



# **Analogue Nt mini Noir Reference Manual**

# **Analogue**

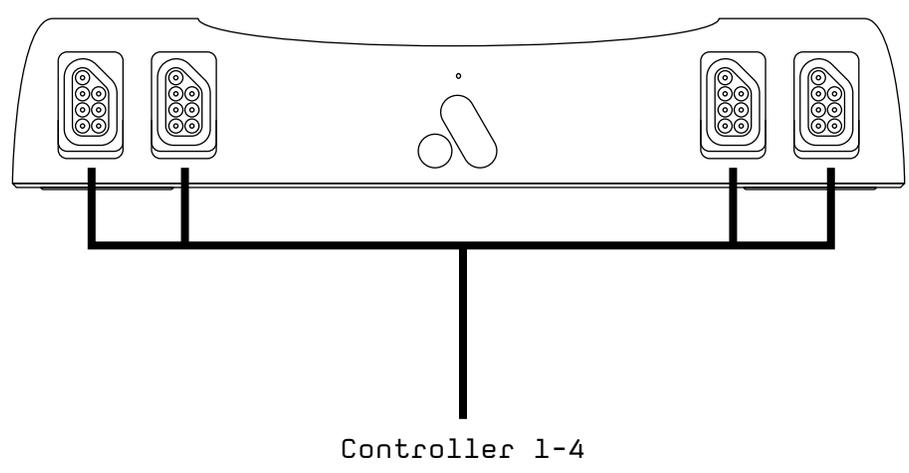
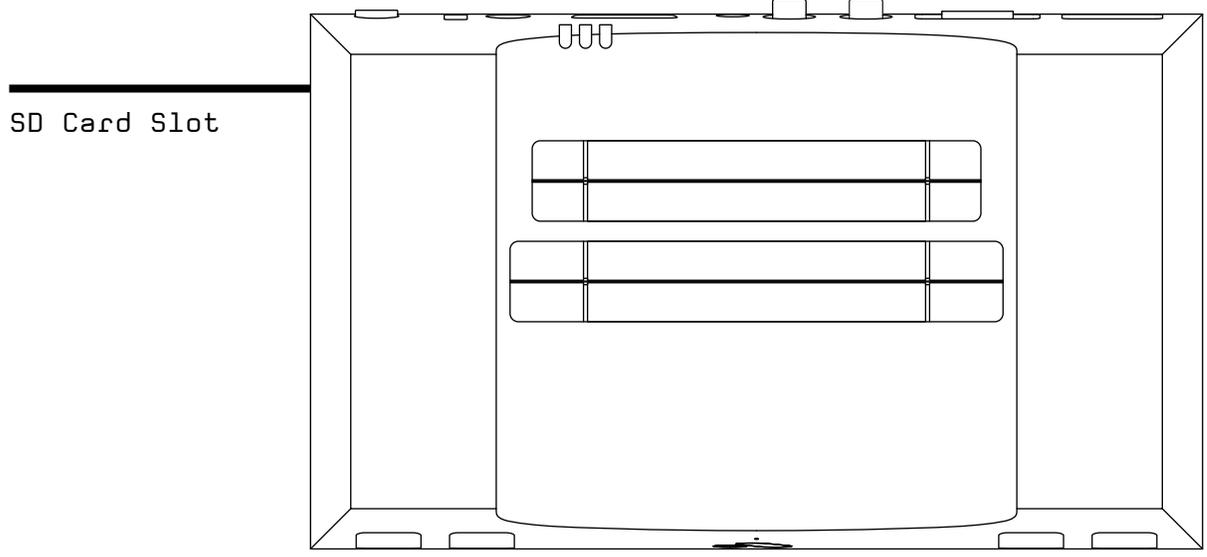
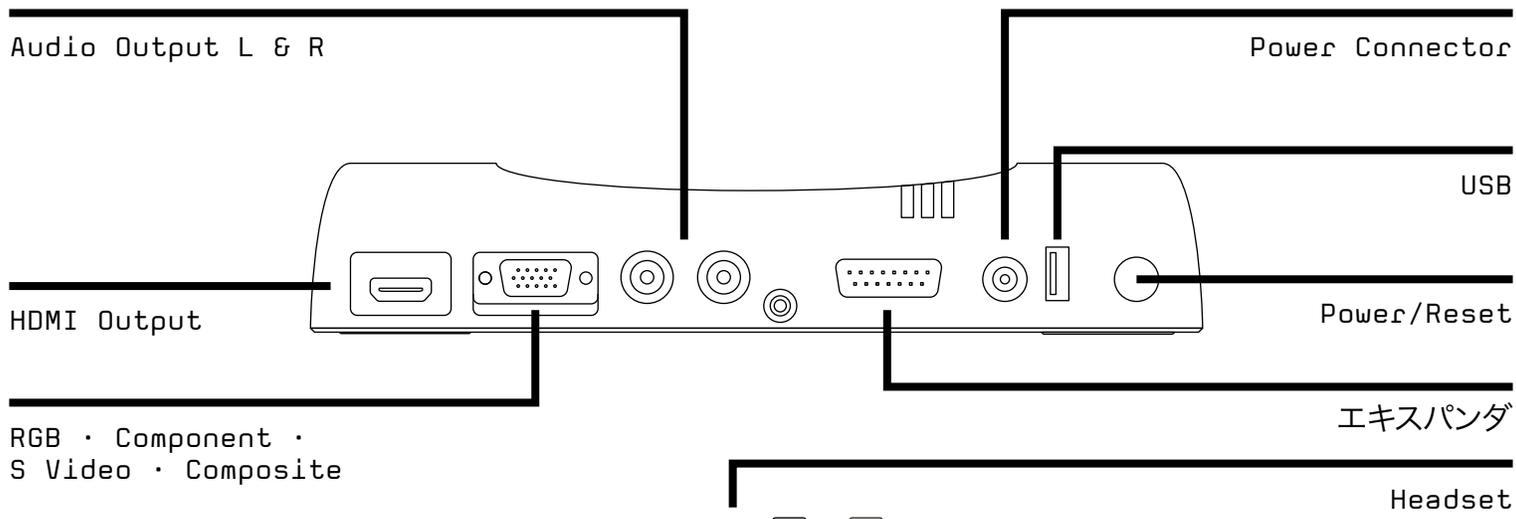
Celebrate & explore the history of video games with the respect it deserves.

