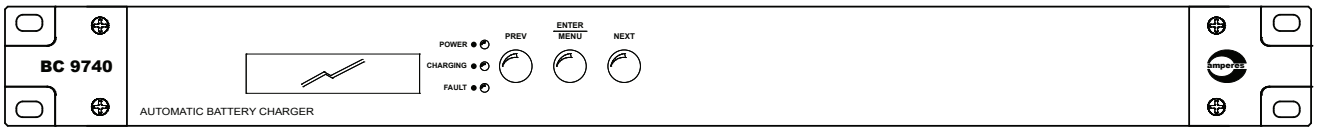
INSTRUCTION MANUAL

BC9740

24V DC Automatic Battery Charger



Thank you for choosing another quality product from Amperes Electronics

Product in Summary

We are proud to introduce a 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 of 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 III 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.

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VER 3 / 2025

In our support towards environment, we shall no longer print manuals to be accompanied with each product. Please view through browser and print them only when necessary.

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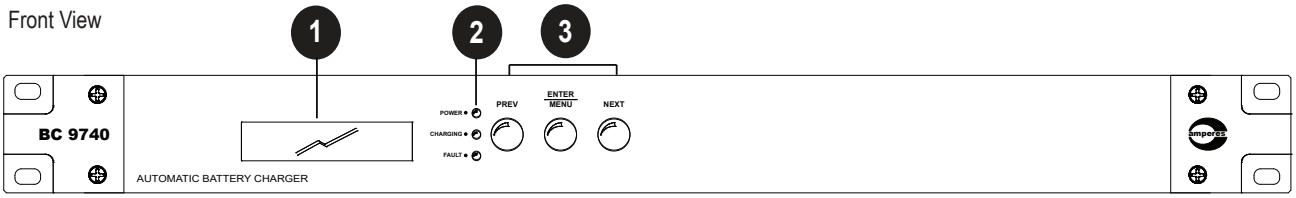
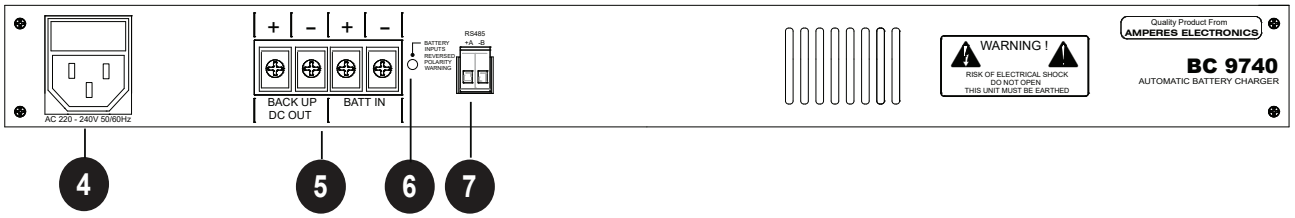
Parts Identification

