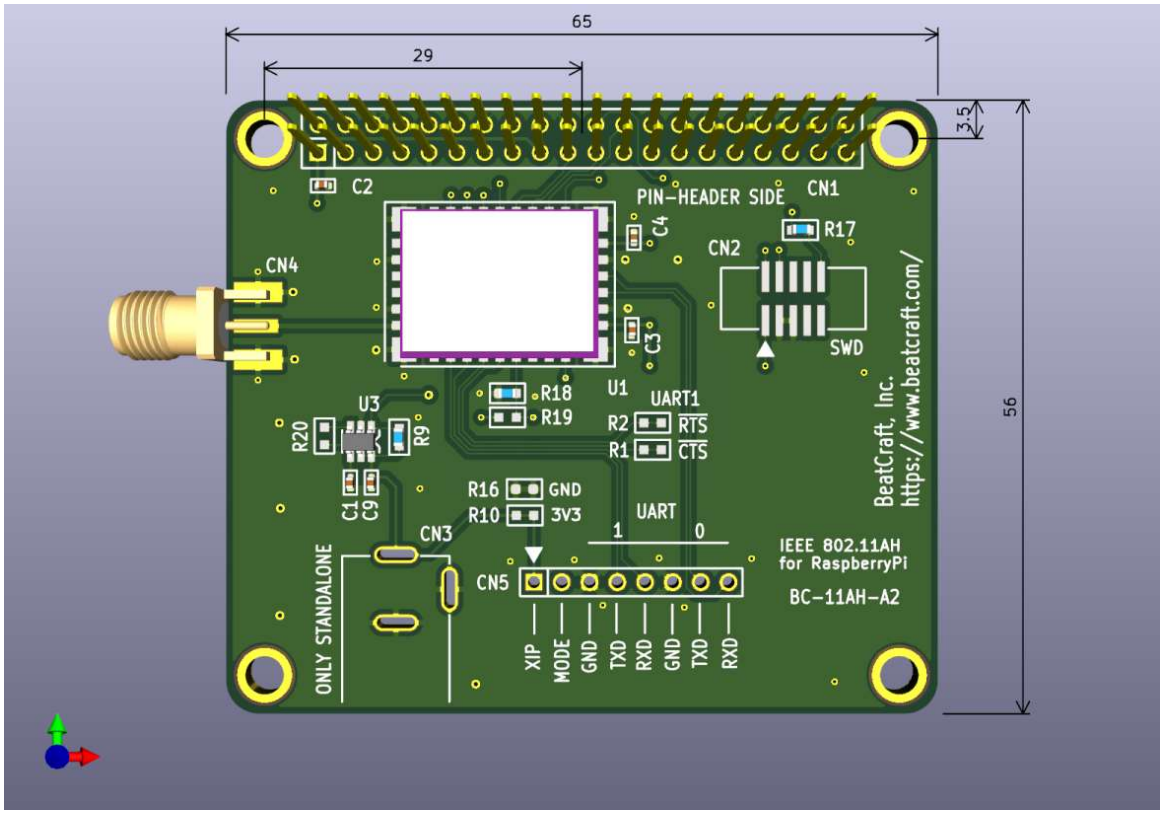
The board is a HAT board designed for the Raspberry Pi series.

It incorporates an ASKEY IEEE802.11AH wireless module, allowing users to easily enable IEEE 802.11AH functionality simply by attaching it to a Raspberry Pi.

3. Specifications

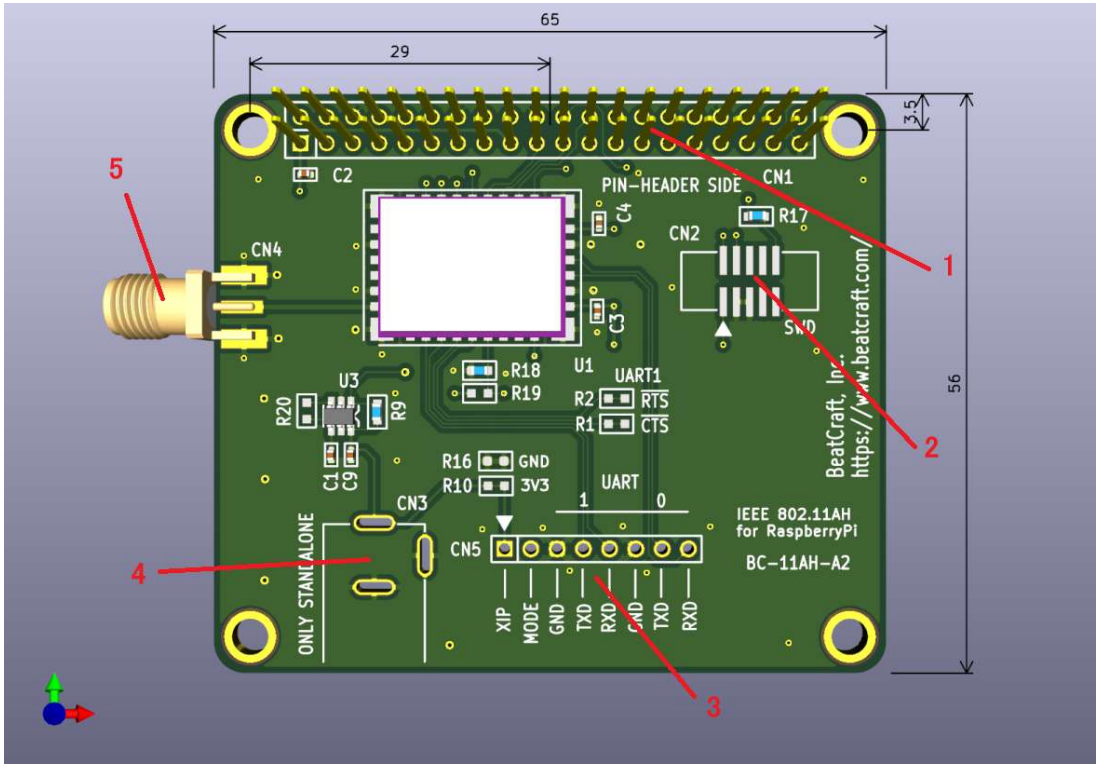
Board Material	FR-4	
Dimensions	65x56 mm	1.6mm (excluding component height)
Layer Count	2 layers	
Mounting Holes	M2.6	4 (compatible with Raspberry Pi)
Power Supply Voltage	3.3V	supplied from Raspberry Pi

