



## **ZERO-UP** 200W/400W/800W *Programmable DC Power Supplies*

***Built-in RS232 & RS485 Interface  
with GPIB optional.***

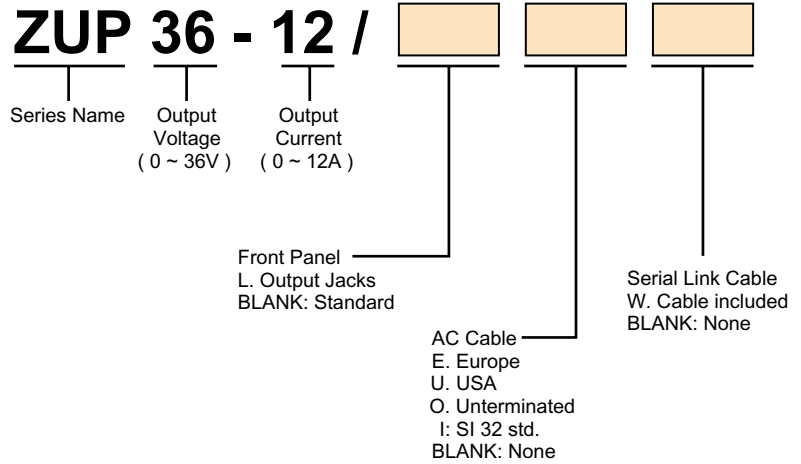
Constant Voltage/Constant Current  
Built-in RS232 & RS485 Interface  
An embedded Microprocessor controller  
Digital Encoder Knob  
Software Calibration  
Last Setting Memory  
Parallel Operation (Master/Slave) Active Current Sharing  
External Voltage or Resistance Programming  
Voltage up to 120V, Current up to 132A  
Active Power Factor Correction: 99%  
85~265Vac Universal Input Voltage  
19" Rack Mounted ATE and OEM  
Worldwide Safety Agency Approvals  
CE Mark for LVD and EMC Regulation



## Product Line Up

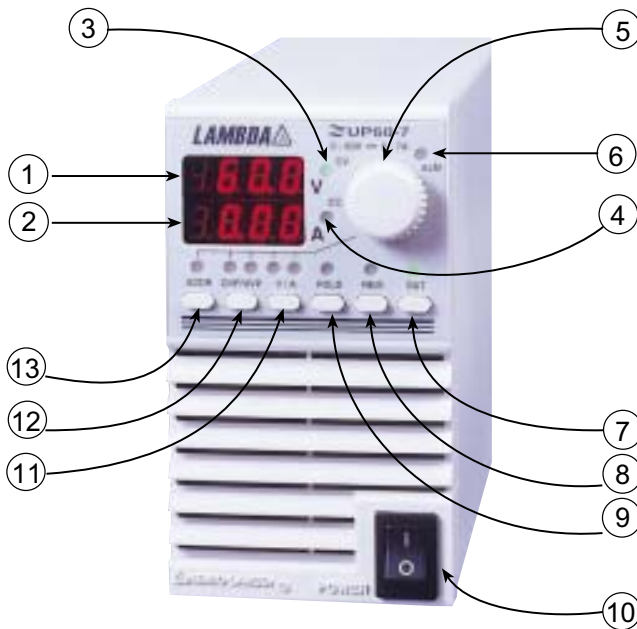
Model	Output Voltage (VDC)	Output Current (A)	Output Power (W)
ZUP6-33	0 ~ 6 VDC	0 ~ 33	198
ZUP6-66		0 ~ 66	396
ZUP6-132		0 ~ 132	792
ZUP10-20	0 ~ 10VDC	0 ~ 20	200
ZUP10-40		0 ~ 40	400
ZUP10-80		0 ~ 80	800
ZUP20-10		0 ~ 10	200
ZUP20-20	0 ~ 20VDC	0 ~ 20	400
ZUP20-40		0 ~ 40	800
ZUP36-6	0 ~ 36VDC	0 ~ 6	216
ZUP36-12		0 ~ 12	432
ZUP36-24		0 ~ 24	864
ZUP60-3.5	0 ~ 60VDC	0 ~ 3.5	210
ZUP60-7		0 ~ 7	420
ZUP60-14		0 ~ 14	840
ZUP80-2.5	0 ~ 80VDC	0 ~ 2.5	200
ZUP80-5		0 ~ 5	400
ZUP120-1.8	0 ~ 120VDC	0 ~ 1.8	216
ZUP120-3.6		0 ~ 3.6	432

