

Peripherals for the Vampire Standalone V4

IDE

- Also known as PATA.
- This is a 44-pin IDE Interface.
 - 44-pin IDE devices, such as 2.5-inch IDE hard disks, can be connected directly using a cable.
 - 50-pin (JAE) IDE devices, such as laptop ATAPI CD/DVD drives, can be connected using an appropriate cable adapter.
 - CompactFlash (CF) cards can be connected using a CF-to-IDE adapter. Please see [Vampire-compatible CF adapters and cards](#).
 - SATA devices can be connected using a SATA-to-IDE adapter. There are adapters for various SATA connector types.
 - For devices with a standard SATA connector, [this adapter](#) and [this adapter](#) are known to work well.
 - For devices with an M.2 SATA connector, [this adapter](#) is known to work well.
 - SD cards can be connected using an SD-to-IDE adapter.
 - For a MicroSD card, [this adapter](#) is known to work well.
 - For an SD card, [this adapter](#) and [this adapter](#) are known to work well.
- The board supplies a voltage of 5V through this interface.
 - The supplied voltage is **not** sufficient for devices that require more than 5V. Those would typically be 3.5-inch hard disks and desktop CD/DVD drives (either SATA or 40-pin IDE), which require 12V. If you need to use such a device with the Vampire, then, not only do you need to find an appropriate adapter, but you also need to feed extra power into the device from an outside power source. In such a situation, setting up the necessary connections can be dangerous if done incorrectly, so we do **not** recommend attempting it. If you really must, then we recommend the help of a professional.
 - Even though most laptop CD/DVD drives require only 5V and don't need an outside power source to supply any extra voltage, they still consume a lot of power. It's common to see these drives draw 4A of current. If you want to connect such a drive to the Vampire, then, in order to avoid a power deficiency, you would want to make sure that your computer's power adapter is able to output more than 4A. However, there is still a risk of electrical problems, because Vampire boards are not designed to handle such high levels of current (like 4A) going through them. Therefore, we do **not** recommend connecting CD/DVD drives to the Vampire. If you really must, then please find a CD/DVD drive with the lowest possible power consumption, and do not connect any other peripherals that could consume a lot of power. Or you might choose to feed power into the drive from an outside power source, but we recommend the help of a professional in this case.
- This interface supports "Fast IDE", with PIO modes from 0 (slowest) to 6 (fastest).
 - Most storage devices are **certified** to support up to PIO mode 4, but many CF cards are **certified** to support up to PIO modes 5 and 6. Therefore, fast CF cards enable the maximum possible speed on this interface.
 - If you can't use a CF card, you might still be able to reach PIO modes 5 and 6 using another type of fast storage device, in case it **unofficially** supports those modes as a side effect of its high DMA speed.
 - If you attach multiple devices to a single IDE cable, the slowest device will dictate the maximum speed on this interface. For example, if you have a CF card that supports PIO

- mode 6, its speed would be hampered by a hard disk which only supports PIO mode 4.
 - To enable “Fast IDE”, please see [VControl IDESPEED](#).
- When connecting or disconnecting a device on this interface, make sure that the Amiga / Vampire is powered off. Also, disconnect all devices that have their own power connection, such as Digital Video, Ethernet and USB-Blaster cables, to prevent power backfeed into the Vampire.
- Be very careful when connecting a device to this interface. If you shift your connector to either side of this interface (meaning that you don't cover all pins), you can cause a short circuit and destroy the Vampire.

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SPI-capable Expansion Ports

- These are the middle and right Expansion Ports (I/O Header #2 and I/O Header #3 [here](#)).
- The following devices can be connected to these ports:
 - [ENC28J60 Ethernet Module](#)

I2S-capable Expansion Port

- This is the left Expansion Port (I/O Header #1 [here](#)).

The following I2S devices were tested successfully with this port:

- [PCM5102A DAC Decoder Board](#)
 - Can be used to output analog audio from the Vampire through RCA audio jacks.
 - Must be connected to the Expansion Port using female-to-female jumper wires like [these ones](#).

