AUDIOBYTE
thinking in digital

Hydra Zap Power Supply

Owner's Manual - English

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About this document

This document is the user manual for the Audiobyte Hydra ZAP ultra linear power supply.

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 ZAP Power Supply Unit (identifiable by the 7-digit serial number on the back);
- Supply unit 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 Audiobyte Hydra ZAP is a stand-alone power supply, designed specifically to power the Audiobyte Hydra VOX and Hydra HUB devices.

It is comprised of three totally isolated supplies and a CAN communication interface used for load device control. The provided voltages are:
• 	one 5V DC/2A supply used as digital power (filtered using supercapacitors);
• 	one 7V DC/0.5A supply used as clock power;
• 	two ±10.5V - ±20V DC/0.5A adjustable supplies used to power analog stages.

The user can control the device using its touch-screen display. Also, the Hydra ZAP can be remotely controlled by the means of an Android/iOS app. Please search for the Audiobyte Hydra Remote app on Google Play/App Store.

When the mains cable is attached to the Hydra ZAP, the unit is, by default, in stand-by. In this mode, the screen has a low backlight level, a red Audiobyte logo is displayed and the supercapacitors are being charged in background, if not full. To exit stand-by mode, the user must press anywhere on the screen.

On stand-by exit, the main screen is shown. This screen elements are:

• 	in the upper-right corner the user can find the stand-by button. Pressing this button will check if any Audiobyte devices are connected and send a shut-down request. While these devices are shutting down, the red Audiobyte logo is shown, in full brightness. If no Audiobyte devices are connected to the Hydra ZAP or if shut-down confirmation received, the ZAP disables all supply outputs and enters stand-by;

- in the upper-left corner there is the menu button, represented by an Audiobyte blue logo;
- in the center of the screen, the monitored supply's status is shown:
    - o fixed 5V supply status:
        - ▫ supercapacitors charging – capacity percentage shown;
        - ▫ digital supply operational – output (supercaps) voltage shown (supply can be on or off);
        - ▫ supercapacitors discharging – capacity percentage shown;
        - ▫ supercapacitors discharged – capacity percentage shown.
    - o negative adjustable supply output voltage level;
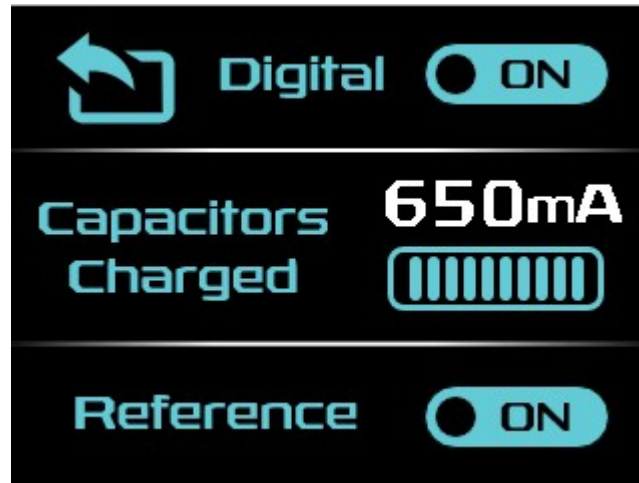   - o positive adjustable supply output voltage level.

Note: If one of the supplies has a red background, the respective output is user disabled. Go to the appropriate control screen and turn it on.

- on the bottom of the screen, the Audiobyte Hydra VOX/HUB connection status is shown. If the load device is detected on the CAN interface, the correspondent radio button is marked with a green dot, as depicted in the image above.

The menu screen has the following options:

- About button – this will open the system information screen;
- Digital button – will open the supercapacitor-based supply and clock supply control;
- Analog Monitor button – allows access to positive and negative analog supplies current and voltage real-time monitor;
- Analog Adjust button – used to access the analog supplies adjustment screen.

On the top-right of the Digital screen, the user can press the **ON/OFF** button to enable/disable the supercapacitor-based 5V supply output and to control supercapacitor charge/discharge state.

Depending on the charge state, pressing this button will behave as follows:
- Capacitors Charging (**output supply is disabled**):
  - o Short-press on Digital **ON/OFF** – determines the state of the output supply when the charging is complete (state changes to Capacitors Charged);
  - o Long-press(5s) on Digital **ON** – enables the capacitor discharging mode;
- Capacitors Charged:
  - o Short-press on Digital **ON/OFF** – enables or disables the output supply;
  - o Long-press(5s) on Digital **ON** – disables the output supply and enables the capacitor discharging mode;

- Capacitors Discharging or Capacitors Discharged (**output supply is disabled**):
  - o Short-press on Digital **OFF** – enables the capacitors charging mode.

