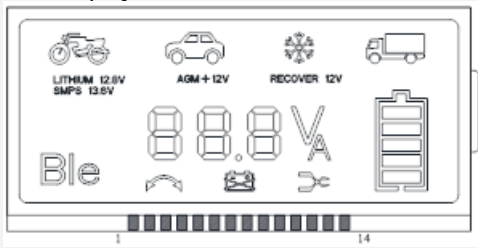


Product Specification

Product name: Intelligent Battery Charger
Product type: Household Automotive Battery Charger
Product Model: LB100 Pro

1. Basic Description:

Purpose	The product is special applied 12V/24V Lead-acid battery (Wet, Gel, MF and AGM) and 12.8V 4-cells LiFePO ₄ . The whole charging procedure is under the control of MCU or Bluetooth APP. Product has Memory function which enables charger to return to last selected mode automatically when power is switched on. If it is connected to the 1-to-3 Switcher, user can program the charging process on different batteries (max. 3 batteries). If the charger is paired with smartphone, user can control it through smartphone.
Batteries Types	Lead-acid Battery: 12V/24V Wet, Gel, MF, AGM 12V: 18Ah-240Ah 24V: 10Ah-120Ah Lithium: 12.8V; 4-cells LiFePO ₄ ; 10-80Ah
Mode Select Switch	There are 10 different kinds of charging mode, selecting the switch manually. Pb battery Modes: 12V Normal, 12V Cold/AGM, 12V Small, 12V Small Cold/AGM, 24V Normal, 24V Cold/AGM. Special Modes: 12V AGM+, 12V Recover, Lithium, 13.6V Power Supply. 1. MODE key is disabling if Vbat<3.7V. 2. MODE key is disabling at ERROR, Reset after battery removed or AC main power restart. 3. MODE key is enabling at battery connected status or charging status, and full charged status. 4. Press once at Pb battery Modes: If Vbat=3.7-14.0V: 12V Normal → 12V Cold/AGM → 12V Small → 12V Small Cold/AGM → Stand-by → go to loop If Vbat=14.0-28.0V: 24V Normal → 24V Cold/AGM → Stand-by → go to loop. 5. Long press switch 3 sec. at battery connected status: any Pb battery Modes or Standby mode → Lithium 12.8V. Long press switch 3 sec. at battery disconnected status: Standby mode → 13.6V SMPS Power Supply → go to standby. 6. Press once at Special Modes: Lithium 12.8V → Advanced AGM 12V → 12V Recover → go to Standby. If out of 3.7-14.0V, 12V AGM+ and 12V Recover Mode is not available, keep original status or charge mode. For Lithium battery, if Vbat is less than 9.5V, it goes to recovery step. If Vbat is more than 13.8V, Lithium Mode is not available, keep original status or charge mode. 7. If current battery voltage can't meet requirements of the remembered mode, just stay at Stand-by, waiting for manual operation. Go to meet the requirements of the mode by the charger system recommended after user press the MODE key.
Apps control	Apps will support iOS and Android systems. After connecting between charger and smart phone, ● Start or pause the charging ● Select the charging mode ● Program the charging process ● Save the charging data ● Check the charging status
Indicator	LCD display: 
Input cable	U plug; 0.75mm ² , 180cm length, PVC
Output cable	150cm, Black 4C PVC charge cable OD=4.5*9.5mm with deluxe connector (female).
Accessories option 1	40cm Red/Black 2C PVC charge cable OD=3.7*7.4mm with deluxe connector (male) ←→insulated alligator clips, Fuse=40A at positive cord.
Accessories option 2	40cm Red/Black PVC charge cable OD=3.7*7.4mm with deluxe connector (male)

	←-→eyelet M10 (ID=10.6mm), Fuse=40A at positive cord.
Color	Black
Dimensions (L x W x H) mm	245.7*102.2*58.8
Weight(exclude packaging)	g
Operation Temperature	0℃ to +40℃
Storage Temperature	-30℃- 60℃
Safety Class	Class II
Certificate	CE
Standards	EN 60335-2-29 and EN 60335-1 EN 55014-1, EN 55014-2, EN 61000-3-2 and EN 61000-3-3 RED:EN301 489-1 , EN301 489-17,EN300 328 ,EN62479
Chemical	RoHS, REACH
Housing Protection Class	IP65 (Dust and Water proof)
Noise Level	<50dB (Tested from a distance of 50cm)

2. Rating:

Input	220-240V~ 50Hz 1.5A
Output Power	128.0W max
Charge Voltage	Normal: 14.4/28.8V DC. Cold/AGM: 14.7/29.4V DC. 13.6V Power Supply: 13.6V DC
Charge Current	10.0A for 12V battery 5.0A for 24V battery 5.0A for 13.6V Power Supply

