RELAY ATTENUATOR

Relay Attenuator shield has been designed for Audio attenuation after Piano DAC output by 1dB step size, Its Compact and simple circuit, Just 6 tiny relays implement a 64-step logarithmic stereo attenuation.The 64 steps of 1.0dB together span a 63dB audio attenuation range. By avoiding any active electronics, a very clean and open sound is maintained.

Features:

- Constant Input resistor:**10K**
- Load resistance: **60K**
- Resistance standard:**E192**
- Step Size :**1dB**
- No.of relays:**6**
- No.of Steps:**64dB**

Input audio connectivity: Stereo inputs through on-board RCA Connectors.

Left Out→white RCA connector.

Right Out→Red RCA connector.

Output audio connectivity: Stereo outputs through on-board RCA Connectors.

Left Input→white RCA connector.

Right Input→Red RCA connector.

PCB Dimension: 85X67.8X22.2mm (W*L*H)

Weight: 42gm.

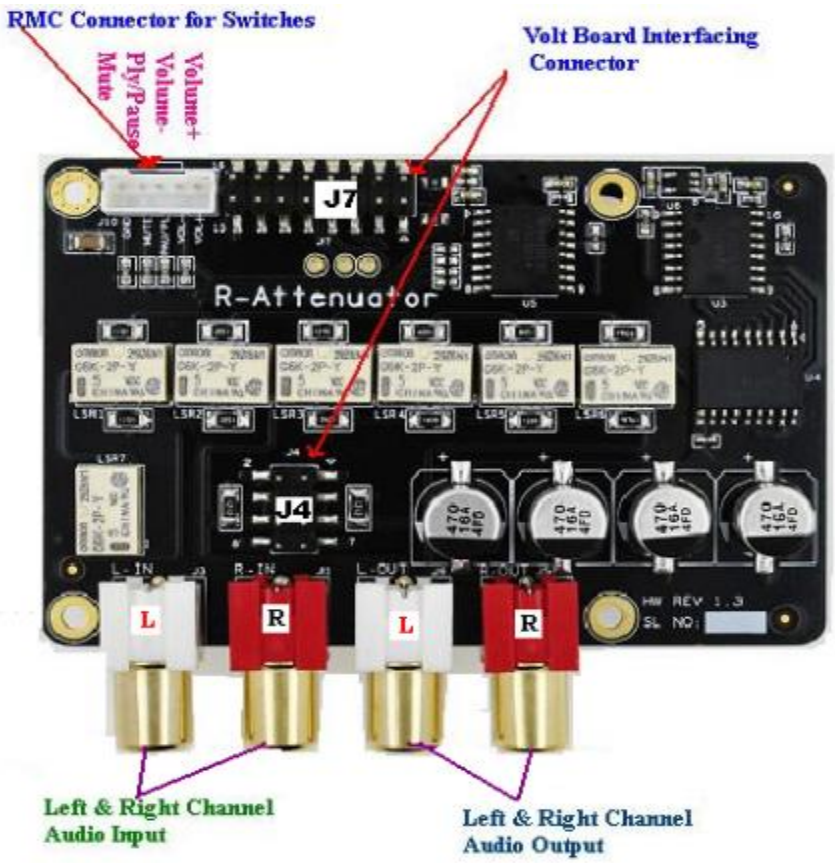
Operating Temperature: 0^{o} C to 70^{o}C

Relay Attenuator is an add-on stereo sound attenuation card for Sparky / RPI- 2 & 3 version SBCs.

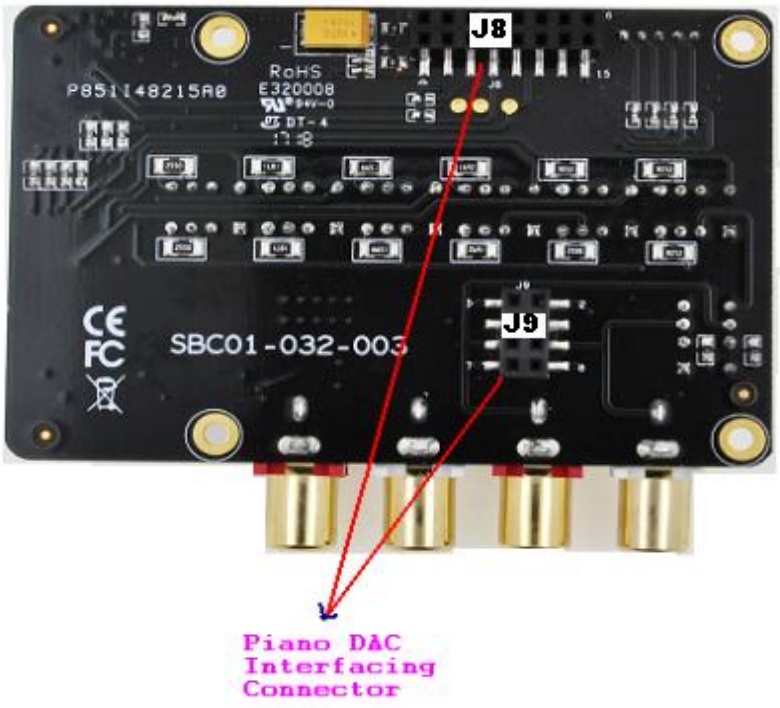
The Relay Attenuator takes the analog audio Input signal from the **PIANO Hi-Fi DAC** through on-board board to board connector or RCA Connector and delivers variable analog audio output to the Piano RCA connectors and Board to Board Connector (to VOLT).

