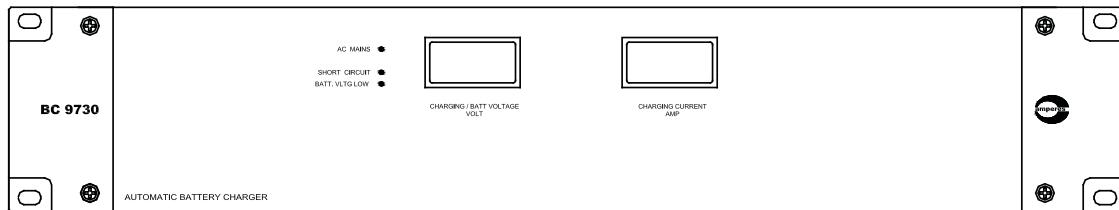


INSTRUCTION MANUAL

BC 9730
IMPROVED VER.2

24V DC CURRENT REGULATED
AUTO BATTERY CHARGER



Thank you *for selecting and trusting another product from Amperes Electronics.*

BC9730 (Version 2) has been improved further. Protection features against heat, short circuit, reverse polarity are among the added features. It powers your batteries via highly efficient switching power supply circuitry, thus providing the best possible charging pattern to your standby power bank.

In Amperes, we just never stop creating and upgrading for the best, in bringing the most optimum product to your installations.

Although the installation process is simple, a thorough understand of the product is important to avoid any untowards incident. Please read through this manual and keep it for future reference.

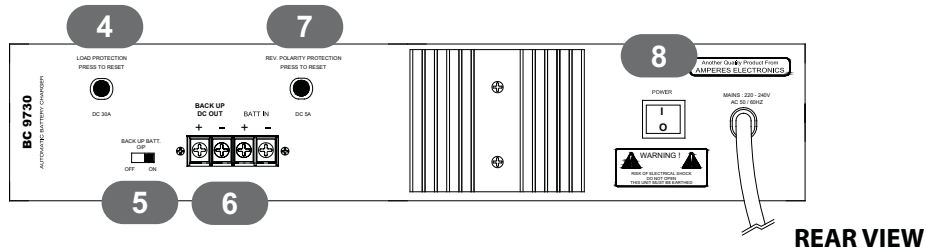
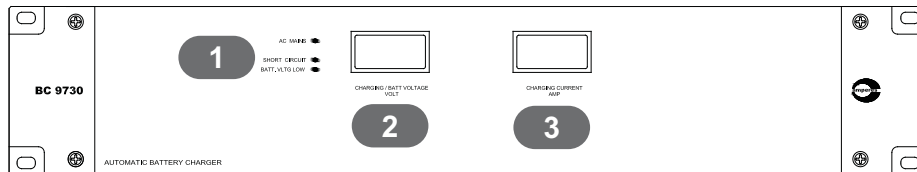
Thank you again for choosing Amperes the emerging preference.

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PARTS IDENTIFICATIONS

FRONT VIEW



1 AC MAINS, SHORT CIRCUIT, BATT LOW LED INDICATORS

AC mains indicates incoming ac power. Supply from back up battery shall not lit this LED. Short Circuit LED indicates that the output from charger is shorted. Battery Low LED indicates that the voltage level of battery bank is at lower limit. This is activated when the voltage drops below 15V DC, and charging should be done immediately.

Further drop of voltage to 12V DC shall then disable the charger and cut off the battery supply to external devices. This is to protect the batteries.

Note : SLA batteries must not be discharged fully to prevent permanent damage.

2 DC VOLTAGE METER

This measures the voltage output from the charger, which is then connected to battery bank. Differential voltages from charger and batteries shall be shown as average voltage. Whenever ac is not present, this shall indicate the actual level of battery bank.

In full charge state, the reading shall be around 27 to 28 V DC.

3 CHARGING CURRENT METER (AMMETER)

It shows charging current to the battery bank. Max charging current shall be 3 to 4 A. Under short circuit condition, the reading shall rise immediately until the protection mode sets in. In short circuit, temperature of heat sink shall rise, thus prompting the unit to activate thermal protection mode, which would cut off the current supply at the output. This shall be shown as near zero charging current.

