Product Specification
Product Model: MWLF-CC075A

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. Product has Memory function which enables charger to return to last selected mode automatically when power is switched on.
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 8 different kinds of charging mode, selecting the switch manually. Pb battery Modes: 12V Normal, 12V 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<2.0V. 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=2.0-14.0V: 12V Normal →12V 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 → Special Modes (12V AGM+). Long press switch 3 sec. at battery disconnected status: any Pb battery Modes or Standby mode → 13.6V Power Supply. 6. Press once at Special Modes: 12V AGM+ →12V Recover → Lithium → go to Standby. Press once at 12V Power Supply Mode: 13.6V Power Supply → go to Standby. If out of 2.0-14V, 12V AGM+ and 12V Recover Mode is not available, keep original status or charge mode. If Vbat is out of 11.6-13.8V, Lithium Mode is not available. Keep original status or charge mode. 13.6V Power Supply Mode is disabling at battery connected status. 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.
Indicator	15pcs LED: Details about the function please see LED function instructions.
Input cable	U plug; 0.75mm2; 180cm length
Output cable	140cm 2*1.3m^2 Red/Black 2C PVC charge cable OD=3.5*7.0mm with deluxe connector (female).
Accessories option 1	40cm 2*1.3m^2 Red/Black 2C PVC charge cable OD=3.5*7.0mm with deluxe connector (male) ←-→insulated alligator clips,
Accessories option 2	40cm 2*1.3m^2 Red/Black PVC charge cable OD=3.5*7.0mm with deluxe connector (male) ←-→eyelet M10 (ID=10.5mm),
Color	Injection color
Dimensions (L x W x H) mm	251.3*108.4*61.4
Weight(exclude packaging)	1075g
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
Chemical	Rohs, Prop65.
Housing Protection Class	IP65 (Dust and Water proof)

Noise Level	<50dB (Tested from a distance of 50cm)

2. Rating:

Input	220-240V~ 50Hz 1.3A
Charge Voltage	Normal: 14.5/29.0V DC. Cold/AGM: 14.7/29.4V DC. 13.6V Power Supply: 13.6V DC
Charge Current	7.5A for 12V battery 3.75A for 24V battery 5.0A for 13.6V Power Supply

3. Electrical Features:

Items	Index	Description
Input Voltage	220-240V~ 50Hz 1.3A	
Stand- By Power	<1W	
Reverse Current	<10mA	
Voltage Tolerance	±0.2V	
Current Tolerance	±10% for 7.5A/5.0A/3.75A/2.0A ±20% for 1.3A 0.9A (700-1100mA）	
Trickle charge	30-80mA	
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=50hours go to ERROR.
Memory Function	1. Include 12V Recover mode and Lithium mode. 2. If select any battery modes, Remember the last charge 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 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=0.5S, Stop=2.5S, Still pulse charge until Vbat>2.0V.	
Connected battery voltage	>2.0V	
12V battery voltage charge enable	2.0-14.0V	
24V battery voltage charge enable	14.0-28.0V	
12.8V Lithium voltage charge enable	11.6-13.8V	
12V Recover enable	2.0-14V	

13.6V Power Supply enable	At battery connected status only.	
High Battery Voltage Protection	1. >28V go to ERROR mode when battery connected at first. 2. >16V at 12V any charge status go to stand-by mode (but no charge current).	
Soft Start Charge Function	Just into Soft Start mode: 1. 0.9A charge at first (min. 3sec.), go to next if Vbat is raised [12-V(initial)]/3, go to BULK if >12V. 2. 2.0A charge (min. 3sec.), go to next if Vbat is raised [12-V(initial)]/3. go to BULK if >12V. 3. 3.75A charge (min. 3sec.), go to next if Vbat is raised [12-V(initial)]/3. go to BULK if >12V.	24V battery spec.: [24-V(initial)]/3. >24V go to BULK.

