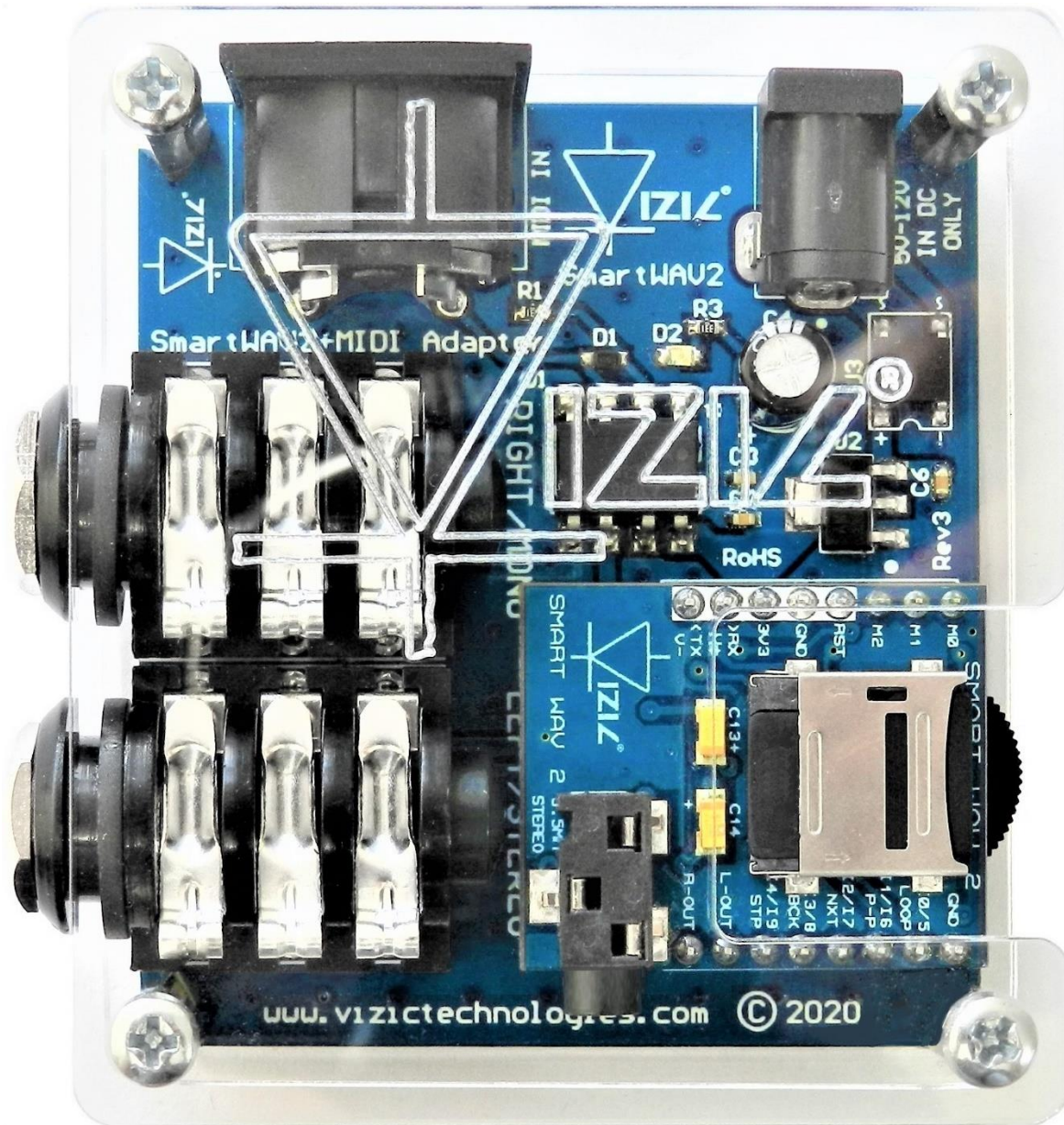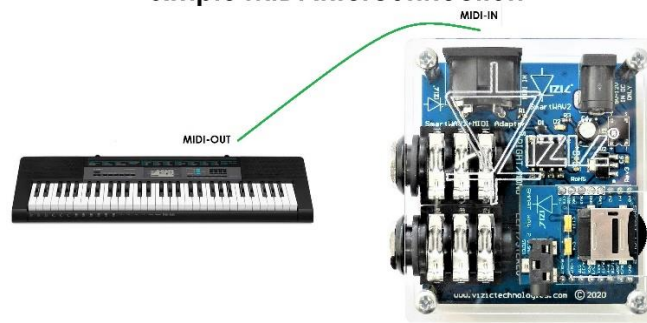# VIZIC
TECHNOLOGIES

