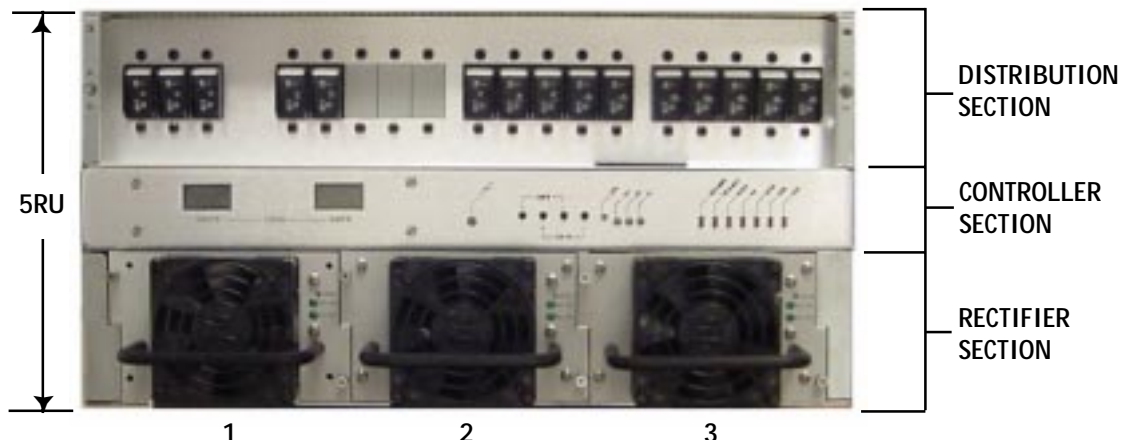


## COMPACT INTEGRATED DC POWER SYSTEM



### KEY FEATURES

- ◆ Compact, 5RU High
- ◆ Fully Integrated System
- ◆ Flexible Configuration
- ◆ Hot-Swap Rectifier Modules
- ◆ -48 or +24VDC, Up to 150A
- ◆ Easy Installation

### SAFETY CERTIFICATIONS

| AGENCY | STANDARD         |
|--------|------------------|
| UL     | UL1950           |
| CUL    | CSA22.2, No. 950 |
| DEMKO  | EN60950          |

### TWO-YEAR WARRANTY



### DESCRIPTION

Gravitas X150 is a compact, integrated, DC power system. It consists of up to three high power-density, hot-swap rectifier modules which can produce 75 amperes at -48VDC, 150 amperes at -48VDC or 150 amperes at +24VDC, depending on system configuration. In a 2+1 redundant operation the output currents are 50, 100 and 100 amperes, respectively.

The system has a DC distribution panel with up to 10 load circuits which are protected by circuit breakers, GMT fuses or a combination of the two. Three Also optional is a low-voltage battery disconnect. Battery breakers for up to three battery strings can be provided.

There are two choices for the system controller. A basic controller has LED visual alarms, Form C relay alarms, test points and set-point adjustments including over- and under-voltage adjustments. There is a temperature compensation option and digital voltage and current display option. An optional intelligent controller provides all these features in keyboard format with an alphanumeric display and remote data access options.

The complete Gravitas X150 is only 5RU high (8.65 inches or 220mm) and is easily installed by a qualified technician. All connections are at the rear to DIN-rail terminal blocks. A comprehensive operating manual explains all the details of operation and installation. The units may be mounted in 19- or 23-inch racks.