5. Steps Data:

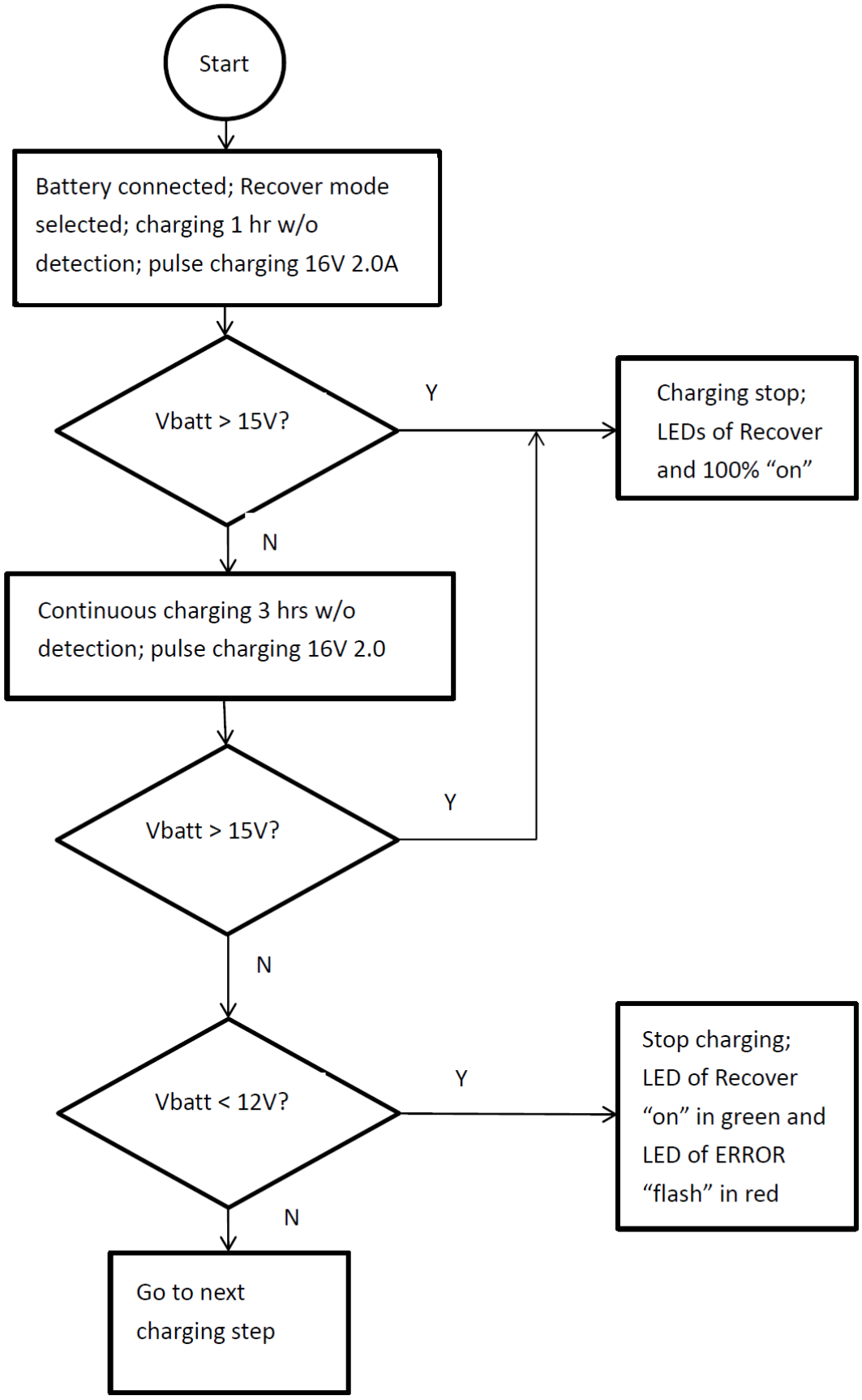
Step	1	2	3	4	5	6	7	8	9	10
Name	**Diagnosis**	**Recovery**	**Soft Start**	**Bulk 1**	**Bulk 2**	**Bulk 3**	**Bulk 4**	**Absorption**	**Trickle**	**Maintenance**
Max Time	**3sec.**	**2hours**		**40hours go to next step for Pb 15hours go to ERROR for $LiFePO_4$**				**10hours**	**Break +10hours [Break time: (25-charge hours) if charging hour < 10 hours; otherwise, 6 hours]**	**Depend Voltage**
12V Normal	Check battery If Vbat is 2.0-12V go to next If Vbat is 12-14V jump to step4, >14V, this mode is not available	2.0-10.5V 5.0A CC Pulse go to error mode after 2hours. Charge=1.0S Stop=0.5S (charge time min. 3sec.)	10.5-12V See Soft Start charge function.	7.5A CC Voltage rise until 13.0 V go to next step	5.0A CC Voltage rise until 13.8V go to next step	3.75A CC Voltage rise until 14.1V go to next step	2.6A CC Voltage rise until 14.5V, Break 5sec. then go to next step.	14.5V 1.3A CC go to next step after 10hours.	After Break time , if Vbat drop to 13.1V then charging with 80mA max. until Vbat is14.7V max. Timer=10hours stop Trickle after break	If Vbat drop to12.8V charging with1.3A CC until13.6V then go to trickle charge. If Vbat <12.8V at maintenance, restart charge.
12V Cold/AGM	Same as NORMAL	Same as NORMAL	Same as NORMAL	Same as NORMAL	5.0A CC Voltage rise until 14.1 V go to next step	3.75A CC Voltage rise until 14.4 V go to next step	2.6A CC Voltage rise until 14.7V, Break 5sec. then go to next step.	14.7V 1.3A CC go to next step after 10hours.	Same as NORMAL	Same as NORMAL
24V Normal	Check battery If Vbat is 14-24V go to next If Vbat is 24-28V jump to step 4 <14V, this mode is not available, >28V error	14.0-21V 1.3A CC Pulse go to error mode after 2hours. Charge=1.0S Stop=0.5S (charge time min.	21-24V See Soft Start charge function.	3.75A CC Voltage rise until 26V go to next step	N/A	2.6A CC Voltage rise until 28.6V go to next step	1.3A CC Voltage rise until 29V, Break 5sec. then go to next step.	29V 0.9A CC go to next step after 10hours.	After break time , if Vbat drop to 26.2V then charging with 80mA max. until Vbat is 29.4V max. Timer=10hours stop Trickle. after break.	If Vbat drop 25.6V,charing with1.3A CC until 27.2V then go to trickle charge. If Vbat <25.6V at maintenance, restart charge.