SMARTWAV 2 + MIDI ADAPTER

Datasheet----Rev 2.0 – Hardware Rev 3.0

SmartWAV 2 + MIDI Adapter
Professional MIDI Audio System

Simple MIDI interconnection
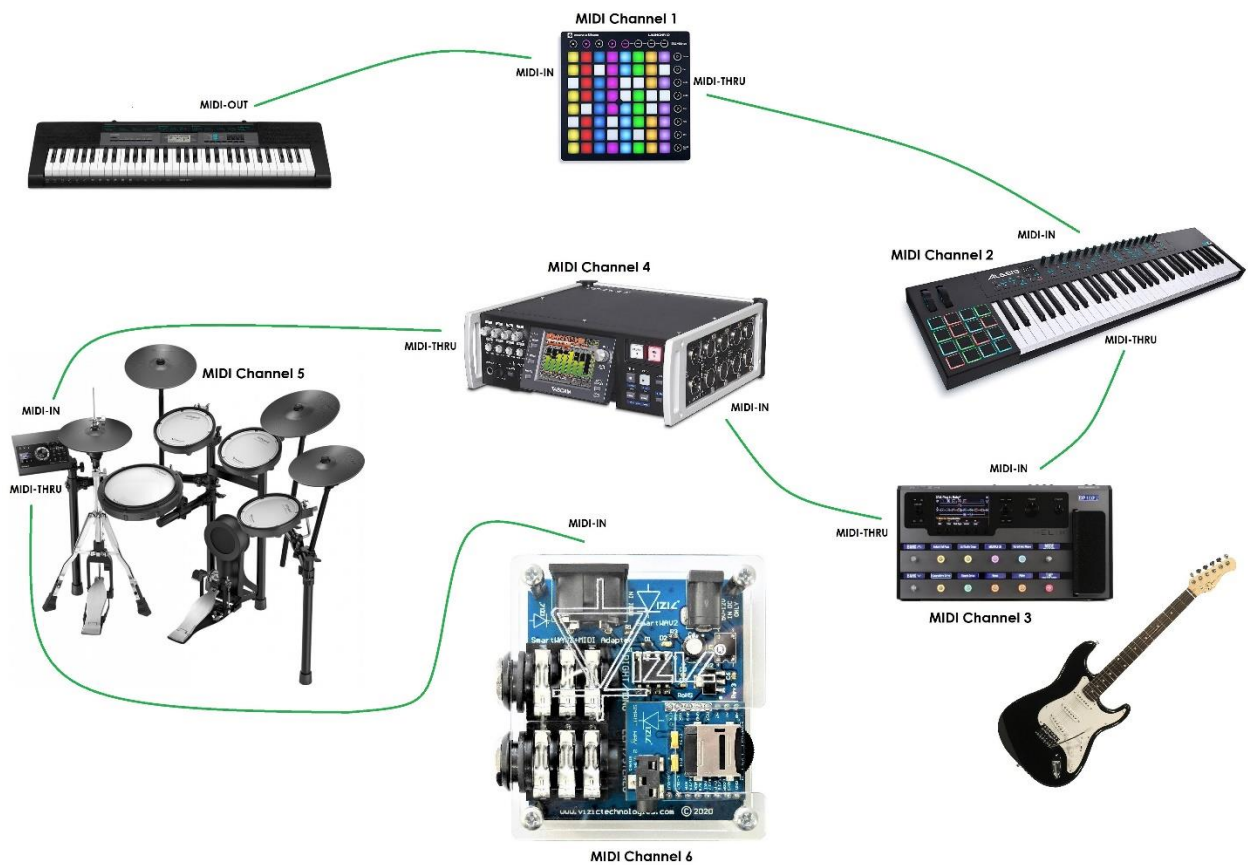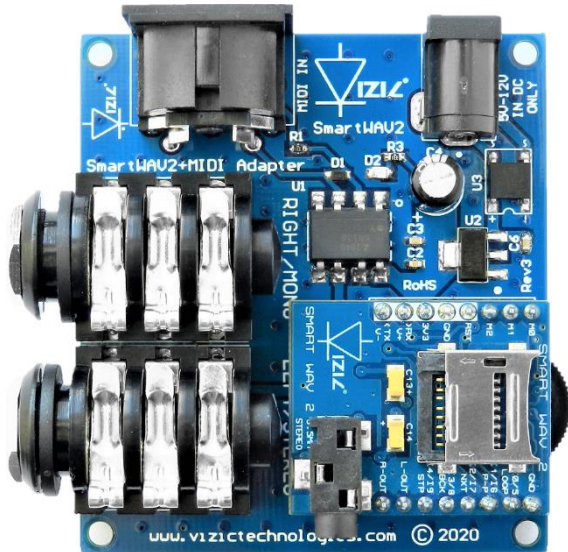

