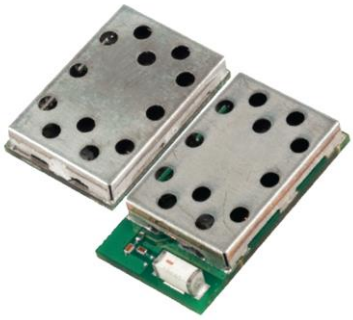
Bluetooth® Audio Modules

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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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
Approvals	Bluetooth	End Product Approved
	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.

Revision History

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

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Laird Connectivity:

BTM510 BTM511 DVK-BTM510 DVK-BTM511