

# USFF/NUC/Mini PCs

Recently, Ultra Small Form-Factor (USFF) a.k.a. Next Unit Computers (NUCs) have been rising in popularity on the market. By virtue of them mostly being x86-based, they are as compatible with Batocera as any [desktop PC](#) is. But since they rely solely on integrated graphics, their performance is usually a bit lower and they may struggle with thermals. With that said, most modern USFF/NUCs will still give you full speed emulation for 5th gen consoles and below.



Just because your device isn't on the **Tested devices** list here doesn't mean it's unsupported, it's just a list of devices that have been reported as working to the Batocera team, and what version it was running on. Consider this like a benchmark table, with less information. Let us know on the Discord if you have Batocera running on your own USFF not listed here.

In case you need a refresher on console generations, check out the top of the [SBC page](#).

## Intel NUC




Tiny all-in-one computers with impressive performance for their size. Available as “Mini PCs” with everything already installed. If you'd instead like to source the individual components yourself (like DIMM sticks, storage, etc.) you can get a “kit”, which is essentially just the case and the motherboard. Check out their range at their [support page](#).

You *may* need to [activate the Intel i965 drivers](#), but it should work out of the box with most kits.

### Required accessories

- Depending on your configuration, you may need to buy RAM sticks and/or storage. These devices are very do-it-yourself (if you want to)
- Keyboard and mouse (for standalone emulator configuration/light gun games, most emulators *can* be configured with just a controller though)
- Display and speakers

### Tested devices

Model/Make	Link	Batocera	Performance
Intel DC3217BY	<a href="#">Specifications</a>	v31	Can emulate up to 5th gen fine, some easy Dreamcast and GameCube games.
Intel NUC6i5SYH	<a href="#">Specifications</a>	v31	Can emulate up to 7th gen fine, struggles with Xbox. PS3 is not working. Needs Intel i965 drivers to be activated.
Intel NUC7i5BNH	<a href="#">Specifications</a>	v32	All hardware works out of the box. Emulates up to 7th gen well, excluding Xbox.
Intel NUC11PAHi5	<a href="#">Specifications</a>	v32	Freezes when pressing [SELECT] in a game list.
Intel NUC8i7BEH	<a href="#">Specifications</a>	v35	Does not boot from USB (  needs confirmation).

### Dell Optiplex Micro Desktops



A bit more of a stretch, these were USFFs that were commonplace in offices and schools. They can usually be found second-hand for cheap prices, just keep in mind they've probably had a lot of use. You can check out their current range available for purchase [on their official website](#), just look for the "Micro" form-factor.

### Required accessories

- Keyboard and mouse (for standalone emulator configuration/light gun games, most emulators *can* be configured with just a controller though)
- Display and speakers

### Tested devices

Model/Make	Link	Batocera	Performance
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To be filled.

# Dell Alienware Mini Gaming Desktop PCs

Powerful mini PCs that go so far as to have high-end graphics cards. On the high-end of the price scale, and for good reason.

## Required accessories

- Keyboard and mouse (for standalone emulator configuration/light gun games, most emulators can be configured with just a controller though)
- Display and speakers

## Tested devices

Model/Make	Link	Batocera	Performance
Dell Alienware Alpha R2	<a href="https://www.dell.com/support/home/en-au/product-support/product/alienware-steam-r2-console/overview">https://www.dell.com/support/home/en-au/product-support/product/alienware-steam-r2-console/overview</a>	v32	

# Lenovo ThinkCentre Tiny Desktops



Not to be confused with IBM's ThinkCentre computers, Lenovo's take on the USFF is a more contemporary approach. Check out their range [at their website](#).

