AUDIOBYTE

thinking in digital

Hydra VOX DAC

Owner's Manual - English

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About this document

This document is the user manual for the Audiobyte Hydra VOX digital – to analog converter, headphone amplifier and preamplifier unit.

It contains a basic overview of the device's internal architecture, specific handling details, functional description, safety precautions and product warranty details. This document is not meant for service or repair operations, as these must be carried out only by qualified personnel.

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https://www.rockna-audio.com
https://audiobyte.net

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Package content

The package you received should contain the following:

- One Hydra Vox DAC Unit (identifiable by the 7-digit serial number on the back);
- DAC velvet cover.

Safety Precautions

1) This device is meant for indoor use only.
2) Protect device from excessive heat, humidity and liquid filled objects, such as vases.
3) Clean only with dry cloth.
4) Use Audiobyte Hydra ZAP as power source.
5) Use Audiobyte branded or Audiobyte approved supply cables to connect Hydra VOX to Hydra ZAP;
6) Before plugging any supply cables in the device, make sure the Hydra ZAP is in standby.
7) Do not move the device while operational.
8) Do not disconnect cables while device is powered on.

Functional Description

The Hydra VOX DAC requires multiple supply voltages in order to be completely functional.

Also, the DAC is controlled by the supply unit via CAN interface, using an Audiobyte proprietary protocol, thus it is mandatory to use the Audiobyte Hydra ZAP as a power source. Please make sure that the Hydra ZAP is in stand-by mode before attaching the VOX supply cables.

To connect the Hydra VOX DAC to the Hydra ZAP Supply, two cables must be used, the 5-way analog + reference cable and 8-way digital the cable.

Connect the 5-way cable between the ZAP male header marked with (1) (VOX ANALOG) and the VOX female header marked with (1) (ANALOG PS). Use the guides located on both the plug and the header in order to determine the proper rotation upon insertion. Make sure that both ends are completely fastened.

Connect the 8-way cable between the ZAP male header marked with (3) (VOX DIGITAL) and the VOX female header marked with (3) (DIGITAL PS). Use the guides located on both the plug and the header in order to determine the proper rotation upon insertion. Make sure that both ends are completely fastened.

If both supply cables are correctly attached, the Audiobyte Hydra VOX is automatically powered-up when the Hydra ZAP is powered on (use Hydra ZAP touch-screen). If proper communication between the two devices has been established, a green dot will be visible near the VOX text on the Hydra ZAP main screen.

At power-up, the Hydra VOX will briefly display the Audiobyte logo screen and then enter the default screen.

To shut down the Hydra VOX, the user must press the stand-by button on the Hydra ZAP main screen.

Upon shut-down the DAC saves its current settings, which are resumed at the next start-up: current selected input, PCM and DSD filters, DSD direct state, phase mode, headphone detect state, I2S mode and attenuation level.

If stored attenuation level is lower than -20dB (volume is too loud), the attenuation is limited to -20dB at next start-up. Also, if mute is enabled at shut-down, it is automatically disabled at start-up.

Use the Hydra VOX touch-screen to adjust its settings. The VOX main screen has the following controls:

- the top-right button is used to select between the DACs three inputs (circular selection):
  - USB;
  - I2S;
  - S/Pdif.
- the bottom left and right buttons are used to adjust the volume level. Pressing once on these buttons will show the current volume level without

changing it. Multiple press or long-press on these buttons will adjust the volume level until the end of scale:

-127.5dB (min volume) → 0dB (max volume);

