



# The Sentinel DAC

## User Guide

Check our website for the most recent user guides,  
firmware, and drivers:  
[www.msbtechnology.com](http://www.msbtechnology.com)

Technical support email is:  
[Hello@msbtechnology.com](mailto:Hello@msbtechnology.com)

02.26.2026



## The Sentinel DAC Support Page

All Sentinel DAC support topics, as well as a full PDF version of this user guide, can be found online by scanning the following QR Code or by visiting the URL listed below.



[www.msbtechnology.com/dacs/sentinel-support/](http://www.msbtechnology.com/dacs/sentinel-support/)

## Sentinel Series YouTube Playlist

Any Sentinel DAC support videos, as well as other related product videos, can be found online by scanning the following QR Code or by visiting the URL listed below.



[www.youtube.com/@msbtechnology](http://www.youtube.com/@msbtechnology)

This user guide is modeled after the following  
firmware revisions:

The Sentinel DAC Software: 1.0.1.0

The Sentinel DAC Hardware 2.0.1.1

# Setup and Quick Start

Please read the entire quick start guide before making any connections to your Sentinel DAC. A full video version of the quick start guide can be found online by scanning the following QR Code or by visiting the URL listed below.



[www.msbtechnology.com/dacs/sentinel-support/](http://www.msbtechnology.com/dacs/sentinel-support/)

## Step 1 – Unboxing

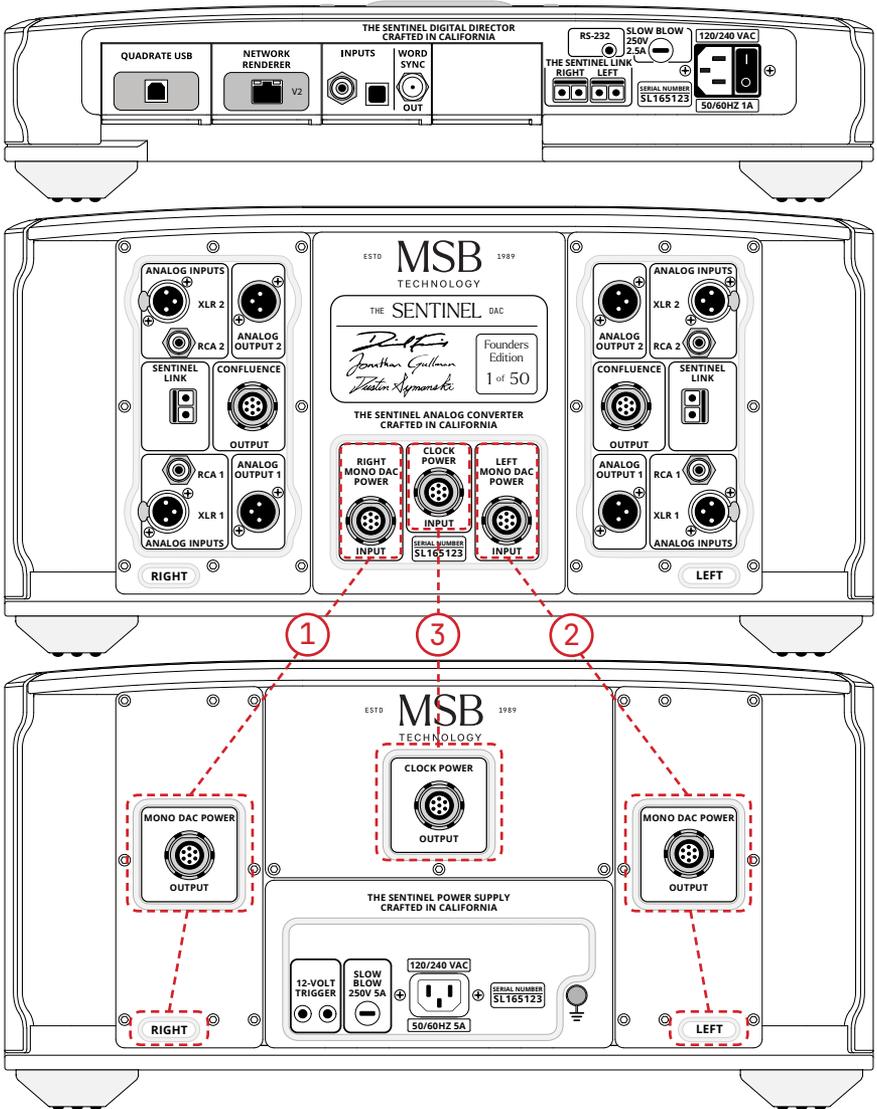
Unbox the Sentinel DAC units and place them into their desired locations in your audio system. These units cannot be stacked. The standard shipping length DC umbilical cables require the units to be on separate shelves in a vertical orientation, one unit above/below the other. If your system configuration requires the units to be in a side by side or horizontal orientation, you will require longer DC umbilical cables. For more information about chassis placement and maximum unit separation please see “DC Umbilical Cable Lengths” section of this manual.

## Step 2 – Power Connections

When connecting to the powerbase, you’ll have three Sentinel Power cables. **DO NOT CONNECT AC POWER BEFORE MAKING YOUR DC CONNECTIONS.** Connect the supplied power cables to each of the appropriate power connectors.

- 1) Connect the “Right” “Mono DAC Power Output” on the Sentinel Powerbase to the “Right Mono DAC Power Input” on the Sentinel Analog Converter.
- 2) Connect the “Left” “Mono DAC Power Output” on the Sentinel Powerbase to the “Left Mono DAC Power Input” on the Sentinel Analog Converter.
- 3) Connect the “Clock Power Output” on the Sentinel Powerbase to the “Clock Power Input” on the Sentinel Analog Converter.

