

LAVRY

DA11



LavryBlack Series Model DA11 Stereo Digital to Analog Converter

Patent Pending >PiC< *Playback Image Control*™

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Quickstart Guide- Basic Settings

To familiarize yourself with the operation of the front panel controls of the DA11, it is advisable to connect the DA11 to AC power *before* making any other connections, and to perform the following procedure- the **Setting example** (below). First, here are some basics:

All switches on the DA11 are spring-loaded three position toggles, and automatically return to the center (no function) position. They are: \longleftrightarrow (left-right), Exit-Set, Wide-Narrow, and Up-Down.

The two switches under the SELECT legend are used to change basic settings.

- Click the \longleftrightarrow switch down to enter the Setting mode. A flashing LED appears as a “cursor” to indicate which setting can be changed. The display under the IMAGE legend has changed modes from the >PiC™ status to displaying setting status.
- The \longleftrightarrow switch now moves the cursor left or right as indicated by the arrows.
- The right switch toggles the setting at the cursor position “On” or “Off” each time the switch is clicked down in the “set” direction. Clicking more than once is OK!
- Click the right switch up towards “exit” to exit the Setting mode.



- Setting example- usb input, output “On,” pin 2 Hot for RCA connection:

This procedure assumes settings have not been changed from the factory defaults, which are: xlr input, output “on,” invert “off,” pin2 “on,” pin 3 “on,” & dim “off.”

The default setting status display looks like this (where  symbolizes a rapidly flashing cursor):



- 1) Turn the DA11 power “on” and wait for the two IMAGE LED’s to appear.
- 2) Enter Setting mode by clicking the \longleftrightarrow switch in the down direction.
- 3) A rapidly flashing cursor appears at the first position on the left (xlr) indicating it is “On.”
- 4) Click the \longleftrightarrow switch down twice so a slowly flashing cursor appears at “usb” (slow= Off).
- 5) Click the right (“exit-set”) switch down towards “set” and the cursor will begin flashing rapidly to indicate the usb input is “On.” The LED above “xlr” will go dark (xlr is now “Off”).
- 6) Click the \longleftrightarrow switch down five times to position the flashing cursor above the pin 3 legend. The LED above “usb” will stop flashing and stay illuminated.
- 7) Click the right switch down towards “set” and the cursor will change from flashing rapidly to flashing slowly to indicate that Pin 3 is “off” (it has been grounded).

The display should look like this (where  symbolizes the slowly flashing cursor):



Hint: To double-check if the setting is correct, use the \longleftrightarrow switch to move the cursor away from the setting you just changed to see if its LED indicator is “On” or “Off” (instead of flashing).

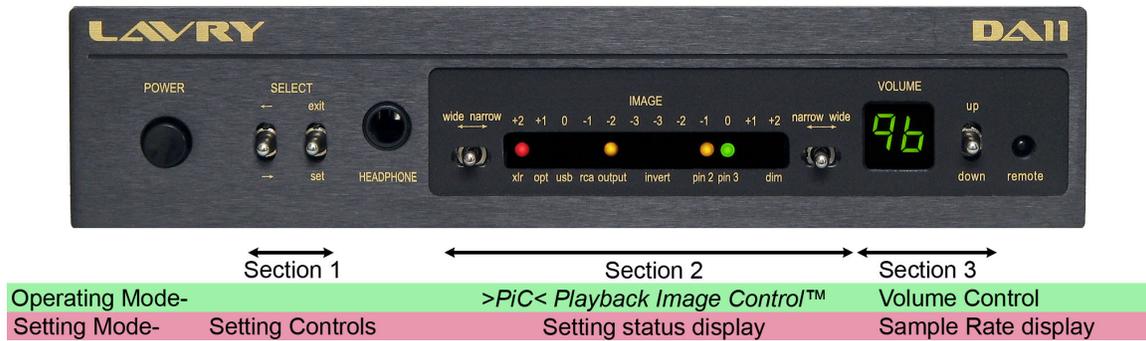
- 8.) Click the right switch up towards “exit” to exit the Setting mode. After about ten seconds, the “LE” symbol will appear in the VOLUME display to indicate the settings have been stored in memory and the DA11 is now in Operating mode.
- 9.) Please reduce the DA11’s Volume setting to a low value (“00” to “05”), wait for the “LE” symbol to re-appear before turning the power “Off,” and see the CONNECTIONS section of the manual.

Please Note: Do not use “earbuds” or other headphones designed for portable battery-powered units such as MP3 players with the DA11. Damage to the headphones may result.

Quickstart Guide- Settings and Operation

The DA11 front panel has three sections:

(Diagram 1)



There are two main modes for the DA11- the Operating Mode and the Setting Mode.

- In Operating mode, the front panel displays the status of the **>PiC< Playback Image Control™** in the IMAGE section (as shown on Page 6). The legend *above* the window applies in this mode (wide-narrow, +2, +1, etc). The VOLUME display indicates the setting of the volume control when the volume is adjusted and for approximately 10 seconds afterwards. The VOLUME display then reverts to displaying “LE.”

- In Setting mode (as illustrated above), status of the settings is displayed along with the position of the cursor in the IMAGE display section. The legend *below* the window applies in this mode (xlr, opt, usb, etc). The position of the cursor is denoted by the flashing LED. When an active input is selected, the VOLUME display will indicate the sample rate of the digital audio input. If the input is not “locked” or there is no signal present on the selected input, the VOLUME display shows the symbol “- -”

- Approximately 10 seconds after exiting Setting mode, the VOLUME display reverts to “LE” to indicate that the settings have been stored in non-volatile memory. This means the DA11 will retain the settings even if the power is turned “off.” Any time the VOLUME display reverts to the “LE” symbol, the settings are stored, including after any volume adjustment from the front panel or remote.

Diagram 1, Section 1- Setting Controls

The two switches under the SELECT legend on the left side of panel control the Setting mode of the DA11. The first switch labeled with the \leftrightarrow symbols has two functions:

- Clicking the switch down in the Operating mode causes the DA11 to enter Setting mode. A flashing cursor and indicators for settings that are “on” will appear in the IMAGE display window. The legend under the window apply in this mode (xlr, opt, usb, etc.).
- While in Setting mode, clicking the switch down moves the cursor one position to the right and clicking the switch up moves the cursor one step to the left.
- For convenience, the position of the cursor is retained when exiting Setting mode. The cursor will appear at the same position when Setting mode is re-entered and clicking “set” will turn the same function on or off. The exception occurs when AC power is first turned “on;” in this case the cursor will always appear in the left-most position (xlr).

The second switch is labeled “exit” and “set.”

- Clicking the switch down (set) toggles the function On and Off. In the case of selecting an input, the input at the cursor position is enabled and all other inputs are disabled.
- Clicking the switch up (exit) immediately exits the Setting mode.
- After exiting the Setting mode, clicking the switch in either direction has no effect.

When in the Setting mode, the LED's above each label indicate the status of each setting. The cursor position affects the way an LED indicates the status.