# Congratulations on becoming an Analogue Nt mini Noir owner.

Engineered with an FPGA. No emulation. 1080p. Zero lag. Total accuracy. Nt Mini Noir is not a plug n' play toy. It is the definitive way to explore Nintendo's 8-bit era. Compatible with the 1800+ NES and Famicom game library. Explore and re-live one of the greatest video game systems of all time with no compromises.

## What's in the box

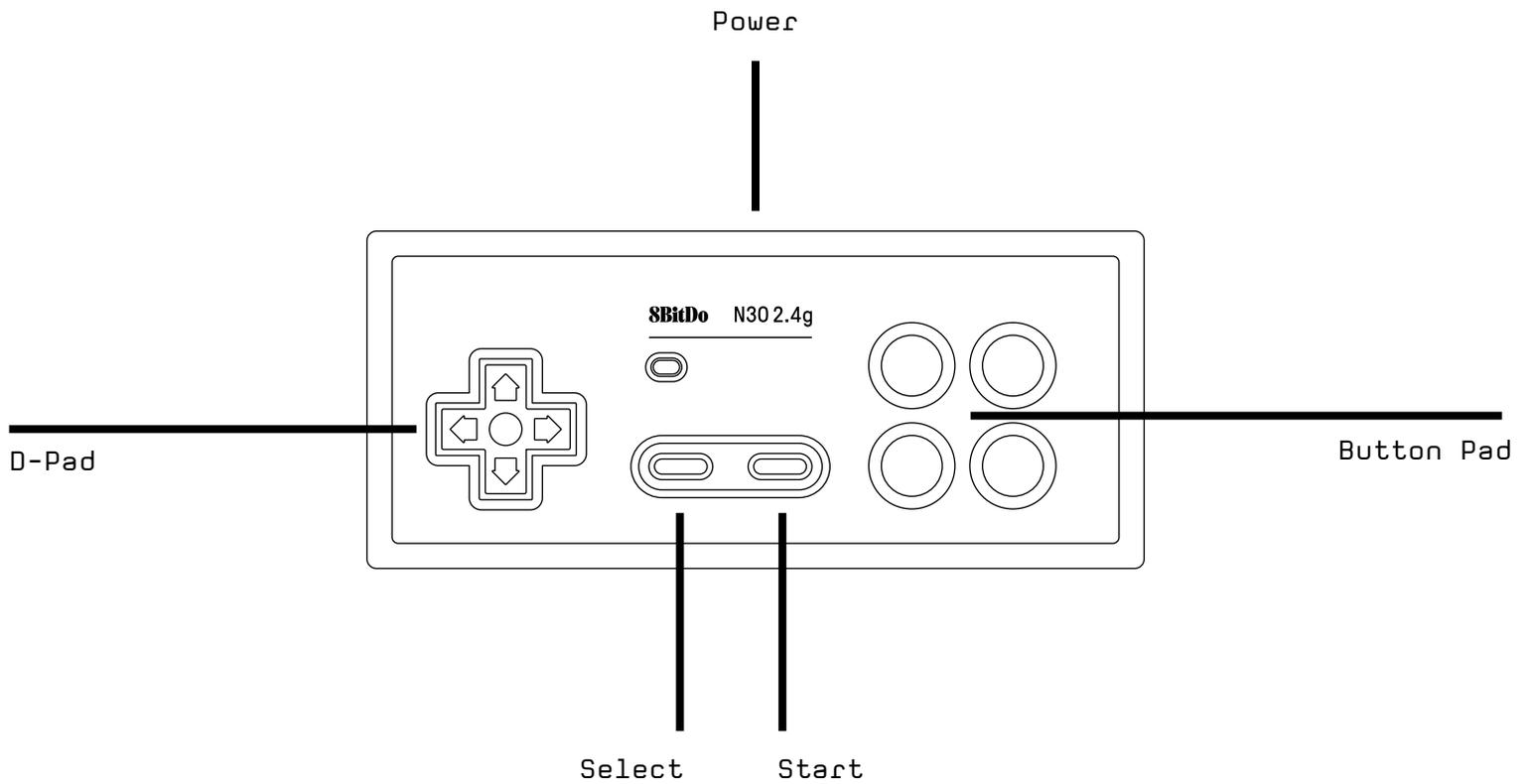
- Analogue Nt Mini Noir
- HDMI cable
- USB cable
- 8bitdo N30 2.4g Wireless Gamepad with NES Controller Port Receiver
- Worldwide Power Supply (100-240v, 50/60hz, USA/JPN plug-type)
- A tri-fold Nt Mini Noir Quick-Start Guide



To start using your N30 controller with 2.4g receiver for NES please see the instructions below.

### Pairing

- 1 Hold start for 3 seconds on your N30 controller to power it on
- 2 Insert the 2.4g receiver into your NES controller port
- 3 Wait until both LED's are solid blue
- 4 Your controller is now paired



## Setting Up Nt mini

Insert your power adapter into the barrel connector on the back of the Nt Mini Noir and plug the other end into a wall outlet. Connect your HDMI cable and/or your analog cables to your Nt Mini Noir and display(s). Insert a NES controller and a Cartridge.

Hold the Power Button down until the front LED turns on. SD cards, controllers and video cables can be inserted and removed while the power is on but Cartridges cannot.

## Updating the Firmware

Before playing your Nt Mini Noir, make sure to update to the latest firmware at [support.analogue.co](http://support.analogue.co). You will need a FAT formatted SD card to update the firmware.

In order to update the firmware, copy the latest firmware update file at Analogue's [Support](#) page (with a .bin extension) to the root directory of your SD card. Make sure no other firmware files are in the root directory. Insert your SD card into the SD card slot on your Nt Mini Noir and turn the power on. The firmware update process will start automatically and takes approximately three minutes to complete. During that time the power LED will flicker red and the screen will be blank. When the process is complete the LED will show a steady color and you will see the Animated Nt Mini Noir Startup logo. Do not power off Nt Mini Noir while the firmware is updating. If the power goes off for any reason, Don't Panic! The system may not display anything but it will look for a firmware file to flash to once the power is restored. You cannot brick your Nt Mini Noir with a failed firmware update.

