

Marshall

Broadcast A/V Division

AR-DM51-B

Digital Audio Monitor



User Manual

Table of Contents

- 1. Introduction 02
- 2. Features 02
- 3. Package Contents 03
- 4. Front Panel 03
- 5. Control Buttons 04
- 6. Rear Panel 05
- 7. Specifications 06
- 8. Operation 07
- 9. Setting or Changing the IP Address 08
- 10. Updating Firmware 12
- 10. Warranty 14

1. Introduction

The Marshall AR-DM51-B Digital Audio Monitor emphasizes a straight-forward, high-quality design and simplicity of operation. The AR-DM51-B exceeds the capabilities of many larger 2RU designs, and is equally at home in production fly packs, news vans, remote OB vans, and equipment rooms.

2. Features

High Performance Audio

- Matches or exceeds many larger 2RU designs
- Enough “punch” for the noisiest server rooms (up to 100dB)

Multiple Input Types

- 3G SDI with Looping Output
- HDMI
- Analog XLR Balanced - 2 Channels
- Analog RCA Unbalanced Line Level - 2 Channels

Flexible Output Types

- AES-EBU Pair Balanced XLR (converted from Analog input)
- Analog Unbalanced RCA Line Level - 2 Channels

2” Video Display

- Provides confidence image of selected HDMI or SDI source
- Text indicates Source, Format, Selected Channels and more

Controllable via Ethernet or RS-232 Serial

- Remote Control App and Protocol available on Marshall Website

Compact 1RU Design Saves Rack Space

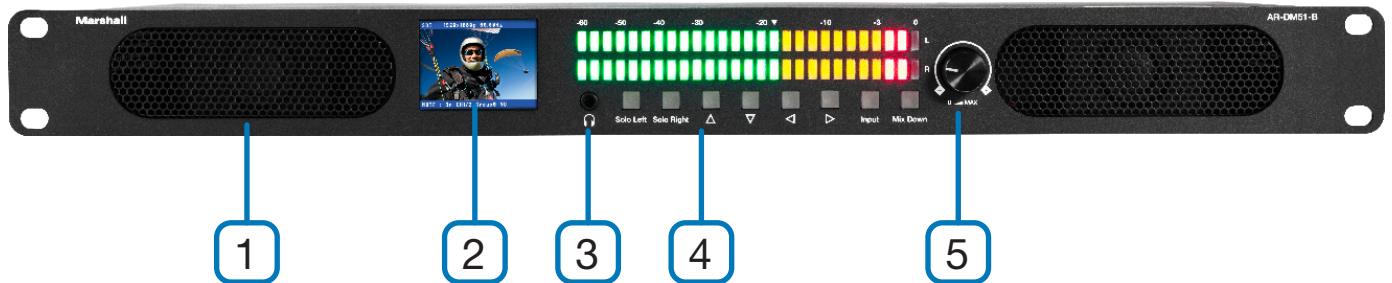
- Minimum size
- Low power consumption, low heat emission into rack

3. Package Contents

Please ensure the following are included:

- One AR-DM51-B Main Chassis
- One 12-Volt Universal Power supply (120/240V – 50/60Hz)

4. Front Panel



1. Speakers

Provides sound from selected channel pair except when Solo buttons are pressed.

2. LCD Video Display

When an HDMI or SDI source is being monitored, the associated video will appear here. Also a text overlay shows input source, selected audio channels, and source video parameters.

Note: The LCD display will be black when Analog Sources are selected.

3. Headphone Jack

Designed to accept stereo headphones with 3.5mm plug.

4. Control Buttons

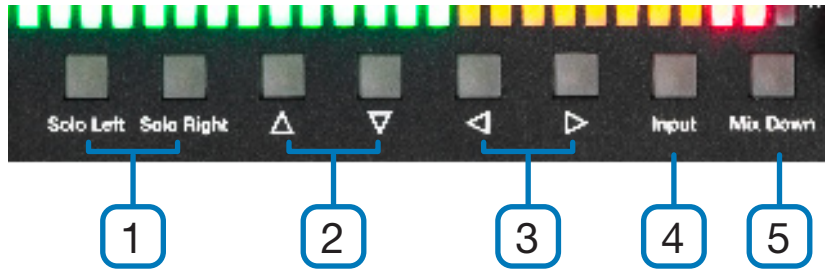
Provides quick access for standard equipment operation.