## Power Supply Identification / Accessories



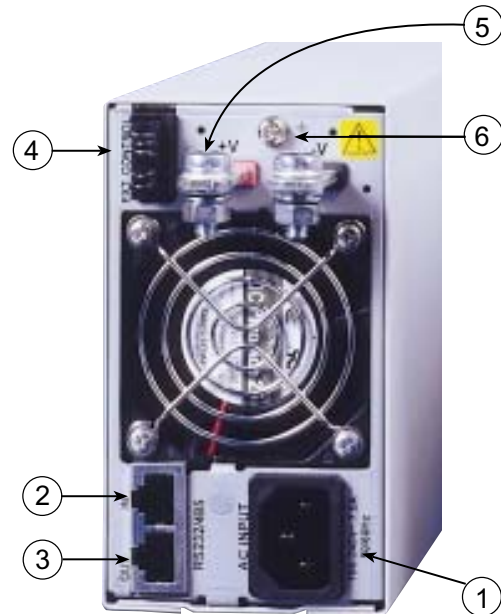
**NEW**  
**NEW**  
**NEW**  
**NEW**

### Front Panel



- Digital Voltmeter
- Digital Amperemeter
- Constant Voltage Mode Indicator
- Constant Current Mode Indicator
- Voltage/Current, OVP/UVP, Address Adjust
- Alarm ( OVP, OTP, FOLD )
- Output ON/OFF Control
- Local/Remote Select
- Foldback Protection Control
- AC Power Switch
- Voltage/Current Mode Control
- Overvoltage/Undervoltage Setting
- Address Setting

### Rear Panel



- IEC320 AC Input Connectors
- Remote IN Programming via RS232/485
- Remote OUT Via RS485 Communications Chaining Power Supplies to Serial Communication Bus.
- External Analog Programming Control Connector
- Output Bus Bars (6V to 60V) model shown. 80V to 120V models PHOENIX: PSC Plug Connectors
- Ground Thread

## ZUP Configurations

### BENCH TOP POWER SUPPLY

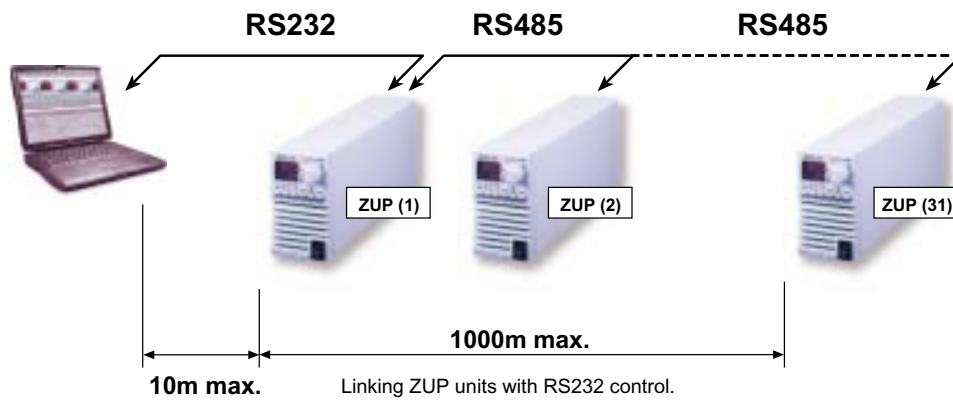


### PARALLEL OPERATION

Master - Slave method: Active current sharing up to 5 units.

### REMOTE PROGRAMMING VIA RS232

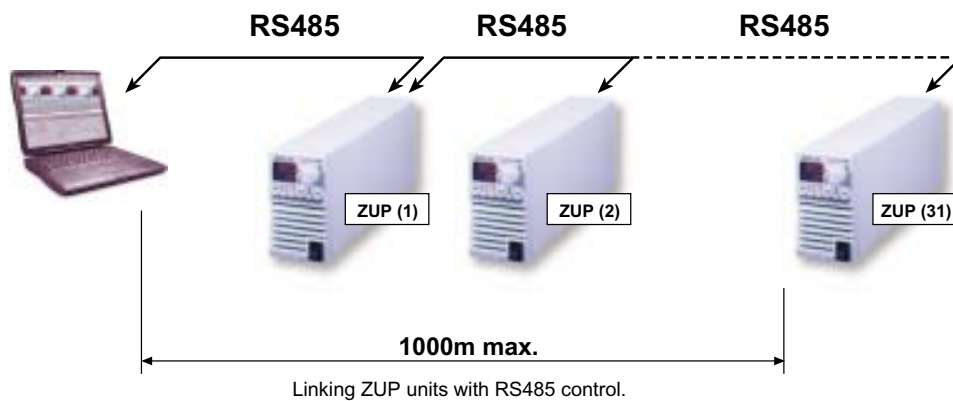
Up to 31 ZUP units can be controlled via RS232 interface.