# Power Connections - Diagram

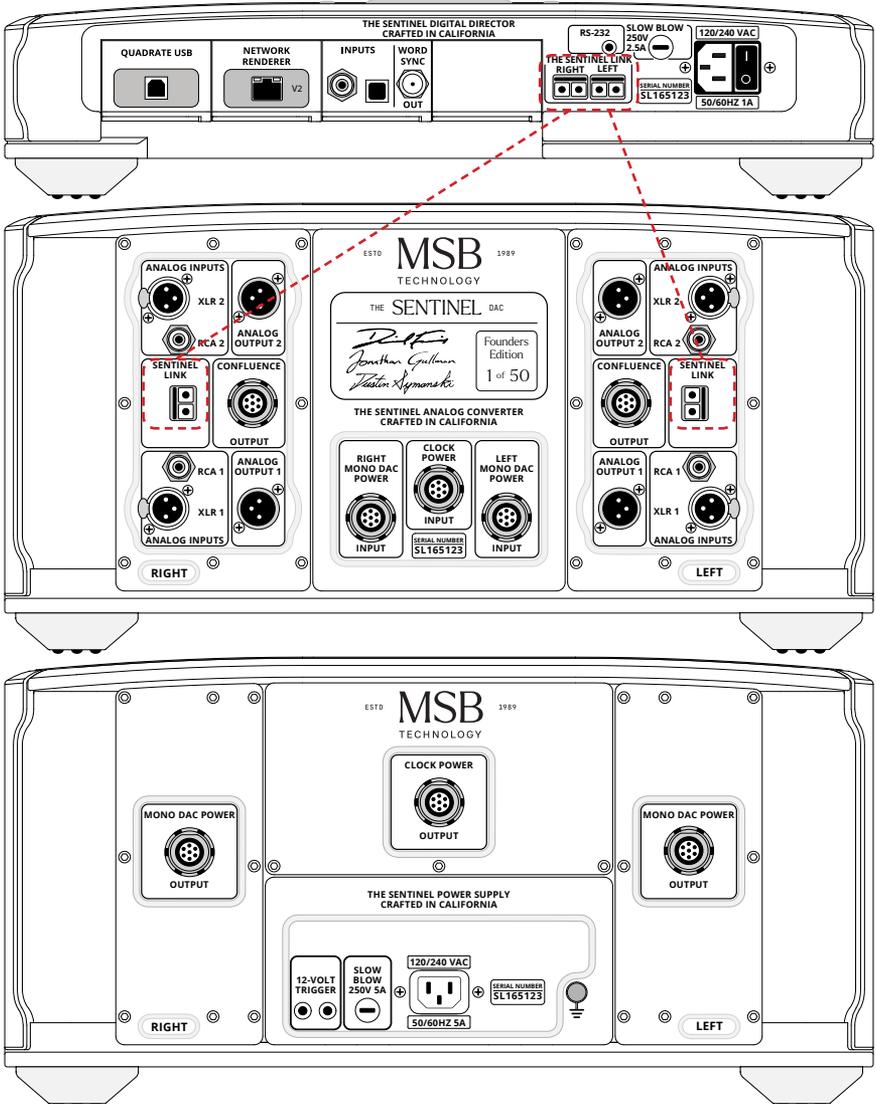


## How to Disconnect Power Cables

When connecting or disconnecting any DC power connections, **ALWAYS UNPLUG YOUR AC INPUT CABLES.** To disconnect a Power cable, simply pinch the collar portion of the cable and pull the collar of the cable directly back from the jack panel. No twisting or rotating is required to disconnect the cable. The collar should slide back to release the locking feature and then pull free from the jack panel.

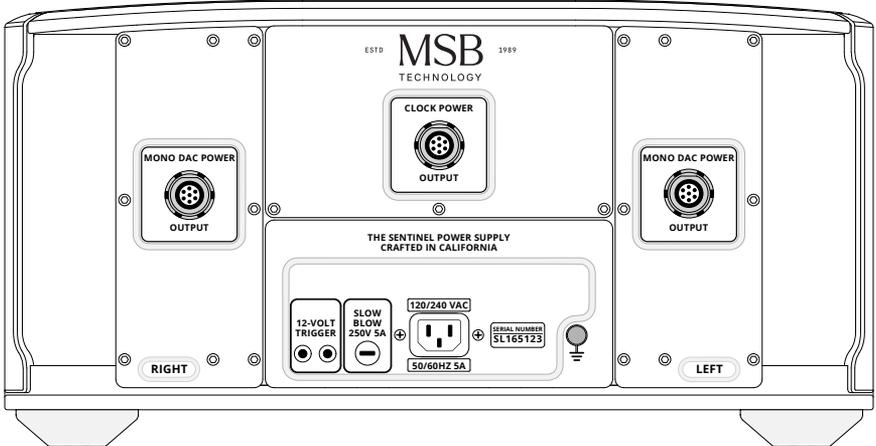
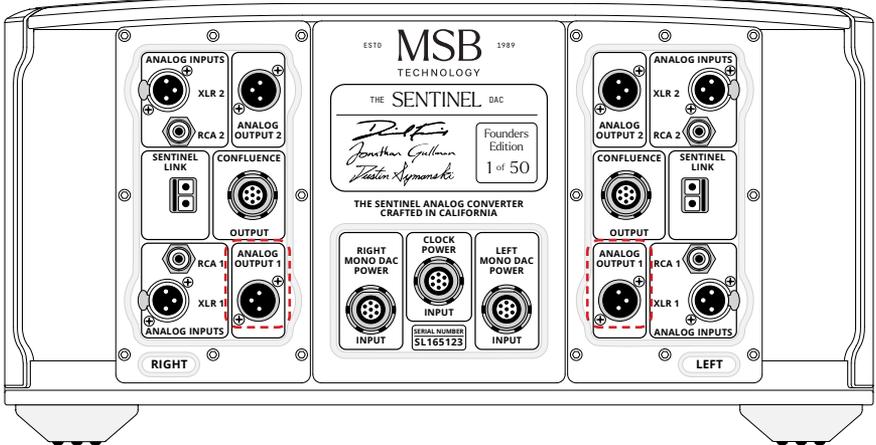
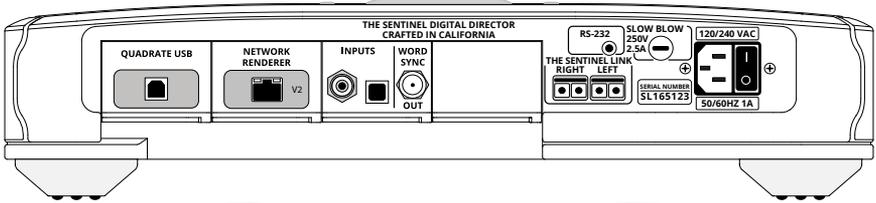
### Step 3 - The Sentinel Links

Use the two included single mode fiber cables to connect the Left and Right Sentinel Link on the Digital Director to the Left and Right Sentinel Link on the Analog Converter. Be sure to push these in firmly until the cable latch clicks into place.



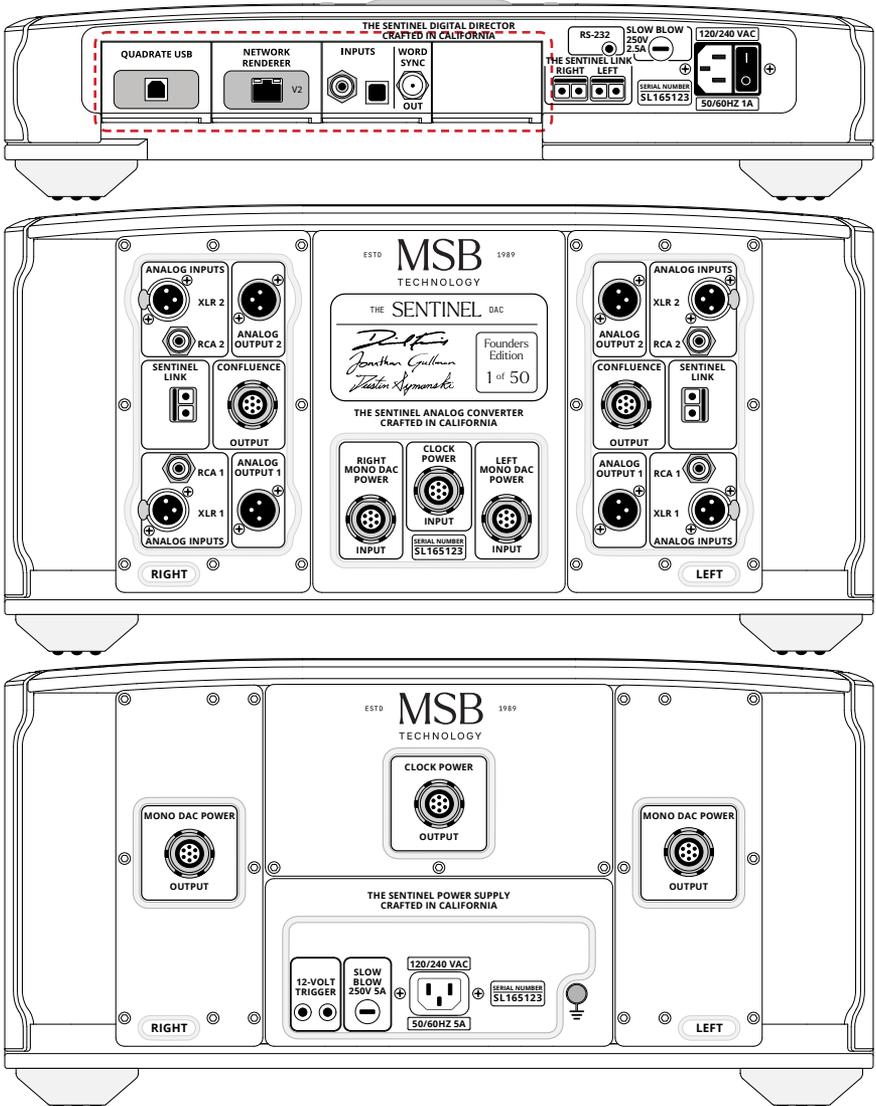
## Step 4 - Analog Outputs

Connect the balanced left and right “Analog Output 1” of the Analog Converter to the power amplifier(s) or preamplifier. If using an external preamplifier, make sure to bypass the volume control by using the “Preamp Off” setting found under “Startup Volume” in the menu settings. More details about the alternative Output options, like Bi-Amp mode, can be found in the “Analog Output Options” section of this manual.



