limited warranty

This product is guaranteed to be free of functional defects for a period of 1 year from original purchase date. Proof of purchase is required for any warranty claim. Return shipping costs are covered by Boredbrain Music within the first 30 days of purchase only. Products with obvious signs of abuse or that have been modified by the end user, may not be covered under this warranty, at the discretion of Boredbrain Music.

service & inquiries

If you experience a problem with your Boredbrain product, or just want to share something interesting with us, please contact us at the link below and be sure to include your name, original purchase date, and a description of the problem you are experiencing. Then just hold tight, as we return most inquiries within 48 hours. We want to work with you to resolve your issue as soon as possible. Thanks.

boredbrainmusic.com/contact

Designed and Built in Richmond, VA USA

boredbrain spdf

Spdf is a digital signal encoder and decoder for eurorack modular synthesizers. The module converts analog audio and CV signals to and from the S/PDIF format to interconnect digitally with computer audio interfaces and other S/PDIF enabled devices.

- Encodes 2 analog inputs into a S/PDIF digital signal
- Decodes a S/PDIF digital signal into 2 analog outputs
- DC-coupled inputs and outputs support both CV and audio signals
- Selectable 44.1/48 kHz internal sample clock or external sync
- Digital coaxial cable connectors for S/PDIF signals (RCA)

technical specs

- **Width:** 5 HP
- **Depth:** 1.0 in (25 mm)
- **Weight:** 1.2 oz (34g)
- **Resolution:** 24 bit, 44.1/48 kHz
- **Max I/O Level:** ± 10 V (20 Vpp)
- **Noise Floor:** -93 dBFS
- **Power:** +12 V 55 mA, -12 V 10 mA

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patch tips

CV/GATE & AUDIO RETURNS

Use CV capable software such as Bitwig Studio or Ableton CV tools to send pitch and gate signals to Spdf outputs. Patch them respectively into a 1V/oct oscillator and envelope gate input. Then patch the audio signal(s) back to the Spdf inputs to mix within the DAW software. Instrument tracks can then contain both the sequence data and audio returns for simple and powerful integration with your eurorack synth.

NOTE: 1V/oct signals will require calibration within the software.

IMPORTANT: Use digital coaxial cables (75 Ω) for optimal signal transmission, not regular RCA audio cables.

spdf

S/PDIF DIGITAL CONVERTER

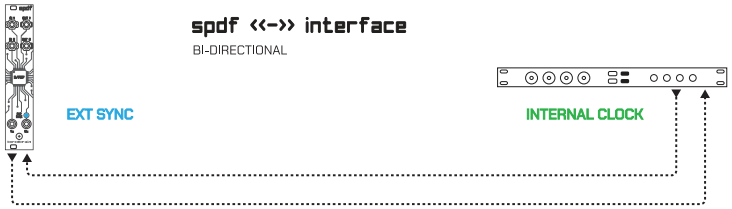
USER GUIDE

S/PDIF Encoding & Decoding

Many audio interfaces are equipped with S/PDIF expansion ports allowing for two additional channels of input and output. Spdf takes advantage of these often unused ports, providing a digital interconnection between a computer and eurorack system.

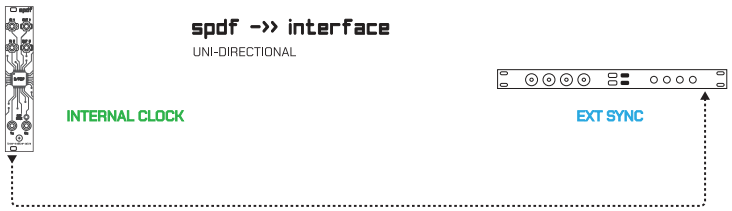
The module accepts a 2-channel S/PDIF signal at the **Rx** jack (via coaxial digital cable) and converts it into two discrete analog signals available at the **OUT 1** and **OUT 2** jacks. Conversely, Spdf accepts two discrete analog signals at the **IN 1** and **IN 2** jacks and converts them into a 2-channel S/PDIF signal available at the **Tx** jack.

The most common configuration uses a bi-directional digital interconnection. The audio interface must have both S/PDIF In and Out ports, and the module is set to external sample clock sync.



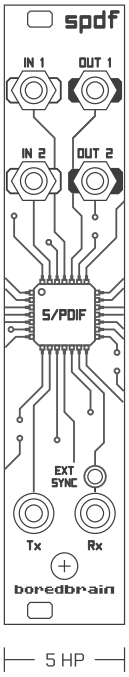
NOTE: With the **SYNC** switch set to **EX**, the blue **EXT SYNC** LED will illuminate when a valid sample clock is detected at **Rx**.

A uni-directional digital connection is used if the audio interface has only a S/PDIF In port. The module is set to generate internal sample clock, and the interface is set to external sample clock sync.



NOTE: With the **SYNC** switch set to **IN**, the S/PDIF **Rx** port is completely disabled, and only the S/PDIF **Tx** port is active.

In addition to computer audio interfaces, Spdf can connect digitally to many other types of gear equipped with S/PDIF coaxial ports. This includes keyboards and samplers, DJ mixers and multi-player decks, digital speakers, and consumer electronics such as TVs, stereo systems, CD players and more.



5 HP

Analog I/O

The module's analog inputs and outputs are DC-coupled (selectable for inputs), which means Spdf can encode and decode DC signals like control voltages. When used in conjunction with software such as Bitwig Studio or Ableton CV Tools, the module can be used to send and receive control voltages like 1V/oct pitch signals, gates, triggers, LFOs, ADSRs, and other modulators.

Spdf can also be used to digitally encode and decode audio signals. AC-coupling for the inputs may be selected (default setting), which will enable an inaudible high-pass filter to remove any DC offset prior to S/PDIF encoding.

All i/o circuitry has been carefully designed and routed for low-noise performance, with buffered inputs and outputs scaled to accept eurorack signals up to ±10 V.

Synchronization Settings

Spdf will operate only when locked to sample clock of 44.1 kHz or 48 kHz, either from an external source (S/PDIF **Rx** signal) or internally generated. Three DIP switches on the back of the module may be used to configure these settings, as well as to select DC or AC coupling of the inputs.

SYNC		RATE		CPL	Input Coupling
IN	Generates and syncs to internal sample clock	**48**	Sets the sample clock rate to 48 kHz	**DC**	Enables DC-coupling for CV signals
EX	Syncs to external clock from S/PDIF Rx	**44**	Sets the sample clock rate to 44.1 kHz	**AC**	Enables AC-coupling for audio