		3sec.)								
24V Cold/AGM	Same as NORMAL	Same as NORMAL	Same as NORMAL	Same as NORMAL	N/A	Same as NORMAL	1.3A CC Voltage rise until 29.4V, Break 5sec. then go to next step,	29.4V 0.9A CC go to next step after 10hours.	Same as NORMAL	Same as NORMAL
12V AGM+	Same as 12V normal	Same as 12V normal	Same as 12V normal	Same as 12V cold	Same as 12V cold	Same as 12V cold	Same as 12V cold	15.0V 1.3A CC go to next step after 10hours.	After break time，if Vbat drop to13.1V then 1.3A pulse charge 1S on 0.5S off, until Vbat 15.0V max. Timer=10hours stop charge. after break	If Vbat drop to12.8V,charing with1.3A CC until13.6V then go to step 9. If Vbat<12.8V at maintenance, restart charge.
12V Recover(+)	Vbat = 2.0-14V 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.			7.5A CC Voltage rise until 13.0 V go to next step	5.0A CC Voltage rise until 14.1 V go to next step	3.75A CC Voltage rise until 14.4 V go to next step	2.6A CC Voltage rise until 14.7V, Break 5sec. then go to next step.	14.8V 1.3A CC go to next step after 10hours.	After break time If Vbat drop to 13.1V then charging with max 80mA until 14.7V max. Timer=10hours stop Trickle after break.	If Vbat drop charging with 12.8V, 1.3A CC until13.6V then go to trickle charge. If Vbat <12.8V at maintenance, restart charge.
12.8V 4cells $LiFePO_4$	0V charge enable, after that, if out of	N/A	N/A	11.6-13.8V 5.0A Voltage rise until	3.75A CC Voltage rise until 14.1V	N/A	N/A	14.5V 1.3A CC Full	N/A	N/A

	11.6-13.8V, this mode is not available			13.8V go to next step	then go to next step.			charged after 10hours.		
13.6V Power supply	13.6V 5.0A CC power supply (no timer).									

