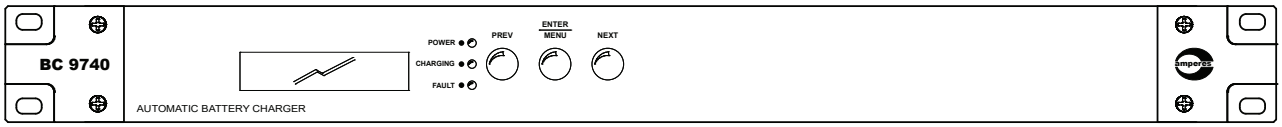
# INSTRUCTION MANUAL

# BC9740

24V DC Automatic Battery Charger




*Thank you for choosing another quality product from Amperes Electronics.*

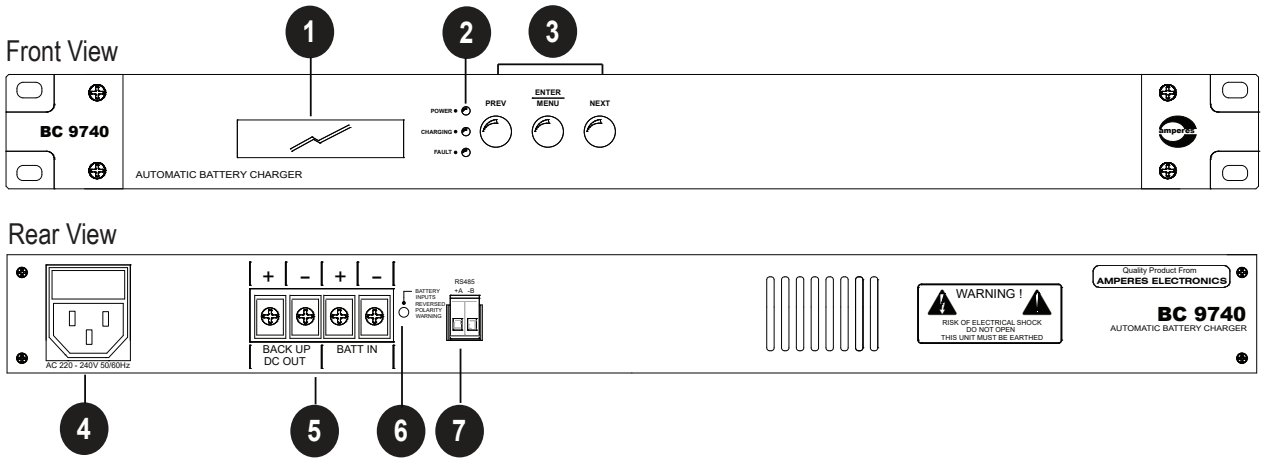
We are proud to introduce the all new innovative Battery Charger which had been designed to meet the demanding requirement of installers and users alike.

The distinctive features as compared to its predecessor are the reduced height for rack space saving, various protective circuitries to prolong the battery life span and the charger itself and the new communication feature which enables remote monitoring by Amperes PMX II Software through LAN.

We invite you to experience this innovative product which we developed by taking challenges into reality. You shall be assured of quality and performance in years to come.

VER 3 / 2022

# Parts Identifications




### 1. LCD DISPLAY

2 X 18 character LCD displaying the units' parameters and programming instructions.

### 2. LED INDICATORS

LED Indicator for power, charging and fault.

### 3. CONTROL BUTTON

Button for menu and various playback.

### 4. AC MAINS INPUT

Incoming supply of 220 / 240V AC, please use correct fuse rating at the plug top for replacement.

### 5. BATTERY AND LOAD CONNECTORS

24V battery bank shall be connected to the "BATT IN" connectors whereas the back up load to " BACK UP DC OUT ". Ensure correct polarity for battery connections. The back up ( or EM load ) shall not exceed 25 Amps and use external relays or contactors if necessary.

DO NOT CONNECT LOAD DIRECTLY TO BATTERY TERMINALS AS THIS MAY CAUSE DAMAGE TO YOUR EQUIPMENT.

