



M-Series Operator's Manual

Model M1428-DV, Dual Voltage 14/28-Volt 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 either a 14 or 28-VDC electrical system and a factory-installed external power receptacle for a 3-pin oval AN2551 (NATO) plug. If your 14-volt aircraft is experimental and does not have an external power receptacle, a wiring kit and matching output cable are available at additional cost. Call our factory for assistance.

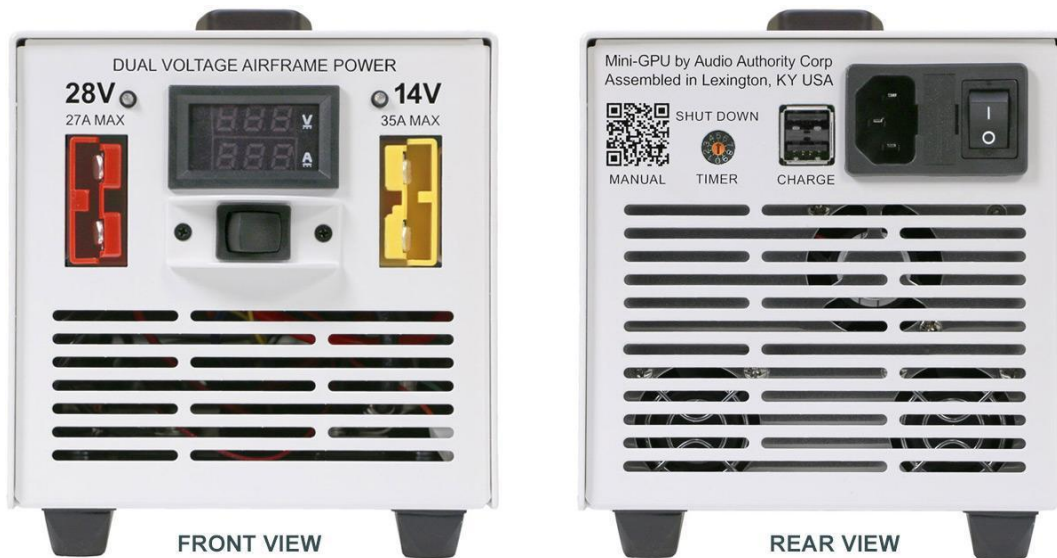
It is the operator's sole responsibility to read completely and fully understand this manual, plus all available documentation on their aircraft's electrical system design, to properly determine the appropriate use of this, or any, external power source. **If you cannot do this, do not use this product.** 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 M1428-DV 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. It contains discrete outputs for either 14 or 28-volts DC, selectable by a front panel switch. It only provides one output voltage at a time, switch-selected and indicated by the front panel voltmeter display. 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. **YELLOW** designates 12/14 volt compatibility, **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 M1428-DV 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 M1428-DV. 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.
- 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 M1428-DV 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. Check AC input fuse. If blown, replace (only once). 1 extra fuse is contained in the fuse drawer. If fuse blows a second time, do not replace until GPU is repaired. 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 < 13/26 volts	Current overload.	Reduce load to less than 35/27 amps.
Status indicator FLASHING RED Volt/Amp meter OFF	Internal protection engaged. Over temperature, or severe overload.	Reduce load to less than 35/27 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	14-Volt Operation	28-Volt Operation
Input Voltage	90-240 volts AC, 50-60 Hz	90-240 volts AC, 50-60 Hz
Input Current	5.3A @ 115 volts AC	8.2A @ 115 volts AC
Input Protection	10A Littelfuse 617 Series P/N 0617010.MXP	
Output	14.25 +/- 0.25 VDC, 35 amps max	28.50 +/- 0.25 VDC, 27 amps max
Output Cables	8 AWG, SB-50 to 3-pin oval AN2551	8 AWG, SB-50 to 3-pin oval AN2551
Chassis Dimensions	6.13" 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 shutdown. 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 to the battery may exceed either the its 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
Audio Authority Corporation
2048 Mercer Road, Lexington, KY 40511
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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.

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.



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