



PB-600 User Manual

2. Front and back panel:

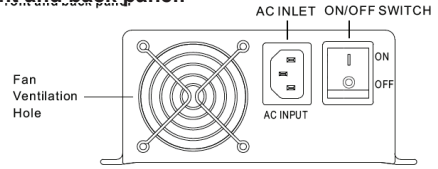


Figure 2.1 Front Panel

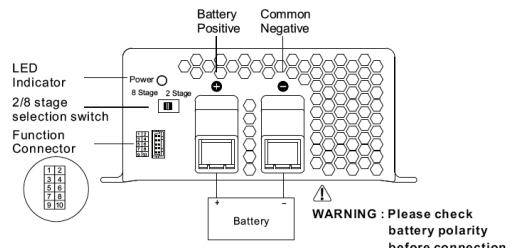


Figure 2.2 Back Panel

WARNING : Please check battery polarity before connection

Assembly Guidelines:

1. The charger should be turned OFF prior to battery connection. Suitable wire gauge should be chosen based on rated charging current of the PB-1000 unit. Double check battery polarity before making the battery connection. Positive terminal of the charger must be connected to "+" of the battery and negative terminal to "-" of the battery. Also, make sure the positive and negative terminals of the charger are not accidentally shorted together.
2. After connecting the output cables, flick the ON/OFF (0/-) switch to the ON (-) position. The indicator light on the switch will turn ON.

Notes on Operation:

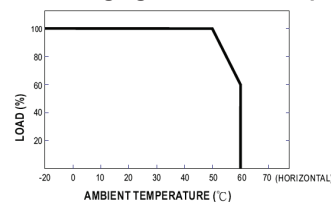
1. Designed for charging lead acid battery.
2. Must be installed in a dry and well ventilated area. It should not be exposed to rain or snow.
3. The cables between charger and battery should be kept as short as possible to prevent excessive line drop. Too much line drop will lead to longer charging period.
4. Please make sure charging voltage and current meets battery specification.
5. Refrain from connecting new and old batteries in series.
6. PB-1000 should be in the OFF mode before making battery connection or disconnection.
7. Three years warranty is provided under normal operating conditions. Failure resulting from improper operation will result in cancellation of warranty.

1. Main Specifications

MODEL	PB-600P/N-12	PB-600P/N-24	PB-600P/N-48
OUTPUT			
BOOST CHARGE VOLTAGE	14.4V	28.8V	57.6V
FLOAT CHARGE VOLTAGE	13.8V	27.6V	55.2V
RECOMMENDED BATTERY CAPACITY (AMP HOURS) ¹	135 ~ 400Ah	70 ~ 210Ah	35 ~ 105Ah
BATTERY TYPE	Open & Sealed Lead Acid		
OUTPUT CURRENT	40A	21A	10.5A
VOLTAGE RANGE ⁴	100 ~ 240VAC 141 ~ 340VDC		
FREQUENCY RANGE ⁴	50 ~ 60Hz		
INPUT			
EFFICIENCY (TYP)	86%	87%	89%
POWER FACTOR (TYP)	0.95/230VAC 0.98/115VAC at full load		
AC CURRENT (TYP)	6.8A/115VAC 3.4A/230VAC		
INRUSH CURRENT (TYP)	25A/115VAC 50A/230VAC		
LEAKAGE CURRENT	<3.5mA / 240VAC		
PROTECT			
OVER VOLTAGE	16 ~ 18V	32 ~ 35V	64.5 ~ 69.5V
	Protection type: Shut down o/p voltage, re-power on to recover		
OVER TEMPERATURE	Protection type: Shut down o/p voltage, recovers automatically after temperature goes down		
REMOTE CONTROL	Open: Normal work Short: Stop charging		
LEAKAGE CURRENT FROM BATTERY (TYP)	1mA		
FUNCTION			
FAST CHARGE	2 / 8 stage selectable		
CHARGER OK	Relay contacts (RY15)		
OUTPUT OK	Relay contacts (RY13)		
TEMPERATURE SENSE	By NTC		
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 & EMC⁴			
SAFETY STANDARDS	UL1012, TUV EN60335-1, EN60335-2-29 (except for 48V) 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)		
HARMONIC CURRENT	Compliance to EN61000-3-2, -3		
EMS IMMUNITY	Compliance to EN61000-4-2, 3, 4, 5, 6, 8, 11; ENV50204, EN55024, light industry level, criteria A		
OTHERS			
MTBF	135.6Khrs min. MIL-HDBK-217F (25°C)		
DIMENSIONS	230*158*67mm (L*W*H)		
PACKING	2.2Kg; 6pcs 14.2Kg 1.76CUFT		
NOTE	<ol style="list-style-type: none"> 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. 		

3. Derating Curves:

3.1. Charging current VS Temperature:



4. Function Description of CN100

Pin No.	Function	Description
1, 2	RY 13	Relay contact rating(max.): 30V/1A resistive.; "Short" when the battery is full, "Open" when the battery is still charging
5, 6	RY 15	Relay contact rating(max.): 30V/1A resistive.; "Short" when the unit is working properly, "Open" when the unit stop charging
7, 8	GND / RTH	Temperature sensor comes along with the charger can be connected to the unit to allow temperature compensation of the charging voltage If temperature sensor is not used charger still works normally.
9, 10	RC- / RC+	Turn the output on and off by electrical or dry contact between pin 10 (RC+) and pin 9(RC-) Open : Normal work , Short : Stop charging

5. LED Indication

Color of LED	Orange	Green	Red
Battery status	Charging	Battery full	Fail

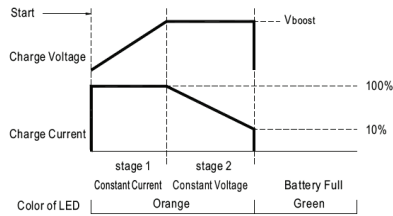
- Types of failure:
- ① Battery disconnected
 - ② Damaged battery
 - ③ Reverse polarity
 - ④ Incorrect battery voltage (e.g. PB-600-12 connected to 24V battery)
 - ⑤ Activation of protection function (e.g. OTP, OVP, and Short)

6. Explanation of Operation Logic (Charging stages):

8 stages charging differ from 2 stages with the addition of pulse, soft start, analysis, recon, float, and maintain stages. 2 stages provide simple and quick charging. On the other hand, 8 stages will allow charging to maximum capacity. User can select between 2 or 8 stages depending on actual requirement.

6.1 "2" stage charging (Selection switch to "2" stage)

During initial charge (stage 1), charger will provide maximum current to the battery. The built-in fan will also turn ON. As the battery starts to get full, charging current will gradually decrease (stage 2). When charging current decrease to less than 10% of max. LED indicator will turn Green indicating a full charge.

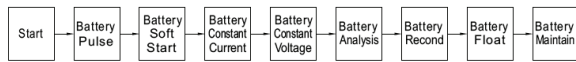


6.2 "8" stage charging (Selection switch to "8" stage)

Advantage of pulse stage: Use pulse current to revive aged battery.

Advantage of recond stage: Allow full charge of battery.

Advantage of Float and Maintain stage: After LED turns green, maintenance charge is provided so the battery is always in a full state. User will have access to a full battery whenever it is disconnected from the charger.



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.

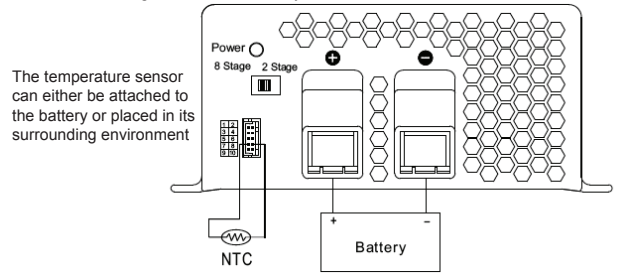
If the product is out of warranty the service fee will be absorbed in the quote for repair. If the quote for repair is denied then the service fee will apply plus freight before the goods are released.

NOTE: This warranty is non transferable

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

7.5 Temperature Compensation

Temperature sensor comes along with the charger can be connected to the unit to allow temperature compensation of the charging voltage. If the temperature sensor is not used, the charger still works normally.