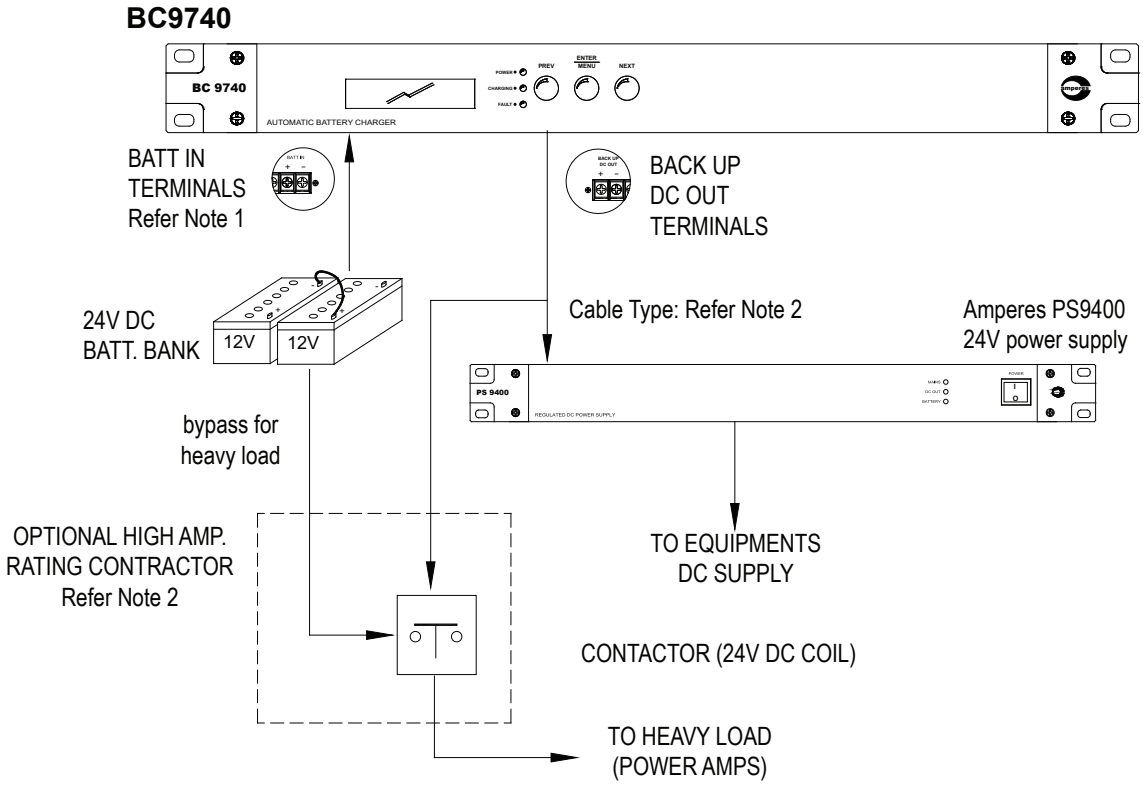
### 6. BATTERY INPUTS REVERSED POLARITY LED

The led shall lit if battery polarity connection to the terminal is reversed.

### 7. RS485 DATA PORT

Information such as battery voltage, charging current and other status can be retrieved via RS485 data port and monitored externally. Amperes PMX II LAN software with BC9740 Monitoring Module can be used for remote viewing. iPX5500 Comm Interface shall convert the RS485 data to IP for communication with the software. Refer to section " Connecting to PMX II LAN via iPX5500 Comm Box ".

# Connecting the unit Diagram




Note 1 :
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.

