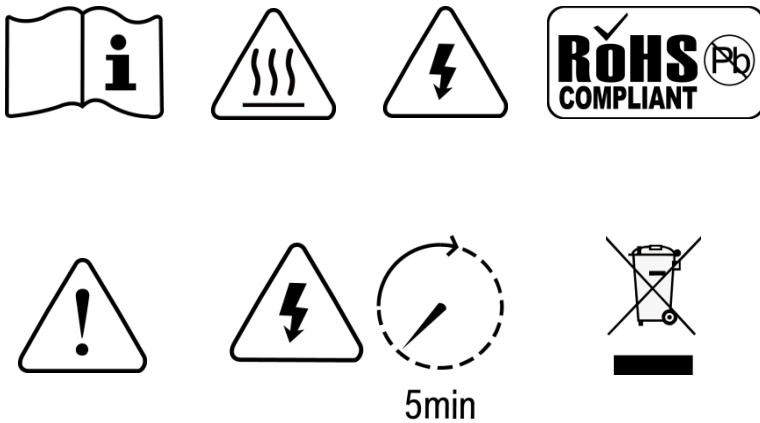


# BML

## Battery Monitor Manual



**Version: A1.1**  
**April. 2017**



**WARNING : FIRE HAZARD**

**SUITABLE FOR MOUNTING ON CONCRETE OR OTHER  
NON- COMBUS TABLE SURFACE ONLY**

**CAUTION : THE DC AND AC BREAKER MUST HAVE BEEN  
TURNED OFF BEFORE SERVICING**

**MADE IN CHINA**

**TBB POWER CO., LTD.**

## Disclaimer

Unless specially agreed in writing, TBB Power Co.,Ltd

- Take no warranty as to the accuracy, sufficiency of suitability of any technical or other information provided in this manual or other documentation.
- Assumes no responsibility or liability for loss or damage, whether direct, indirect, consequential or incidental, which might arise out of the use of such information

## About this Manual

This manual describes our product features and provides procedure of installations. This manual is for anyone intending to install our equipment.

## General Description

Thanks for choosing TBB product.

The BML series battery monitor features microprocessor controlled combined with high resolution measuring system for lithium battery voltage and charge/discharge current . With built in software, BML series can calculated consumed AH/KWH and remaining AH/KWH, and display battery voltage and battery current as well.

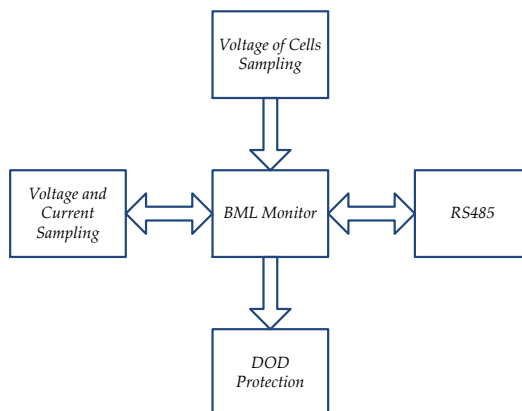
BML could record all battery activities since the first installation (max 200 records). Apart from discharging and charging, multiple other factors are considered including battery size, age ratio of battery etc. With shunt, even the smallest leakage current can be detected and recorded to guarantee the accuracy.

Compared with conventional indicating meters, small current can be measured and read exactly with this device. With this feature, latent consumers (insulation fault, wrong connections, standby unit etc) can be recognized immediately. Meantime, through additional sensor second battery voltage can be measured and displayed.

With the optional DOD protection unit, battery low voltage protection level can be programmed and alarm can will be sent once reaching the limit to avoid battery damage due to deep discharge. In the meantime, it can be used to drive the battery protection device to shut off the battery against further discharge.

- Battery voltage of service battery
- Each Cell voltage of the lithium battery
- Battery current : charging and discharging
- Battery residual capacity in AH
- Battery capacity in %
- Programmable for protection point
- RS485 is available
- Available model: 100A, 200A and 400A.

## Schematic diagram



## Model Name

BML XXX Y

Item		Description	
BM	BML	Battery monitor for lithium battery	
XXX	100	The max current for battery monitor	100A
	200		200A
	400		400A
Y	4	12V system	
	8	24V system	

## Available model

Model	Max Current	Battery voltage	Cell number of Lithium battery
BML1004	100A	12Vdc/24Vdc	4cells
BML1008	100A	12Vdc/24Vdc	8cells
BML2004	200A	12Vdc/24Vdc	4cells
BML2008	200A	12Vdc/24Vdc	8cells
BML4004	400A	12Vdc/24Vdc	4cells
BML4008	400A	12Vdc/24Vdc	8cells

BML detects 12V/24V battery automatically.



