

PB Charger Firmware Modification Request Form

PB-600 and PB-1000 are MW's next generation smart chargers. It has built-in 2 stages / 3 stages (loaded application) / 8 stages charging which are commonly found in majority of the chargers out in the market. Depending on battery brand and type (lead acid, gel, lithium iron, and lithium manganese); the battery may require special charging curves and adjustment to the protective function which differs from the standard settings. Using the table below, you can change the charging voltage/current & cutoff voltage/current settings of each individual stage plus cancelling specific protective functions.

Explanation for 3 stages charging curve (With PB-1000-12 14.4V/60A as example) :

0) Initial stage (battery analysis) :

If the detected voltage level is within the range of 5~13.2V then charging will commence. If the battery is not connected (<5V) or it is already full (>13.2V), no charge will be provided. If the voltage is within normal range, pulse current will be provided to determine whether or not the battery is OK. Pulse current level <10A will be considered as faulty.

1) Stage 1 (constant current) :

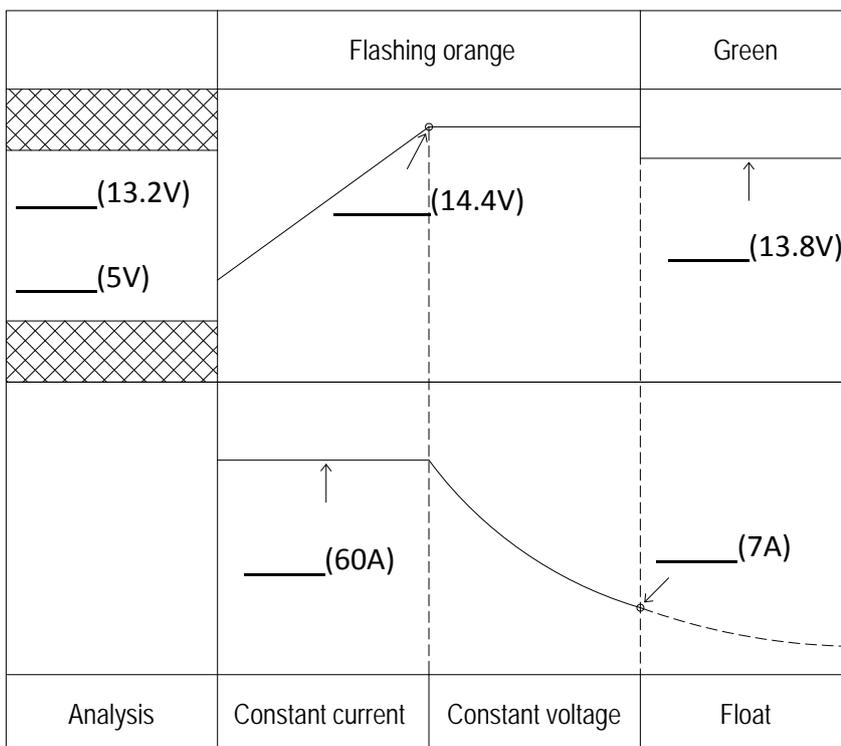
A constant current of 60A is provided until the battery voltage level reaches 14.4V then proceed to the constant voltage stage.

2) Stage 2 (constant voltage) :

A constant voltage of 14.4V is provided until the charging current naturally tapers down to 7A then proceed to the float charge stage. If the charging current does not drop to 7A within a 24hrs period, it will be forced into the float charge stage to preserve battery life.

3) Stage 3 (float charge) :

Float charge is provided so that the battery can maintain capacity. The float charge voltage level is 13.8V.



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Protection function adjustment

Except for short circuit protection, all other protections such as over voltage, over temperature, fan lock, AC under voltage, battery reverse polarity can be cancelled. The over voltage trigger point can be reconfigured upon demand.

