

## ULTRA-COMPACT 48V, 24V and 12V INTEGRATED DC POWER SYSTEMS



### DESCRIPTION

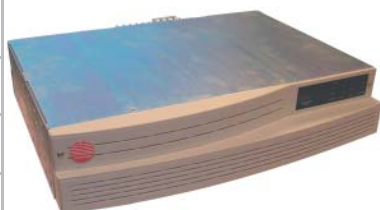
#### KEY FEATURES

- ◆ Compact, 2RU High
- ◆ Fully Integrated System
- ◆ Hot-Swap Rectifier Modules
- ◆ Remote Access Controller
- ◆ Up to 100A at +13.6VDC
- ◆ Up to 99A at +27.2VDC
- ◆ Up to 66A at -54.4VDC
- ◆ Flexible Configuration
- ◆ Quick-Connect Terminals
- ◆ Wide Range AC Input

#### SAFETY STANDARDS

UL60950-1  
CSA22.2 No. 60950-1  
EN60950-1

#### TWO-YEAR WARRANTY



Gravitas X100 is an ultra-compact, integrated, DC power system. It consists of up to three high power-density, hot-swap rectifier modules which can produce up to 66 amperes at -54.4VDC, 99 amperes at +27.2VDC or 100 amperes at +13.6VDC. In 2+1 redundant operation the output current is up to 44 amperes at -54.4VDC, 66 amperes at +27.2VDC or 100 amperes at +13.6VDC.

The system has a configurable DC distribution panel with options of up to 10 load circuits protected either by GMT fuses or circuit breakers. Two battery breakers and a low-voltage battery disconnect are included as standard. The system also has a temperature probe for temperature compensated output from the rectifiers and an optional second probe can be used to monitor external temperature.

The intelligent control and supervisory unit communicates directly with the rectifiers to monitor and control their function. The system can be controlled by software from a remote PC via the Ethernet LAN port, using an on-board WEB server which can be accessed by any standard Java enabled WEB browser.

The complete Gravitas X100 is only 2RU high (3.47inches or 88.1mm) and is easily installed by a qualified technician. All connections are at the rear to terminal blocks. The unit may be mounted in a 19 or 23 inch rack.

## GRAVITAS X100 SUMMARY FEATURES

- ◆ Hot-Swap Rectifiers
- ◆ Universal AC Input
- ◆ Power Factor Corrected
- ◆ Up to 66A at -54.4VDC
- ◆ Up to 99A at +27.2VDC
- ◆ Up to 100A at +12VDC
- ◆ 2+1 Redundant Operation
- ◆ 2 Battery Strings
- ◆ 2 Battery String Breakers
- ◆ Flexible Distribution
- ◆ LV Battery Disconnect
- ◆ Intelligent Controller
- ◆ Ethernet Communication
- ◆ SNMP Alarm Option
- ◆ Quick, Easy Installation
- ◆ Modular Design
- ◆ Only 2RU (3.47 Inches) High
- ◆ 19- or 23-Inch Rack Mounting

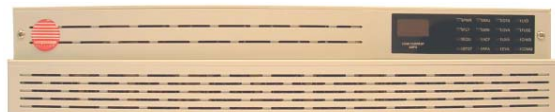
### SYSTEM CAPABILITY

CAPABILITY	X100-48	X100-24	X100-12
System Voltage	-54.4VDC	+27.2VDC	+13.6VDC
System Max. Current	66A	99A	100A
System Current, 2+1	44A	66A	50A
No. of Rectifiers, Max.	3	3	2
Battery String Breakers Low Voltage Disconnect <sup>1</sup>	2 Standard Standard		
Total No. DC Loads, Max. Option A - miniature breakers Option B - GMT fuses Option C - bulk feed breakers	10 1-30A x 8 0.5A-12A x 10 1-50A x 4		
Controller Features Alarm Outputs External Digital Inputs Temp. Compensation <sup>2</sup>	4 1 Standard		
Communications Ethernet TCP/IP SNMP	Standard Optional		
Shelf Height	2RU		
Mounting Width, Inches <sup>3</sup>	19		

### RECTIFIER MODULES

MODULE MODEL NO.	OUTPUT VDC	OUTPUT AMPS	NO. SYST. MODULES	MAX. SYST. AMPS	NO. N+1 MODULES	N+1 SYST. AMPS	INPUT VAC
RPCP48/22-Z	-54.4VDC	22	3	66	3	44	90-264
RPCM48/15-Z	-54.4VDC	15	3	45	3	30	85-264
RPCP24/33-Z	+27.2VDC	33	3	99	3	66	85-264
RPCM24/25-Z	+27.2VDC	25	3	75	3	50	85-264
RPCP12/50-Z	+13.6VDC	50	2	100	2	50	85-264
RPCM12/45-Z	+13.6VDC	45	2	90	2	45	85-264

