Specification of
HV Li-Ion Smart Charger for LiCo / LFP Pack:
0-200V / 0-24A Adjustable

AA Portable Power Corp

AA Portable Power Corp (http://www.batteryspace.com)

Address: 860 S, 19th St, Unit A, Richmond, CA, 94804

Tel: 510-525-2328

Fax: 510-439-2808

Email: Sales@batteryspace.com

Prepared & Approved by Louis (01/10/08)

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1. Overview

High power chargers are designed based on characteristics of large format Li-ion batteries. Using patented high frequency electrical switch technology and working interactively with BMS (Battery Management Systems, the chargers exhibit high efficiency, high reliability, high power precision and high level of intelligence. The chargers will help to prolong battery lifetime.

The benefits of the chargers are following：

1. High efficiency results in low load on electricity network and therefore low electricity cost；
2. Fast response from charger enables high stability of output voltage and current level and not being affected by external loading on electrical network.
3. Intelligent and automated charging process taking feedback from BMS.
4. Exhibit high efficiency and conserves energy
5. Modular design, easy for repair and maintenance；
6. Protection against over-heat, over-voltage, over-current, short circuit, wrong connection, etc
7. Small dimension and low weight。

2. **Main Specifications**

Model	CH-200V24A
Power	4.8KW Max
Input Voltage	120VAC / 220VAC
Frequency	50/60Hz
Output Current	0-24 A
Output Voltage	0-200 VDC adjustable
Voltage Precision	≤±0.2%
Current Presicion	≤±1%
Wave Factor	≤0.3%
Efficiency	≥93%
Power Factor	≥0.7
Operating Temperature Range：-20℃～50℃、Humidity：≤90%	
Protection：Missing phase、over-heat、over-voltage、under-voltage、wrong battery connection	
Dimensions	H * W * L=320 *310 *460 (mm)
Weight	22kg

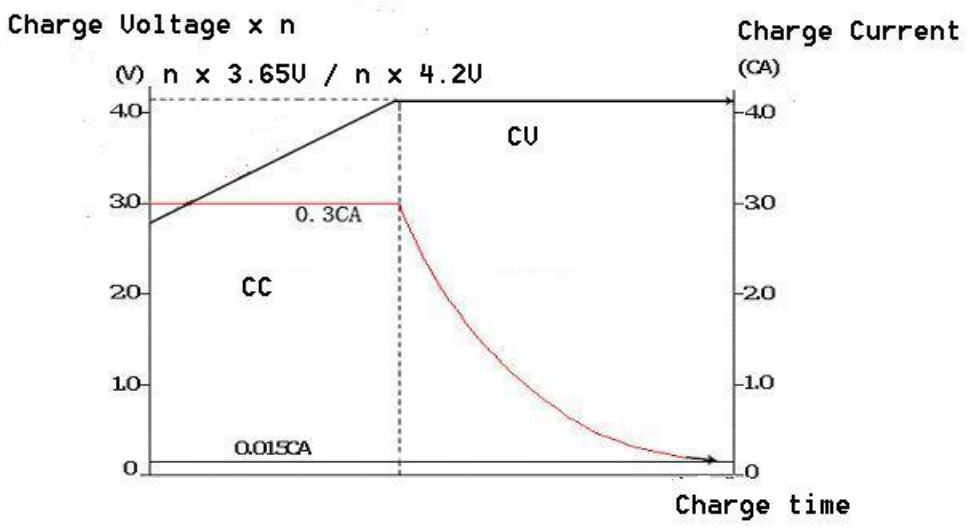
3. Charging Methods and Control Functions

Two step charge：First Constant Current, then Constant Voltage

（1）First Constant Current Charging：charging at constant current with maximum current set between 0.2～0.5CA (typically0.3CA)，voltage gradually increases，until voltage reaches maximum setting.

（2）Then Constant Voltage Charging：when voltage reaches maximum set point, it automatically switches to constant voltage charging step. Charging current gradually drops over time. When current drops to 0.015CA-0.02CA，charging process stops.