Distributor		
Company :	Country :	Date :
Contact person :	E-mail :	TEL :
End user		
Company :	Country :	
Contact person :	E-mail :	TEL :
Charger model :		
Battery type & capacity :		P.S. If possible, please provide battery banks for testing

Other requirements

1.
2.
3.
4.
5. [This space can be used for drawing your own charging curve]

Note: PB-1000 is designed for 2 bank charging, Bank A and Bank B can be reprogrammed separately or reprogrammed with the same settings.

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Reference data

1. Original settings for 3 stages charging

	Analysis	Constant current	Constant voltage	Rated power
PB-600-12	5V~13.2V	14.4V/40A	14.4V/5A	576W
PB-600-24	10V~26.4V	28.8V/21A	28.8V/2.5V	600W
PB-600-48	20V~52.8V	57.6V/10.5A	57.6V/1.5A	600W
PB-1000-12	5V~13.2V	14.4V/60A	14.4V/7A	860W
PB-1000-24	10V~26.4V	28.8V/34.7A	28.8V/4A	1000W
PB-1000-48	20V~52.8V	57.6V/17.4A	57.6V/2A	1000W

2. Explanation for 8 stages charging curve (based on PB-1000-12):

0) Initial stage (battery analysis):

If the detected voltage level is within the range of 5~13.2V then charging will commence. If the battery is not connected (<5V) or it is already full (>13.2V), no charge will be provided. If the voltage is within normal range, pulse current will be provided to determine whether or not the battery is OK. Pulse current level <10A will be considered as faulty.

1) Stage 1 (pulse charging):

Pulse charging is used to revive tired lead acid battery which is either improperly charged/discharged or allowed to self-discharge as occurs during non-use. The typical pulse current setting is 40A.

2) Stage 2 (soft start):

Prepare battery to accept upcoming bulk charging, so a better charge can be applied. The charger voltage gradually increase from 10V to 12V while current remains constant at 24A.

3) Stage 3 (constant current):

A constant current of 60A is provided until the battery voltage level reaches 14.4V then proceed to the constant voltage stage.

4) Stage 4 (constant voltage):

A constant voltage of 14.4V is provided until the charging current naturally tapers down to 7A then proceed to the next stage.

5) Stage 5 (analysis):

The charger will stop charging for 2 minutes to determine battery status. If the battery voltage is higher than 12.6V, the battery is determined as OK and will move on to stage 6. If the battery voltage is lower than 12.6V, the battery fail indication will come ON and the charger will stop charging.

6) Stage 6 (recondition – boost charge):

Boost voltage is provided to recharge the battery charge capacity to its original state. Boost charge to 15.9V is achieved using constant current of 12A, the reconditioning will stop once charging current tapers down to 7A. This stage will last for a maximum of 30 minutes.

7) Stage 7 (float charge):

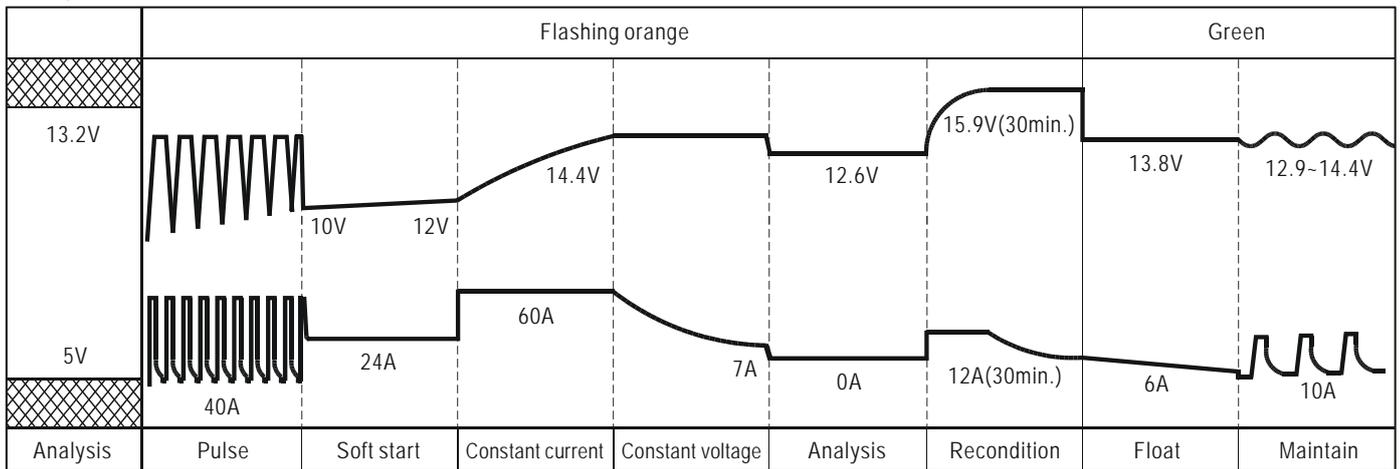
Extended period (about 1 day) of topping charge is provided so that the battery can maintain capacity. Provide float charge current of 6A at voltage level of 13.8V.