5. Volume / Mute Knob

Turn the knob to adjust the sound level of both speakers.

Press in on the knob to instantly Mute the speakers.

5. Control Buttons



1. Solo Left & Solo Right

Press one of these to isolate the left or right channel only.

Note: Sound will come out of both speakers when a solo channel is selected but will originate from a single source.

2. Left / Right Arrow Buttons

Press the Left Arrow button to select a lower numbered pair of channels, press the Right Arrow button to select a higher numbered pair of channels.

For example, when monitoring channels 3 & 4, pressing Left Arrow will switch to channels 1 & 2, pressing Right Arrow will switch to channels 5 & 6. The lower-numbered channel audio in a selected pair will play from the Left speaker. The higher-numbered channel audio will play from the Right speaker.

3. Up / Down Arrow Buttons

Press the Up Arrow to select channel group 1 – 8, press the Down Arrow to select channel group 9 – 16.

Note: This applies to SDI sources only

4. Input

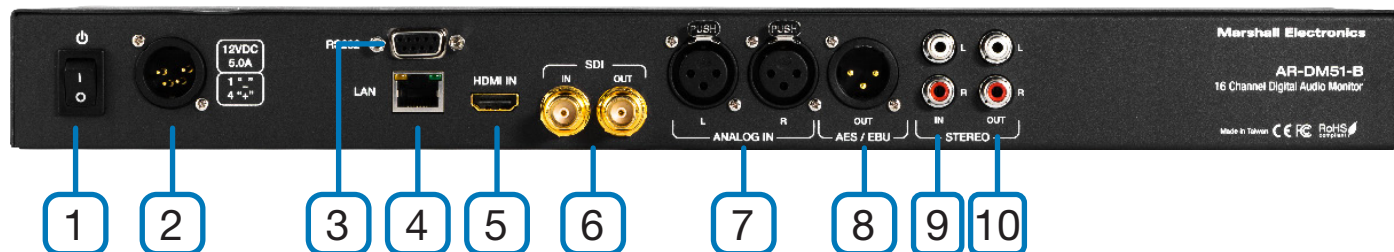
Press to change input source (input type) in this order:

- HDMI
- SDI
- Analog (XLR Balanced)
- Analog (RCA Unbalanced)

5. Down Mix

The button on the far right provides a stereo mix from 5.1 or 7.1 surround sources.

6. Rear Panel



1. Power Switch
2. 12-Volt DC Power Input XLR 4-pin
3. RS-232 Serial Control 9-pin D-Sub Port
4. Ethernet Control RJ-45 Port
5. HDMI Input
6. SDI Input and Loop Out
7. Analog Balanced XLR Inputs (2 channels)
8. AES/EBU Output XLR (2 channel pair converted from balanced analog input)
9. Stereo Unbalanced Input 2 channel RCA jacks
10. Stereo Unbalanced Output 2 channel RCA jacks

7. Specifications

Model Name	AR-DM51-B
Technical	
Video Inputs	HDMI 2.0 x 1 3G SDI x 1 with looping output
Video Formats Supported	HDMI Up to 4K2K@60fps (4:4:4 sampled 8-bits) SDI up to 1080p50, 59.94,60 (4:2:2 sampled 10-bits)
HDMI HDCP	HDCP 2.2 and 1.4 Supported
Audio Inputs	Analog Balanced x 2 XLR Female Analog Unbalanced x 2 RCA Jack
Audio Outputs	AES/EBU x 1 (Digital Pair) XLR Male Analog Unbalanced x 2 RCA Jack
Signal to Noise Ratio (SNR)	85 dB
Digital Audio Supported	PCM 2, 5.1, 7.1 channels
HDMI connector	HDMI type A
Serial Control Connector	DB-9 [9-pin D-sub female] supports RJ-45 for Ethernet control
Network Connector	WE/SS 8P8C for control via Ethernet
Mechanical & Electrical	
Housing	Metal enclosure
Dimensions [H x W x D]	1.75" X 19" x 8.5" / 4.45 cm x 48.25 cm x 21.6 cm
Weight	7.3 lbs / 3.3 Kg
Mounting	Chassis has "ears" for standard 19" rack mount
Included Power supply	Rated 12 VDC 5 Amps, AC Input (120 - 240 VAC)
Power consumption	6 Watts Avg
Operation temperature	0~40°C [32~104°F]
Storage temperature	-20~60°C [-4~140°F]
ESD protection	Human*body model — ±15kV [air-gap discharge] & ±8kV [contact discharge]
Relative humidity	20~90% RH [no cōndensation]