- At the cursor position, a rapidly blinking LED indicates "on" and slowly blinking cursor indicates "off."
- At all other positions, a steadily illuminated LED indicates "on," and an LED that is not illuminated indicates "off."

Please note that in the following Setting mode function descriptions, the distinction between whether the LED is at the cursor position or not may be omitted for clarity.

Diagram 1, Section 2- Settings Status Display (only in Setting mode)

- **Input selection.** This consists of the **xlr**, **opt** (optical), **usb**, and **rca** labels and the LED's above them. Only one input can be selected at any time.
 - If the cursor is positioned at the selected input, the LED flashes rapidly.
 - If the cursor is positioned at an input that is not selected, the cursor LED flashes slowly.
 - When an input is selected and the cursor is at a different position, the LED for the selected input is constantly illuminated while the LED for the cursor flashes slowly. Clicking the "Set" switch will enable the input at the cursor position and disable the previously selected input (the constantly illuminated LED will go dark and the cursor will flash rapidly).
 - Once an input is selected and the cursor is still at that input position, subsequent "set" clicks toggle that input on and off.

!!! Please Note: there are settings in the computer that affect the operation of the USB input. Please see the "USB INPUT" section of the manual for details.

- **Output muting.** The main (XLR) outputs of the DA11 can be muted while the headphone output remains active.

- If the output setting is "on" as indicated by the LED, the outputs are "on."
- If the output setting is "off," the main outputs are muted.

This function operates differently than the Mute function controlled by the optional infrared remote. Like other functions in the Setting mode, if the cursor is positioned at the output LED, it will flash rapidly to indicate that the function is "On." Clicking the set switch once will mute the outputs and this will be indicated by a slowly flashing LED. When the cursor is at another position, the LED is "off" (not illuminated) when the outputs are "off" (muted).

- **Please use caution when turning the outputs "on;" it is a good idea to set the volume to a low setting prior to turning the outputs "on."**
- **DO NOT use "earbuds" or other headphones designed for portable battery-powered units such as MP3 players, or damage to the headphones may result.**

- **Polarity Invert.** This function changes the audio signal polarity of both the main outputs and the headphone output. The invert function is operational for all main output configurations- balanced or unbalanced.

- If the invert function is "on" as indicated by the LED, the polarity is inverted in the output audio for Pin 2 "+" operation and headphones.
- If the invert function is "off" as indicated by the LED, the polarity is not inverted in the output audio for Pin 2 "+" operation and headphones.
- The sense of the function is reversed for Pin 3 "+" operation. For example, if the invert function is "On," the output audio signal is *not* inverted for Pin 3 "+" operation.

- **Pin 2 & Pin 3.** These settings determine the configuration of the output for balanced or unbalanced operation. A typical use would be to set the outputs to Pin 2 “On” and Pin 3 “Off” when connecting the DA11 to a preamp with RCA inputs. This applies to the included adapters, as well as most standard XLR to RCA adapters and adapter cables. Please see CONFIGURING THE XLR OUTPUTS for details on the correct settings.

- If pin 2 is “on” as indicated by the LED above the “pin 2” label, Pin 2 is active (has audio signal present) on both the left and right output XLR connectors. If pin 2 is “off” as indicated by the LED above the “pin 2” label, Pin 2 is grounded on both the left and right output XLR connectors.

- If pin 3 is “on” as indicated by the LED above the “pin 3” label, Pin 3 is active (has audio signal present) on both the left and right output XLR connectors. If pin 3 is “off” as indicated by the LED above the “pin 3” label, Pin 3 is grounded on both XLR connectors.

- If either pin 2 or pin 3 is already “off,” setting the opposite pin to “off” will turn the first pin “on” so that a least one pin is always active.

- If both pins are “on,” the output is configured for balanced operation.

- If pin 3 is “off,” the outputs are configured for “Pin 2 Hot unbalanced” operation.

- If pin 2 is “off,” the outputs are configured for “Pin 3 Hot unbalanced” operation.

- **Dim.** This function sets the brightness level of the front panel display. When dim is “on” as indicated by the LED, the front displays are dimmed to approximately half brightness.

Diagram 1, Section 3- Sample Rate Display (Setting mode)

- In Setting mode this window displays the sample rate of a digital input that is valid and “locked.” For standard sample rates of 44.1, 48, 88.2, or 96 kHz, the first two digits of the actual sample rate are displayed, so an input that is locked to a valid 88.2 kHz sample rate would be indicated by an “88” in the VOLUME display. Please see the OPERATION section of the manual for details.

- In Setting mode if the DA11 is not receiving a valid signal on the selected input or there is nothing connected, the symbol “- -” appears in the VOLUME display. This can be quite useful when troubleshooting problems. For example: Why is no music coming from the DA11 outputs when my computer (USB source) is playing a track in the player software? Please see the section titled USB INPUT for more details.

Diagram 1, Section 2- >PiC< Playback Image Control™ (Operating mode)

This section controls the stereo image in both the main (XLR) outputs and the headphone output. It consists of the LED’s below the IMAGE legend (+2, +1, etc.) and the two switches labeled “wide narrow” and “narrow wide.” Moving the settings in the “wide” direction increases the apparent width of the stereo image, and moving the settings in the “narrow” direction decreases the stereo width (making it “more mono”). The left and right controls are independent of each other, and can be used to alter the stereo image of asymmetric mixes (true stereo recordings, for example) or adjust for asymmetrical speaker placement. When both LED indicators are on “0,” the stereo image is not altered. Please note that the perceived effects of these adjustments are very program dependent, and may result in a change in acoustic volume level.

- When “Mute” is activated from the optional infrared remote, in Operating mode *both* IMAGE indicator LED’s will go dark to indicate that the Mute function is active.

- Please note that the switches are always active in both Operating and Setting modes, unlike the LED indicators which change function depending on the mode.

Diagram 1, Section 3- Volume Control (Operating mode)

This section consists of the VOLUME display and the “up/down” switch.

- The up/down switch always controls the volume in both Operating and Setting modes.
- Please see the section titled “Determining the Correct DA11 Volume Setting for Your System” for important information when connecting the DA11 outputs to other equipment.

