

25kW Fan cooled

AC-HVDC power supplies 

The GX series is a range of enclosed, programmable, low ripple, high voltage power supplies capable of supplying voltages up to 100kV and power to 25kW. The GX Series are fast response units with tight regulation. They are air insulated thereby offering a lower cost of life ownership, are lighter and are more environmentally friendly than potted or oil insulated alternatives.

The GX range has been designed for parallel operation up to 200kW and all versions have Arc Quench & Arc Count features to protect both the load and power supply unit.



Features

- ▶ 0 to 100% programmable voltage & current
- ▶ Local, analog, & RS232/USB digital control. Ethernet is optional
- ▶ 3 phase AC input. 480VAC standard, 380VAC & 415VAC optional
- ▶ Output voltage & current regulated
- ▶ Voltage & current monitor outputs
- ▶ Operating temperature: 0°C to +40°C, no derating
- ▶ Short circuit, arc, overload & thermal protection
- ▶ Efficiency >80%
- ▶ Low ripple <0.1% RMS of rated voltage at full load
- ▶ CE marked for EMC, low Voltage (LVD) & ROHS directives
- ▶ 3 year warranty

Applications



Semiconductor manufacturing



High power e-beam



Industrial electronics



Technology

Dimensions

482.6 x 487.4 x 609.6 mm (19.0" x 19.2" x 24.0")
11U 19" rack mount

More resources

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→ [xppower.com](https://www.xppower.com)



Models & ratings

Positive polarity	Negative polarity	Reversible polarity ⁽¹⁾	Voltage	Current	Stored energy	Output cable
GX005P5.0	GX005N5.0	GX005R5.0	0 – 5kV	5.00A	12J	RG-8U
GX006P4.1	GX006N4.1	GX006R4.1	0 – 6kV	4.15A	16J	RG-8U
GX008P3.1	GX008N3.1	GX008R3.1	0 – 8kV	3.15A	12J	RG-8U
GX010P2.5	GX010N2.5	GX010R2.5	0 – 10kV	2.50A	17J	RG-8U
GX012P2.1	GX012N2.1	GX012R2.1	0 – 12kV	2.10A	22J	RG-8U
GX015P1.6	GX015N1.6	GX015R1.6	0 – 15kV	1.65A	17J	RG-8U
GX020P1.2	GX020N1.2	GX020R1.2	0 – 20kV	1.250A	29J	RG-8U
GX025P1.0	GX025N1.0	GX025R1.0	0 – 25kV	1.000A	34J	RG-8U
GX030P835	GX030N835	GX030R835	0 – 30kV	0.835A	48J	RG-8U
GX040P625	GX040N625	GX040R625	0 – 40kV	0.625A	28J	RG-8U
GX050P500	GX050N500	GX050R500	0 – 50kV	0.500A	34J	RG-8U
GX060P415	GX060N415	GX060R415	0 – 60kV	0.415A	41J	RG-8U
GX070P360	GX070N360	GX070R360	0 – 70kV	0.360A	48J	DS2121
GX080P315	GX080N315	GX080R315	0 – 80kV	0.315A	55J	DS2121
GX100P250	GX100N250	GX100R250	0 – 100kV	0.250A	69J	DS2121

Notes:

1. For reversible polarity two high voltage chassis will be supplied both; a positive and a negative so usage depends on the required output.

Model configurator

Series

GX

Output voltage

100

Polarity

P

Output current

250

Standard options

ETH

Code	Output voltage
005	0 - 5kV
006	0 - 6kV
008	0 - 8kV
010	0 - 10kV
012	0 - 12kV
015	0 - 15kV
020	0 - 20kV
025	0 - 25kV
030	0 - 30kV
040	0 - 40kV
050	0 - 50kV
060	0 - 60kV
070	0 - 70kV
080	0 - 80kV
100	0 - 100kV

Code	Polarity
P	Positive
N	Negative
R	Reversible

Code	Output current
5.0	5.00A
4.1	4.15A
3.1	3.15A
2.5	2.50A
2.1	2.10A
1.6	1.65A
1.2	1.250A
1.0	1.000A
835	0.835A
625	0.625A
500	0.500A
415	0.415A
360	0.360A
315	0.315A
250	0.250A

Code	Standard options
SS	Slow start
ZR	Zero start
ETH	Ethernet
NC	Blank front panel
38	380VAC, 3-phase input
41	415VAC, 3-phase input

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage ^(1,2)	432	480	528	VAC	35kVA max.
Input frequency	48		63	Hz	
Input current		45		A	RMS
Inrush current			50	A	RMS
Input connector	Five position terminal strip for AC line connection is provided.				

