Datasheet Amp100

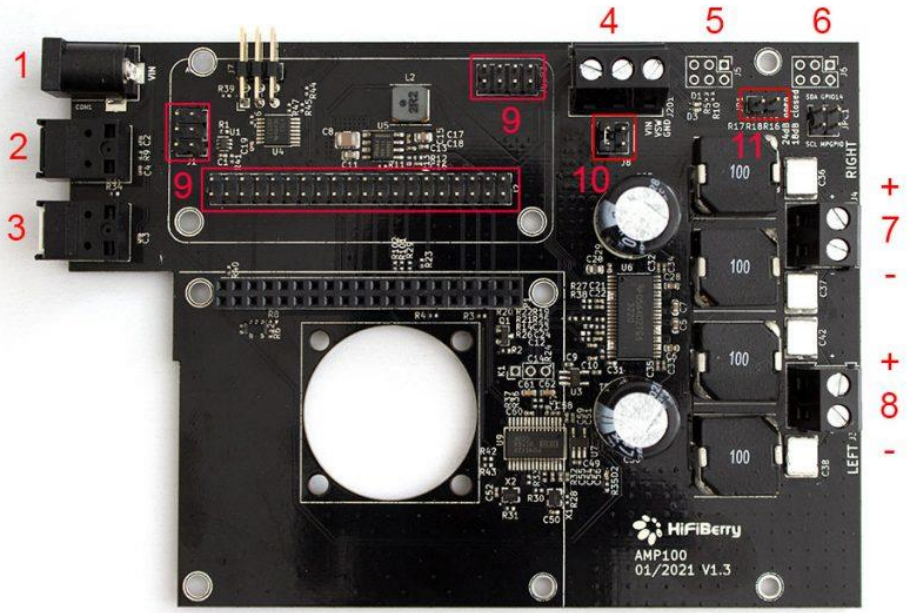
Overview

The HiFiBerry Amp100 is a DAC/amplifier combination for all Raspberry Pi models featuring a 40-pin GPIO header.

Facts

- Stereo DAC with sample rates up to 192kHz/24bit, based on the HiFiBerry DAC2 Pro design
- Up to 2x100W output power output
- Can be extended with the HiFiBerry DSP add-on board
- Onboard TOSLink input/output (requires DSP add-on board)
- Uses a single external power supply 12-30V to power the amplifier and the Raspberry Pi
- No soldering, comes as a pre-fabricated kit, just plug it onto the Raspberry Pi.
- Comes with all components required to mount it.

Hardware and speaker connectors



1	Power input, barrel jack
2	TOSLink input connector (requires DSP add-on, see below for limitations)

3	Toslink output connector (requires DSP add-on, see below for limitations)
4	Power connector, screw terminal
5	DSP I2S output connector
6	DSP I2S output connector
7	Right speaker output
8	Left speaker output
9	DSP add-on connectors
10	Power switch jumper – leave this on if you're not using the power controller
11	amplifier gain: open = 24dB, closed = 18dB

L/R outputs can't be bridged!

Note that the actual board might look a bit different. Layout and components might change without further notice. We do not guarantee a specific PCB layout or specific components.

Power supply screw terminal

If you connect an external power supply to the power supply screw terminal, you can just connect it to VSW (+) and GND (-) (see print on the PCB). VIN and VSW are needed in combination with the HiFiBerry power controller.

Indicator LEDs

D1	fault	Indicates a fault in the output stage, e.g. shortage or overload
D3	clipping	Indicates clipping, meaning, the input signal in higher than the output stage can handle. Slightly glowing is fine.

Specifications

Recommended operating voltage	12-30V	
Absolute maximum operating voltage	32V	
Maximum output power	2x100W	into 4Ohm
THD+N	<0.05%	typical, output power 0.1-10W, 0-20kHz
Typical output power per channel	40W	Vsupply=20V, Rspk = 4Ohm, THD+N <1%
	60W	Vsupply=24V, Rspk = 4Ohm, THD+N <1%
	100W	Vsupply=30V, Rspk = 4Ohm, THD+N <1%
Maximum output power per channel	50W	Vsupply=18V, Rspk = 4Ohm, THD+N <10%
	75W	Vsupply=24V, Rspk = 4Ohm, THD+N <10%
	110W	Vsupply=30V, Rspk = 4Ohm, THD+N <10%
Sample rates	44.1-192kHz	

The Amp2 will power the Raspberry Pi. It is powerful enough for any Pi up to the Pi4B. Note that additional hardware drawing lots of power (e.g. hard disks, displays) might require an external power supply.

Configuration

dtoverlay=hifiberry-amp100

Limitations of the TOSLink inputs and outputs

While the Amp100 board comes with onboard TOSLink inputs and outputs their functionality is limited. Please read this document carefully to understand these limitations.

Functionality

With only the Amp100 connected to the Raspberry Pi, both TOSLink input and output have no function. They require the use of the add-on DSP module. The inputs and outputs are directly connected to the inputs and outputs of the DSP on this DSP module.

Limitations

The DSP add-on originally has been designed to process the data stream between the Raspberry Pi and an add-on DAC like the DAC2 HD and DAC2 Pro. While the TOSLink connectors are connected to the DSP they do not work independently of the Pi. To implement this, the audio data from the Pi are being replaced by the audio data from the TOSLink input. This requires the Pi to deliver audio data to the DSP. If there is no playback on the Pi, the DAC and amplifier on the Amp100 won't work.
We have created a small program that outputs a dummy data stream on the Pi. It is open source and can be downloaded from Github. There is no individual support for this script from us. You might post in our forum to discuss potential problems with the community.

We recommend the use of the TOSLink inputs/outputs only to users with some understanding of DSP programming as you might have to create your own DSP profile to use them. For a product where TOSLink, DSP, DAC and amplifier are more tighly integrated and easier to use, check out the Beocreate 4-channel amplifier.