In Operating mode the VOLUME display has two types of indication:

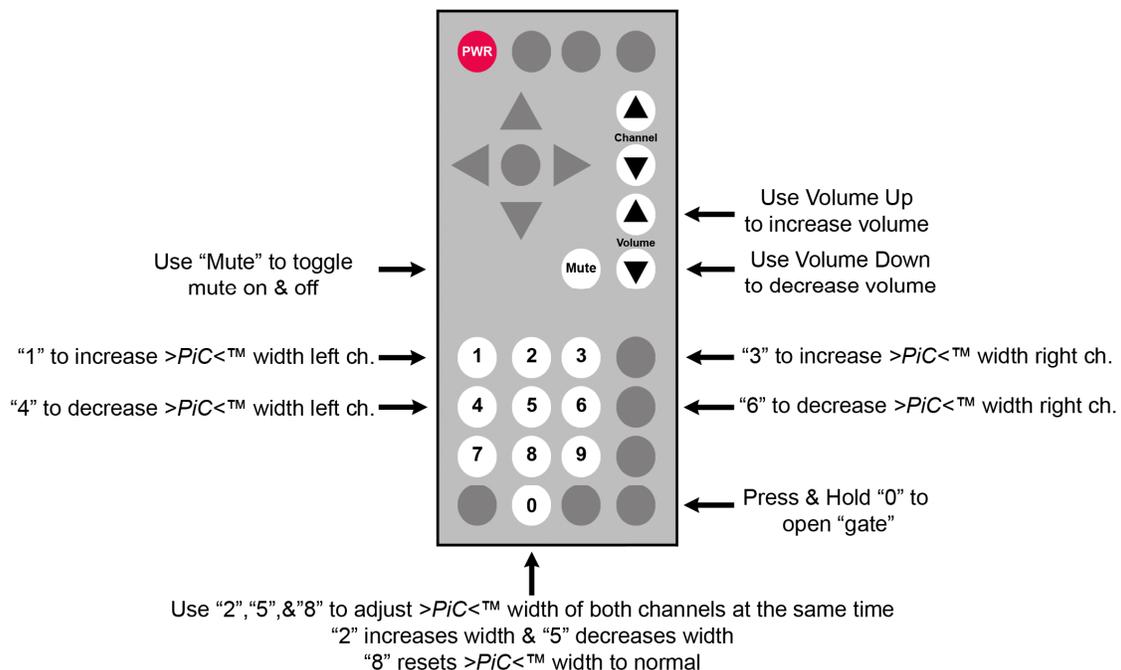
- It displays the volume setting during adjustment via the front panel up/down switch, after IR remote commands are received, and for approximately 10 seconds thereafter.
- It displays “LE” at other times in Operating mode to indicate that the settings have been stored in memory, and that the infrared remote functions have been “gated off” to prevent accidental changes to the settings (if the gating function is enabled-see below).

Optional Infrared Remote-

The DA11 is programmed to accept standard Philips RC5 TV infrared remote commands. This means almost any Universal infrared remote control can be programmed to control the DA11. Be sure to check the package of the universal remote to confirm it works with Philips TV’s. Follow the instructions that come with the universal remote, and program the remote using the code in the instructions for a Philips TV. If the first code does not work correctly, there is often more than one code available; so try a different code that is also for a Philips TV.

- Please note: If SAFE MODE is enabled, you must press and hold “0” on the remote until the “LE” symbol changes to the numeric Volume display before the DA11 will respond to any remote functions other than Mute. Toggling the Mute function will confirm that the remote is programmed properly. The IMAGE LED’s go dark when MUTE is “On.”
- This “gating function” is called the SAFE MODE and is “disabled” by factory default. Please see the OPTIONAL INFRARED REMOTE section of the manual for more details.

Example of Optional Universal Remote





MODEL DA11

The LavryBlack DA11 features:

- Ultra low jitter mode
- Patent Pending >PiC< **Playback Image Control™**
- Accepts input sample rates between 30kHz and 200kHz
- *autoCrystal mode™* virtually eliminates sonic degradation due to jitter
- Potentiometer-free digitally controlled analog volume circuitry
- High power discrete headphone output
- XLR, USB, RCA (Coaxial) and Optical (Toslink) digital inputs
- Optional Infrared Remote control
- Power On/Off muting protection on Main XLR and Headphone outputs
- Balanced or unbalanced outputs with Polarity Inversion
- Included XLR to RCA adapters for easy connection to RCA inputs



CONNECTIONS

CAUTION: Care must be taken when connecting the DA11 directly to the input of a power amplifier or powered monitors to avoid speaker damage. It is suggest that *before making any connections*, the DA11's Volume setting be reduced to a low value ("00" to "05"). Please switch OFF or disconnect power to all devices in your system before making input and output connections to the DA11, except the USB port. See the section titled USB INPUT for details.

Connect a stereo digital audio INPUT from your source using any or all of the following:

- AES source using an XLR cable to the XLR connector.
- Stereo optical source using a Toslink fiber to the OPTICAL connector.
- SPDIF (Stereo Digital) source using a coaxial RCA cable to the RCA connector.
- Because the power should be "On" when connecting the USB cable to the DA11 and a USB connector on your computer, it is advisable to make all other connections first. Please see the USB INPUT section of this manual for details.

Note: The XLR, RCA and Optical connectors can receive either AES/EBU (professional format) or SPDIF (consumer format). For example, an XLR to RCA adapter can be used to feed a coaxial SPDIF signal to the XLR input.

Connect the XLR OUTPUTS to your destination device (recording studio equipment, receiver, power amplifier, or powered speakers).

- Use the XLR to RCA adapters included with the DA11 to connect the XLR outputs of the DA11 to equipment with RCA inputs. Standard XLR to RCA adapters or adapter cables can also be used to connect the XLR outputs to other equipment with unbalanced inputs.
- If connections are made to equipment with unbalanced inputs, please be sure to set the output configuration for the proper unbalanced mode (typically "Pin 2 Hot"). Please see the section titled CONFIGURING THE XLR OUTPUTS.
- The XLR marked LEFT to the LEFT Channel of the destination.
- The XLR marked RIGHT to the RIGHT Channel of the destination.
- Please see the section titled "Determining the Correct DA11 Volume Setting for Your System" for details on the correct Volume settings.
- Connect headphones to the HEADPHONE jack. The headphones can be plugged or unplugged at any time. There is a protection circuit to prevent power on/off "pops."
- DO NOT use "earbuds" or any other headphones designed for use with portable battery-powered devices such as MP3 players. Damage to the headphones may result.

Once the inputs and outputs have been connected:

- Connect the AC power cord to the DA11's back panel power entry receptacle.
- Connect the DA11 and other devices to an AC power source. The DA11 will automatically adjust to inputs in the range of 90-264 VAC- no need to change settings!

USB INPUT

With computer USB audio, the playback must be "Stopped" before normal playback is initiated. The effect of this can be seen in the Setting mode of the DA11 by an indication of the sample rate or "- -" in the VOLUME display. One example of this is if the AC power on the DA11 is turned "Off" and "On" while the USB input is selected. If the audio software was playing when the power was cycled, the DA11 will display "- -" in Setting mode until the playback is "stopped" (not paused!) and started again. **There will be no sound reproduced until the sample rate indication re-appears. It is advisable to keep the DA11 volume setting low until sound is reproduced!**

The DA11 has a USB input compatible with the USB 2.0 standard. There is some basic set-up required for consistent operation of the DA11 using the Operating System's driver.

In current operating systems, once the output sample rate and Wordlength are selected in the setting dialog ("Sound" in Windows® or "Audio MIDI" in Mac OS), this setting will remain in effect until it is manually changed. This means that the output sample rate will not automatically "follow" the settings of the playback software. If you play a file recorded at a different sample rate in the playback software, you must also change it in the setting dialog to avoid sample rate conversion being introduced automatically. You can check this while playing a file by looking at the sample rate indication in the front panel "Volume" display of the DA11 in Setting mode.