## Required accessories

- Keyboard and mouse (for standalone emulator configuration/light gun games, most emulators can be configured with just a controller though)
- Display and speakers

## Tested devices

Model/Make	Link	Batocera	Performance
Lenovo M900 Tiny i5 6400t	<a href="https://www.lenovo.com/au/en/desktops-and-all-in-ones/thinkcentre/m-series-tiny/M900-Tiny/p/11TC1MTM90010FM">https://www.lenovo.com/au/en/desktops-and-all-in-ones/thinkcentre/m-series-tiny/M900-Tiny/p/11TC1MTM90010FM</a> or <a href="#">Amazon page</a> or <a href="#">support page</a> .	v32	
Lenovo M93p SFF	<a href="https://www.lenovo.com/au/en/desktops-and-all-in-ones/thinkcentre/m-series-sff/10A9/p/11TC1TMM93P10A9">https://www.lenovo.com/au/en/desktops-and-all-in-ones/thinkcentre/m-series-sff/10A9/p/11TC1TMM93P10A9</a>	v31	

Model/Make	Link	Batocera	Performance
Lenovo Thinkcentre M715q (Ryzen 2400GE)	<a href="https://www.lenovo.com/us/en/p/desktops/thinkcentre/m-series-tiny/thinkcentre-m715q-tiny/11tc1mt715q">https://www.lenovo.com/us/en/p/desktops/thinkcentre/m-series-tiny/thinkcentre-m715q-tiny/11tc1mt715q</a>		
Lenovo Thinkcentre M710q (i5-7500T)	<a href="https://www.lenovo.com/us/en/p/desktops/thinkcentre/m-series-tiny/thinkcentre-m710q/11tc1mt710q">https://www.lenovo.com/us/en/p/desktops/thinkcentre/m-series-tiny/thinkcentre-m710q/11tc1mt710q</a>		

## Asus Mini PCs PN/PB series




Tiny all-in-one computers with impressive performance for their size. Check out the range at their [product page](#).

### Required accessories

- Keyboard and mouse (for standalone emulator configuration/light gun games, most emulators *can* be configured with just a controller though)
- Display and speakers

### Tested devices

Just because your device isn't here yet doesn't mean it's unsupported, this is just a list of confirmed fully functional Asus Mini PCs and what version of Batocera they were tested on. Consider this like a benchmark table, with less information. Let us know on the Discord if you have Batocera running on your own Asus Mini PC.

Model/Make	Link	Batocera	Performance
ASUS PN50-BBR033MD	<a href="#">ASUS Product Page</a> , <a href="#">Newegg page</a> <a href="#">Amazon page</a> or <a href="#">Microcenter page</a> .	v32	
ASUS PB-50 (Ryzen 3550h, 8GB RAM)	<a href="#">ASUS Product Page</a>	v33	can emulate up to 6th gen fine (struggles with xbox, gamecube up to 720p, ps2 native resolution). BEWARE: loud fan noise!

## HP Mini/Micro/Small Form Factor PCs



HP's line of regular small form factor PCs. The Micro line is incredibly thin, but usually at the cost of any disc drive/graphics card expandability.

Model/Make	Link	Batocera	Performance	
HP 280 G2 Small Form Factor	<a href="https://support.hp.com/us-en/drivers/selfservice/hp-280-g2-small-form-factor-pc/11747117">https://support.hp.com/us-en/drivers/selfservice/hp-280-g2-small-form-factor-pc/11747117</a>	v32	With an RX 580 GPU, emulates up to 6th gen fine.	
HP ProDesk 400 G3	<a href="https://support.hp.com/us-en/product/hp-prodesk-400-g3-desktop-mini-pc/15287510">https://support.hp.com/us-en/product/hp-prodesk-400-g3-desktop-mini-pc/15287510</a>	v33	Fix Me!	
HP EliteDesk 705 G1 (AMD A6 Pro 7400B)	<a href="https://support.hp.com/us-en/product/hp-elitedesk-705-g1-desktop-mini-pc/6893888">https://support.hp.com/us-en/product/hp-elitedesk-705-g1-desktop-mini-pc/6893888</a>	Fix Me!	Up to 5th gen.	
HP EliteDesk 800 G1 (Intel i5-4570)	<a href="https://support.hp.com/au-en/document/c03832938">https://support.hp.com/au-en/document/c03832938</a>	v35	Up to 7th gen, <a href="#">benchmark here.</a>	
HP EliteDesk 705 G4 (AMD Ryzen 5 Pro 2400GE)	<a href="https://support.hp.com/us-en/product/hp-elitedesk-705-35w-g4-desktop-mini-pc/21353696">https://support.hp.com/us-en/product/hp-elitedesk-705-35w-g4-desktop-mini-pc/21353696</a>	v36	Up to 6th gen.	Radeon GPU may fail around 50% of the time with black screen after splash screen, refer to important note below.