## GRAVITAS X150 SUMMARY FEATURES

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>◆ Choice of Hot-Swap Rectifiers</li> <li>◆ 120 or 230VAC Input</li> <li>◆ Power Factor Corrected</li> <li>◆ AC Line Breakers Option</li> <li>◆ Class B EMI Input Filter</li> <li>◆ Up to 150A at -48 or +24VDC</li> <li>◆ Up to 100A for 2+1 Redundant</li> <li>◆ Up to 10 DC Circuit Breakers or Fuses</li> <li>◆ Up to 3 Battery Strings</li> </ul> | <ul style="list-style-type: none"> <li>◆ Up to 3 Battery String Breakers</li> <li>◆ LV Battery Disconnect Option</li> <li>◆ Basic or Intelligent Controller</li> <li>◆ Communication Options</li> <li>◆ Distribution Section Cover</li> <li>◆ Distribution Section Wallet</li> <li>◆ Quick, Easy Installation</li> <li>◆ Modular Design</li> <li>◆ Only 5RU (8.65 Inches) High</li> </ul> |
|--|---|

### SYSTEM MODEL NO.

| SYSTEM CAPABILITY                   | X150-48R/150 | X150-48R/75 | X150-48M/75 | X150-24R/150 | X150-24M/150 |
|-------------------------------------|--------------|-------------|-------------|--------------|--------------|
| System Voltage                      | -48VDC       | -48VDC      | -48VDC      | +24VDC       | +24VDC       |
| System Max. Current                 | 150A         | 75A         | 75A         | 150A         | 150A         |
| System Current, 2+1                 | 100A         | 50A         | 50A         | 100A         | 100A         |
| Input Range, VAC                    | 170-264      | 85-264      | 170-264     | 85-264       | 170-264      |
| Rectifier Model                     | RRS48/50     | RRP48/25    | RMP48/25    | RRP24/50     | RMP24/50     |
| Rectifiers Required                 | 3            | 3           | 3           | 3            | 3            |
| Input Breakers, AC <sup>1</sup>     | 3 optional   | 3 optional  | 3 optional  | 3 optional   | 3 optional   |
| Battery String Breakers             | 2 standard   | 1 standard  | 1 standard  | 2 standard   | 2 standard   |
| Extra Breaker                       | 1 optional   | 1 optional  | 1 optional  | 1 optional   | 1 optional   |
| Low Voltage Disconnect <sup>2</sup> | optional     | optional    | optional    | optional     | optional     |
| Total No. of DC Loads <sup>3</sup>  | 10           | 10          | 10          | 10           | 10           |
| 1-50A Breakers                      | 4            | 4           | 4           | 4            | 4            |
| 1-20A Breakers                      | 6            | 6           | 6           | 6            | 6            |
| ½-12A GMT Fuses                     | 10           | 10          | 10          | 10           | 10           |
| Control Features                    |              |             |             |              |              |
| Alarm Outputs                       | 7 standard   | 7 standard  | 7 standard  | 7 standard   | 7 standard   |
| Temp. Compensation                  | optional     | optional    | optional    | optional     | optional     |
| Communications                      |              |             |             |              |              |
| LAN                                 | optional     | optional    | optional    | optional     | optional     |
| Modem                               | optional     | optional    | optional    | optional     | optional     |
| Local RS232                         | optional     | optional    | optional    | optional     | optional     |
| Rack Height                         | 5RU          | 5RU         | 5RU         | 5RU          | 5RU          |
| Rack Width, Inches <sup>4</sup>     | 19           | 19          | 19          | 19           | 19           |

- NOTES: 1. One per rectifier module.  
 2. Battery disconnect.  
 3. May total 12 if no battery string breakers are used. Check with factory.  
 4. 23-Inch mounting brackets can be supplied.