The alternative is less of a purist approach, but easier- "rip" all of your files at the same sample rate so the playback sample rate does not change. Because the sample rate conversion does not happen in "real time," a more accurate conversion is possible, so the final quality should be better than letting the computer automatically introduce sample rate conversion during playback.

Windows ® XP: First, set the Volume control of the DA11 to a low value: "00" to "05."

With Windows ® started normally and the DA11 power "On," connect the USB cable from the DA11 to a USB port on the PC. A small window should pop-up to indicate that Windows has recognized the USB device. Although the DA11 should now be capable of playing digital audio from an application, it is a good idea to change a few settings for consistent operation.

- Go to the START menu and select Control Panel.
- When the list of control panels appears in the Control Panel dialog, select the “Sound and Audio Devices” control panel.
- Click on the “Audio” tab at the top.
- In the “Sound Playback” section select “Lavry DA” as the default device from the drop-down list.
- It is suggested that you “check” the “Use only default devices” checkbox near bottom of dialog.
- Click the “Apply” button.
- In the Sound Playback section, click on the “Volume” button. The software mixer should appear.
- Move the faders on the inputs used for playback to the very top position for unity gain. For example: the “Wave” and “CD Player” inputs. Close the mixer window.
- Click on the “Volume” tab at the top (not the Volume button!).
- The “Lavry DA” should now appear next to the speaker symbol in the top left corner of the dialog. The Device Volume will appear grey.
- Click “OK” to save all the settings and close the control panel.

Windows ® Vista/Seven- First, set the Volume control of the DA11 to a low value: “00” to “05.”

With Windows ® started normally and the DA11 power “On,” connect the USB cable from the DA11 to a USB port on the PC. Windows ® Vista/Seven should recognize the device, load any drivers as necessary, and Vista will inform you when the Lavry DA11 is ready. Although the DA11 is now operational, it is a good idea to change a few settings for “bit-accurate” operation.

- You can access the SOUND control panel in Vista or Windows Seven from the start menu; or the Playback Devices control panel by right-clicking on the speaker icon next to the clock on the right end of the taskbar and choosing PLAYBACK Devices from the fly out menu.
- The Playback tab should be selected, and the LavryBlack DA should appear as a “Speaker.” If the DA11 is set as the Default device, a green check mark will appear next to the speaker symbol. If not, click once on the LavryBlack DA to select it, and then click on the “Set Default” button at the bottom of the control panel.
- While the Lavry DA is highlighted, click on the “Properties” button at the bottom of the control panel. A second panel will open titled “Speaker Properties,” and the Lavry DA should be listed in the middle of the GENERAL tab in the “Controller Information” section.
- Click on the LEVELS tab, and set the fader level to “100.”
- Click on the ENHANCEMENTS tab, and disable ALL enhancements for “bit-accurate” playback.
- Click on the ADVANCED tab to set the output sample rate in the Default Format section. For bit-accurate playback, set the output to match the sample rate of the source audio file. Please note that “24 bit” is always set. This is OK, even for 16 bit files.
- In the Exclusive Mode section, you can select the mode so that only one software application at a time can play back through the DA11. This is not recommended, because it prevents other audio sources from playing back through the DA11 simultaneously.

Macintosh OSX- First, set the Volume control of the DA11 to a low value: “00” to “05.”

With OSX started normally and the DA11 power “On,” connect the USB cable from the DA11 to a USB port on the computer. Although the DA11 should now be capable of playing digital audio from an application, it is a good idea to change a few settings for “bit-accurate” operation.

- Select “Utilities” from the Finder “GO” menu. For easier access, you may want to drag the “Audio MIDI Setup” to the Dock. Open the “Audio MIDI Setup” dialog. Choose AUDIO DEVICES.

There are two different procedures, depending on the version of the operating system:

A.) The window has “System Settings” in the upper left corner and both “Audio Input and Audio Output” sections at the bottom of the window. In the “Systems Settings” set the “Default Output” to the “Lavry DA” using the arrows on the right side to choose it from the drop-down list. In the “Audio Output” section, select the sample rate that matches the sample rate of the file you wish to play, and always select “2 Ch. 24 bit” as the output resolution (even when playing 16 bit files).

B.) The window is titled “Audio Devices” and there is a pane on the left side with icons and a list of Audio Devices. Click on the “Lavry DA” so it is selected (highlighted). The right side of the window should now have the heading “Lavry DA.” Select the sample rate that matches the sample rate of the file you wish to play, and always select “2 Ch. 24 bit” as the output resolution (even when playing 16 bit files). Click on the gear icon at the bottom of the left pane and select “Use this device for sound output.”

- If you do not stop playback and manually select the correct sample rate before playing a file of a different sample rate, a rather low-quality sample rate conversion will automatically be introduced which can degrade the audio performance of the DA11. With some software, it may be necessary to actually close the playback program before changing the output sample rate settings to avoid double-sample rate conversion. Open the playback software *after* changing the output settings.

CONFIGURING THE XLR OUTPUTS:

The unit is factory configured to operate in Balanced output mode. The balanced audio signal appears on Pin 2 and Pin 3 of the XLR outputs. Pin 1 is a ground connection for the cable shield. The unit may be configured using the Setting mode to drive unbalanced inputs.

The default setting for the polarity **invert** function is “off,” which results in the signal Polarity of the XLR outputs being Pin 2 “+” and Pin 3 “-“. This is also the correct setting for normal listening when using the XLR to RCA adapters included with the DA11.

The included XLR to RCA adapters and many adapter cables are wired as “Pin 2 Hot unbalanced.” The XLR outputs are short-circuit protected, so operating the DA11 with the outputs configured incorrectly will not result in permanent damage.

- If the outputs are configured for balanced operation and connected to unbalanced wiring, the reproduced audio will be significantly more distorted than with the proper configuration.
- If the outputs are set for the unbalanced configuration opposite the correct one, there will be no audio reproduced.
- The configuration of the XLR outputs has no affect on the headphone outputs. One way to confirm that the unbalanced setting is *opposite* the correct configuration is to check for the presence of audio in the headphones when there is no audio from the XLR outputs. An example of *incorrect setting* with XLR to RCA adapters is if the outputs are configured for Pin 3 Hot instead of Pin 2 Hot.

This chart shows the status of the front panel LED’s in Setting mode and the signals on the XLR output pins with the (audio polarity) **invert** function set to “off.” The “+” denotes non-inverted signal polarity and the “-“denotes inverted signal polarity.

Setting for the XLR to RCA adapters included with the DA11

XLR Output Configuration	LED status	Pin 2 Signal	Pin 3 Signal
Balanced operation	pin 2 “on” pin 3 “on”	Audio +	Audio -
Unbalanced Pin 2 Hot	pin 2 “on” pin 3 “off”	Audio +	Ground
Unbalanced Pin 3 Hot	pin 2 “off” pin 3 “on”	Ground	Audio - *

*For “Unbalanced Pin 3 Hot” operation, the invert function would normally need to be turned “on” to make the polarity of pin 3 “non-inverted.” Please see the “**invert**” section (below) for details on the signal polarity.