RPI/Sparky sends control signals through I2C interface and I2C EXPANDER (PCF8574) Provides GPIO,s to control Relay Driver(ULN2803), Relay Driver drives 6-stage Relays to achieve 0-63dB (64 steps) logarithmic attenuation.

Relay Attenuator TOP View



Relay Attenuator BOTTOM View



RELAY ATTENUATOR BOARD TO BOARD CONNECTOR PIN OUT DETAILS

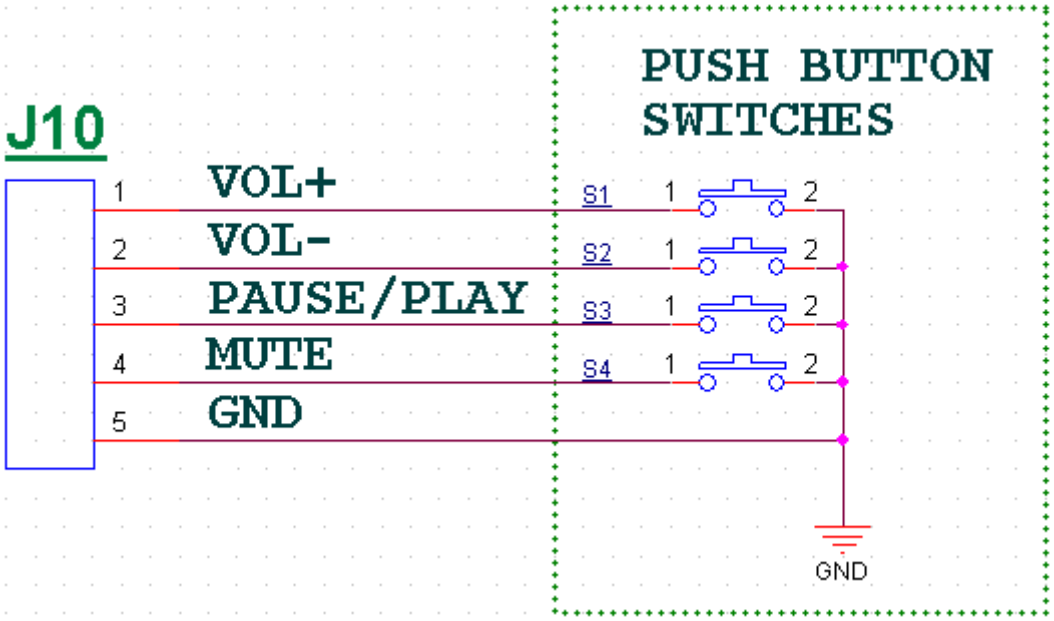
RELAY ATTENUATOR J8 PIN OUT DETAILS					
PIANO DAC	RELAY ATTENUATOR	PIN		RELAY ATTENUATOR	PIANO DAC
5V	5V	1	2	5V	5V
NC	NC	3	4	NC	NC
TWI2_SDA	SDA	5	6	NC	GPIOB14
TWI2_SCK	SCK	7	8	GPIOB15	GPIOB15
NC	NC	9	10	NC	GPIOB16
NC	NC	11	12	NC	GPIOB30
SDZ_AMP	NC	13	14	NC	MUTE_AMP
GND	GND	15	16	GND	GND

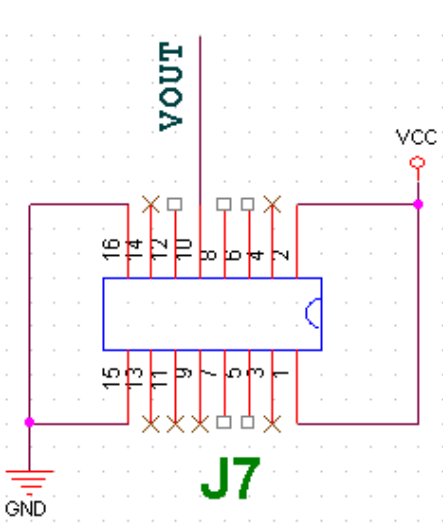
RELAY ATTENUATOR J9 PIN OUT DETAILS					
PIANO DAC	RELAY ATTENUATOR	PIN		RELAY ATTENUATOR	PIANO DAC
5V	5V	1	2	5V	5V
AUDIO RIGHT	AUDIO RIGHT	3	4	AUDIO LEFT	AUDIO LEFT
AUDIO RIGHT	AUDIO RIGHT	5	6	AUDIO LEFT	AUDIO LEFT
GND	GND	15	16	GND	GND