HP EliteDesk 705 G4 (AMD Ryzen 5 Pro 2400GE with Radeon RX Vega 11 GPU) may fail with an intermittent black screen after the splash screen. There are three options in the BIOS firmware Advanced Secure Boot Configuration screen, in the section "Configure Legacy Support and Secure Boot". Select the third option, "Legacy Support Disable and Secure Boot Disable". This will prevent the BIOS from performing legacy option ROM initialization on the GPU prior to boot, which interferes with the normal initialization performed by the Linux amdgpu driver.

## HP Desktop Thin Clients



HP's Thin Clients are little USFF computers designed to connect to a larger server network that runs a VM for the machine to take over that can come in a variety of form factors. Check out their range at [their Thin Clients page](#) (scroll down to the bottom and click on "Learn" in the "HP Desktop Thin Clients").

### Required accessories

- Keyboard and mouse (for standalone emulator configuration/light gun games, most emulators *can* be configured with just a controller though)
- Display and speakers

### Tested devices


Model/Make	Link	Batocera	Performance
Thin Client M340C AMD GX-412HC	Discontinued, no official pages. <a href="#">Here's a blog post about it.</a>	v32	PSX, N64 and Dreamcast full-speed at 720p.
HP t630 Thin Client	<a href="#">Product page.</a> <a href="#">Support page.</a>	v32	PSX, N64 and Dreamcast full-speed at 720p

## GIGABYTE BRIX/Ultra Compact PC kit



[Check out their line here.](#)

### Tested devices

Model/Make	Link	Batocera	Performance	Notes
GB-BLCE-4105	<a href="#">Support page</a>	v34	At 720p all emulators up to Gamecube and 2D Wii games are running at full speed.	All PSP/Dreamcast/PS1 games run at full speed at 720p, 1080p is limiting for some high-end games.
GB-BXi3H-5010	<a href="#">Overview page</a>	v33		

## ZOTAC Mini PC ZBOX C series



Check out their range on [their product page](#).

### Required accessories

- Keyboard and mouse (for standalone emulator configuration/light gun games, most emulators *can* be configured with just a controller though)
- Display and speakers

### Tested devices

Model/Make	Link	Batocera	Performance
ZOTAC ID41 (Atom D525)	<a href="https://www.zotac.com/product/mini_pcs/id41-plus">https://www.zotac.com/product/mini_pcs/id41-plus</a>	v31	Up to 5th gen

## Beelink Mini PC



Beelink is a relatively new manufacturer who employ custom motherboards using x86\_64 chipsets to run small but powerful emulation boxes. They also feature some TV boxes, as discussed in [the relevant section on the SBC page](#).



The custom motherboard in Beelink devices is a double-edged sword; although it allows for crazy form-factors, their BIOS loaders have strange limitations/bugs that do not play nicely with distributions such as Batocera. This includes sometimes not being able to boot Batocera from USB ports (even when booting from the SATA port is fine) and not being compatible with older versions of Batocera at all due to kernel requirements. This may change as the Linux kernel is updated to include these hardware off-shoots.

