gravitas X75
ENERGY SYSTEMS

UNIPOWER

1RU HIGH 48V, 24V and 12V INTEGRATED DC POWER SYSTEMS

GRAVITAS X75 BASE SYSTEM

KEY FEATURES

- 1RU High Base System
- 1RU High Expander Shelf
- Remote Monitoring & Control
- Fully Integrated System
- Hot-Swap Rectifier Modules
- Up to 72A at -54.4VDC
- Up to 75A at +27.2VDC
- Up to 75A at +13.6VDC
- Wide Range AC Input
- Up to 10 DC Load Circuits
- Quick and Easy Installation

SAFETY CERTIFICATIONS

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

TWO-YEAR WARRANTY

c UL us E210994

CE LVD2006/95/EC
EMC2004/108/EC
ROHS2011/65/EU

RoHS

DESCRIPTION

Gravitas X75 is an ultra-compact, integrated DC power system. The base system is a 1RU shelf holding up to three hot-swap rectifier modules. This system produces up to 1958 watts output at -54.4, +27.2 or +13.6VDC. It can also be operated as a 2+1 redundant system with up to 1305 watts output. The expanded system consists of a base shelf plus an expander shelf with a 2RU total height. This system holds up to six rectifier modules with up to 3916 watts output; it can be operated as a 5+1 redundant system with up to 3264 watts output. Each rectifier module is cooled by a fan that operates at a speed which is a function of load and temperature.

There are up to five circuit-breaker protected DC outputs or up to 10 GMT fuse protected outputs on the base system. A battery string breaker and a low-voltage battery disconnect are standard features. The expander shelf comes with a ribbon cable and connectors to link the signals between the two units at their rear panels. It also comes with bus bar links to parallel the rectifier output bus bars.

The system can also be operated as a battery backup, single feed power system (without load circuit breakers or fuses).

The remote access controller monitors the system parameters and has alarms for system failures. There are six red LED alarms which indicate a failure: Major Alarm, Minor Alarm, Rectifier Alarm, AC Input Alarm, Over temperature Alarm and Overvoltage Alarm. A green LED indicates that the controller is operating. Four Form C relay outputs give alarms: Major Alarm, Minor Alarm, Rectifier Alarm and AC Input Alarm. The controller is programmed by means of a remote PC web page display. Communication is by Ethernet LAN with SNMPv3 with alarm trapping. It also has provision for temperature compensated charging of an external battery using a supplied TC probe.

GRAVITAS X75 SUMMARY FEATURES

- -48, +24, or +12VDC Rectifiers
- Hot-Swap Rectifiers Modules
- Power Factor Corrected
- Class B EMI Input Filter
- Base and Expander Shelves
- N+1 Redundant Operation
- Up to 10 DC Load Circuits
- Circuit Breakers or GMT Fuses
- Battery String Breaker
- LV Battery Disconnect
- Remote Monitoring & Control
- Quick, Easy Installation
- 19 or 23-Inch Rack Mounting
- SNMPv3 with Alarm Traps

GRAVITAS X75 CAPABILITY GUIDE

SYSTEM CAPABILITY

SYSTEM CAPABILITY	X75-48		X75-24		X75-12	
	BASE SYSTEM	EXPANDED SYSTEM	BASE SYSTEM	EXPANDED SYSTEM	BASE SYSTEM	EXPANDED SYSTEM
System Voltage System Max. Current System Current, N+1 Redundant	-54.4VDC 36.0A 24.0A	-54.4VDC 72.0A 60.0A	+27.2VDC 55.2A 36.8A	+27.2VDC 75.0A 73.5A	+13.6VDC 75.0A 66.0A	NOT AVAILABLE
No. of Rectifiers, Max.	3	6	3	5	3	
Battery String Breaker Low Voltage Disconnect	Standard Standard					
Total No. DC Loads, Max. Option A - miniature breakers Option B - GMT fuses	10 1-30A x 5 0.5A-12A x 10					
Controller Features Alarm Outputs External Digital Inputs Temp. Compensation	 4 1 Standard					
Communications Ethernet TCP/IP SNMPv3	 Standard Standard					
Shelf Height	1RU, Base Shelf and Expansion Shelf					
Mounting Width, Inches	19 or 23 (universal reversible mounting brackets)					

Notes:

1. The expander shelf allows up to 3 additional rectifier modules to be connected to the rectifier bus for additional power capability. The rectifiers are paralleled to the system bus via bus bars and expansion interface connections.
2. For applications not requiring battery support consult UNIPOWER sales office about using Front-End power modules instead of rectifier modules.