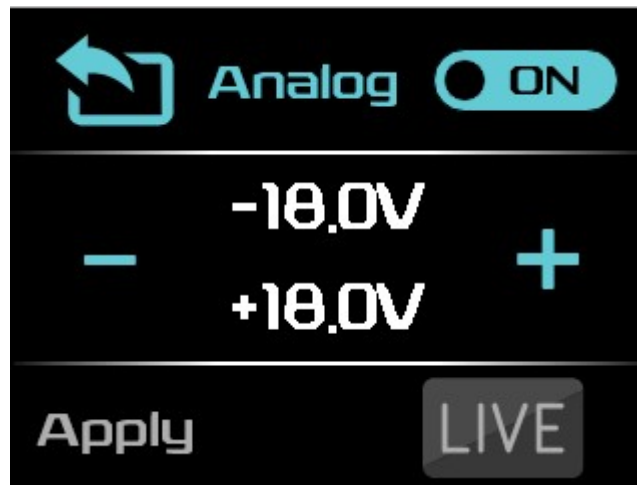The Reference **ON/OFF** button is used to enable/disable the supply used for clocks.

Note: When the 5V supply is in Capacitors Charged mode and the Digital button is set to ON, if an Audiobyte device (Hydra VOX/HUB) is connected to the Hydra ZAP, the supply control is taken over by the ZAP and the user cannot turn ON or OFF any of the supplies, individually. In this case, the supplies can only be turned off by putting the Hydra ZAP in stand-by mode from the home screen.

The Analog supplies monitor screen has two dials used for graphical representation of negative and positive current draw and numerical values for actual voltages and currents measured just before the output switches.

If the numerical values have a red background it means that the analog supply is disabled.

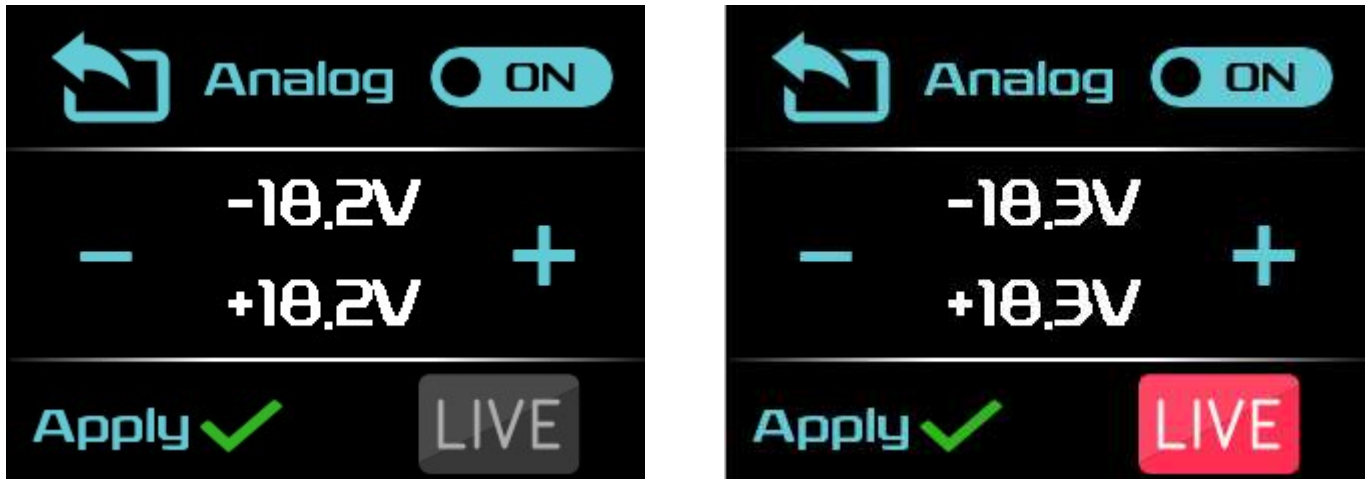Use the button on the bottom-left to go back to the menu screen.

O the Analog adjustment screen, use the top-right button to enable/disable both the negative and the positive voltages. Individual control for these two voltages is not possible.

> **Note**: If an Audiobyte device (Hydra VOX/HUB) is connected to the Hydra ZAP, the supply control is taken over by the ZAP and the user cannot turn ON or OFF any of the supplies, individually. In this case, the supplies can only be turned off by putting the Hydra ZAP in stand-by mode from the home screen.

Pressing the **-** and **+** buttons allows the user to set a new target voltage for the two supplies (actual voltage of the two rails does not change if Live is not active).

If target voltage has been tuned, the **Apply** button becomes active. Press the **Apply** button to set the target to both supply stages and store it as default (outputs can be enabled or disabled).

Activate the **Live** mode so that the stage voltages follow the target voltage, as it is tuned. Make sure that analog outputs are enabled in order to see the changes on the load. Press **apply** to store the tuned value as default.

