

BLUE DEMO AUDIO

Features

- KC-5290 Class 2 Bluetooth Audio Module
- Schematics, parts list, and layout files included
- Bluetooth v2.1+EDR compliant
- Class 2 radio, range typically exceeds 20m
- Analog stereo input and output
- 3.5mm jack and differential audio
- 16-bit ADC/DAC stereo CODEC
- 16 Mbit flash memory
- USB and SPI interfaces
- 4 user buttons
- Li-Ion battery onboard
- Red and blue indicator leds



Bluetooth Audio Profiles

Note: profiles are not all available in the same editions

- A2DP - Advanced Audio Distribution Profile
Full range stereo streaming with SBC compression. Both source and sink available.
- AVRCP - Audio Video Remote Control Profile
Standard remote playback controls.
- HSP/HFP – Headset/Handsfree Profile
Cell phone headset connectivity.
- AG - Audio Gateway
Cell phone audio profile connects to standard mono headsets with HSP/HFP.

Custom Audio Profiles

- Stereo + Intercom
Low latency, 3 channel audio with full stereo streaming with live voice back channel.
- Live Stereo
Low latency, high quality stereo for real time applications – TV, Video Games, Interactive
- Live Microphone/Guitar/Instrument
A low latency, high quality mono channel perfect for live musical performance.
- Intercom
Optimized for high quality wireless telephone or intercom service.
- Push-To-Talk
Push to talk features available

Description

Use our Blue Demo Board as a fast introduction to wireless audio capabilities and performance of our kcAudio hardware and firmware systems. The Blue Demo board can be easily reprogrammed with different firmware, useful for trying various editions, or for use while developing some customizations. Also, the Blue Demo Board is useful as a performance benchmark for customer prototypes and products. For long range applications, we recommend our BD-5190 Class 1 Bluetooth Audio Demo Board.

Blue Demo Kit Includes



- BD-5290 Class 2 Audio Demo Board
- Li-Ion Rechargeable Battery
- USB Cable, Mini-B
- 3.5mm Cable, Audio M/M
- RJ-45 Programming Cable, M/M
- DB-25 SPI Programming Adapter, M/F

Quick Start

Turn on battery with Dip Switch #3. Press and Hold BTB (Button #1) for 3 seconds. BlueDemo will power up. Press and Hold BTB for 5 seconds to power off. See kcAudio User Guide for additional operating instructions.

Firmware

The firmware comes in three editions: kcAudioAdapter, kcAudioGateway, kcAudioHeadset. Blue Demo boards can be reprogrammed with any of these firmware editions.

kcAudioAdapter

The kcAudioAdapter firmware streams high quality stereo audio to a headset. It is fully compatible as a Bluetooth A2DP "Source" device, and also supports AVRCP profile. The kcAudioAdapter will transmit the analog audio from the LIN and RIN input pins, or optionally, from the digital audio from the USB or PCM interfaces. The stereo signal is then compressed, segmented into Bluetooth packets, and transmitted wirelessly to the kcAudioHeadset.

kcAudioGateway

The kcAudioGateway firmware provides two-way voice communications to a standard Bluetooth cell phone headset. It is fully compatible as a Bluetooth AGHFP device. The kcAudioGateway will transmit the analog mono audio from the LIN input pins, or optionally, as digital audio from the USB or PCM interfaces. The input signal is then compressed, segmented into Bluetooth packets, and transmitted wirelessly to a Bluetooth headset. Also, the microphone signal from the headset is received, and available through the LOUT output pins, or optionally as digital audio to USB or PCM.

kcAudioHeadset

The kcAudioHeadset firmware will receive the wireless stereo signal, decompress, and convert to analog audio available on the LOUT and ROUT output pins. Optionally, the output can be directed to the USB or PCM interfaces. It is fully compatible as a Bluetooth A2DP "Sink" device, and simultaneously as a Bluetooth HSP cell phone "Mono Headset" device supporting HFP profile.

kcAudio profile

Additionally, we have a custom, patent pending, profile we call KCAUDIO enabled by default. This profile is in addition to the standard Bluetooth profiles, and is included in both kcAudioAdapter and kcAudioHeadset firmware versions. Our patent pending KCAUDIO profile is a real time Stereo + Intercom communication system. There are two major features in the KCAUDIO profile that do not exist in standard Bluetooth A2DP.

Bluetooth V2.1+EDR does not have enough bandwidth for uncompressed stereo signals. The audio stream is compressed with either the Bluetooth default SBC (sub-band coding) codec, or our low latency audio codec when using our KCAUDIO profile. We designed KCAUDIO for real-time applications like gaming and television. KCAUDIO is about three times faster than SBC, and the entire system provides audio with around 45ms wireless delay, which is under the perception time for lip sync problems.