Multiple MIDI Interconnection

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1- SmartWAV 2 + MIDI Adapter

1.1- Introduction:

The SmartWAV 2 is an Intellectual Property smart high-end audio processor, when mounted on the MIDI Adapter board, it is called the SmartWAV2 + MIDI Adapter and the processor always operates in "MIDI Mode".

The system is therefore a professional MIDI receiver, with high-quality audio track/sample triggering via MIDI commands.

The processor supports **8/16bit**, **8Khz-48Khz, mono/stereo, ".WAV"** files.

The main goal of the SmartWAV 2 + MIDI Adapter it's to bring the easiest way to evaluate the MIDI mode of the bare SmartWAV 2 processor board and provide simple inputs and outputs as any other commercial musical product, this way any user without the experience in wiring electronics can operate the system.

This document covers hardware, specifications and connection related data, for MIDI commands detailed information and working operation MIDI mode, please refer to **SmartWAV2-MIDI.pdf** document.

1.2- **Features:**

- Pre-amplified line-level dual channel stereo out with 8/16bit, stereo/mono, and up to 48khz sampling rate, CD quality.

- Up to 14 channel polyphonic playback / automatic mixing.

- External potentiometer volume control.

- On board 5-pin universal MIDI in connector

- MIDI mode compliant with channel selection (default Omni).

- On board ¼" output plugs for single mono, single stereo or dual stereo connections.

- On-board microSD/microSDHC memory card socket with FAT/FAT32 support up to 32GB for storing thousands of tracks/audio **WAV** files. No need of special/rare file formatting.

- DC jack in: 5V to 12V (any polarity) power supply compatible.

- Blue power LED.

- 3mm Acrylic case for easy handling and gig-ready.

1.3- **Typical Applications:**

- Embedded polyphonic audio/sound systems.
- Drum MIDI triggers.
- Audio channel mixers.
- Battery powered audio systems.
- MIDI systems.

2- SmartWAV2 + MIDI Adapter Working Mode

The SmartWAV2 processor will always work in MIDI mode when mounted on the MIDI Adapter, the system can be controlled by standard musical instrument digital interface(MIDI) commands. Audio related functions (Refer to document **SmartWAV2-MIDI.pdf**) are controlled by receiving simple midi commands.

To receive midi commands the SmartWAV 2 + MIDI Adapter uses it 5-Pin (midi in) connector, MIDI works on a standard serial protocol (31250bps, 8bit, 1stop, no parity).

The electronics inside the MIDI Adapter are just "pin to jack connector" plus a simple MIDI to serial TTL(0V-3.3V) converter:

MIDI Adapter: Schematics
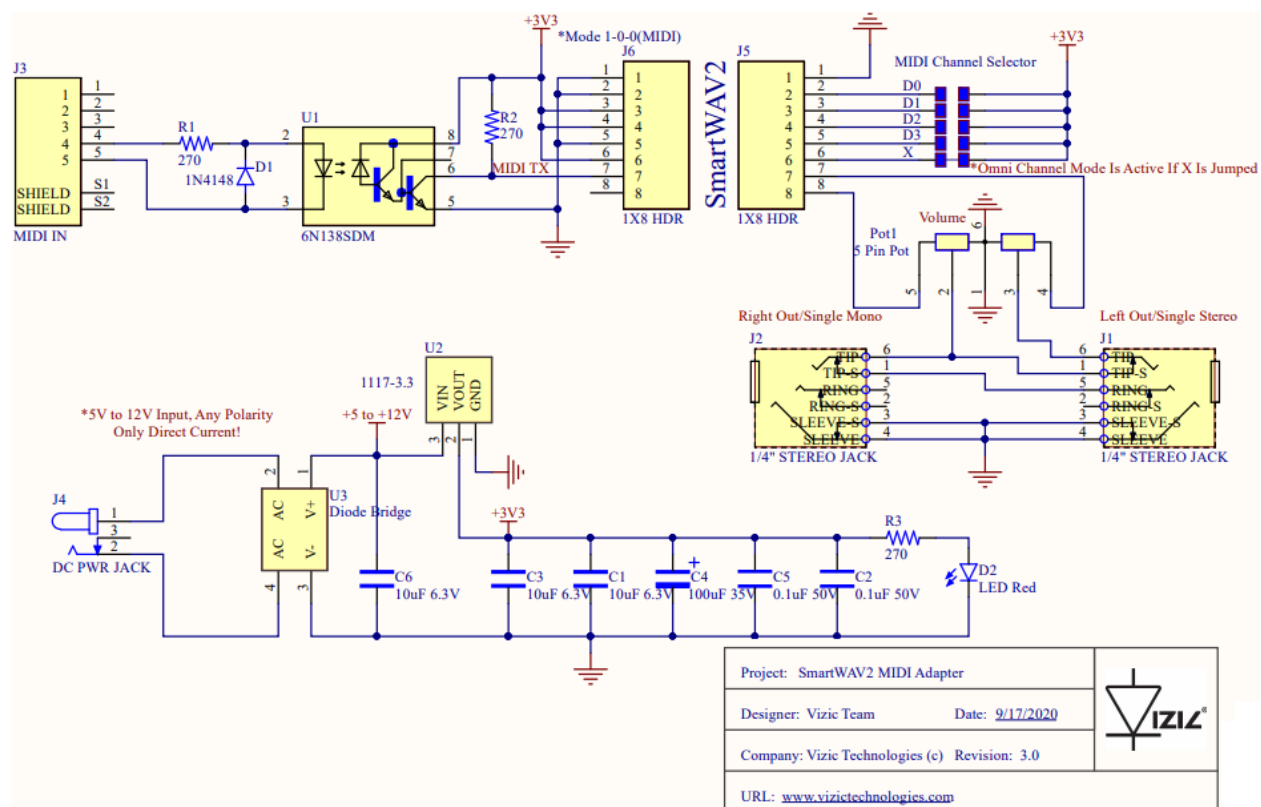
3- SmartWAV2 + MIDI Adapter Hardware Connections

The **SmartWAV2+MIDI Adapter** is a simple board that simplifies all the required connections to operate the SmartWAV2 in MIDI mode. For users that does not have any or basic experience in electronics, the adapter exposes all the required **inputs** (MIDI-IN and DC power jack) and **outputs** (¼" Jacks) at the level of a commercial MIDI musical instrument for plug and play.

3.1- DC Power Supply: The MIDI Adapter receives power from a standard DC barrel jack, any power AC/DC adapter from 5V to 12V with more than 150mA can run the system, however it is strongly recommended that the power supply has built in "noise-reduction" circuitry, this is to avoid unwanted noise from the ¼" audio outputs.

The board accepts any polarity DC input, can be positive center or negative center.

SmartWAV2+MIDI Adapter DC In Jack

*A recommended DC power supply is the D'Addario **PW-CT-9V** AC/DC 9 Volt Adapter, or the BOSS **PSA** 9 Volt Adapter, both are designed so it they can supply power to small pedal boards without inducing noise.*

3.2- MIDI In 5-pin: The system receives MIDI commands from a standard 5 pin DIN MIDI jack, any universal MIDI cable can be used to send commands to the board.