8. Operation

Controls on the AR-DM51-B are designed to be extremely straight-forward. To start, simply press the Input button to select the desired source, then adjust the volume knob to the desired listening level.

Metering Type

The default audio metering type is PPM (Peak Program Meter). The metering type can be switched to VU (averaging) using the remote control software or press Mix Down button for 3 seconds.

Monitoring HDMI Sources

When HDMI is selected, video from that source will appear on the front panel LCD display along with information about the video format and selected audio channels. This is a convenient feature allowing quick confirmation that the desired source is being monitored. Channels 1 & 2 will appear on the LED meters and be heard from the speakers. Up to 8 audio channels may be carried in an HDMI program. These are often arranged as 5.1 or 7.1 surround. Use the Right or Left arrow buttons to hear other channel pairs or press the Mix Down button to hear all of the channels as a stereo mix.

Monitoring SDI Sources

When SDI is selected, video from that source will appear on the front panel LCD display along with information about the video format and selected audio channels. Channels 1 & 2 will appear on the LED meters and be heard from the speakers. SDI can carry up to 16 channels, organized as two groups of 8 channels each. Press the Right or Left arrow buttons to hear other channels in the first group (channels 1 – 8).

Press the Up or Down arrows to select the second group (channels 9 – 16) then press Left or Right to select channels in this group.

Monitoring Analog Sources

Connectors are provided for either broadcast level +4dBm balanced audio (XLR) or AV line level -10dBm unbalanced (RCA) audio. When the LED meters are in PPM mode, a broadcast level tone at +4dBm will indicate at the arrow mark on the meter bar, line level 10 at -10dBm will indicate at the same point when connected via the RCA connectors.

In addition to metering and monitoring, analog sources are sampled and converted to AES digital and will appear at the AES/EBU connector on the back panel. The AES connection is balanced 110-ohm type.

Note: If it is desired to connect to equipment that accepts AES digital audio on a 75-ohm BNC connector, please use a 110-ohm to 75-ohm “balun” converter.

9. Setting or Changing the IP Address

STEP 1

If you know the current IP address you can skip to Step 6.

If the IP address is not known, it maybe be discovered and changed using an RS-232 serial connection. If you do not have a way to connect via RS-232, low cost adapters can easily be ordered on-line by searching for “USB to RS-232 adapter”.

Here’s an example of one from Amazon. Note the pins pointing out from the RS-232 end. This is a “straight through” cable, not a “crossover” or “null modem” version.

Windows will provide drivers for this product automatically once the USB part is plugged in.



STEP 2

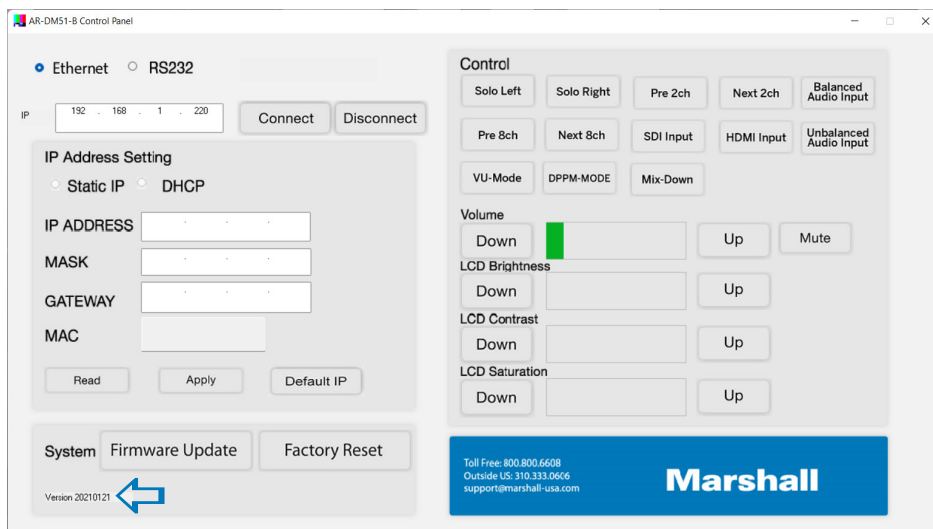
Obtain the latest control software from the Marshall website. This will likely come bundled with the latest Firmware update file.

