



The BTM410 and BTM 411 Bluetooth® modules from Laird Technologies have been designed to meet the needs of developers who wish to add robust, short range Bluetooth data connectivity to their products. They are based on the market leading Cambridge Silicon Radio BC04 chipset, providing exceptionally low power consumption with outstanding range. They support the latest Bluetooth Version 2.1 Specification, providing the important advantage of Secure Simple Pairing, which improves security and enhances the ease of use for end customers.

With a footprint as small as 12.5 x 18.0mm for the BTM410 and best of class, low-power operation, these modules are the ideal choice for applications where designers need both performance and minimum size. For maximum flexibility in systems integration, the modules are designed to support a separate power supply for I/O.

To aid product development and integration, Laird Technologies has integrated a complete Bluetooth protocol stack within the modules, including support for the Bluetooth Serial Port Profile. The modules are fully qualified as Bluetooth End Products, allowing designers to integrate them within their own products with no further Bluetooth Qualification. They can then list and promote their products on the Bluetooth website free of charge.

Future supports includes the Bluetooth Health Device Profile, making this the ideal module for development of Continua compliant medical and wellness devices.

A comprehensive AT command interface is included, which simplifies firmware integration. Combined with a low cost developers kit, this ensures that the choice of Laird Technologies Bluetooth modules guarantees the fastest route to market.

#### FEATURES AND BENEFITS

- Bluetooth v2.1+EDR
- Adaptive frequency hopping to cope with interference from other wireless devices
- Secure Simple Pairing support
- External or internal antenna options
- Comprehensive AT interface for simple programming
- Bluetooth End Product Qualified
- Compact size
- Class 2 output – 4dBm
- Low power operation
- UART interface
- PCM and SCO for external codec
- GPIO lines under AT control (future)
- Wi-Fi co-existence

#### APPLICATION AREAS

- Embedded devices
- Phone accessories
- Security devices
- Medical and telehealth devices
- Aftermarket automotive applications
- Bluetooth advertising
- ePOS

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[www.lairdtech.com/wireless](http://www.lairdtech.com/wireless)

| CATEGORIES                         | FEATURE                 | IMPLEMENTATION  |
|------------------------------------|-------------------------|---|
| <b>Wireless Specification</b>      | Bluetooth®              | Version 2.1+EDR   |
|                                    | Frequency               | 2.402 – 2.480 GHz   |
|                                    | Max Transmit Power      | Class 2<br>+4dBm (at antenna pad – BTM410)<br>+4dBm (from integrated antenna – BTM411)                          |
|                                    | Receive Sensitivity     | Better than -84dBm  |
|                                    | Range                   | Up to 30 meters   |
|                                    | Data Rates              | Up to 2.1Mbps (over the air)  |
|                                    | UART Data Transfer Rate | Greater than 300 Kbps   |
| <b>Host Interface</b>              | UART                    | Supports CTS, RTS, DTR, DSR, DCD and RI   |
| <b>User Interface</b>              | GPIO                    | 8 lines (shared)  |
| <b>Profiles</b>                    |                         | SPP – Serial Port Profile<br>Voice over SCO via a PCM interface<br>HDP - Health Device Profile (future release) |
| <b>Supply Voltage</b>              | Supply                  | 3.0v to +3.3v   |
|                                    | I/O                     | 1.7v to +3.6v (independent of Vcc)  |
| <b>Power Consumption</b>           | Current Consumption     | Less than 40mA during SCO transmission<br>Idle (sleep) < 1mA  |
| <b>Coexistence / Compatibility</b> | 802.11 (Wi-Fi)          | 2 wire and 3 wire schemes supported   |
| <b>Connections</b>                 | External Antenna        | Connection via SMT pad – BTM410   |
|                                    | Internal Antenna        | Multilayer ceramic – BTM411   |
| <b>Protocols</b>                   |                         | AT Command Set  |
| <b>Physical</b>                    | Dimensions              | 12.5mm x 18.0mm x 3.4mm (external antenna – BTM410)   |
|                                    |                         | 12.5mm x 22.0mm x 3.4mm (integrated antenna – BTM411)   |
| <b>Environmental</b>               | Operating Temperature   | -30°C to +85°C  |
|                                    | Storage Temperature     | -40°C to +85°C  |
| <b>Miscellaneous</b>               | Lead free               | Lead-free and RoHS compliant  |
|                                    | Warranty                | 1 Year  |
| <b>Development Tools</b>           | Development Kit         | Development board and software tools  |
| <b>Approvals</b>                   | Bluetooth               | End Product Approved  |
|                                    | FCC/IC & CE             | BTM410 - Limited Modular Approval<br>BTM411 - Full Modular Approval   |

### ORDERING INFORMATION

|             |  |
|-------------|--|
| BTM410      | Bluetooth AT Data Module (external antenna)        |
| BTM411      | Bluetooth AT Data Module (with integrated antenna) |
| DVK- BTM410 | Development Kit (external antenna)                 |
| DVK- BTM411 | Development Kit (with integrated antenna)          |

The details contained within the document are subject to change. Download the product specification from [www.lairdtech.com/wireless](http://www.lairdtech.com/wireless) for the most current specification.

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