SmartWAV2+MIDI Adapter 5-Pin MIDI In Jack

3.3- Micro SD Card Socket: The system manages the audio generation from .wav file samples (Refer to document **SmartWAV2-MIDI.pdf** for more detailed information), the microSD card socket is a push-lever, insert, close-pull type, this kind of sockets hold and secure the microSD card from accidentally falling.

SmartWAV2+MIDI Adapter MicroSD Card Socket
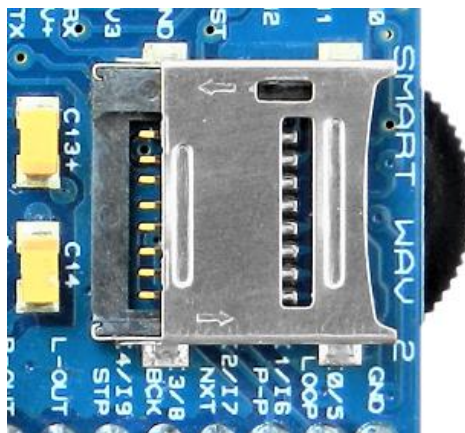
3.4- 1/4" Audio Output Jacks: The generated line-level audio signal from the SmartWAV2 processor can be output in 3 different ways, Single Mono, Single Stereo or Dual Stereo, standard 1/4" TS or TRS cables must be used for the next connections:

Single TS 1/4" Mono Output

Single TRS 1/4" Stereo Output

Dual TS 1/4" Stereo Outputs

Never mix connection types or use both TS and TRS cables, use only one type of wiring and follow always the above connections.

3.5- Volume Potentiometer: The system volume can be digitally controlled by MIDI commands, but also an external volume potentiometer is present on the board.

SmartWAV2+MIDI Adapter Stereo Volume Potentiometer

*As a general rule for instruments and audio systems, always perform all wiring and connection of cables before powering-on the equipment, it is recommended to power-on the smartWAV2 + MIDI Adapter board while the volume potentiometer it's at the lowest volume position, then adjust the volume.
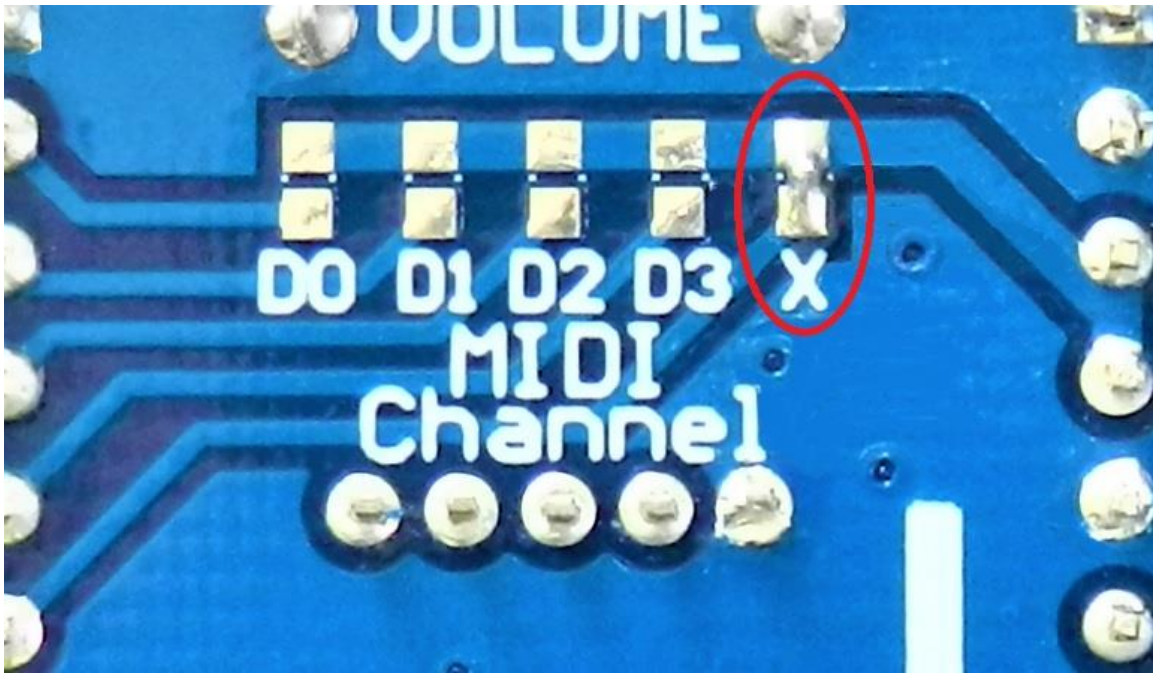
4- SmartWAV2 + MIDI Adapter MIDI Channel Selection