X150 SYSTEM WITH COVER

## RECTIFIER MODULES

|                        | MODULE MODEL NO. |          |          |          |          |
|------------------------|------------------|----------|----------|----------|----------|
| SPECIFICATIONS         | RRS48/50         | RRP48/25 | RMP48/25 | RRP24/50 | RMP24/50 |
| Output Voltage, Nom.   | 48VDC            | 48VDC    | 48VDC    | 24VDC    | 24VDC    |
| Output Voltage, Set    | 54.4V            | 54.4V    | 54.4V    | 27.2V    | 27.2V    |
| Output Voltage Range   | 45-58V           | 45-58V   | 45-58V   | 22.5-29V | 22.5-29V |
| Output Current, Max.   | 50A              | 25A      | 25A      | 50A      | 50A      |
| Output Watts, Max.     | 2,720            | 1,360    | 1,360    | 1,360    | 1,360    |
| Input Range, VAC       | 170-264          | 85-264   | 170-264  | 85-264   | 170-264  |
| Input Power Factor     | 0.98             | 0.98     | 0.99     | 0.98     | 0.99     |
| Input Current, 230VAC  | 14.2A            | 7.1A     | 7.1A     | 7.1A     | 7.1A     |
| 120VAC                 | -                | 13.6A    | -        | 13.6A    | -        |
| Inrush Current Limit   | 25A Pk.          | 25A Pk.  | 50A Pk.  | 25A Pk.  | 50A Pk.  |
| Input Frequency, Hz    | 47-63            | 47-63    | 47-63    | 47-63    | 47-63    |
| Efficiency             | 87%              | 87%      | 87%      | 85%      | 85%      |
| Total Regulation, Max. | 1.0%             | 1.0%     | 1.0%     | 1.0%     | 1.0%     |

### RECTIFIER MODULE SPECIFICATIONS

#### INPUT

Voltage Range \_\_\_\_\_ 85-264 or 170-264VAC  
 Power Factor \_\_\_\_\_ 0.98 or 0.99  
 Total Harmonic Distortion, Max. \_\_\_\_\_ 5%  
 Frequency \_\_\_\_\_ 47-63Hz  
 Inrush Current Limiting \_\_\_\_\_ 25 or 50A Peak  
 EMI Filter, Conducted \_\_\_\_\_ FCC20780 pt. 15J Curve B  
 \_\_\_\_\_ EN55022 Curve B

#### Input Immunity, Conducted

Fast Transients, Line-Line ±2kV (EN61000-4-4 Level 3)  
 Surges, Line-Line \_\_\_\_\_ ±1kV (EN61000-4-5 Level 2)  
 Surges, Line-Ground \_\_\_\_\_ ±2kV (EN61000-4-5 Level 3)

#### OUTPUT

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

#### Filtering: Wideband Noise, 20Mhz BW

48V Out, P-P \_\_\_\_\_ 500mV  
 24V Out, P-P \_\_\_\_\_ 250mV  
 Voice Band Noise \_\_\_\_\_ <32dBmC  
 Current Limit \_\_\_\_\_ 105% Rated Current  
 Efficiency \_\_\_\_\_ 85-87%

#### SAFETY STANDARDS UL 1950, CSA22.2-950, EN60950

#### STATUS INDICATORS

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

#### ENVIRONMENTAL

Operating Temp. Range \_\_\_\_\_ 0°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

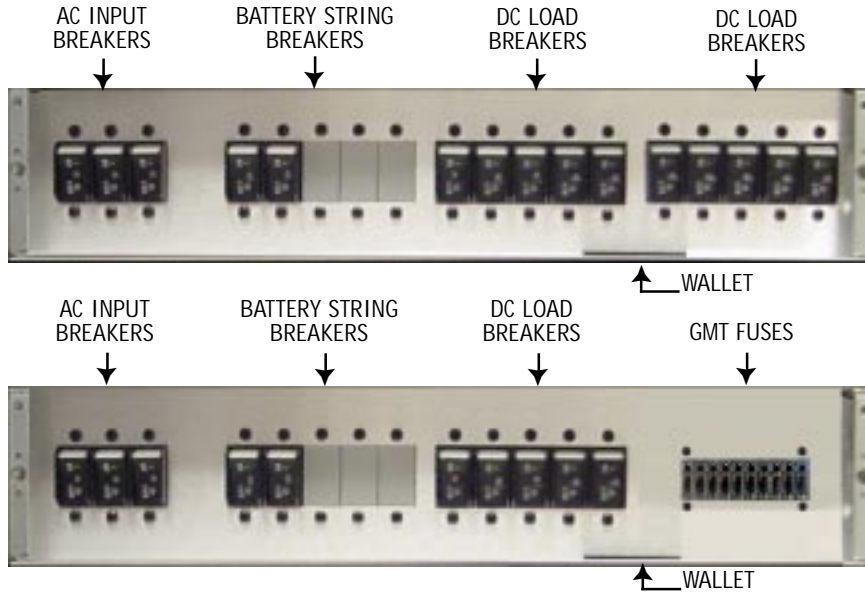
### BASIC CONTROLLER (Standard)

This basic controller controls the system rectifier, monitors the system parameters and has alarms for system failures. There are seven red LED alarms which also have Form C relay outputs to indicate a failure: Rectifier-Major, Rectifier-Minor, AC Input, Fuse or Circuit Breaker, Low Voltage Disconnect, Overvoltage and Undervoltage. Four front-panel voltage-set adjustments are for Float Voltage, Battery Overvoltage, Battery Undervoltage and Temperature Compensation. Test points for load voltage and current permit external measurement of these values. Options for this controller include digital meters for continuously monitoring battery voltage and load current and a temperature probe which provides a temperature compensated output from the rectifier.

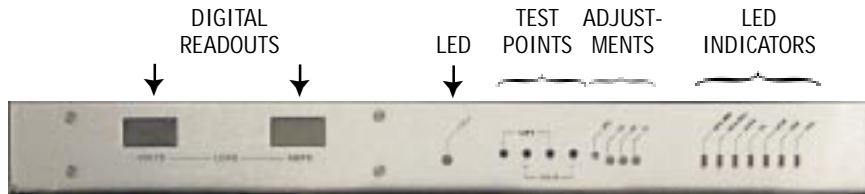
### INTELLIGENT CONTROLLER (Option)

This full-featured controller is a control and supervisory unit that communicates directly with the rectifier to monitor and control its function. The digital controller features a keypad and a back-lit 2x24 character alphanumeric display. All system parameters can be controlled by the keypad. Alternatively, the system can be controlled by software from a remote PC by means of a standard RS232 port or via an optional modem or Ethernet LAN. This controller also has an optional temperature probe for temperature compensated output from the rectifier.

### DISTRIBUTION SECTION



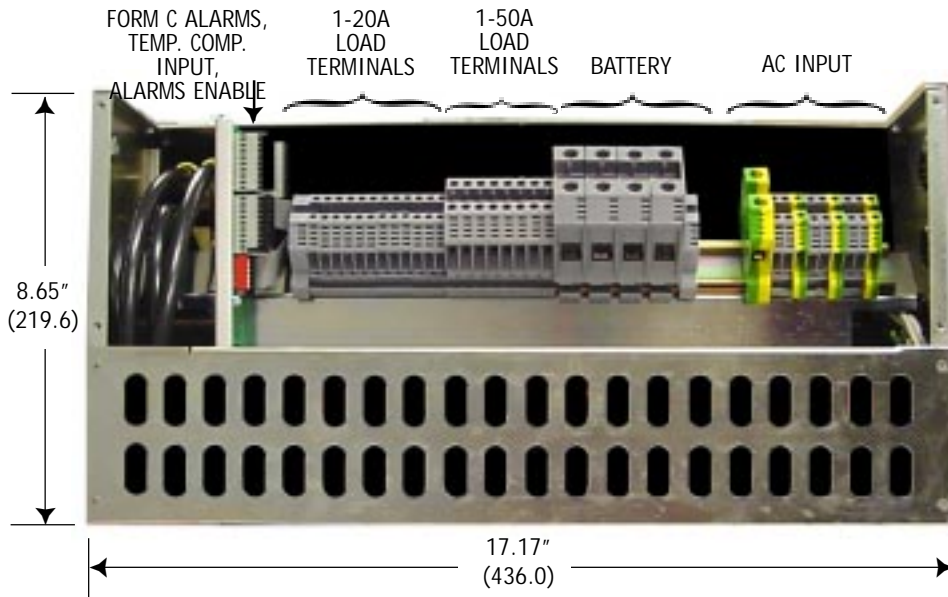
### CONTROLLER SECTION BASIC CONTROLLER



### INTELLIGENT CONTROLLER



### REAR VIEW



## CONFIGURATION GUIDE

| SYSTEM MODEL NO.                      | SYSTEM OUTPUT, MAX. | INPUT, VAC | RECTIFIER MODULES | NO. MODULES ORDERED |
|---------------------------------------|---------------------|------------|-------------------|---------------------|
| <input type="checkbox"/> X150-48R/150 | -48VDC@150A         | 170-264VAC | RRS48/50          | ___                 |
| <input type="checkbox"/> X150-48R/75  | -48VDC@75A          | 85-264VAC  | RRP48/25          | ___                 |
| <input type="checkbox"/> X150-48M/75  | -48VDC@75A          | 170-264VAC | RMP48/25          | ___                 |
| <input type="checkbox"/> X150-24R/150 | +24VDC@150A         | 85-264VAC  | RRP24/50          | ___                 |
| <input type="checkbox"/> X150-24M/150 | +24VDC@150A         | 170-264VAC | RMP24/50          | ___                 |

Check the System Model No. desired and indicate the number of Rectifier Modules ordered, including spares. Maximum number of operating rectifier modules per system is three.

### INPUT PROTECTION (OPTION)

Circuit Breakers (1 per Rectifier)

### BATTERY PROTECTION

- 1 Battery String Breaker (Standard for 75A Output)
- 2 Battery String Breakers (standard for 150A Output)
- 1 Extra Battery String Breaker (Option)
- Low-Voltage Battery Disconnect (Option)

### DC DISTRIBUTION (OPTIONS)

- OPTION A:** Up to 10 Breakers Total
 

|                          |                          |                           |
|--------------------------|--------------------------|---------------------------|
| 1. Breaker ___ A (1-50A) | 5. Breaker ___ A (1-20A) | 9. Breaker ___ A (1-20A)  |
| 2. Breaker ___ A (1-50A) | 6. Breaker ___ A (1-20A) | 10. Breaker ___ A (1-20A) |
| 3. Breaker ___ A (1-50A) | 7. Breaker ___ A (1-20A) |                           |
| 4. Breaker ___ A (1-50A) | 8. Breaker ___ A (1-20A) |                           |
- OPTION B:** Up to 10 GMT Fuses & Up to 4 Breakers (Total of 10 Max.)
 

|  |                          |  |  |
|--|--------------------------|--|--|
| 1. 10-Position GMT Fuse Block (Standard, 80A Max.) |                          |  |  |
| 2. Breaker ___ A (1-50A)                           | 4. Breaker ___ A (1-50A) |  |  |
| 3. Breaker ___ A (1-50A)                           | 5. Breaker ___ A (1-50A) |  |  |

### BREAKERS & FUSES AVAILABLE

**Breakers:** 1, 2.5, 5, 10, 15, 20, 25, 30, 40, & 50A (Enter in Option A or B)

**GMT Fuses:** Order 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    |           |

### CONTROLLER & OPTIONS

- Basic Controller (Standard)
  - Temperature Compensation (Option)
  - Digital Voltage & Current Displays (Option)
- Intelligent Controller with Keypad, Display and RS232 (Option)
  - Remote Access Modem (Option)
  - Remote Access Ethernet, LAN (Option)
  - Temperature Compensation (Option)

### BLANK COVERS (FOR UNUSED RECTIFIER SLOTS)

Cover Position:  1  2  3 (left to right)

### MOUNTING BRACKETS

19-Inch  23-Inch