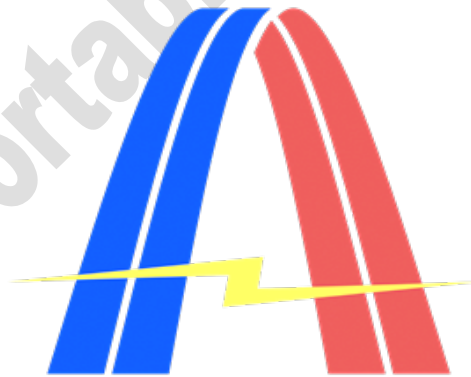




SPECIFICATION

Protection Circuit Module (PCB)
with 60°C Thermostat and Fuel Gauge Socket for 20
cells (24V), 7A limited
NiMH/NiCd Battery Pack



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AA Portable Power Corp



1. Important Notes:

This PCB module is for 24V NiMh or NiCd battery pack. AA Portable Power will not responsible for any damage, accidents leading to minor or fatal injuries, and etc. caused by the user's negligence or lack of knowledge. Always read the specification beforehand and perform the best operation when handling it.

2. Technical specification:

No.	Items	Specification	Notes
Normal information:			
1	Battery type	24V NiMh / NiCd battery pack	20S (1.2V/cell)
	Max charging / discharging current	7A	
	Typical power consumption	1.5 mA	
Basic function			
2	Over discharging protection	Yes	< 18~21V
	Over temperature protection	Yes	< 60±5°C
	Short circuit protection	Yes	
	Fuel gauge socket	Yes	Suitable for our P/N: FG-MH20S
Environment			
4	Operation Temperature	-10°C~40°C	
	Operation Humidity	<90%	
	Storage Temperature	-10°C~40°C	
	Storage Humidity	20%~60%	
Mechanical			
5	Dimensions	60mm(2.4") x 30mm(1.2") x 6.0mm(0.25")	
	Weight	0.4Oz (11g)	

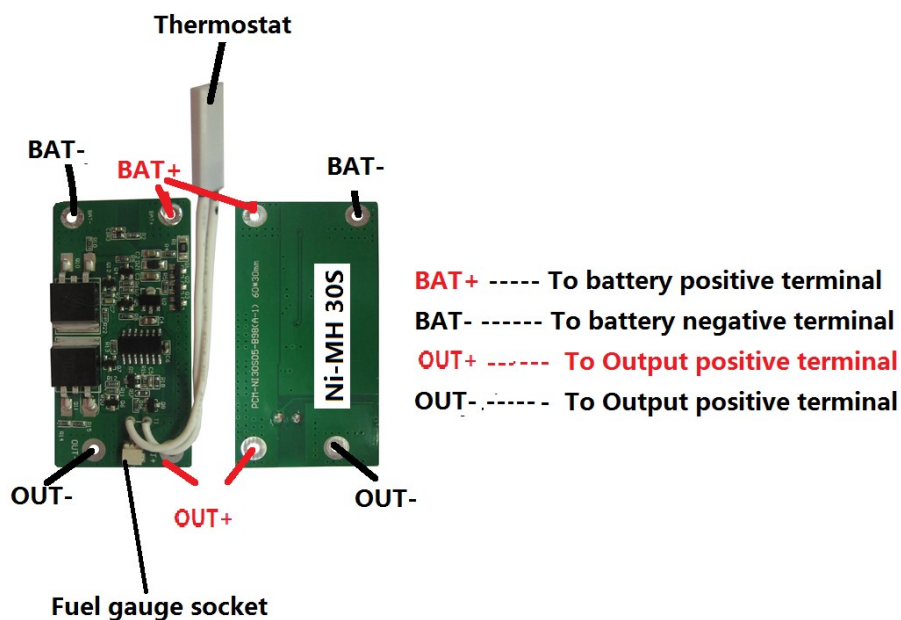


3. Operation & Instruction :

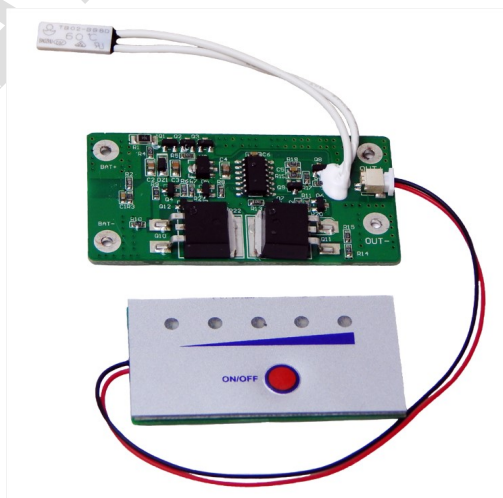
Connect the PCB to battery pack as shown in following picture.

3.1 Please connect PCB to battery first , then connect battery pack to the load, otherwise the PCB will be locked.

3.2 When install PCB on battery, if there is a fuel gauge on PCB, please disconnect fuel gauge first, otherwise the PCB will be locked.



3.3 If you want to install a fuel gauge to monitor the battery's voltage, connect our fuel gauge (Part No: [FG-MH20S](#)) in fuel gauge socket, as shown below.





3.4 If the PCB is locked, the output voltage can be measured from OUT+ and OUT-, but no output current. There are two ways to unlock the PCB:

A. Use a 24V NiMH charger to charge the battery, charging current should be less than 7A. The PCB will be unlocked in several seconds.

B. Disconnect any load, include fuel gauge. The PCB will be unlocked in several seconds.

3.5 The PCB has about 1.5mA consumption in idle status, so please charge the battery pack immediately after use, or charge the battery periodically to maintain the battery pack, otherwise the battery may be damaged. For example, for 3Ah capacity battery pack, it should be recharged every 2000 hours (83days). You can calculate by using the following formula

$$\text{Days} = \text{battery capacity (mAh)} / 1.5\text{mA}$$

3.6 **Do not charge or discharge battery pack with PCB over 7A.** The PCB will be damaged due to over current.

3.7 Over discharging or battery's voltage < 20V will lead to PCB locked. Charge the battery immediately.

3.8 60°C thermostat should be put it in suitable position which is most possible catch the highest temperature in the battery pack.

4. Warning

- Customer should be professional in NiMH/NiCd battery pack to use the PCB. Misusing PCB may cause battery damage or explode.
- Don't use this PCB with Li-Ion / LifePo4 battery pack
- Use for 24V NiMh/NiCd pack (20 cells 1.2V/cell) only.
- Since this PCB does not have over-charge protection function, must use our 24V NiMH/NiCd smart charger to recharge battery pack.