When in the Setting mode, the LED’s above each label indicate the status of each setting. *Please remember that the cursor position affects the way an LED indicates the status:*

- At the cursor position, a rapidly blinking LED indicates “on” and slowly blinking cursor indicates “off.”
- At all other positions, a steadily illuminated LED indicates “on,” and an LED that is not illuminated indicates “off.”

To set the XLR outputs for Pin 2 Hot Unbalanced operation (for included XLR to RCA adapters);

- 1.) Enter the Setting mode by clicking the switch marked “” down.
- 2.) The current setting of the XLR outputs is now displayed above the front panel designations “pin 2” and “pin 3.” If it has not been changed from the factory setting, both LED’s above the pin 2 and pin 3 designations will be “On,” denoting balanced operation.
- 3.) Click the  switch to move the flashing cursor until it is the above “pin 3” legend. Click the right switch down once in the set direction to toggle pin 3 “Off.” The LED above pin 3 will be “Off” to indicate that pin 3 of the XLR outputs is now connected to ground.

OPERATION:

A. FRONT PANEL DISPLAYS

There are two modes for the front panel controls of the DA11- Operating Mode and Setting Mode. The front panel displays serve different functions in the two modes, and may also change appearance in each mode to indicate changes in settings or input signals.

In the center of the front panel, the IMAGE display has two modes:

- 1.) In Operating mode, two LED’s indicate the setting of the **>PiC< Playback Image Control™**. The numbers above the display are the legend for this mode.
- 2.) In Setting mode the status of all of the programmable settings are displayed. The legend for the indicators in Setting mode is below the display- xlr, opt, usb, rca, output, pin 2, pin 3, dim.

- In Operating mode, if the “mute” function is activated by the optional infrared remote, the entire display goes “dark.”

- In Operating mode, if the SAFE MODE of the infrared receiver is disabled, the two LED’s that indicate the setting of the Stereo Image Control flash when the “LE” symbol appears.

On the right side of the front panel, the VOLUME display has two modes:

- 1.) In Operating mode, the numerical value of the volume is displayed for ten seconds after the setting has been changed. After ten seconds, the “LE” symbol appears.
- 2.) In Setting mode, the VOLUME display indicates both the input sample rate and whether the selected input is “locked” to a valid signal. If the input is locked, the sample rate is displayed as a two digit number; if it is not locked or a signal is not present, the symbol “- -” is displayed. Please see the section (below) titled “**xlr, opt, usb, rca**” in for details.

- Any time the VOLUME display reverts from the numerical display to the LE symbol, the settings are stored in non-volatile memory.

- In Operating mode with SAFE MODE enabled, the symbol “LE” indicates that the infrared receiver is “gated off” so that the DA11 will not respond to remote commands other than “Mute.” To “open the gate,” press the “0” button and the display changes to the numerical volume setting. Please see the section OPTIONAL INFRARED REMOTE for details.

B. SETTING MODE

To enter the Setting mode, click the  switch under the SELECT legend once either up or down. The IMAGE display will change from indicating the setting of the **>PiC< Playback Image Control™** to indicating the status of the programmable settings.

To exit the Setting mode, click the right SELECT switch up towards “exit.” The displays will revert to the Operating mode with the IMAGE display indicating the setting of the **>PiC<™** and the VOLUME display indicating the numerical volume setting for approximately 10 seconds. The symbol “LE” will appear after that to indicate the programmable settings have been stored in non-

volatile memory. This means the settings will be retained if the power is turned “Off” and restored when the power is turned back “On.”

- The first time Setting mode is entered after power is applied, the left-most LED will begin flashing. If other functions or inputs are enabled, the LED above their legend will be illuminated.
- When the Setting mode is exited, the position of the cursor is retained, so upon re-entering Setting mode it will appear at the same position (allowing setting changes to the same function).

The LED at the cursor position indicates the status of the function differently than other positions-

- At positions other than that of the cursor, if the LED is illuminated (“On”), the function is enabled (“On”). If the LED is “Off,” the function is “Off.”
- At the cursor position, if the LED is flashing at a fast rate, the function is “On.” If the LED is flashing slowly, the function is “Off.”

!!! Please note that in the following function descriptions, the distinction between whether the LED is at the cursor position or not is omitted for clarity. For example: if the LED is “On” it is either rapidly flashing at the cursor position or steadily illuminated at other positions.

- For single functions such as output, invert, or dim; when the right SELECT switch is clicked down to the “set” position, the function toggles between On and Off with each click.
- The input selection is “interlocked” electronically, so selecting a new input de-selects the previous one. For example, if the xlr input is selected, and you position the cursor above the usb legend and click “Set,” the usb input will be selected and the xlr input will be deselected.
- The XLR output pin2/pin 3 selection for unbalanced operation is interlocked in a similar manner.

xlr, opt, usb, rca-

The first four positions in the Setting mode display are the digital audio inputs of the DA11, and correspond to the connectors on the back panel. To listen to the desired input, enter the Setting mode by clicking the  switch once, and then click it either up or down to move the cursor to the position above the legend for the desired input.

Once the cursor is above the desired input, click the right SELECT switch down in the “set” direction to toggle the input “On.” Clicking the switch again will toggle the input “Off.” If the input is “On,” the cursor flashes quickly and if the input is “Off,” the cursor flashes slowly. It is possible to turn all of the inputs “Off.”

- Because only one input can be “On” at a given time, enabling a previously de-selected input will automatically de-select an input that was “On.”

The numerical VOLUME display changes in Setting mode to indicate both the input sample rate and whether the input is receiving a valid signal and is “locked” (synchronized to the input signal).

- If the input is locked, the VOLUME display indicates the sample rate of the input by displaying “44” for 44.1kHz, “48” for 48kHz, “88” for 88.2kHz, and “96” for 96kHz. The DA11 incorporates an advanced version of the Crystal mode introduced in the DA10- the *autoCrystal mode*[™]. When the digital audio input of the DA11 is switched or the signal feeding the input is changed, the DA11 automatically checks the incoming sample frequency. If the sample frequency is close enough to the frequencies 44.1, 48, 88.2 or 96 kHz, the control circuitry automatically selects Crystal mode with enhanced jitter rejection. For all other input sample frequencies, a more “standard” PLL mode is employed which allows the DA11 to lock to input signals between 32 and 200 kHz. The DA11 operates in Wide lock mode and displays one of the four sample rates that is closest to the input sample rate. For example; an input that is locked to a valid 32 kHz sample rate would be indicated by a “44” in the VOLUME display. Switching between modes is seamless so that there is no loss of lock or muting when *autoCrystal mode*[™] is engaged.