### X100 FRONT VIEW WITH FASCIA PANEL FITTED



#### NOTES:

1. Battery disconnect.
2. One Temperature probe supplied as standard.
3. 23-Inch mounting brackets can be supplied.

## RECTIFIER MODULE SPECIFICATIONS

### INPUT

Voltage Range  
 RPCP48/22 \_\_\_\_\_ 90-264VAC  
 All other models \_\_\_\_\_ 85-264VAC  
 Power Factor \_\_\_\_\_ 0.98  
 Total Harmonic Distortion, Max. \_\_\_\_\_ 5%  
 Frequency \_\_\_\_\_ 47-63Hz  
 Inrush Current Limiting \_\_\_\_\_ 50A Peak  
 EMI Filter, Conducted \_\_\_\_\_ FCC20780 pt. 15J Curve B  
 \_\_\_\_\_ EN55022 Curve B  
 Input Immunity, Conducted  
 Fast Transients, Line-Line  $\pm 2$ kV (EN61000-4-4 Level 3)  
 Surges, Line-Line \_\_\_\_\_  $\pm 1$ kV (EN61000-4-5 Level 2)  
 Surges, Line-Ground \_\_\_\_\_  $\pm 2$ kV (EN61000-4-5 Level 3)

### OUTPUT

Output Voltage Set, Adjustment Range  
 48V out \_\_\_\_\_ 54.4VDC, 45-58VDC  
 24V out \_\_\_\_\_ 27.2VDC, 22.5-29VDC  
 12V out \_\_\_\_\_ 13.6VDC, 11.14.5VDC  
 Output Current \_\_\_\_\_ See Table  
 Total Regulation, Max. \_\_\_\_\_ 1.0%  
 Holdup Time \_\_\_\_\_ 20msec  
 Overvoltage Protection  
 48V Out \_\_\_\_\_ 59V  
 24V Out \_\_\_\_\_ 29V

12V Out \_\_\_\_\_ 14.5V  
 Filtering: Wideband Noise, 20Mhz BW  
 48V Out, P-P \_\_\_\_\_ 500mV  
 24V Out, P-P \_\_\_\_\_ 250mV  
 12V Out, P-P \_\_\_\_\_ 125mV  
 Voice Band Noise \_\_\_\_\_ <32dBmC  
 Current Limit \_\_\_\_\_ 105% Rated Current  
 Efficiency \_\_\_\_\_ 82-87%

### SAFETY STANDARDS

UL 1950, CSA22.2-950, EN60950

### STATUS INDICATORS

AC Good \_\_\_\_\_ Green LED  
 DC Good \_\_\_\_\_ Green LED

### ENVIRONMENTAL

Operating Temp. Range \_\_\_\_\_ -20°C to +70°C  
 Output Current Derating \_\_\_\_\_ 2.5%/°C, 50°C to 70°C  
 Storage Temp. Range \_\_\_\_\_ -40°C to + 85°C  
 Humidity \_\_\_\_\_ 0% to 95%, Non-Condensing  
 ESD \_\_\_\_\_ Bellcore GR-1089-Core and EN61000-4-2  
 Cooling \_\_\_\_\_ Internal Fans  
 Weight (excluding rectifiers) \_\_\_\_\_ 18.7lbs (8.5Kg)

## CONTROLLER FUNCTIONS & FEATURES

### PRIMARY FUNCTIONS

- ◆ Controls System Rectifiers
- ◆ Controls Low Voltage Disconnect
- ◆ Monitors System Operating Parameters
- ◆ Provides System Alarms
- ◆ Provides Remote Access

### VISUAL DISPLAYS

- ◆ 16 LED Indicators
- ◆ 7 Segment LED Display of Load Current
- ◆ PC WEB page via Ethernet TCP/IP

### RECTIFIER CONTROL FUNCTIONS

- ◆ Battery Float Voltage
- ◆ Battery Equalise Voltage
- ◆ Battery Voltage Temp. Compensation

### RECTIFIER MONITORING DATA

- ◆ AC OK (Input)
- ◆ DC OK (Output)
- ◆ Internal Temperature / Thermal Warning
- ◆ Running
- ◆ Inventory Data