The MIDI channel selection is via the D0 to D3 solder pads on the PCB board, when those pads are **"open"** (not jumped) are connected to **GND** ground or "0", when the pads are **"closed"** (jumped) then those are connected to **VCC** voltage or "1", this allow a logical binary selection of channel 0(0000b) to 15(1111b), however inside the processor this is handled as channel: n+1, resulting in a **1 to 16 channel** selection.

The X labeled pad acts as a MIDI Omni-channel enable/disable switch, **when closed (jumped) it overrides the D0-D3 pads,** when open (not jumped) the system reads the D0-D3 pads to choose the MIDI channel according to the next table.

## SmartWAV2 + MIDI Adapter MIDI Channel Selection:

Channel #	Pads			
	D3	D2	D1	D0
Channel 1	OPEN	OPEN	OPEN	OPEN
Channel 2	OPEN	OPEN	OPEN	CLOSED
Channel 3	OPEN	OPEN	CLOSED	OPEN
Channel 4	OPEN	OPEN	CLOSED	CLOSED
Channel 5	OPEN	CLOSED	OPEN	OPEN
Channel 6	OPEN	CLOSED	OPEN	CLOSED
Channel 7	OPEN	CLOSED	CLOSED	OPEN
Channel 8	OPEN	CLOSED	CLOSED	CLOSED
Channel 9	CLOSED	OPEN	OPEN	OPEN
Channel 10	CLOSED	OPEN	OPEN	CLOSED
Channel 11	CLOSED	OPEN	CLOSED	OPEN
Channel 12	CLOSED	OPEN	CLOSED	CLOSED
Channel 13	CLOSED	CLOSED	OPEN	OPEN
Channel 14	CLOSED	CLOSED	OPEN	CLOSED
Channel 15	CLOSED	CLOSED	CLOSED	OPEN
Channel 16	CLOSED	CLOSED	CLOSED	CLOSED

SmartWAV2+MIDI Adapter D0-D3 and X Pads

When a jumper pad is soldered: it is connected to **VCC or closed**, when the pad is left unsoldered: it is connected to **GND or open**.

Most common MIDI applications require that the receiver, in this case the SmartWAV2 + MIDI Adapter, to be an Omni-channel system that receives/accepts commands from all the 16 MIDI channels, this is why the X pad is factory soldered(closed) by default as show in the above image.