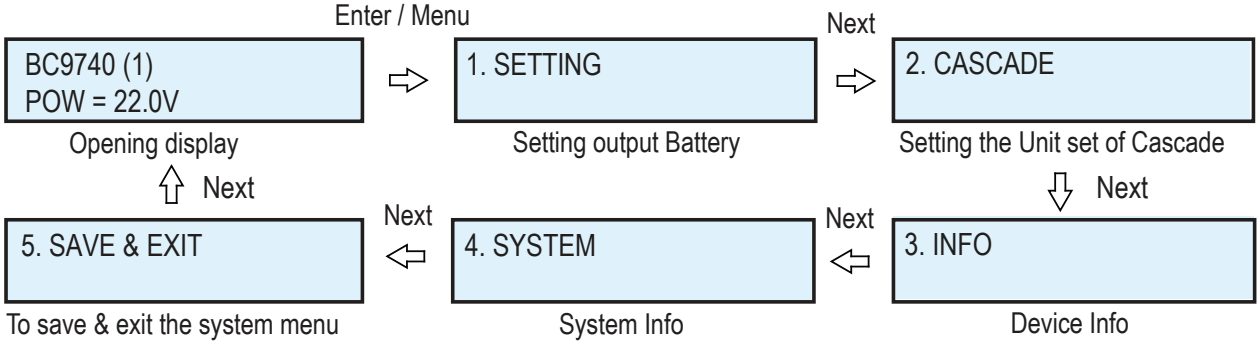
PLEASE REFER TO SECTION : USING CORRECT CABLE SIZE FOR BACK UP BATTERIES

Note 2 :
It is recommended that external that draw high current uses external contactor or high power relay for back up changeover, equipment. ie. power amplifiers.

AC contractor is recommended as it shall provide faster change over to battery DC supply as compared to DC contractor.

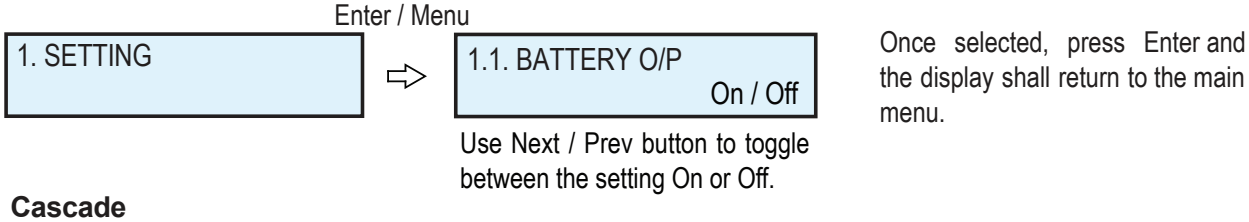
# Operating The Unit ( Menu Instructions )

**The Menu Flowchart :**



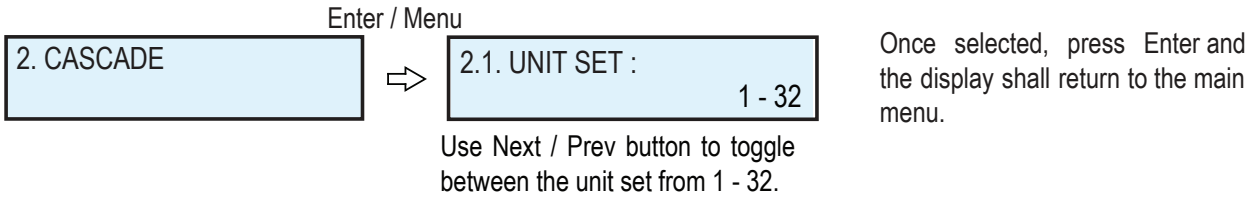

## 1. Setting

It is used to set the battery output connection to the system. If the system were to be shut down, we recommend that the battery bank to be disconnected to avoid unnecessary draining of the batteries.



