

X410R / X610R

Mid-Size Power Systems - up to 600A

The X410R & X610R modular DC power systems are designed to meet the stringent requirements of telecom applications where battery backup, reliability, and system flexibility in configuration are key factors. The system is built around a standard 600 x 600 x 2134mm (48U) cabinet enclosure with provision for configuring standard modular assemblies of rectifiers, AC and DC distribution, battery distribution, batteries, and system controller.

The cabinet is rated to support loads up to 600A @ -48V, and is configurable to accommodate a variety of AC inputs from either single phase or 3 phase sources.

The system is expandable to provide additional battery capacity for extended battery backup time by addition of battery racks. It can also accommodate optional inverter modules, DC/DC modules, and their associated distribution modules for sourcing loads other than the -48V loads.



Gravitas X410R-48 modular DC power system fitted with:
 8 hot-swap 50A rectifiers, 400A.
 36 load circuit breakers.
 2 battery trays, 1 battery string.

FEATURES

- System installation/operation simplified
- Fully integrated cabinet system
- Up to 12 hot-swap 50A rectifiers
- Up to 600A (32.7kW) load
- Up to 36 load circuit breakers (1 to 100A)
- AC breakers for individual rectifier inputs
- Single or 3 phase inputs
- 3 battery shelves, 510AH total
- Optional battery cabinets available
- 3 battery circuit breakers in cabinet
- Low voltage battery disconnect (LVD)
- Load and rectifier bus current metering
- CB's field installable
- Front access battery terminals
- Modular/flexible configuration
- Intelligent micro controller
- LCD for supervision/setup
- Ethernet (SNMP compatible)
- Form "C" dry alarm contacts
- Options available:
 - Battery cabinets
 - Cabinet doors/side panels
 - Inverter shelves
 - DC/DC converter shelves
 - SNMP

SPECIFICATIONS

System Enclosure

The Gravitas X410R & X610R power systems are based around a fully integrated freestanding cabinet incorporating 8 or 12 positions for hot-swap rectifiers, AC input distribution/protection, DC output distribution/protection, low voltage battery disconnect (LVD), battery distribution/protection, system controller, and 3 strings (shelves) of front connect batteries rated up to 170AH each. A vertical space of 4U rack height has been allocated for optional equipment such as inverter or DC/DC converter shelves and their distribution/protection panels.

Cabinet Size	600mm x 600mm x 2134mm (48RU)
Mounting	Floor standing
Battery Connection	Front access
Load Circuit Breaker Connection	Front access
Cable Entry, AC & DC	Top of cabinet
Front Doors	Optional

Rectifier Modules

The X410R system accommodates 2 of the RANGER Series shelves with 4 rectifier modules in each for a total of 8 rectifiers, while the X610R increases this capacity by 50% to 3 shelves and a total of 12 rectifiers. The rectifiers are hot-swap for N+1 redundant operation, providing a high level of system security and ease of maintenance.

Model	RRSI48/50-Z
DC Output Rating	50A @ 54.4V
AC Input Rating	230VAC – Operating range 170 – 264VAC
Data Sheet	www.unipower-corp.com/pdf/

DC Distribution and Protection Panel

The DC distribution panel includes DIN Rail mounted load circuit breakers for ease of changing in the field or adding as expansion demands. Also included are modular alarm cards for circuit breaker trip alarms, load shunts for sensing rectifier bus and load bus current, and a Low Voltage Disconnect (LVD) contactor to prevent deep discharge of the system battery.

DC Distribution	
Number of breaker positions	36 X 13mm positions max. for load circuits 2 X 13mm positions for internal aux. circuits
Standard ratings	1A to 60A for single position of 13mm each 80A, 100A require 2 positions of 26mm each
Type of CB	DIN Rail mount, Hydraulic-Magnetic, Mid-Trip, Listed UL 489A
Alarm Cards	Monitors 12 CB's each. Max. 3 total required. Cards provide relay alarm contacts to DSC1000 controller
Access to CB's and alarm cards	Removeable front panel

Load & Rectifier Bus Shunts	
Rating	50mV at 400A (X410R) or 600A (X610R) each input to DSC1000 Controller/ LCD display

Low Voltage Disconnect	
Disconnect/Reconnect Levels	Programmable through the DSC1000 Controller
Contactor Rating	400A (X410R) or 600A (X610R)

Battery Distribution and Protection Panel

Each of the 3 battery shelves in the cabinet is protected by a circuit breaker mounted on the front panel. External optional battery racks have individual breaker protection per shelf in it's respective rack. Connection to these external racks is made via bus bar connections at the back of the cabinet with back panel removed.

Rating	125A
Alarm	Alarm contacts from CB to DSC1000 controller

AC Distribution and Protection Panel

Input protection to each rectifier is provided via circuit breakers mounted on the front of the AC distribution panel. This panel also has a terminal block input to connect either a single phase or a 3 phase main feed plus ground.

Number of Breakers	8 (X410R) or 12 (X610R)
Breaker Rating	25A, 2-pole, UL489 Listed
AC input Terminals	L1, L2, L3, N, GND

Battery Shelf

The cabinet system incorporates 3 battery shelves, each of which can accommodate a single string of 4 x 12V front connect batteries having a maximum capacity of 170AH using Northstar NSB-170FT, giving a total cabinet capacity of 510AH. Each battery has characteristics defined as follows:

Model	NSB-170FT
Terminals	Front access
Voltage	12V
8 hr capacity to 1.75 volts per cell	170.8 ampere – hour (AH)
Float voltage	2.27 +/- .02 volts per cell
Size	12.60"/320mm(H) X 4.92"/125mm(W) X 22.05"/560mm(D)
Weight	131.2 pounds (~60Kg)

The cabinet is pre-wired with standard battery feed cables from the battery distribution panel and return bus. Additional battery capacity can be provided via optional battery cabinets (consult sales).