### Tested devices

Model/Make	Link	Batocera	Performance	Notes
Beelink Gemini X55	<a href="#">Amazon</a>	5.12, 5.19	<b>Fix Me!</b>	Can not boot from the SD card slot. Boots from USB successfully. Booting takes a long time.
Beelink U59	<a href="#">Link</a>	N/A	<b>Fix Me!</b>	Does not work with the current version of Batocera (v33), requires a higher kernel version. Will probably work with <b>v34</b> when it gets released. Does not boot from the USB port. Boots from SATA port correctly (tested using a custom build with a newer kernel).
Beelink GTR5 (Ryzen 5950HX)	<a href="#">Link</a>	v34	Runs all systems. Xbox runs at/near 60FPS depending on the game.	Not compatible with the default Wi-Fi card provided, requires swap.
Beelink Mini S N5095	<a href="#">Link</a>	v35	N/A	Old version of the BIOS does not permit the changing of the boot order, and does not allow booting from any external storage. New BIOS functions fine. <a href="#">The BIOS can only be flashed via Windows.</a> ( <b>Fix Me!</b> confirmation needed, and which version specifically?)
Beelink EQ12 (N100, 16GB DDR5)	<a href="#">Link</a>	v38	Up to lightweight Wii U emulation	See alert below
Beelink SER5 MAX (Ryzen 7 5800H, 32GB DDR4)	<a href="https://www.bee-link.com/beelink-amd-ryzen-5-ser5-5800u-minip-78978682">https://www.bee-link.com/beelink-amd-ryzen-5-ser5-5800u-minip-78978682</a>	v38	Ran everything up to PS3/WiiU, FPS dropped only on High End games, still relatively playable	Had no problems with booting from USB (F7)




Beelink EQ12 Requires a tweak to get functional WiFi: `echo 'options iwlfwifi disable_11ax=true' > /etc/modprobe.d/ax101.conf && batocera-save-overlay`

# Aerofara Aero line



[Aerofara](#) is a performance-oriented mini PC manufacturer.

## Tested devices



Model/Make	Link	Batocera	Performance	Notes
Aero2 N5105	<a href="#">Store page Amazon</a>	v34	 <b>Fix Me!</b>	

# Fujitsu FUTRO line



[Fujitsu's FUTRO line](#) are a series of "thin client" computers.

## Tested devices

Model/Make	Link	Batocera	Performance	Notes
FUTRO S740	<a href="#">Support page.</a>	v35		Its bootloader only supports EFI, and by default will not offer utilities to update this info. Temporarily boot into another Linux-based OS with efibootmgr available (such as Ubuntu) and <a href="#">configure it using the command</a> : <code>efibootmgr -c -d /dev/sda -p 1 -L "Batocera" -l '\EFI\BOOT\bootx64.efi'</code> (where sda is the drive Batocera is installed to). This may change in the future.
FUTRO S720	<a href="#">Support page.</a>	v37		Runs best out of the box with Batocera 37. It's dedicated (and changeable) 8GB m.SATA is just enough to boot from. The Thin Client supports a SATA-port underneath the cooling system. The 5V power line can be used from the pins for USB support, so it's possible to put a storage media like HDD/SDD into this unit. Upgrade of WiFi/BT is possible through internal mPCI port. Build in DVI/DP with audio out option makes this small system a perfect candidate into retro-gaming systems up to the late 1990s. It's successor the S720 is much smaller in design, more powerfull but in todays costs much overestimated. The S720 costs less then 20 USD, whereas the S740 is (10.2023) in between 80-120 USD!!)

## Obscure hipster USFFs

These ones aren't usually a "line" of devices, but one-offs by various companies that usually don't get upgraded with a new hardware revision later. They can offer great value when picked up second-hand.

### ViewSonic VOT



A discontinued line of USFF computers by ViewSonic around 2011, can still be found for good prices second-hand.