Front View



Rear View



1. LCD DISPLAY

2 X 18 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.

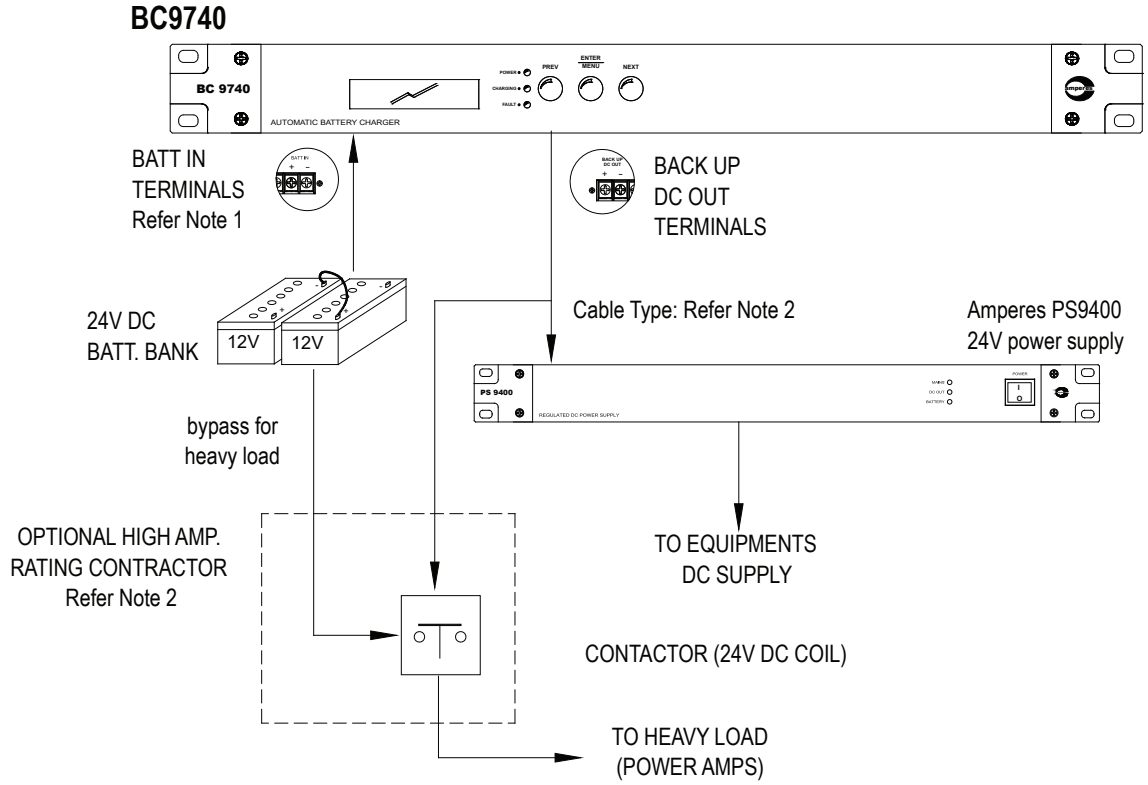
6. BATTERY INPUTS REVERSED POLARITY LED

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 III 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 III LAN via iPX5500 Comm Box".

Connecting the Unit Diagram



Note 1 :
It is important to use correct cable size for back up supplies, i.e. 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.

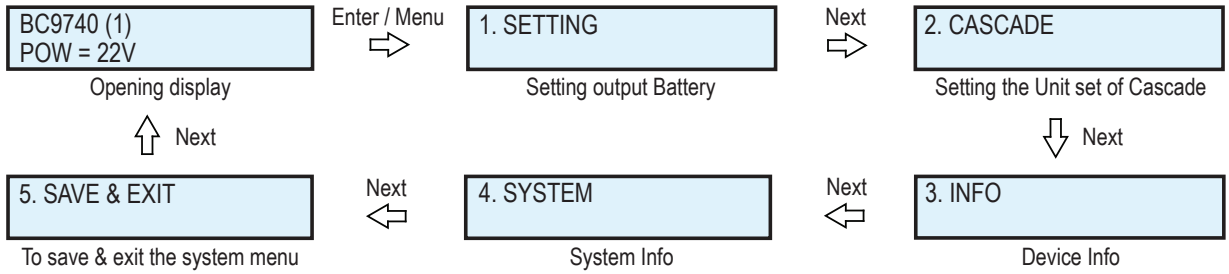
PLEASE REFER TO SECTION : USING CORRECT CABLE SIZE FOR BACK UP BATTERIES

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

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

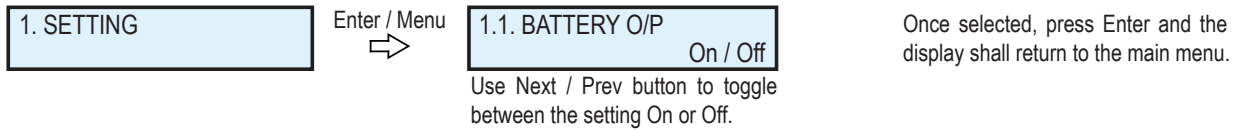
Operating The Unit (Menu Instructions)

The Menu Flowchart :



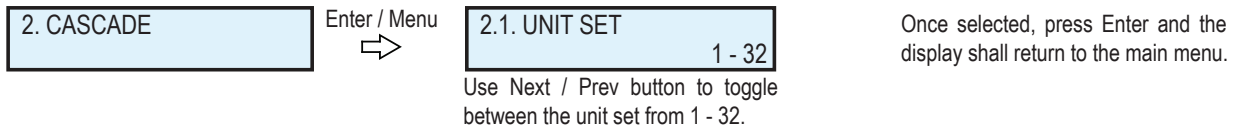
1. Setting

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.