I2C

- This is the I2C / RTC port [here](#).
- Can be used to connect simple, low-speed devices like battery-backed real-time clocks (RTC), small LCD/OLED displays, temperature sensors, etc.
- With an appropriate splitter, multiple devices can be connected to a single port.

The following I2C devices were tested successfully with this port:

- [DS3231 RTC Module](#)
 - Strongly recommended if you want the Vampire to keep track of the current time across reboots.
 - When connecting to the I2C port, the module must face towards the center of the board.

Pinout

The pins are numbered from left to right based on the board schematics [here](#).

Connector Pin	Function
1	+3.3V
2	SDA
3	SCL
4	NC
5	GND

68k Bus Expansion

- All 68k signals are available in this socket.
- Theoretically, a Zorro II bridge could be built for this socket, which would allow connecting Zorro cards to the Vampire.

Digital Video/Audio Out

- Compatible with most modern monitors and TVs.
- All Amiga screen modes (OCS/ECS/AGA/RTG) are output from this interface.

Resolution and refresh rate

- You can create RTG screen modes from 320×200@200Hz up to 1920×1080@28Hz.
 - As the resolution increases, the maximum possible refresh rate decreases.
 - The Vampire is able to achieve a refresh rate of 60Hz for all resolutions up to and including 1280×720. Resolutions higher than that will reduce the maximum refresh rate to below 50Hz. For example:
 - 1600×900: ≤40Hz
 - 1920×1080: ≤28Hz
- The Vampire outputs screen modes without any upscaling. It applies pixel doubling to low-resolution modes, as appropriate, to increase them to a resolution allowed by Digital Video. This also ensures the correct aspect ratio. In particular, non-RTG (OCS/ECS/AGA) screen modes are output to Digital Video as follows:
 - PAL mode:
 - Low Res / High Res ⇒ 720×576@50Hz (standard PAL)
 - Super-High Res ⇒ 1440×576@50Hz
 - NTSC mode:
 - Low Res / High Res ⇒ 720×480@59.94Hz (standard NTSC)
 - Super-High Res ⇒ 1440×480@59.94Hz
 - Interlaced modes are output as interlaced scan. Non-interlaced modes are output as progressive scan.
- For the best experience, you should use a monitor or TV that **natively** supports all the resolutions and refresh rates that you will use. Monitors or TVs that support “variable refresh rate” or “adaptive sync” usually work best.
- If you are stuck with a monitor or TV that does not (adequately) support the resolutions and refresh rates that you will use, you can connect an “**HD video converter**” to adjust the signal from the Vampire as desired. For example, you can easily find converters that upscale the video signal to exactly 1920×1080@60Hz. (Some purchase options: [1](#), [2](#), [3](#), [4](#), [5](#), [6](#))

Audio

- All Amiga audio is output from this interface, as digital audio.
- If your monitor or TV has built-in speakers, you can play the audio from there.
- Some monitors and TVs have audio output or headphone jacks, so you can pass the audio through to a different device.
- Alternatively, from the Vampire's Digital Video/Audio signal, you can extract the audio to various output formats (S/PDIF, analog RCA, headphone, etc.) using an “**audio extractor/splitter**”. (Some purchase options: [1](#), [2](#), [3](#), [4](#))

DVI

- You can connect a DVI monitor to this interface, using an adapter that converts Digital Video to DVI.
- Please note that most DVI monitors cannot handle the Digital Audio signal that is sent together with the Digital Video signal. To be able to use such monitors, you would need an “**audio extractor/splitter**” that moves the Digital Audio signal to a different output. (Example purchase options are mentioned above.)

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- Note: Another alternative to output analog audio (through RCA audio jacks) is explained in [I2S-capable Expansion Port](#) above.




