



X400-48

Midi Power System

Built around a standard 600 x 600 x 2200 enclosure format, Gravitas Energy Systems X400-48 utilises up to 8 ultra high density hot-swap 48V/50A RANGER rectifiers.

This system can accommodate up to 4 strings 150AH batteries which can provide a full 2 hours of autonomy at a typical equipment load of 300A.

The fully integrated customer interface module mounted at the top of the cabinet includes provision for individual rectifier AC circuit breakers and up to 20 DC load breakers. All connections are made from the front.

A microprocessor based digital controller monitors all critical system parameters and provides a range of alarms on dry contact relays. In addition an optional Modem or Ethernet adaptor may be fitted to allow monitoring and display of alarms at a remote location.

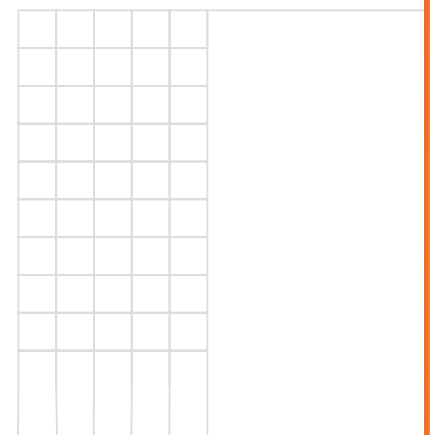
The X400-48 has been designed to allow scalability with the addition of 1 or 2 'slave' cabinets, increasing overall rectifier capacity to 1200A and at the same time accommodating further batteries to maintain overall autonomy.



FEATURES

- **Integrated 2.2m Free-Standing Cabinet**
- **Hot-Swap Rectifiers**
- **Single or 3 Phase Input**
- **Intelligent Microprocessor Digital Controller**
- **Expandable Architecture**

Gravitas Energy Systems X400-48 with 400A rectifier capacity, 16 DC load circuits and 500AH battery autonomy.



SPECIFICATION

System Enclosure

The Gravitas Energy Systems X400-48 Midi Power System is a fully integrated 2.2m high x 600mm x 600mm freestanding cabinet incorporating 8 positions for hot-swap rectifiers, AC input and DC output distribution and protection, LVD, system controller and 4 strings of front connect batteries up to 150AH each in capacity offering a full 2 hours.

The maximum capacity for a single cabinet is 400A at -48V with the facility to operate the system with N+1 redundancy. Up to two 'slave' enclosures can be installed alongside the 'master' to boost overall capacity to 1200A with sufficient space for the batteries required to maintain the system for 2 hours.

RANGER RRS Series Rectifier Modules

The Gravitas Energy Systems X400-48 Midi Power System accommodates up to 8 High Density RANGER RRS Series rectifier modules with a -48V nominal DC output and 230VAC input.

Hot-Swap N+1 redundant operation is a standard feature of these rectifiers, providing a high level of system security and ease of maintenance.

RRS48/50 rectifiers are set at 54.4V and provide up to 50A each.

DC Distribution & Protection

The Gravitas Energy Systems X400-48 includes facilities for up to 20 DC load circuit breakers. Various combinations of breaker rating can be accommodated with ratings up to 125A and individual alarm modules may also be incorporated.

A Low Voltage Disconnect (LVD) is incorporated as standard. This provides protection against deep discharge of the batteries which can result in plate deformation and damage beyond repair. The level at which the LVD activates is programmable through the PCM1000 digital controller. Where a maximum period of autonomy is required and this can be achieved through 'load shedding' a second LVD contactor may be installed with a 'split' DC bus. With such a scheme in place non-essential equipment can be switched off at an earlier point in the battery discharge cycle. This level is programmable through the PCM1000 controller.

Input protection to each installed rectifier is provided via optional circuit breakers when desired.

Control & Monitoring

The Gravitas Energy Systems X400-48 includes an intelligent microprocessor digital controller as standard. The controller monitors such parameters as bus voltage level, rectifier status, AC supply and temperature and these can be programmed through the front panel controls or remote monitoring software to provide MAJOR and MINOR alarms on dry relay contacts as desired. Options include the provision of dry relay contact outputs for specific alarm conditions and

Battery Tray

The Gravitas Energy Systems X400-48 incorporates 4 battery shelves, each of which can accommodate a single string of front connect batteries up to a capacity of 150AH each giving a total of 600AH capacity.

Each battery shelf incorporates a battery isolating circuit breakers to allow easy battery maintenance without compromising system integrity.