Second, we added a live intercom back channel. The kcAudioHeadset when connected using the KCAUDIO profile, will send the wireless microphone signal back to the kcAudioAdapter. Thus, a mono audio signal connected to the kcAudioHeadset LIN pin will be available on both LOUT and ROUT (dual mono) pins on the kcAudioAdapter.

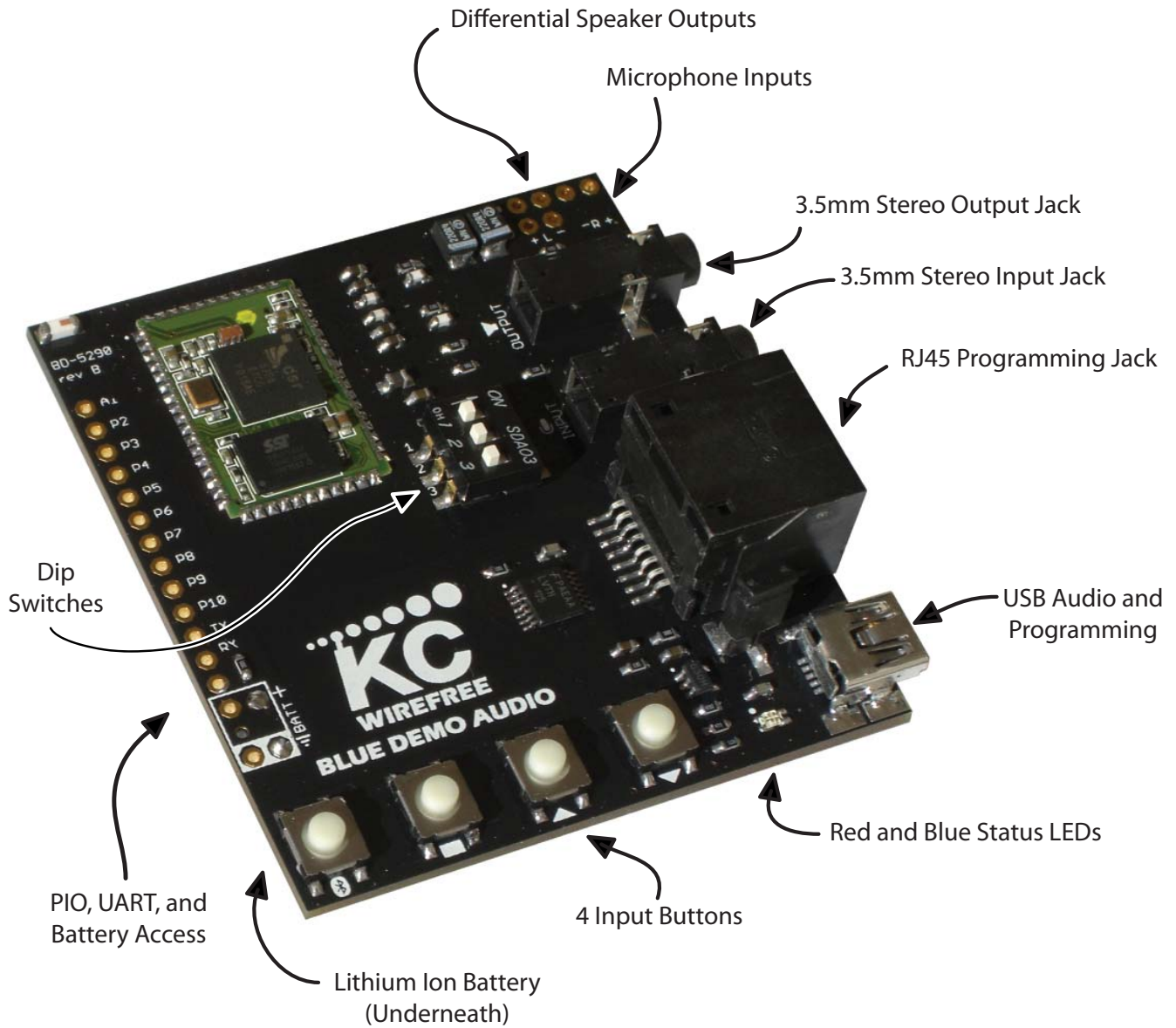
KCAUDIO Stereo + Intercom profile is selected by default when connected to another KCAUDIO enabled device.

