ENTMENITSEA HC-08

ENTMENITSEA HC-08 Bluetooth 4.0 Serial Port Module User Manual

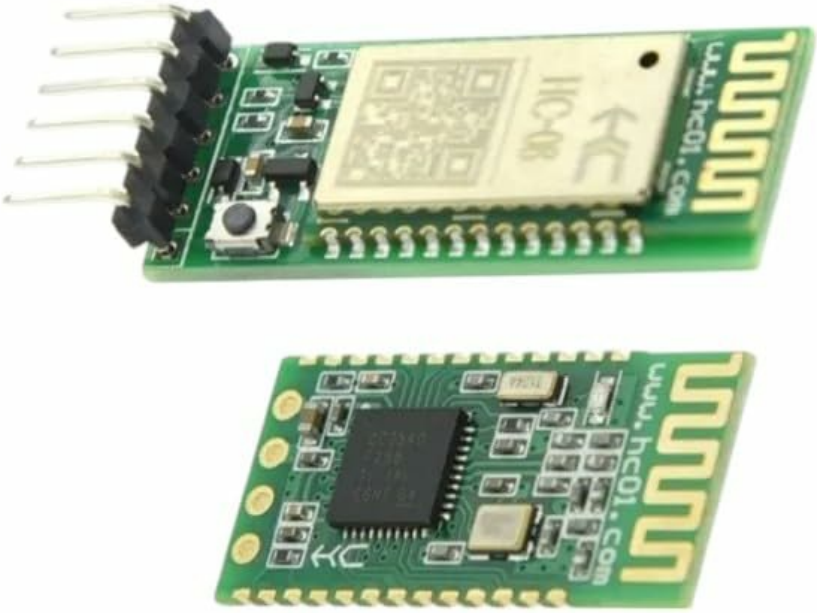
Model: HC-08

1. Introduction

This manual provides detailed instructions for the setup, configuration, and operation of the ENTMENITSEA HC-08 Bluetooth 4.0 Serial Port Module. The HC-08 is a low-power Bluetooth Low Energy (BLE) module designed for transparent serial communication, enabling wireless data transfer between microcontrollers and other Bluetooth-enabled devices.

2. Product Overview

The HC-08 module integrates a Bluetooth 4.0 chip, antenna, and necessary peripheral components onto a compact PCB. It operates as a slave device by default, allowing other Bluetooth master devices to connect and exchange data via a serial UART interface.



The image displays two views of the HC-08 Bluetooth 4.0 module. The top view shows the main chip and antenna, while the bottom view reveals the solder pads and additional components. Pin headers are visible on one side for connection.

3. Specifications

Feature	Description
Model	HC-08
Bluetooth Version	Bluetooth 4.0 (BLE)
Operating Voltage	2.0V - 3.6V (typically 3.3V)
Communication Interface	UART (Serial)
Default Baud Rate	9600 bps
Frequency Range	2.4GHz ISM band
Operating Current	~8mA (active), <1mA (sleep)
Transmission Distance	Up to 30 meters (line of sight)

4. Pinout Description

The HC-08 module typically features the following pins:

Pin Name	Description
VCC	Power supply input (2.0V - 3.6V)
GND	Ground
TXD	UART Transmit Data (connect to RXD of microcontroller)
RXD	UART Receive Data (connect to TXD of microcontroller)
STATE	Connection status indicator (High when connected, Low when disconnected)
EN	Enable pin (High to enable, Low to disable/sleep)

5. Setup and Configuration

5.1 Hardware Connection

1. Connect the **VCC** pin of the HC-08 module to a 3.3V power supply.
2. Connect the **GND** pin of the HC-08 module to the ground of your system.
3. Connect the **TXD** pin of the HC-08 module to the**RXD** pin of your microcontroller or serial-to-USB converter.
4. Connect the **RXD** pin of the HC-08 module to the**TXD** pin of your microcontroller or serial-to-USB converter.
5. The **STATE** pin can be connected to an LED or a digital input on your microcontroller to monitor connection status.
6. The **EN** pin should be pulled HIGH for normal operation.

5.2 AT Command Configuration

The HC-08 module can be configured using AT commands sent via the serial interface. Ensure your serial terminal or microcontroller is set to the module's current baud rate (default 9600 bps).

- **Test Command:** Send AT. The module should respond withOK.
- **Set Module Name:** Send AT+NAME<name> (e.g., AT+NAMEHC08_Device). Response: OKsetname.
- **Set Baud Rate:** Send AT+BAUD<value>. Common values: 1 (1200), 2 (2400), 3 (4800), 4 (9600), 5 (19200), 6 (38400), 7 (57600), 8 (115200). Response: OKsetbaud.
- **Query Module Address:** Send AT+LADDR. Response: OK+LADDR:<address>.
- **Restore Factory Settings:** Send AT+RENEW. Response: OK+RENEW.

Note: AT commands must be sent without a newline character (CR/LF) unless specified by the module's firmware version. After sending a command, wait for the module's response.

6. Operating Instructions

6.1 Establishing a Connection

Once the HC-08 module is powered and configured, it will broadcast its presence. A Bluetooth 4.0 (BLE) enabled device (e.g., smartphone, computer with BLE adapter) can scan for and connect to the module using its configured name.

1. Ensure the HC-08 module is powered on. The STATE pin will typically be LOW or an LED will be blinking, indicating it is discoverable.
2. On your master device, scan for Bluetooth Low Energy devices.
3. Select the HC-08 module (by its configured name) and initiate a connection.
4. Upon successful connection, the STATE pin of the HC-08 module will go HIGH (or an LED will become solid), indicating an active link.

6.2 Data Transmission

After a connection is established, any data sent to the HC-08's RXD pin will be wirelessly transmitted to the connected master device. Conversely, data received wirelessly from the master device will be output through the HC-08's TXD pin.

- **From Microcontroller to Master Device:** Send data from your microcontroller's TXD to the HC-08's RXD.
- **From Master Device to Microcontroller:** The master device sends data wirelessly, which the HC-08 outputs via its TXD pin to your microcontroller's RXD.

7. Troubleshooting

- **Module not discoverable:**
  - Verify power supply (VCC and GND) is correctly connected and within the 2.0V-3.6V range.
  - Ensure the EN pin is pulled HIGH.
  - Check if the module is already connected to another device.
- **Cannot send AT commands:**
  - Confirm TXD/RXD connections are correct (cross-connected).
  - Verify the serial terminal's baud rate matches the module's baud rate (default 9600 bps).
  - Ensure no newline characters are appended to AT commands.
- **Connection drops frequently:**
  - Check for interference from other 2.4GHz devices.
  - Ensure the distance between devices is within the effective range.
  - Verify power supply stability.

8. Safety Information

- Do not exceed the specified operating voltage range (2.0V - 3.6V) to prevent damage to the module.
- Handle the module with care to avoid electrostatic discharge (ESD) damage.
- Ensure proper ventilation when integrating into enclosures to prevent overheating.
- Keep the module away from water and moisture.

9. Warranty and Support

ENTMENITSEA provides a money-back guarantee for this product, reflecting confidence in its quality. For any questions, technical assistance, or support needs, please contact ENTMENITSEA customer service. Our knowledgeable team is available to assist you.