

PRODUCT OVERVIEW

GUPS are ruggedized on-line "UPS's" that accept a broad range of worldwide utility and military AC/DC input power. Without operator intervention, they automatically select the appropriate input power ranges to accommodate global operation.

The GUPS Series has been specifically designed to withstand the rigors of mobile applications. They meet the vibration and shock requirements as specified in MIL-STD-810E, Methods 514.4 and 516.4. Their rackmounted aluminum chassis with stainless steel hardware withstands harsh environments and provides a strong, light weight enclosure.

FEATURES AND BENEFITS

UNIVERSAL INPUT

The GUPS 1250A AC input model provides 1250 VA/1000W of clean, stable 115V, 60 Hz standard U.S. power. It will automatically operate across a continual AC input range of 80 to 280 VAC, while accepting any frequency from 45 to 450 Hz.

The GUPS 1250AD AC and DC input model provides 115V, 60 Hz standard U.S. power. It operates from the same wide range AC input of the GUPS 1250A as well as from 28 VDC nominal DC vehicle power for mobile applications.

The GUPS 2400A AC input model provides 2400 VA/1920W of 115 VAC, 60 Hz power. It automatically selects between two input ranges of 85 to 140 VAC and 170 to 280 VAC, while accepting any frequency from 45 to 450 Hz, and provides 115 VAC, 60 Hz output power.

The GUPS 2400U universal output model provides 115 VAC, 60 Hz standard U.S. power or 230 VAC, 50 Hz international power (user selectable). Without operator intervention, it automatically selects between two input ranges of 85 to 140 VAC and 170 to 280 VAC, while accepting any frequency from 45 to 450 Hz.

The GUPS 2400A-104 variant providing a three phase input from 159-232 VAC line to line at frequencies from 370-430 Hz is also available.



GUPS 1250AD

The GUPS 2400AD AC and DC input model substitutes a DC/DC converter for the internal battery pack of the GUPS 2400A, allowing it to accept 28V nominal DC vehicle power input as well as AC input. Accordingly, an external battery chassis is required.

The Elgar GUPS is tolerant of variable power associated with "soft" sources such as engine/motor generators. Stable output power is provided, without oscillating between generator and battery input, regardless of how the input power varies within the allowed ranges. This prevents battery discharge and ensures that battery power is available in the event of generator failure. Soft-start of the UPS input rectifier limits the inrush current during start-up, precluding fluctuations in the AC source voltage that could affect other loads.

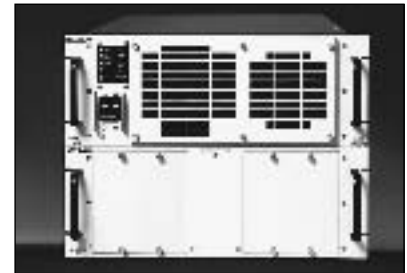
PRECISE AND STABLE OUTPUT

The output is precisely regulated, providing a low distortion sine waveform. Protection of the critical load is maximized because it is continually supplied by the online inverter; the output is never dependent on the condition of the AC input, and there are no switching transients.

Low output impedance allows driving non-linear loads that draw currents with high crest factors, such as computer power supplies. The 200% overload rating of the inverter, with a greater than 3:1 crest factor, provides an enhanced capability to supply the start-up inrush current of such loads. High frequency power conversion technology is utilized for fast dynamic response to changing load conditions. Continuous overload and short circuit protection ensure reliable operation.



GUPS 2400A/U



GUPS 2400AD with battery chassis

A shielded transformer is used to galvanically isolate the output from the AC input, DC input, and battery. The output is further protected with suppression networks that absorb high energy transients and surges that occur on the AC input. EMI filtering and the shielded isolation transformer provide transverse-mode and common-mode attenuation of electrical noise.

UPS integrity is determined through a self test that is performed automatically during start-up. Proper operation is ensured prior to energizing the critical load. After start-up, this function can also be manually selected by the user from the front panel.

COMMUNICATIONS INTERFACE

An RS 232 communications interface provides information to the host system about operating status and UPS parameters such as voltages and currents. Isolated relay contacts are available for remote annunciation of loss of AC input power and impending shutdown during operation from the battery.

BATTERIES

The GUPS 1250A and GUPS 1250AD have an internal battery capable of 15 minutes of backup at full load and 25°C.

The GUPS 2400A and GUPS 2400U include a drawer-mounted internal battery module that is removable from the front panel without the use of tools; this allows servicing of the battery without removing the UPS from its rack.

Battery life is maximized with automatic microprocessor controlled equalization and temperature compensation during charging.