Hardware

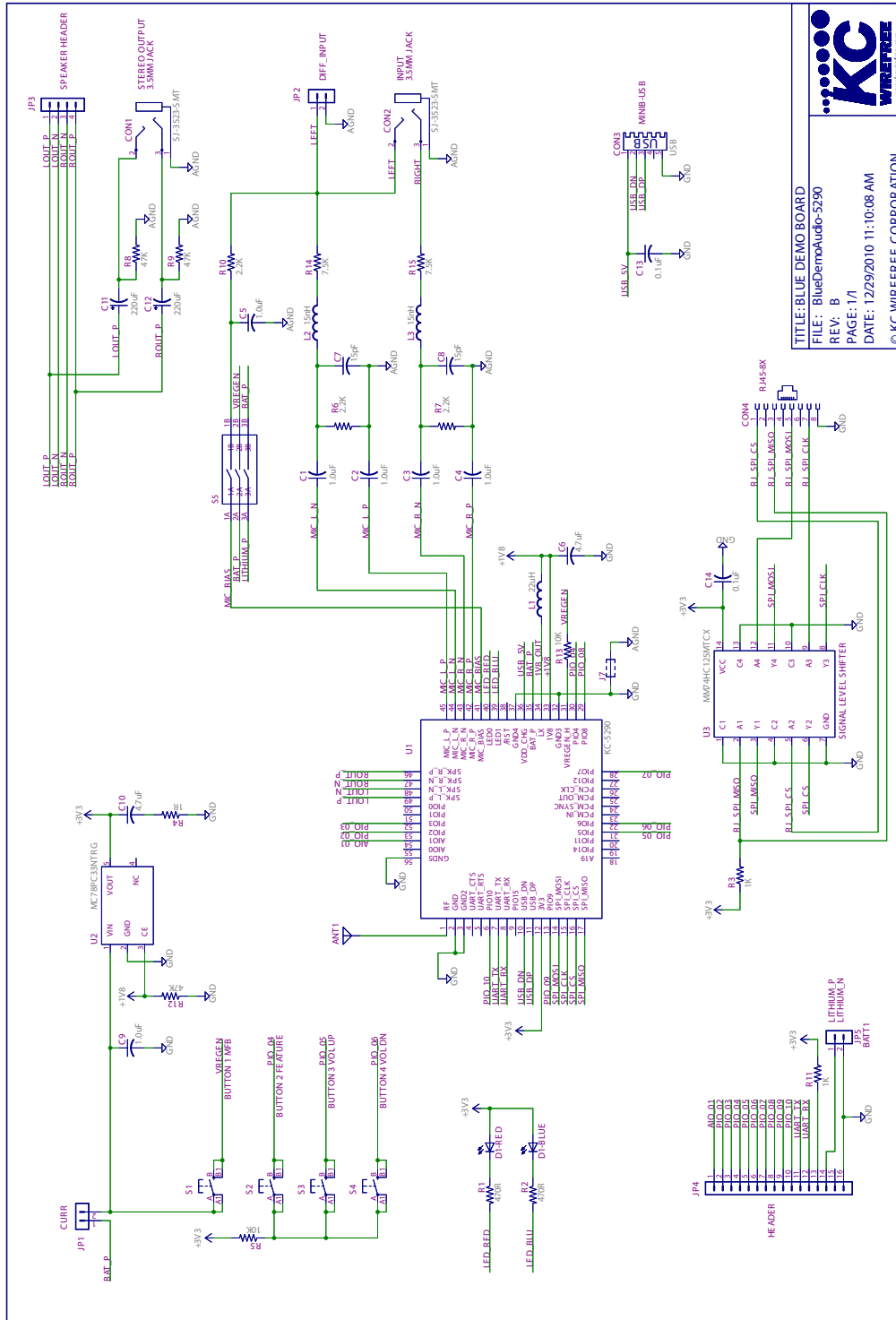
Button	Name	Connect
1	BT	VREGEN
2	AUX	PIO 4
3	VOLUP	PIO 5
4	VOLDN	PIO 6

Dip Switch	Off	On
1	Mic Bias Disconnect	Mic Bias Connect to Inputs
2	VREGEN Disconnect	VREGEN Connect
3	Battery Disconnect	Battery Connect

Blue Demo Board Highlights



Blue Demo Schematic



KC
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www.kcwirefree.com

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FILE: BlueDemoAudio-5290
REV: B
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Ordering Information

Product Series	BD-5290
Product Version	Rev B
Country of Manufacture	USA
Order Part Number	Description
BD-5290-AA	Class 2 Blue Demo Board w/ kcAudioAdapter firmware
BD-5290-AG	Class 2 Blue Demo Board w/ kcAudioGateway firmware
BD-5290-HS	Class 2 Blue Demo Board w/ kcAudioHeadset firmware

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