
CardioChip Starter Kit Module Spec Sheet (Preliminary)

December 28, 2012

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Technical Specifications

General

Classification	Specification	Notes
Model Name	CardioChip™ Starter Kit	
Revision Number	1.3	
Overall Dimension (Max)	27.9mm x 15.2mm x 2.5mm	
Operating Voltage	3.3V +- 10% @ P2,P3	P2,P3 do not need regulated inputs.
Max Input Voltage Noise	10mV Peak to Peak	
Max Power Consumption	0.90mA @ 3.3V	
SEP/SEN Input Range	Up to 5mV Peak to Peak	
ESD Protection	4kV Contact Discharge 8kV Air Discharge	Tested at SEN & SEP
Output Interface Standard	UART(Serial)	P3
Output Baud Rate	57600	
#ECG Channels	1	2 sensors (SEN,SEP)

I/O Pins

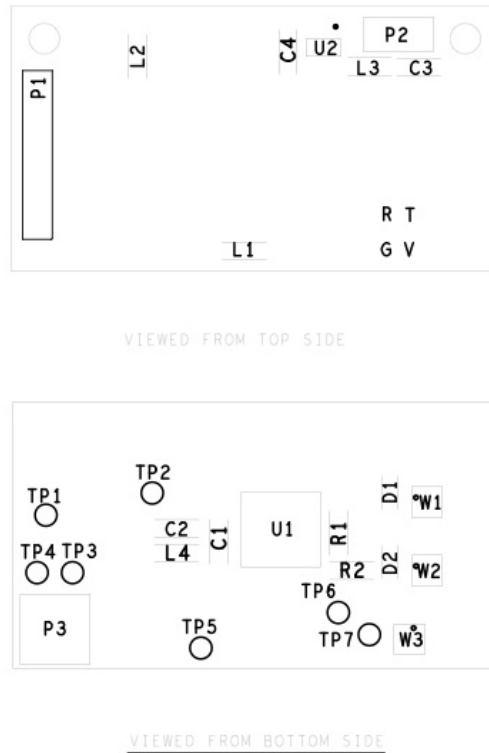


Figure 1.1: Assembly Top and Bottom for BMD101 Starter Kit Module Ver 1.3

Sensor Connections (Micro-Coaxial Receptacles)

W1: ECG Sensor "SEP"

W2: Reference Sensor "SEN"

W3: Ground Sensor (Not Populated) "GND"

Sensor Connections (Thru-Hole)

P1: Please see board for sensor/shield locations.

Header P2 (Battery Input)

Pin1: VCC "+"

Pin2: GND "-"

Header P3 (U1 Power/Serial)

Pin1: RXD "R"

Pin2: TXD "T"

Pin3: GND "G"

Pin4: VCC "V"

Note: Labels in quotation marks indicated on PCB for convenience.

Description

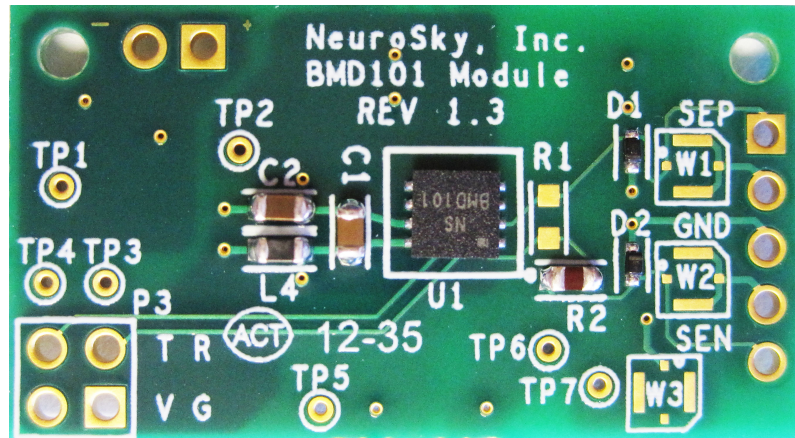


Figure 2.1: BMD101 Module REV 1.3

Overview

The CardioChip Starter Kit module has been designed to use NeuroSky's BMD101, which is equipped with an analog front end (AFE) specifically optimized for bio-signals such as ECG. After the AFE filters out the noise, the high precision ADC digitizes the signal into a 16 bit signed integer. The embedded DSP takes this digitized signal and interprets the signal to produce information such as ECG raw wave and heart rate.

Sensor Inputs

SEP and SEN are located at W1 and W2, respectively. W1 and W2 are micro-coaxial receptacles, which will require a micro-coaxial connector (P/N: Murata MXJA01XX0400D1) to properly connect sensors to this Starter Kit Board.

Outputs

There are two outputs that can be obtained from the module. Both outputs use Standard UART Serial Protocol, which uses the following setting:

Baud Rate: 57,600
Data Bits: 8
Parity: None
Start Bits: 1

Stop Bits: 1

Hardware Flow Control: None

P3 is the main output header, where Rx/Tx information is obtained.

Wireless communication such as Bluetooth is recommended for data transmission. If wired connection is desired, please make sure to take necessary precautions, such as optocouplers on the data line and additional filter caps on the power line to prevent noise in the analog front end.

Power Supply

There are two ways of powering BMD101. If power is supplied through P3, the power will be sent directly to the chips. When powering the module through this path, please be sure to have a clean and regulated 3.3V. Noisy power supply will significantly affect the signal.

Another way to power the module is to use the P2. This header is recommended for supplying the power directly to the module using a battery. This connection accommodates single/double AAA batteries, coin cells, and lithium batteries.