AWAVINGCEM DX-BT18

AWAVINGCEM DX-BT18 Dual-Mode Bluetooth Module User Manual

Model: DX-BT18

1. Introduction

The AWAVINGCEM DX-BT18 is a versatile dual-mode Bluetooth module designed for serial data passthrough. It supports both Bluetooth SPP2.0 (Serial Port Profile) and BLE4.0 (Bluetooth Low Energy) protocols, offering broad compatibility and flexible integration into various electronic projects. This module is engineered for reliable and stable performance, making it suitable for a wide range of industrial, automotive, and household electronic applications. It is compatible with systems designed for HC-05 modules, providing an upgrade path with dual-mode capabilities.

2. Product Overview

The DX-BT18 module integrates advanced Bluetooth technology into a compact form factor, facilitating wireless communication between microcontrollers, computers, and other Bluetooth-enabled devices. Its dual-mode functionality allows for both classic Bluetooth connections (SPP) and energy-efficient connections (BLE), catering to diverse application requirements.

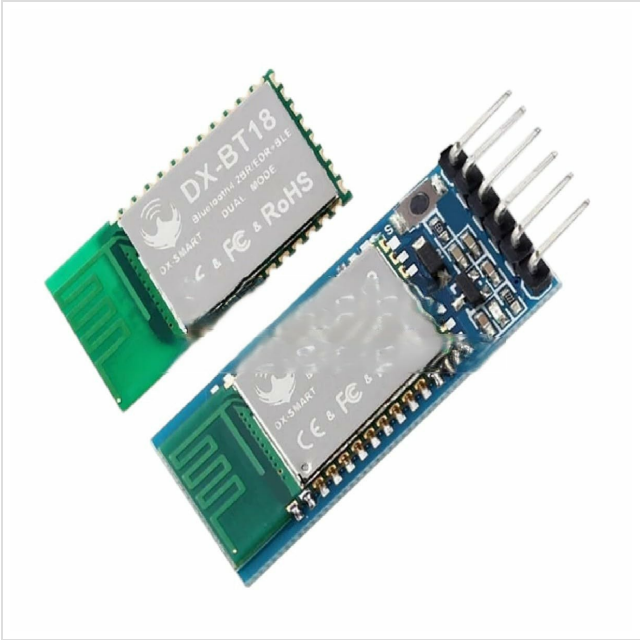

Figure 1: AWAVINGCEM DX-BT18 Dual-Mode Bluetooth Modules. The image displays two modules, highlighting their compact size and the integrated antenna design. One module is shown with header pins attached, indicating readiness for breadboard or PCB integration, while the other is without pins, showcasing the module's base form factor.

Key Features:

- Dual-Mode Bluetooth: Supports both SPP2.0 and BLE4.0 for versatile connectivity.
- Serial Passthrough: Enables transparent data transmission over Bluetooth.
- HC-05 Compatibility: Designed to be compatible with existing HC-05 module setups.
- High Reliability: Constructed with quality electronic components for stable operation.
- Compact Design: Small footprint for easy integration into projects.

3. Specifications

Parameter	Value
Model	DX-BT18
Bluetooth Version	SPP2.0 + BLE4.0 (Dual-Mode)
Operating Voltage	3.3V - 5V (Typical)
Communication Interface	UART (Serial)
Default Baud Rate	9600 bps (Configurable)
Antenna	Integrated PCB Antenna
Operating Temperature	-20°C to +85°C
Dimensions	Refer to product datasheet for exact measurements

Note: Specific electrical characteristics and detailed pin descriptions should be referenced in the official DX-BT18 datasheet.

4. Pinout Description

The DX-BT18 module typically features a standard set of pins for power, ground, and serial communication. While

the exact pin configuration may vary slightly, common pins include:

- **VCC:** Power supply input (typically 3.3V to 5V).
- **GND:** Ground connection.
- **TXD:** Transmit Data pin (connects to RXD of the host microcontroller).
- **RXD:** Receive Data pin (connects to TXD of the host microcontroller).
- **STATE/LED:** Status indicator pin, often connected to an LED to show connection status.
- **EN/KEY:** Enable or Key pin, used for entering AT command mode or enabling/disabling the module.

Always consult the specific datasheet for your DX-BT18 module to ensure correct pin identification and connection, as incorrect wiring can damage the module or host device.

5. Setup and Installation

5.1. Hardware Connection

1. **Power Supply:** Connect the VCC pin of the DX-BT18 module to a stable 3.3V or 5V power source. Connect the GND pin to the system ground. Ensure the power supply can provide sufficient current.
2. **Serial Communication:** Connect the TXD pin of the DX-BT18 to the RXD pin of your host microcontroller (e.g., Arduino, ESP32). Connect the RXD pin of the DX-BT18 to the TXD pin of your host microcontroller.
3. **Logic Level Compatibility:** If your host microcontroller operates at 3.3V and the module is powered at 5V, or vice-versa, use a logic level converter to prevent damage.
4. **STATE/LED Pin:** Optionally connect an LED (with a current-limiting resistor) to the STATE pin to visually monitor the module's connection status.
5. **EN/KEY Pin:** This pin is typically used to enter AT command mode. Refer to the datasheet for the specific procedure (e.g., holding high during power-up).

5.2. Initial Power-Up

After connecting the hardware, apply power to the module. The status LED (if connected or integrated) should blink, indicating that the module is powered on and awaiting connection. If the LED remains off or solid, recheck your wiring and power supply.

6. Operating Modes

The DX-BT18 supports two primary operating modes:

- **SPP (Serial Port Profile) Mode:** This is the classic Bluetooth mode, often used for transparent serial data communication. It allows the module to act as a master or slave, connecting to other SPP-enabled devices (e.g., computers, smartphones with SPP apps, other Bluetooth modules).
- **BLE (Bluetooth Low Energy) Mode:** This mode is designed for low-power applications and is commonly used for connecting to modern smartphones and other BLE-enabled devices. It offers efficient data transfer for smaller packets and is ideal for battery-powered devices.

The module can typically be configured to operate in either mode or switch between them using AT commands.

7. Configuration (AT Commands)

The DX-BT18 module can be configured using AT (Attention) commands sent via its serial interface. To enter AT command mode, a specific procedure is usually required, often involving holding the EN/KEY pin high during power-up or sending a specific command sequence. Refer to the module's datasheet for the precise method.

Common AT Commands (Examples):

- **AT:** Tests the connection to the module. Should return 'OK'.
- **AT+NAME=<name>:** Sets the Bluetooth name of the module.
- **AT+BAUD=<baudrate>:** Sets the serial baud rate (e.g., 9600, 115200).
- **AT+ROLE=<role>:** Sets the module's role (e.g., 0 for slave, 1 for master).
- **AT+PIN=<password>:** Sets the pairing password (for SPP mode).
- **AT+VERSION:** Queries the firmware version.

A terminal program (e.g., PuTTY, Arduino Serial Monitor) can be used to send AT commands. Ensure the terminal's baud rate matches the module's current baud rate (default is often 9600 bps).

8. Troubleshooting

- **Module Not Powering On:**
  - Verify VCC and GND connections are correct and stable.
  - Check power supply voltage and current capacity.
- **Cannot Connect/Pair:**
  - Ensure the module is in the correct operating mode (SPP or BLE) for the device you are trying to connect with.
  - Check the pairing password (if applicable for SPP).
  - Verify the module is discoverable (check AT command settings).
  - Ensure the connecting device's Bluetooth is enabled and searching.
- **No Data Transmission/Garbled Data:**
  - Confirm TXD and RXD connections are correctly cross-wired (TX to RX, RX to TX).
  - Verify that the serial baud rates of the module and the host microcontroller match.
  - Check for logic level compatibility issues and use converters if necessary.
  - Ensure the module is successfully paired and connected.
- **AT Commands Not Responding:**
  - Ensure the module is in AT command mode (refer to datasheet).
  - Verify the serial terminal settings (baud rate, no line ending, or correct line ending like 'Both NL & CR').
  - Check TXD/RXD connections.

9. Maintenance

The DX-BT18 module is a robust electronic component designed for long-term use with minimal maintenance. To ensure optimal performance and longevity:

- **Handle with Care:** Avoid physical shock or excessive force.
- **Keep Dry:** Protect the module from moisture and humidity.
- **Cleanliness:** Keep the module free from dust and debris. Use a soft, dry brush or compressed air for cleaning if necessary.
- **Proper Power Supply:** Always use a stable and correctly rated power supply to prevent damage.
- **ESD Protection:** When handling, take precautions against electrostatic discharge (ESD) to protect sensitive components.

10. Warranty and Support

10.1. Warranty Information

AWAVINGCEM products are manufactured to high standards and are backed by a commitment to quality. For specific warranty terms and conditions, please refer to the purchase documentation or contact your retailer. Typically, electronic components are covered against manufacturing defects for a limited period from the date of purchase.

10.2. Customer Support

For technical assistance, troubleshooting, or inquiries regarding the DX-BT18 module, please contact AWAVINGCEM customer support or your authorized distributor. When contacting support, please have your product model (DX-BT18) and a detailed description of your issue ready.

You may also find additional resources, datasheets, and community forums online by searching for 'AWAVINGCEM DX-BT18 support' or 'DX-BT18 datasheet'.