AC Input

Input Voltage Range	170-264VAC, 1-phase or 3-phase with Neutral conductor
Frequency Range	45-65 Hz
Power Factor	>0.98
Input Protection	Individual Rectifier Fusing
AC MCB (optional)	Individual Rectifiers

DC Output

	48V nominal
Voltage Factory Set-point	54.4V
Voltage Range	47-57V
Maximum System Current	400A
Rectifier Unit Capacity	50A
Remote Output Adjustment	Controlled from PCM1000 Output voltage returns to factory set-point in case of loss of control voltage

Environment

Ambient Temperature	0°C to 70°C
Derating	2.5%/°C from 50°C to 70°C
Humidity	<95% Non-Condensing
Cooling	Forced cooling integral to rectifier modules

Regulatory

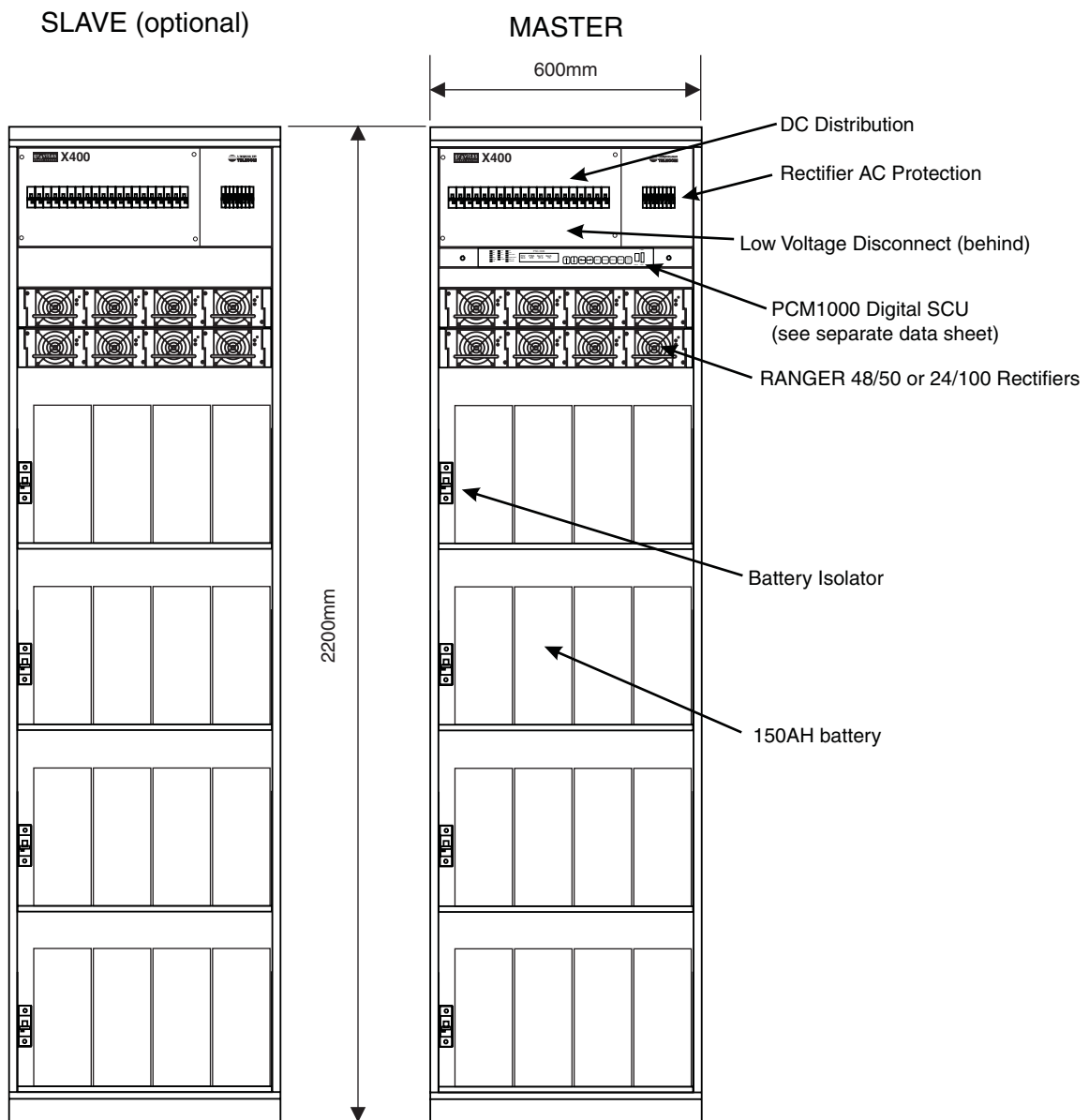
Safety	EN60-950, CE Marked (LVD73/23/EEC) UL1950, CSA22.2-950
Emissions	
Line Conducted	EN55022 level A
Radiated	EN55022 level A
AC Harmonics	EN61000-3-2 class A
Immunity	
Fast Transients	EN61000-4-4 level 3
Surges	EN61000-4-5 level 2 (L-L), level 3 (L-E)
Radio Frequency	EN61000-4-3 level 2
Electrostatic Discharge	EN61000-4-2 level 2 (air discharge)

Mechanical

Size	2200mm (h) x 600mm (w) x 600mm (d)
Mounting	Floor Standing
Connection	Front Connection
Cable Entry	Top or Bottom

Options

DC Circuit Breaker Current Ratings	single width up to 63A, 1½ width 64A to 125A
System Control Unit	PCM1000 microprocessor digital controller Optional Modem or TPC/IP Ethernet LAN with Windows software
Status & Alarm Signals	Major and Minor alarms provided on dry contact C/O relays. For other status and alarm signals please consult sales office



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