RELAY ATTENUATOR J7 PIN OUT DETAILS					
VOLT	RELAY ATTENUATOR	PIN		RELAY ATTENUATOR	VOLT
5V	5V	2	1	5V	5V
NC	NC	4	3	NC	NC
GPIOB14	NC	6	5	SDA	TWI2_SDA
GPIOB15	GPIOB15	8	7	SCK	TWI2_SCK
GPIOB16	NC	10	9	NC	NC
GPIOB30	NC	12	11	NC	NC
MUTE_AMP	NC	14	13	NC	SDZ_AMP
GND	GND	16	15	GND	GND

RELAY ATTENUATOR J4 PIN OUT DETAILS					
VOLT	RELAY ATTENUATOR	PIN		RELAY ATTENUATOR	VOLT
5V	5V	2	1	5V	5V
AUDIO LEFT	AUDIO LEFT	4	3	AUDIO RIGHT	AUDIO RIGHT
AUDIO LEFT	AUDIO LEFT	6	5	AUDIO RIGHT	AUDIO RIGHT
GND	GND	16	15	GND	GND

PUSH BUTTON SWITCES AND IR SENSOR WIRING DIAGRAM.

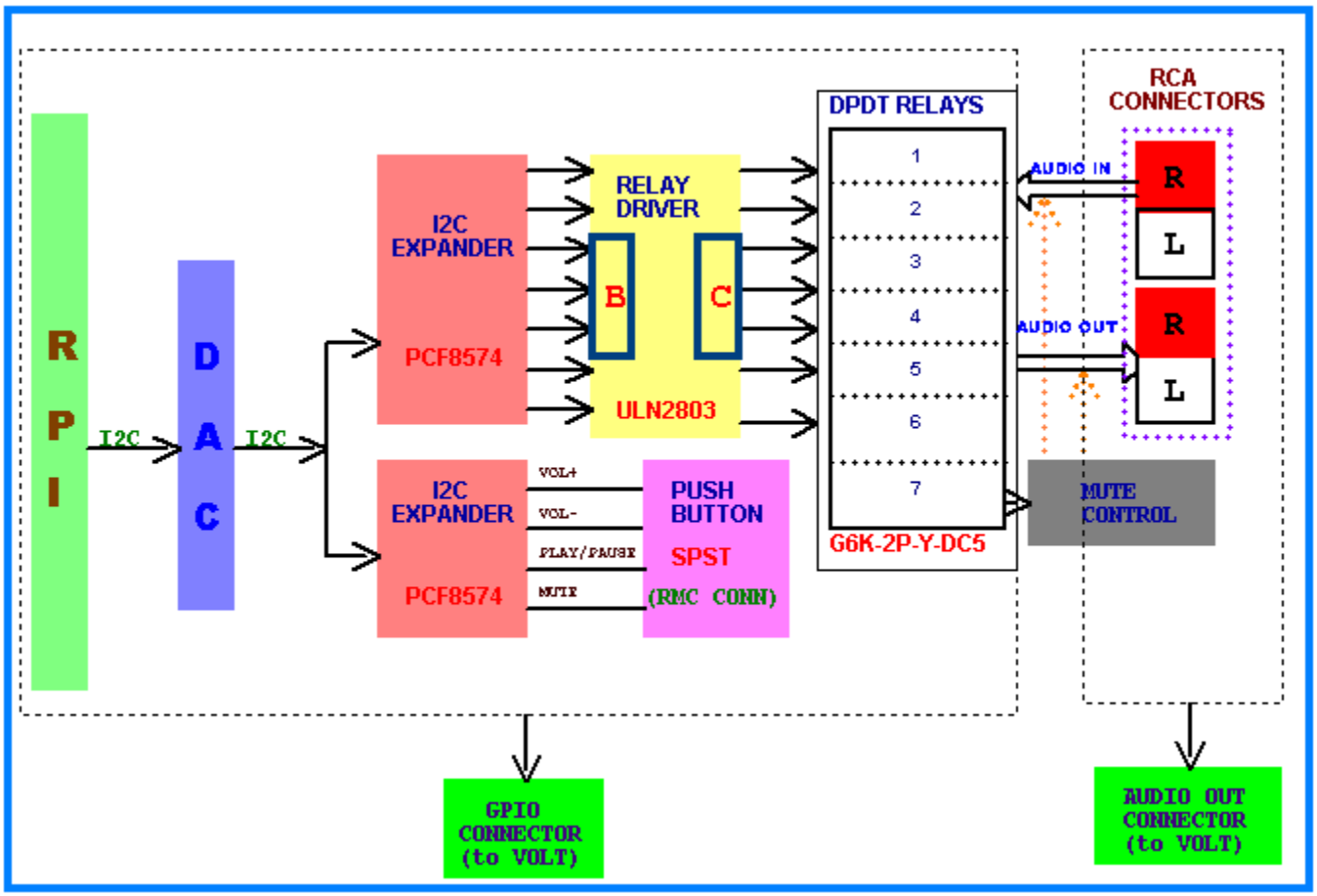




** vcc→+5V

IR SENSOR

RELAY ATTENUATOR BLOCK DIAGRAM



Power (5V): No need to connect extra power source to Relay Attenuator, 5V power will source from SBC through DAC compatible header.

Power (3.3V): 3.3V power Generated with on-board 5V to 3.3V LDO.