The GUPS 2400AD includes an external battery chassis that provides a minimum of 10 minutes of backup at full rated load; reduced loads increase the backup time. An integral charger provides a quick recharge

time of six hours (to 90% of full charge), following discharge at full rated load.

Additional external rackmounted battery packs for the GUPS 2400AD are available to further increase the backup time.

For the GUPS 2400A and GUPS 2400U, an optional external rackmounted battery pack increases the backup time to 18 minutes at full rated load; multiple packs further extend the backup.

APPLICATIONS

GUPS are especially useful for demanding field computer applications powered by engine generators where a need for ruggedization, as well as voltage and frequency variations, have traditionally been a problem for regular UPS operation.

The ability to accept a broad range of AC and DC input voltages and frequencies, as well as ruggedized construction, make the GUPS an ideal choice for the following military and commercial applications:

- Remote computer based systems
- Engine generator output conditioning
- Communications
- Remote SATCOM
- Airborne telemetry backup
- Geological exploration
- Oil field instrumentation/logging
- Data acquisition
- Military C4I

Model Selection

Model:	GUPS 1250A	GUPS 1250AD	GUPS 2400A	GUPS 2400U	GUPS 2400AD
Maximum Output Rating	1.25 kVA/1000W	1.25 kVA/1000W	2.4 kVA/1920W	2.4 kVA/1920W	2.4 kVA/1920W
Output Voltage	115 VAC ±2%	115 VAC ±2%	115 VAC ±2%	115 or 230 VAC ±2%	115 VAC ±2%
Output Frequency	60 Hz ±0.1%	60 Hz ±0.1%	60 Hz ±0.1%	60 Hz or 50 Hz ±0.1%	60 Hz ±0.1%
Input Frequency	45 to 450 Hz	45 to 450 Hz or DC	45 to 450 Hz	45 to 450 Hz	45 to 450 Hz or DC
Input Voltage	80 to 280 VAC Single Phase	AC: 80 to 280 VAC Single Phase DC: 22 to 32 VDC	85 to 140 VAC or 170 to 280 VAC Single Phase Auto Range *	85 to 140 VAC or 170 to 280 VAC Single Phase Auto Range	AC: 85 to 140 or 170 to 280 VAC Single Phase Auto Range DC: 20 to 32 VDC
Battery	Internal battery module	Internal battery module	Removable internal battery module	Removable internal battery module	Separate external battery chassis
Battery Backup Time	15 min. backup w/1250 VA load; 0.8 PF @ 25°C	15 min. backup w/1250 VA load; 0.8 PF @ 25°C	5 min. backup w/2400 VA load; 0.8 PF @ 25°C	5 min. backup w/2400 VA load; 0.8 PF @ 25°C	10 min. backup w/2400 VA load; 0.8 PF @ 25°C
Optional External Battery Packs Available	No	No	Yes. For total of 18 min. at full rated load	Yes. For total of 18 min. at full rated load	External battery is required for 10 min. at full rated load
Weight	93 lbs	95 lbs	78 lbs without battery module; Removable internal battery module is 48 lbs; total 126 lbs	83 lbs without battery module; Removable internal battery module is 48 lbs; total 131 lbs	Main chassis 95 lbs; battery chassis 106 lbs; total 201 lbs
Dimensions	7" H x 19" W x 21" L	7" H x 19" W x 21" L	7" H x 19" W x 21" L	7" H x 19" W x 21" L	Two chassis, each 7" H x 19" W x 21" L

Range

* The GUPS 2400A-104 variant providing a three phase input from 159-232 VAC line to line at frequencies from 370-430 Hz is also available. Contact Elgar for details on this model.

SPECIFICATIONS**OUTPUT**

Maximum Output Power: 1250 VA/1000W

Output Voltage: 115 VAC, $\pm 2\%$ over full range of line and load variations

Output Frequency: 60 Hz, $\pm 0.1\%$

WaveForm: Sinusoid, $< 2\%$ distortion with linear load, $< 5\%$ with non-linear (power supply) load

Output Current: 10.9A RMS, 32.6A peak

Output Current Crest Factor: 3:1

Efficiency: 80% from 230 VAC input, 76% from 115 VAC input, 72% from 28 VDC input (GUPS 1250AD only)

Output Overload: 150% for 30s; 200% for 3s

Output Protection: Automatic current limiting, RMS current shutdown, and thermal shutdown

Output Connector: MIL-C-5015

INPUT

Input Voltage: 80 to 280 VAC and 22 to 32 VDC (GUPS 1250AD only)

Input Current: AC: 11.6A at 115 VAC with battery charged and full load. DC: 58.4A max at 28 VDC while battery is charging (GUPS 1250AD only)