## Optional DOD model:

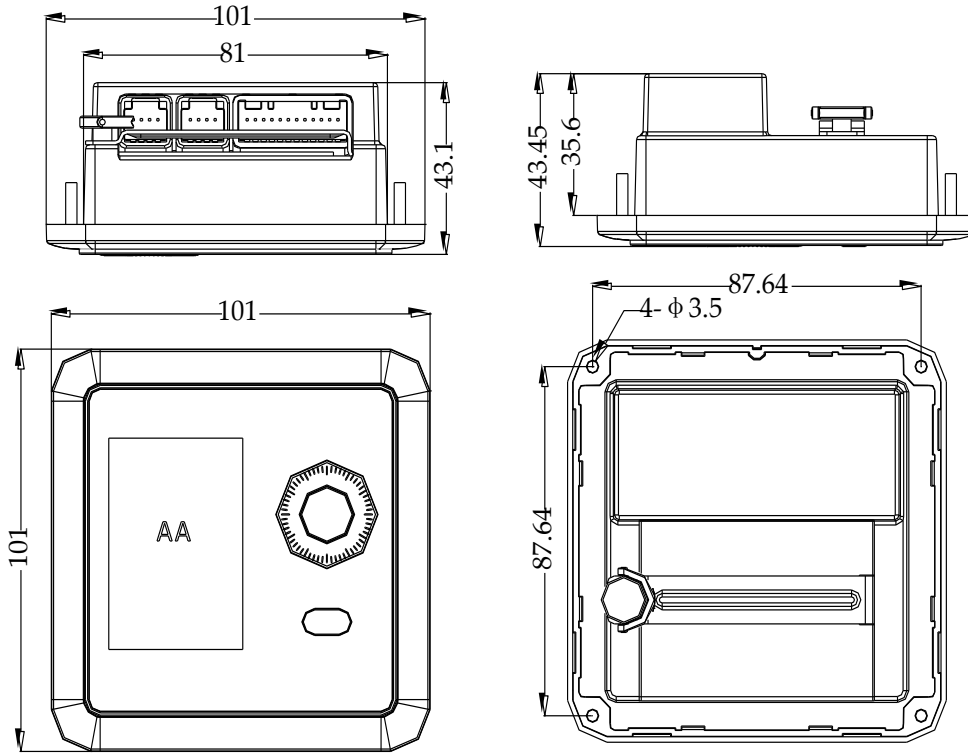
Compatible for	12Vdc	24Vdc	48Vdc
50A	RY50L	/	/
100A	CR100L/RV100L	CR100M	CR100S
200A	CR200LM	CR200LM	CR200S
400A	CR400L	CR400M	CR400S

## Components

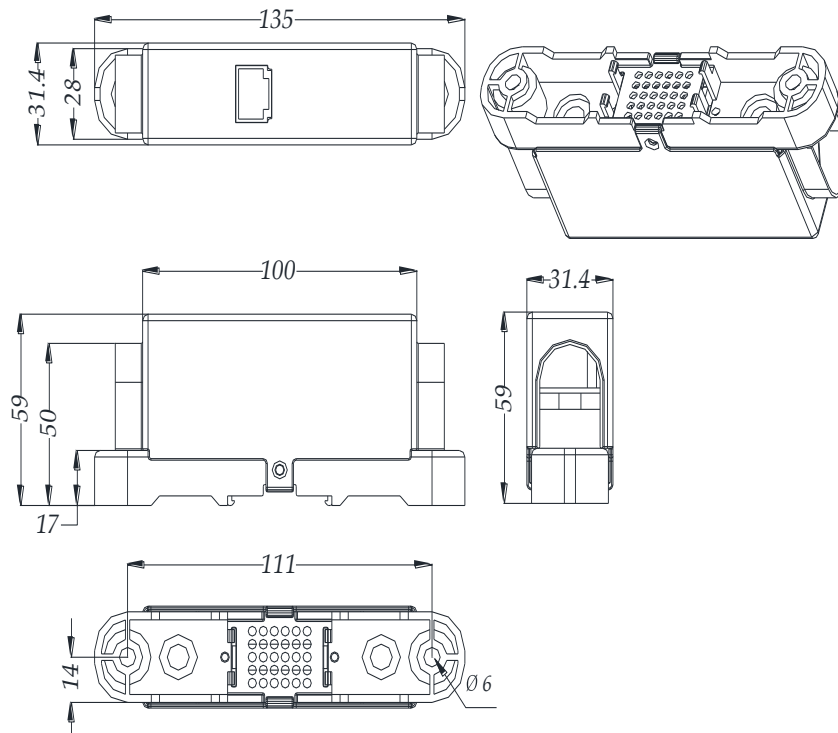
	<b>Monitor Module</b>
	<b>Current Detector Module</b> SS (for 100A,200A model)
	<b>Current Detector Module</b> SH (for 400A model)