PARTS IDENTIFICATIONS (CONTINUED)

4 LOAD PROTECTION CIRCUIT BREAKER

It is rated at 30A DC. Overloading shall break the DC supply to equipments and can be reset by pressing down the breaker button.

5 REVERSE POLARITY PROTECTION CIRCUIT BREAKER

Wrong polarity connection from batteries to the charger shall be damaging to the unit. This additional feature prevents unnecessary damage to the charger that is due to human error in connection.

Only press it down after the fault is removed.

6 BATTERY DISCONNECTION SWITCH

It is recommended that the battery bank is disconnected from the system if it shall be left idle for some time such as long weekend or after installation pending system handover. Otherwise, it shall be assumed that the ac is unavailable and DC supply is still fed to the equipments. This shall drain out the battery bank and would cause premature and permanent damage to the power pack.

7 BACK UP SUPPLY AND BATTERY CONNECTION TERMINALS

Battery bank should be connected to the BATT IN terminals whereas back up supply to equipments terminated at BACK UP DC OUT port.

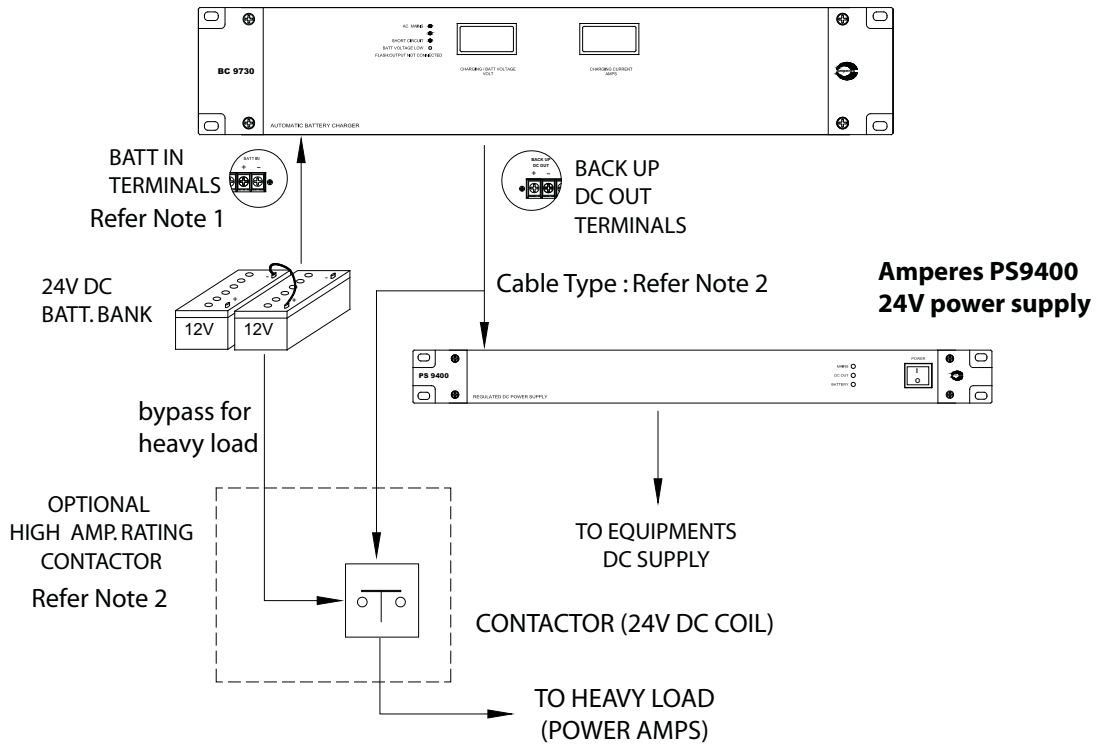
Ensure correct terminals during connections and take extra care with the polarity and short circuit at battery terminals shall cause serious damages such as fire and explosion.

8 AC MAINS SWITCH

The ac mains switch has been relocated to the rear of the unit to avoid incidental shut down of ac power supply to the charger. Switching off the mains supply assumes ac failure, thus activating DC back up supply to the other equipments.

APPLICATION SCHEMATIC

BC9730 (Ver 2)



Note 1 :

Although BC9730 has reversed polarity protection circuitry, it is always important to observe the polarity when connecting the back up batteries to the charger. Repeated error may cause damage to the unit.

