Warranty:

Bainbridge Technologies warrants this product for a period of 24 months from the date of purchase.

Bainbridge Technologies will repair or replace any defective product when directly returned, postage paid, to us with a new or refurbished product.

This decision will be at Bainbridge Technologies discretion.

This warranty will be considered void if the product has suffered any obvious physical damage or alteration either internally or externally. Bainbridge Technologies does not cover damage arising from improper use, such as plugging the unit into unsuitable power sources, or attempts to operate products with excessive power consumption requirements, or use in unsuitable environments.

A minimum standard service fee of $35.00 plus G.S.T. will apply on all products. If the product is deemed to be a warranty then this fee will be waived, and the product will be replaced and/or repaired at no charge.

If there is no fault found with the product the service fee will apply, plus return freight charges prior to the product being released.

If the product is out of warranty the service fee will be absorbed in the quote for repair. If the quote for repair is denied then the service fee will apply plus freight before the goods are released.

NOTE: This warranty is non transferable

NOTE: Reverse polarity & severe voltage surges are not covered by warranty.

Bainbridge Technologies

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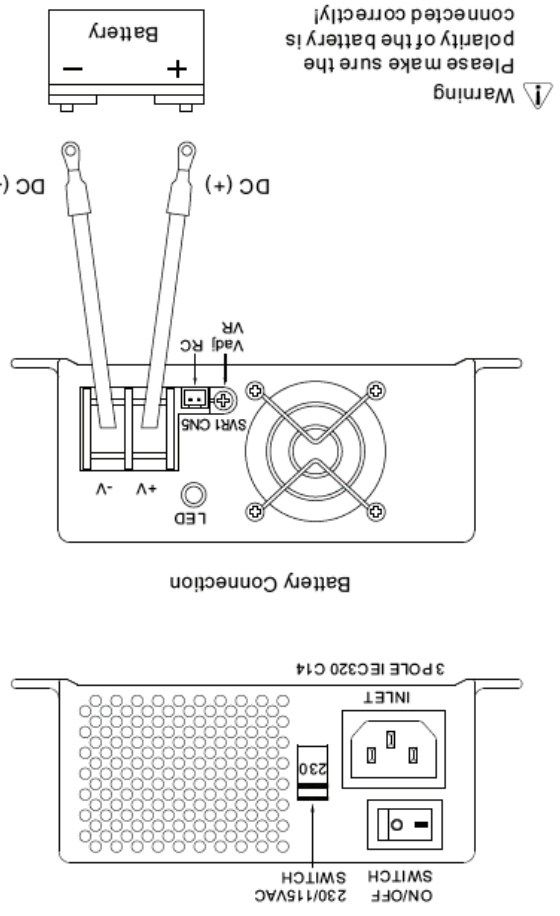
BAINTECH
Power Products™