Input Frequency: 45 to 450 Hz

Input Power Factor: 0.95, nominal line, 50/60/400 Hz, full load (400 Hz with 115V input)

Surge Withstand Capability: 500A/6000V ring wave, 3,000A/6,000V impulse, IAW IEEE/ANSI C62.41-1980

ESD Withstand Capability: IEC 801-2, Level 4

Battery Backup: 15 minutes at full rated output of 1250 VA/1000W and 25°C

Battery Recharge Time: 4 hours to 90% of full charge following full load discharge

Input Connectors (AC and DC): MIL-C-5015

ENVIRONMENTAL

Operating Altitude: Sea level to 10,000 feet

Non-Operating Altitude: Sea level to 40,000 feet

Operating Temperature: -20° to 50°C

Non-Operating Temperature: -40° to 65°C

Humidity: 5 to 95% non-condensing

Vibration and Shock: Per MIL-STD-810E, Method 514.4, Procedure I, Category 8; and Method 516.4, Procedure I

GENERAL

Weight: GUPS 1250A: 93 lbs with internal battery
GUPS 1250AD: 95 lbs with internal battery

Dimensions: 21" L x 19" W x 7" H; complies with EIA-130-D for rackmounting

INDICATORS

AC Input: A two color LED indicates the condition of the AC input voltage. The LED is green when the AC input voltage is within the normal operating limits and red when the operating range is exceeded.

DC Input (GUPS 1250AD only): A three color LED indicates the condition of the DC input voltage. The LED is green when the DC input voltage is within the normal operating limits, amber when the voltage is close to the limits of the operating range and red when the operating voltage range is exceeded.

Battery: A three color LED indicates the condition of the battery, its voltage and relative capacity. The LED is green during normal operating conditions when the battery is charged. When the battery is partially charged (during charge or discharge) the LED is amber. When impending shutdown is approached, the LED turns red.

Load: A three color LED indicates the amount of output load. The LED is green when the load is less than 95% of maximum output, amber when the load is within 95% and 105% and red when the load exceeds 105%, indicating that the inverter will shut down if the load is maintained.

Fault/Temp (GUPS 1250AD only): A two color LED indicates the operating status of the GUPS. The LED is green during normal operating conditions and red when either an internal fault or overtemperature occurs within the GUPS.

Temperature (GUPS 1250A only): A three color LED indicates the status of the internal operating temperatures. The LED is green under normal operating conditions, turns amber when the overtemperature shutdown threshold is approached and turns red when overtemperature shutdown occurs.

Fault (GUPS 1250A only): A two color LED indicates the operating status of the GUPS. It is normally green, and turns red if self-test fails.

ALARMS AND SIGNALS

Audible Alarm: An audible alarm is sounded during any alarm or fault condition: loss of AC input, battery discharge, impending low battery shutdown, overload, improper AC input voltage, DC input voltage (GUPS 1250AD only), internal fault or overtemperature.

Signals: Isolated relay contacts (both normally open and normally closed contacts) for signaling loss of AC input and impending inverter shutdown due to low battery capacity.

CONTROLS

Output On: Two-pole switch that switches the AC input power to the GUPS and turns the unit on and off

Alarm Silence: Momentary switch that silences the audible alarm. A change in the alarm conditions will re-enable the audible alarm.

RS 232 INTERFACE

The RS 232 data communications interface provides information of the GUPS' operating status, alarm conditions, and readback of parameter values [AC input voltage, AC input frequency, DC input voltage (GUPS 1250AD only) battery voltage, output load current, output voltage]. It allows interface with an ASCII data terminal or a computer emulating a terminal. No software is required; the internal firmware of the GUPS fully controls the operation of the interface.

SPECIFICATIONS

OUTPUT

Output Voltage GUPS 2400A and

2400AD: 115 VAC $\pm 2\%$ over full range of line and load variations

Output Voltage GUPS 2400U: 115 VAC or 230 VAC $\pm 2\%$ over full range of line and load

Output Frequency GUPS 2400A: 60 Hz $\pm 0.1\%$

Output Frequency GUPS 2400U: 50 Hz or 60 Hz $\pm 0.1\%$

Efficiency: 70% from AC input, 65% from DC input (GUPS 2400AD only)

Output Current: 21 ARMS, 63A peak

Output Distortion: 2% maximum THD with linear loads

Output Power: 2400 VA into ± 0.8 PF load

Output Overload: 150% for 30s; 150% to 200% for 3s. For GUPS 2400AD, when operating from DC input, overload capability is limited by 220A DC input current limit.

AC to DC Crossover: If AC input falls below or rises above the currently selected input range limits, the unit switches to battery. Unit switches to DC, if available, before switching to battery (GUPS 2400AD only).