## Dimension and Hole size

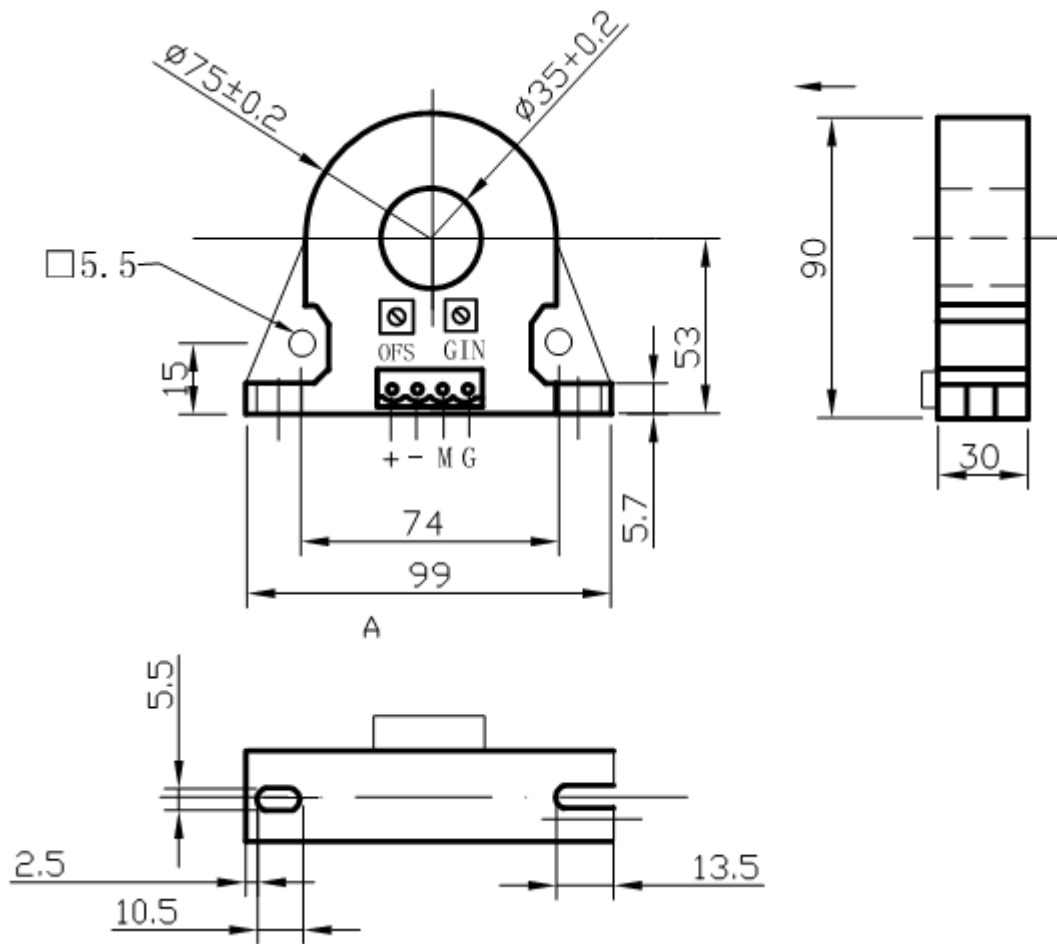
### Monitor Module



### SS

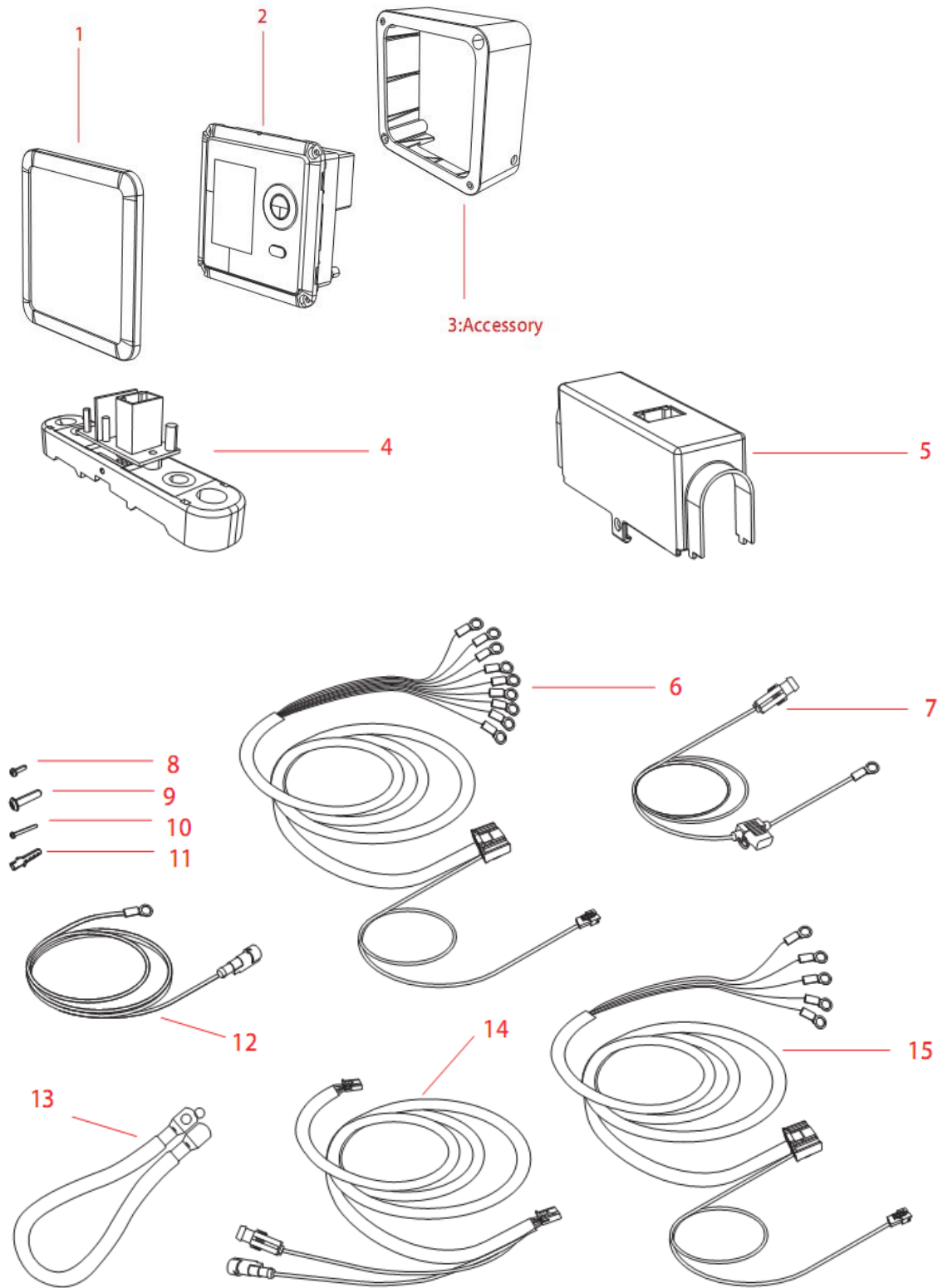


SH:



# Installation Preparation

## Material list







Item	Qty	Description
1	1	Front panel of Monitor Module
2	1	Monitor Module
3	1	Mounting holder
4	1	SS current detector
5	1	SS plate
6	1	Cable-L8-D/03,Cable for 8 cells voltage and DOD, for BML1008 and BML2008
7	1	Cable-Service-Batt-Volt/01, Cable for Service battery
8	1	Screws, M3x12mm for holder mounting
9	3	Screws, M6 x 25mm for SS mounting
10	2	Screws M3x25mm for Monitor module mounting
11	5	Screw fixing expansion sleeve 4mm
12	5	Cable-Starter-Batt-Volt/01, Cable for starter battery
13	1	Cable-Flex-50/30 or Cable-Flex-25/30,Cable for SS and negative connector of battery
14	1	Cable-BM/03, Cable for SS and Monitor Module
15	1	Cable-L4-D/03, Cable for 4 cells voltage and DOD, for BML1004 and BML2004