8. Wiring for battery

Select suitable wire gauge based on rated charging current. Refer to the following table for minimum wire gauge. We highly recommend using RED wire for + connection and BLACK wire for - connection:

AWG	CROSS SECTION(mm ²)	Max.Current(A) UL1015(600V 105°C)
14	2.1	12
12	3.3	22
10	5.3	35
7	10	46
6	16	60
4	25	80

9. Suggested battery capacity

Model	Battery capacity
PB-600-12	135-400AH
PB-600-24	70-210AH
PB-600-24	70-210AH

10. Suggested No. of cells

Model	Battery capacity	Number
PB-600-12	100AH	1~4
PB-600-24	80AH	1~3
PB-600-24	46AH	1~2

NOTE: 1. Using battery capacity larger than the suggested value will not lead to damage of battery. The only drawback is it may take longer to fully charge the battery.

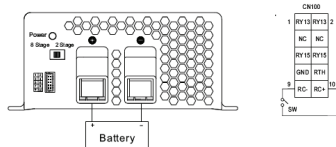
2. If you're unsure about max allowable charging current of the battery, please refer to the battery's technical specification or consult its manufacturer.

7. Function description

7.1 Remote Control

The charger can be turned ON/OFF by using the "Remote Control" function..

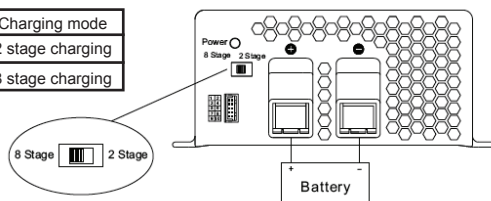
Between RC+(pin10) & RC-(pin9)	Charger
SW Open	ON
SW Short	OFF



7.2 2 or 8 stage Charging mode Select

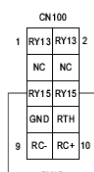
The charger features user selectable 2 or 8 stage charging. The charging profile is selected by moving the slide switch on the back panel.

Switch	Charging mode
Turn right	2 stage charging
Turn left	8 stage charging



7.3 Charger OK Relay(RY15)

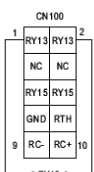
Charger	Between pin5 and pin6
Normal work	ON (Short)
Failure or the protection function is activating	OFF(Open)



7.4 Output OK Relay(RY13)

7.4.1. Bank OK (RY13)

Bank	Between pin1 and pin2	Color of LED
Battery Full	ON (Short)	Green
Charging	OFF(Open)	Orange



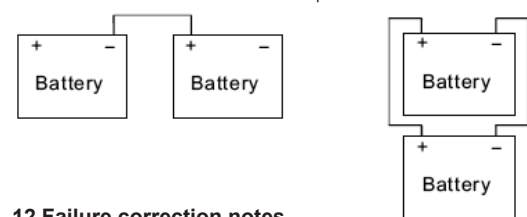
11. Series and parallel connection of batteries

1. Batteries in series

2. Batteries in parallel

Voltage can be doubled when 2 batteries are connected in series. However, the capacity (AH) will remain the same. For example, 2 x 12V 100AH batteries connected in series = 24V 100AH.

When 2 batteries are connected in parallel, voltage remains the same and the capacity (AH) doubles. For example, 2 x 12V 100AH batteries connected in parallel = 12V 200AH.



12. Failure correction notes

Status	Possible Reasons	Ways to Eliminate
Unable to charge the battery	ON/OFF switch in the OFF position	Switch to the ON position
	Battery reverse polarity	Reconnect using correct polarity
	Battery with higher voltage is connected	Use battery with the correct voltage
LED indicator does not turn Green after a long charging period	Input AC voltage is too low	Make sure input source is between 90~264VAC
	Battery exceed lifespan or damaged	Replace with a new battery
	Output cables are too thin	Replace with suitable wire gauge

If you are not able to clear the failure condition, please contact Mean Well or any of our distributors for repair service.

WARNING: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Against recharging non-rechargeable batteries.



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