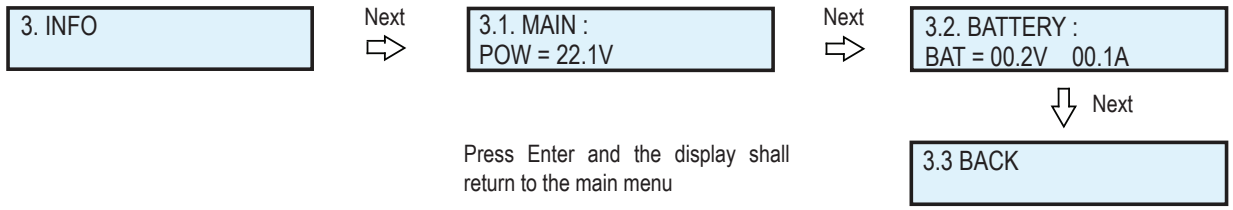
2. Cascade

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.



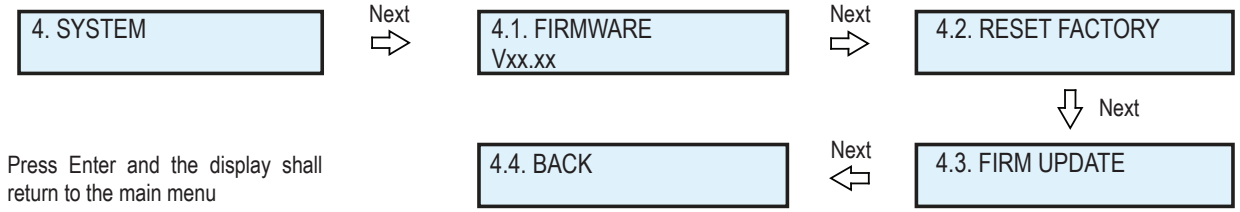
3. Info

Info on charging and battery voltage.

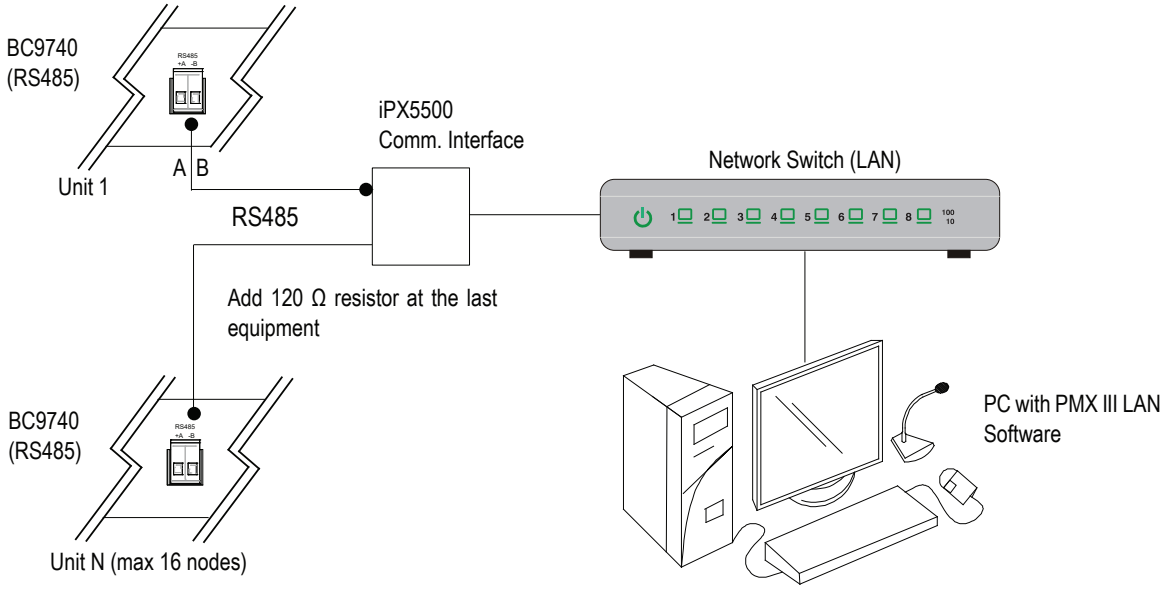


4. System

System information of the charger is available in this menu.



