



What is the difference between J-PAC and I-PAC?

The I-PAC is a control interface which has all inputs connected into it via screw connectors, for building your own panel and doing your own control wiring. The J-PAC has most of the inputs connected to it via an integral JAMMA edge connector and makes it easy to connect a standard JAMMA pre-wired cabinet by simply plugging the cabinet connector onto the board. The J-PAC also contains video circuitry for connecting the PC to the cabinet arcade monitor.

What is a JAMMA cabinet anyway?

JAMMA (Japanese Amusement Machine Manufacturers Association) is a wiring standard which was developed in the 1980's to standardize wiring of cabinets to game logic boards. A JAMMA cabinet has a 28+28 way edge connector for connection to a game board pre-wired to controls, monitor etc. If the controls you will be using are **not** wired to one of these connectors then the I-PAC may be for you rather than J-PAC.

What controls does the JAMMA connector support?

The JAMMA standard supports 2 players with 3 buttons per player. There is an unofficial addition to this, some cabinets wire a fourth button. Plus coin, start etc.

That's not many buttons, what about any others?

Game boards which need more buttons have an auxiliary button connector which can vary in type. This is not part of the JAMMA standard. The J-PAC caters for these extra buttons by having screw terminal inputs for these extra inputs.

Inputs supported directly through the JAMMA connector are:

- Player 1 and 2 joysticks
- Player 1 and 2 buttons 1,2,3,4
- Coin 1, Coin 2
- Start1, Start2.

Inputs supported by the screw terminals are:

- Player 1 and 2 buttons 4,5,6,7,8.

Note that button 4 can be connected via either method as some JAMMA harnesses route this button through the connector. If you have a 4 player cabinet you can use an I-PAC2 board as well as a J-PAC and plug the I-PAC into the pass-through connector of the J-PAC. You will need to re-program the I-PAC board for correct player 3 and 4 keycodes.

Can I program the inputs?

Yes the J-PAC uses the same programming utility as I-PAC. It also contains the connector for the I-PAC LED harness.

What about video?

The J-PAC routes VGA video from the PC VGA card to the JAMMA connector and therefore to the monitor. But of course it's not that simple! There are configuration issues when using arcade monitors on a PC with a normal VGA card (as opposed to our ArcadeVGA card). The VGA card must

be told to output a horizontal sync frequency which is much lower than the VGA standard. The J-PAC amplifies the VGA 1 volt signal level to approx 5 volts peak-peak which is the arcade monitor spec.

What does the J-PAC video circuitry do?

Besides amplifying the video level, the on-board video circuitry also synthesises composite sync from separate H-V sync from the VGA card. The J-PAC has a jumper which is set to the frequency that the monitor is designed for (most commonly 15Khz). The J-PAC will not pass the sync signal through unless it detects the signal is at the correct frequency for the monitor. Some older types of 15Khz monitor could be damaged if fed with a high sync rate. The J-PAC prevents this happening. If the sync rate is not in range, the monitor is still powered up and still has video passed to it but no damage can occur as the horizontal frequency cannot be driven too fast without any sync present. IMPORTANT: It is not a scan converter so you will have to configure the VGA card to send the correct sync rate for the monitor OR you can use our ArcadeVGA card which will drive a 15Khz monitor with no special configuration.

How does the J-PAC work with the ArcadeVGA card?

The J-PAC and the ArcadeVGA card (see details under ArcadeVGA heading) make perfect partners and give the easiest possible solution for driving a JAMMA cabinet with a 15Khz monitor. The ArcadeVGA card plugs into the PC and simply plugs into the J-PAC via the VGA cable. Then plug into the cabinet harness and you should get a perfect picture right from boot-up with no worries about configuring the VGA card to send 15Khz.

What about half-screen mode?

This is a feature of the J-PAC which allows a stable picture to be displayed from a PC running in 31Khz (VGA) mode using a normal VGA card (as opposed to our ArcadeVGA card) on a 15Khz arcade monitor. What actually happens is, as the horizontal sync frequency is divided by two, there are two pictures displayed on the screen side-by-side. This is NOT meant for serious PC application use! It is useful for checking all is well with the boot process. It is usually possible to type in DOS successfully for configuration changes etc. A Windows picture (or rather two pictures!) can also be displayed for limited use. Some monitors/VGA cards display this mode better than others.

What about sound?

The JAMMA standard is for only one speaker, mono sound. This is one of the reasons the J-PAC does not contain a sound amp. Other reasons are: There is no readily available 12V supply. Using the available 5V supply would not enough power. Using a separate mains adaptor would create issues with local line cord types.

How do I wire for sound?

There are several easy ways to do this:

Use a sound card with an on-board amp. Either wire this to the speaker connectors on the J-PAC to use the cabinet speaker via the JAMMA connector or by-pass the J-PAC and wire directly to one or two speakers in the cabinet.

OR:

Use a set of mains powered PC speakers. Either remove the speakers from their cases and mount in the cabinet or simply place inside the cabinet. This will give the advantage of power stereo sound.

But my JAMMA cabinet DOES have a power supply.

Most cabinet power supplies will not function unless a game board is connected, owing to insufficient load. It is best to remove the power supply completely as the J-PAC does not need any power. All power comes from the keyboard or USB interface. The monitor power must be left as it is though. DO NOT remove the monitor isolating transformer if one is fitted.

What about cabinet safety issues?

Definitely a good question! There are serious safety issues with cabinets containing monitors, especially older types. We have covered some issues in the J-PAC installation instructions. It is essential to check grounding thoroughly.

Do I have to have a JAMMA-wired cabinet to use J-PAC?

Not necessarily. You could solder a JAMMA edge connector onto your control harness and plug onto the J-PAC. This might be a way to implement removeable control panels. But the I-PAC might be best for a non-JAMMA set-up as it has screw connectors for the wiring.

I think my cabinet is a "JAMMA-PLUS" cabinet. What about this?

JAMMA-PLUS is a fairly loosely-defined standard. It has a main JAMMA connector and also an additional connector for buttons 4-6 for each player. Yes you can use a J-PAC with this. The main connector plugs in the normal way, and the wires from the extra connector can be connected

into the screw connectors.

What about 4-player cabinets?

Usually a 4-player JAMMA will use a JAMMA connector for players 1 and 2, and video. Players 3 and 4 will be routed through a custom connector. The player 3,4 controls would need to be connected to an I-PAC 2 by manual wiring. The I-PAC needs to be re-programmed using WinIPAC

to change all player 1 keycodes to player 3, and player 2 keycodes to player 4. Then plug each board into its own USB port on the PC.

Is there anything else I need to know before ordering?

It's important to understand the implications of using an arcade monitor on a PC before connecting up. The J-PAC is not a scan converter. For best picture quality the J-PAC does not convert the scan rate, you need to correctly configure the PC for 15Khz (if you have a 15Khz monitor), just as if you used a passive cable. Not all video cards support 15Khz mode. Our ArcadeVGA card is the ideal partner for a J-PAC as it outputs a 15Khz video signal right from boot. Don't expect a great Windows desktop on a fixed-frequency standard-res arcade monitor though because they can only display 240 lines and so a 640X480 screen must be interlaced which results in some 30Hz flicker on horizontal lines. This will not affect games, as these were designed to run on this type of monitor. Making the configuration right will reward you with an arcade-perfect picture which is difficult to achieve with an expensive scan converter.