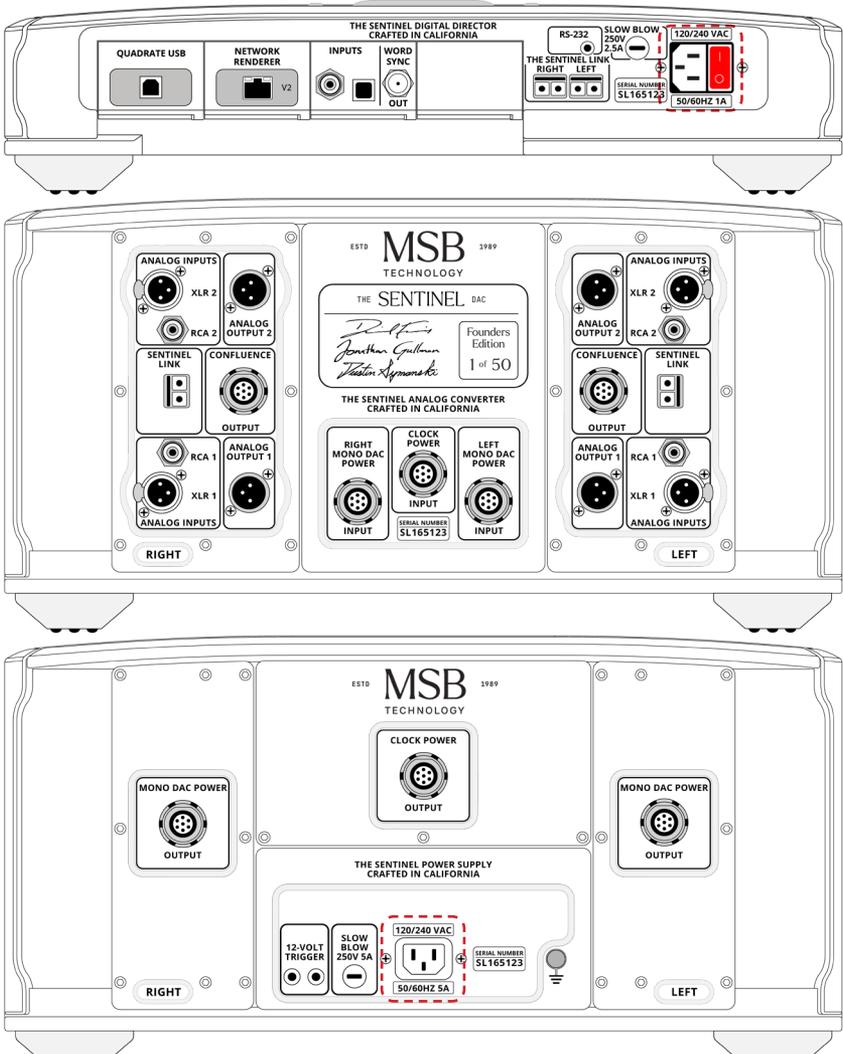
## Step 5 - Digital Inputs

Connect all of your desired digital audio sources to the matching digital inputs on your Digital Director. The Digital Director will automatically switch to any active digital input source. Once a source has been switched to, the frequency of the incoming digital source will be displayed on the unit.



## Step 6 – AC Connections

Lastly, connect the Powerbase and Digital Director to your power mains with the supplied IEC cables. The unit will automatically switch between 120 or 240V. **(Units built for Japan are 100V ONLY)**



## Step 7 – Initial Power Up

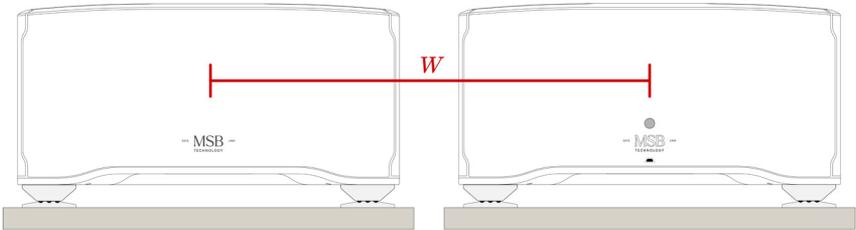
Turn on your Digital Director using the switch located next to the IEC connector and turn on your Analog Converter using the remote or the button on the front of your Powerbase. You are now ready to play music with your Sentinel DAC. When powering down your system, simply turn off the analog converter using the remote or button on the powerbase, and the Digital Director will go into standby mode.

# DC Umbilical Cable Lengths

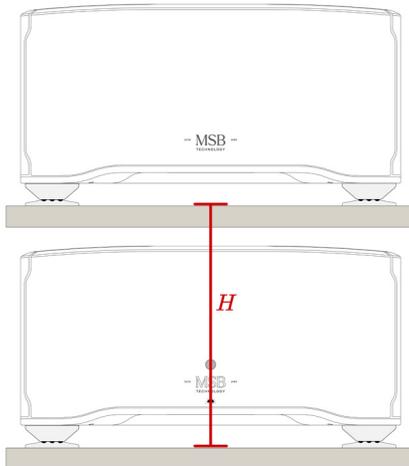
The DC umbilical cables required to connect the Sentinel Converter to the Sentinel Powerbase come in a variety of lengths. The table below depicts the maximum distance the two units can be separated using each length of DC umbilical cable.

Cable Length	Max Vertical Spacing (H)	Max Horizontal Spacing (W)
32"	24in (610mm)	N/A
48"	40in (1016mm)	34in (864mm)
60"	52in (1321mm)	46in (1169mm)
72"	64in (1626mm)	58in (1474mm)