<https://marshall-usa.com/monitors/audio/model/AR-DM51-B.php>

Find the link on this page **Control Software**, click it, download the file and UnZip it.

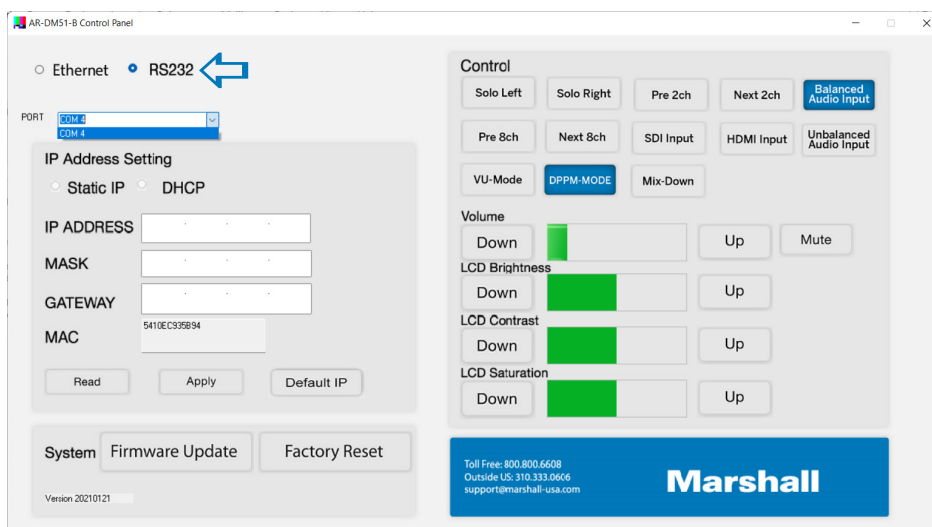
Step 3

Run the AR-DM51-B Remote application. It should run immediately without an installation step. You will see this screen.



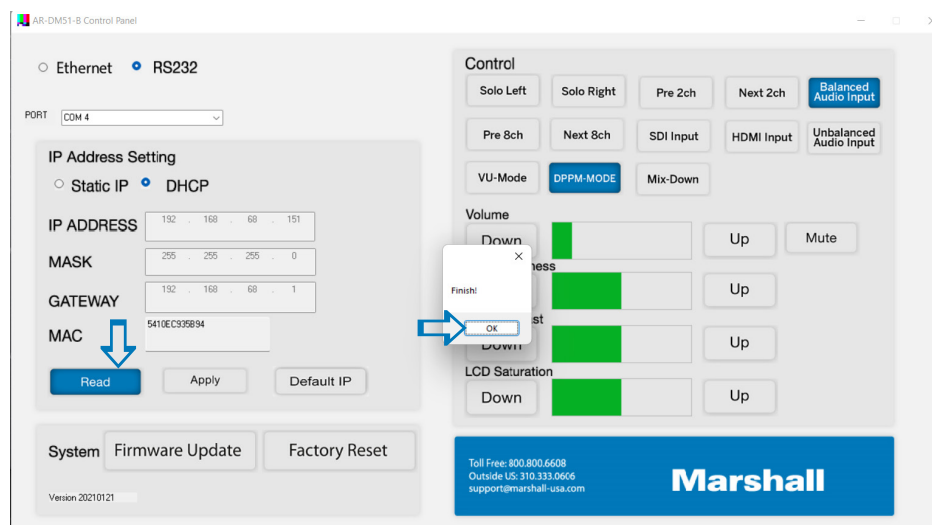
STEP 4

Next, click the **RS232** button. Allow a moment for the AR-DM51 to respond. If there is only one Com Port running on the computer, the App will usually connect automatically. This is apparent when green bars appear next to Brightness, Contrast and Saturation. When the App does not connect automatically, you will need to select a port number from the pulldown menu. If this is the wrong port number, a small error message will appear. Close the message and select a different port number until the AR-DM51 responds.