6. Flow chart of 12V Recover mode (Step 1 to 3)

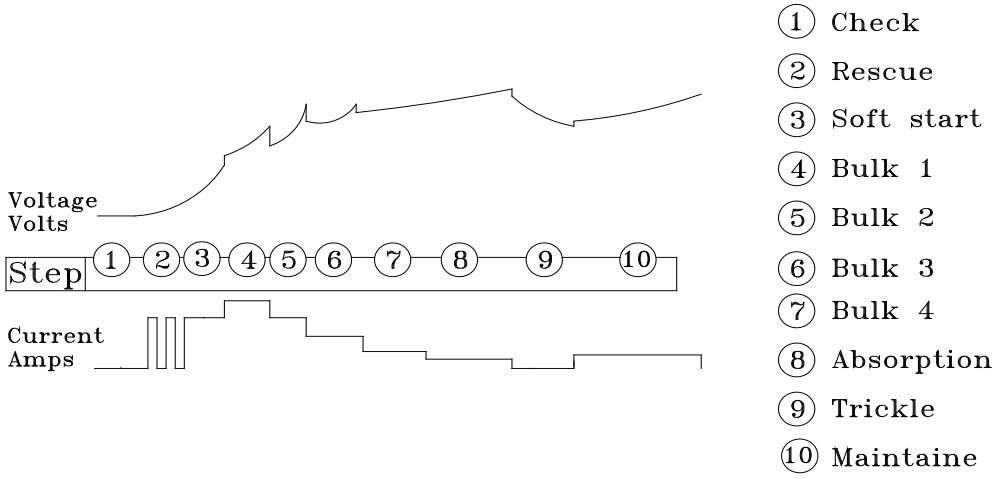
Flowchart of Recover mode

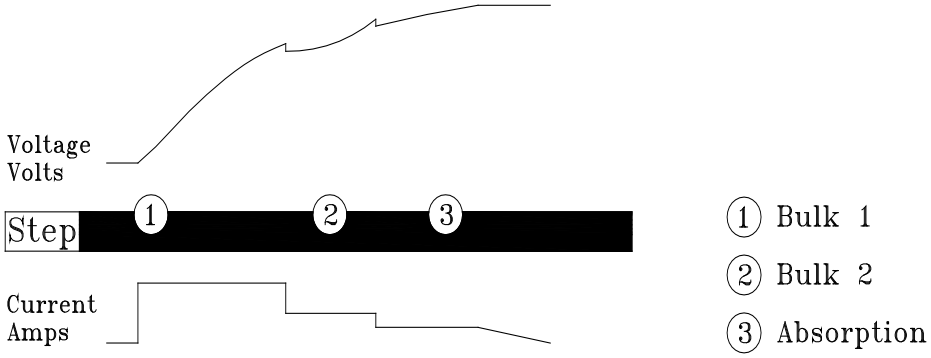


7. LED Indication:

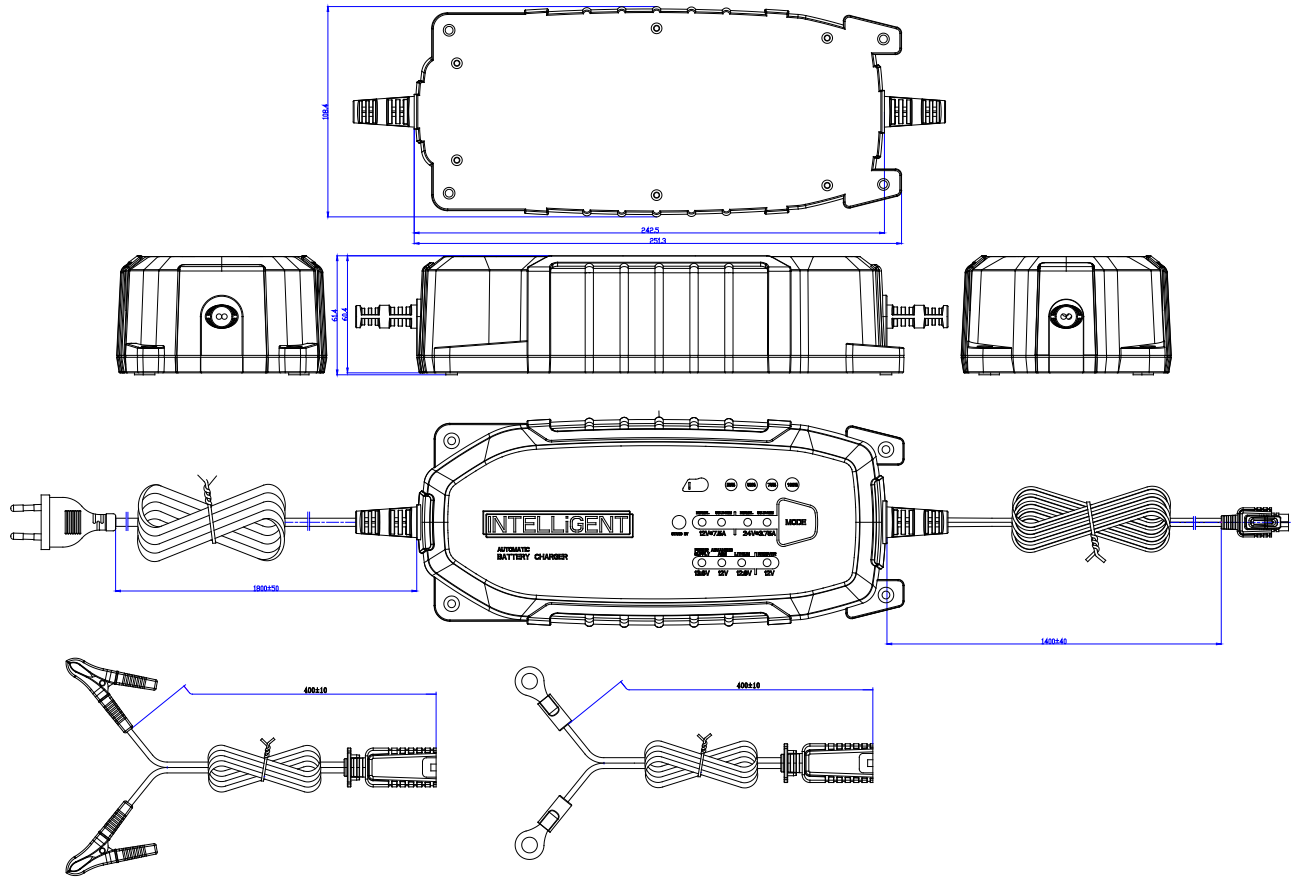
Item	Indication	LED
Power On Reset	All LED flash 2 times for self-check.	Flashing: ON=0.5S,OFF=0.5S
Stand-by	ON: no battery at Standby. OFF: Battery Charging.	Color: Pure Green
Error(dual color)	Flashing: 1. Timer>2hours at step2 and step3 Recovery+Soft start charge. (red on) If 12V recover (+) mode <12V after 4hours (red on). 2. Timer>15hours at Lithium Bulk charge. (Green on) 3. Total Timer>50hours at Pb battery modes. (yellow flash) 4. Battery voltage>28V, Vbat=1.0-2.0V (yellow on) 5. Reversed Polarity. (red flash)	Color: Red and Yellow Flashing: ON=0.5S,OFF=0.5S
25%	Flashing: Vbat<12.8/25.6V Steady: Vbat>12.8/25.6V after 3sec. OFF: after full charged	Color: Red Flashing: ON=0.5S,OFF=0.5S
50%	Flashing: 12.8/25.6V<Vbat<13.6/27.2V Steady: Vbat>13.6/27.2V after 3sec. OFF: after full charged	Color: Orange Flashing: ON=0.5S,OFF=0.5S