Remote Access Controller

The Gravitas DSC1000 is a remote access system controller for telecom power systems. It is used to digitally control and monitor the power system and it's components, and to communicate remotely via a network connection. Features and specifications are as follows:

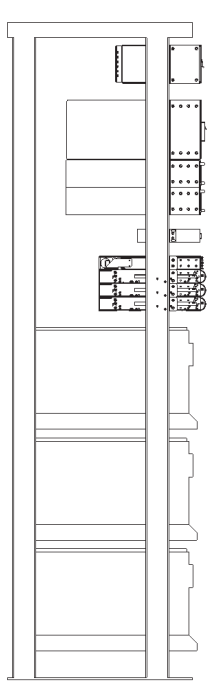
Rectifier Control Functions (I ² C control via RJ11 connector interface to each rectifier shelf)	Battery Float Voltage, Battery Equalize Voltage, Battery Voltage Temp. Compensation, Battery Charge Current
LVD (Bat. Low Volt Disconnect)	Programmable disconnect and re-connect voltages for LVD contactor
Visual Displays (front panel)	16 LED indicators for alarm/status, LCD 16x2 matrix display
Touchpad Control (front panel)	8-key, for manual programming and monitoring of system parameters
Remote Programming (front Panel)	RS232 interface
Relay Alarm Outputs	8 Form-C relay contacts, 4 pre-defined & 4 user configurable
Remote Communication (RJ45)	Ethernet communication, Optional SNMP Built-in WEB server allows access from PC Java enabled WEB browser
Remote Comm. of Alarm Parameters (RJ45)	Overvoltage, Undervoltage, End Voltage, Batt. OT, Ext. OT, Fuse/CB Trip, Rectifier Fail, AC Fail, LVD Fail, User Defined (up to 6)

System Specifications

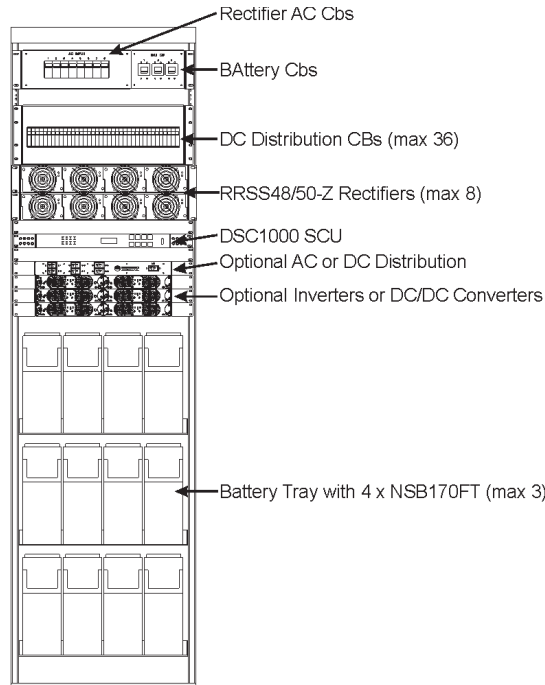
AC Input	
Input Phase	1-phase or 3-phase
Voltage Range	170-264VAC phase to phase or phase to neutral
Frequency Range	47-63 Hz
Power Factor	Greater than 0.98
Input Protection	25A, 2-pole breaker, each rectifier
Rated Current	100A input each 3-phase line

DC Input	
Nominal Voltage	-48V
Float Voltage Set-point	-54.4V
Voltage Adjustment Range	-46 to -57V (controlled by DSC1000)
Maximum System Current	X410R - 400A, (8 rectifiers max. in two 2U shelves) X610R - 600A, (12 rectifiers max. in three 2U shelves)
Rectifier Rated Current	50A
Load Bus & Rectifier Bus Metering	X410R - 50mV, 400A shunt for each X610R - 50mV, 600A shunt for each

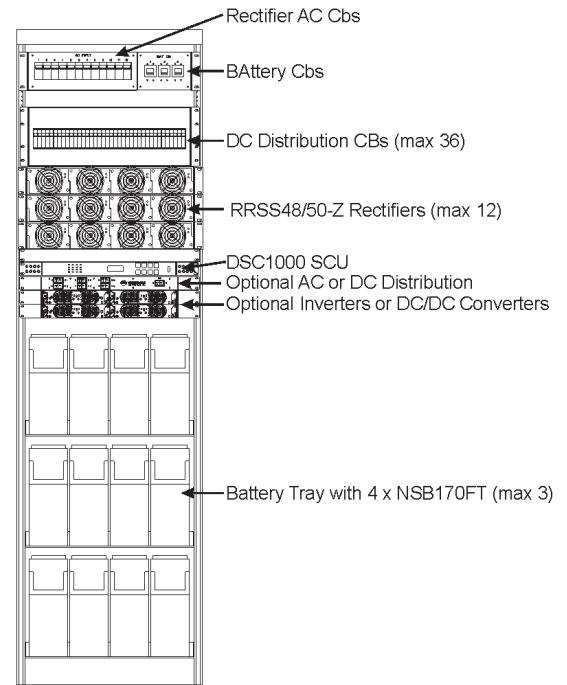
Environment	
Ambient Temperature	0 to 70°C, derating 2.5%/°C from 50-70°C (not including batteries)
Humidity	Less than 95% Non-condensing
Cooling	Fan cooling in each rectifier and optional Inverters & DC/DC Converters



Side View
(shown with cladding removed)



X410R



X610R

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