Notes:

1. Mains service must be protected with fuses or circuit breakers with a maximum rating of 175A .
2. 380VAC & 415VAC optional.

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage range	0		100	kV	See models and ratings table.
Output current range	0		5.0	A	See models and ratings table.
Polarity	Available with either positive or negative polarity with respect to chassis ground.				
Output control	Continuous, stable adjustment by panel mounted optical rotary encoder or by external +10V signals.				
Static voltage load regulation	0.01			%	+5mV/A for full load to no load variation.
Dynamic voltage regulation	Typical deviation is 2% of rating. The recovery to within 1% of rating is 500µs and within 0.1% in 1 ms for load transients from 10% to 100% and 100% to 10%.				
Stability			0.05	%	Per 8 hours under constant conditions after 30 min. warm up.
Temperature coefficient			100	ppm/°C	After 30min. warm up.
Voltage rise time constant		200		ms	For 15kV to 100kV models, using HV enable.
		50		ms	For 1kV to 12kV models using HV enable.
Voltage decay time constant	Decay time constant is function of the applied load. The decay time constant will be equal to the rise time constant with a minimum load of 5%.				
Ripple		0.1		%	+1V RMS at full load.
Optical rotary encoder resolution		0.025		%	With Fine Adjustment mode selected.
		0.25		%	With Coarse Adjustment mode selected (default).
Line regulation	0.01			%	For ±10% input variation, constant load.
Current regulation	0.5			%	For short circuit to rated output voltage variation, at any load.
Current trip	When this switch is set to CURRENT TRIP (CT), the unit will shut down and latch off when the load current equals or exceeds the programmed value.				
Arc count	Internal circuitry senses the number of arcs caused by the external load characteristics. If the rate of consecutive arcs exceeds approximately 1 per second, for at least 5 arcs, the supply will turn off for approximately 5 seconds to allow clearance of the faulty load condition. Custom modifications of this feature are available. Custom modifications of this feature are available, please contact XP Power sales to discuss.				
Arc quench	Internal circuitry senses the number of arcs caused by the external load characteristics. If the rate of consecutive arcs exceeds approximately 1 per second, for at least 5 arcs, the supply will turn off for approximately 5 seconds to allow clearance of the faulty load condition. Custom modifications of this feature are available. Consult the factory. Custom modifications of this feature are available, please contact XP Power sales to discuss.				

Notes:

The specifications apply from 5% to 100% of rated voltage for a 25kW standalone power supply.

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency	80			%	At full load.
HV insulating medium	Outputs are air insulated.				
External interlock	Open = OFF, closed = ON. Normally latching except when 'NC' options is selected when the HV ON button on the front panel is by-passed for the alternative remote command, where it is non-latching				
HV enable input	Active in Remote Analog control. HIGH for HV Output Enable				
Voltage programming accuracy	0.5% of setting +0.2% of rated				
Analog voltage monitor	0 to +10V, equals 0 to rated voltage, with an accuracy of 0.5% of reading +0.2% of rated. Output impedance is 10kOhm.				
Analog current monitor	0 to +10V, equals 0 to rated current, with an accuracy of 1% of reading +0.5% of rated. Output impedance is 10kOhm.				
RS232/USB/Ethernet programming	Resolution		0.025% of full scale for both the voltage and the current channels.		
	Remote setting accuracy		Voltage setting accuracy is better than 0.5% of setting +0.2% of rated.		
	Remote reading accuracy		Voltage reading accuracy is 0.5% of reading +0.2% of rated. Current reading accuracy is 1% of reading +0.5% of rated.		

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	0		+40	°C	
Storage temperature	-20		+70	°C	
Cooling	Forced air cooling with internal fans.				
Humidity - operation	30		90	%RH	Non-condensing
Humidity - storage	10		95	%RH	Non-condensing
Operating altitude			5000	ft	
Over temperature protection	Shuts down and latches the unit in OFF state upon exceeding the internally measured temperature threshold or sensing a defective fan. The fault indicator will be activated.				
Input under voltage protection	Will prevent the Power Stage circuit from operating without all 3 line voltages active. When this happens, the output will shut down and recovers automatically when the normal input line condition is restored. The fault indicator will be activated during the shutdown period.				
DC Under Voltage (DCUV) protection	Will prevent the Power Stage circuit from operating with DC bus voltage below the operating level. When this happens, the output will shut down and recovers automatically when the normal input line condition is restored. The fault indicator will be activated during the shutdown period.				
Power Block Desaturation protection	The IGBT power block control has the capability to sense an excessive current in its conduction state and turn off the conversion cycle to avoid a shoot thru condition.				
RoHS	Restriction of the use of Hazardous Substances				

Notes:

The specifications apply from 5% to 100% of rated voltage for a 25kW standalone power supply.