Horizontal Spacing Reference

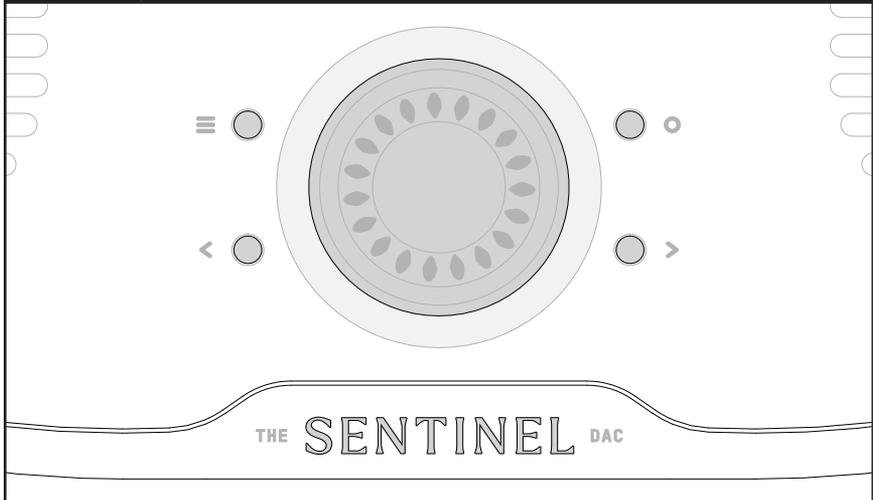


Vertical Spacing Reference



# Digital Director User Interface

<p>Menu Button</p> 	<p>The Menu button is single purpose: it will enter the setup menu at the top of the menu tree. If in the setup menu (it doesn't matter where), this button will exit the setup menu and return to the normal audio listening function.</p>
<p>Arrow Buttons</p> 	<p>The right and left arrows switch inputs. The 'Auto' mode will be in the list of inputs. If 'Auto' is selected, the unit will automatically switch inputs based on priority (Input slot D being the highest priority and slot A being the lowest priority). When a source with a higher priority becomes active, the unit will automatically switch to the new, higher priority input. Toggling through the inputs manually will defeat any auto switching. When in the setup menu, the arrows move right and left through the menu structure.</p>
<p>Circle Button</p> 	<p>The circle button is used for muting your DAC audio output. While in the menu, this button can also be used as an enter command.</p>
<p>Volume Knob</p>	<p>This knob adjusts the volume between 0 and 106. It also navigates the menu options.</p>
<p>Display</p>	<p>The display shows the Input, bit-depth, sample rate, and/or volume level.</p>
<p>Manual Reset</p>	<p><b>Holding down any one of the buttons for 10 seconds will force your digital director to restart.</b></p>



# The Powerbase

The powerbase will detect the input voltage and switch to 120 volt or 240 volt operation as needed. It is also available in a fixed 100 volt configuration for Japan. The powerbase has over-voltage protection that will help protect the unit.

## Powerbase Fuse

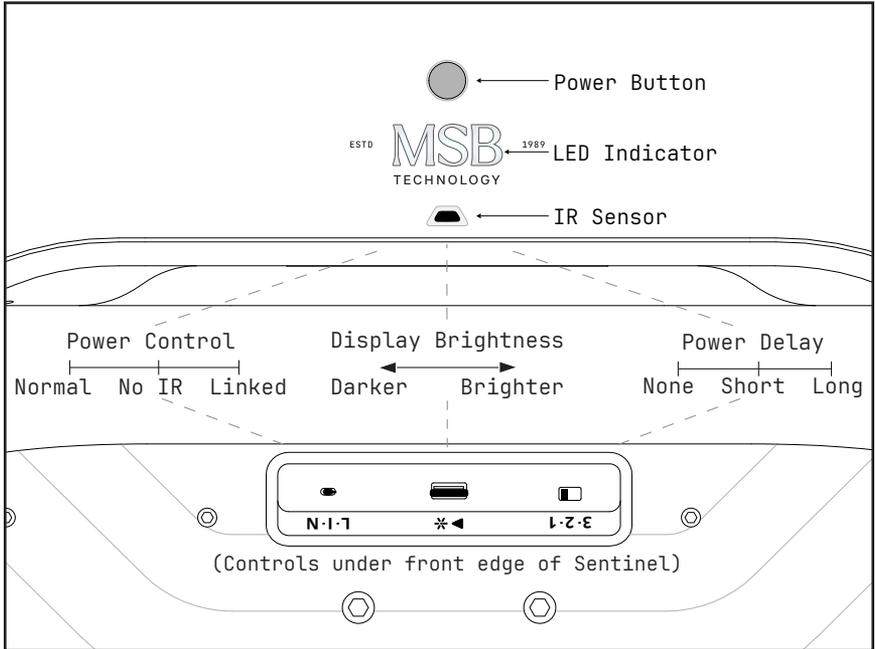
- 2.5A 250V SLO BLO - 5 mm x 20 mm mini fuse (Accessed on jack panel)

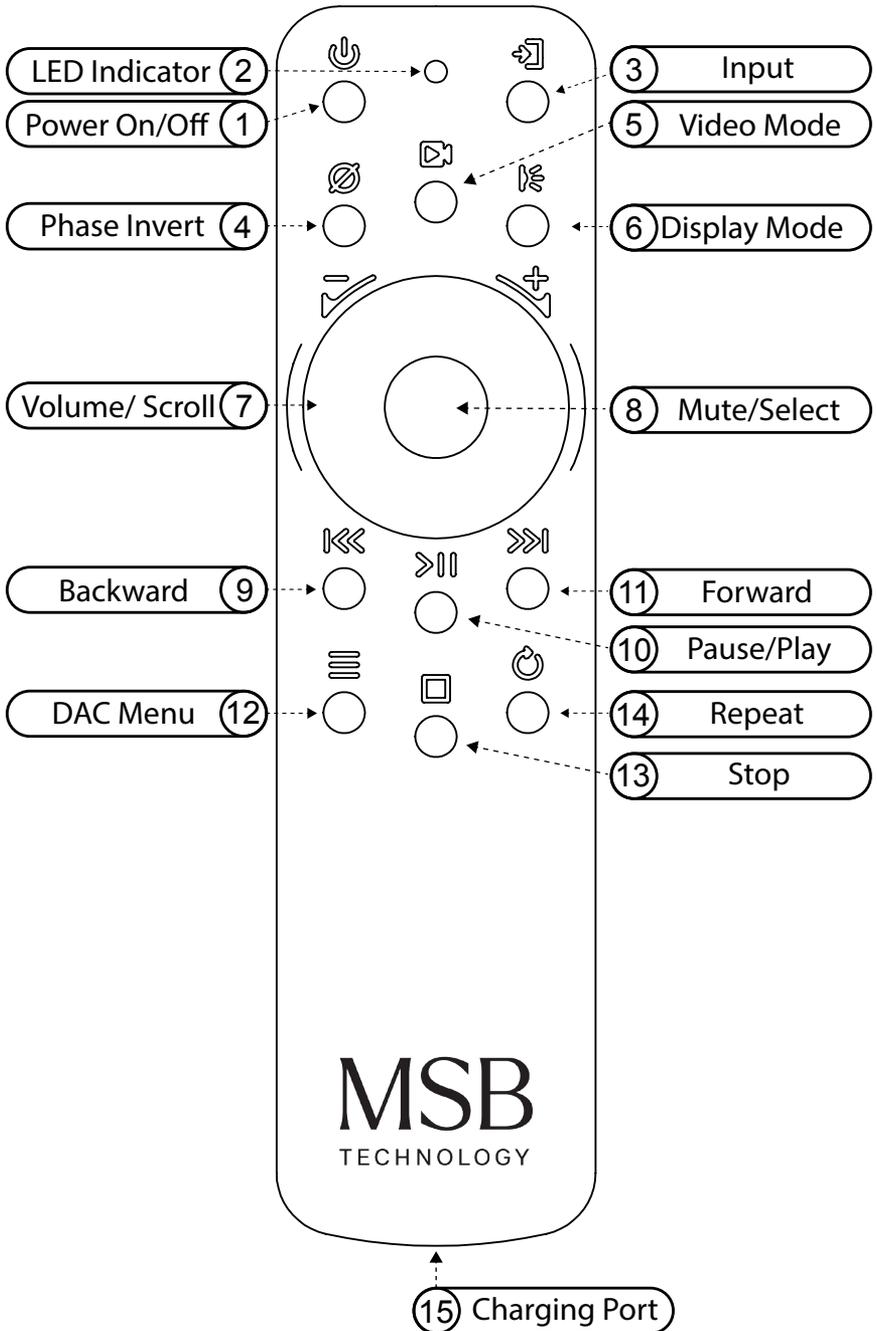
## Powerbase User Interface

There is one button on the front of the powerbase—as well as two control features just under the powerbase—on the bottom front edge.