When you update firmware, all settings are reset to their defaults. Take notes of your settings prior to updating.

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## Ports

P1-P4 – Controller Ports 1-4.

SD Card – Used for loading NSF music files, NES palettes files and LED pattern files.

Power Button – Hold down to turn the Power On or Off, press and release to perform a Warm Reset.

USB – Used to charge Wireless Gamepads.

Power Socket - Provides power to Nt Mini Noir.

エキスパンダ – Used for Famicom Expansion Port peripherals.

Headset – This is used for both headphone output and microphone input (used by several Famicom games) via a TRRS mini-jack. A headset is supported for both headphone output and microphone input usage and TRS mini-jack standard headphones are also supported.

A discrete condenser microphone can be used with a TRRS to headphone & microphone splitter. Nt Mini Noir follows the AHJ/CTIA standard for TRRS signal assignment : Tip = Left, 1st Ring = Right, 2nd Ring = Ground, Sleeve = Microphone

Analog Audio – Gold plated stereo RCA outputs provide audio regardless of video mode used

Analog Video – All analog video is passed through this gold plated HD-15 “VGA” port, but only standard definition video is available via this port.

HDMI Port – Digital video and audio is available through this port in 480p, 720p, or 1080p modes with a refresh rate of either 50 or 60Hz.

## Setting up your HDMI TV for ideal retro gaming

If your flat panel TV has a low-latency, no-lag or Game Mode, enable it. Otherwise turn off all processing features on your TV or it they may negatively affect gameplay and latency.

### Compatible Analog Video Cables

Nt Mini Noir supports RGB, Component, S-Video and Composite video through the 15-pin "VGA" video connector. Analogue recommends cost effective cables sold by Monoprice to provide optimal results. Here is a list of compatible cables and links where you may purchase them :

#### Composite & S-Video

[Monoprice VGA to S-Video/RCA \(Composite\) Adapter Cable](#)

#### Component Video

[Monoprice 12ft VGA to 3 RCA Component Video Cable](#)

[Monoprice 6ft VGA to 3 RCA Component Video Cable \(HD15 – 3-RCA\)](#)

[Monoprice 6in VGA to 3x RCA Component Video Cable \(HD15 to 3x RCA\)](#)

#### RGB Video – BNC Connectors

[Monoprice VGA HD-15 to 5 BNC RGB Video Cable for HDTV Monitor cable - 6FT](#)

[Monoprice VGA HD15 Male to 5x BNC Female Adapter Cable - 1ft](#)

#### RGB Video – SCART Connector

For SCART connections, the most hassle-free way to deliver analog video to your TV set may be to use the Monoprice VGA HD15 Male to 5x BNC Female Adapter Cable – 1ft in combination with this :

[Male SCART to 4 x BNC + 2 x RCA breakout](#)

Connect the Red, Green and Blue video terminals together. The composite synch line is Gray/White, so connect the matching terminals together. There

is no audio connection at DAC's analog video connector, you will need to plug in the RCA cables into the RCA jacks on DAC.

### RGB Video – VGA or DVI Connector

You can use any VGA-to-VGA cable or adapter with HD-15 Connectors on it. Note the gender of the connector's input device. The VGA display or capture device must be able to support a 15KHz horizontal scan frequency, which is what 240p/480i consoles output. Typical VGA CRTs do not. You may also connect DAC to a display or capture device, such as a flat panel LCD, which has a DVI-A or DVI-I input connector with the appropriate cables or adapters. Not all devices with a DVI connector will support the 15KHz horizontal scan frequency which Nt Mini provides.

### Default Controller Key Assignments & Hotkeys

Up + Start + Select + B + A – Warm Reset (Same as pushing the power/reset button)

Down + Start – Enter/Leave Menu (Entering the Menu does not pause a game and blocks controller inputs to the game, Leaving the Menu returns to a game in progress and returns controller inputs to the game)

B - Confirm/Select Menu Option Key

A - Cancel/Back Key

These can be changed in the System – Hotkeys & Controllers menu option.

Select + A - Hold down to Power On Nt Mini Noir by controller

### Main Menu Options

Run Cartridge

Performs a Cold Reset (CPU registers and memory is reset) and runs the cartridge in the cartridge slot. This can be a NES or a Famicom cartridge, but you cannot use both cartridge slots at the same time, if there is a cartridge in the NES slot, the Famicom slot must be unoccupied and vice versa.

### Settings

Allows you to adjust the video, audio or system options, save settings and view the credits.

## **Tools**

Allows you to enter Game Genie-style cheat codes and play NSF files.

## **Power Off System**

Allows you to turn the system off without having to reach behind it to hold down the power button.

## **Compatible Cartridges**

- Official Nintendo-manufactured and approved cartridges (all regions)
- Unlicensed/Homebrew/Reproduction/Pirate NES and Famicom cartridges
- Famicom Disk System, Karaoke Studio, Datach
- Joint ROM System, StudyBox and Famicom Modem
- Game Genie, Pro Action Replay and Game Action Replay
- Aladdin Deck Enhancer
- NES PowerPak, EverDrive N8 and N8 Pro\*

\* - Nt Mini does not support Expansion Audio passthrough on its NES cartridge connector, only on its Famicom cartridge connector

## **Compatible Controllers & Peripherals**

Official and aftermarket NES controllers (all regions, all varieties)  
Famicom Expansion port devices\*  
8bitdo N30 2.4G NES Controller Receiver and Bluetooth Retro Receiver  
Super NES Controllers and Super Famicom NTT Data Controllers (via a SNES-to-NES converter)  
NES and Famicom Light Guns, R.O.B. and Famicom 3-D Glasses compatible only when analog video modes are used on a CRT display

\* - The original Famicom Expansion ports were deeper than the DA-15 connector used on the Nt Mini Noir, so they may stick out a bit from the socket. Some very bulky peripherals may block the power socket and will require a short 15-pin extension cable.