75%	Flashing: 13.6/27.2V<Vbat<13.9/27.8V Steady: Vbat>13.9/27.8V after 3sec. OFF: after full charged	Color: Yellow Flashing: ON=0.5S,OFF=0.5S
100%	Flashing: 13.9/27.8V<Vbat<full charged Steady: Full charged after 3sec.	Color: Pure Green Flashing: ON=0.5S,OFF=0.5S
12V Normal	Mode selected	Color: Red
12V Cold/AGM	Mode selected	Color: Red
24V Normal	Mode selected	Color: Red
24V Cold/AGM	Mode selected	Color: Red
12V AGM+	Mode selected	Color: Red
Lithium	Mode selected	Color: Red
13.6V Power Supply	Mode selected	Color: Red
12V Recover(+)	Steady: Mode selected(3sec.) Flashing: Start charging after Step1 (Diagnosis) started. Steady: after go to 12V Cold charge, timer over 4hours, ERROR and full charged.	Color: Pure Green Flashing: ON=0.5S,OFF=0.5S

8. Charging steps (charging Voltage & charging current)





9. Sketch/photo: Draft




INTELLiGENT
AUTOMATIC
BATTERY CHARGER
25%
50%
75%
100%
NORMAL
COLD-AGM
NORMAL
COLD-AGM
MODE
STAND BY
12V@7.5A
24V@3.75A
POWER SUPPLY
ADVANCED AGM
LITHIUM
RECOVER
13.6V
12V
12.8V
12V