

GP100 Rectifier GP100L3R48TEZ

3Ø -200/208/240 Vac Input; 48Vdc Output; 6KW Output)



The GP100 Rectifier provides a high efficiency, intrinsically phase balanced way to power data center cabinets directly from 3 wire 3Ø 200/208 or 240VAC. The AC can be supplied by a UPS, Generator, or line transformer with any accepted winding or grounding configuration. The neutral wire is not connected to the GP100, so there is zero risk of neutral currents in any normal or fault scenario.

Should there be a line fault, the GP100 is compatible with ABB TLE UPSs in Ring Bus or traditional configurations, as well as other UPSs with a transfer time of less than 8 ms. Should there be a rectifier fault, the GP100 is parallelable up to 100 units. In addition to applications without batteries on the output, the GP100 is suitable for use in traditional centralized battery applications, or in distributed systems with traditional or advanced battery technology. Isolated serial communications and extensive testing allow the GP100 to work in either n+1 or N+N configurations.

A full featured, N+N redundant, 200-240 Vac to 48 Vdc battery reserve system can be provided in 1 Rack Unit (1.75 inches) of 19 inch rack space. Two GP100s and an ABB Power Edge controller enable distributed battery systems with a three wire 200-240 Vac feed to the cabinet.

This 3Ø -200/208/240 Vac standard product is designed to be deployed internationally. This rectifier is an excellent choice for facility scale data applications requiring modular, very-high-efficiency AC to 48 Vdc intermediate voltage

Applications

Applications for this rectifier include: Industrial, Super Computer, Routers/VOIP/Soft and other telecom switches, 48Vdc distributed power architectures. Specifically this rectifier addresses those applications where the utility power is 3Ø -200/208/240 Vac

Features

- Compact 1RU form factor provides high power density of 27 Watts / Cubic inch
- Efficient with 95.5 % peak efficiency
- Balanced draw from each of the three ac input phases
- 6000 Watts at 48 Vdc from three wire 3Ø 200 to 240 Vac (no neutral is needed)
- Constant power for output voltages from 48 to 58 Vdc (Output voltage programmable: Off, and from 42 to 58 Vdc)
- Communications choices: RS485
- Operates over a broad temperature range: -10°C through +75°C (Output derates at 2% per °C beginning at +50°C)
- Remote Upgrade from RS485
- Preemptive Analytics
- Fail safe performance – Internal faults isolated from output bus; hot insertion capabilities allow for rectifier replacement without system shutdown; soft start and inrush current protection prevent nuisance tripping of upstream breakers
- Extended service life – parallel operation with automatic load sharing ensures that units are not unduly stressed
- Simple Human Factors – 3 front panel LEDs indicate ac good (Green), DC good (Green) or Fault (Red)
- Agency Compliant - EN/IEC/UL/CSA C22.2 60950-1 2nd edition +A1, CE mark, FCC part 15, EN55022 Class A, EN61000 immunity and transient, EN/IEC 61000-3-2 and EN 60555-2 Power factor correction, IPC 9592 Class II Shock & Vibration, NEBS GR-1089, GR-63-CORE, RoHS6/6
- Improved Power Metering Accuracy

Technical Specifications

Electrical Specifications

INPUT

Parameter	Symbol	Min	Typ	Max	Unit
Startup voltage	V_{IN}		176		V_{ac}
Operating Range (3 Φ delta with safety frame ground)	V_{IN}	180	200/208/240	275	V_{ac}
Voltage Swell (no damage)	V_{IN}			300	V_{ac}
Frequency	F_{IN}	47	50/60	63	Hz
Operating Current (3 Φ —all phases operational, 200-240Vac)	I_{IN}		24-16		A_{ac}
Inrush Transient (per Φ @208Vac, 25°C, excluding X-Cap)	I_{IN}		25	30	A_{pk}
Leakage Current (per Φ @275Vac, 60Hz)	I_{IN}			5	%
Power Factor (50-199% load)	PF	0.96	0.995		
Efficiency Peak	η		95		%
Holdup time (output allowed to decay down to 40Vdc)	T		8		ms
Ride through (at 208Vac, 25°C)	T		1/2		Cycle

Electrical Specifications

OUTPUT -48Vdc Main

Parameter	Symbol	Min	Typ	Max	Unit
Output Power (200 – 240Vac -3 Φ)	W	6000			W_{dc}
Default Set point			54.5		V_{dc}
Overall Regulation (load, temperature, aging and compensated for droop)	V_{out}	-1		+1	%
Output Voltage set range—set by firmware		42		58	V_{dc}
Output Current (54/48Vdc, $T_{amb}=45^{\circ}C$)	I_{out}	1		111/125	A_{dc}
Output Ripple Peak-to-Peak (5Hz to 20MHz)	V_{out}			250	mV_{p-p}
External Bulk Load Capacitance	C_{out}	0		1700	$\mu F/A$

Environmental, Compliance and Physical

Parameter	
Operating Ambient Temperature Range	-10°C to +75°C (Output derates at 2%/°C beginning at 50°C)
Cooling Method	Front to back airflow with onboard temperature controlled fans
Operating Relative Humidity	0 - 95% (non-condensing) for use in a controlled environment
Electromagnetic Compatibility	FCC Part 15, EN 55022 (CISPR22), EN 55024, Level A, GR-1089
Agency Certifications* planned	UL1950, EN60950, CSA*234/950, NEBS GR-1089, GR-63-CORE, CE Ma
Heat Release	316 Watts, or 1080 BTU/hr at full load of 6000 Watts
Mean Time Between Failure (MTBF)	1183k Hours @ 25°C per Telcordia Issue 4
Height x Width x Depth, Weight, Packaged weight	1.61x7.97x17.36in (41x202x441mm), 8.95 lbs (4.1 kg), 9.85 lbs (4.5 kg)

Change History (excludes grammar & clarifications)

Version	Date	Description of the change
1.0	07/16/2021	Initial Release



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