- 
- 4 *Hardware*
  - a USA
  - b PAL Regions
  - c Dendy
  - d SD Card Speed
    - i Normal Speed
    - ii Fast
    - iii Faster
  - e Fill RAM with 0's at start
  - f Fill RAM with FF's at start
  - g Fill RAM randomly at start
  - h 3.6V Cartridge IO
- 
- 5 *LED Options*
  - a Standby Color
  - b Center Pixel
  - c K-Pro Rainbow
  - d Load Custom Pattern
    - i File Browser
  - e Adjust Pattern
    - i Animate Pattern
    - ii Animate Speed (0-31, 16)
    - iii Pattern Position (0-255, 0)
  - f LED Brightness (0-31, 8)
  - g Standby Color Adjust:
    - i Red (0-255, 255)
    - ii Green (0-255, 255)
    - iii Blue (0-255, 255)
- 

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#### **D Cheat Codes**

- 1 *Enable Checked Codes*
  - a -----
  - b -----
  - c -----
  - d -----
  - e -----
  - f -----
- 

#### **E Core Options**

- 1 *Disable Square Reset*
  - 2 *Disable Looped Noise*
- 

#### **F About**

- 1 *Special Thanks*
- 

#### **F Save/Clear Settings**

- 1 *Save Settings*
- 2 *Restore Factory Defaults*

## Resolution

480p mode sets a resolution of 640×480  
576p mode sets a resolution of 720×576  
720p modes set a resolution of 1280×720  
1080p modes set a resolution of 1920×1080

50p is intended for European, Australian, Chinese and Russian PAL and Dendy games, all Japanese, American, South Korean, Taiwanese and Brazilian games use the NTSC 60p frame rate. If you see visual artifacts like tearing (assuming the single buffer mode is off) or stuttering, check here to make sure your refresh rate matches the refresh rate of the game's region. This setting should be used in conjunction with the Hardware settings in the System Submenu.

Nt Mini Noir supports EDID (Extended Display Identification Data) over HDMI. The display will send EDID information over the HDMI cable telling Nt Mini Noir what display modes it supports. You may get an unsupported display mode to work, but if you do not, you may end up with no picture. Some NTSC displays may not report 50p support but will work with some or all 50p resolutions anyway. Almost all European displays support 60p. Nt Mini Noir will start up with the highest resolution and frame rate your monitor supports unless you select a lower resolution setting and save the settings.

The NTSC NES and Famicom display 256×240 active pixels in NTSC mode and the PAL NES and Dendy display 252×239 pixels in PAL mode.  
Width & Height

### 1. 480p Options

Minimum/Maximum Width in Horizontal Pixels :  
256/640  
Minimum/Maximum Height in Vertical Pixels :  
480/480

Horizontal Presets at the 480 (2x) Vertical Preset :  
Width – 256 (1x), 480 (1:1), 512 (2x), 548 (Square Pixels), 640 (4:3 for 16:10)

### 2. 576p Options

Minimum/Maximum Width in Horizontal Pixels :  
256/720

Minimum/Maximum Height in Vertical Pixels :  
480/576

Horizontal Presets at the 480 (2x) Vertical Preset :  
Width – 256 (1x), 480 (1:1), 512 (2x), 548 (Square Pixels), 720 (4:3 for 16:10)

Horizontal Presets at the 576 Vertical Preset :  
Width – 256 (1x), 512 (2x), 576 (1:1), 658 (Square Pixels), 720 (4:3 for 16:10)

### 3. 720p Options

Minimum/Maximum Width in Horizontal Pixels :  
512/1280  
Minimum/Maximum Height in Vertical Pixels :  
480/720

Horizontal Presets at the 480 (2x) Vertical Preset :  
Width – 512 (2x), 548 (Square Pixels), 768 (4:3 for 16:10), 853 (4:3 for 16:9), 4x (1024), 5x (1280)

Horizontal Presets at the 600 (2.5x) Vertical Preset :  
Width – 512 (2x), 600 (1:1), 685 (Square Pixels), 3x (768), 960 (4:3 for 16:10), 1024 (4x), 1066 (4:3 for 16:9), 1280 (5x)

Horizontal Presets at the 720 (3x) Vertical Preset :  
Width – 512 (2x), 720 (1:1), 768 (3x), 822 (Square Pixels), 1024 (4x), 1152 (4:3 for 16:10), 1279 (4:3 for 16:9), 1280 (5x)

### 4. 1080p Options

Minimum/Maximum Width (Horizontal Pixels) :  
1024/1920  
Minimum/Maximum Height (Vertical Pixels) :  
960/1200

Horizontal Presets at the 960 (4x) Vertical Preset :  
Width – 1024 (4x), 1097 (Square Pixels), 1280 (5x), 1536 (4:3 for 16:10) (6x), 1706 (4:3 for 16:9), 1792 (7x), 1920

Horizontal Presets at the 1080 (4.5x) Vertical Preset :  
Width – 1024 (4x), 1080 (1:1), 1234 (Square Pixels), 1280 (5x); 1536 (6x), 1728 (4:3 for 16:10), 1792 (7x), 1919 (4:3 for 16:9), 1920

Horizontal Presets at the 1200 (5x) Vertical Preset :  
Width – 1024 (4x), 1200 (1:1), 1280 (5x), 1371 (Square  
Pixels), 1536 (6x), 1792 (7x), 1920 (4:3 for 16:10)

## Notes on Scaling

If you are outputting your Nt Mini to a 1080p or 4K native display, you should use the 5x vertical scale to fill up as much of the screen as possible. You should be able to see all essential information in most games and should not need to adjust the vertical position often. A 5x vertical scale gives you essentially a 256x216 scaled resolution, so you can use the horizontal and vertical positioning sliders to adjust the lines displayed if any vital details are lost. This page discusses overscan on the NES.