5- Mechanical Dimensions
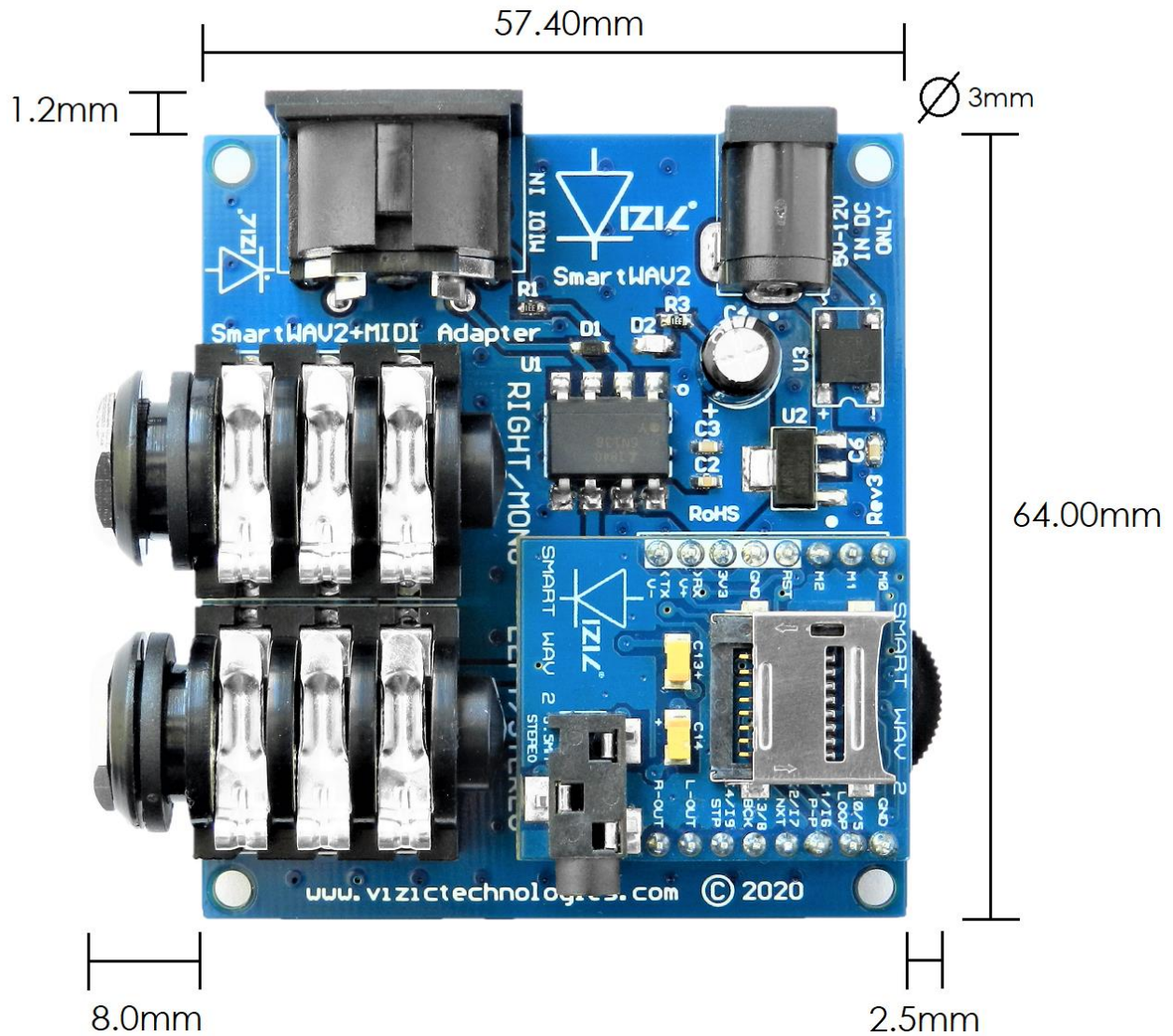
6- Specifications and Ratings

SmartWAV2+MIDI Adapter

|	
Power Supply	5V to 12V DC In Barrel Jack for AC/DC Adaptor any polarity
Max Current Consumption	60mA average, 120mA max
MicroSD Card	SD/SDHC memory card FAT32 format (32 GB or less recommended)
MicroSD Card Socket	Push-Lever open, close Pull type
Audio Outputs **Single Mono Connection** **Single Stereo Connection** **Dual Stereo Connection**	1/4" Jacks phone type Single TS Single TRS Dual TS
MIDI Input	5-Pin DIN MIDI Cable
Stereo Volume Potentiometer	10K ohms

