



Below are some info regarding WaveIO's I/O and connections:

#### 1. J1 - External USB ●

For the J8 (the one in top-left corner of the card - near the USB-B on-board connector): EXT means that USB data bus will be connected to the J1 external USB pin header while BRD option will choose the on-board USB input. If there's no jumper then BRD is selected by default.

The J1 pinout is visible on the card:

SHD = USB shield,

GND = USB Ground,

DT+ and DT- are USB Data lines,

+5V = USB 5V VDD.

#### 2. J2 - uBNC (non-isolated) I2S Lines ●

The connectors have self-explanatory comments on the TOP Silk Screen layer.

#### 3. J12 – External Power ●

J12 header (PSU Select - see bottom of the card) switches between two power supply options:

EXT = external PSU by means of J13 power connector while USB = power from USB bus.

Note: external PSU voltage must be  $5V_{dc} \pm 10\%$  @ 0.5A or more, check the polarity right below the J13 screw-type connector! Even if there's a protection diode (D2) installed on the card, it wasn't tested when external AC voltage is applied thus please avoid this situation!

#### 4. J9 – Sample rate LEDs ●

J9 Header are for LEDs and additional signals:

L1 = 44.1 kHz

L2 = 48 kHz

L3 = 88.2 kHz

L4 = 96 kHz

L5 = 176.4 kHz

L6 = 192 kHz

L7 = Host Active

L8 = Audio Streaming.

Host Active is ON when the card is plugged into the USB port and is recognized.

Audio Streaming is enabled when there's streaming over USB (when a song will play) and disabled in any other circumstances. Also, when incoming sample rate is changed, the Audio

Streaming signal is disabled for ~1s. This signal could be used to MUTE some DAC chips if required. Please use low current driven LEDs (that can sink 8mA or less to lit).

## **5. J6 - Header is for isolated I2S output signals** ●

The NVE's IL715 isolator accept 5Vdc or 3.3Vdc power supply on the V+ pin to work accordingly (please see the bottom of the card).

DT = I2S Data,

LR = I2S Word Clock,

BC = I2S Bit Clock,

MC = I2S Master Clock.

There are also 5 pins dedicated to isolated GND. They should be used.

Some words about I2S Master clock signal: it is provided in case that it's required by some DAC chips like PCM1794 but there are few things to know before use this signal:

a) can be used to realign the WaveIO NON-isolated I2S output signals at the receiver's side (DACs) by using a fast Flip-Flop clocked by this Master Clock signal.

b) it can only have two values: 22.5792 MHz or 24.576 MHz. The signal is picked-up right after the oscillators so it is clean as much as it can be.

Attention: There will be NO signals at J5 pin-header connector (Isolated I2S Outputs) if there's no voltage applied on the V+ and Isolated-GND pins (usually 3.3V but 5V is also accepted - please see IL715 datasheet for more information).

### **Other notes:**

Please do NOT use non-isolated SPDIF output since it was built for testing purposes only, use instead the isolated one instead. In addition, H1, H2 and H3 mounting holes are NOT connected to the ground planes while H4 is... so, be careful!

And, as a last note, just make sure that your WaveIO is powered properly using a 5Vdc PSU sourcing more than 0.5A. If you'll use the USB ports then it's possible that some laptop/motherboard USB power chips don't supply the required amount of current (specified in USB specs.) but a little bit less, making WaveIO card not to work as expected especially at higher sample rates.