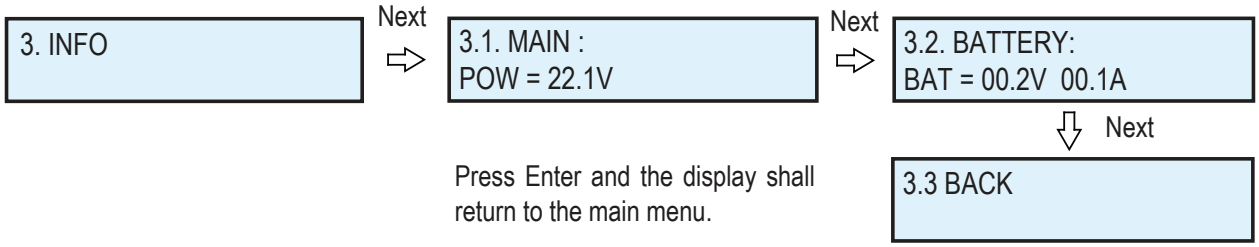

## 2. Cascade

Charger unit can be addressed to identify unit number if more than single unit are installed. It is useful to set this if remote monitoring is used.



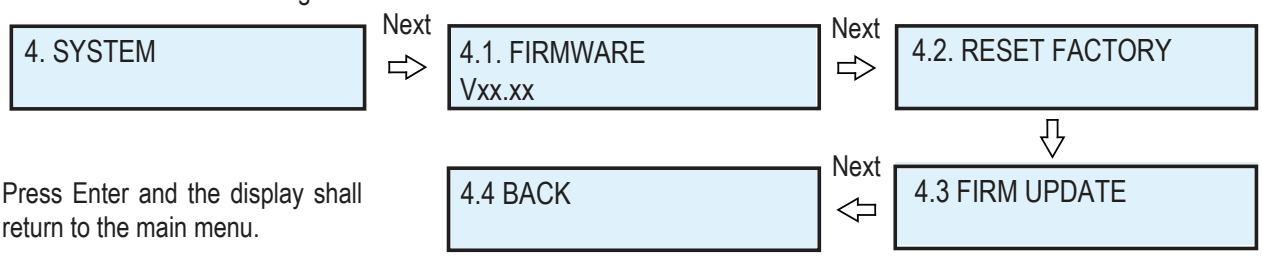

## 3. Info

Info on charging and battery voltage.

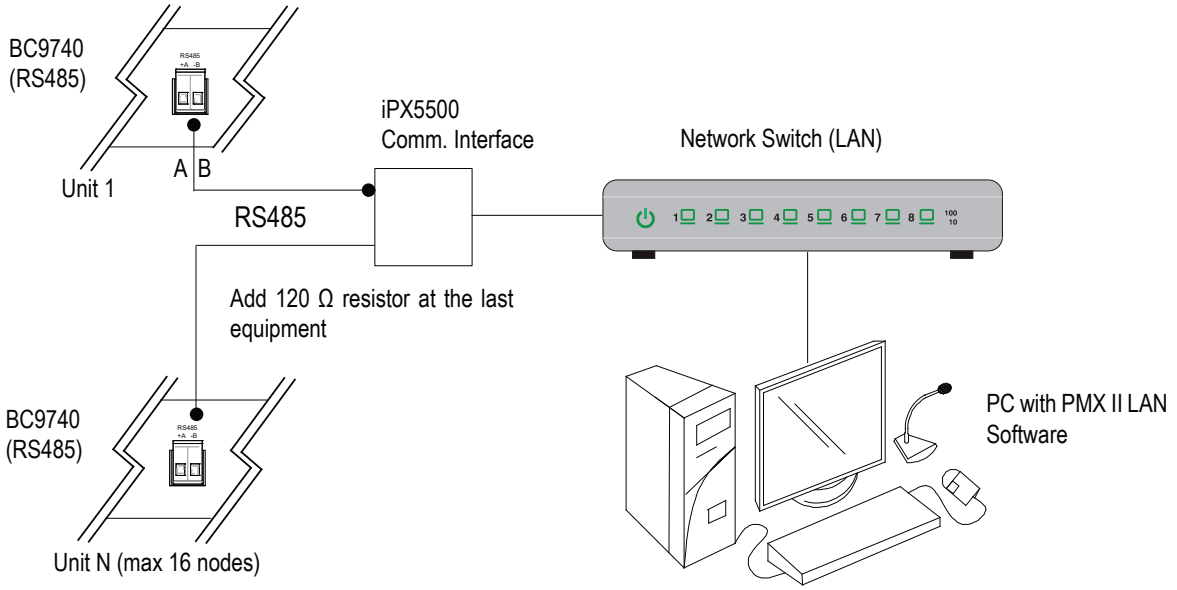



## 4. System

System Information of the charger is available in this menu.