If you want perfectly square pixels at 1080p, choose a 5x horizontal scale. The ideal pixel scale are the “Square Pixel” options shown above the horizontal slider. Horizontal scaling with non-integer pixel values can show shimmering in games like Contra. Enabling the horizontal interpolation can eliminate that shimmer with only a minimal loss of sharpness. If you want a stretch that does not have shimmering artifacts and that is just slightly wider than a typical CRT, then choose the 6x horizontal scale with the 5x vertical scale in 1080p mode.

### Centering Values for Selected Horizontal and Vertical Pixel Sizes

#### 480p

Width = 512 (2x) / 548 (Square Pixels)

Horizontal Position = 31

Height = 480 (2x)

Vertical Position = 53

#### 720p

Width = 822 (Square Pixels) / 1024 (4x)

Horizontal Position = 26 / 19

Height = 480 (2x)

Vertical Position = 39

#### 1080p

Width = 1097 (Square Pixels) / 1280 (5x)

Horizontal Position = 22 / 16

Height = 960 (4x)

Vertical Position = 51

Width = 1234 (Square Pixels) / 1280 (5x)

Horizontal Position = 17 / 18

Height = 1080 (4.5x)

Vertical Position = 48

Width = 1371 (Square Pixels) / 1536 (6x)

Horizontal Position = 13 / 7

Height = 1200 (5x)

Vertical Position = 45

These values may not be valid for every HDMI-compatible device and may shift by a pixel or two if one of the scalers or interpolation is active.

## Screen Size

In the simplified Screen Size setting, height settings are given only for 1080p modes.

## Cropping

You can use the sliders to crop each edge of the screen by up to 32 pixels in each direction.

The NES always displays 240 or 239 active vertical pixels and 256 or 252 active horizontal pixels with NTSC and PAL PPU, respectively. The NTSC NES and Famicom also can display a border color, but this was not intended to be seen and is only visible on Nt Mini Noir with analog display modes. While early games tended to fill the top, bottom and sides with tiles, eventually developers figured out that most TVs did not display the edges of the NES resolution. So they may have not updated tiles properly in these areas (Bionic Commando, Double Dragon II) or have allowed oddly colored areas in the left and right borders (Super Mario Bros. 3, Kirby's Adventure).

## Scalers

Several scalers are available if you wish to apply them. “No scaler” uses nearest-neighbor interpolation where the color of a pixel is repeated horizontally and vertically as often as is necessary to get to the desired scaled resolution. This results in the sharpest, “pixel purist” graphics but can leave uneven horizontal pixels if the scaled resolution is not an integer multiple of the original resolution.

The HQ2x, HQ3x and HQ4x scalers interpolate a pixel based on the surrounding pixels. The result is generally a smoother image. The 2x, 3x and 4x refer to blocks of pixels, and the larger the block,

the fewer colors will be used. Scale 2x and Scale 3x use a somewhat different algorithm but produce a similar result. X-Ray uses a simple algorithm to give inverted black and white graphics.

Using scalers may shift the image slightly, alter the colors considerably and will cause a little extra lag due to the processing of the image required.

Disable H and V Interpolation – These options are useful with horizontal and vertical pixel sizes which are not an integer multiple of 256 and 240, respectively. These modes subtly blend the edges of pixels to make uneven nearest-neighbor scaled pixels less noticeable. It can also eliminate shimmer in scrolling backgrounds on LCD displays. If you are using a true integer horizontal or vertical scale, you should not need to use these options.

When the Disable Horizontal or Vertical Interpolation box is checked, that means the interpolation is NOT being applied to the video. You can set each form of interpolation independently.

## Scanlines

Nt Mini Noir can recreate scanlines produced by the scanning beam structure of a CRT. Normal Scanlines dim pixels by the same amount regardless of the pixel's color. The Hybrid Scanlines option targets more realistic scanlines by adjusting for gamma when dimming a pixel's color. With hybrid scanlines, darker colors have thicker scanlines than brighter colors.

These options presented here, Normal Scanline Depth, Scanline Width and Scanline Sub-Brightness work in conjunction with each other to alter the display of the brightness of both the scan displayed and the gap lines simulated in between each scan of the displayed graphics. Scanline Sub-Brightness, must be set to a value above 0 before you will see any lines in between the graphics. This option will darken the line and by 255, the lines will be full black.

The first two options have little, if any effect in 480p mode. Their best utility is in the 1080p 4x and 5x modes. What they do is to alter the brightness of the scanned lines adjacent to the gap line in different ways. These options allow a fine gradient

to the brightness of a scanned line's colors in relation to the gaps in between each drawn line. You can use these options to darken every third scanline in 720p mode, which may be the easiest way to obtain PVM-like scanlines.

If you use scanlines, you may need to adjust the Vertical Position in the Width and Height setting from the current setting to allow the scanlines to align themselves with the top or bottom edge of each line of scaled pixels. Having scanlines bisect a scaled pixel is not ideal.

## Analog Mode

Nt Mini Noir can display analog video output via its built in analog video port as well as Analogue DAC.

Limit Browser Width – The File Browser for fonts and LED animations will show 60 columns of text and numbers per line. If checked, the File Browser will show 30 columns of text and numbers per line. If a file name is too long to be displayed fully on one line of the File Browser, the name will scroll to the left so you can read the whole file name. Text at 60 characters per line can be extremely hard to read when output via composite video. 30 characters per line text is not an issue, even with composite.

DAC LED Brightness – Sets the brightness of DAC's led.

Link DAC LED to power LED – Analogue DAC's LED behaves like Nt Mini Noir's LED

## Advanced Settings

RGB Composite Synch (one synch wire, 75-ohm terminated synch) default option  
RGB Separate Synch (two synch wires, TTL-level synch)  
RGB Synch on Green (zero synch wires)

These settings can also be accessed with HDMI. Setting the wrong synch option may result in a black or garbled screen or a rolling screen. You can use any other video output from HDMI to Composite to set the synch option to an option your device supports if the default analog option (Composite synch) does not function with your display device. Remember to save your settings if you plan to use an analog display exclusively.

Analog RGB monitors usually require or prefer Composite Synch, but an analog capture card like the Datapath E1/E1s requires Separate Synch.

**Invert RGB Synch** – This option will toggle the polarity of the Synch signal from positive to negative or negative to positive. Use this option if your display is showing a difficulty acquiring or losing sync with the default option.