RECTIFIER MODULES vs. SYSTEM CAPACITIES

MODULE MODEL NO.	OUTPUT VDC	OUTPUT AMPS	NO. SYST. MODULES		MAX. SYST. AMPS		NO. N+1 MODULES		N+1 SYST. AMPS	
			BASE	EXP.	BASE	EXP.	BASE	EXP.	BASE	EXP.
RSJ48/12-Z	-54.4VDC	12.0	3	6	36.0	72.0	2+1	5+1	24.0	60.0
RSG48/10-Z	-54.4VDC	10.1	3	6	30.3	60.6	2+1	5+1	20.2	50.5
RSF48/7-Z	-54.4VDC	7.4	3	6	22.2	44.4	2+1	5+1	14.8	37.0
RSG24/18-Z	+27.2VDC	18.4	3	5	55.2	75.0	2+1	4+1	36.8	73.6
RSF24/13-Z	+27.2VDC	12.9	3	5	38.7	75.0	2+1	4+1	25.8	51.6
RSG12/33-Z	+13.6VDC	33.0	3		75.0		2+1		66.0	
RSF12/22-Z	+13.6VDC	22.1	3		66.3		2+1		44.2	

RECTIFIER MODULE SPECIFICATIONS

INPUT

Voltage Range	See Model Table
Power Factor	>0.99
Total Harmonic Distortion, Max.	5%
Frequency	47-63Hz
Inrush Current Limiting, Max.	30A Peak
EMI Filter, Conducted	FCC20780 pt. 15J Curve B
	EN55022 Curve B
Fast Transients	EN61000-4-4
Surges	EN61000-4-5
Remote Adjust	0 to +5V
Input Protection [1]	Internal Fuse, 10A

OUTPUT

Current & Voltage	See Model Table
Output Power	300-653W
Voltage Adjustment Range	±5%
Standby Output	+5V@250mA
Line & Load Regulation, Max.	2%
Holdup Time	10msec.
Overvoltage Protection	Latch Off
Filtering: Wideband Noise, 20MHz BW [2]	
48V/54.4V	500mV pk-pk
24V/27.2V	250mV pk-pk
12V/13.6V	125mV pk-pk
Current Limit	105-110% Rated Current
Efficiency [3]	85-90%

SAFETY CERTIFICATIONS UL60950-1 2nd Ed., CSA22.2 No. 60950-1 2nd Ed., EN60950-1 2nd Ed.

STATUS INDICATORS

AC GOOD	Green LED
DC GOOD	Green LED

ALARM SIGNALS (Logic LO, TTL compatible)

ACOK	AC present, 5V standby operating
DCOK	DC output within -10% of nominal

SERIAL COMMUNICATIONS

I²C	Append add -Z to model number

ENVIRONMENTAL

Operating Temp. Range	-20˚C to +70˚C
	-40˚C start-up, reduced performance
Output Current Derating	2.5%/˚C, 50˚C to 70˚C
Storage Temp. Range	-40˚C to + 85˚C
Environment	Pollution Degree 2
Humidity	0% to 95%, Non-Condensing
ESD	Bellcore GR-1089-Core and EN61000-4-2
MTBF, 35ºC (Bellcore)	200,000 Hours
Cooling	Integral Ball Bearing Fan
Acoustic Noise @ 1m (module)	52-61dB

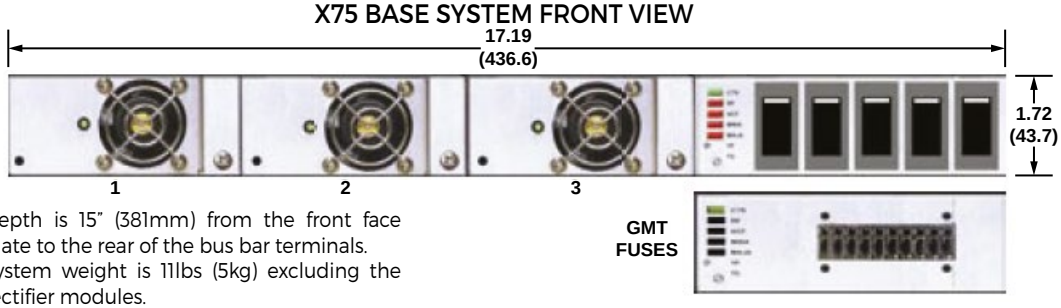
PHYSICAL SPECIFICATIONS

Case Material	Aluminum
Case Dimensions, Inches (mm)	1.6 H x 3.3 W x 11.0 D
	(40.6 x 83.8 x 279.4)
Weight	2.1 lbs. (0.95 kg.)

Notes:

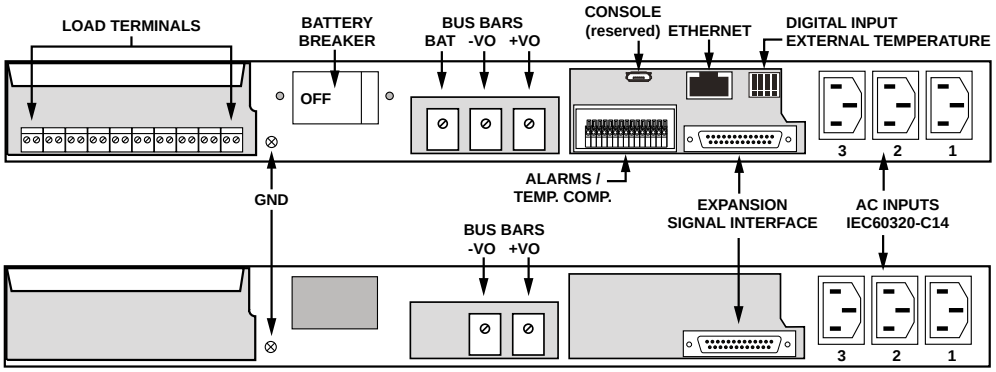
1. External protection required when operating from HVDC.
2. 20MHz bandwidth. Measure with 0.1µF ceramic and 10µF tantalum capacitors in parallel across the output.
3. Typical efficiency is at low end of range for 12V output and at high end of range for 48V output.

X75 BASE SYSTEM FRONT VIEW



Depth is 15" (381mm) from the front face plate to the rear of the bus bar terminals. System weight is 11lbs (5kg) excluding the rectifier modules.

X75 BASE SYSTEM REAR VIEW



See X75 manual for full description of I/O signals and connector pinouts.

75-ES EXPANDER REAR VIEW

MOUNTING

The X75 is designed for mounting in a 1U high space in either a 19" or a 23" rack-mount environment and is supplied as standard with dual purpose rack-mounting brackets.

SHIPPING WEIGHTS & DIMENSIONS

	Width	Height	Depth	Weight
System Unit	22 (560)	3 (76)	22 (560)	14lbs (6.4kg)
Expansion Chassis				
Rectifier Module	8 (203)	4 (102)	15 (381)	4lbs (1.8kg)

Dimensions in inches (mm)

CONFIGURATION GUIDE

1. Determine the capacity of the system desired, taking into account future expansion, then check the type of rectifier required and fill in the initial quantity to be ordered including spares. This will determine the system unit base number.

BASE SYSTEM OUTPUT, MAX.	BASE SYSTEM OUTPUT, N+1	RECTIFIER MODULES CHECK TYPE REQ.	NO. MODULES REQUIRED	SYSTEM UNIT BASE NUMBER
-54.4VDC@36.0A -54.4VDC@30.3A -54.4VDC@22.2A	-54.4VDC@24.0A -54.4VDC@20.2A -54.4VDC@14.8A	❑ RSJ48/12-Z ❑ RSG48/10-Z ❑ RSF48/7-Z	_____	X75-48
+27.2VDC@55.2A +27.2VDC@38.7A	+27.2VDC@36.8A +27.2VDC@25.8A	❑ RSG24/18-Z ❑ RSF24/13-Z	_____	X75-24
+13.6VDC@75.0A +13.6VDC@66.3A	+13.6VDC@66.0A +13.6VDC@44.2A	❑ RSG12/33-Z ❑ RSF12/22-Z	_____	X75-12

2. If the required capacity initially or in the future exceeds the capability of the base system check against the same rectifier type as above and fill in the number of additional rectifiers required. This defines that an expansion unit needs to be ordered.