3. Electrical Features:

Items	Index	Description
Input Voltage	220-240V~ 50Hz 1.5A	
Stand- By Power	<1W	
Reverse Current	<10mA	
Voltage Tolerance	± 0.2V	
Current Tolerance	± 10% for 10.0A/7.5/5.0A/3.7A/2.5A ± 20% for 1.5A 0.9A (700-1100mA)	
Trickle charge	30-120mA	
Charge Control Type	CC	
Short Circuit Protection	Yes	
Reversed Polarity Protection	Yes >1.5V	
High Battery Voltage Protection	Yes	
Over Temperature Protection	Yes	
Safety Time Protection	Yes	Timer=50 hrs go to ERROR.
Memory Function	1. Exclude any special modes. 2. If select any special modes, Remember Stand-by mode. 3. If connect battery is no memory function, just stay at Stand-by, and go to charging mode after user press the MODE key.	Remember the last charge mode if battery removed or power off.
0V battery enable	yes	

4. Charging data:

Item	Index	Description
0V battery charge enable at Stand-by mode	16.5V 120mA max. Pulse at stand-by mode. Charge=0.5 sec, Stop=2.5 sec, Still pulse charge until Vbat>2.0V.	
Connected battery voltage	>3.7V	
12V battery voltage charge enable	3.7-14.0V	
24V battery voltage charge enable	14.0-28.0V	
12.8V Lithium voltage charge enable	9.5-13.8V	
12V Recover enable	3.7-14V	
13.6V Power Supply enable	At battery connected status only.	
High Battery Voltage Protection	>28V go to ERROR mode when battery connected at first. >14V at 12V any charge status go to stand-by mode (but no charge current). >16V at 12V any charge status go to stand-by mode (but no charge current).	
Soft Start Charge Function	Just into Soft Start mode: 0.9A charge at first 10 sec. go to BULK if >14.1V. 2.5A charge 10sec.go to BULK if >14.1V. 5.0A charge 20min. go to BULK if >14.1V.	24V battery spec. >28.2V go to BULK.

5. Steps Data:

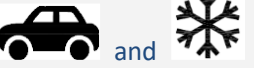
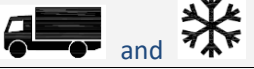
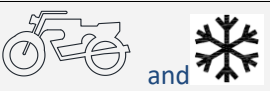
Step	1	2	3	4	5	6	7	8	9	10
Name	Diagnosis	Recovery	Soft Start	Bulk 1	Bulk 2	Bulk 3	Bulk 4	Absorption	Trickle	Maintenance
Max Time	3sec.	2hours		40hours go to next step for Pb 15hours go to ERROR for LiFePO ₄				10hours	Break +10hours [Break time: (25-charge hours) if charging hour < 10 hours; otherwise, 6 hours]	Depend Voltage
12V Normal	Check battery If Vbat is 3.7-12.0V go to next. If Vbat is 12.0-14.0V jump to bulk step. If Vbat>14.0V, this mode is not available	3.7-10.5V 5.0A CC Pulse go to error mode after 10 hrs. Charge=1 sec. Stop=0.5 sec. (charge time min. 3 sec.)	10.5-12V See Soft Start charge function	10A CC Voltage rise until 12.8 V go to next step	7.5A CC Voltage rise until 13.8V go to next step	5A CC Voltage rise until 14.1V go to next step	3.7A CC Voltage rise until 14.4V, Break 5 sec. then go to next step	14.4V 1.5A CC go to next step after 10 hrs.	After Break time, if Vbat drop to 13.1V then charging with 80mA max. until Vbat is 14.7V max. Timer=10 hrs stop Trickle after break	If Vbat drop to 12.8V charging with 1.5A CC until 13.6V then go to trickle charge. If Vbat <12.8V at maintenance, restart charge.
12V Cold/AGM	Same as 12V Normal	Same as 12V Normal	Same as 12V Normal	Same as 12V Normal	Same as 12V Normal	Same as 12V Normal	3.7A CC Voltage rise until 14.7V, Break 5sec. then go to next step.	14.7V 1.5A CC go to next step after 10hours.	Same as 12V Normal	Same as 12V Normal
12V Small	Check battery If Vbat is 3.7-12.0V go to next. If Vbat is 12.0-14.0V jump to bulk step. If	3.7-10.5V 1.5A CC Pulse go to error mode after 10 hrs. Charge=1 sec. Stop=0.5 sec.	10.5-12V See Soft Start charge function.	1.5A CC Voltage rise until 12.8 V go to next step	1.5A CC Voltage rise until 13.8V go to next step	1.5A CC Voltage rise until 14.1V go to next step	1.5A CC Voltage rise until 14.4V, Break 5 sec. then go to next step.	14.4V 1.5A CC go to next step after 10 hrs.	After Break time, if Vbat drop to 13.1V then charging with 80mA max. until Vbat is 14.7V max. Timer=10 hrs stop Trickle after break	If Vbat drop to 12.8V charging with 1.5A CC until 13.6V then go to trickle charge. If Vbat <12.8V at maintenance,