MicroSD Card

- Most MicroSD and MicroSDHC cards should work fine.
 - Supports speeds up to Speed Class 10.
- If you want to use your MicroSD card on a different device which only has a standard-size SD slot, you can use a simple MicroSD-to-SD adapter. (Some purchase options: [1](#), [2](#))
- If you want to use a standard-size SD card in the MicroSD slot of the Vampire, you can use an SD-to-MicroSD adapter. Some of these adapters even come with an extension cable. (Some purchase options: [1](#))
 - **Note:** Some adapters do not have an angled edge at the bottom front of the MicroSD end, so they do not slide smoothly into place. Be very careful when inserting such adapters into the MicroSD slot, because a careless push might bend or break the pins in this slot.
- You can use the [Arananet SDNET Adapter](#) in this slot to connect an Ethernet module to the Vampire. (This adapter also contains an SD-to-MicroSD adapter, so you will still retain the functionality of using SD cards in this slot, during times when the Ethernet module is not used.)

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USB-A

```
.outline_key * { color: #fff; text-shadow: -1px -1px 0 #333, 1px -1px 0 #333, -1px 1px 0 #333, 1px 1px 0 #333; }
```

- These two ports are reserved for USB input devices like mice, keyboards and game controllers.
 - The port next to the DB-9 ports is reserved for a mouse or a game controller.
 - The port next to the Ethernet port is reserved for a keyboard.
 - See [here](#) for exact port locations.
- USB hubs are not supported. Therefore, keyboard & mouse switches that are hub-based will not work.
- At the hardware level, the USB input device signals are translated to classic Amiga input device signals. Therefore, the input devices are available to AmigaOS immediately upon booting the Kickstart, without the OS having to load a USB stack.
 - A USB mouse is mapped to a “virtual” Amiga mouse that is connected to a DB-9 port.
 - Left, right and middle mouse buttons, as well as the mouse scroll wheel, work just like an Amiga mouse.
 - A USB keyboard is mapped to a “virtual” Amiga keyboard.
 - The **left**  **Win**dows logo key is mapped to the **left** **A** Amiga key.
 - The **right**  **Win**dows logo key, the  **Menu** key (application key), and the **right** **Ctrl** key are all mapped to the **right** **A** Amiga key.
 - The **Page Up**/**Page Down** keys are both mapped to the Amiga **Help** key.
 - A USB game controller is mapped to a “virtual” Amiga joystick that is connected to a DB-9 port.
 - The D-pad, the digital stick and the analog stick are mapped to Amiga joystick directions.
 - The fire buttons are mapped to two fire buttons of the Amiga joystick.
- Because the USB ports are being mapped to classic Amiga connectors at the hardware level, the operating system will not see actual “USB” ports.
- [Vampire-compatible USB input devices](#)

DB-9

- Also known as DE - 9.
- Compatible with Amiga, Atari and Commodore 64 joysticks.
 - Works with one-button and two-button joysticks.
- Amiga CDTV remote controllers (connected using an appropriate IR adapter) behave like a two-button joystick.
- Amiga CD32, Sega Master System and Sega Genesis (Mega Drive) joypads behave like a two-button joystick.
- You can enable the third fire button on a Sega Genesis (Mega Drive) joystick by rewiring it.
 - The rewiring technique is described most recently in the [ADoom documentation](#) (under the heading “SEGA CONTROLLER”).
 - The games ADoom, Hired Guns and Flashback, as well as some emulators, support all 3 fire buttons.
- The two ports allow up to two players to connect.
- Amiga mice do not work.

Mini-B USB

The Vampire's power adapter must be connected to this port. Any compatible power adapter works, but its output must have the following rating:

- Voltage: 5.0V or 5.1V.
- Current: 0.5A or higher. (Higher values are better, like 2A.)

Cases

The standard one is a high-quality, professionally-made, anodized aluminum case that snugly fits the Vampire Standalone. Other alternatives are also available:

- [Acrylic Design Case](#)
- [Checkmate A1500 Plus Case](#)
- [Amiga 1200 Case](#)
- [Acrylic Case](#)
- [Acrylic Case AROS Version](#)
- [A Classic Amiga Enclosure](#) (for 3D printing)
- [Amiga Evolution: Project Julia](#) (for 3D printing)

Note that these third-party cases have not been quality-checked by the Apollo Team, so use them at your own risk.

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