The following is charging curve (n: number of cells in series)



Note:nx3.65V for LiFePO4 pack, nx4.2V for Li-Ion pack

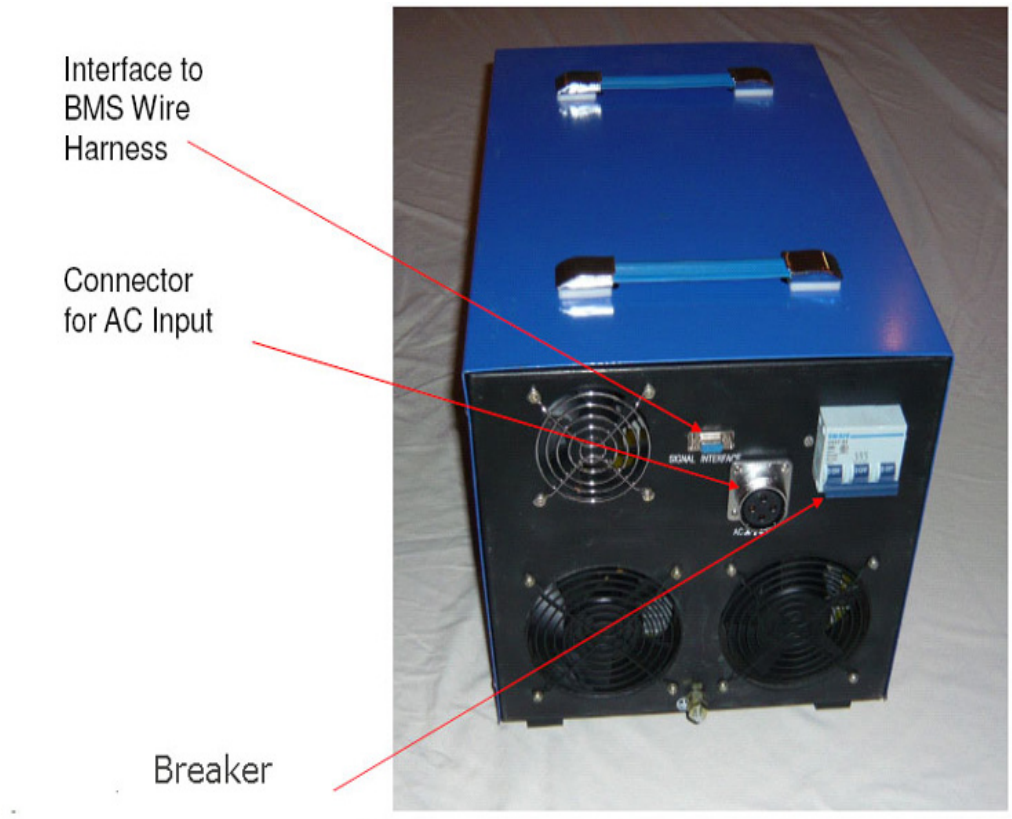
-Max charging current is set to be 0.3C (30A for 90Ah cells)
-There are 2 steps for the charging process:
-Constant current (voltage rises to max set point)
-Constant voltage (current drops from set point to zero)

（3）Automatic adjustment in output voltage and current：during the charging process, especially during the constant voltage step, if any cell exceeds maximum voltage set point, or over-heating condition is detected, BMS will send a Normally Close signal to charger. The charger will automatically reduce output voltage and current to prevent over-charging condition.

When BMS detects any cell is in under-voltage condition, it will send a Pass signal, charger will immediately stop charging. User needs to verify if under-voltage condition is real. If so, user needs to push “resume” button on the front panel. Charger will resume charging at current level at 35%～40% of original set point, until charging process is complete. Next charging process will start in normal condition.