- the bottom-middle button is used to set Mute ON or OFF;
- the top-left Audiobyte logo button is used to go to the menu screen;
- the center line is used by default to display the current input sample rate. If no lock detected on current input, the "--.--" text is shown. When volume level is adjusted, the current attenuation is displayed.
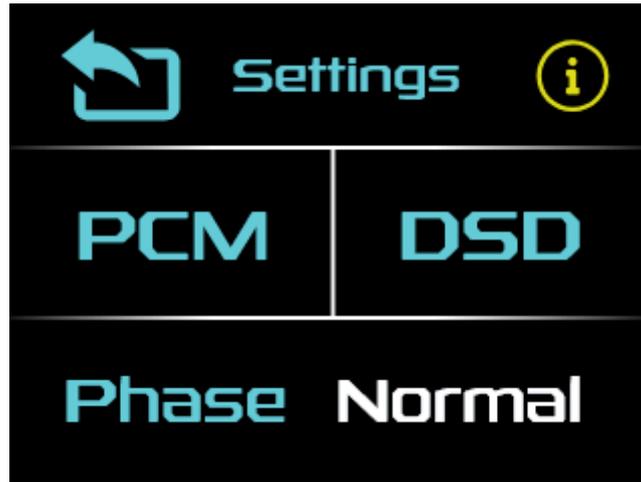
The menu screen has the following controls:

- Pressing on the lower side of the screen will cycle the output signal phase state between Normal and Inverted;
- PCM button enters the PCM audio settings screen;
- DSD button enters the DSD audio settings screen;
- Pressing on the top-middle Settings button enters the general audio settings screen;
- The top-right button opens the device information screen;
- The top-left button returns to the main screen;

Use the three check-buttons on the PCM audio settings screen to select the Phase Response:

- Linear;
- Minimum;
- Hybrid;
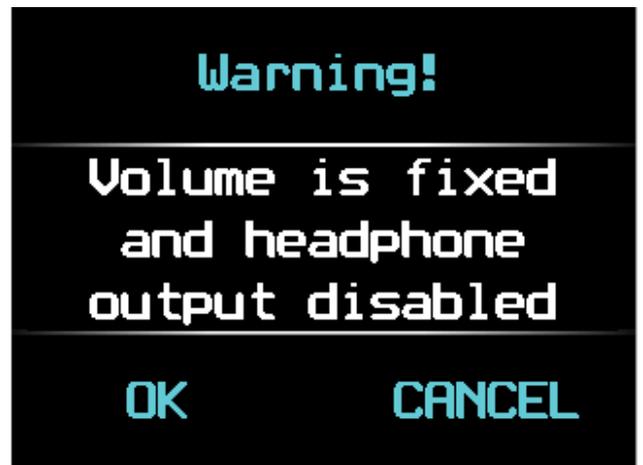
In the DSD settings screen, when the DSD Direct button is pressed:

- if DSD direct is activated, the volume level will be set to max and the headphone amplifier disabled, only after OK is pressed in the confirmation screen;
- If DSD direct is deactivated, volume level will be applied and headphone amplifier will be enabled.

Note: DSD phase response is currently not implemented and selection is disabled on display.
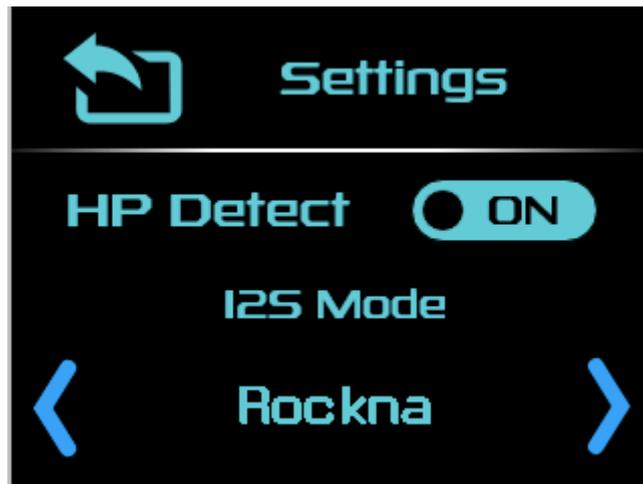
In the general audio settings screen the user can select if line outputs (RCA and XLR) are to be disabled if headphones are inserted. Thus, if HP Detect is:
- ON – line out signals are disabled when headphones are detected;
- OFF – line out signals are enabled at all times.