Next, click the **Read** button.

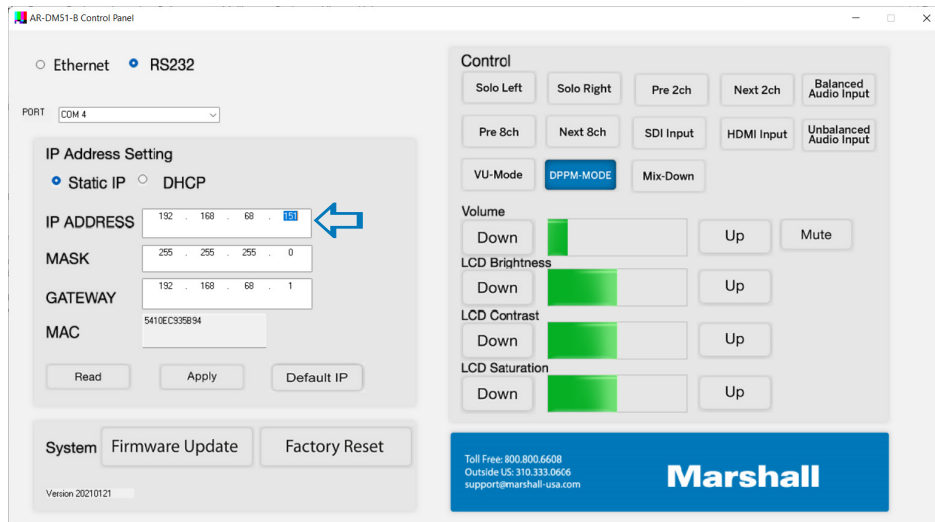
The Current IP address, Subnet Mask, Gateway and MAC Address should appear. A small window with “Finish!” will appear as well. You can close that window by clicking **OK**.



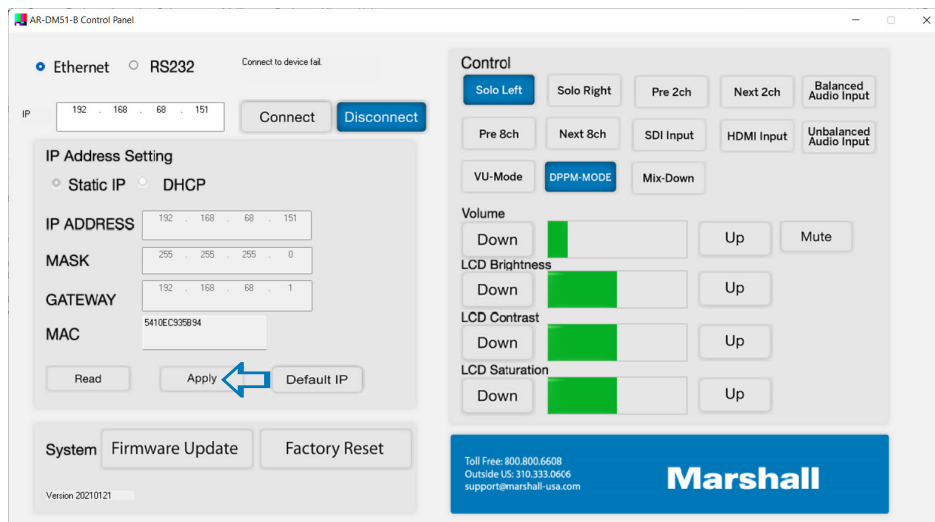
STEP 5

To change the IP Address to a custom Static address, swipe your mouse over the various numbers so they highlight in **blue**. Type over each piece until all the information is correct. (Note: The MAC address cannot be changed).

If you want the ARDM-51 to operate in DHCP mode instead, simply check the **DHCP** box instead of typing new numbers.



Click the **Apply** button. When the Finish! Message appears, the IP address has been changed.