	Vbat>14.0V, this mode is not available	(charge time min. 3 sec.)								restart charge.
12V Small Cold/AGM	Same as 12V Small	Same as 12V Small	Same as 12V Small	Same as 12V Small	Same as 12V Small	Same as 12V Small	1.5A CC Voltage rise until 14.7V, Break 5sec. then go to next step.	14.7V 1.5A CC go to next step after 10hours.	Same as 12V Small	Same as 12V Small
24V Normal	Check battery If Vbat is 14.0-24.0V go to next. If Vbat is 24.0-28.0V jump to bulk step. If Vabt<14.0V, this mode is not available. If Vbat>28.0V error	14.0-21.0V 2A CC Pulse go to error mode after 10 hrs. Charge=1 sec. Stop=0.5 sec. (charge time min. 3 sec.)	21-24V See Soft Start charge function.	5A CC Voltage rise until 25.6V go to next step	3.7A CC Voltage rise until 27.6V go to next step	2.5A CC Voltage rise until 28.2V go to next step	1.5A CC Voltage rise until 28.8V, Break 5 sec. then go to next step.	28.8V 0.9A CC go to next step after 10 hrs.	After break time, if Vbat drop to 26.2V then charging with 80mA max. until Vbat is 29.4V max. Timer=10 hrs stop Trickle. after break.	If Vbat drop 25.6V, charging with 0.9A CC until 27.2V then go to trickle charge. If Vbat <25.6V at maintenance, restart charge.
24V Cold/AGM	Same as 24V Normal	Same as 24V Normal	Same as 24V Normal	Same as 24V Normal	Same as 24V Normal	Same as 24V Normal	1.5A CC Voltage rise until 29.4V, Break 5 sec. then go to next step.	29.4V 0.9A CC go to next step after 10 hrs.	Same as 24V Normal	Same as 24V Normal
12V AGM+	Same as 12V Normal	Same as 12V Normal	Same as 12V Normal	Same as 12V Cold/AGM	Same as 12V Cold/AGM	Same as 12V Cold/AGM	Same as 12V Cold/AGM	15.0V 1.5A CC go to next step after 10 hrs.	After break time, if Vbat drop to 13.1V then 1.5A pulse charge (1 sec., 0.5S off, until Vbat 15.0V max. Timer=10hours stop charge. after break	If Vbat drop to 12.8V, charging with 1.5A CC until 13.6V, then go to step 9. If Vbat<12.8V at maintenance, restart charge.