PB-360
User Manual

SPECIFICATION PB-360

	MODEL	PB-360P/N-12	PB-360P/N-24	PB-360P/N-48
OUTPUT	BOOST CHARGE VOLTAGE	14.4V	28.8V	57.6V
	FLOAT CHARGE VOLTAGE	13.6V	27.2V	54.4V
	VOLT ADJUSTABLE RANGE	13 ~ 14.7V	26 ~ 28.8V	26 ~ 58.6V
	RECOMMENDED BATTERY CAPACITY (AMP HOURS)[2]	80 ~ 200Ah	40 ~ 125Ah	20 ~ 65Ah
	BATTERY TYPE	Open & Sealed Lead Acid		
	OUTPUT CURRENT (MAX)	25A	12.5A	6.25A
INPUT	VOLTAGE RANGE[4]	90~132VAC/180~264VAC selected by switch 248~370VDC		
	FREQUENCY RANGE[4]	47 ~ 63HZ		
	EFFICIENCY (TYP)	85%	86%	87%
	POWER FACTOR (TYP)	>0.65 (with P type) at 230VAC		
	AC CURRENT (TYP)	7A/115VAC 3.4A/230VAC		
	INRUSH CURRENT (TYP)	COLD START 60A		
	LEAKAGE CURRENT	<3.5mA / 240VAC		
PROTECT	OVER LOAD	90 ~ 110% rated output current Protection type: Constant current limiting, recovers automatically after fault condition is removed		
	REVERSE POLARITY	By internal fuse		
	OVER VOLTAGE	16 ~ 18V	31 ~ 35V	59 ~ 64V
		Protection type: Shut down o/p voltage, re-power on to recover		
	OVER TEMPERATURE	Protection type: Shut down o/p voltage re-power on to recover		
	OVER TEMPERATURE	Protection type: Automatically derate charge current until 0		
ENVIRONMENT	WORKING TEMP	-20 ~ +60°C (Refer to output load derating curve)		
	WORKING HUMIDITY	20 ~ 90% RH non-condensing		
	STORAGE TEMP	-40 ~ +85°C		
	STORAGE HUMIDITY	10 ~ 95% RH		
	TEMP. COEFFICIENT	+0.05%/°C (0 ~ 50°C)		
	VIBRATION	10 ~ 500Hz, 2G 10min/1 cycle 60min each along X, Y, Z axes		
SAFETY & EMC[3]	SAFETY STANDARDS	IEC60335-2-29 GB approved by TUV(except for 48V) UL60950-1 approved		
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC		
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH		
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B		
	HARMONIC CURRENT	Compliance to EN61000-3-2, -3 (only P type)		
	EMS IMMUNITY	Compliance to EN61000-4-2, 3, 4, 5, 6, 8, 11; ENV50204, EN55024, light industry level, criteria A		
OTHERS	REMOTE CONTROL	Open: Normal work Short: Stop charging		
	MTBF	115.8khrs min. MIL-HDBK-217F (25°C)		
	DIMENSIONS	253*135*48.5mm (L*W*H)		
	PACKING	1.5Kg; 6pcs / 10Kg / 0.93CUFT		
NOTE		1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature 2. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives 3. This is Bainbridge Technologies suggested range. Please consult your battery manufacturer for their suggestions about maximum charging current limitation. 4. PB-600 unit can be operated with 90 ~ 264VAC of input voltage range and 47 ~ 63HZ of input frequency. Please check the specification sheet for details.		



Assembly Procedure:

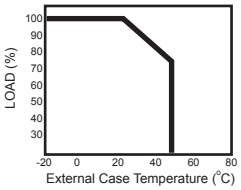
1. Make sure the charger is shut off and choosing suitable wires to connect the charger and batteries based on the rating of charging current. The polarity must be correct: charger output (+) should be connected to the (+) terminal of batteries and charger output (-) should be connected to the (-) terminal. In no times should the (+) and (-) be short together or the charger and batteries will be damaged.
2. Select the correct input voltage range between 115VAC and 230VAC. The selecting switch is preset at 230VAC in the factory.
3. Set the ON/OFF(0/-) power switch to ON(-) and check whether the operation of LED is correct (red : charging; green : battery is full).

Notes on Operation:

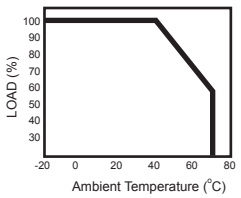
1. The charger is only suitable for “lead-acid” batteries.
2. The charger should be assembled in the place with good ventilation and low moisture. Exposure to the rain or snow is strictly prohibited.
3. Wires connecting between the charger and batteries should be as short as possible since the high voltage drop on the wires will increase the time required to fully charge the batteries.
4. Make sure the charging voltage and charging current are suitable for the batteries you are using.
5. If the batteries need to connect in series for charging, old batteries are not suggested to be used with new ones or the lifetime of batteries may reduce because of the unbalance charging voltage distribution on new and old batteries.
6. Please turn off the charger before connecting or disconnecting the wires.
7. The charger has a 2-year worldwide warranty, however, damages from misusing the charger will not be included in the coverage of warranty.