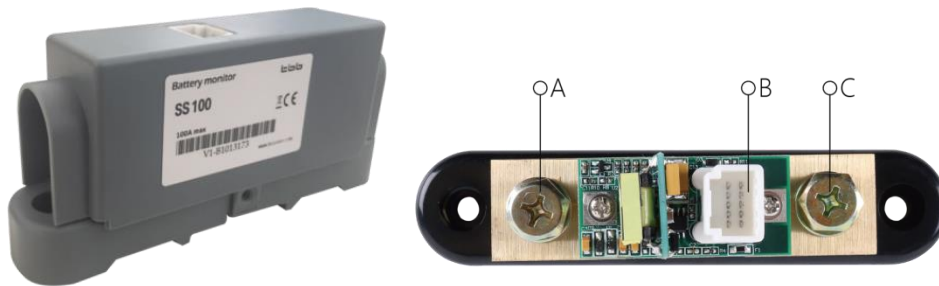
## Connector Description

- Monitor Module



A	RS485 Communication	COM
B	Comm. port for Lithium battery energy information	BM
C	Comm.Port for lithium battery cell voltage and DOD dry contact	Cells+DOD
D	Cable fastener	

- Current Detector Module - SS



Take off the cover, you will see the connector of the SS.

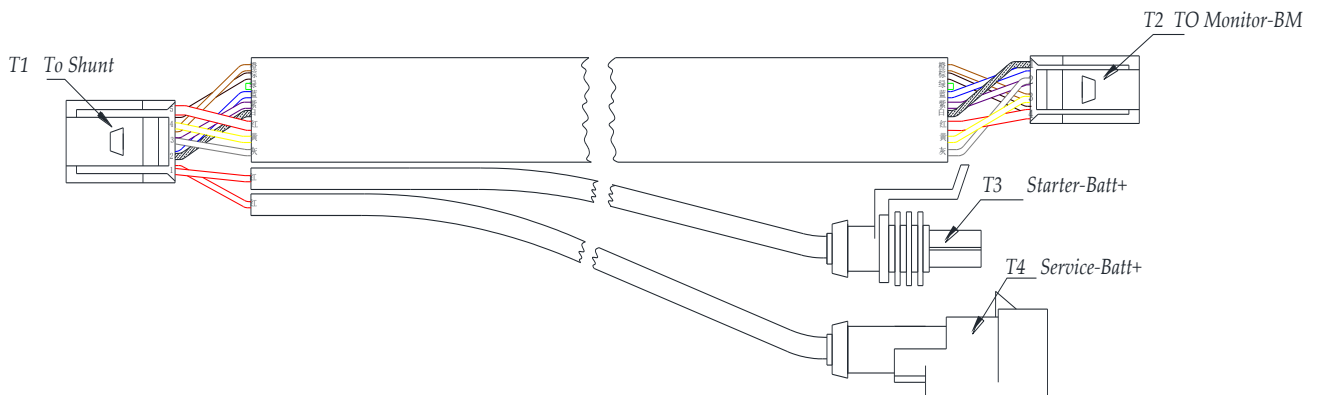
A	Load -
B	BMcomm.Cable connector
C	BAT-

## Cable preparation

Please prepare the following cables for installation

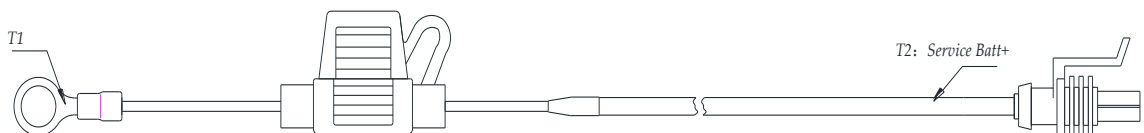
Model	length	comments
Cable-BM/03	3	The standard
Cable-Service-Batt-Volt/01	1	The standard
Cable-Starter-Batt-Volt/01	1	The standard
Cable-L8-D/03	3	for BML1008/BML2008
Cable-L4-D/03	3	for BML1004/BML2004
Cable-Flex-50/30	0.3	for SS200/SS200S
Cable-Flex-25/30	0.3	for SS100/SS100S