### MAJOR SYSTEM PARAMETERS DISPLAYED

- ◆ Bus Voltage
- ◆ Battery Current
- ◆ Rectifier Current
- ◆ Load Current
- ◆ Battery, External and Internal Temperatures

### ALARM PARAMETERS

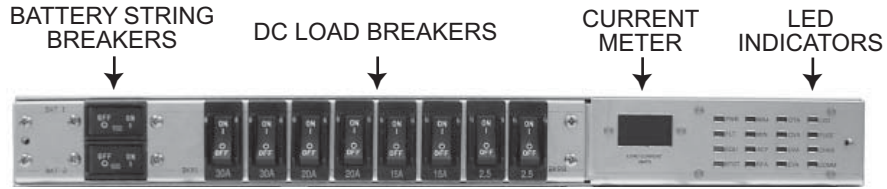
- ◆ Overvoltage
- ◆ Undervoltage
- ◆ End Voltage
- ◆ Battery Overtemperature
- ◆ External Overtemperature
- ◆ Internal Overtemperature
- ◆ Break/Fuse/Digital Input
- ◆ Rectifier Failure
- ◆ AC Power Failure
- ◆ LVD Failure

### ALARM OUTPUTS

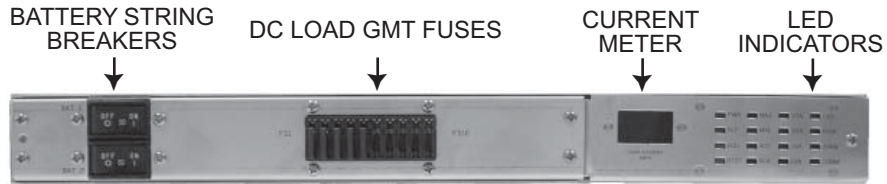
- ◆ 4 x Form-C Relay Contacts
- ◆ LED Matrix
- ◆ E-mail
- ◆ SNMP (Optional)

## DISTRIBUTION & CONTROLLER SECTION

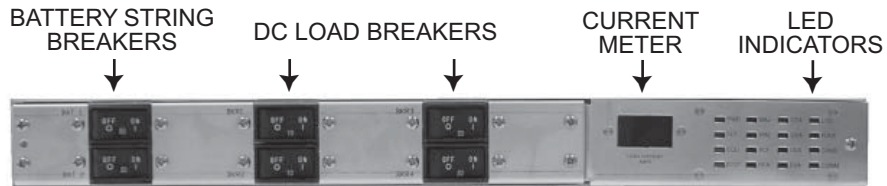
### OPTION A - MINIATURE CIRCUIT BREAKERS



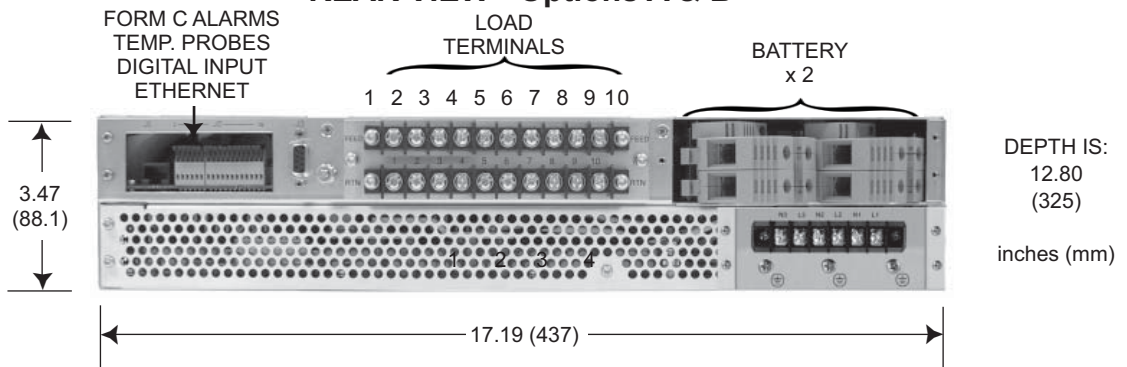
### OPTION B - GMT FUSES



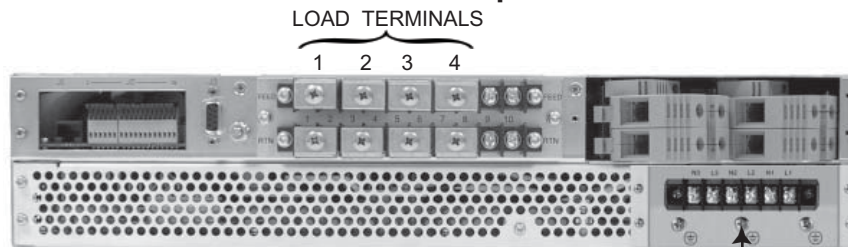
### OPTION C - BULK FEED CIRCUIT BREAKERS



### REAR VIEW - Options A & B



### REAR VIEW - Option C



### J2 CONNECTIONS

Term.	Function	Term.	Function
1	Batt. Temp. Probe +	10	Min. Alarm N/O
2	Batt. Temp. Probe -	11	Min. Alarm Common
3	Ext. Temp. Probe +	12	Min. Alarm N/C
4	Ext. Temp. Probe -	13	K3 Alarm N/O
5	Aux. 3 Contact	14	K3 Alarm Common
6	Aux. 3 Contact	15	K3 Alarm N/C
7	Maj. Alarm N/O	16	K4 Alarm N/O
8	Maj. Alarm Common	17	K4 Alarm Common
9	Maj. Alarm N/C	18	K4 Alarm N/C

AC INPUT TERMINALS  
ONE SET PER RECTIFIER

## CONFIGURATION GUIDE

SYSTEM MODEL NO.	SYSTEM OUTPUT, MAX.	INPUT, VAC	RECTIFIER MODULES	NO. MODULES ORDERED
<input type="checkbox"/> X100-48/66	-48VDC@66A	90-264VAC	RPCP48/22-Z	_____
<input type="checkbox"/> X100-48/45	-48VDC@45A	85-264VAC	RPCM48/15-Z	_____
<input type="checkbox"/> X100-24/99	+24VDC@99A	85-264VAC	RPCP24/33-Z	_____
<input type="checkbox"/> X100-24/75	+24VDC@75A	85-264VAC	RPCM24/25-Z	_____
<input type="checkbox"/> X100-12/100	+12VDC@100A	85-264VAC	RPCP12/50-Z	_____
<input type="checkbox"/> X100-12/90	+12VDC@90A	85-264VAC	RPCM12/45-Z	_____

Check the System Model No. and indicate the number of Rectifier Modules ordered, including spares. Maximum number of operating rectifier modules for 48V or 24V systems is three and for 12V systems is two.

### DC DISTRIBUTION OPTIONS

- OPTION A:** Up to 8 Breakers Total, maximum 30A each.
 

1. Breaker ___ A, code ___	5. Breaker ___ A, code ___
2. Breaker ___ A, code ___	6. Breaker ___ A, code ___
3. Breaker ___ A, code ___	7. Breaker ___ A, code ___
4. Breaker ___ A, code ___	8. Breaker ___ A, code ___
- OPTION B:** Up to 10 GMT Fuses Total
- OPTION C:** Up to 4 Bulk Breakers Total, maximum 50A each.
 

1. Breaker ___ A, code ___	3. Breaker ___ A, code ___
2. Breaker ___ A, code ___	4. Breaker ___ A, code ___

### BREAKERS & FUSES AVAILABLE

**Breakers:** 1A(F), 2.5A(G), 5A(H), 10A(I), 15A(J), 20A(K), 25A(L), 30A(M), 40A(N), & 50A(O) (Enter rating and code in option A or C above.)

**GMT Fuses for Option B:** Enter the number required. Maximum total current is 80A.

AMPS	BUSSMAN NO.	COLOR	NO. REQ'D	AMPS	BUSSMAN NO.	COLOR	NO. REQ'D
0.5A	GMT - 1/2	Red		3	GMT - 3	Blue	
0.75	GMT - 3/4	Brown		5	GMT - 5	Green	
1	GMT - 1	Gray		10	GMT - 10	Red-White	
1.33	GMT - 1 1/3	White		12	GMT - 12	Green-Yel	
2	GMT - 2	Orange		0	GMT - Dummy	Orange	

### OPTIONS

- Additional Temperature Probe (One supplied as standard)
- SNMP - Simple Network Management Protocol

A configuration Model Number in the below format will be issued based on the completed configuration guide, which should be returned to the relevant sales office.

Option A: **X100-vv/iii-r-Abbbbbb-ST**

Option B: **X100-vv/iii-r-B-ST**

Option C: **X100-vv/iii-r-Cbbbb-ST**

Key:

vv = voltage, iii = current, r = # rectifiers fitted.

b = breaker code (insert 'X' if not fitted).

S = SNMP option fitted. (add as suffix)

T = additional Temp. probe supplied. (add as suffix)

Note that Fuses (Option B) are always supplied as separate items.  
Rectifiers may be included or supplied separately.

x100-ds-revM-02-12-09.indd