Emissions - EMC

Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN61000-6-4		
Radiated	EN61000-6-4		

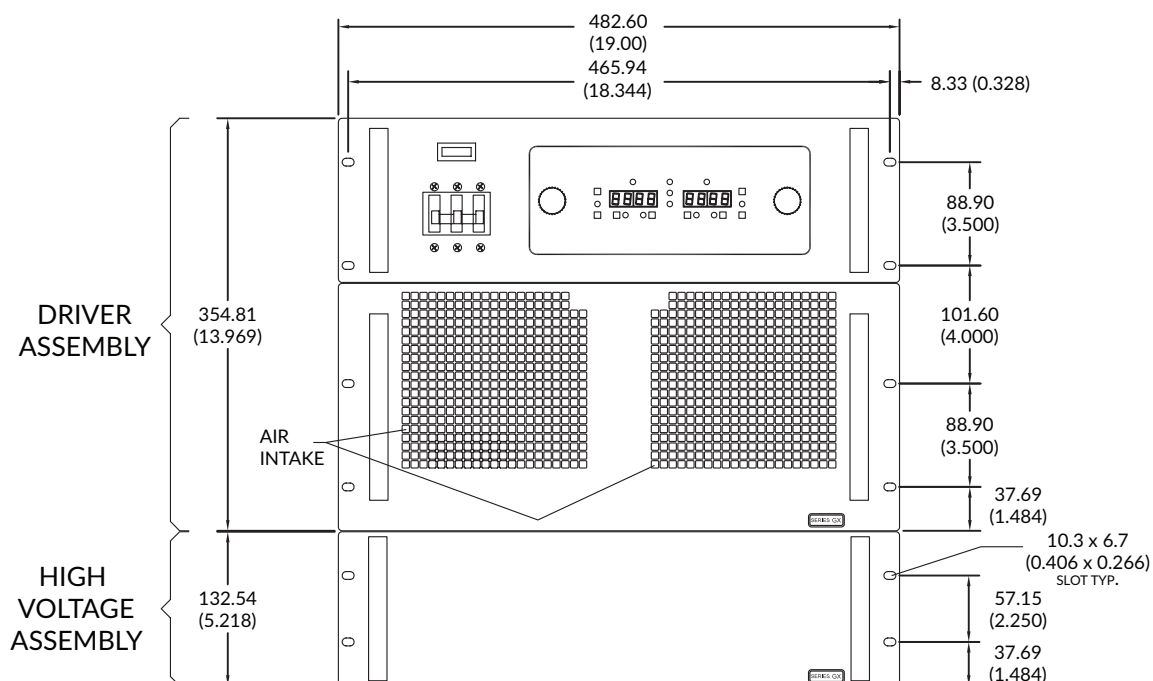
Emissions - immunity

Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN61000-6-2		
Radiated	EN61000-6-2		

Safety approvals

Certification	Standard	Notes & conditions
EN	EN61010-1/IEC61010-1	Safety
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

