

User Manual

White Lightning™ Model S28114 SmartGPU™



IMPORTANT INSTRUCTIONS, DISCLAIMERS & LIABILITY LIMITATIONS

As a condition for use, Audio Authority® Corp. authorizes this device for use ONLY by aviation professionals, such as licensed pilots and maintenance technicians, knowledgeable about the aircraft's electrical system and batteries.

The concepts, recommendations, and instructions in this manual are necessarily general and make assumptions that do not apply to every aircraft and may not be correct for your particular aircraft. Improper use of this device has the potential to damage the GPU and/or aircraft components.

It is the operator's sole responsibility to read completely and fully understand this manual, plus all available documentation on their aircraft's electrical system design, to properly determine the appropriate use of this, or any, external power source. If you cannot do this, do not use this product. Instead, consult a qualified technician familiar with your specific aircraft type and configuration before connecting the GPU to your aircraft, or return it to the seller before using.

This device contains FCC ID: XPNINAW15. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Introduction

Thank you for purchasing a White Lightning Ground Power Unit, designed and manufactured by Audio Authority Corporation in Lexington, Kentucky USA.

Included with the Model S28114:

- 2.4 GHz wireless antenna
- 10-ft 115V AC line cord NEMA 5-15P to C19 rated to 20A
- 8-ft 28V DC Aircraft Output Cable with 3-pin AN2551 plug (aka Cessna or NATO)
- 6-ft 230V AC connection pigtail L6-20R (packaged/shipped separately with item below)
- 50-ft 230V AC 12-gauge extension cord L6-20R to L6-20P



8-FT 28V DC OUTPUT
AIRCRAFT CABLE
(SB120 TO AN2551)



ANTENNA

50-FT 240V
EXTENSION
INPUT CABLE
(L6-20R TO L6-20P)

6-FT 240V PIGTAIL
INPUT CABLE (L6-20R)

10-FT 115V INPUT
LINE CORD

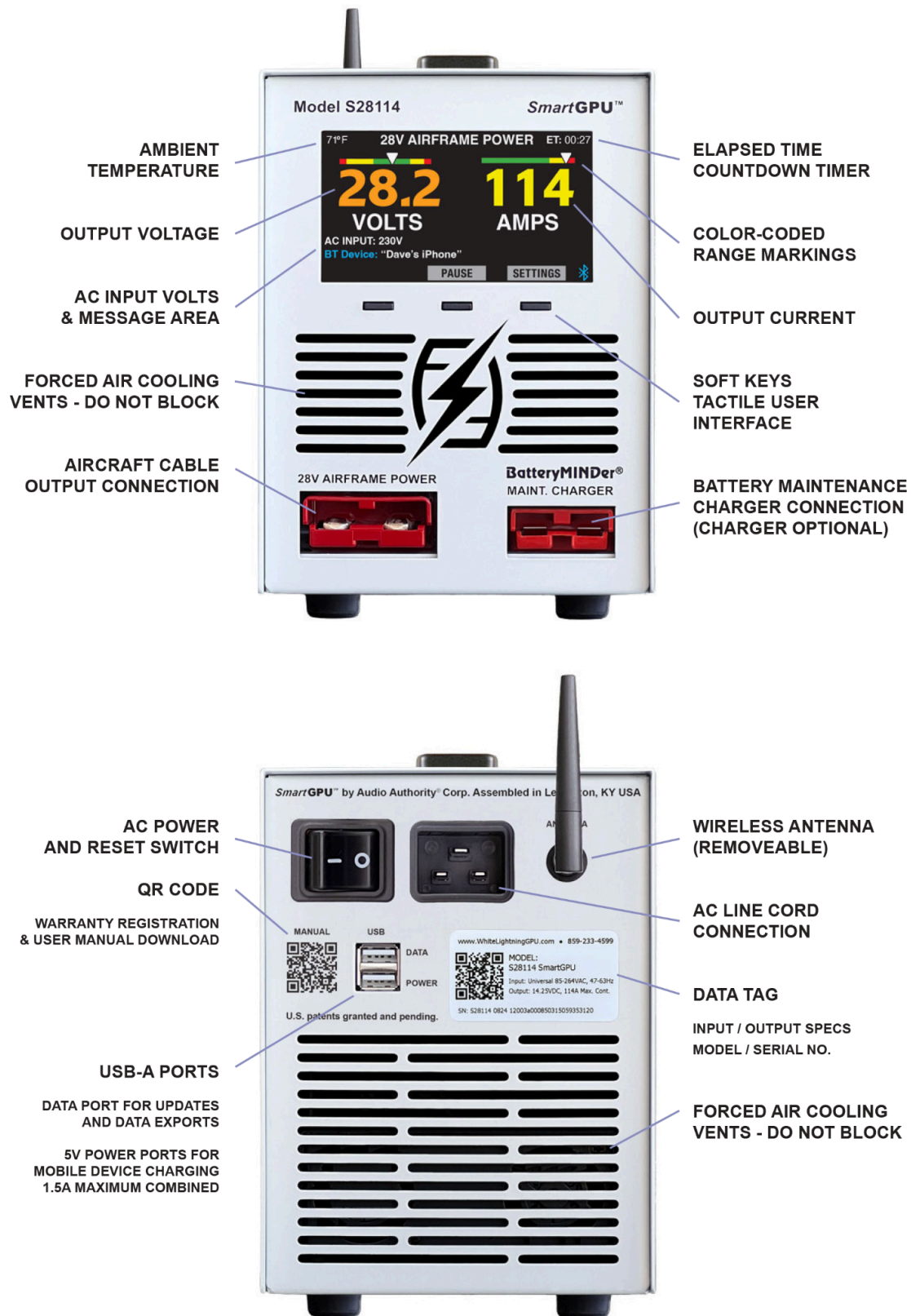
For battery maintenance charging, the Model BMC24 BatteryMINDER® is offered as an option with its own separate User Manual. The BatteryMINDER® may be factory installed, or the kit is easily installed by a technician, if not initially included with the SmartGPU.

About the GPU

The White Lightning Model S28114 SmartGPU is an advanced 3200W (114A @ 28V DC) power supply designed to provide safe, stable, airframe power for a wide variety of general aviation aircraft. It connects to the aircraft's AN2552-3A external power receptacle to energize the aircraft's main electrical bus allowing operation of aircraft systems independent of the ship's battery. The SmartGPU output is for airframe power only, NOT FOR ENGINE START OR MOTORING. Typical uses include powering the airframe for:

- powered preflight inspection with simultaneous battery top-off
- flight deck database and software updates
- flight planning, cockpit procedures training and familiarization
- airframe systems troubleshooting and maintenance
- cabin ventilation and heating systems during ground operations and boarding

Features & Controls



Input Power Requirements

SmartGPUs are designed for worldwide use with universal AC input range of 90-264 volts, 47-63 Hz. Full 3200-watt (114-amp maximum continuous output at 28V DC) requires an AC input of greater than 200 volts. At 120V AC, typical North American line voltage, the maximum continuous output is input-limited to approximately 70 amps. Therefore, when using 115V power, the GPU should be connected to a dedicated 120 volt AC, 20-amp wall receptacle. For full rated output, a **208-240V, 20A** AC branch circuit is required. To match the supplied 50-foot extension cord, an L6-20R twist-lock receptacle is recommended. The GPU is supplied with input line cords for both 115- and 230-volt AC line service.



Mobile Device Connection

SmartGPUs support wireless connection via Bluetooth and Wi-Fi. BT connectivity is for operator-attended GPU operations. BT pairing to an iOS or Android mobile device is similar to pairing a phone with an automobile or other appliance. On screen messages on the GPU display and the mobile device screen prompt the user, authenticate, and remember device connections so that the device can auto-connect in the future.

Wi-Fi is used for Internet connectivity to monitor/control unattended remote battery maintenance charging if the optional BatteryMINDER® (Model BMC24) is installed. As of this writing, the BMC24 is in final development.



GPU Operation

REGISTRATION: Please register your SmartGPU purchase to establish warranty coverage, facilitate factory support and receive notifications of firmware updates. We recommend you preserve your GPU shipping carton.

ANTENNA: Attach the wireless antenna to the rear panel if you are going to use the mobile device app.

AC INPUT: Use the provided 50-ft extension cord to supply 208-240V AC to the GPU for 114A maximum output. If your high voltage receptacle is incompatible with the L6-20P plug supplied, it may be removed to install your required plug. Connect the GPU to the extension cord using the provided 6-ft input pigtail.

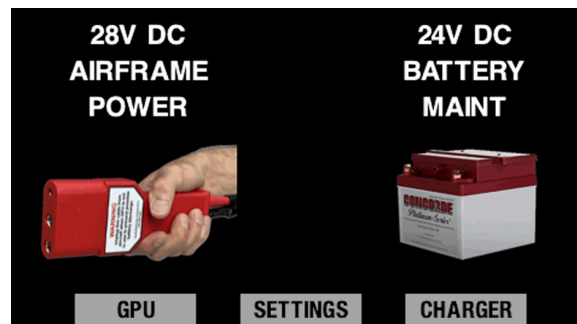
Optionally, if a high voltage input is not available or desired, use the supplied 115V AC input cord and a heavy-duty (12 gauge) extension cord, keeping the total length to a minimum for optimal GPU output,

which will be input-limited to about 70 amps at this voltage. Actual AC input voltage received is displayed on the GPU and the mobile app.

DC OUTPUT: Connect the provided aircraft output cable to the SB-120 connector on the front of the GPU and the 3-pin oval AN2551 plug to the aircraft's external power receptacle.

GPU STARTUP: Move the power switch to the ON position. The display sequences through initialization, the White Lightning splash screen, product identification, installed options, and conditions for use.

1. Press the **CONFIRM** key to accept the conditions for use.
2. If an optional BatteryMINDER maintenance charger (BMC) is installed, select the GPU function to proceed. If no BMC is installed, GPU mode is assumed and not prompted.

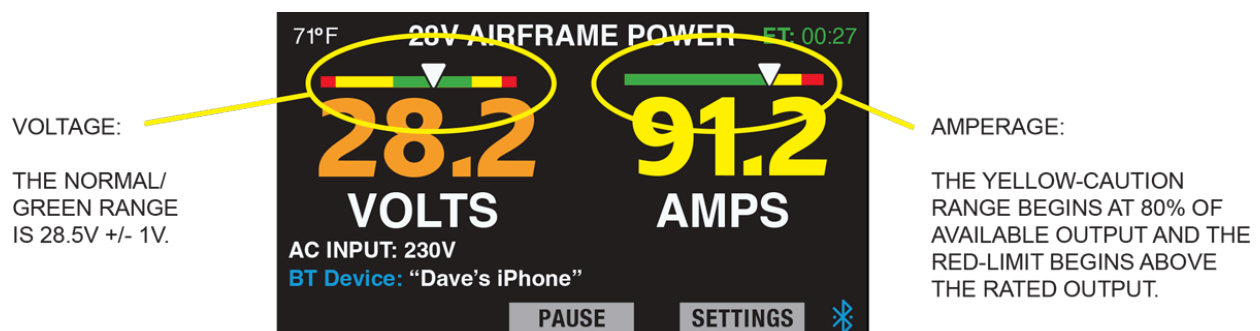


3. GPU is paused and ready to use. Voltage and maximum available current are displayed but grayed out (see next page). Confirm AC input voltage and DC output compatibility.
4. Press the **START** key when ready to apply DC power to the aircraft cable. Check that voltage and amperage output indications are as expected and less than the maximum continuous output rating of the GPU.

NOTE: Aircraft cable must be connected to proceed. If not connected, the GPU displays the **CABLE!** message, prompting you to connect the output cable.

PAUSE/RESUME: The GPU output can be interrupted and later resumed by a soft key as needed. Some aircraft automatically engage the ship's battery during external power. Check your aircraft flight manual to determine if this power interruption feature is advisable/helpful or not.

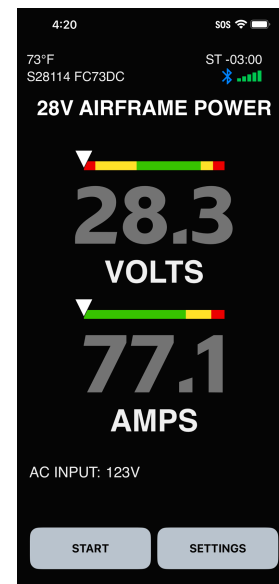
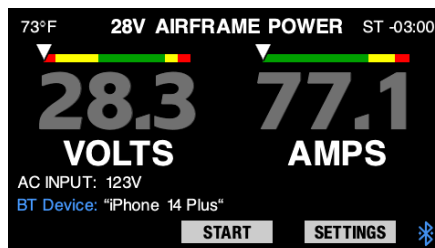
INSTRUMENTATION: The SmartGPU includes a high-resolution color display with large numerical indications of voltage and current. Above each numerical value is a color-coded bar graph with traditional green-normal / yellow-caution / red-limit range markings. A triangular cursor indicates the current value.



Instrumentation on the mobile device app is similar to that on the GPU display but is configured for vertical orientation.

Whenever the GPU output is paused, the numeric power indicators for volts and amps are grayed out. The value shown for VOLTS is what the GPU will provide when power is started or resumed. The value for AMPS is the maximum continuous current that will be available.

NOTE: The maximum current is available with an AC input voltage of greater than 200-volts. The GPU will operate at lesser input voltages, such as 120-volts, but the available output will be input-limited.



Remote GPU Operation

For untethered remote indication and control from your mobile device, download the White Lightning SmartGPU App to your mobile device from the Apple iOS Store. (As of this writing, Android support is in development and will be offered in a future software release.)

To pair your mobile device with the SmartGPU:

- 1) Open the SmartGPU app which will search for available SmartGPUs.
- 2) On the GPU press the **SETTINGS** key.
- 3) Then, select **BLUETOOTH SETTINGS**.
- 4) Then, select **START PAIRING** and follow the prompts.

Settings Menu and Configuration

The SmartGPU provides for a number of custom configurations to tailor its use to individual needs. These are accessed through the **SETTINGS** menu and navigated with the softkey switches. Settings configurations include:

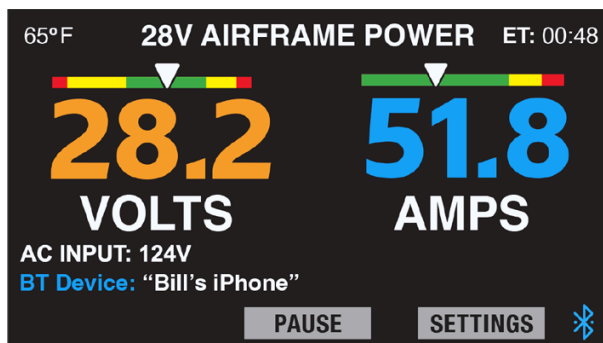
DISPLAY BRIGHTNESS: Adjustment range 1 – 8.

DEVICE NAME: Displays the current Bluetooth device name of the GPU. The default name is model number + alphanumeric identifier. Changing the device name requires use of the mobile device app.

AUTO-SHUTDOWN TIMER: The Auto-Shutdown can prevent an unattended GPU from inadvertent continuous operation. Its applicability may vary according to aircraft type, so the default setting for this feature is disabled. If desired, the feature can be activated by selecting a timer range from 30 to 300 minutes. Selecting DISABLED provides continuous operation.

When enabled, a countdown of the auto-shutdown timer (ST) will be shown in the upper right corner of the display, alternating with the elapsed time (ET). The countdown timer is shown in yellow until 15

minutes prior to shutdown when it switches to red. Pausing the GPU output or cycling the power switch will restart the timer. When the timer reaches 0:00, the GPU output will be automatically paused.



ST: -00:12

AUTO-SHUTDOWN TIMER:

WHEN ENABLED, THE TIMER ALTERNATES BETWEEN ELAPSED TIME AND SHUTDOWN TIME.

CAUTION: Always remove the GPU's output cable from the aircraft's external power receptacle immediately after each use. **DO NOT** leave the DC power cable connected to the aircraft as this may allow the ship's battery to discharge in some aircraft.

BLUETOOTH SETTINGS: Use this section to establish and maintain BT connections to the GPU. The procedure to securely pair a mobile device is typical of other BT devices and once bonded, the GPU will attempt to reconnect automatically. If there are multiple SmartGPUs operating within BT range, the app will display a list of known (previously bonded) GPUs that are available for the user to select from. A SmartGPU can only be connected to one operator / mobile device at a time.

Where there are multiple SmartGPUs and/or technicians, it is recommended that users disconnect/unpair when no longer using the SmartGPU so it is available to pair with another user.



The **BLUETOOTH SETTINGS** menu includes the following options:

START PAIRING

This option puts the GPU into pairing mode which allows the mobile device app to “discover” it. Bluetooth pairing uses a numerical passcode which must be confirmed on the mobile device to initiate pairing and connection.

DISCONNECT DEVICE

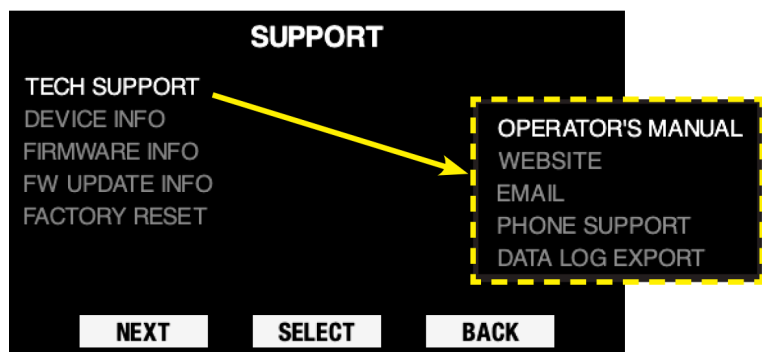
Disconnects the current active device from the GPU. Disconnected devices remain bonded in the GPU's known devices list and available to re-connect later.

UNPAIR ALL

Clears the GPU's list of all known BT devices. To fully eliminate the bond between the GPU and a mobile device, select to "forget" the GPU in the mobile device's BT settings.

OUTPUT VOLTAGE TRIM: Factory setting is 28.3V DC. Use to adjust the output voltage if required. Suggested range is 27.5V-29.5V DC.

SUPPORT: The support menu provides information for both the user and for factory technicians. The first section, Tech Support, offers the user several information and support resources. The other sections are for factory assisted support.



USB MOBILE DEVICE CHARGING: Two convenience USB charging ports are provided on the rear panel of the GPU. These provide a 5VDC output, up to 1.5A output combined, suitable for charging many portable devices like tablets and headphones.

BATTERY CHARGER OPTION: Each SmartGPU comes ready to be upgraded with battery charging capability (if it was not pre-installed at the factory). The battery charging port is standard, and only requires the circuit board to be installed by removing the GPU cover, affixing the charging unit by two screws, and connecting two cables. The BMC24 charger kit includes the circuit board with BatteryMINDer® technology, a cable, and a quick-connect wiring kit that is easily installed on your aircraft. Refer to the BMC24 manual for detailed information.



Specifications:

Model	S28114
Function	Continuous External Airframe Power (not for engine start)
AC Input Requirements	90-264 volts, 47/63 Hz 17A @ 230-volts 18A @ 115-volts
AC Input Connection Supplied	230V detachable 6-ft NEMA L6-20P pigtail and 50-ft extension cable. 115V detachable 10' NEMA 5-15P
Output Power, Watts	3200 @ 230V AC 2400 @ 115V AC
DC Output Voltage	28.3 volts, default setting (trim range 27.5 to 29.5V DC)
DC Output Current	114A max continuous with >200-volt >70A max continuous with >115-volt
Output Indication	Digital, color TFT display – volts, amps, temps, status, alerts, etc.
Output Connection	Heavy duty detachable 8-ft. 4 AWG 3-pin oval AN2551 plug (Cessna/NATO)
Protection	Overload / over voltage / over temp / short circuit
USB Ports Power	Maximum 1.5A, both ports combined
Remote Control	Mobile device app, iOS & Android
Operating Temp Limits	-20°C to +50°C
Chassis Dimensions (inches)	7.88H x 5.38W x 18.63D
Chassis Weight	18 lbs.
Carrying Weight w/cables	23 lbs.
Shipping Weight	30 lbs.
Warranty	Limited 1-Year parts & labor
Extended Care	10% per year subscription

One Year Limited Warranty

Our Model S28114 SmartGPU is warranted to the original purchaser to be free of defects in materials and workmanship for a period of one year from date of shipment. If you suspect a failure, please contact our service department for instructions or see our Service Policies online at www.audioauthority.com/page/Service_policy.

Service Department
Audio Authority Corporation
2048 Mercer Road, Lexington, KY 40511
Phone: 800-322-8346 (or 859-233-4599)
Email: support@audioauthority.com

Units received that are in-warranty will be repaired without charge. Units returned for service require a return authorization number and must be shipped freight prepaid. Units repaired under warranty will be returned freight prepaid via UPS ground or equivalent. A repair estimate will be provided for out-of-warranty repairs. This warranty is void for products that, in our opinion, have been subject to overload, moisture, accident, damage, alteration, misuse, abuse, or acts of nature.

THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY IS LIMITED TO REPAIR OR REPLACEMENT AS SPECIFIED ABOVE. THERE ARE NO OTHER WARRANTIES EXPRESSED OR IMPLIED. SPECIFICALLY, BUT WITHOUT LIMITATION, THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT WILL AUDIO AUTHORITY BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM ANY DEFECT, OR FAILURE TO OPERATE PROPERLY, OR ARISING OUT OF ANY BREACH OF THE WARRANTY MADE HEREIN.

No person is authorized to give any other warranty or to assume any additional obligation or liability on behalf of Audio Authority Corporation, without its express written approval.