SmartWAV 2 + MIDI Adapter connections
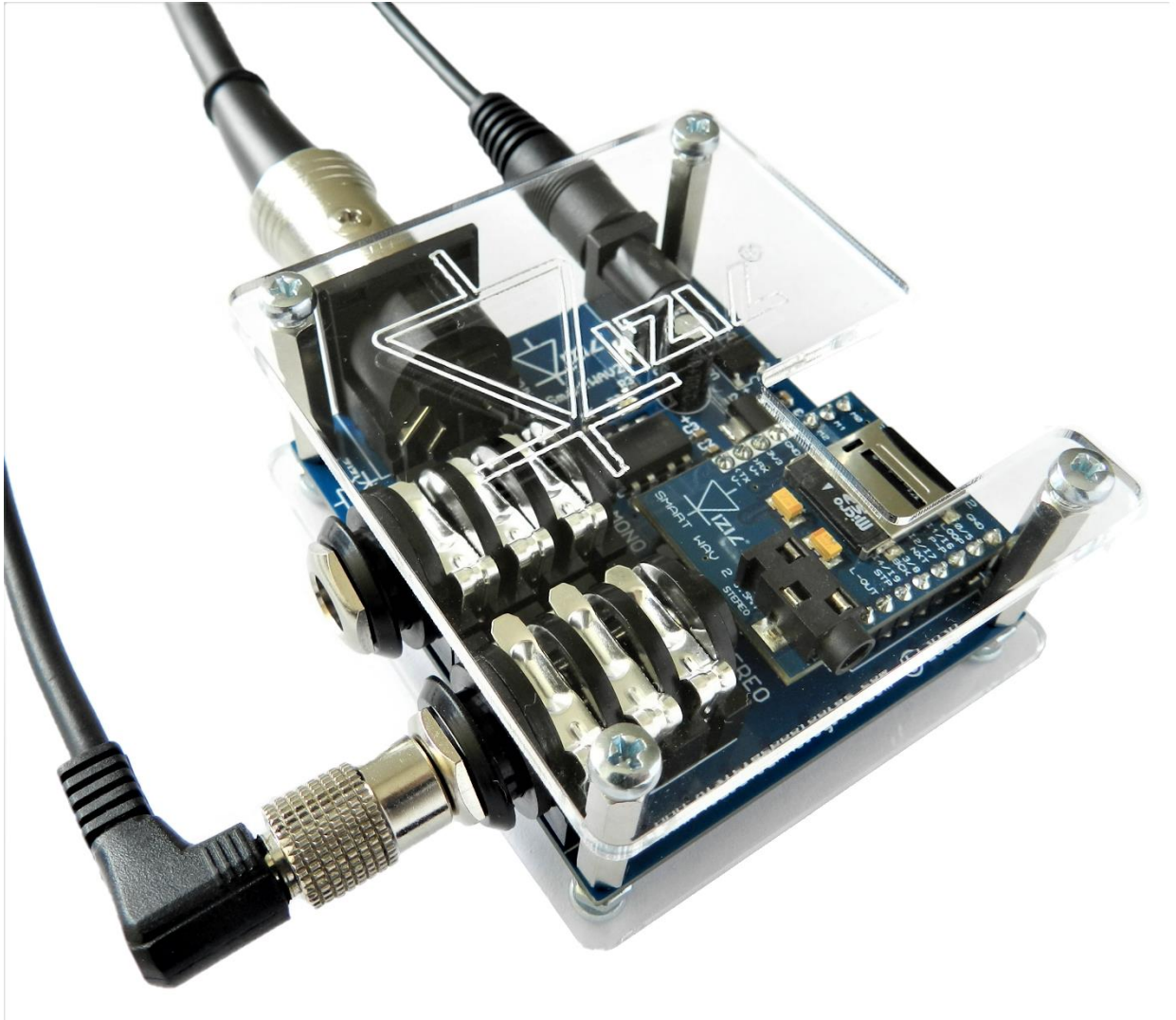
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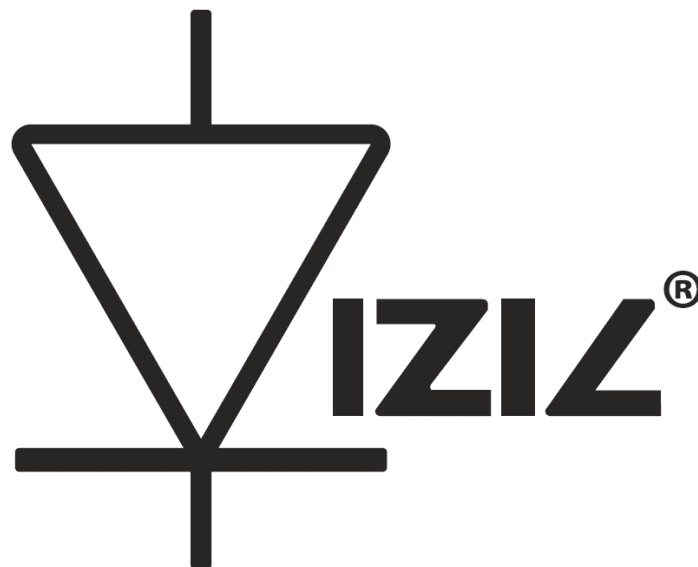
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