8) Stage 8 (maintain):

Maintenance charge is provided to compensate for battery self-discharge and extend battery life. Maintenance pulse current of 10A is provided based on voltage range of 14.4V and 12.9V, current ON when voltage drops to the low end and current OFF when voltage rises to the high end.

PB Charger Firmware Modification Request Form

8 Stage



3. Explanation for 2 stages charging curve (based on PB-1000-12):

0) Initial stage (battery analysis) :

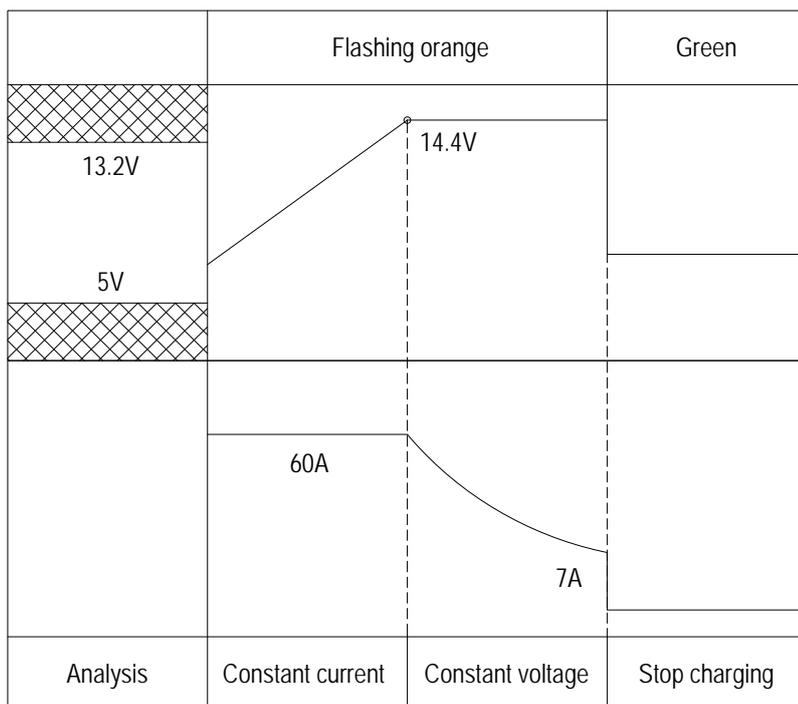
If the detected voltage level is within the range of 5~13.2V then charging will commence. If the battery is not connected (<5V) or it is already full (>13.2V), no charge will be provided. If the voltage is within normal range, pulse current will be provided to determine whether or not the battery is OK. Pulse current level <10A will be considered as faulty.

1) Stage 1 (constant current) :

A constant current of 60A is provided until the battery voltage level reaches 14.4V then proceed to the constant voltage stage.

2) Stage 2 (constant voltage) :

A constant voltage of 14.4V is provided until the charging current naturally tapers down to 7A then stop charging. The LED indicator will turn green.



Referring to the examples above (2 stages and 8 stages) and the model specifications, voltage/current transition points of each stage can be reset to fit your charging needs.