- If the input is not valid or not present, the DA11's input is not locked and the VOLUME display indicates this by displaying "- -" instead of the numerical sample rate.
- Please see the USB INPUT section for detail of the display's operation with a USB source.

output-

One use for the output function is to mute the speakers while listening with headphones. The output function "mutes" the main XLR outputs and does not affect the headphone output. To mute the XLR outputs, enter the Setting mode and position the cursor above the "output" legend. Click the right SELECT switch towards "set" to toggle the outputs On and Off.

- When the output LED is illuminated ("On"), the outputs are On.
- When the output LED is "Off," the outputs are Off (muted).
- Please note: this function is different than the MUTE function of the optional infrared remote, which mutes all audio output from the DA11; including the headphone output.

invert-

The invert function affects the Polarity of both the main XLR outputs and the headphone output. The consequence of incorrect Polarity is subjective, and is quite often subtle. This setting is provided for two reasons:

1. To provide flexibility with output connection wiring.
2. To allow the signal polarity to be corrected when it is inverted due to polarity inversion in the recorded music or other equipment/wiring in your system.

- Please note that this function operates in all configurations of the XLR outputs- balanced, unbalanced Pin 2 Hot, and unbalanced Pin 3 Hot. The "sense" of the function is reverse for unbalanced Pin 3 Hot operation and balanced "Pin 3 +" wiring (please see the chart below).

The Polarity of the signal affects the motion of the speaker reproducing the audio, and if incorrect can affect the fidelity of the audio in a way that will vary with program material. If correct throughout the recording and reproduction process, a positive air pressure at the microphone will result in a positive pressure created by the speaker. If it is "inverted," the speaker will move in the opposite direction and the resulting acoustic signal will be less accurate.

Enter the Setting mode and position the cursor above the "invert" legend. Toggle the function On and Off with the Set switch. Below is a chart of the audio Polarity for different settings:

Setting for the XLR to RCA adapters included with the DA11

Invert Function	LED	Balanced output	Unbalanced Pin 2 Hot	Unbalanced Pin 3 Hot
OFF	OFF	Pin 2 +, Pin 3 -	Normal	Inverted
ON	ON	Pin 2 -, Pin 3 +	Inverted	Normal

pin 2, pin 3-

These functions are used to configure the XLR outputs for balanced, unbalanced Pin 2 Hot, or unbalanced Pin 3 Hot operation, and do not affect the headphone output or signal polarity. Balanced inputs are characterized by XLR connectors, and are typically wired so Pin 2 is "+" (non-inverting) and Pin 3 is "-" (inverting). Unbalanced inputs are typically "RCA" (also called coaxial "Cinch" connectors) or 1/4" phone jacks (similar to a large headphone plug with two conductors). Most consumer HiFi equipment has unbalanced RCA inputs. Although no damage will occur if these settings are not correct, connecting the DA11 to an unbalanced input with the incorrect settings will result in higher than normal distortion or no sound. Please see the section titled CONFIGURING THE XLR OUTPUTS for details on these settings.

dim-

This function adjusts the brightness of the front panel displays. When the function is On, the displays are approximately one half as bright as when the function is Off.

C. OPERATING MODE

When AC power is first turned “on,” the DA11 initializes for a few seconds. Once the indicator LED’s appears in the IMAGE display, the unit has entered Operating mode. All of the settings (including the Volume setting) are restored to the state they were in the last time the “LE” symbol appeared before the power was turned “off.” Turning the power “off” before the LE reappears will result in the last setting changes *not* being stored in memory.

>PiC< Playback Image Control™-

This proprietary system controls the apparent “width” of the stereo image, and allows the position in the stereo sound field of each channel to be controlled individually. Decreasing the width of the stereo image when listening with headphones or to compensating for asymmetric placement of speakers in relation to the listening position are examples of when this feature could be used.

Please note that the perceived effects of these adjustments are very program dependent, and may result in a change in acoustic volume level. One extreme example is mono program material- adjusting the >PiC<™ controls to the same setting on both channels will not change the apparent location of the sound in the stereo sound field.

>PiC<™ is comprised of the LED display in the center of the front panel below the “IMAGE” and numerical legends (+2, +1, 0, etc.), and the two switches labeled “wide-narrow” and “narrow-wide.” The >PiC<™ function can be controlled by these two switches or from an infrared remote (please see the OPTIONAL INFRARED REMOTE section for details).

Adjustment of the >PiC<™ is indicated by the position of the illuminated LED’s. Moving the settings in the “wide” direction (“+” numbers) increases the apparent width of the stereo sound field. Moving the settings in the “narrow” direction (“-” numbers) decreases the apparent width making it closer to “mono.” Similar to the VOLUME up/down control, single clicks move the width setting one step and holding the switch moves the setting until it reaches the end of the adjustment range.

When the “Mute” function is enabled by an optional infrared remote, the LED’s that normally indicate the setting of the >PiC<™ turn “off” to indicate that all audio outputs are muted. In other words, when Mute is enabled, the entire IMAGE window is dark in Operating mode.

Volume Control-

A digitally controlled *analog* volume circuit is used to control the volume of the XLR and Headphone outputs. The advantages of this approach are:

- Extremely consistent sound quality regardless of volume; much better than a traditional potentiometer “knob” type of control.
- Excellent matching between channels at every volume setting for consistent stereo balance.
- Ease of reset-ability for listening or critical monitoring at a consistent level

The volume control consists of the numerical display under the VOLUME legend, and the up/down switch just to the right of the display. The volume can be controlled in one dB steps from full volume (56) to the lowest volume (01), When the display indicates “00,” the signal is muted. Holding the up/down switch in either position will cause the Volume setting to change continuously until the switch is released or the setting reaches the end of the range.

The up/down switch is always active in both Operating *and* Setting modes once the DA11 has finished the power-on initialization. Likewise, the volume setting will also change in Setting mode when the DA11 accepts a remote volume command (the Safe Mode setting affects remote Volume commands; please see the OPTIONAL INFRARED REMOTE section of the manual).

The display reverts to “LE” approximately ten seconds after the last Volume control input (front panel up/down switch or infrared remote). This indicates that the settings have been stored in non-volatile memory. Any time the volume is adjusted, the display will change from “LE” back to the numerical volume setting in Operating mode.

Determining the Correct DA11 Volume Setting for Your System-

Please be certain to configure the outputs of the DA11 for the proper balanced or unbalanced setting to match the wiring and inputs of your system. See the section titled CONFIGURING THE XLR OUTPUTS for details.

There are two ways the DA11 can be used to listen to digital audio sources through speakers:

- 1.) Connect the main output of the DA11 to the input of a receiver or preamp, set the DA11 to a “fixed” level, and adjust the speaker volume using the volume control of the receiver or preamp.
- 2.) Connect the main output of the DA11 directly to the input of a power amp or powered monitors and use the Volume control of the DA11 to adjust the speaker volume.

PLEASE NOTE: When operating the DA11 connected directly to a power amp or powered monitors, it is important to reduce the VOLUME of the DA11 to a very low setting BEFORE turning the AC power of the power amp or monitors “ON!”

