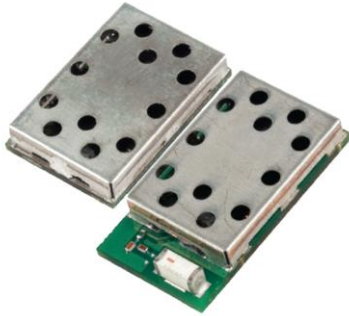




Bluetooth® Audio Modules BTM510/511 – Firmware Release v22.2.5.0



The BTM510 and BTM511 low-power Bluetooth® modules from Laird are designed for adding robust audio and voice capabilities. Based on the market-leading Cambridge Silicon Radio BC05 chipset, these modules provide exceptionally low power consumption with outstanding range. Supporting the latest Bluetooth Version v3.0 specification, these modules provide the important advantage of Simple Secure Pairing that improves security and enhances easy use. BTM510 and BTM511 modules come standard with the apt-X™ audio codec for wireline-quality stereo audio.

The modules' compact size makes them ideal for battery-powered headset form factor audio and voice devices. With a 16-bit stereo codec and microphone inputs to support stereo and mono applications, the modules contain a fully integrated Bluetooth-qualified stack along with SPP, HFP 1.6, HSP, AVRCP v1.5, and A2DP profiles.

The BTM510/511 modules include an embedded 32-bit, 64-MIPS DSP core within the BC05. This allows designers to make use of features such as echo cancellation and noise reduction using CSR Clear Voice Capture (CVC) as well as A2DP audio enhancements using CSR Music Manager.

BTM510 and BTM511 modules are provided with CSR's apt-X codec without additional license fees. CSR's world renowned apt-X™ audio compression solutions retain the full integrity of original digital audio and are optimized for instant real-time audio streaming (<http://www.csr.com/products/technology/aptx>).

To speed product development and integration, Laird has developed a comprehensive AT command interface that simplifies application development, including support for audio and headset functionality. Combined with a low-cost development kit, Laird's Bluetooth modules provide faster time to market.

Features and Benefits

- Fully featured Bluetooth multimedia chipset
- Bluetooth v3.0
- Supports mono / stereo headset applications
- apt-X Audio Codec provided free of charge
- Adaptive frequency hopping to cope with interference from other wireless devices
- 32-bit Kalimba DSP for enhanced audio applications
- Support for secure simple pairing
- External or internal antenna options
- HSP and A2DP audio profiles
- HFP v1.6 Wideband Speech and AVRCPv1.5
- 16-bit stereo codec and microphone input
- AptX, AAC and SBC codecs supported
- CVC 7th gen. audio enhancement supported
- EIR fully supported
- Integrated audio amplifiers for driving stereo speaker
- Comprehensive AT interface for simple programming
- Bluetooth End Product qualified
- Compact size
- Class 2 output – 4 dBm
- Low power operation
- WLAN co-existence hardware support

Application Areas

- High-quality stereo headsets
- Mono voice headsets
- Hands-free devices
- Wireless audio cable replacement
- MP3 and music players
- Phone accessories
- VoIP products
- Cordless headsets
- Aftermarket automotive applications

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Bluetooth® Audio Modules

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| CATEGORIES | FEATURE | IMPLEMENTATION |
|------------------------|-------------------------|--|
| Wireless Specification | Bluetooth® | Version 3.0 |
| | Frequency | 2.402 – 2.480 GHz |
| | Max Transmit Power | Class 2 - 4 dBm (at antenna pad – BTM510) 4 dBmi (from integrated antenna – BTM511) |
| | Receive Sensitivity | Better than -86 dBm |
| | Range | Up to 30 meters |
| | Data Rates | Up to 3 Mbps (over the air) |
| | UART Data Transfer Rate | Greater than 300 Kbps |
| Host Interface | UART | Supports DTR, DSR, DCD and RI, multiplexed with other functionality |
| Audio Interfaces | Codec | Internal 16-bit Stereo Codec Integrated Amplifiers for driving stereo speaker |
| | I2S / PCM | Master / slave roles |
| | Microphone | Stereo microphone input |
| DSP | Integrated Kalimba DSP | 32-bit, 64 MIPS |
| Additional I/O | 4 x GPIO | Function Mapping e.g. button control |
| Profiles | | SPP (Serial Port Profile), HSP, HFP v1.6 (Audio Gateway and Handset), A2DP (Source and Sink), AVRCP v1.5 (Target and Controller) |
| Supply Voltage | Supply | 3.0 V to +3.6 V DC |
| | I/O | 1.7 V to +3.6 V DC |
| Power Consumption | Current Consumption | Operational - Less than 70 mA (including speaker amplifiers) |
| | | Idle (sleep) < 1.0 mA Configurable Sniff mode and Sniff sub rating |
| Coexistence | 802.11 (WLAN) | 2 wire and 3 wire schemes supported |
| Connections | External Antenna | Connection via SMT pad – BTM510 |
| | Internal Antenna | Multilayer ceramic – BTM511 |
| Programming API | | AT Command Set (extended for audio and headset functions) |
| Physical | Dimensions | 14 mm x 20 mm x 3.4 mm (SMT connector – BTM510) |
| | | 14 mm x 25 mm x 3.4 mm (integrated antenna – BTM511) |
| Environmental | Operating Temperature | -40° C to +85° C |
| | Storage Temperature | -40° C to +85° C |
| Miscellaneous | Lead Free | Lead-free and RoHS compliant |
| | Warranty | 1-Year Warranty |
| Developmental Tools | Development Kit | Development board and software tools |
| | Bluetooth | End Product Approved |
| Approvals | FCC/IC/CE & MIC | BTM510 - Limited Modular Approval |
| | | BTM511 - Full Modular Approval |

Ordering Information

| | |
|------------|---|
| BTM510-09 | Bluetooth Multimedia Module (external antenna) |
| BTM511-09 | Bluetooth Multimedia Module (with internal antenna) |
| DVK-BTM510 | Development Kit (external antenna) |
| DVK-BTM511 | Development Kit (with internal antenna) |

The details contained within the document are subject to change. Download the product specification from www.lairdtech.com/wireless for the most current specification.

CONN-DS-BTM510/511 FW v22.2.5.0

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Revision History

| Ver | Date | Changes | Approved By |
|-----|-------------|---------|-------------|
| 1.0 | 16 Jun 2013 | Initial | J. Kaye |



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Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
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- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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