Press the button on the top-left to return to the menu screen. If voltage is tuned and Apply is not pressed, when exiting the screen, all adjustments are cancelled and the previous voltage level is applied.

The Hydra ZAP can be remotely controlled using a dedicated Android/iOS app. Please search for the Audiobyte Hydra Remote app on Google Play or App Store. Installing this app will give you the possibility to control the Audiobyte Hydra VOX and Hydra HUB devices as well.

If app has connected successfully to the Hydra ZAP, the app version can be seen in the BT App Ver field of the system information screen.
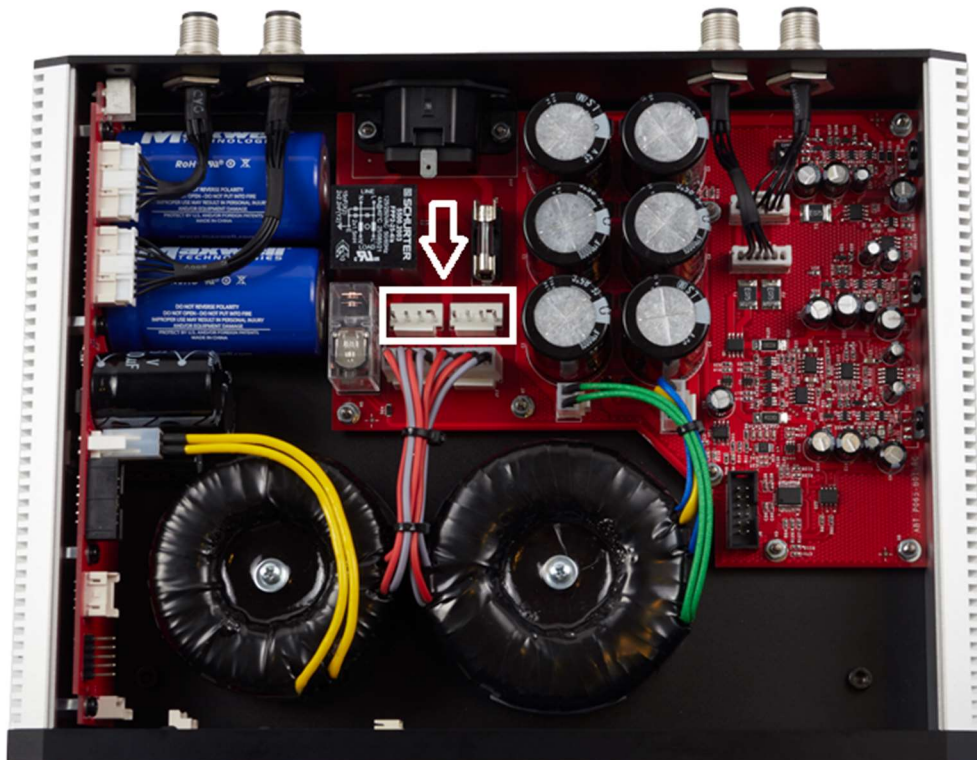
Firmware Update

Update of the control firmware is done via the remote-control app. When a new firmware version is available, the user is informed by the app, when the Hydra ZAP is in stand-by.