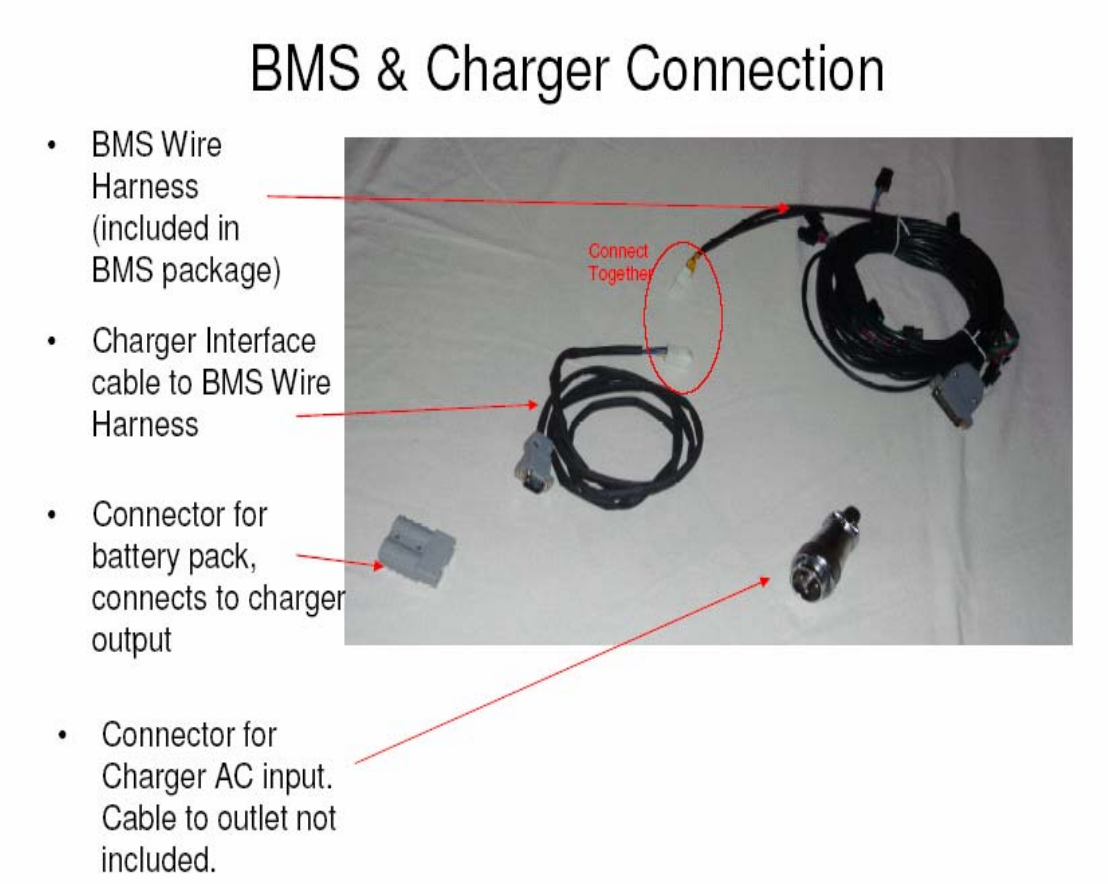
If Li-Ion/LiFePO4 batteries are under normal voltage and temperature conditions, charger is not influenced by BMS control. Adjust output voltage and current to match the requirement of battery pack. (the number of cells).

4. 45’ View & Back end Picture:



120VAC / 240VAC input terminal & Signal interface terminal for BMS wire Harness

5. BMS & Charger Connection



6. Charger turn-on / programming sequence

Charger Turn-On/Programming Sequence

- Do not connect power, battery pack and BMS alarm cable at this point
- Turn current and voltage knobs counter clockwise to minimum
- Connect AC power input (240VAC or 110VAC to respective input)
- Turn on breaker on the rear panel
- Set Voltage/Current selector to “Voltage”
- Turn voltage knob clockwise gradually to desired set point. Recommended voltage set point: 3.65V X number of cells.
- Flip Voltage/Current selector to “current”
- Connect battery pack to charger output
- Gradually turn current knob clockwise to desired set point. Recommended current set point: 0.3C (eg. 30A for 90Ah cells)
- Plug in BMS alarm signal cable

If “UT display” red light comes on while setting/increasing voltage/current, push “UT recharge” button and then continue to increase voltage/current.

Note:

- Must set up voltage and current correctly based on Li-Ion Battery pack's specifications
    - Must set up constant voltage correctly, e.g Charging Voltage = 4.2V x Number of Li-Ion Cell in series, or 3.65V x Number of Li-F-P Cell in series
    - Must set up constant current equal or less than specified charging current in cell
    - Too high charging voltage may cause Li-Ion battery to explode or start a fire