**Chroma Filter** – The Chroma Filter options will adjust the color fringing seen with Composite Video. S-Video is virtually free of color fringing, so this option's effect using that connection is minimal. It has no effect on Component Video or RGB Video connections.

**7.5 IRE Black Level** – Brightness for Composite Video is measured in IRE units, and 0.0-100.0 is the usable range of IRE units. This option sets the black level to the US NTSC standard of 7.5 IRE when enabled. This option will only have an effect for Composite Video and S-Video. If disabled, 0.0 IRE will be used, which became the Japanese NTSC standard and was always used for PAL.

**700mv RGB Level** – When disabled, RGB will use 1v signaling for each color signal. Most RGB displays prefer 700mV, you should disable this option only for those displays that prefer higher voltage levels. It has no effect for any other connection type.

## Extra Features

**Enable Dejitter** – The NES outputs one “short” (by one pixel) scanline every other frame to reduce the visibility of composite color artifacts. Nt Mini Noir replicates this feature, but it can show as jitter in the first scanline in other output types. Enable Dejitter to eliminate this jitter.

**16 Sprites per Scanline** – The NES could display eight sprites per scanline. If more sprites were placed on a scanline, the result would be flickering because the ninth and later sprites would not otherwise be displayed. This option can eliminate or greatly reduce flickering by allowing up to 16 sprites per scanline to be displayed. However, it can cause glitches in games and some games (Nintendo World Cup) draw their sprites to avoid flickering in such a way that this option will not help those games' flickering.

**Palette** – This option allows you to select one of the built-in palettes or a custom palette from your SD card. There is no one true NES palette because the NES directly generated NTSC and PAL hues rather than converting RGB values. The .pal file must be 192 bytes in size. Nt Mini will look by default in the \PALETTE directory on the SD card. This option will have no effect if Composite or S-Video is being used.

## Buffer Mode

The buffering modes on Nt Mini Noir address the issue that the NES's native NTSC frame rate is 60.0988fps and the PAL rate is 50.0070fps. A CRT can display these frame rates with ease but Modern displays and HDMI interfaces expect either 60fps, 59.94fps or 50fps and are generally not tolerant of refresh rates that vary from too far from the official framerates. Nt Mini Noir has three modes that deal with the frame rate differential in different ways.

The Fully Buffered option buffers full frames to maintain the timing of a 60.0988 or 50.0070 frame rate using only 60 or 50fps. This mode avoids tearing at the cost of latency. Nt Mini Noir must render at least 1 frame ahead of the game's internal rendering to stay ahead.

The Zero Delay option slows down the simulated NES/Famicom to achieve a true 60 or 50fps frame rate, a speed difference of no more than 0.1%. There is no latency penalty with this method but this method causes Nt Mini Noir fall behind by about 1 second every 10 minutes compared to an original NES/Famicom running the same software.

Finally, the Single Buffer option is something of a compromise between the two methods described above. Like the Full Buffer option, the correct timing is being generated within Nt Mini Noir. Unlike the Full Buffer, only a portion of the next frame is being pre-rendered, giving latency of no more than 1 frame depending on when the player activates an input. The drawback is a recurring retrace line that is visible once per every several seconds.

**Enable DVI Mode** – This option can allow Nt Mini Noir to connect to displays which only support the DVI standard. DVI does not carry audio and other data over its connection that HDMI carries. The extra data which HDMI provides can cause many

DVI-only monitors to fail to display Nt Mini Noir's video. If you use this option, you must take audio from the RCA or headset jacks

## Dual Output Support

Nt Mini Noir supports simultaneous output via its HDMI and analog video ports.

Zero Delay and analog video output are not compatible. When HDMI is in Full or Single Buffer mode, analog video will run at the native NES/Famicom NTSC or PAL refresh rate and there will never be any lag over analog video. If Zero Delay is enabled, Nt Mini Noir will show a warning message until it is turned to another option on the HDMI display

Nt Mini Noir supports Analogue DAC for dual analog output. The Nt Mini Noir's USB port or an external power adapter can be used to provide power to Analogue DAC. Plugging in Analogue DAC will turn Zero Delay mode into Full Buffer Mode.

## Famicom Disk System Compatibility

The cycle-stealing nature of the Zero Delay mode will likely cause the Famicom Disk System not to work properly with Nt Mini Noir because the Famicom Disk System runs on its own clock and must synchronize it to the Famicom's internal clock which the designers expected to be identical. The Full and Single Buffer modes present the original clock signal to the cartridge ports but Zero Delay cannot. The result is that some Famicom Disk Systems will not work reliably with the Zero Delay mode. Changing the buffer mode from Zero Delay to Full Buffer or Single Buffer should resolve this issue.

## Color

Limiting RGB Range adjusts the color output range to accommodate those displays which do not handle 24-bit RGB natively. Many LCDs as found on TVs do not show a full range of RGB for each of the three primaries, red, green and blue. Each primary color is represented by an 8-bit value, giving 256 levels of color for each primary. Full RGB displays accept values of 0-255 for each color primary. Limited RGB displays only accept values of 16-235,

with values below 15 being designated as black and values above 235 being designated as white. The identical RGB value will not produce the same color in limited RGB versus full RGB because limited RGB tries to cover the same color space as full RGB but has fewer values to cover the range.

You should use Full RGB if your display supports it. If you turn on the Limited RGB Option and see black turn to dark gray, then you should not use this option. If the black stays black, then keep this option on.

The Lock Gamma Sliders Together option disables your ability to set the gamma for Red, Green and Blue independently.

Red, Green & Blue sliders can be set from 1.00 to 1.99 in .01 increments. You may come close to the gamma of a CRT with the sliders at 1.20 without scanlines and 1.40 with scanlines.

## Advanced Mode

Enabling this option adds the Cropping, Extra Features, Buffer Mode, Color and DAC RGB Mode options to the Video Submenu and turns the simplified Screen Size options into the Width & Height options. Any options you select while using Advanced Mode options will remain in effect if the Simplified Menu is selected.