Connecting to PMX III LAN via iPX5500 Comm Box

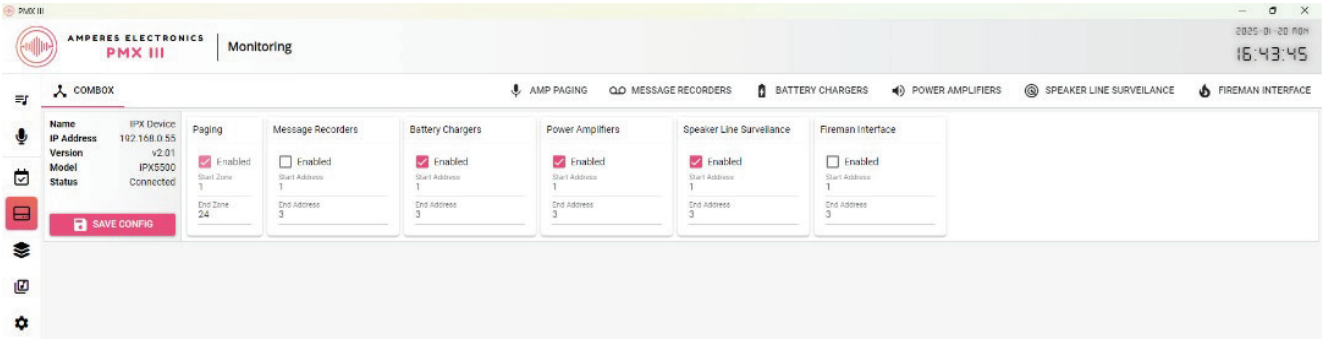


Parameters such as charging voltage, current, battery status can be monitored remotely via PMX III LAN version. iPX5500 Comm Box (Communication Interface Box) is required to convert the RS485 data to IP and thereafter captured by the software. Maximum 16 nos of nodes (including other equipment in the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

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

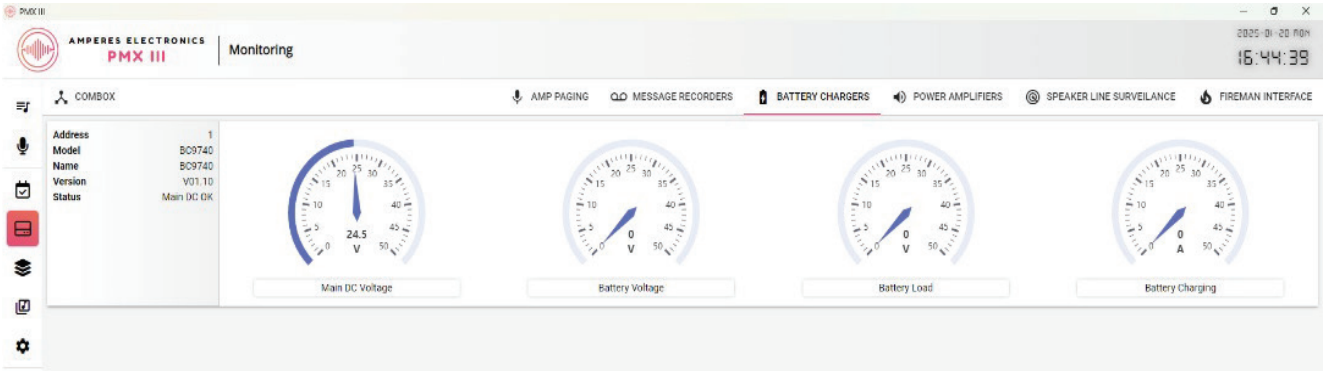
Monitoring via PMX III LAN

Remote Monitoring



5 types of monitoring status can be monitored, including Message Recorder, Battery Charger, Power Amplifier, Speaker Surveillance, Fireman Interface.

Battery Charger Interface



Parameters status can be monitored from BC9740 are Main AC voltage, Battery Voltage, Battery Load and Battery Charging.

Calculating Back Up Battery Capacity

For most commercial installations, it is a requirement by local authority that the PA system must be able to operate during power failure. This means for back up supply to the system can be from building's standby generator or via standalone back up power supply bank, i.e. Batteries.

The standby batteries' capacity should meet the requirement for either these conditions :

Building with back up generator :

The minimum capacity to maintain the system operation for at least 6 hours, after which it is able to operate evacuation broadcast in all zones for at least 30 minutes.

Building without back up generator :

The minimum capacity to maintain system operation for at least 24 hours, after which it is able to operate evacuation broadcast for at least 30 minutes.