Because the DA11 is capable of driving professional level balanced inputs as well as consumer level unbalanced (RCA) inputs, some care is needed when using the DA11 with unbalanced consumer HiFi equipment. Although exceeding the absolute maximum input level is not likely to cause damage, it will reduce the quality of the listening experience. The first time you use the DA11 feeding equipment with a volume control, it is recommended that you start with the DA11 at a very low setting, and raise the volume on the preamp or receiver to a level you would use to listen to other inputs (Phono or FM radio, for example). Switch to the input that the DA11 is feeding, and raise the Volume setting of the DA11 until the acoustic volume is the same as other sources. Matching the acoustic level between sources will almost certainly mean you are not exceeding the input rating of your equipment!

There is wide variation in the absolute maximum input level that HiFi equipment is capable of accepting without distortion. When this level is exceeded, the music program can be distorted regardless of the volume setting of the HiFi equipment because the distortion can be caused *before* the volume control. This could also occur when feeding a power amp or powered monitors directly, especially if the input level control of the power amp/monitors is turned “down” very low. It would be harder to detect in this situation, because the corresponding acoustic volume would typically be very loud.

- Most consumer equipment with RCA inputs are designed to operate with an absolute maximum input level of 2V rms (which is 5.6 V peak-to-peak). When operating in unbalanced configuration, the VOLUME setting on the DA11 that corresponds to this level is “46.” *It is recommended to check the specifications and confirm this corresponds to the absolute maximum input rating of your equipment according to the manufacturer! If it does not, you should determine the correct setting of the DA11 that is the absolute maximum setting for your system.* Please see the section titled “Determining the Correct DA11 Volume Setting for other input ratings” (below).

- For professional equipment with balanced inputs, a VOLUME setting of 56 corresponds to +24dBu. Some professional equipment has a maximum input rating of +18 dBu, which corresponds to the VOLUME setting of “50” on the DA11 for balanced operation and “56” for unbalanced operation.

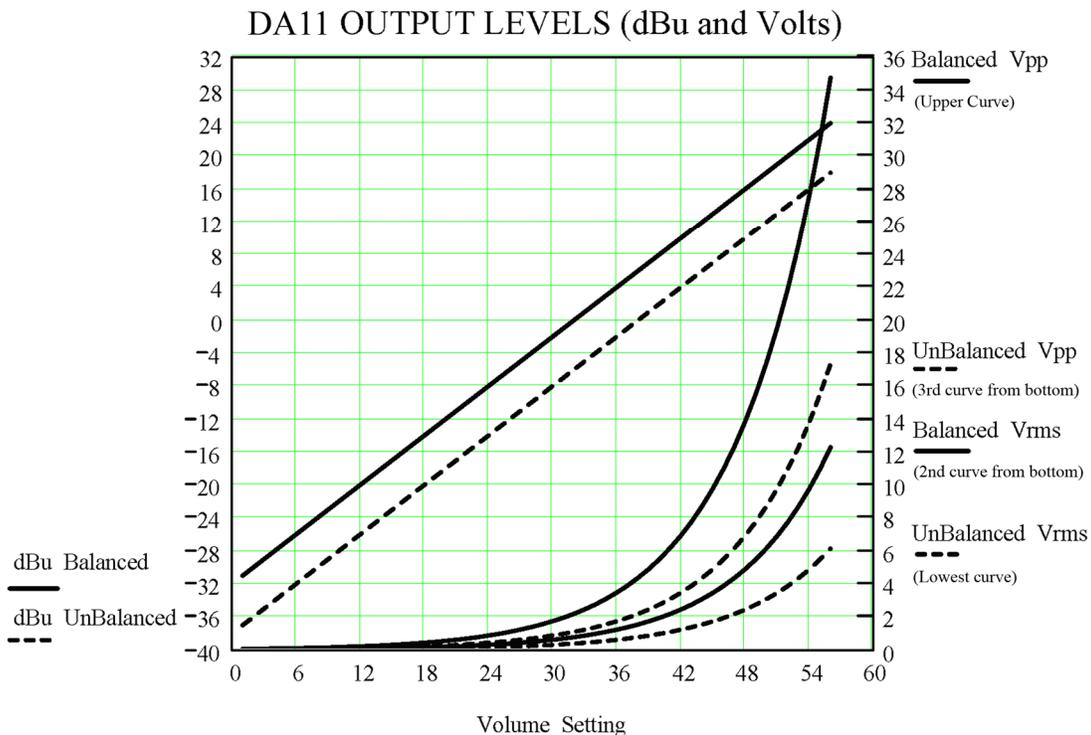
In cases where the DA11 is feeding a consumer receiver or preamp, once the absolute maximum level has been established, the actual level used for typical listening may be lower than this value. As a rule, if you switch between analog sources on the receiver or preamp and there is a large

difference in volume between other sources and the DA11, it is probably better to lower the VOLUME setting of the DA11 below the absolute maximum level if it is much louder than other sources. It will probably take some experimenting with different music program to establish a good “working volume” with your system. There is a possibility that the optimum DA11 level setting will still result in the DA11 being slightly louder than other sources. It is also recommended that you not exceed the absolute maximum level, even with music program that has large variations in level, because a loud peak could occur that would cause distortion.

In most cases, lowering the volume setting on the DA11 will degrade the signal quality less than lowering the volume control on the receiver below a setting which is “normal” for other analog sources (phono, FM broadcast, etc.). The digitally controlled analog level circuitry of the DA11 degrades the signal less than typical “knob” potentiometer volume controls on consumer equipment, particularly at lower level settings.

Determining the Correct DA11 Volume Setting for other input ratings-

Use the graph (below) to determine the proper maximum Volume control setting of the DA11 for other voltage values. For Volts rms or Volts p-p, find the voltage on the vertical scale on the right side of the graph and trace horizontally until it intersects the relevant curve (solid for rms, dotted for V peak to peak, balanced or unbalanced). At the point where the horizontal line intersects the curve, trace straight down to the scale on the bottom of the graph to find the closest DA11 Volume control setting that will be the maximum volume for your equipment’s inputs. Pro users can use the vertical scale on the left edge of the graph for the same purpose using dBu units. For example: if you find 2 volts on the right scale, and trace horizontally until it intersects the dotted “Unbalanced Vrms” curve, then trace down to the bottom scale, it intersects at “46.”



If you have difficulty determining the correct setting, please contact techsupport@lavryengineering.com once you have the manufacturer’s ratings for your equipment.

Peak output levels for DA11 Volume Settings:

Volume Setting	XLR Balanced Operation	XLR Unbalanced Operation	Headphone Level
56	24dBu	18dBu	18dBu
50	18dBu	12dBu	12dBu
---	---	---	---
46	14dBu	8dBu	8dBu
---	---	---	---
01	-31dBu	-37dBu	-37dBu
00	OFF	OFF	OFF

AES/EBU professional analog line levels:

Set to 56 for 24dBu balanced = 34.72V peak to peak = 12.28V rms

Set to 56 for 18dBu un-balanced = 17.36V peak to peak = 6.14V rms

A typical home power amp or powered speaker:

Set to 40 for 8dBu balanced = 5.6V peak to peak = 2V rms

Set to 46 for 8dBu unbalanced = 5.6V peak to peak = 2V rms

OPTIONAL INFRARED REMOTE

The DA11 is programmed to accept standard Philips RC5 TV infrared remote commands. This means almost any Universal infrared remote control can be programmed to control the DA11. Be sure to check the information on the universal remote package to confirm it works with Philips TV's. Follow the instructions that come with the universal remote, and program the remote using the code from the instructions for a Philips TV. If the first code does not work correctly, there is often more than one code available; so try a different code that is also for a Philips TV.