I2S Mode allows the user to select between various HDMI I2S input configurations, depending on the I2S signal source type.

The Info Screen shows device-related information as follows:
- Hydra VOX firmware pack pseudo-name (ex: ROCKET);
- FPGA (audio) firmware version;
- Micro-controller (system control) firmware version;
- User interface (touchscreen display) firmware version;
- ZAP-VOX CAN Interface status (OK/NOT OK).

The Hydra VOX can be remotely controlled using the Hydra ZAP Android/iOS app.

Please search for the Audiobyte Hydra Remote app on Google Play or Apple App Store.

Firmware Update

Each Hydra VOX firmware update wave file contains update data for all three firmware types that the unit comprises (FPGA, Controller, Display).

In order for the **update to start** (the wave file is validated as update file), the current FPGA firmware version and the update file FPGA firmware version **must be different**. The other two versions can be any version.

Update and downgrade are both possible on all three firmware types. Each wave update file is released with the FPGA, Controller, Display versions in its name, in that order. For example, the file HVOX_111_267_118.wav has FPGA v1.11, Controller v2.67, Display v1.18.

Follow the steps below to update your unit:

1. Download and unpack the appropriate zip file;

2. Set the DAC input on USB;

3. Make sure that on the PC side the playback is bit-perfect (attenuation is set to 0dB, channels are not inverted, no DSP effects are added etc.);

4. Select the DAC as output device and play the .wav update track;

5. During the update process, you will see the update file play progress on display. Let the wave file play until the end without changing the volume level or other player parameters;

6. When update wave playback is completed successfully, you will see "Done" on display;

7. The DAC checks received images for validity and installs them one after another;

8. After all check are done, the Hydra VOX main menu is resumed and you can check the new firmware versions in the info screen.

Detailed Specifications

SUPPLY VOLTAGES:

Digital: 5.1V DC (provided by Hydra ZAP Supercapacitors Digital Supply);

Analog: ±16.5V DC → ±19.5V DC (adjustable, provided by Hydra ZAP, ±18v default recommended voltage);

Reference: 8.0V DC (provided by Hydra ZAP).

INPUTS:

I²S LVDS (HDMI connector): all sample rates

S/PDIF coaxial: up to 192k / DSD64

USB: all sample rates

OUTPUTS:

RCA single ended: 3.8V (peak)

XLR balanced: 3.8V (peak)

Headphone out: 9V (peak)

THD+N: -118 dB (0 dB)

S/N: -118 dB

USB Configuration

For the computer playback side, please consider the following information:

Recommended software players:

1) Foobar2000

2) Jriver

3) Jplay

4) Audiogate

5) Audirvana Plus

Under Win XP environment, kernel streaming (KS) is recommended for PCM, and ASIO for DSD playback.

Under W7/8 environment, WASAPI or ASIO mode is recommended for both PCM and DSD playback.

USB Driver Installation

The following installation details are valid for Windows XP 32/64, Windows 7 32/64, Windows 10 32/64.

Do not connect the USB cable between the DAC and your computer before driver installation! If you have already connected the DAC to the PC, click Cancel if an installation screen has shown up and remove the USB cable.