Calculation of minimum battery capacity :

C min = 1.25 ((T1 x I1) + D (I2 x T2) Ah)

C min	- min capacity of battery when new at 20 hr discharge rate at 20C in Ah.
1.25	- Ageing factory allowing 5% per year for 4 years
T1	- Battery standby period in hours
T2	- Alarm time in hours (as 0.5 or 30 minutes)
I1	- Battery standby load in amperes
I2	- Battery alarm load in amperes
D	- Battery de-rating factor (usually 1.75 for inefficiency of battery under load)

Example :

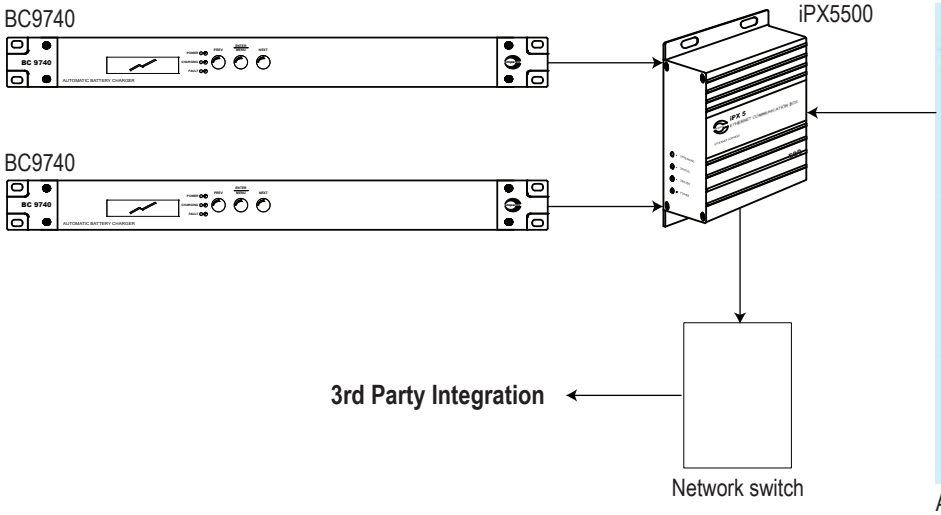
A system with full load of 50 amps and standby current at 2 amps would require minimum battery capacity of :

C min = 1.25 ((24 x 2) + 1.75 (50 x 0.5))
= 114.7 Ah

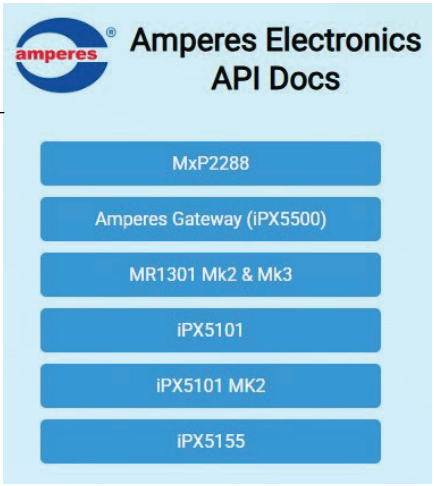
Select the closest battery capacity which is 100 Ah or 150 Ah.

Source of info : BS5839-1 : 2013 ; annex D

3rd Party Integration



Access through API



API Docs available at **apidocs.amperes.xyz**
Click (iPX5500) to view file API documentations

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 wth the capacity of the battery bank, we suggest that the back up system to be divided into several blocks.

Seperate 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 Low battery auto disconnection, reverse polarity, system idle disconnection
Indications	AC mains, short circuit and low battery
Displays	Charging current Charging voltage Battery voltage Output current 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 (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.

Eligibility :
Amperes Electronics' Service Center will accept any device send in for repair / checking purchased from any of our dealers. Some dealers may have the right to refuse repair / service / checking for any device not purchased from them directly.

Coverage
This warranty covers only repairs and replacement of defective parts, due to defects of components or workmanship during product warranty period. For any product purchased exceeding the warranty period, a cost of repair shall be presented and will only proceed to rectifications upon agreed value. If the owner decides not to proceed, a minimal checking fees will be applied.

Exclusions
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 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.

Duration / Warranty Period
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.

Cost of Claiming Warranty
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.

Limitations
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. Our liability is limited to the cost of the product

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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