**Required Accessories**

- Keyboard and mouse (for standalone emulator configuration/light gun games, most emulators *can* be configured with just a controller though)
- Display and speakers

**Tested Devices**

Model/Make	Link	Batocera	Performance
ViewSonic VOT133	<a href="https://www.viewsonic.com/la/index.php/vot133-1-183539e54667dddc02d46f94bc0d43c5.html">https://www.viewsonic.com/la/index.php/vot133-1-183539e54667dddc02d46f94bc0d43c5.html</a>	v31	Up to 5th gen

**CHUWI Larkbox**



Chinese manufacturer Xiaomi's take on the NUC form-factor. [Official page here.](#)

### Required accessories

- Keyboard and mouse (for standalone emulator configuration/light gun games, most emulators *can* be configured with just a controller though)
- Display and speakers

### Tested devices

Model/Make	Link	Batocera	Performance
CHUWI LarkBox Pro Mini PC Intel® Celeron® J4125	<a href="https://store.chuwi.com/products/chuwi-larkbox-pro">https://store.chuwi.com/products/chuwi-larkbox-pro</a>	v31	

### CHUWI RZBOX

A higher-end small form-factor PC packing a beefy Ryzen processor.

### Required accessories

### Tested devices

Model/Make	Link	Batocera	Performance
CHUWI RZBOX AMD RYZEN 9 4900H	<a href="https://store.chuwi.com/products/chuwi-rzbox">https://store.chuwi.com/products/chuwi-rzbox</a>	v32	

### CHUWI HeroBox Pro Mini PC



Batocera is yet to successfully boot on this mini PC.

### Tested devices

Model/Make	Link	Batocera	Performance	Notes
Intel Jasper Lake N4500 8GB DDR4 256GB SSD	<a href="#">Amazon</a>	v32	N/A	Does not boot.

### LattePanda



There have been reports of Batocera having issues on this device.

A tinkerer's dream, a small form-factor PC with built-in Arduino. [Official page](#). This device is really an SBC, but isn't in the same class as the other SBCs on [their own page](#). Just like with regular PCs, you will need to [adjust the BIOS settings](#) to enable booting from the USB first if desired.

[A video installation guide of Batocera on the LattePanda by DB Tech.](#)

### Required Accessories

- Keyboard and mouse (for standalone emulator configuration/light gun games, most emulators *can* be configured with just a controller though)
- Display and speakers

### Tested devices

Model/Make	Link	Batocera	Performance
LattePanda Delta 432 4GB/32GB	<a href="https://www.dfrobot.com/product-1908.html">https://www.dfrobot.com/product-1908.html</a>	<b>5.24</b>	Can do up to 5th gen full-speed.

### AWOW PC stick



<https://youtu.be/9LM2tc2kyZ8>

### Required Accessories

- Keyboard and mouse (for standalone emulator configuration/light gun games, most emulators *can* be configured with just a controller though)
- Display and speakers
- Micro-SD card (recommended just to use Batocera off the SD card)

### Tested devices

Model/Make	Link	Batocera	Performance
AWOW NY41S	<a href="https://www.amazon.com/Fanless-Celeron-Computer-Ethernet-AWOW/dp/B09F3BJNPH/">https://www.amazon.com/Fanless-Celeron-Computer-Ethernet-AWOW/dp/B09F3BJNPH/</a> or directly from AWOW.	v32	Kills 5th gen, can do some low-end 6th gen.

### AWOW Mini PCs



### Required Accessories

- Keyboard and mouse (for standalone emulator configuration/light gun games, most emulators *can* be configured with just a controller though)
- Display and speakers

### Tested devices

Model/Make	Link	Batocera	Performance
AWOW AK10 N100 (8G DDR5)	<a href="#">Amazon link</a>	v38	Up to lightweight Wii U emulation

### Kamrui Mini PCs

[Kamrui](#) makes a variety of laptops and mini-PCs.



### Required Accessories

- Keyboard and mouse (for standalone emulator configuration/light gun games, most emulators *can* be configured with just a controller though)
- Display and speakers

### Tested devices

Model/Make	Link	Batocera	Performance
CK2	<a href="#">Product page Amazon link</a>	v33	Up to sixth gen, does GameCube okay but demanding titles slowdown.

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[https://www.wiki.batocera.org/usff\\_nuc\\_mini\\_pcs?rev=1699769403](https://www.wiki.batocera.org/usff_nuc_mini_pcs?rev=1699769403)

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