Board view



4. Connectors and Switches

The following table lists the connectors and switches mounted on the board, along with their functions:



No.	Name	Function / Description
1	Stacking Connector	Connection interface with Raspberry Pi
2	SWD Connector	Serial Wire Debug connector for ARM debugging (not populated)
3	Expansion Connector	UART0/1 and mode-setting expansion connector (not populated)
4	External Power Input	Connector for external DC power input (not populated)
5	SMA Conector	Connector for the designated antenna

Connectors No. 2-4 are not populated. When used in conjunction with a Raspberry Pi, there is no need to connect UART0, UART1, or an external power source, nor to change the boot mode.
Therefore, these components are omitted by default.

If the board is used standalone (not connected to Raspberry Pi), users must solder and install the pin headers and power connectors as necessary.

Caution:
Always use the designated antenna provided with the product. Using an unauthorized antenna may violate certification regulations. For domestic (Japan) operation, using a non-specified antenna requires re-certification under the Radio Act or obtaining a radio station license.

5. Usage

The board connects to the Raspberry Pi through a 40-pin stacking connector. Attach the designated antenna to the SMA connector.

The photo below shows an example setup using Raspberry Pi 3 (previous board revision BC-11AH-A)

Power the Raspberry Pi via its standard power connector (e.g., Wall adapter). The board draws all required operating power directly from the Raspberry Pi.

6. UART Usage

The 11AH module on the board has two UART ports (UART0 and UART1), which are routed to connector CN5.

CN5 Pin Assignment

No.	Signal	Description	No.	Signal	Description
1	XIP	XIP mode setting	2	MODE	Boot mode setting
3	GND	GND	4	TXD	UART1 - TXD
5	RXD	UART1 - RXD	6	GND	GND
7	TXD	UART0 - TXD	8	RXD	UART0 - RXD

UART0 and UART1 operate at CMOS 3.3V logic levels.

- XIP/MODE: Short pins 1 (XIP) and 2 (MODE) to enable XIP mode; leave open for ROM mode.
- UART1 also supports hardware flow control (RTS/CTS), but these signals are not routed to the connector. If required, they can be wired manually from the test pads on the PCB.

7. Power Input Connector

For standalone operation (not connected to Raspberry Pi), supply DC 3.3V externally via connector CN3.
Install a DC jack such as MJ-179PH (AKIZUKI DENSHI TSUSHO CO.,LTD.), and use a regulated DC power supply capable of delivering ≥200 mA.
When used with a Raspberry Pi, do not connect power to this terminal.

AKIZUKI DENSHI TSUSHO: https://akizukidenshi.com/

8. SWD Connector

The board includes pads that provide access to the SWD (Serial Wire Debug) interface of the NRC7394 inside the ASKEY module.
Connector CN2 uses a standard 1.27 mm pitch, 10-pin header commonly used for SWD debuggers.

9. Application Development

The onboard ASKEY module contains the NEWRACOM NRC7394 chipset. You can use the official NRC7394 driver and sample programs provided by NEWRACOM. For detailed information on application development, refer to the NRC7394 Software Guide.

NEWRACOM: https://newracom.com/ https://github.com/newracom

Appendix:

Standalone Operation

The board can be used without connecting to a Raspberry Pi by soldering connectors on CN3 and CN5.

CN3: Recommended DC jack — MJ-179PH (AKIZUKI DENSHI TSUSHO, Code: 106568)
CN5: Recommended 2.54 mm pitch, single-row, 8-pin MIL-standard pin header or socket.
(e.g., Hirose A2-8PA-2.54DS or A2-8PA-2.54DSA)

Use a stabilized 3.3V DC power supply (≥200 mA).
Do not connect an AC adapter to CN3 while the board is attached to Raspberry Pi.

UART Interface notes

Both UART0 and UART1 operate at 3.3V CMOS levels.
If you use a USB-UART converter, such as AKIZUKI DENSHI TSUSHO AE-TTL-232R Board (FT232RQ module), when connecting to a PC.

CN5 UART0	CN5 UART1	AE-TTL-232R Board
8 (RXD)	5 (RXD)	4 (TXD)
7 (TXD)	4 (TXD)	5 (RXD)
6 (GND)	3 (GND)	1 (GND)

※ FT232RQ Board: converter pins (2,3,6) unconnected.
※ Ensure SW2 = OFF (factory default) for 3.3V I/O operation.
※ The LED switch (SW1) has no effect on board operation.

Boot mode

By default, the module boots in ROM mode, waiting for commands from the Raspberry Pi or UART after power-up.
To enable XIP mode, short pins 1 (XIP) and 2 (MODE) of CN5 — this allows the module to execute firmware stored in its internal Flash ROM.

If desired, users may install an external switch or jumper to control mode selection.