<p>Display Modes</p>	<p>All display modes will be displayed at full brightness when a display status is changed and then fade to the brightness set by the user.</p> <p><b>White</b> - Power on.</p> <p><b>Red</b> - Power off.</p> <p><b>Pulsing Amber</b> - Standby (pressing the power button from this state will shut the powerbase off, pressing the standby again will turn it back on)</p> <p><b>Flashing Red</b> - Overheating Protection (Unit will not turn on until it has reached an acceptable temperature)</p> <p><b>Flashing Amber</b> - Over-voltage protection.</p>
<p>Remote Trigger Switch</p>	<p><b>Normal</b> - This sets the unit as the 12 volt trigger master.</p> <p><b>No IR</b> - Remote commands disabled.</p> <p><b>Linked</b> - This sets the powerbase as the 12 volt trigger slave. The 'master' unit will control this units power and standby with link cable installed.</p>
<p>Display Brightness</p>	<p>This is a rolling wheel to control the brightness of the power indication display</p>
<p>Delay switch</p>	<p><b>No Delay</b> - The powerbase will have no delay before switching on.</p> <p><b>Short Delay</b> - The powerbase will power on after a short delay.</p> <p><b>Long Delay</b> - The powerbase will power on after a long delay.</p>

# Powerbase User Interface (Diagram)





# The MSB Remote

1	Power On/Off	Powerbase on and off. When the powerbase is linked to an amplifier or MSB product via the 12 volt trigger system, this button will turn off the entire system.
2	Indicator LED	<p><b>While in use:</b>  <b>White</b> - Command Sent  <b>Red and White</b> - Command Sent and Low Battery  <b>Red Flashing</b> - Needs Charging</p> <p><b>While charging:</b>  <b>Red</b> - Charging  <b>White</b> - Fully Charged</p>
3	Input	Toggles directly through DAC inputs
4	Phase Invert	Toggles phase invert (Ø - on display)
5	Video Mode	Toggles video mode ("Video" - on display)
6	Display Mode	Toggles between the three display modes.
7	Volume/Scroll	The center scroll wheel controls DAC volume and scrolls when in the menu.
8	Mute/Select	DAC mute and select when in the menu.
9	Backward	Skip backward (Renderer and MSB Transport only)
10	Play/Pause	Play and pause (Renderer and MSB Transport only)
11	Forward	Skip forward (Renderer and MSB Transport only)
12	DAC Menu	<p>Enter DAC menu</p> <p><b>While in menu:</b>  <b>Up</b> - Volume wheel up  <b>Down</b> - Volume wheel down  <b>Enter</b> - Mute (Center button)  <b>Return</b> - DAC menu button</p>
13	Stop	Stop media (Renderer and MSB Transport only)
14	Repeat	Track or playlist repeat (Renderer and MSB Transport only)
15	Charging Port	Micro-USB to charge the remote battery

## Display Variations and Information

There are two variations of the display depending on what information you would like to have visible at any given time. There are also a few details that can be found on the display indicating certain options or settings have been chosen. These details are displayed the same way, but they can change location depending on what display format is chosen in your settings menu.

The display also features three selectable dimming modes. Each of these modes, as well as a brief description, can be found in the menu options listed in this manual.

### Display – Detailed

This version of the display will show you bit-depth and sample rate on the top left, the current input on the bottom left, and the current volume on the right.



### Display – Volume Only

This version of the display will show you only the large volume numbers in the center of the display. The display will momentarily show the detailed information whenever the current input, bit-depth, or sample rate changes, before going back to the centered large volume numbers.



### Manually Selected Inputs

The display will show a small arrow before the current input to indicate that this input has been manually selected. When an input is chosen manually, the system will not auto switch to any other inputs until the auto-select feature has either been chosen again (the arrow is not displayed) or the system has been turned off.



# Saving Menu and Startup Settings

When changing settings in the menu, use the enter button in the center of your volume wheel on the remote or the right arrow on the Digital Director to confirm settings in the menu. In order to save the changes you have made in the menu, use the “menu button” to exit the menu completely.

The Digital Director will not save any of your settings until you exit the menu.

Certain buttons on your remote will change settings on your system without navigating the menu, such as: Phase Invert, Display Modes, and Video Mode. However, these settings reset every time the system is reset or powered off.

If at any point the system seems to be improperly setup or you want to start fresh with your settings and functions, there is a “Reset” option near the end of the menu. Simply select this and confirm “YES” before leaving the menu.

## Phase Invert

The Phase Invert button is located on the remote to allow the user an easy way to invert the audio phase. This is a situational feature that is not always needed, but it can be used to fix certain recording or system setup requirements.



## Video Mode

The Video Mode button is located on the remote to reduce signal latency and compensate for lip-sync delays when using the DAC for video playback. This should only be used for video playback as it increases unwanted jitter in the system. This setting can be saved as the default state for any specific input. Choose the desired input to be the currently active input, turn on video mode using the button on your remote, and then go to the “Video Mode” setting in your DAC menu and select the “Save” option before leaving the menu.



# The Sentinel DAC Menu

The following menu tree is developed to represent the menu system of The Sentinel DAC - **Firmware 1.0.1.0**  
If your DAC does not feature the same menu options, Please update your firmware. If you have the latest firmware, visit the Sentinel DAC support page to find the most recent user guide release.

## Display Brightness

**1 - 10 (Default 8)**

Brightness of display

## Display Mode

**Always On**

Display always on

**Auto Dimming (Default)**

Display dims, brightens momentarily when information changes

**Auto Off**

Display is off, turns on momentarily when information changes

**Note:** Setting your display to “Auto Dimming” or “Auto Off” helps reduce the chances of burn-in on your display. This can also be done with a button on the remote.

## Display Info

**Detailed (Default)**

Displays sample rate, bit-depth, input, and volume

**Volume Only**

Displays centered volume only

Continued...

### Video Mode

An option to save the current status of video mode to the currently selected digital input as the “Default” state.

#### Save

Saves the current video mode setting to the currently selected digital input

#### Clear

Clears the saved video mode setting from the currently selected digital input

### Startup Volume

#### 0 - 100 (Default 70)

Set startup volume from 0 - 100

#### Preamp Off

Preamp off and volume control bypassed

**Note:** *If you choose to use the DAC with an external preamp, we recommend turning the preamp off. To do this, turn the knob past 100 to “Preamp Off”.*

### Input Select

Input switching modes

#### Smart Inputs (Default)

Allows manual selection of active and previously active inputs

#### All Inputs

Allows manual selection of all installed inputs

**Note - Analog Inputs:** *Analog inputs can only be selected if enabled in the settings menu.*

Continued...

### Output Mode

Analog Output 1  
Analog Output 2

**Note:** Bi-Amp mode is only used when connecting multiple amplifiers per channel. This configuration uses 8 DAC modules per output.

### Output 1 (Default)

Output 1 is active and Output 2 is disabled

### Output 2

Output 1 is disabled and Output 2 is active

### Bi-Amp

Output 1 and 2 are both active with the DAC modules split between them

### Renderer Remote

Renderer playback remote control setup

**Note:** Option only shown when renderer module installed.

### Enable (Default)

Playback buttons on remote will control audio playback as normal

### Disable

Turns renderer controls on remote off to allow control over an MSB transport only. For systems equipped with both a renderer and MSB Transport

### Uni I2S (A\*)

Universal I2S Protocol Options

**Note:** Option only shown when Universal I2S module installed.

**Note\*:** The "A" after the Uni I2S menu text will change according to which port the module is installed.

### Off (Default)

Module is disabled

### PS Audio

Configures the module for use with a PS Audio Source

### Antipodes

Configures the module for use with a Antipodes Source

### More sources...

More configurations will be listed as they become verified and enabled through future firmware updates

Continued...