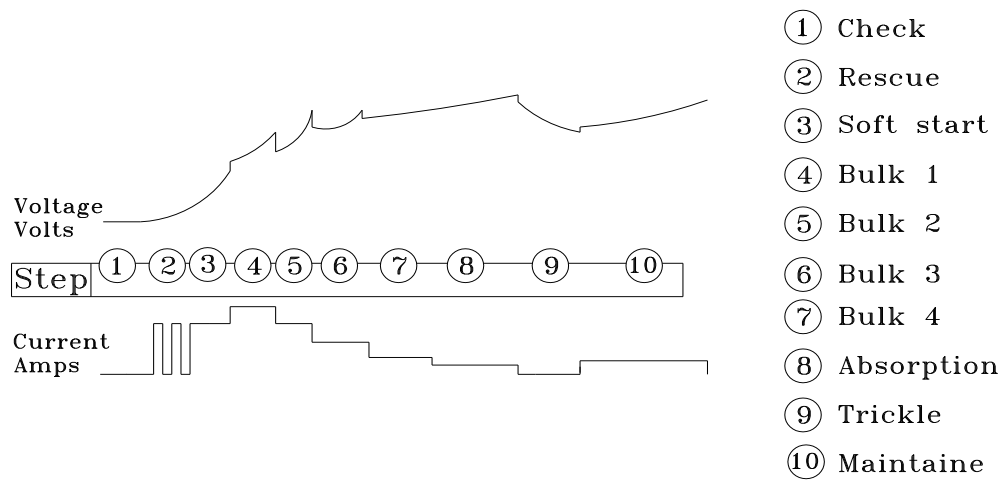
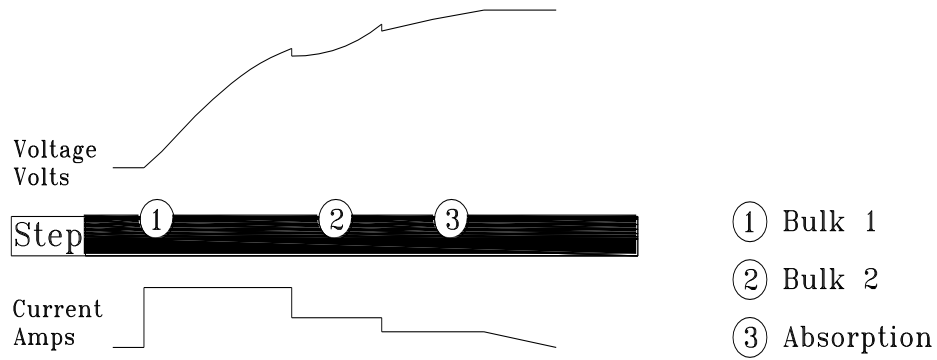
12V Recover(+)	Vbat = 3.7-14V at initial: (See Section 6 "Flow chart of 12V Recover mode (Step 1 to 3)") A. 16V 2.0A Pulse Charge=1.0S Stop=0.5S. B. Charge battery 1 hr without detection. C. Checking the battery voltage; 1. If Vbat>15V, stop charging; LEDs of Recover and "100%" are 'on' in green. 2. If Vbat is not >15V, keep charging 3 hrs without detection. D. Checking the battery voltage; 1. If Vbat>15V, go to point C1; 2. If Vbat <12V, stop charging; LED of Recover is "on" in green and LED of ERROR is "on" in red. 3. Otherwise; go to step 4.			5A CC Voltage rise until 12.8 V go to next step	3.7A CC Voltage rise until 14.1 V go to next step	2.5A CC Voltage rise until 14.4 V go to next step	1.5A CC Voltage rise until 14.7V, Break 5sec. then go to next step.	14.7V 0.9A CC go to next step after 10 hrs.	After break time, If Vbat drop to 13.1V then charging with max 80mA until 14.7V max. Timer=10 hrs stop Trickle after break.	If Vbat drop charging with 12.8V, 1.5A CC until 13.6V then go to trickle charge. If Vbat <12.8V at maintenance, restart charge.
12.8V 4cells LiFePO ₄	Check battery. If Vbat is 9.5-13.8V, go to step 4, If Vbat <9.5V, go to next step.	0-1V: 13.6V 900mA max. Pulse Charge=0.5S, Stop=2.5S 1-9.5V: 13.6V 900mA max. Pulse Charge=1.0S, Stop=2.5S. (If battery voltage cannot be charged up to 9.5V within 30 min, the charging on-off time will be 0.5S-2.5S)	N/A	9.5-13.8V 5.0A Voltage rise until 13.8V go to next step	3.7A CC Voltage rise until 14.1V then go to next step.	N/A	N/A	14.4V 0.9A CC Full charged after 10hours.	N/A	N/A

13.6V Power supply	13.6V 5.0A CC power supply (no timer).
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6. LCD Indication:

Item	Indication	LCD indication
Power On Reset	LCD display flash twice for self-check.	Flashing
	Battery not connected	Flashing
	Error: 1. Timer>10hours at step 2 and step 3 "Recovery+Soft" start charge. 2. If 12V recover (+) mode <12V after 4hours 3. Timer>15hours at Lithium Bulk charge. 4. Total Timer>50hours at Pb battery modes. 5. Battery voltage>28V, Vbat=1.0-2.0V	Flashing
	Connected in reverse polarity	Flashing
	Capacity of battery Flashing with different no. of bars, 5 bars means fully charged. Steady: Full charged after 3sec.	Flashing for charging; On for fully charged
	Mode selected: 12V Lead acid battery (regular capacity)	On
	Mode selected: cold mode 12V Lead acid battery (regular capacity)	On
	Mode selected: 24V Lead acid battery (small capacity)	On
	Mode selected: cold mode 24V Lead acid battery (small capacity)	On
LITHIUM 12.8V	Mode selected: Lithium iron phosphate battery	On
RECOVER 12V	Mode selected: Recover 12V Lead acid battery	On
	Mode selected: AGM+ battery	On
SMPS 13.6V	Mode selected: Power supply	On
	Mode selected: 12V Small	On
	Mode selected: 12V Small Cold/AGM	
Ble	Bluetooth APP control function	On

8. Charging steps (charging Voltage & charging current)



9. Sketch/photo:

