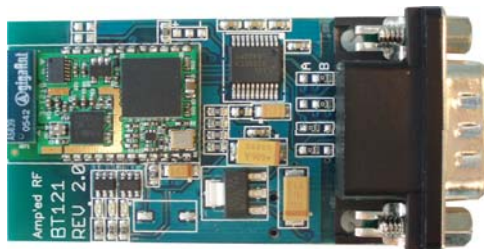# Product Specification

Description

The BT-120/121 is a serial adapter that provides fully embedded, ready to use Bluetooth wireless technology. The reprogrammable flash memory contains embedded firmware for serial cable replacement using the Bluetooth SPP profile. Other popular Bluetooth profiles, such as OBEX, are also available.

Customized firmware for peripheral device interaction, power optimization, security, and other proprietary features may be supported and can be ordered pre-loaded and configured.

Additional Documentation

- **BT-21 Datasheet**
- **abSerial User Guide**
- **abSerial Reference Guide**

Features

- **Bluetooth Radio**
  - Fully embedded Bluetooth v2.0 Serial Profile
  - Class 2 radio
  - Complete RF ready module
  - Wireless data communications
  - Integrated chip antenna
  - 128-bit encryption security
  - Range up to 30m LOS
  - FCC & Bluetooth qualified
- **ST Micro ARM microprocessor up to 50MHz**
- **Memory**
  - 256K bytes flash memory
  - 64K bytes RAM memory
- **Data Rate**
  - 2M bps maximum data rate
  - Multipoint capability
- **Serial Interface**
  - UART, up to 921K baud
- **User Interface**
  - AT command set

Software Architecture

Lower Layer Stack

- Full Bluetooth v2.0 data rate (3M bps maximum)
- Device power modes—active, sleep and deep sleep
- Wake on Bluetooth feature—optimized power consumption of host CPU
- Authentication and encryption
- Encryption key length from 8-bits to 128-bits maximum
- Persistent FLASH memory—for BD Address and radio parameter storage
- All ACL (Asynchronous Connection Less) packet types (DM1, DH1, DM3, DH3, DM5, DH5, 2-DH1, 2-DH3, 2-DH5, 3-DH1 3-DH3, 3-DH5, AUX1)
- SCO (Synchronous Connection Oriented) packet types (HV1, HV2, HV3)
- Point to multipoint and scatternet support—3 master and 7 slave links allowed (10 active links simultaneously)
- Park, sniff, and hold modes—fully supported to maximum allowed intervals
- Master slave switch—supported during connection and post connection
- Dedicated Inquiry Access Code—for improved inquiry scan performance
- Dynamic packet selection—channel quality driven data rate to optimize link performance
- Dynamic power control—interference reduction and link performance
- Bluetooth test modes—per Bluetooth v2.0 specification
- 802.11b co-existence—AWMA and AFH
- Vendor specific HCI commands—to support device configuration and certification test modes

Upper Layer Stack

- SPP, OBEX, SDAP, GAP, and DUN protocols
- RFComm, SDP, and L2CAP supported

HCI Interface

- Bluetooth v2.0 specification compliant
- HCI UART transport layer (H4)
- Firmware upgrade over UART

HCI STACK
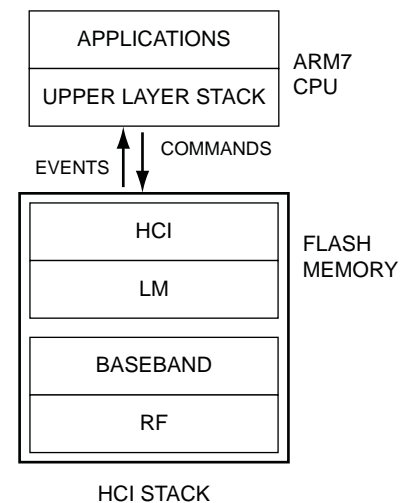
Serial Interface AT Commands

The abSerial Interface supports AT style commands, which can be issued from a host PC or controller to control the BT-121 adaptor. For more information on our AT command set, please refer to the abSerial Reference Guide.

Hardware

Switches

The following are pin assignments for the switches on the back of the BT-120/121 adapters:

1. Flow Control Pin: ON for no flow control, OFF for CTS/RTS flow control.

2. Not Assigned

3. Programming Pin: ON for normal mode, OFF to run Boot Loader.

4. Not Assigned

Power Jack

Our adapters use a power supply, 5-9 VDC, with a 1.3mm jack.
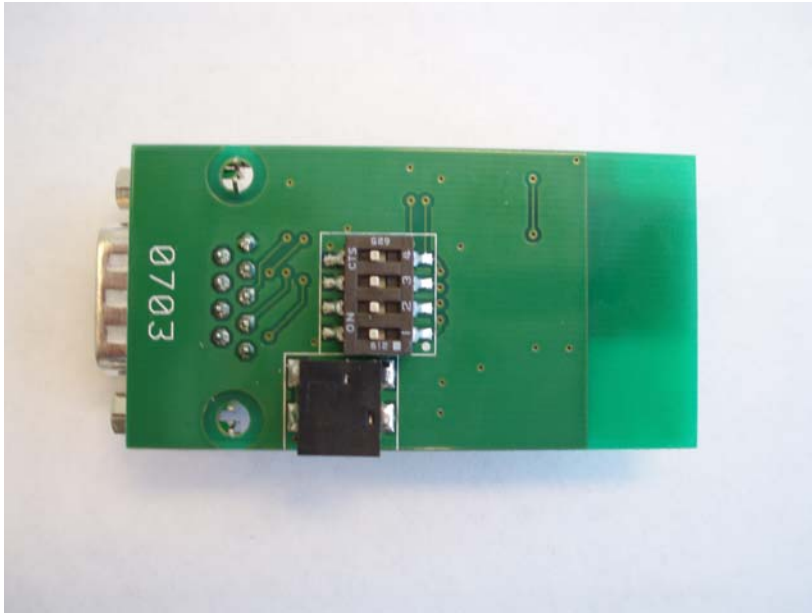
Connector Types

The BT-120 adapter has a female DB9 serial connector. To connect to a PC, it may use a straight DB9 serial cable M/M.

The BT-121 adapter has a male DB9 serial connector. To connect to a PC, it may use a null modem DB9 serial cable F/F.

LEDs

The following are functional assignments for the LEDs on the BT-120/121 adapters:

LED 1, Not Assigned

LED 2, CPU Active

LED 3, RF Link Active

Schematic