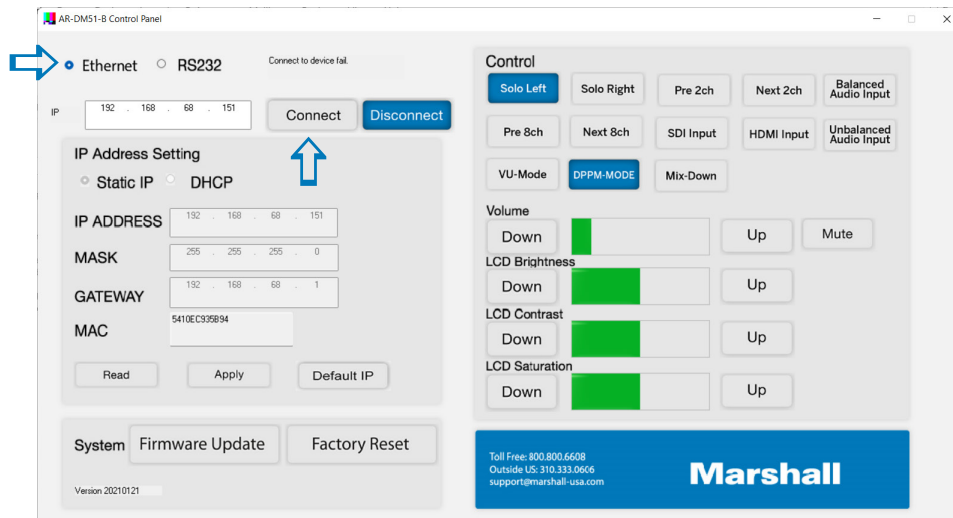
STEP 6

At this point, you can test Ethernet operation of the AR-DM51. (The Ethernet cable should be attached and your computer will need to be on the same network).

Click the **Ethernet** button, confirm that the address in the upper window is the correct address. If it is not, change it now to match the new address you created.

Click the **Connect** button. If the app does not communicate with the AR-DM51 immediately, close it, open it again then click **Ethernet**, Connect.

Try changing something simple like clicking the **Solo Left** button. The Solo Left button on the AR-DM51 front panel should light. Click again and it should turn off.



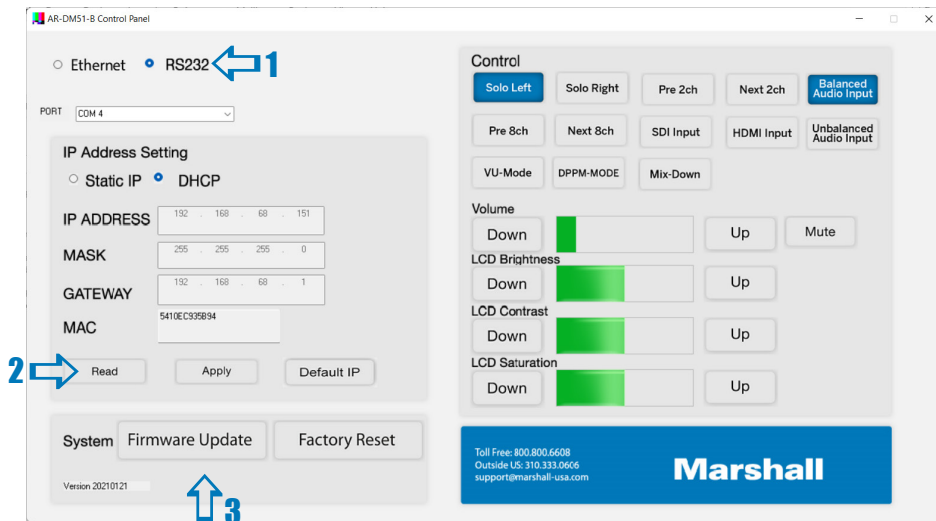
10. Updating Firmware

Firmware updates require an RS-232 connection, they cannot be performed over Ethernet.