1. Go to product's page on http://audiobyte.net/products/hydra-vox.
2. Download the USB Drivers archive from the bottom of the page.
3. Unpack zip archive.
4. Enter your operating system folder.
5. Launch Setup32.exe for 32bit OS or Setup64.exe for 64bit OS.
6. After the application launches, click Next:
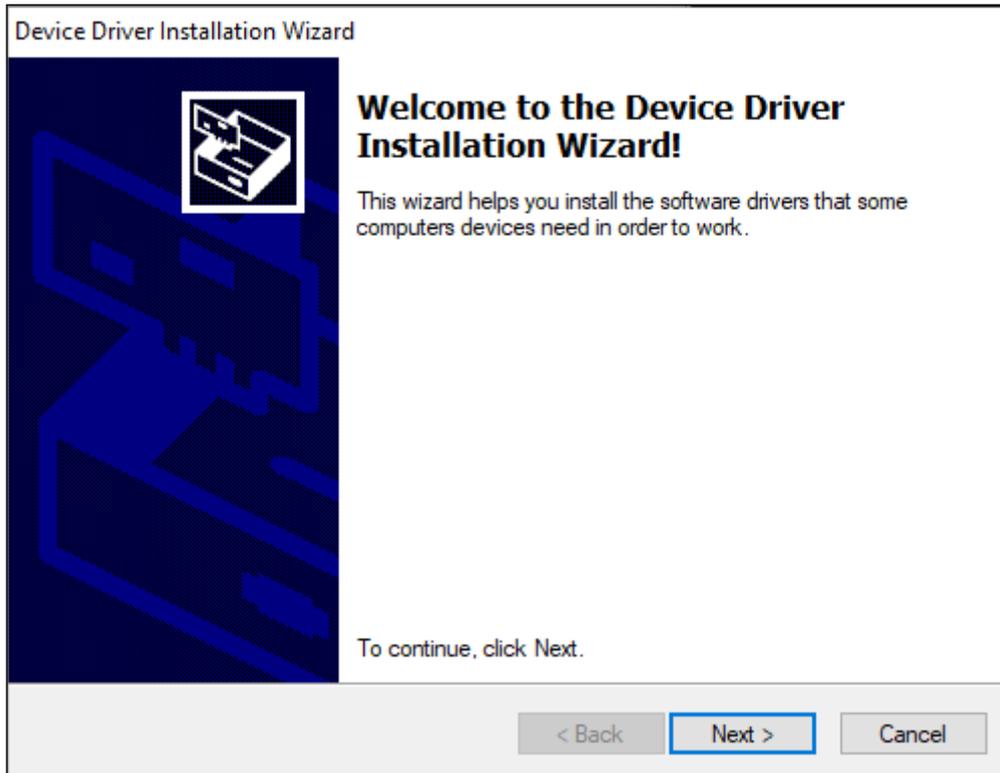
7. Wait for the driver to be copied and then click Finish:
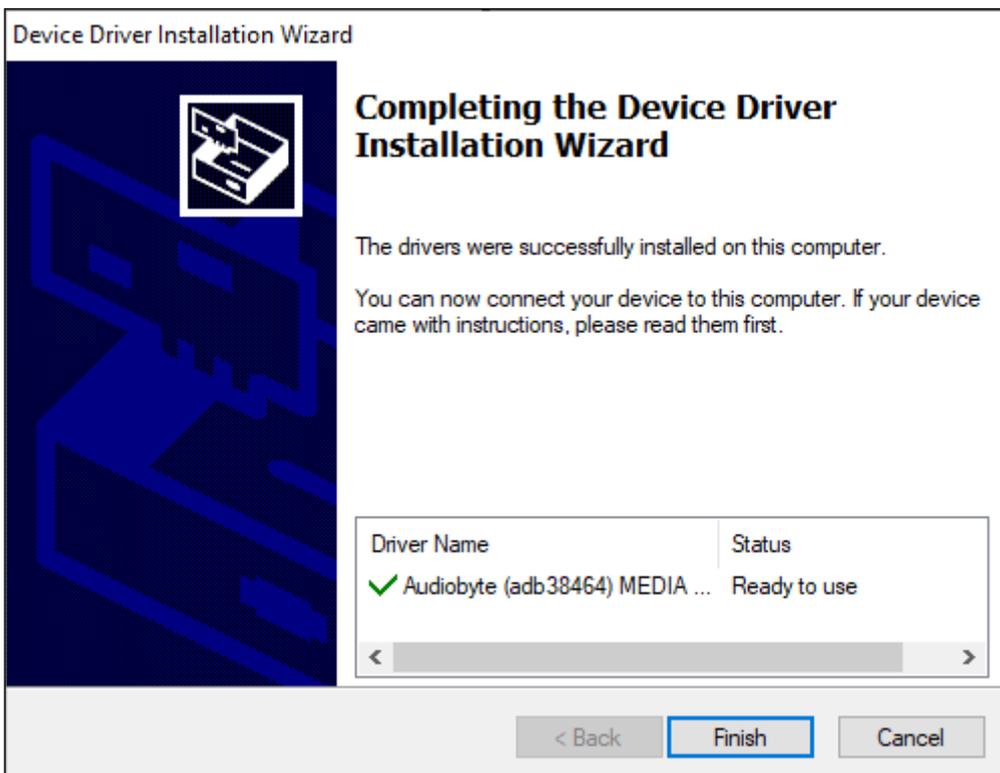
8. Connect the DAC to the PC. If the Found New Hardware wizard starts, install the Audiobyte hardware without connecting to Windows Update, selecting automatic installation and pressing Continue Anyway in the Windows Logo warning window.
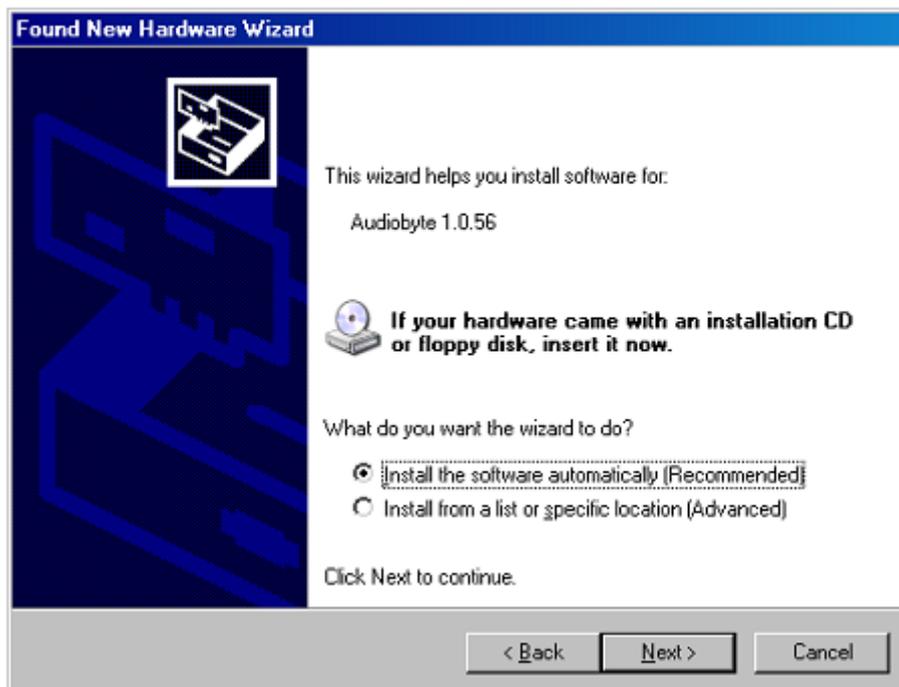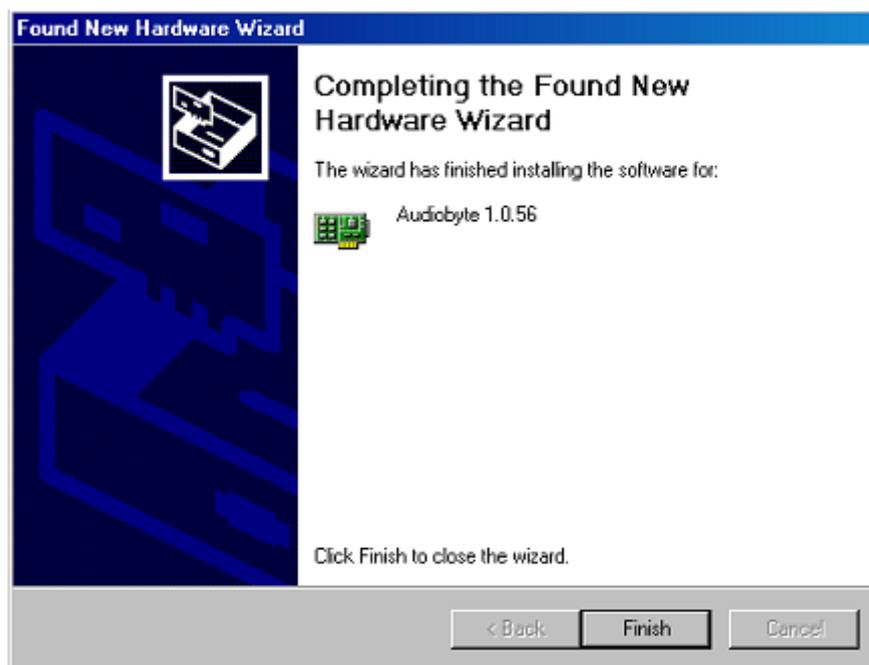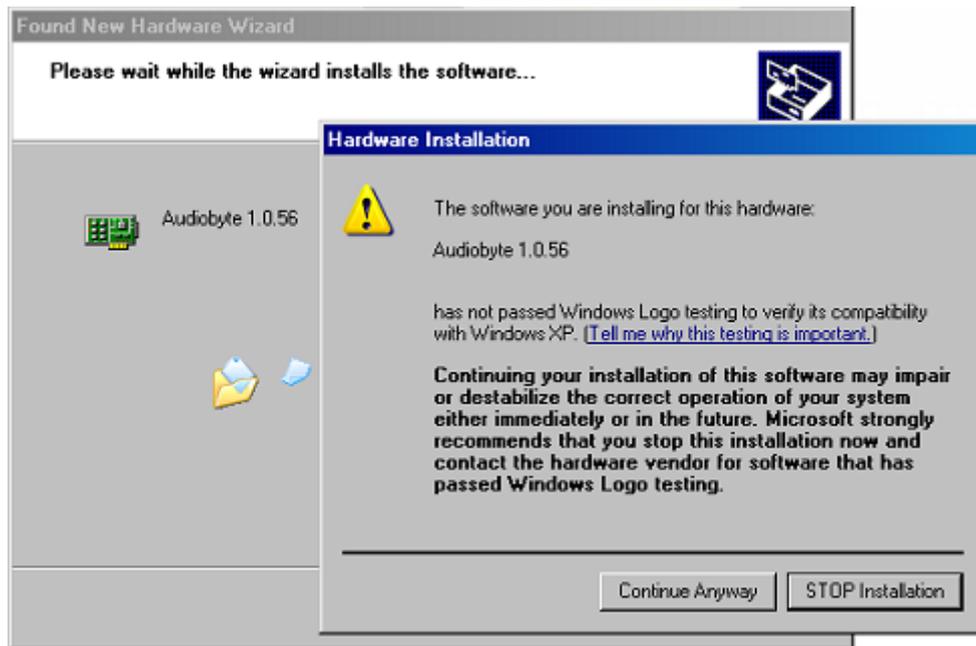
Now the device should be found in the Windows Device Manager and can be removed using the Safely Remove icon in the taskbar.
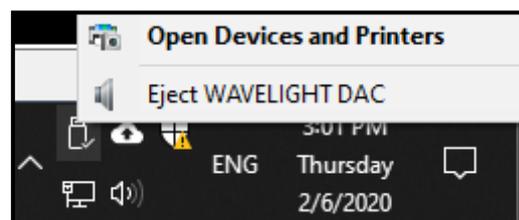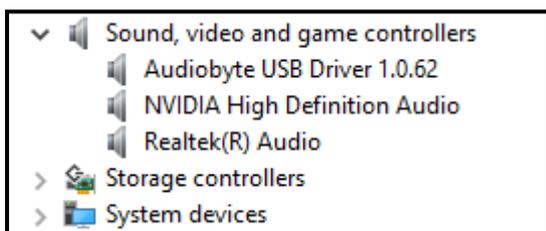
AUDIOBYTE LIMITED WARRANTY
Three (3) Years

WARRANTY COVERAGE:
AUDIOBYTE warranty obligation is limited to the terms set forth below.

WHO IS COVERED:
Audiobyte warrants the product to the original purchaser or the person receiving the product as a gift against defects in materials and workmanship as based on the date of original purchase from an Authorized Dealer. The original sales receipt showing the product name and the purchase date from an authorized retailer is considered such proof.

WHAT IS COVERED:
The Audiobyte warranty covers new products if a defect arises and a valid claim is received by Audiobyte within the Warranty Period. At its option, Audiobyte will either (1)repair the product at no charge, using new or refurbished replacement parts, or (2)exchange the product with a product that is new or which has been manufactured from new, or serviceable used parts and is at least functionally equivalent or most comparable to the original product in Audiobyte current inventory, or (3)refund the original purchase price of the product. Audiobyte warrants replacement products or parts provided under this warranty against defects in materials and workmanship from the date of the replacement or repair for one(1) year or for the remaining portion of the original product's warranty, whichever provides longer coverage for you. When a product or part is exchanged, any replacement item becomes your property

and the replaced item becomes Audiobyte's property. When a refund is given, your product becomes Audiobyte's property.

Note: Any product sold and identified as refurbished or renewed carries a one(1) year limited warranty. Replacement product can only be sent if all warranty requirements are met. Failure to follow all requirements can result in delay.

WHAT IS NOT COVERED - EXCLUSIONS AND LIMITATIONS:
This Limited Warranty applies only to the new products manufactured by or for Audiobyte that can be identified by the trade-mark, trade name, or logo affixed to it. This Limited Warranty does not apply to any non-Audiobyte hardware product or any firmware, even if packaged or sold with the product. Non-Audiobyte manufacturers, suppliers, or publishers may provide a separate warranty for their own products packaged with the bundled product. Audiobyte is not liable for any damage to or loss of any programs, data, or other information stored on any media contained within the product, or any non-Audiobyte product or part not covered by this warranty. Recovery or reinstallation of programs, data or other information is not covered under this Limited Warranty.

This warranty does not apply (a)to damage caused by accident, abuse, misuse, misapplication, or non-Audiobyte product, (b)to damage caused by service performed by anyone other than Audiobyte or

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This Limited Warranty does not cover:
• Shipping charges to return defective product to Audiobyte.
• Labor charges for installation or setup of the product, adjustment of customer controls on the product, and installation or repair of systems outside of the product.
• Product repair and/or part replacement because of improper installation, connections to improper voltage supply, abuse, neglect, misuse, accident, unauthorized repair or other cause not within the control of Audiobyte.
• Damage or claims for products not being available for use, or for lost data or lost firmware.
• Damage occurring to product during shipping.
• A product that requires modification or adaptation to enable it to operate in any country other than the country for which it was designed, manufactured, approved and/or authorized, or repair of products damaged by these modifications.
• A product used for commercial or institutional purposes(including but not limited to rental purposes).
• Product lost in shipment and no signature verification receipt can be provided.
• Failure to operate as per Owner's Manual.

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Document version and modifications description

Version	Date	Description
1.00	02-28-2020	Initial release
1.01	04-02-2020	Modified fonts, added Rockna and Audiobyte contact information, rearranged screen description chapter