### Analog Inputs

Analog XLR 1  
Analog XLR 2  
Analog RCA 1  
Analog RCA 2

### Disabled (Default)

Analog input disabled and not selectable

### On - Volume

Analog input on and preamp controls volume level

### On - Bypassed

Analog input on and the volume control is bypassed

### Port A

Installed module info  
Lowest priority for auto select

### Port B

Installed module info  
Second lowest priority for auto select

### Port C

Installed module info  
Second highest priority for auto select

### Port D

Installed module info  
Highest priority for auto select

### Product Identification

Serial number,  
manufacture date and  
distributor name

**Note:** each of the port screens will show information about the module that is currently installed in that slot. You can find things like the version number of the module as well as the IP address of any network renderer you currently have installed. However; some modules only display the module name.

Continued...

**Software**

Firmware version #

**Hardware**

Hardware version #

**Reset**

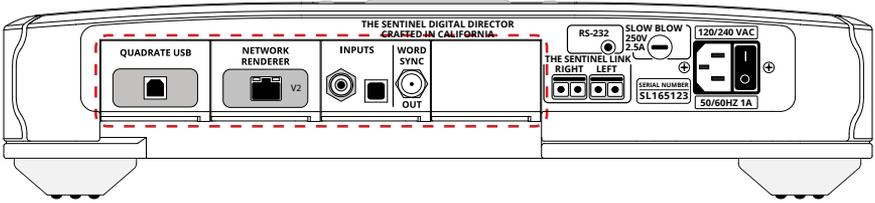
Factory reset settings

**Note:** When resetting to factory settings, you must select confirm and exit the menu settings for the changes to take effect.

*This page intentionally left  
blank by MSB Technology*

# About the Input Module Slots

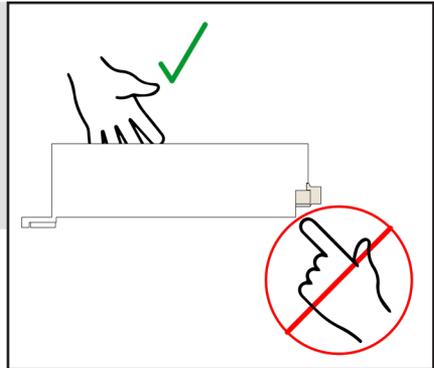
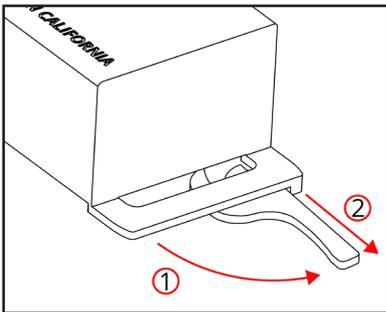
The Digital Director has four input module slots. They are labeled A through D. Input modules can be placed in any position. Each module is completely self-contained. It is recognized by the Digital Director and identified on the display. When the module is not in use, it is disabled.



## Module Handling

It is important that you refrain from touching the circuit board or rear connector of any input module when removing or installing any input modules in your Digital Director. You should only handle it by the metal case of the module, or the front edge of the module where the cam arm is located.

Improper handling of your modules can result in static shock and damage to the module and/or DAC.



## Removing and Installing Modules

Removal and installation of modules is a tool-free process that is easily performed at the back of the unit. Under the lower lip of each module is a lever. Simply pull the lever out and away until it is perpendicular with the back of the unit. Then, gently, but firmly pull the module and lever until the module releases. Slide it out of the unit. Refer to the “Module Handling” portion of your manual before attempting.

## Available Input Modules

If the digital inputs in the Digital Director do not fulfill your full digital input requirements, a list of the currently available modules and their intended uses are listed below. A full digital list of these inputs, as well as a comprehensive list of pros and cons for each input format, can be found online by scanning the following QR Code or by visiting the URL listed below.



[www.msbtechnology.com/dacs/digital-inputs/](http://www.msbtechnology.com/dacs/digital-inputs/)

Pro ISL	MSB proprietary interface for use with MSB sources. This module provides one input.
Renderer	A renderer interface for use on a home network or server. (See Renderer manual for operation and setup details.)
MQA USB	A single USB interface for playback via a computer-based source. (See USB manual for operation and setup details.)
Optical/Coaxial S/PDIF	A Toslink and Coaxial digital input with a word-sync output.
Digital XLR	A single XLR digital input with a word sync output.
Pro I <sup>2</sup> S	MSB's proprietary interface for use with classic MSB transports. This module provides two inputs.
Universal I2S	A single HDMI style connector to connect compatible servers using the I2S protocol. <b>THIS IS NOT THE SAME AS HDMI 2.0 OR HDMI VIDEO INTERFACES.</b> (See Universal I2S manual for operation, setup details, and a list of compatible sources.)

## Burn-In

The feedback we receive leads us to recommend at least 100 hours of burn-in on this product. Customers generally report improvement up to one month.

# Analog Output Options

## Single and Bi-amp XLR Connections

**Single Output Mode** - This is the standard output mode, utilizing 16 DAC modules per channel to create an 18.75Ω output. The desired output (“Analog Output 1” or “Analog Output 2”) on the jack panel can be switched in the menu to use the desired connector. Switching this output will turn the alternate output off.

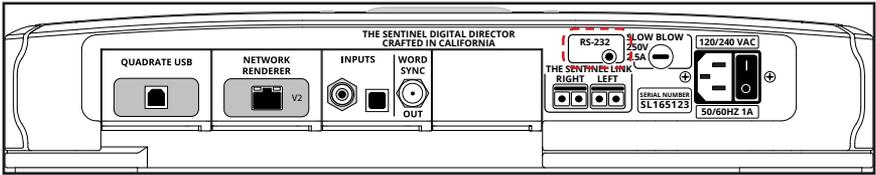
**Bi Amp Mode** - This setting splits the DAC modules per channel in half (8) resulting in four separately isolated 37.5Ω outputs for a true bi-amplifier setup.

## Alternate Amplifier Connections

**Confluence** - The Confluence connector located on the back of the product is a proprietary connector for use with The Sentinel amplifiers. If you wish to know more about this connection, see the “Confluence Connections” portion of The Sentinel amplifier product manual. When plugged in, the DAC will automatically switch to this output. It does not need to be selected in the menu.

**Single Ended** - For any setups that require a single-ended connection, MSB offers a high-quality XLR-RCA adapter that is sold separately. Please contact an MSB dealer or visit our website for more information.



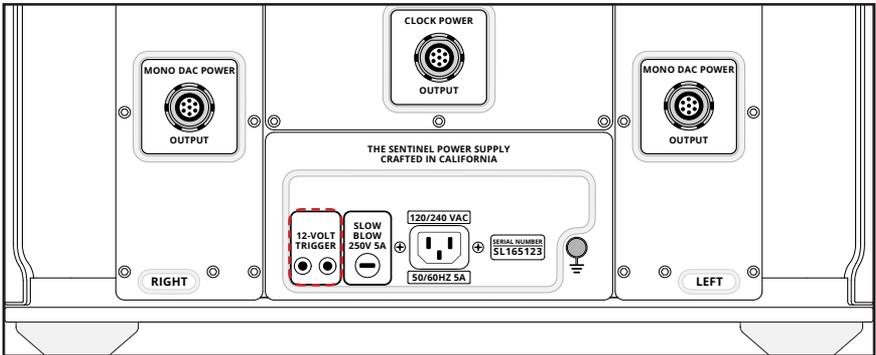


## RS-232

The Digital Director features an RS-232 control port on the back of the unit that can be used with whole home control systems and for home theater integration. A full list of commands and coding can be found using the QR code below.