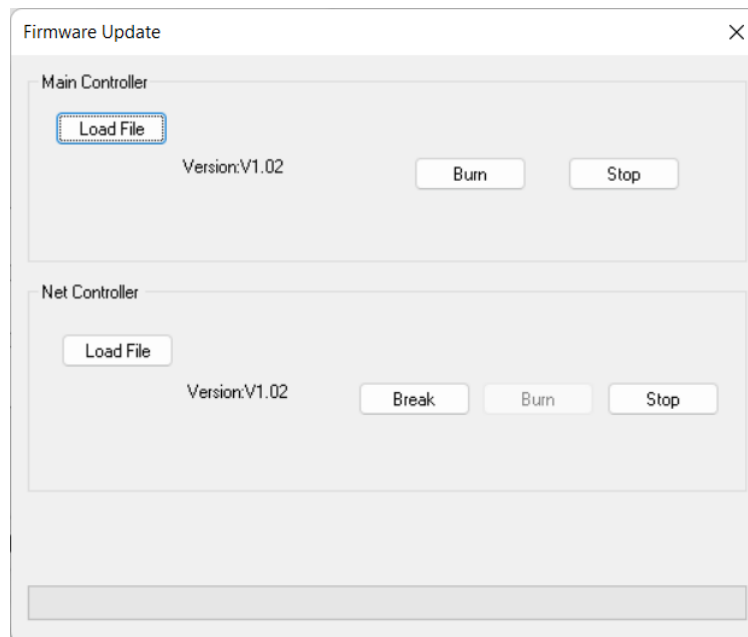
STEP 1

Connect via RS-232 as described in Section 9.

Click on the **Read** button, then click on the **Firmware Update** button.



A window like this will appear showing the currently installed Firmware versions. There are two types: **Main** and **Net**.



STEP 2

Compare these version numbers to the file or files available on the Marshall website. If a file with a higher version number is on the website, it is strongly recommended that the Firmware be updated.

To install the update file, click on the Load File button for the type of file you are installing.

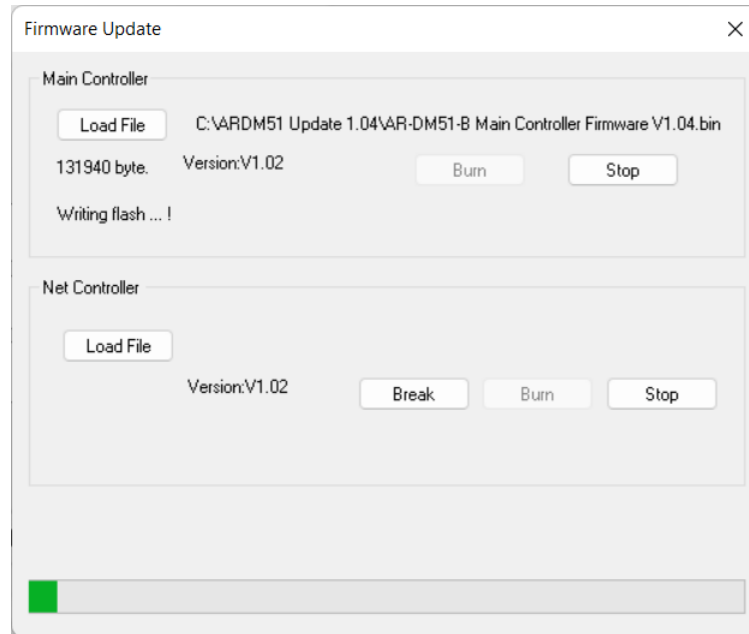
STEP 3

Browse to the location on your computer where the file was saved. Highlight the file and click **Open**.

This should return you to the Firmware Update page

Click the **Burn** button.

The message “Write to Flash” will appear and a green progress bar will move.



When the bar moves all the way to the right and stops, the AR-DM51 front panel will light up then go dark.

Use the power switch on the back of the AR-DM51 to turn the power off and back on.

This completes the firmware installation.

To confirm the update, you can repeat Step 1.

Warranty

For Warranty information please refer to Marshall website page:
<https://marshall-usa.com/company/warranty.php>

Safety

Listening to audio at excessive volumes can cause permanent hearing damage. Over exposure to excessive sound levels can damage your ears resulting in permanent noise-induced hearing loss (NIHL). Please use the following guidelines established by the Occupational Safety Health Administration (OSHA) on maximum time exposure to sound pressure levels before hearing damage occurs.

dB SPL Level	Maximum time exposure
90	8 hours
95	4 hours
100	2 hours

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