## Audio Settings

The NES' Audio Processing Unit (APU) provided five channels of audio, two pulse waves, one triangle wave, one noise channel and one DPCM channel. Certain Famicom games and the Famicom Disk System can add additional audio channels which are then mixed with the APU's audio.

Headphone Volume – Sets the volume level from the headset jack

High Impedance Phones – If you are using studio-use headphones, select this option and Nt Mini Noir will try to provide the power necessary to drive those phones. If you are using earbuds or typically low impedance computer/gaming headsets, leave this option unchecked. If your headphone's impedance is above 50 Ohms, then select this option. If below 30 Ohms, leave it unchecked. Between 30 and 50 Ohms, see which setting works

best for you. You will notice an increase in the loudness of the audio with this item checked.

Use Headset Volume Buttons - Allows you to control the volume via the buttons on a headset.

Channel Levels – These sliders allow you to set the relative volume levels of each internal NES APU channel and the levels of the simulated expansion audio APUs. The NES' five internal channels are designated as Square 1, Square 2, Triangle, Noise and DPCM.

Some expansion audio sources (VRC6, MMC5, three channels each) allow you to set the channels individually, some partially (VRC7, six channels split into A and B) and some only have one channel (Famicom Disk System). The AY38910 (Sunsoft 5B) has three channels, but Nt Mini does not allow you to set the volume of each channel individually. The N163 may have up to eight channels, but the chip was designed to play each channel sequentially, and that part of its functionality is maintained in the volume controls.

Channel Panning – All audio on the NES and Famicom was intended to be heard in mono but NES could be modded to split to have the two pulse wave channels on one output and the triangle, noise and DPCM channels on another output. The panning options with the Nt Mini Noir allows for far more control over stereo sound than the original hardware was capable. The middle setting gives a centered output.

-3db Output Cut – Some monitor embedded speakers and soundbars clip or cannot recognize a full-volume signal. This option reduces the volume to reduce the peaks below their maximum amount (0db). Try enabling this option if you are not hearing any sound or hearing clipping sound from Nt Mini Noir.

Enable Cartridge Audio – This option lets you use a cartridge's built-in audio processing unit instead of Nt Mini Noir's.

Swap Left & Right – This option reverses stereo.

## Advanced Filter Settings

Use Lowpass Filter – This allows you to apply a lowpass filter to the simulated audio output. You may wish to use this to attenuate the higher frequency components of the audio. The slider allows you to specify a cutoff frequency from 100-20000Hz in 100Hz steps. If you go too low the sound will start to sound muffled.

The low pass filter is a 256-order low pass, so the cutoff frequency will sharply attenuate audio above the set frequency.

The Disk System and N163 default to using the filter because the Disk System had a low pass filter and certain games (Erika to Satoru no Yume Bouken, King of Kings, Namco Classic II, Sangokushi: Chuugen no Hasha, Sangokushi II: Haou no Tairiku, Yokai Dochuuki) using N163 audio also included a filter in the mixing path.

Rolloff Rate – The rolloff rate is given with a number representing the db reduction in volume over a decade. The default value is 28db/decade

The resulting sound may vary considerably from what was intended, so the setting won't be saved when you Save Settings.

Audio Toys – The Square 1-2 and Triangle TIA features give an Atari 2600-like quality to the audio output. The 2600's TIA could produce various forms of sound, but the sound quality was generally very crude. Music was difficult to get in tune with the 2600. With these options you can give your Nt Mini Noir some of those same harsh, electronic qualities.

Microphone Sensitivity – This option adjusts the sensitivity of the Famicom Controller Port 2's microphone as implemented by the headset jack on Nt Mini Noir. The Japanese versions of The Legend of Zelda and the Famicom Disk System's Hikari Shinwa : Palutena no Kagami are the titles best known to western audiences to use the microphone.

Expansion Chips – This enables the expansion audio chip recreation for cartridges that use expansion audio. You must select the appropriate option when using a cartridge if you wish to hear Nt Mini's reproduction of that audio chip. The list of games with expansion audio support can be found here.

Akumajou Densetsu uses the VRC6 option while Esper Dream 2 & Madara use the VRC6 Swap option.

You must use original cartridges if you wish to hear expansion audio from the Jaleco or Bandai speech chip games. They are not implemented in Nt Mini Noir.

## System Settings

### Menu Options

**Skin** – Use the Cartridge graphic and Highlight color appropriate for the region selected.

**Highlight Style** – Used to indicate the current menu option

**Highlight Color** – Used to determine the color of the current menu option

**Font** – Changes the menu font, Alternate Font uses a thicker, standard 8x8 font instead of the default font.

The user loaded font allows you to select your own font in place of those which come with Nt Mini Noir. The load font option will bring you to the file browser. If you have a directory called FONT at the root of your SD card, it will default to that directory to load a font file. The font must use an 8x8 text box and must be represented in binary in a 1-bit per pixel format. Each character will take eight bytes to represent in this format. The file must be 768 or 1024 bytes in size and use the extension .fnt. The characters in the file will have to start at ASCII 20 (space) and end at ASCII 7F (delete). Font files 1024 bytes in size will not show the first 32 characters which would be stored in the first 256 bytes of that file.

**Menu Bounce** – The menus will drop down instead of instantly appearing

**Dim Game in Menu** – The game will be dimmed when the menu is active, making it easier to see the menu options but more difficult to see the effects of changing video parameters.

### Controls & Hotkeys

**Reset Hotkey** - You can use almost any combination

of controller buttons and directionals for this option. You cannot use the Up and Down or Left and Right directionals at the same time.

**Menu Hotkey** – You can use almost any combination of controller buttons and directionals for this option. You cannot use the Up and Down or Left and Right directionals at the same time.

## 4 Player Settings

These options will determine how Controller Ports 3 & 4 function on Nt Mini Noir.

**Standard Controllers** – Controller Ports 3 & 4 will not function.

**Four Score** – required for NES Four Score/Satellite supporting four player games released in North America and Europe.

**Fami Four Player** – allows you to use NES controllers plugged into Controller Ports 3 & 4 instead of the Famicom Expansion Port to play Famicom three and four player games. This is supported by games released only in Japan.