### REMOTE PROGRAMMING VIA RS485

Up to 31 ZUP units can be controlled via RS485 interface.

For operation environments that require high noise immunity or long distance communication, it is recommended to use the built-in RS485 interface.

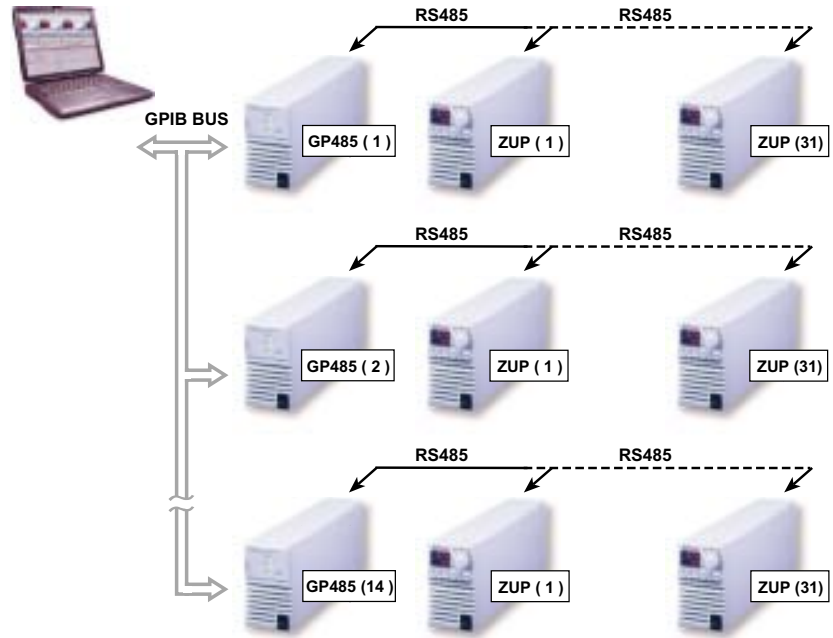


## Remote Programming Via GPIB.

GPIB ↔ RS485 CONTROLLER

The GP485 is a high performance serial to GPIB Interface  
It enables a ZUP series with RS485 port to be a Talker, Listener, or controller on the GPIB

- \* Controls up to 31 ZUP units through a single GPIB address.
- \* Conforms to all versions of the IEEE488 standard, including IEEE488.2.
- \* 19 racking possibility.
- \* Application software - LabView, LabWindows.



## Rack Mounted ATE and OEM up to 2.4KW

Six units can be assembled into 19-inch rack / 3U high to meet your configuration requirements

### Power Modules Table

Module Type	200W	400W	800W
0 ~ 6V	33A	66A	132A
0 ~ 10V	20A	40A	80A
0 ~ 20V	10A	20A	40A
0 ~ 36V	6A	12A	24A
0 ~ 60V	3.5A	7A	14A
0 ~ 80V	2.5A	5A	
0 ~ 120V	1.8A	3.6A	
19"rack width	1 / 6 width	1 / 6 width	2 / 6 width