[www.msbtechnology.com/dacs/sentinel-support/](http://www.msbtechnology.com/dacs/sentinel-support/)



## 12 Volt Trigger

The 12 Volt Trigger port on the jack panel allows you to connect to other MSB Products and use one power button to control the power of all MSB products in your system. Connect the units you wish to control by chaining them together using 3.5mm stereo mini-jack cables. Then, using the power control switch under the front of the unit, set the primary powerbase to the “N” (normal) position and every other unit that has been connected to the system to the “L” (linked) position. When done correctly, the entire system will turn on and off together when using the power button on your primary powerbase or by using the power button on the MSB remote. A more detailed explanation and setup guide can be found online by scanning the following QR Code or by visiting the URL listed below.



[www.msbtechnology.com/support/12-volt-trigger/](http://www.msbtechnology.com/support/12-volt-trigger/)

# Updating Firmware

The following instructions are for updating the firmware in the Sentinel DAC. Simply play the firmware files (which are .WAV audio files) like normal audio files to update your Sentinel DAC. The most up-to-date instructions can be found online.

## Updating Firmware

Begin by downloading the firmware. Add these files to your bit-perfect playback software. Please note, these must be played by a bit-perfect source. If the update fails, it is not being played bit-perfect. There are two updates within the same file. The file is several minutes long. Please do not interrupt the process and let the file finish to the end. When you play the file, you will hear instructions and two upgrade tones. Following each tone, you will either hear silence for about 30 seconds (this varies), or you will hear the message 'upgrade failed'. If all the upgrades fail, it is because you did not play the file bit-perfect. You may have computer upsampling on or digital volume control somewhere in your playback system. The screen on the Digital Director will confirm when the upgrade is happening. Detailed instructions can be found online by scanning the following QR Code or by visiting the URL listed below.



[www.msbtechnology.com/dacs/sentinel-support/](http://www.msbtechnology.com/dacs/sentinel-support/)

## Bit-Perfect Source Testing

Files can be downloaded from the MSB website to verify bit-perfect playback on any transport. They are .WAV music test files that, when played, will be identified and checked by the Digital Director. It will be reported on the display if they are bit-perfect. If there is a problem with the test, it will play, but the display will not indicate any change. Be sure upsampling is turned off in any transport, as this prevents a file from remaining bit-perfect. This system will allow you to easily test your source, especially computer sources, to see if all your settings are correct. There are files at all sample rates for both 16-bit and 24-bit operation. Detailed instructions can be found online by scanning the following QR Code or by visiting the URL listed below.



[www.msbtechnology.com/support/bit-perfect-testing/](http://www.msbtechnology.com/support/bit-perfect-testing/)

## Preamp/Volume Control Information

The volume control in the Sentinel DAC operates by reducing the output of the DAC modules passively when set below “100”, while keeping the output impedance at exactly 18.75Ω. This is done in the analog domain without the use of buffers or amplifiers using completely passive attenuation. At “100” the Sentinel does not attenuate the signal, the DACs full power is available at the outputs and still has a 18.75Ω output impedance. For settings “101-106” the Sentinel applies gain in the digital domain before conversion (the analog inputs also switch from a +0dB buffer setting to a +6dB buffer setting). Since the Sentinels maximum output voltage of about 3.5 volts RMS is above the input sensitivity of the vast majority of power amplifiers, the majority of amplifiers will clip long before the DAC runs out of signal headroom. The extra 6dB of gain available above “100” is intended for quiet recordings that were not recorded with sufficient gain.

All of the Sentinels attenuation settings, “0-99”, are close to lossless. They closely approach the theoretical noise floor and distortion produced by a 18.75Ω resistor at room temperature. This residual noise is called thermal noise. In fact, you can't get below this noise level unless you lower the true output impedance (parallel more DAC modules for example), reduce the bandwidth (eg. apply a low pass filter), or lower the temperature of the system by a large amount (eg. cryo-cool the system). The only way to reasonably increase the performance is to reduce the gain of the amplifier itself, then increase the volume setting. This is an available option of our 500 series amplifiers.

Typical audio volume controls don't come close to this level of performance. This is because of parasitic effects, such as the winding wire resistance in a transformer volume control, or the variable impedance (usually high) of a potentiometer based volume control. Even most “stepped attenuators” are essentially potentiometers with discrete steps and have a variable output impedance (usually high) with each setting. Active volume controls are usually much worse by combining loss (eg. a potentiometer) with gain (eg. an OpAmp).

## Volume Control Settings

The default startup volume is set at 70. This can be changed using the “Startup Volume” setting in the system menu. Menu settings and an explanation for each can be found starting on page twelve of this manual.

If you wish to bypass the preamp for any reason, you can do this one of two ways. If you wish to do this for a more permanent configuration, go to the “Startup Volume” setting in your system menu and scroll past “100” to the “Preamp Off” setting. Select this and then exit the menu to save your settings. In this mode the volume will no longer be visible on the screen and the integrated preamp will be bypassed. For a more temporary setting, you can simply turn the volume control to “100”. This is the full power of the DAC modules with no attenuation of digital gain applied to the outputs.

## Advanced Grounding Setup

The Sentinel DAC features a grounding lug on the rear of the powerbase. This lug is used to create a ground shield network with other products in the system chain. MSB does not recommend making alterations to this setup unless you are knowledgeable about this topic. Making a change in this area can easily have negative results if not done correctly.

If you do not have a clamp style multimeter, then the setup MSB recommends is to simply connect the ground lug of the Sentinel Powerbase to the Ground lug featured on the back of an MSB amplifier. This improvement varies system by system, so listen and compare your system with and without this connection to see what sounds best.

If you do have a clamp meter, then use it around one of the analog output cables of your Sentinel DAC while trying different grounding connection choices. Set the meter to “AC current” in the lowest possible range. The best clamp style multimeter to use is called a “Ground Fault Clamp Meter”. Once the clamp meter is showing you how much AC current is on the outputs, Start by simply connecting the powerbase and amplifiers first followed by trying other chassis’ in your system. No two systems or components will have the same results. The best result may require multiple chassis being connected in a chain or no connections entirely. The goal here is to get the smallest amount of AC voltage that you can on the analog outputs of your Sentinel DAC. Which ever ground connections reduce this number to the lowest possible number should , in theory, result in the best sonic performance possible.

**\*\*\* NEVER CONNECT ANY GROUNDING LEADS TO THE NEGATIVE  
TERMINAL ON YOUR AMPLIFIER. \*\*\***

# Troubleshooting Error Codes

Error codes will show “Error” in the top left corner. “L Error” will indicate issues with Left Mono DAC. “R Error” will indicate issues with the Right Mono DAC. “LR Error” will indicate issues with both Right and Left Mono DACs. Below the error indicator in the top left will be a combination of one or more of the following error codes:

## “P”

- Problem with the Analog Converter or Powerbase power. Contact MSB.

## “Bad Power”

- Indicates that there is a problem with the power in the digital director. Contact MSB.

## “Gnd”

- Problem with the isolated power shorting to ground. Most likely cause is that one of the Sentinel Link SFP modules release latches are open and touching the chassis.



## “CLK”

- Problem with the clock. If this error message persists, or if the sound is distorted, contact MSB. (If it’s momentary on power up, it can be ignored because the clock is warming up.)

## “R”

- Problem with one of the Sentinel links. Data corruption was detected. Replace the fiber cable and SFP modules. Contact MSB if problem is persistent.

## “F”

- Problem with the one of the Sentinel links. Data corruption was detected. Replace the fiber cable and SFP modules. Contact MSB if problem is persistent.

