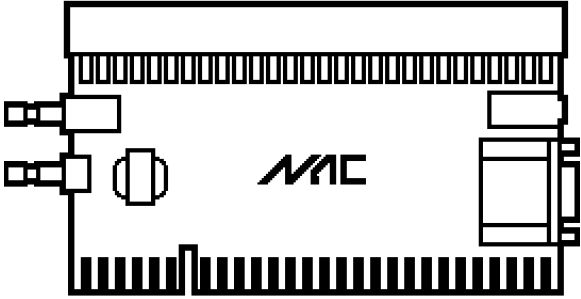


SPLITFIRE

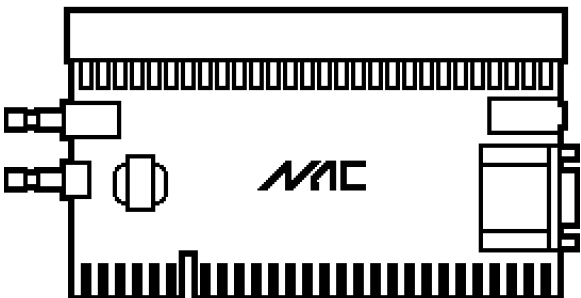
JAMMA PCB A/V Splitter



NAC-SPF Version 1.0
Designed by Mike J. Moffitt
Assembled in Northern California

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If you have any questions or need technical support contact:
support@norcalarcade.club

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Precautions & Warnings



This product is being used as-is. Use it at your own risk! NAC is not responsible for damages that occur to your hardware due to incorrect installation of this product.



Please unplug and power off your arcade cabinet or JAMMA setup before installing Splitfire or switching game PCBs.



Be sure that neither Splitfire nor the JAMMA PCB are resting against a metal surface. It is important to avoid electrical short circuits for the safety of you and your equipment.

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Basic Usage

- 1 Plug the game PCB into the Splitfire JAMMA connector.
- 2 Plug the Splitfire into the arcade cabinet's JAMMA harness.
- 3 Connect a HDB15 (VGA) cable and 3.5mm audio cable into the connectors.
- 4 Use the video and audio knobs to adjust the output levels.

See pages 5 & 6 for adjustments

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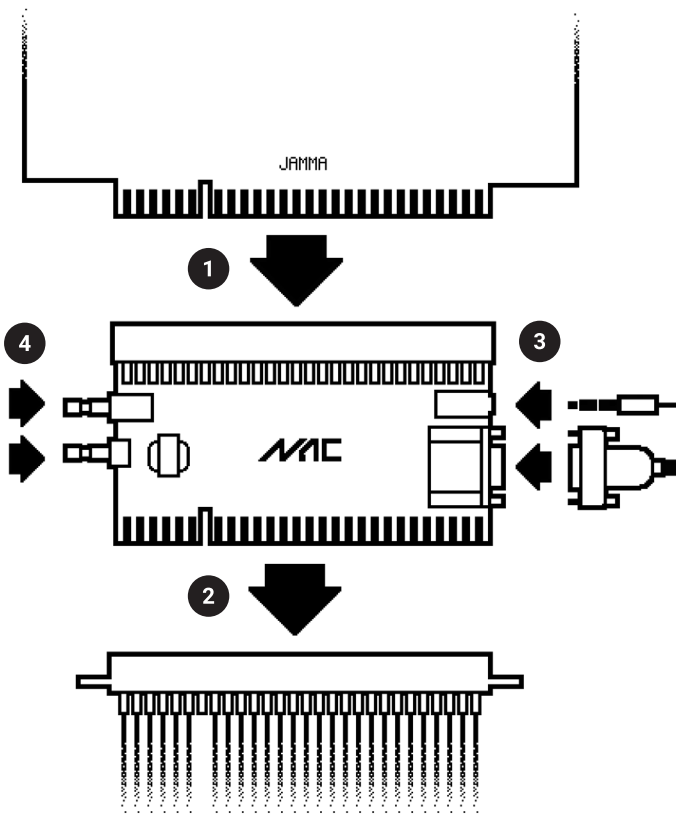