Electrical Specifications

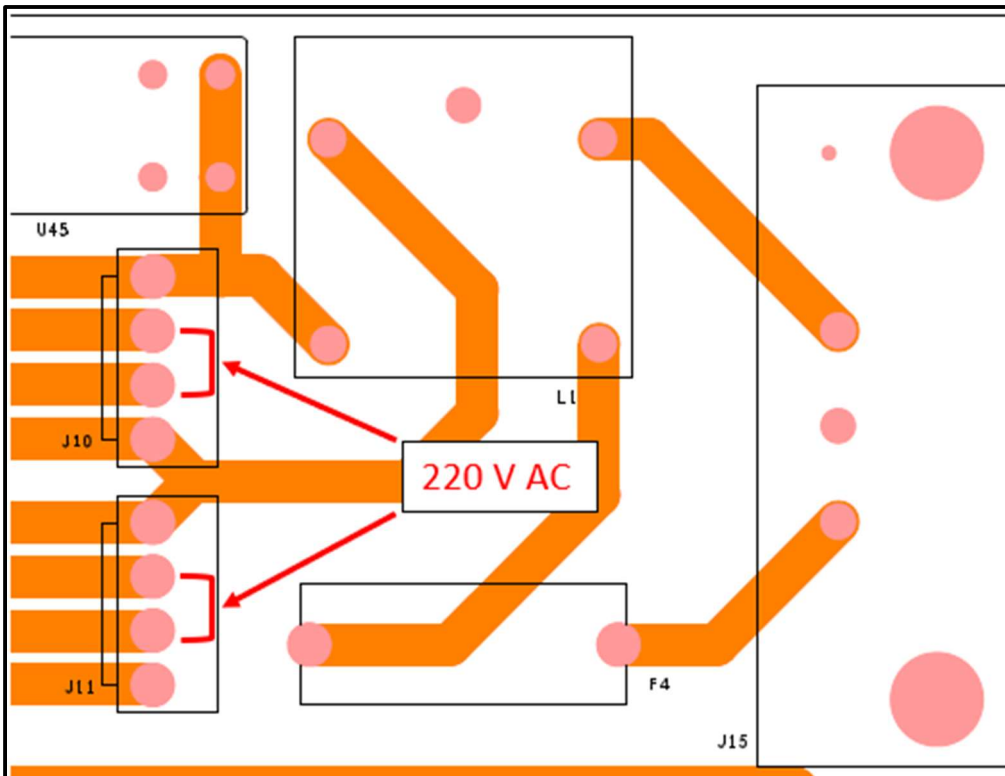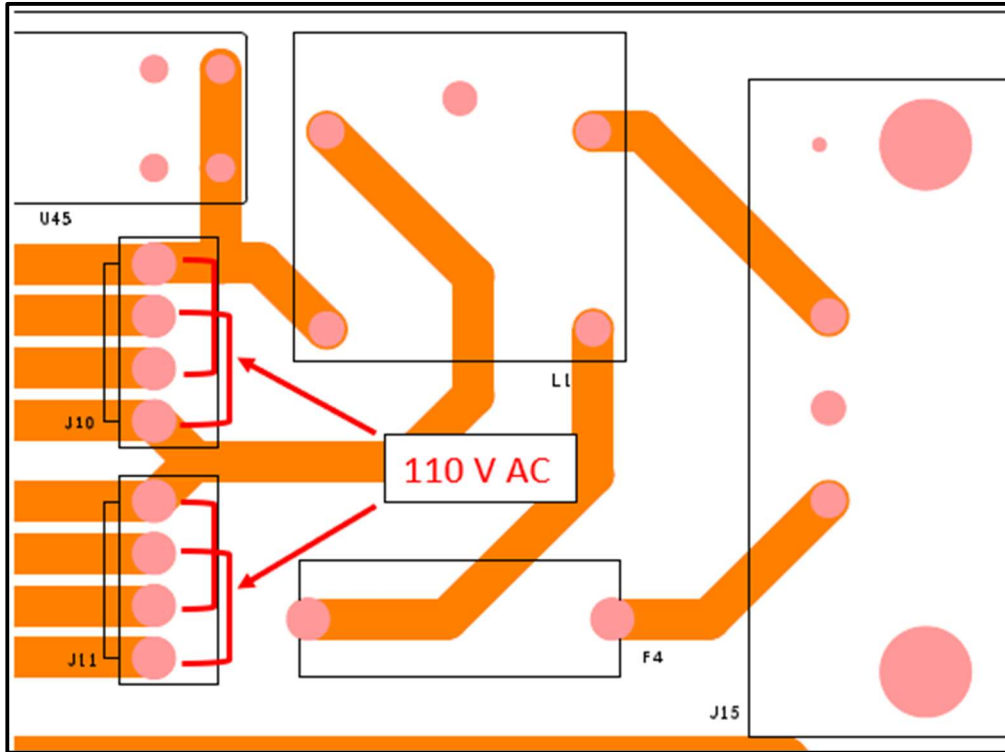| Supply output	Min	Typ	Max	Units
Digital	4.9	5.1	5.3	V DC
	0	-	2	A
Reference	7.75	8	8.25	V DC
	0	-	0.5	A
Analog(voltage adjustable, tracking negative and positive)				
VOX or HUB not connected	±10	-	±20	V DC
VOX or HUB connected	±16.5	18	19.5	V DC
	0	-	0.5	A

Mains Voltage Selection

Remove the top lid and locate J10 and J11 on pcb.

Changing the Hydra Zap mains input voltage to 220V or 110V AC is done using a pair of connectors(jumpers) that can be requested or is provided in the power supply package.

Please correctly identify and place two connectors(jumpers) on J10 and J11 of the supply board, as instructed below:

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 Audiobyte

Authorized Service Location, (c)to a product or a part that has been modified without the written permission of Audiobyte, or (d)if any Audiobyte serial number has been removed or defaced, or (e) product, accessories or consumables sold "AS IS" without warranty of any kind by including refurbished Audiobyte product sold "AS IS" by some retailers.

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	03-03-2020	Initial release
1.01	04-02-2020	Modified fonts, added Rockna and Audiobyte contact information, rearranged screen description chapter, added electrical specifications table
1.02	04-08-2020	Added accounting phone nr
1.03	11-13-2020	Added supercaps charging in stand-by statement, modified electrical characteristics table
1.04	07-07-2021	Added mains voltage selection