TOTAL SYSTEM OUTPUT, MAX.	TOTAL SYSTEM OUTPUT, N+1	RECTIFIER MODULES CHECK TYPE REQ.	NO. MODULES REQUIRED	EXPANSION UNIT NUMBER
-54.4VDC@72.0A -54.4VDC@60.6A -54.4VDC@44.4A	-54.4VDC@60.0A -54.4VDC@50.5A -54.4VDC@37.0A	❑ RSJ48/12-Z ❑ RSG48/10-Z ❑ RGF48/7-Z	_____	X75-ES
+27.2VDC@75.0A +27.2VDC@75.0A	+27.2VDC@73.6A +27.2VDC@51.6A	❑ RSG24/18-Z ❑ RSF24/13-Z	_____	

3. Check either option A or option B for DC distribution. For option A fill in the rating and code for each breaker to be installed. For option B fill in the number of fuses for each value required including spares.

❑ **OPTION A:** Up to 5 Breakers Total, maximum 30A each.
1. Breaker ___ A, code ___ 3. Breaker ___ A, code ___ 5. Breaker ___ A, code ___
2. Breaker ___ A, code ___ 4. Breaker ___ A, code ___

Enter rating & code above: 1A(F), 2.5A(G), 5A(H), 10A(I), 15A(J), 20A(K), 25A(L) & 30A(M), Not required(X).

❑ **OPTION B:** Enter the quantity for each rating of fuse that you require (maximum 10 total).
Note that these are to be ordered as a separate line item using the listed part number and will be shipped as separate items:

0.5A (pt. no. 401-1500-0010) qty ____
0.75A (pt. no. 401-1500-0020) qty ____
1A (pt. no. 401-1500-0030) qty ____
1.33A (pt. no. 401-1500-0040) qty ____
2A (pt. no. 401-1500-0050) qty ____
3A (pt. no. 401-1500-0060) qty ____
5A (pt. no. 401-1500-0070) qty ____
10A (pt. no. 401-1500-0080) qty ____
12A (pt. no. 401-1500-0090) qty ____
dummy (pt. no. 401-1500-0100) qty ____

4. Check ❑ Additional Temperature Probe (One supplied as standard)

5. Send the completed form to the relevant UNIPOWER sales office and we will issue a configuration Model Number which will use the following format.

- System unit Option A: **X75-vv-A-bbbbb-ST**
- System unit Option B: **X75-vv-B-ST**
- Expansion unit: **X75-ES** (voltage independent, no options available)

Key:
vv = system voltage.
b = breaker code, five characters total.
S = SNMP fitted as standard. (always add suffix)
T = additional Temp. probe. (add as suffix)

Rectifiers, fuses and other accessories are supplied as separate items from the main system unit and will be detailed separately in quotations, proposals and Sales Order documentation.

AC LINE CORDS, BATTERY & DC CABLE SETS

AC LINE CORD - 120V 15A	**Part No.: 364-1412-0000**	**NEMA 5-15**	**IEC-C13**
One cord per installed power module. Cord length 6ft (1.83m)			
AC LINE CORD - 240V 15A	**Part No.: 364-1414-0000**	**NEMA 6-15**	**IEC-C13**
One cord per installe power module. Cord length 6ft (1.83m)			
AC LINE CORD - 120/240V 15A	**Part No.: 364-1421-0000**	**ROJ-LEADS**	**IEC-C13**
One cord per installe power module. Cord length 6ft (1.83m) REQUIRES CUSTOMER SUPPLIED PLUG			
BATTERY CABLE KIT - 1 to 2 LUG 30"	**Part No.: 775-1497-1230**	**Start Lug**	**End Lug**
Pair of Black / Red #4AWG copper cable (600V 125A) 30" (76cm) with lug terminations and heat shrink. Hole size 0.25", tongue width 0.55", spacing 0.625".			
BATTERY CABLE KIT - 1 to 2 LUG 84"	**Part No.: 775-1497-1284**	**Start Lug**	**End Lug**
One pair Black / Red #4AWG copper cable (600V 125A) 84" (213cm) with lug terminations and heat shrink. Hole size 0.25", tongue width 0.55", spacing 0.625".			
DC LOAD CABLE KIT - 2 to 2 LUG 30"	**Part No.: 775-1497-2230**	**Start Lug**	**End Lug**
One pair Black / Red #4AWG copper cable (600V 125A) 30" (76cm) with lug terminations and heat shrink. Hole size 0.25", tongue width 0.55", spacing 0.625".			

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