Once the universal remote is programmed, it controls the DA11 in the following manner:

- 1.) The "Mute" button is always active and immediately toggles the audio outputs of the DA11 "on" and "off." Please note that this *does affect the headphone output* and is therefore not the same as the "output" function in Settings mode.
 - To indicate the "mute" function has been engaged, in Operating mode the two LED's in the IMAGE display will go dark until the mute button is pressed again to un-mute the DA11. The mute function can also be turned "off" by operating the DA11's front panel volume up/down switch.
- 2.) The current factory default is for the SAFE MODE to be *disabled*. If SAFE MODE is enabled, all other commands are "gated" to prevent accidental changes. The symbol "LE" appears in the VOLUME display to indicate that the gate is "closed" and the DA11 will not accept infrared commands other than Mute. Press and hold the number "0" button for a few seconds, and the numerical volume setting will re-appear to indicate that the "gate is open." As long as the numerical volume setting is displayed, the DA11 continues to accept remote commands. Please also note that the "LE" indicates when the settings have been stored in memory. Please see ENABLING or DISABLING SAFE MODE (below) for more information.
 - Pressing the "Mute" button also "opens the gate." Once open, it is not necessary to press "0" to access the other remote functions until the LE symbol appears in the Volume display.

For all of the following functions, it is assumed that SAFE MODE is disabled, or that the "gate is open" so the numerical setting is visible in the VOLUME display.

- 3.) To raise or lower the volume setting, press the Volume Up or Volume Down button on the remote. Similar to the front panel "up/down" switch, a single press of the remote button will change the volume by one step, and holding the button will make the setting change continuously until the button is released or the end of the adjustment range has been reached.

4.) The number pad can be used to adjust the **>PiC< Playback Image Control™** and control the “gating” function according to the following chart:

1 Increase width Left channel	2 Increase width both channels	3 Increase width Right channel
4 Decrease width Left channel	5 Decrease width Both channels	6 Decrease width Right channel
7 No function	8 Reset width to “0” (normal)	9 No function
	0 Press & Hold to open “gate”	

ENABLING or DISABLING SAFE MODE-

When SAFE MODE is disabled, all functions of the infrared remote will operate without having to press “0” first to “open the gate.” The status of SAFE MODE is displayed by the LED’s in the IMAGE section in operating mode.

- When SAFE MODE is disabled, the LED’s in the IMAGE section will blink once whenever the VOLUME display reverts to the “LE” symbol.

To enable SAFE MODE using the switches under the SELECT legend, the unit must be in Setting mode.

- Use the left switch marked  to enter the Setting mode.

- *Press and hold* the right switch in the EXIT direction until the “LE” symbol appears and the LED’s in the IMAGE display blink once.

- Safe Mode can be disabled using the same procedure.

- The setting for SAFE MODE is stored in non-volatile memory, so the DA11 will retain the setting when the AC power is cycled

SPECIFICATIONS:

THD+N at max volume (volume = 56) – typical, 0.0008% FS, maximum 0.0013% FS

Test conditions: 20Hz – 20KHz, -3dBFS sine wave, 22-22KHz BW

At all possible settings and switch combinations. This also applies to operating the DA11 with the included XLR to RCA adapters.

Dynamic Range: -112dB typical, -110 dB minimum

Test conditions: Non weighted

At all possible settings and switch combinations.

Drive Capability:

24dBu Balanced XLR output into 1K ohms at Volume = 56 or lower

21dBu Balanced XLR output into 600 ohms at Volume = 53 or lower

18dBu Unbalanced XLR output into 600 ohms at Volume = 56 or lower

18dBu Headphone into 100 ohms at Volume = 56 or lower *

18dBu Headphone into 50 ohms at Volume = 50 or lower *

* PLEASE NOTE: Do not use “earbuds” or any other type of headphones designed for use with portable battery-powered devices such as an MP3 player. The DA11 is not designed to work with this type of headphone. The headphone output is capable of much higher levels than a battery-powered device in order to properly drive typical HiFi headphones. Damage may occur to the portable device headphones if they are connected with the DA11 Volume control set to a higher setting.

Volume Control Precision:

Integral linearity (deviation from straight line) – better than 0.1dB

Differential linearity (step size) – better than 0.08dB

AC Power:

Voltage 90-264 VAC, Frequency 40-63Hz,

Typical Current usage: 0.1A

Fuse Rating 2.5A “Time Delay” *

*Subject to change! Please always check the rating on the fuse and the one printed next to the fuse holder on the power supply PC board before replacement. Replace the fuse ONLY with a fuse of the same rating. If you have any questions, contact: techsupport@lavryengineering.com

Please Note: The DA11 automatically adjusts to AC power inputs in the range of 90 to 264 Volts AC and line frequencies between 47 and 63 Hertz. There are no settings to change.

Dimensions:

8”w x 1.75”h x 10.75” d (including front panel switches and rear panel connectors)

Weight:

Less than 5lbs, 6 lbs shipping weight

Optional Rack Mount Kit: An optional Rack Mount Kit is available which can be used to mount any combination* of two LavryBlack units in a 1U 19” rack space. Please note that this kit cannot be used to rack mount a *single* LavryBlack unit.

*Please note: Current production model DA11’s can be rack mounted with the kit. For older model DA11’s, please contact sales@lavryengineering.com for information on upgrading your unit.

LIMITED WARRANTY – LAVRYBLACK SERIES MODEL DA11

Subject to the conditions set forth below, for one year after the original purchase date of the product, Lavry Engineering will repair the product free of charge in the United States in the event of a defect in materials or workmanship.

Lavry Engineering may exchange new or rebuilt parts for defective parts. Please call the factory for an RMA number prior to shipment. No product will be accepted for warranty service without a pre-issued RMA number.

This warranty is extended only to an original purchaser of the product from Lavry Engineering, or an authorized reseller of Lavry Engineering. Products that are purchased from unauthorized resellers do not have any warranty coverage. A valid purchase receipt or other valid proof of purchase will be required before warranty service is provided. This warranty only covers failures due to defects in materials or workmanship and does not cover damages which occur in shipment or failures resulting from accident, misuse, line power surges, mishandling, maintenance, alterations and modifications of the product, or service by an unauthorized service center or personnel. Lavry Engineering reserves the right to deny warranty service to products that have been used in rental, service bureau, or similar businesses.

This limited warranty gives you specific legal rights. You may have others which vary from state/jurisdiction to state/jurisdiction.

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