Power Loss During Crossover: None

INPUT

Input Voltage, AC: 85 to 140 VAC or 170 to 280 VAC single phase *

Input Current, AC: 33A at 120 VAC, 17A at 240 VAC (12.5A/phase max (GUPS2400A-101)

Input Frequency, AC: 45 to 450 Hz **

Input Voltage, DC (GUPS 2400AD only): 20 to 32 VDC

Internal Battery Module: 192 VDC, 2.5 AH. Optional external battery packs available

Battery Hold-Up Time: 5 minutes for internal module with 2400 VA load, 0.8 PF @ 25°C. Adding one external battery pack increases time to a minimum of 18 minutes at full rated load. Reduced loads increase backup time.

Input Current DC (GUPS 2400AD only): 105A at 28 VDC

GUPS 2450AD: 10 minutes for external battery chassis with 2400 VA load, 0.8 PF at 25°C. Adding additional external battery packs increases backup time.

* 159-232 3 phase for GUPS 2400A-104

** 370-430 for GUPS 2400A-104

*** 7"H x 19"W x 25.1"L for GUPS 2400A-104

ENVIRONMENTAL

Altitude: Operating 0 to 10,000 ft; non-operating 0 to 40,000 ft

Temperature: Operating 0° to 40°C; non-operating -40° to 65°C

Humidity: 5 to 95% non-condensing

GENERAL

Weight GUPS 2400A: 78 lbs, maximum without battery module. Removable internal battery module is 48 lbs (126 lbs max combined weight).

Weight GUPS 2400U: 83 lbs, maximum without battery module. Removable internal battery module is 48 lbs (131 lbs max combined weight).

Weight GUPS 2400AD: Main chassis is 95 lbs; battery chassis 116 lbs, total weight 211 lbs.

Dimensions: 7"H x 19"W x 21"L (GUPS 2400AD two chassis) ***

INTERNAL BATTERY MODULE

Battery Description (GUPS 2400A and GUPS 2400U): 192 VDC, 2.5 AH sealed lead acid

Configuration: 96 cells at 2.0 V, 2.5 AH in a single pullout, removable module

Recharge Time: 4 hours, 90% full charge with integral battery charger

Typical Minimum Hold-Up Time 2400 VA at 25°C: 5 minutes

Microprocessor Controlled Equalization: Batteries maintained on a temperature compensated, constant voltage float charge with automatic equalization as required

Temperature: Operating 0° to 40°C; non-operating -40° to 65°C

Weight of Removable Module: 48 lbs

EXTERNAL BATTERY CHASSIS FOR (GUPS 2400AD)

Battery Description: 192 VDC, 5 AH sealed lead acid

Configuration: Two modules, 2.5 AH each

Recharge Time: 6 hours, 90% full charge with integral battery charger

Typical Minimum Hold-Up Time 2400 VA at 25°C: 10 minutes

Temperature: Operating 0° to 40°C, non-operating -40° to 65°C

ALARMS AND SIGNALS

Alarms: The audible alarm sounds for an overtemperature, loss of AC input or improper battery voltage.

Signals: (1) Isolated relay contacts signal loss of AC input and impending inverter shutdown due to low battery capacity and (2) RS 232 data communications for computer interface provides information on GUPS status, alarms and parameter values.

INDICATORS

AC Input: A three color LED indicates the condition of the AC input voltage. The LED is green when the AC input voltage is within the normal operating limits, amber when the voltage is close to the limits of the operating range and red when the operating voltage range is exceeded.

Battery: A three color LED indicates the condition of the battery. The LED is green under normal operating conditions, amber when the battery is discharging or has low capacity and red when impending inverter shutdown is approached.

Load: A three color LED indicates the amount of output load. The LED is green when the load is less than 80% of maximum output, amber when the load is within 80% to 105% and red when the load exceeds 105%, indicating that the inverter will shut down if the load is maintained.

Temperature: A two color LED indicates the overtemperature condition of the GUPS. The LED is green under normal operating conditions and red when an over-temperature occurs.

Test: A two color LED indicates the results of the internal self-test. A blinking light indicates the test is in progress. When the test is complete, the LED turns green if the GUPS passes the test and red if it fails.

CONTROLS

Output On: Switches on or off the GUPS output

Test: Initiates the internal self-test

Alarm Silence: Silences the audible alarm

Remote Shutdown (GUPS 2400U only): Switches off the UPS output and disconnects the UPS from the AC input source. Requires external SPST contact closure

FREQUENCY SWITCH

Output Frequency (GUPS 2400U only): Selects 50 or 60 Hz output

CONFIGURATION TERMINAL BLOCK

Output Voltage (GUPS 2400U only): Selects 115 VAC or 230 output