# Connecting to PMX II LAN via iPX5500 Comm Box




Parameters such as charging voltage, current, battery status can be monitored remotely via PMX II LAN version. iPX5500 Comm Box ( Communication Interface Box ) is required to convert the RS485 data to IP and thereafter captured by the software. Maximum 16 nos of nodes ( including other equipment in the rack ) can be connected.

Each unit should be addressed individually to avoid data crash. Please refer to instruction manual of relevant IP product for its setup procedures.

# Monitoring via PMX II LAN

Note: To be available soon

# Calculating Battery Requirement

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 interprete the actual requirement as well as battery characteristics. Please refer to battery data sheet for information.

| STEP 1 | STEP 2 | STEP 3 | STEP 4 |
|---|---|---|---|
| Sum up total current drawn and the operating period required.<br>e.g: Total current under 24V DC is 30A and 2 hours stand-by time.<br>C1 = 30 x 2<br>= 60Ah | Determine residual voltage to remain to avoid total discharge; ie: 30%<br>C2 = 60 / 0.7<br>= 85.7Ah<br>Refer to battery data sheet for recommended value. | Optimum discharge rate; i.e: 5Amp / Hr from battery.<br>C3 = 85.7/0.5<br>= 171.4Ah | Duty cycle & capacity required.<br>e.g: 20% duty cycle for paging.<br>:- Battery capacity = 171.4 x 0.2 = 34.28Ah |

Choose the nearest battery capacity value for your installation. i.e: 40Ah

# Using Correct Cable 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) | Conduct or 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.

# Technical Specifications

| | |
|---|---|
| Input voltage | 220 / 240V AC |
| Charging voltage | 27.8V DC Max |
| Charging current | 4A; (max 5A) |
| Idle power consumption | 1.3W |
| Protections | 25A fuse at PCB<br>Low battery auto disconnection, reverse polarity, system idle disconnection |
| Indications | AC mains, short circuit and low battery |
| Displays | Charging current<br>Charging voltage<br>Battery voltage<br>Output current<br>Battery reverse polarity |
| Communication | RS485 out; link to Amperes PMX II LAN via iPX5500 comm. box for remote monitoring |
| E/M back up Amp rating | 25A max<br>( Use external contactor / relay if required ) |
| Terminals | Battery input , EM load |
| Weight | 4.15 kg |
| Dimensions | 482 ( W ) X 44 (H) X 180 (D) mm |

# Warranty Conditions

Only Amperes Electronics Service Centres are allowed to make warranty repairs : a list of Amperes Electronics authorized service centres may be asked by the purchaser or send directly to Amperes Electronics Sdn Bhd at 70 Jalan Industri PBP3, Tmn Perindustrian Pusat Bandar Puchong, 47100, Puchong, Selangor. 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 risk 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, negligence in application as well as using the product with power supply voltage other than shown on the product, or any other power supply source / adapter 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 cause to the people and things during the use of the product.

This warranty certificate is valid only for the described product, and is not valid if modifications are made on this certificate or identification labels applied to the unit or any other modifications to the physical unit other than its intended usage.

This warranty covers all the material and manufacturing defects and is valid for a period of 36 months from the date of purchase or for a specified 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.

The purchaser is deemed to agree to the above warranty conditions once the product packaging is unpacked., Otherwise the product shall be returned to the seller in proper original condition.

# Disclaimer

Information contained in this manual is subjected 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 of this product to be carried out by Amperes Electronics or its authorized service agents.

Amperes products must only be used for the purpose they were intended by the manufacturer and in conjunction with this operation 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.

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