



M-Series Operator's Manual

Model M2850, 28-Volt 50-Amp Mini-GPU



IMPORTANT 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 may not apply to your aircraft. Therefore, incorrect use of this device has the potential to damage the GPU and/or aircraft components.

The device is designed exclusively for aircraft with a 28VDC electrical system, a 24V battery, and a factory-installed external power receptacle for a 3-pin oval AN2551 (NATO) plug.

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.

General Description and Application

The M2850 Mini-GPU is a specialized switching-mode power supply designed to provide pilots and aviation maintenance professionals with a portable, affordable source of stable, high-current, noise-free DC power that replicates the in-flight electrical environment. Its rated output is 28-volts up to 50-amps (approximately 1500 watts). The GPU's intended purpose is to energize an aircraft's main electrical bus without using the ship's battery or engine. It will safely provide continuous power for the most delicate electronics and airframe systems up to its full rated output.

- Typical Uses**
- power avionics for flight planning, familiarization, and training
 - update flight deck database and software
 - troubleshooting and maintenance



Special Features

- Color-coded, keyed SB-50 type output connection to prevent accidental voltage mismatch (**RED** designates 24/28 volt compatibility)
- Dual digital output meters for voltage and amperage (load)
- Front panel status indicator LED
- Programmable auto-shutdown timer and dual USB power ports for mobile device charging
- QuietFiltered™ output for interference-free COM radio operation
- Auto protection/recovery from short circuit, reverse polarity, over voltage/load/temperature

Operating Conditions and Limitations

The M1428-DV is internally fan-cooled and relies on unobstructed ventilation access for proper operation. The GPU should operate on a clean, hard surface so that debris cannot be ingested. Its design assumes a dry operating environment. If used outdoors, it is the operator's responsibility to ensure that the unit is not exposed to moisture.

The M2850 is designed to provide **airframe power only**. It is not a battery charger. It does not monitor the state-of-charge of the aircraft battery. It is not suitable for engine starting. A *charged* aircraft battery of any chemistry may be safely used with the M2850. A *discharged* battery, if in-circuit with external power, may overload the GPU and engage its internal protection (see Troubleshooting).

Safety Precautions

- Do not use this or any electrical device near uncontained fuel or fuel vapors.
- Use in a well-ventilated area.
- Do not use in a wet environment.
- Do not use in the presence of open fuel containers or if fuel vapors are detected.
- Disconnect GPU from aircraft when not in use.
- Do not leave unattended while in use.

Connecting GPU to Aircraft

- Connect the GPU AC input cord to a grounded power receptacle, 90-240VAC, 50-60Hz.
- Connect the output cable to the GPU front panel receptacle.
- Turn GPU power switch ON; observe as proper voltage stabilizes on the output display.
- Connect GPU output cable to aircraft's external power receptacle; observe that the airframe is energized and shows a stable load of less than the GPU's rated output. If voltage or current load are not as expected, or GPU status indicator is flashing or red, disconnect the GPU from the airframe and investigate the problem.

SAFETY TIP: Using the GPU during preflight allows time for a thorough inspection of all systems and lights, without depleting the aircraft battery. In fact, if the battery is switched in-circuit with the external power, it will provide a "top-off" charge for the aircraft battery. (Not to exceed 15 minutes.)

Status Indicator

The GPU incorporates a status indicator between the volt/amp meter and the output connector. Indications are interpreted as follows:

OFF = Power Switch OFF, or no AC input power

GREEN = ON or powered, normal operation

FLASHING GREEN = Auto-shutdown engaged

FLASHING RED = Fault condition – see troubleshooting table for more details

Automatic Shutdown Timer

The M2850 features a programmable timer to automatically shut down the GPU after a period of time in use, as selected by the user. This is to prevent the GPU from inadvertently being left on for an extended period and potentially overcharging the aircraft's battery, if in-circuit with the GPU.

A 10-position rotary switch on the back panel determines the duration of continuous operation. Each number represents ½ hour. This switch is factory set at 5 (2.5 hours); adjust with a small screwdriver. To disable the auto-shutdown feature, set the switch to the 0 position.

To reset the timer and restart the GPU after auto-shutdown, cycle the power switch OFF then back ON.

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 2A total combined, suitable for charging many portable devices like phones and speakers.

Troubleshooting

PROBLEM / CONDITION	CAUSE	SOLUTION
GPU does not turn ON Volt/Amp meter OFF Status indicator OFF	No AC input to GPU.	Verify power cord connections. Reset built-in circuit breaker by cycling the ON/OFF switch. <i>If breaker blows repeatedly, GPU needs to be repaired.</i> See Limited Warranty statement for technical service contact information.
GPU displays voltage but no output to aircraft (zero amps) Status indicator GREEN	Faulty connection between GPU and aircraft electrical system.	Check connections from GPU to the aircraft's external power receptacle.
Volt/amp meter OFF Status indicator FLASHING GREEN	Auto-shutdown timer expired.	Cycle power switch OFF, then back ON, to restart shutdown timer. Adjust timer settings if desired, or zero to disable shutdown timer.
Status indicator FLASHING RED Voltage drops to < 26 volts	Current overload.	Reduce load to less than 50 amps.
Status indicator FLASHING RED Volt/Amp meter OFF	Internal protection engaged. Over temperature, or severe overload.	Reduce load to less than 50 amps. Turn off aircraft equipment to reduce current draw. Cycle Power Switch OFF then ON again to reset.
Status indicator FLASHING RED GPU displays voltage but no output to aircraft (zero amps)*	Internal protection engaged.	If cable connections are good, then turn power switch OFF. Disconnect DC output cord from aircraft external power receptacle. Wait for GPU meter to go OFF. Power switch ON. Observe meters ON. Reconnect to aircraft.

* In certain instances, battery voltage backfeeding from the aircraft may trigger protection mode in the GPU, thereby preventing normal power up. Follow instructions above for disconnecting from the aircraft and resetting the GPU to restore proper operation.

SPECIFICATIONS	M2850
Input Voltage	Universal 90-264 volts AC, 47-63 Hz
Input Current	17A @ 115 volts AC
Input Protection	20A circuit breaker, cycle ON/OFF to reset
Output	28.50 +/- 0.25 VDC, 50 amps max cont.
Output Cable	4 AWG, SB-50 to 3-pin oval AN2551 (NATO)
Chassis Dimensions	6.45" H x 5.32" W x 14.63" L
Carry Weight w/cables	17 lbs
Carton Dimensions	10" H x 10" W x 18" L
Shipping Weight	18.3 lbs

Operating Tip

Connecting a GPU, any GPU, to some aircraft may automatically energize certain airframe systems (like motors for air conditioning or hydraulics) that could cause an overload condition. A sustained overload will cause the GPU to self-protect and shut down. To restore GPU operation, disconnect it from the aircraft and cycle the power switch to reset its internal protection. To prevent the overload condition, identify and pull the circuit breakers that control those devices, then reconnect the GPU.

A similar overload may be encountered if a *partially discharged battery* is used in-circuit with the GPU's output. In this case, the GPU's response may exceed either the battery's maximum charging rate and voltage, or the GPU's capability, causing an overload protective shutdown.

CAUTION: While a fully charged battery of any chemistry may be safely used in-circuit with a GPU, a discharged battery should always be removed from the aircraft for bench charging. It is the aircraft owner's responsibility to follow the battery manufacturer's instructions for charging and capacity testing the battery for airworthiness before reinstalling and/or using it in-circuit with a GPU.

One Year Limited Warranty

All Mini-GPUs are 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
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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.

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