Charging Current And Ambient Temperature:

1. Below the ambient temperature of 40°C , PB-360 can provide the maximum charging current to the batteries. If the ambient temperature is higher than 40°C, the output current of PB-360 will decrease automatically. Please refer to the derating curve shown as below:



2. Below the ambient temperature of 40°C, PB-360 can provide the maximum charging current to the batteries. If the ambient temperature is higher than 40°C, the output current of PB-360 will decrease automatically. Please refer to the derating curve shown as below:



Selection Of Output Connection:

AWG	CROSS SECTION(mm^2)	Max.Current(A) UL1015(600V 105°C)
10	5.262	35
12	3.309	22
14	2.081	12
16	1.309	8
18	0.823	6
20	0.517	4

Please choose wires with suitable diameter of its cross section based on the current rating. Please refer to the following table for the information of some frequently used wires. Using red wires to connect the (+) terminals and black ones for (-) terminals is highly recommended. (Black wires for grounding is a usual practice in electrical applications.)

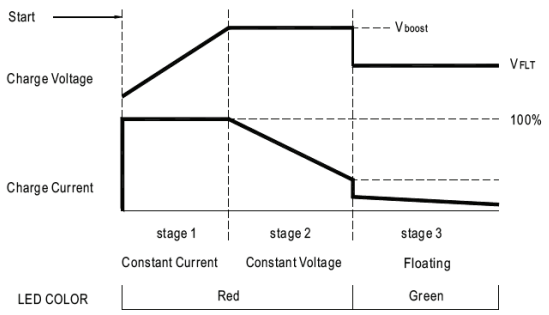
Suggested Battery Capacity:

1. It will not have any problem if the capacity of batteries larger than the suggested value. It just takes more time to make the batteries fully charged!
2. If you have any question about the suitable charging current for the batteries, please refer to the technical data provided by the battery manufacturers or consult the vendor of the batteries.

Model	Suggested Battery capacity
PB-360-12	80-200Ah
PB-360-24	40-125Ah
PB-360-48	20-65Ah

Status Under General Operation:

At the beginning stage of operation, the charger provides the largest current with 14.4Vdc of output voltage (for 12V batteries) to charge batteries. The LED indicator will lighten in red and the built-in fan will spin to dissipate the heat (360W only). After a period of time (probably a couple of hours, based on the capacity of batteries), the charging current will decrease gradually. After reaching 10% of its maximum value, the charger will go into “floating-charge” stage. The fan will stop spinning, charging voltage will decrease to 13.6Vdc, and the LED indicator will turn to green. The relationship between charging current and charging voltage for each operation stage are shown in the curves below:



STATE	PB-300/360-12	PB-300/360-24	PB-300/360-48
V_{BOOST}	14.4V	28.8V	57.6V
V_{FLT}	13.6V	27.2V	54.4V

NOTE: Output voltage of the charger (V_{FLT}) can be adjusted through SVR1 without connecting the batteries and this adjustment will change the value of V at the same time. For example, if originally V_{FLT} is 13.6V and V_{BOOST} is 14.4V, after adjusting V to 13.2V under no-load condition, V will also reduce to 14V. So, please consult the manufacturer of batteries about the suitable charging voltage before make any adjustment.

Notes On Failure Elimination

Status	Possible Reasons	Ways to Eliminate
No output voltage	Power switch is not set to ON(-)	Set the power switch to ON(-)
	Wrong polarity of the battery connection (output fuse open)	Replace the fuse
	Wrong selection of the 115/230Vac switch	Repair required. Please send it back to us or any of our distributors
Output voltage is too low	Wrong selection of the 115/230Vac switch	Choose the correct input voltage range through the 115/230Vac switch
Can’t achieve the FLOAT (green light) stage after long period of charging operation	Batteries are aging or broken	Replace the batteries
	The gauge of output wire is not large enough	Choose connecting wires with suitable gauge

If you still cannot eliminate the failure situation, please consult Bainbridge Technologies or any of our distributors

WARNING: Explosive gases. Prevent flames and sparks. Provide adequate ventilation during charging.

Disconnect the supply before making or breaking the connections to the battery.

Against recharging non-rechargeable batteries.

CAUTION: (1) Temperature of the case will be high during the charging operation.

(2) If the AC input terminal does not connect to F.G. or the ground, then the case should be grounded or the leakage current may harm the users while touching the case.

(3) The charger should be fixed firmly at its operation place or be mounted on a holding rack for extra support. Reserved space for built in is at least (325*145*55) L*W*H

(4) During charging, the battery must be placed in a well ventilated area.

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