## “L”

- Problem with one of the Sentinel links. Data corruption was detected. Replace the fiber cable and SFP modules. Contact MSB if problem is persistent.

# Display Messages

The following messages will be displayed during power up:

## “Waiting for DAC”

- On power up of the director, it's looking for a connected and powered on Analog Converter. If it persists, check that you have properly connected both Sentinel Links and have powered on your Analog Converter.

## “Left/Right/Both Channels Missing”

- Check to ensure the Sentinel Link cables are properly connected to each channel on the Sentinel Converter.

## “Confluence Mismatch”

- This indicates that only one Confluence cable is detected.

## “Powering Down”

- Indicates the Analog Converter has been disconnected or turned off. The Digital Director will go into standby.

## “Looking for DAC”

- This message appears when you wake up the Digital Director and it can't find an attached and powered on Analog Converter. If it persists, check that you have properly connected both Sentinel Links and have powered on your Analog Converter.

## “Bit Pass”

- This displays when the bit-perfect test file is played and the unit has verified the playback as bit-perfect.

## “DSP Code”

- This shows when the DAC has received a DSP code file update and the update is taking place. DO NOT POWER OFF THE UNIT.

## “Updating...”

- This shows when the DAC has received a micro-code file update and the update is taking place. DO NOT POWER OFF THE UNIT.

# Audio Dropouts

After powering on the Sentinel DAC, in the first one to three minutes of playback the audio signal may drop out while the Sentinel DAC is heating the clock crystals. If this issue persists beyond 5 minutes, please contact MSB Technology.

# Product Disclaimers

Please note each of the disclaimers below. MSB is not liable for any mis-use of products.

## Product Grounding

If PROTECTIVE EARTHING is used as a SAFEGUARD, the instructions shall require connection of the equipment PROTECTIVE EARTHING CONDUCTOR to the installation PROTECTIVE EARTHING CONDUCTOR (for example, by means of a power cord connected to a socket-outlet with earthing connection).

# The Sentinel DAC Warranty Registration

All MSB Technology products come with a standard 2-year warranty. Details are defined below. We offer an additional 3 years of extended warranty for the original owner (a total of 5 years) if the following warranty registration form is completed within one year of the manufacture date. Instructions can be found online by scanning the following QR Code or by visiting the URL listed below.



[www.msbtechnology.com/warranty/](http://www.msbtechnology.com/warranty/)

# The Sentinel DAC Limited Warranty

Warranty includes:

- MSB warranty covers the unit against defects in materials and workmanship for a period of **2 years** from the original manufacture date.
- This warranty covers parts and labor only; it does not cover shipping charges or tax/duty. During the Warranty period, there will normally be no charge for parts or labor.
- During the warranty period, MSB will repair or, at our discretion, replace a faulty product.
- Warranty repairs must be carried out by MSB or our authorized dealer. Please contact your dealer if your unit requires service.

Warranty excludes:

- The Warranty does not cover standard wear and tear.
- The product is misused in any way.
- Any unauthorized modifications or repairs were performed.
- The product is not used in accordance with the Operating Conditions stated below.
- The product is serviced or repaired by someone other than MSB or an authorized dealer.
- The product is operated without a mains earth (or ground) connection.
- The unit is returned inadequately packed.
- MSB reserves the right to apply a service charge if the product returned for warranty repair is found to be operating correctly, or if the product is returned without a returns number (RMA) being issued.

Operating Conditions:

- Ambient temperature range: 32F to 90F, non-condensing.
- The supply voltage must remain within the AC voltage specified on the power base.
- Do not install the unit near heat sources such as radiators, air ducts, power amplifiers, or in direct, strong sunlight. This may cause the product to overheat.

# Technical Support

If you are experiencing any issues with your MSB product, please contact your nearest dealer or try our support page at [www.msbtechnology.com/support](http://www.msbtechnology.com/support). Please be sure you have the most current edition of your products' firmware installed. If your issue persists, please feel free to contact MSB directly. Emails are usually responded to in 1-2 business days. **Email:** [hello@msbtechnology.com](mailto:hello@msbtechnology.com)

## MSB Return Procedure (RMA)

If a customer, dealer, or distributor has a problem with an MSB product, they should email tech support before sending anything back to the factory. MSB will do their best to respond within 1-2 business days. Should it be clear that a product must be returned, tech support should be informed and all the following relevant information should be provided:

1	Product in question
2	Serial number
3	Exact configuration when symptom is observed, along with a list with the input used, source material, system connections, and amplifier
4	Customer name
5	Customer shipping address
6	Customer phone number and email
7	Special return shipping instructions

MSB will issue an RMA number and create an invoice with all details outlined, except the final price as the product has not yet been seen. This invoice will be emailed so all the above information can be checked and verified by the customer.

The product should be returned with the RMA number present on the box. Work can then begin immediately and the product can be sent back quickly.

Any repair that is difficult and cannot be completed in two weeks will be identified, and the customer will be informed when it is to be expected. Otherwise, the majority of repairs should be shipped back within two weeks if all the required information is present on the invoice.

### Link to page:

[www.msbtechnology.com/support/repairs/](http://www.msbtechnology.com/support/repairs/)

# The Sentinel DAC Specifications

Supported Formats (Input dependent)	44.1kHz to 3,072kHz PCM up to 32 bits 1xDSD, 2xDSD, 4xDSD, 8xDSD Supports DSD via DoP on all inputs
Digital Inputs	4x Advanced isolated input module slots
XLR Analog Inputs	50k $\Omega$ Balanced 6Vrms Maximum Isolated when not selected
RCA Analog Inputs	25k $\Omega$ Single-Ended 6Vrms Maximum Isolated when not selected
XLR Analog Outputs	3.32Vrms Maximum (Digital Input) 6Vrms Maximum (Analog Input) 18.75 $\Omega$ Single - 37.5 $\Omega$ Bi-amp
Volume Control	Purely passive constant impedance analog attenuation 1dB steps
Director Power	24 Watts
Converter/PB Power	225 Watts
Included Accessories	MSB remote Micro USB charging cable 2x White Handling Gloves 2x IEC power cables 2x Sentinel-Link fiber cables 3x Sentinel power cables 12x Foot base
<b>CHASSIS DIMENSIONS</b>	
Sentinel Director	Width: 17.5 in (444.5 mm) Depth: 16.5 in (419.1 mm) Height: 4.3 in (108 mm) Weight: 46.5 lbs (21 kg)
Sentinel Converter	Width: 17.5 in (444.5 mm) Depth: 16.5 in (419.1 mm) Height: 9.43 in (239.6 mm) Weight: 91 lbs (41.3 kg)
Sentinel Powerbase	Width: 17.5 in (444.5 mm) Depth: 16.5 in (419.1 mm) Height: 9.43 in (239.6 mm) Weight: 117.5 lbs (53.3 kg)

# The Sentinel DAC Packaging Details

The Sentinel DAC Packaging consists of four wooden crates with the following dimensions and weights.

Accessories	6.5 x 25 x 22.5 in 165 x 635 x 572 mm	43.1 lbs 19.55 kgs
Digital Director	8.5 x 25 x 22.5 in 216 x 635 x 572 mm	82 lbs 37.2 kgs
Analog Converter	17.5 x 26.5 x 24 in 445 x 673 x 610 mm	146 lbs 66.6 kgs
Powerbase	17.5 x 26.5 x 24 in 445 x 673 x 610 mm	172.5 lbs 78.6 kgs

The Sentinel DAC ships as a single pallet containing all four of the boxes mentioned above.

Freight Pallet	48 x 32 x 31.5 in 1219 x 813 x 800 mm	475 lbs 216 kgs
----------------	--	--------------------