fig. a – basic usage

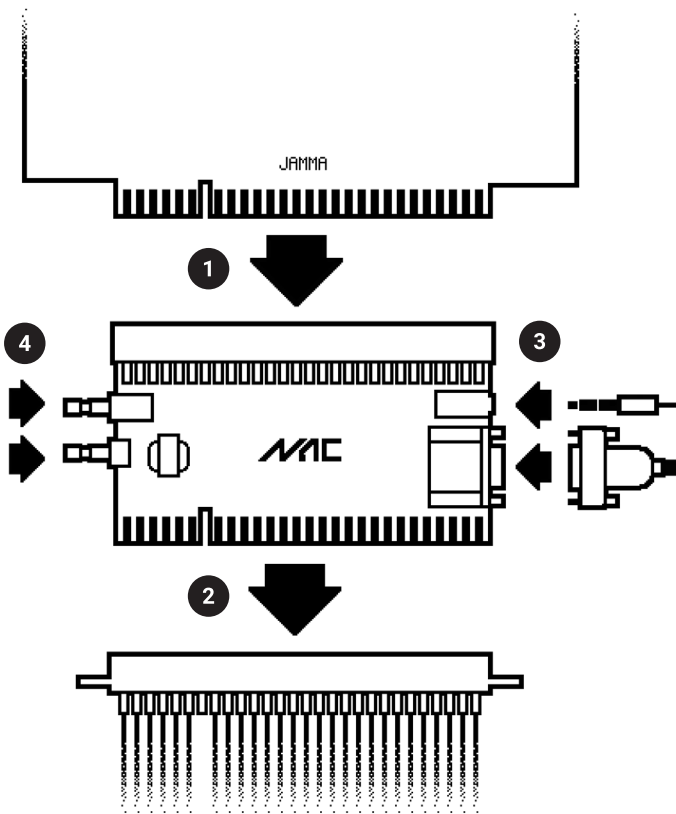


fig. a – basic usage

How to configure the Splitfire

The Splitfire features two potentiometers for easy adjustment of both video and audio levels. To get the best result out of your equipment, proceed with the following steps:

1. Power on your arcade machine with your JAMMA board plugged into the Splitfire, and your monitor and audio at normal settings.
2. Open your capture software of choice (e.g. OBS) to inspect the video and audio levels.
3. Using your game's test menu (if available), find the color test option, where color gradient bars can be seen.
4. Turn the video gain knob all the way down, then slowly raise it until the brightest point on the gradient bar matches your monitor. Too far, and the brighter details will be indistinguishable; not far enough, and the whole image will be reduced in intensity. (see fig. b)
5. Using headphones, speaker monitors, or your capture software's VU meters, adjust the PCB volume and the Audio Attenuation until audio is at a suitable level. Too high, and audio may clip. Too low, and it will be difficult to hear.

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How to configure the Splitfire



Good!

The right side of the color bar is at peak brightness, and the lower levels preceding it can be distinguished.



Too Dark

The peak brightness level is lower than full white, and detail is lost on the lower range.



Too Bright

The peak level is set too high. Bright tones are no longer distinguishable.

fig. b – configuring video gain with a gradient pattern

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Troubleshooting & FAQs

How does the Splitfire work exactly?

Your arcade cabinet's controls, speaker connection, and RGB signals are passed directly to the game PCB. Splitfire taps off of the video signals using a high input impedance amplifier so as to not affect the original monitor's levels based on signal termination. As many games have varying RGB voltage levels, a Video Gain adjustment is provided.

The audio output is tapped from the balanced speaker signals produced by the JAMMA board, and run through a transformer in order to isolate the audio. An attenuation knob is provided to allow reduction of the audio level. With the transformer, the JAMMA amplifier is not harmed by the audio output's ground being common to the PCB's DC ground connection.

Does the Splitfire add lag?

No! All signals are passed through directly to the cabinet. The video buffer is no more than an amplifier; there is no temporal buffering. Playing off of the secondary output is fine if you prefer it.

I have no image!

Check all of your connections, and ensure that the video gain knob has been turned clockwise. Check that your monitor and capture equipment are both receiving a sync signal, and that the game looks okay on your arcade cabinet.

Why is there a transformer?

JAMMA audio is balanced output, intended to drive a speaker directly. If the JAMMA connection is connected to ground, it can damage some amplifier designs. To mitigate this risk, a transformer isolates the audio signal so that it may be used with reference to the same ground signal as the rest of the JAMMA PCB.

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Can I use Splitfire with non-JAMMA games?

Electrically, Splitfire will work with anything that produces RGB signals with a TTL-level composite sync, but it is designed for JAMMA hardware. If you make a custom adapter for your other hardware to plug in like a JAMMA board, it may be used.

Is it safe to use Splitfire with a monitor that has 75-ohm termination (e.g. Sony PVM)?

Yes - Splitfire buffers RGB and sync signals thoroughly. The amplifier is designed to drive a 75-ohm load for the RGB signals, and a 470-ohm resistor in series with the sync output protects Splitfire's sync buffer to provide the correct level for 75-ohm termination, producing the 0.7V signal that a PVM and other studio monitors will expect.

How is RGB buffered on Splitfire?

A THS7374 high-bandwidth buffer is used to tap the original RGB signals and provide a buffered output. The Video Gain knob is a multi-gang potentiometer that allows a reduction of the signal before it reaches the amplifier.

The THS7374 has an optional low-pass filter, which may be enabled using a solder pad on the underside of the PCB. Games with lots of high-frequency ringing noise on sharp edges may benefit from this filter. By default, this filter is not enabled.

How is sync buffered on Splitfire?

A 74HCT-series logic IC is used to buffer the original sync signal, which is passed into two other buffers so that the arcade monitor sync and capture monitor sync signals are completely isolated and may be terminated separately. Even if you were to short out the external capture sync to ground, the arcade monitor would continue to work just fine (please, don't do this, though).

A solder pad on the underside of the PCB allows you to select whether or not the THS7374 amplifier or 74HCT04 buffer provide the buffered sync signals. Before selecting either setting, use a knife to cut the small trace that links the default settings.

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