## Zup Series Specifications

MODEL		ZUP6-33	ZUP6-66	ZUP6-132	ZUP10-20	ZUP10-40	ZUP10-80	ZUP20-10	ZU	
OUTPUT VOLTAGE (*1)	V	0-6			0-10					
OUTPUT CURRENT (*2)	A	0-33	0-66	0-132	0-20	0-40	0-80	0-10		
RATED OUTPUT POWER	W	198	396	792	200	400	800	200		
CONSTANT VOLTAGE	LOAD REGULATION	- 0.005%+2mV From No load to Full load, constant input voltage.								
	LINE REGULATION	- 0.005%+1mV From 85-132VAC or 170-265VAC, constant load.								
	RMS RIPPLE (5Hz-1MHz Bandwidth)	mV	5	5	8	5	5	8	5	
	RIPPLE (pk to pk) (20MHz Bandwidth)	mV	50	50	100	50	50	90	50	
	RECOVERY TIME (*3)	mS	1			0.5				
	TEMPERATURE COEFFICIENT	- 30ppm/...C from rated voltage following 30-minute warm-up.								
	TEMPERATURE DRIFT	- 0.01%+2mV Change in output over 8-hour interval under constant line, load and ambient temp following 30-								
	UP PROGRAMMING RESPONSE TIME (*4)	mS	50	50	60	50	50	60	50	
	DOWN PROGRAMMING RESPONSE TIME	FULL LOAD	mS	50	50	50	50	50	50	
	NO LOAD	mS	250			350				
CONSTANT CURRENT	LOAD REGULATION (*5)	-	0.01%+5mA	0.01%+5mA	0.07%+10mA	0.01%+5mA	0.01%+5mA	0.07%+10mA	0.01%+5mA	0.01%
	LINE REGULATION (*6)	-	0.01%+2mA	0.01%+2mA	0.01%+5mA	0.01%+2mA	0.01%+2mA	0.01%+5mA	0.01%+2mA	0.01%
	RMS RIPPLE (5Hz-1MHz Bandwidth)	mA	50	100	200	25	50	100	15	
	TEMPERATURE COEFFICIENT	- 100ppm/...C from rated current following 30-minute warm-up.								
	TEMPERATURE DRIFT (*8)	-	0.02%+5mA	0.02%+5mA	0.05%+10mA	0.02%+5mA	0.02%+5mA	0.05%+10mA	0.02%+5mA	0.02%
PROGRAMMING (*9)	VOLTAGE	RESOLUTION	- Better than 0.028% of rated output voltage							
		ACCURACY	- 0.02%+5mV			- 0.02%+8mV			- 0.02%	
	CURRENT	RESOLUTION	- Better than 0.03% of rated output current							
	ACCURACY	- 0.4%+40mA								
OVERVOLTAGE PROTECTION (*10)	V	0-7.5			0-13					
HOLD-UP TIME	-	20mS At 100V/200VAC, rated output voltage and output current.								
DISPLAY	VOLTAGE	- 3 digits ( 6v; 20v; 36v; 60v; 80v); 3.5 digits ( 10v; 120v ) accuracy: 0.2% +/- 2 digits.								
	CURRENT	- 3.5 digits (132A); All others 3 digits, accuracy: 0.5% +/- 3 digits.								
	STATUS	- CV/CC, Alarm, Fold, Local/Remote, On/Off.								
OUTPUT PROTECTIONS	-	Over Voltage, Over Temperature, Foldback.								
INPUT	INPUT VOLTAGE (*11)	- 85-265Vac Continuous, 47-63Hz								
	INPUT CURRENT (*12)	A	3.0/1.5	5.6/2.7	11.2/5.4	2.9/1.4	5.6/2.7	11.2/5.4	2.9/1.4	5
	INRUSH CURRENT ( 100/200V )	A	15/30 (*7)	15	30	15/30 (*7)	15	30	15/30 (*7)	7
	EFFICIENCY (*12)	%	69/72	74/77	74/77	73/77	79/82	77/81	74/78	7
	INPUT CURRENT HARMONICS	- Complies with EN61000-3-2, Class A								
	POWER FACTOR (TYP)	- 0.99 at 100/200Vac, 100% load.								
ENVIRONMENT	OPERATING TEMPERATURE	- 0 to 50 ...C ; 100% Load.								
	OPERATING HUMIDITY	- 30-90% RH ( No dewdrop ).								
	STORAGE TEMPERATURE	- -20 to 70 ...C								
	STORAGE HUMIDITY	- 10 - 95% RH (No dewdrop).								
MECHANICAL	VIBRATION	- 10-55Hz, Amplitude (sweep 1 min ) 2G, X, Y, Z, When mounted with mounting screws.								
	SHOCK	- Less than 20G								
	WEIGHT	Kg	2.9	3.2	5.8	2.9	3.2	5.8	2.9	
	SIZE (WxHxD)	mm	200W and 400W units: 70 x 124 x 350. 800W units: 140 x 124 x 350 (Refer to outline drawing)							
EXTERNAL CONTROL FUNCTIONS	OUTPUT ON/OFF	- By TTL Signal or Dry Contact (Refer to instruction manual).								
	OUTPUT GOOD	- Open collector (Refer to instruction manual).								
	OUTPUT VOLTAGE PROGRAMMING	- By Voltage ( 0-4V ) or by Resistance ( 0-4K ) (Refer to instruction manual).								
	OUTPUT CURRENT PROGRAMMING	- By Voltage ( 0-4V ) or by Resistance ( 0-4K ) (Refer to instruction manual).								
	REMOTE SENSING	- Maximum 0.5V drop on each load wire for model up to 60V and 2V for the 80V, 120V models								
	COMMUNICATION INTERFACE	- RS232 and RS485 Built-in, IIEEE488 Optional.								
APPROVALS	SAFETY STANDARDS	- UL3111-1, EN61010-1								
	EMC STANDARDS	- EN61326-1, IEC 61326-1, FCC part 15 (class A).								
CONDUCTED EMI	- EN55022-B, FCC-B, VCCI-2									
RADIATED EMI	- EN55022-A, FCC-A, VCCI-1									
SERIES OPERATION	- Up to 2 units (Refer to instruction manual).									
PARALLEL OPERATION	- Master - Slave method; up to 5 units (Refer to instruction manual).									
COOLING	- Forced air by blower fan (Blower fan is mounted within unit).									
WITHSTAND VOLTAGE	- Input - Chassis...2.0kVAC 1 min, Input - Output...3.0kVAC 1 min, Output - GND...500VAC 1 min.									
ISOLATION RESISTANCE	- More than 100MOhm at 25 ...C and 70% R.H.									

### NOTES:

- \*1. Minimum voltage is guaranteed to maximum 0.2% of the rated output voltage.
- \*2. Minimum current is guaranteed to maximum 0.4% of the rated output current.
- \*3. Time for recovery to within +/-50mV against current change of 50% to 100%.
- \*4. From zero volts to full scale , resistive load and current setting at maximum.
- \*5. From no load to full load , constant input voltage.
- \*6. From 85~132Vac or 170~265Vac constant load.
- \*7. At cold start Ta=25 ...C.

- \*8. Change in output over 8 hour interval constant line, load and ambient temperature following 30-minutes warm-up.
- \*9. Given for control of the output via the serial communication or via front panel controls.
- \*10. Inverter shut down method, manual reset (OVP will shut down output)
- \*11. For cases where conformance to various safety specs. (UL, IEC, etc.) are required, to be described as 100-240VAC (50/60Hz) on name plate.
- \*12. At 100V/200V and Maximum Output Power.

	ZUP20-20	ZUP20-40	ZUP36-6	ZUP36-12	ZUP36-24	ZUP60-3.5	ZUP60-7	ZUP60-14	ZUP80-2.5	ZUP80-5	ZUP120-1.8	ZUP120-3.6	
	0-20		0-36			0-60			0-80		0-120		
	0-20	0-40	0-6	0-12	0-24	0-3.5	0-7	0-14	0-2.5	0-5	0-1.8	0-3.6	
	400	800	216	432	864	210	420	840	200	400	216	432	
	0.005%+4mV												
	0.005%+2mV												
	5	5	5	5	5	5	5	5	20	20	20	20	
	50	80	50	50	70	50	50	60	70	70	80	80	
	0.2		0.2			0.2			0.2		0.2		

wing 30-minute warm-up.

	50	60	50	50	60	50	50	60	100	100	100	100	
	50	50	50	50	50	50	50	70	60	60	80	80	
	400		500			750			800		1000		

A	0.01%+5mA	0.07%+10mA	0.01%+5mA	0.01%+5mA	0.07%+10mA	0.01%+5mA	0.01%+5mA	0.07%+10mA	0.01%+5mA	0.01%+5mA	0.01%+5mA	0.01%+5mA
A	0.01%+2mA	0.01%+5mA	0.01%+2mA	0.01%+2mA	0.01%+5mA	0.01%+2mA	0.01%+2mA	0.01%+5mA	0.01%+2mA	0.01%+2mA	0.01%+2mA	0.01%+2mA
	30	60	7.5	15	30	5	10	20	5	5	5	5

A	0.02%+5mA	0.05%+10mA	0.02%+5mA	0.02%+5mA	0.05%+10mA	0.02%+5mA	0.02%+5mA	0.05%+10mA	0.02%+5mA	0.02%+5mA	0.02%+5mA	0.02%+5mA
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	0.02%+12mV		0.02%+20mV			0.02%+35mV			0.02%+50mV		0.02%+80mV		
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	0-24		0-40			0-66			0-88		0-132		
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	5.6/2.7	11.2/5.4	2.9/1.4	5.6/2.7	11.2/5.4	2.9/1.4	5.6/2.7	11.2/5.4	2.6/1.3	4.9/2.4	2.9/1.4	5.3/2.6
)	15	30	15/30 (*7)	15	30	15/30 (*7)	15	30	15/30 (*7)	15	15/30 (*7)	15
	79/83	79/82	76/80	80/84	80/84	75/79	80/84	80/84	78/82	83/87	78/82	82/86

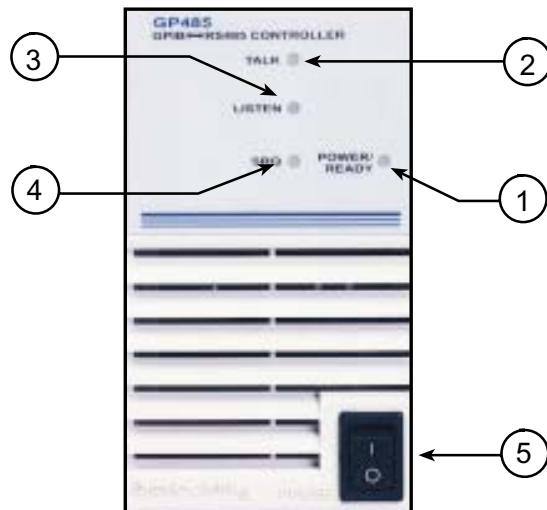
	3.2	5.8	2.9	3.2	5.8	2.9	3.2	5.8	2.9	3.2	2.9	3.2
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## GP485 SPECIFICATIONS

The GP485 has all the software and logic required to implement the physical and electrical Specifications of the IEEE488 and RS485 standards

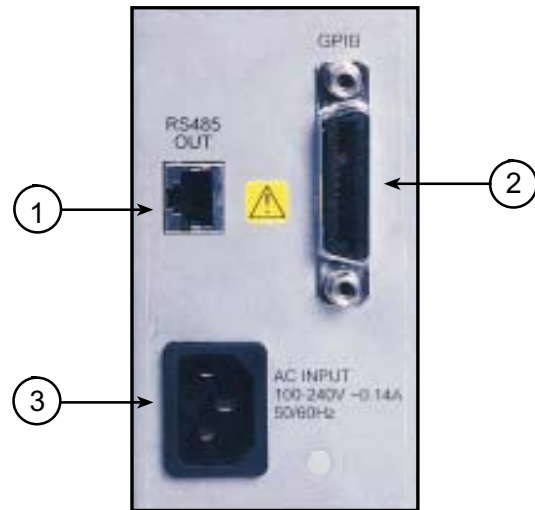
Input Voltage /freq	Vac	85 ~ 265Vac continuous 47 ~ 63 Hz
Input consumption	W	5W
IEEE 488 Capability		SH1,AH1,T6,TE0,L4,LE0,SR1,RL0,PP1,DC1,DT0,C0,E1,E2
Indication LED's		Power /Ready ,Talk ,Listen ,SRQ
Baud rate	bps	Optional 300 , 600 ,1200 , 2400 , 4800 , 9600 Default :9600
Address		1 up to 30 can be set using an address switch
Operating temp	°C	0~ 50
Storage temp	°C	-20 ~ 70
Conducted emission		EN5022B,FCC-B
Radiated emission		EN5022A,FCC-A
Safety standards		UL3111-1 , EN61010-1
EMC standards		EN61326-1, IEC 61326-1, FCC part 15 (class A).
Withstand voltage		Input - Chassis 2.0kVAC 1min, Input - Output 3.0kVac 1 min, Output - Chassis 500VAC 1 min.
Vibration	G	10-55Hz, Amplitude (sweep 1 min ) 2G, X, Y, Z, When mounted with mounting screws.
Size (WxHxD)	mm	70x124x350 (GP 485 has all the mechanical specifications & mounting hole as ZUP200W/400W units)
Weight	Kg	1.95

**Front Panel**



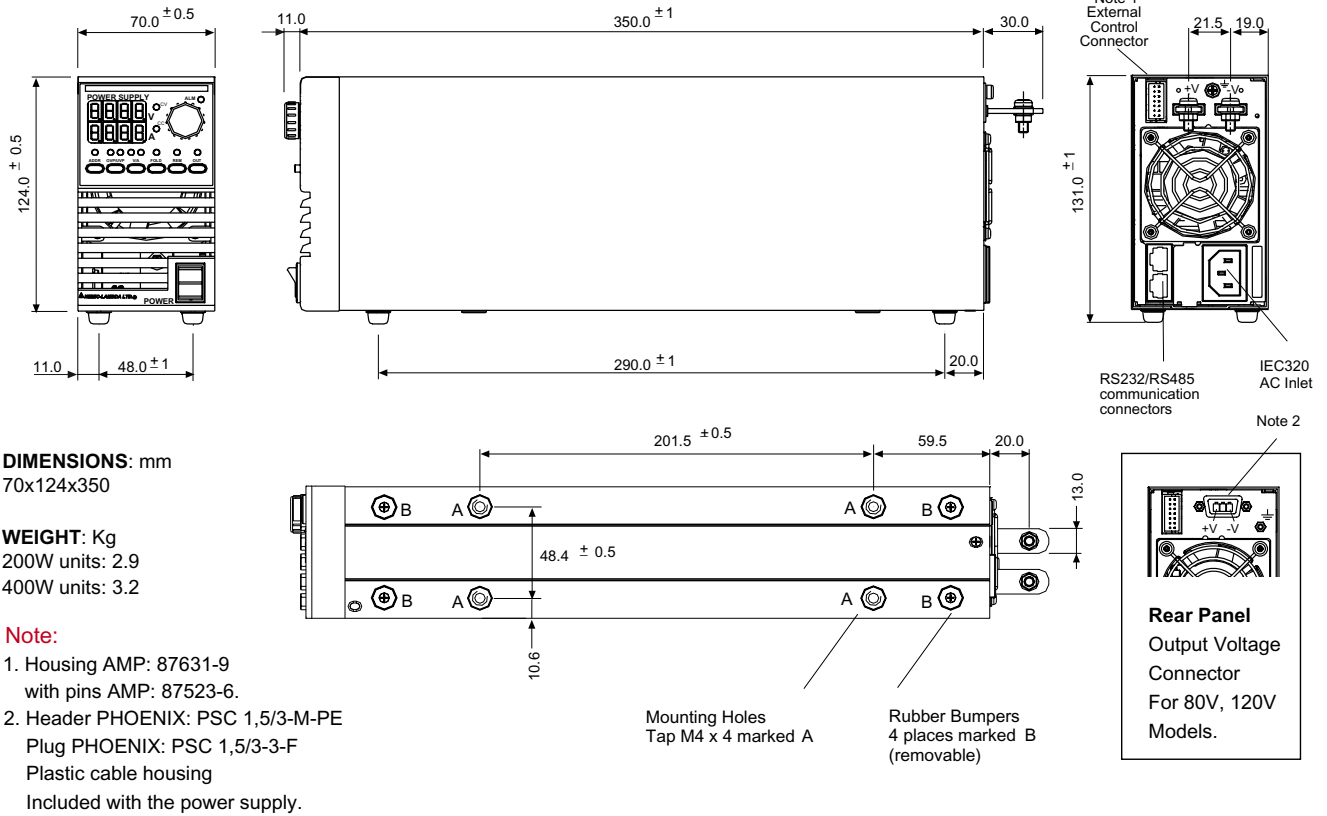
1. Power/Ready: Indicates that the power is ON and the self-test has passed successfully. The unit is ready to operate once the LED illuminates.
2. Talk: Indicates that the GP485 is addressed as a GPIB Talker.
3. Listen: Indicates that the GP485 is addressed as a GPIB Listener.
4. SRQ: Indicates that the GP485 signal line SRQ is asserted.
5. AC ON/OFF: Turns AC power On and Off.

**Rear Panel**

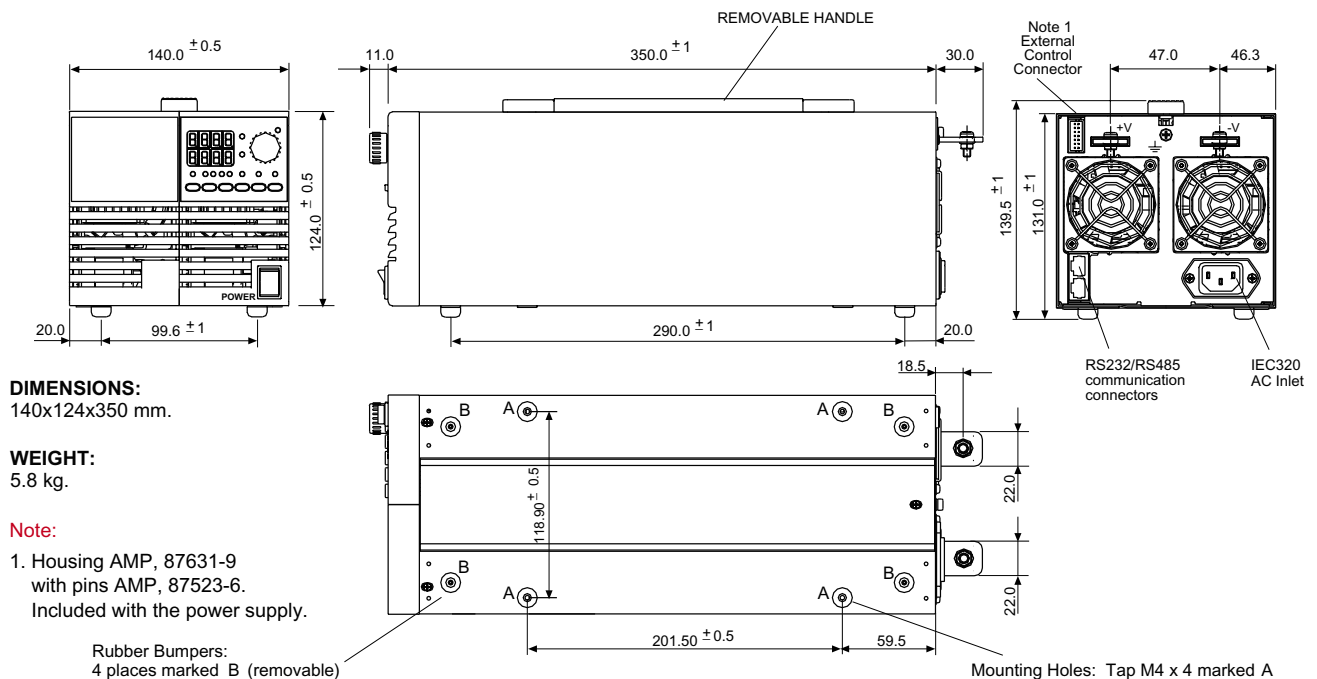


1. RS485 OUT: EIA-568A shielded type connector, used for RS485 communication with ZUP power supplies.
2. GPIB: Shielded 24-pin Champ female connector, with metric screwlock. Used for GPIB communication with the GPIB controller.
3. AC Input: IEC type appliance inlet.
4. XXXXXXXXXXXXX

## Outline Drawings ZUP 200W/400W Units



## Outline Drawings ZUP 800W Unit



## Accessories

### 1. AC Cord Sets

Three optional cords are possible according to order:

Region	AC Cord	Power Supply Connector	Wall Plug	P/N
North America	15A / 125Vac L=2m	IEC320-C13	NEMA 5-15P	ZUP/U
Europe	10A / 250Vac L=2m	IEC320-C13	INT'L 7/ VII	ZUP/E
SI- 32 Std	10A / 250Vac L=2m	IEC320-C13	SI-32	ZUP/I



North America



Europe



SI-32 Standard

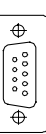
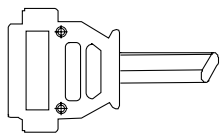
### 2. Communication Cable

RS232/RS485 cable is used to connect the power supply to the PC controller

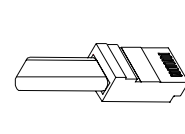
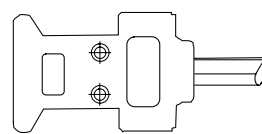
Mode	PC connector	Communication cable	Power Supply Connector	P/N
RS232	DB-9	Shield Ground , L=1m	EIA / TIA-568A (RJ-45)	ZUP/NC401
RS232	DB-25	Shield Ground , L=1m	EIA / TIA-568A (RJ-45)	ZUP/NC403
RS485	DB-9	Shield Ground , L=1m	EIA / TIA-568A (RJ-45)	ZUP/NC402
RS485	DB-25	Shield Ground , L=1m	EIA / TIA-568A (RJ-45)	ZUP/NC404



DB-25 (female connector)



DB-9 (female connector)

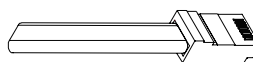
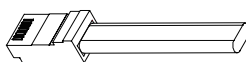


EIA/TIA (RJ-45)

### 3. ZUP serial link cable

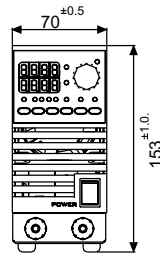
Used to chain Power Supply to Power Supply from a serial communication bus

Mode	Communication cable	Power Supply Connector Remote IN /OUT	P/N
RS485	Shield Ground , L=50cm	EIA /TIA -568 A (RJ-45)	ZUP/ W

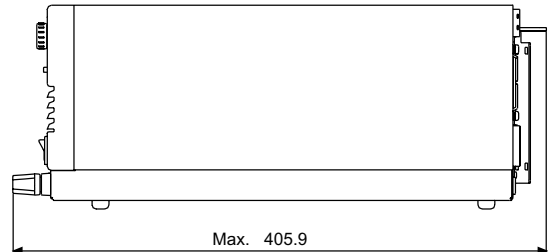


**Options ( 200W, 400W, 800W Models )**

1. FRONT PANEL OUTPUT JACKS  
P/N: ZUP / L

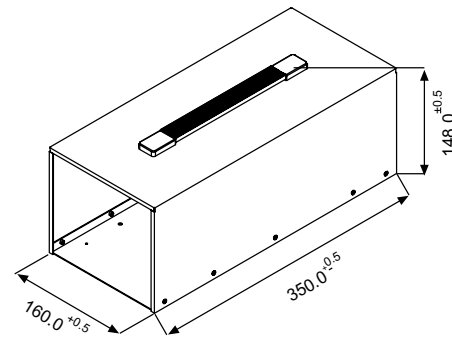


Outline Drawing: Physical Dimensions in mm.  
ZUP 200W/400W Units: 70x153x405.9  
ZUP 800W Units: 140x153x405.9



Up to 20A output current via front panel jacks.

2. ZUP ASSEMBLIES  
Dual Output Packing 200W/400W models  
P/N: NL200



3. 19" RACK MOUNTED ATE AND OEM UP TO 2.4 KW  
Up to six power units can be assembled into a 19 , 3U rack, kit P/N NL100.  
In cases where the entire rack is not occupied with power units, NL101 blank panels can be installed.  
P/N: NL100