Famicom and NES four player games use incompatible methods for reading the inputs of controllers three and four and are not compatible with each other. You should not need to set either four player option unless you are playing games with more than two players.

**Light Guns** can only be used on Controller Ports 1 & 2

**Disable Hotkeys** – If you wish to eliminate any accidental triggering of the hotkeys, you can use this option but you will not be able to return to the menu without power cycling the console. The state of this option will not be saved when you Save Settings.

**Passthrough Mode** – If you are having trouble with an unusual peripheral or wish to disable all Nt Mini Noir controller compatibility processing and eliminate a tiny amount of latency required by that processing, enable this mode. You will need to tap the power button twice (reset) quickly to get out of this mode and be able to access the menu again. The state of this option will not be saved when you

Save Settings.

## Startup Options

**Boot Sequence Delay** – This slider determines how much of a delay will be used before the screen will be activated. Some LCDs cannot handle information immediately available from the HDMI interface, so if you are not getting a picture you may want to add a little delay to give the display time to set up the picture parameters.

**Title → Menu** – Starts up directly with the Root Menu after showing the startup sequence

**Title → Cartridges** – Starts any cartridge inserted in Nt Mini Noir after showing the startup sequence

**Menu Direct** – Starts up directly with the Root Menu without showing the startup sequence

**Cartridge Direct** – Starts any cartridge inserted in Nt Mini Noir without showing the startup sequence

## Hardware

**USA** – Use for Games released in North America, Japan, Taiwan and South Korea

**PAL Regions** – Use for Games released in Western Europe, Australasia, Hong Kong

**Dendy** – Use to recreate the Dendy PAL behavior

These settings change the PPU and APU functionality to function with each particular region. USA simulates the 2A03 APU and the 2C02 PPU, found in all official mainstream Famicoms and NTSC NES consoles.

PAL Regions simulates the 2A07 APU and 2C07 PPU found in official PAL NES consoles. Dendy simulates the PAL UA6527P APU and UA6538 PPU clone chip behavior found in the Dendy consoles which were popular in Russia and Eastern Europe. The Dendy option uses PAL speed but is much more compatible with NTSC games than the official PAL APU and PPU.

## SD Card Speed

This option allows for SD card access in the File Browser via three speed settings for loading files : Normal Speed, Fast and Faster.

Unless your SD card is really slow, you should be OK with Faster. Lower the speed down if you are having trouble loading Files.

**Fill RAM Options** – These options let you set the initial RAM values when a game starts. RAM in original consoles is not set or cleared by the system, it uses pseudo-random values which can vary from system to system. Some games like Final Fantasy rely on this randomness for their random number generator functions. Certain games like Huge Insect may show glitch tiles unless the RAM is set to 0s or FFs due to programming oversights.

**3.6V Cartridge IO** – By default, Nt Mini Noir uses 5V IO signals to communicate with cartridges. This is ideal for cartridges released during the lifetime of the NES and Famicom. However, some more recent homebrew games and multicartridges uses 3.3v flash chips without logic level converters. These flash chips work best with a console that uses logic levels at or near that voltage. If you are having trouble with such a cartridge, try checking this option. Keep this option unchecked when using official and vintage cartridges.

**Dendy mode** – When using Analogue DAC with Nt Mini Noir, DAC's NTSC/PAL switch determines the output mode. Because the switch has only two positions, this option lets Nt Mini Noir instruct Analogue DAC to use Dendy-timings instead of official PAL timings.

## LED Options

These options control the colors displayed by Nt Mini Noir's RGB LED.

**Standby Color** – LED Color is solid White by default but can be freely adjusted with the Standby Color Adjust sliders.

**Center Pixel** – LED Color will be whatever the pixel in the center of the screen's color is. If you choose this option, you may not see the LED show color when the system turns on if you boot to the menu because the center pixel is black.

**K-Pro Rainbow** – LED Color cycles through the rainbow.

**Load Custom Pattern** – Allows you to load a custom pattern contained on the SD card. Will send you to a File Browser. Pattern files are 768 bytes in size.

**Adjust Pattern** – These options allow you to adjust the animation speed and position of the pattern selected in the previous menu .:

**Animate Pattern** – Will disable animation and leave the LED set to the last displayed color if disabled. Equivalent to setting the Animate Speed to 0.

**Animate Speed** – Determines the speed at which the LED changes colors, higher numbers give faster transitions.

**Pattern Position** – Determines the currently displayed color within the pattern. Each pattern consists of 256 RGB values.

**LED Brightness** – Determines the brightness of the LED in a slider, 0 turns the LED off.

## Save/Clear Settings

**Save Settings** – Saves menu settings to Nt Mini Noir's internal flash memory

**Restore Factory Defaults** – Restores Factory Defaults, so take notes of your settings prior to updating.

## Core Options

**Disable Square Reload** – This is a feature relied upon with certain NSF files originally composed using less accurate emulators. It should be unchecked when not playing those NSF files, because it can lead to inaccurate audio. When the score counts down in Super Mario Bros. when you touch the flagpole at the end of a level and the Disable Square Reload function is enabled, you will hear a constant tone instead of the oscillating tone intended.

**Disable Looped Noise** – This option allows your Nt Mini Noir to sound like an early Famicom, which lacks the short noise period in its APU. Enabling this option will make electrical sounds in Mega Man (Fire Man's stage) and Mega Man 2 (Quick Man's stage) sound like white noise but may make the final note of game over music in Balloon Fight sound more authentic.

## Tools

### NSF Player

Starts the file browser to play NSF (Nintendo Sound Format) files contained on the inserted SD card. Once an NSF is selected, the NSF player application will play the songs in the NSF file. NSF files contain the APU register data needed to generate NES music and sound effects. Only NSF v1.0 files are fully supported. When you wish to leave the player or play another file, bring up the menu to the file browser and keep pressing the Back button until the application disappears.

## Cheat Codes

Enable Checked Codes – Activates and Deactivates Codes individually. Up to six standard Game Genie codes can be entered, Codes #1-#6. A code is entered by moving the D-pad to the box and pressing A to advance the numbers and letters. You can only go forward from A-Z & 0-9, not backward.



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