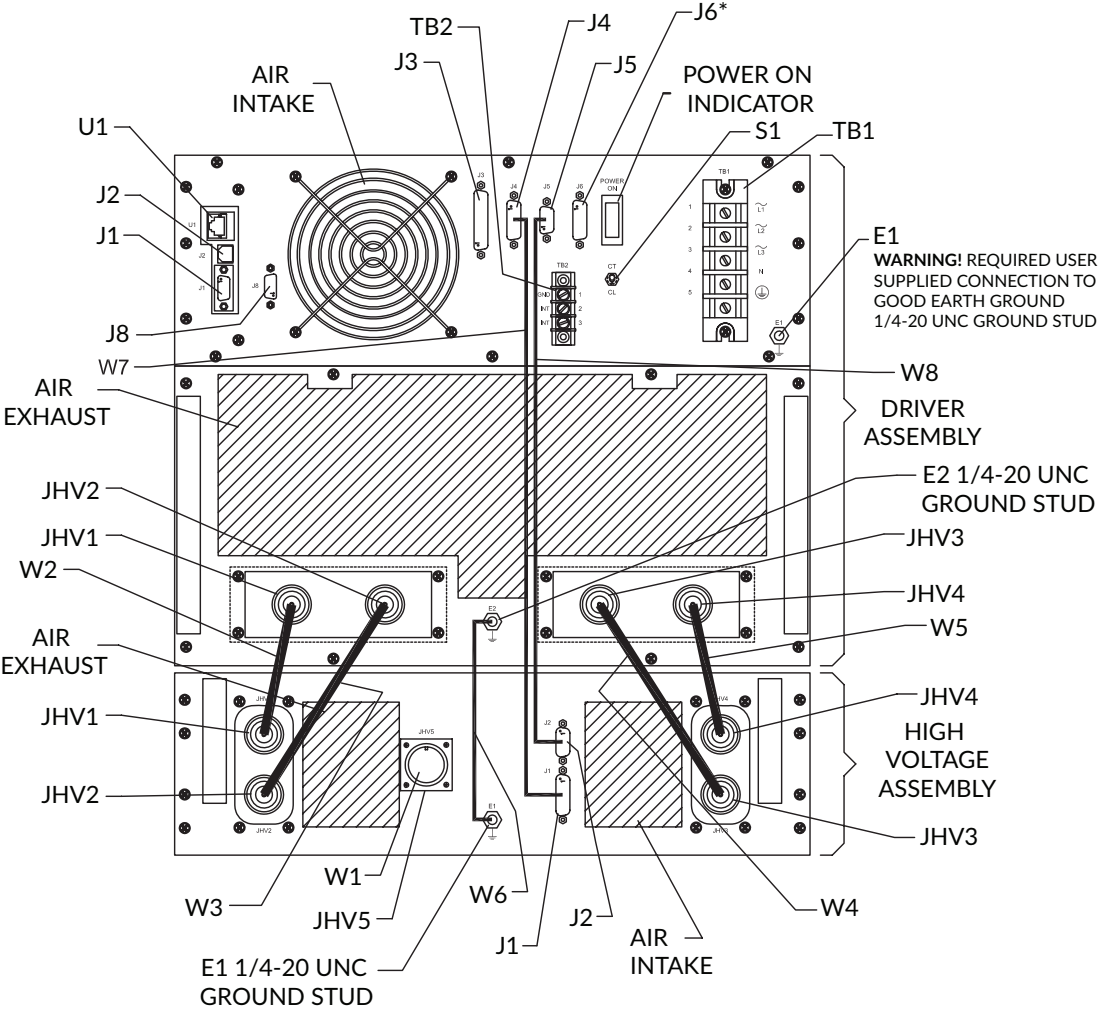
Technical drawing of the battery pack layout. The drawing shows a rectangular battery pack with dimensions 609.6 (24.0) in width and 38.1 (1.50) in height. The pack is divided into two main sections: the DRIVER ASSEMBLY (top) and the HIGH VOLTAGE ASSEMBLY (bottom). The DRIVER ASSEMBLY contains four hatched rectangular areas representing battery modules. The HIGH VOLTAGE ASSEMBLY is a solid white rectangular area. Dimensions are provided in both inches and millimeters. The overall width is 609.6 (24.0). The overall height is 38.1 (1.50). The DRIVER ASSEMBLY height is 347.60 (13.685). The HIGH VOLTAGE ASSEMBLY height is 125.37 (4.936). The label 'AIR EXHAUST' points to the top left corner of the DRIVER ASSEMBLY. The label 'DRIVER ASSEMBLY' is centered in the top section. The label 'HIGH VOLTAGE ASSEMBLY' is centered in the bottom section. The label '3.18 (0.125)' is at the top left corner. The label '38.1 (1.50)' is at the top right corner. The label '347.60 (13.685)' is on the right side, spanning the DRIVER ASSEMBLY. The label '125.37 (4.936)' is on the right side, spanning the HIGH VOLTAGE ASSEMBLY. The label '609.6 (24.0)' is at the top, spanning the width. The label '38.1 (1.50)' is at the bottom left corner.



1. Dimensions are in mm (inches).
2. High voltage assembly shown for 15-100kV.
3. Weight: 55kg (120lbs).



Mechanical details



Key	Function
E1	Ground
E2	Ground
J1	RS232 Interface
J2	USB Interface
J3	Analog Remote Interface
J4	High Voltage Interface
J5	High Voltage Interface
J6	Master/Slave Interface Out
J8	Slave Control Out

Key	Function
JHV1	High Voltage AC
JHV2	High Voltage AC
JHV3	High Voltage AC
JHV4	High Voltage AC
JHV5	High Voltage Output
TB1	AC Input
TB2	Signal Interface
U1	Ethernet (option)