REMOVE THE FAULT AND RESET THE CIRCUIT BREAKER



Note 2 :

It is important to use correct cable size for back up supplies, ie. cable from battery bank to charger and from charger to load. Incorrect size may cause serious consequences whenever takeover is activated and the load is high. This may cause fire.

PLEASE REFER TO SECTION : USING CORRECT CABLE SIZE FOR BACK UP BATTERIES

Note 3 :

It is recommended that external that draw high current uses external contactor or high power relay for back up changeover. Such load are power amplifiers or external volume controllers that may be big in quantity.

USING CORRECT CABLE SIZE FOR BACK UP BATTERIES

It is important to use correct cable size for back up batteries. Errors may cause cable overheating whenever take over is activated, eventually leads to cable insulation being melted and short circuit. In worst case, this may lead to fire. Why so?. Batteries would provide whatever current required by load which may run into hundreds of amp for a very short period of time.

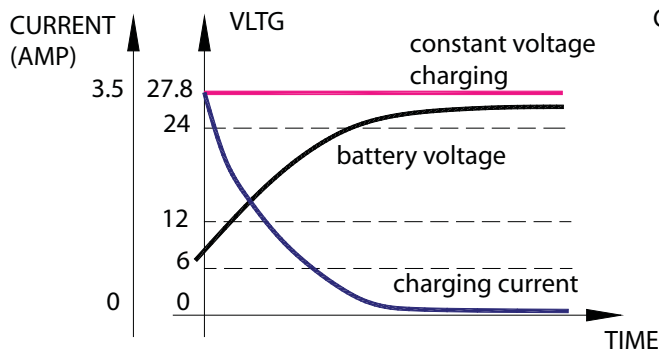
Use the table given below as guideline in choosing correct cable size against calculated max load. Always allow a headroom of 20% in your design.

Cable Area (mm sq)	Conductor Size (mm)	Max Load (Amp)
1	1/1.30	11
1.5	1/1.38	13
2.5	3/1.04	18
4	7/0.85	24
6	7/1.04	31
10	7/1.35	42

If the load is large as compared with the capacity of the battery bank, we suggest that the back up system to be divided into several blocks.

Separate individual blocks shall be safer as compared to a single large battery bank.

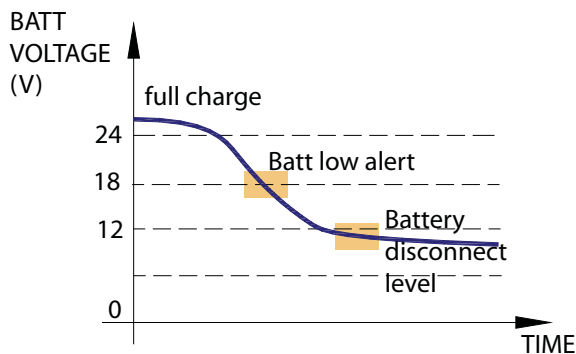
GENERAL CHART FOR CHARGING AND DISCHARGING



CHARGING CHART

Initial charging current is subject to voltage level of battery at point of charging process. The current shall reduce to a constant value upon full charge.

Charging voltage is constant at around 27 - 28V. Final battery voltage may exceed 25V.



BATTERY DISCHARGING CHART

Discharging rate is subjected to load, operating temp and battery capacity.

Batt low alert level is around 18V.

Batt disconnect from system is around 12V. Discharge may continue though disconnected, depending on the battery characteristics. Refer to battery's technical literature.

CALCULATING BATTERY CAPACITY

The following steps may provide a guideline in determining the capacity required for your back up system. Some end results may vary, depending on how you interpret the actual requirement as well as battery characteristics. Please refer to battery data sheet for information.

1. Check the current drawn for your equipment and the operating period required

ie. 30A for your 480W amplifier under rated full load, 2 hrs of operating
:Capacity (C1) is = 30×2
= 60 AH

2. Residual voltage percentage to remain at battery to avoid full discharge

ie. 30% should remain to avoid damaging battery
:Capacity (C2) is = $60 / 0.7$
= 85.7 AH

Also refer to the battery data sheet for recommended residual voltage

3. Determine optimum discharge rate

ie. Say it is recommended to draw 5 amphour from 10 amphour battery
:Capacity (C3) is = $85.7 / 0.5$
= 171.4 AH

Also refer to the battery data sheet for recommended discharge rate.

Higher discharge rate shall not be able to provide the required capacity and the voltage shall drop sharply.

4. Duty cycle

ie. 20% of current shall be draw in an hour, ie duty cycle = 20%
:Battery capacity required per unit amp = 171.4×0.2
= 34.28 Ah

In voice or music, the amp is not constantly loaded at rated value. Lower output volume, music or speech may only consume a fragment of power, unlike siren. Thus using a factor of 20% shall be reasonable.

5. Sum up total equipments

ie. 4 units of amplifiers are available
:Actual AH capacity required = 34.28×5 AH
= **137.1 Ah**

Choose the nearest available rating of battery bank.

Add allowance for other equipments such as accessories etc.

SUMMARY OF FEATURES

Constant voltage charging with decreasing charging current. Initial charging current of up to 3.5A.

Digital voltmeter and ammeter with LEDs for easy status identification

Protections for surge, fuse for battery overload and reverse polarity

Charger output short circuit protection

Thermal overheat protection by cutting off charging voltage

Battery disconnection switch for disengaging the battery when not in used for a long period of time

Low battery and short circuit indications

Automatic low battery disconnection to avoid batter over discharging

SPECIFICATIONS

Input voltage	230 / 240V ac
Charging voltage	27.3 - 27.8 V dc
Charging current	3 - 3.5A max with reducing current
No load consumption	30 mW
Max consumption	100 W
Protections	Resettable DC fuse (30 A) Battery polarity reverse connection Built in surge protection Low battery auto disconnection (10 - 12V) Thermal overheat protection (80 C at heatsink) Short circuit protection
Indications	AC mains, short circuit and low battery
Displays	Voltage / current 3 digit display
E/M back up Amp rating	25A max (use external contactor / relay if required)
Terminals	Battery input , EM load
Weight	3.4 kg
Dimensions	482 (W) X 88 (H) X 150 (D) mm

WARRANTY CONDITIONS

Only Amperes Electronics Service Centres are allowed to make warranty repairs : a list of Amperes Electronics Service Centres may be asked for by the purchaser or send directly to Amperes Electronics Sdn Bhd or its authorised distributors. This warranty is not valid if repairs are performed by unauthorized personnel or service centres.

This warranty covers only repairs and replacement of defective parts ; cost and risks of transportation as well as removal and installation of the product from the main system are for the account of the purchaser. This warranty shall not extend to the replacement of the unit.

This warranty does not cover damages caused by misuse, neglect, accident of the product as well as using the product with power supply voltage other than shown on the product, or any other power supply source / adaptor not recommended by the manufacturer.

This warranty does not cover damages caused by fire, earthquakes, floods, lightning and every cause not directly related to the unit.

This warranty does not include any indemnity in favor of the purchaser or the dealer for the period out of use of the unit; moreover the warranty does not cover any damages which may be caused to people and things when using the product.

This warranty certificate is valid only for the described product, and is not valid if modifications are made on this certificate or on the identification label applied on the product.

This warranty covers all the material and manufacturing defects and is valid for a period of 12 months from the date of purchase or for a longer period in countries where this is stated by a national law. In this case, the extension is valid only in the country where the product is purchased.

Amperes Electronics Sdn Bhd is not obliged to modify previously manufactured products under warranty if the design changes or improvements are made.

DISCLAIMER

Information contained in this manual is subject to change without prior notice and does not represent a commitment on the part of the vendor. AMPERES ELECTRONICS SDN BHD shall not be liable for any loss or damages whatsoever arising from the use of information or any error contained in this manual.

It is recommended that all services and repairs on this product be carried out by AMPERES ELECTRONICS SDN BHD or its authorized service agents.

AMPERES series must only be used for the purpose they were intended by the manufacturer and in conjunction with this operating manual. AMPERES ELECTRONICS SDN BHD cannot accept any liability whatsoever for any loss or damages caused by service, maintenance or repair by unauthorized personnel, or by use other than that intended by the manufacturer.