### Cable-BM/03



T1	To Connect to SS or SH
T2	To Port BM of the monitor module
T3	To connect Cable-Starter-Batt-Volt/01
T4	To connect Cable-Service-Batt-Volt/01

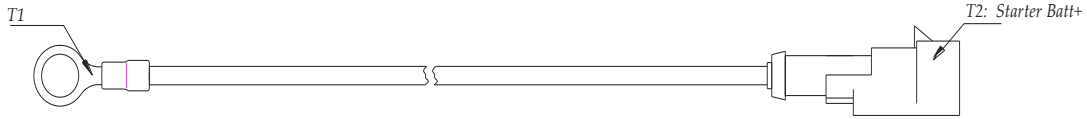
### Cable-Service-Batt-Volt/01



T1	To Connect to Service batt +
----	------------------------------

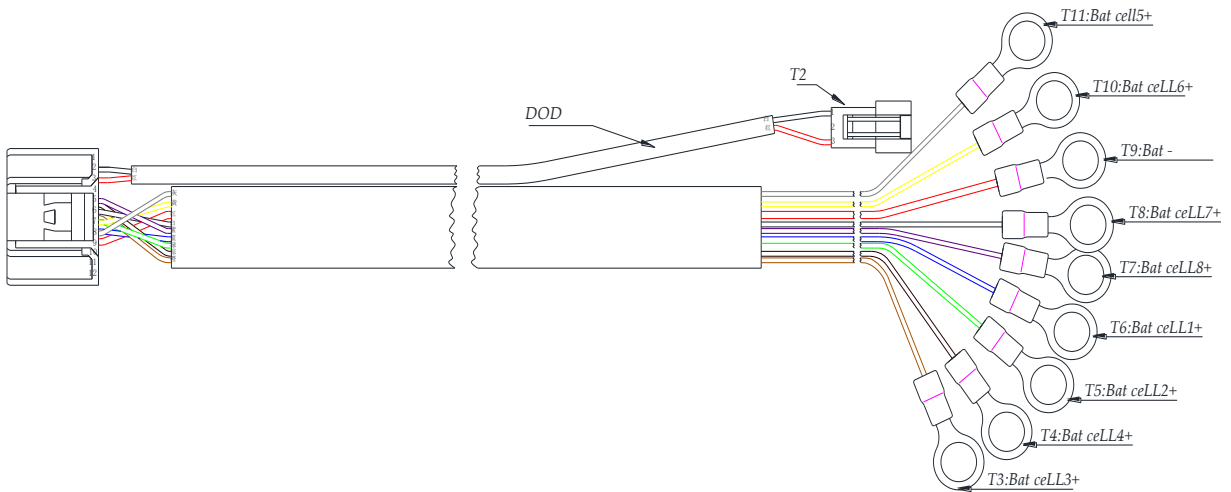
T2	To connect to Cable-BM/03
----	---------------------------

**Cable-Starter-Batt-Volt/01**



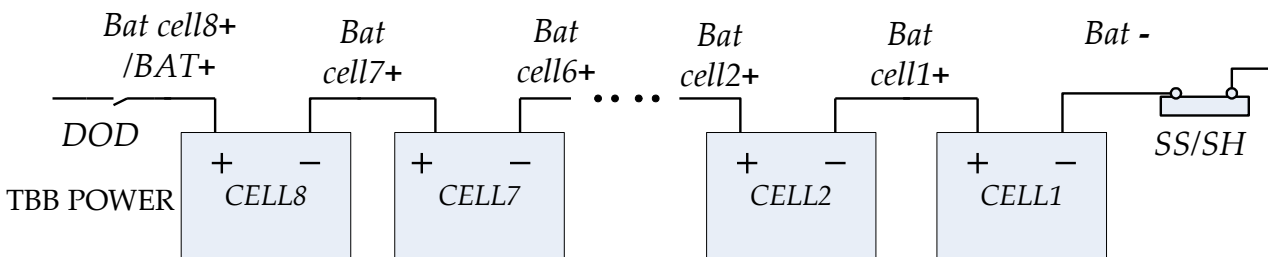
T1	To Connect to Starter batt +
T2	To connect to Cable-BM/03

**Cable-L8-D/03**

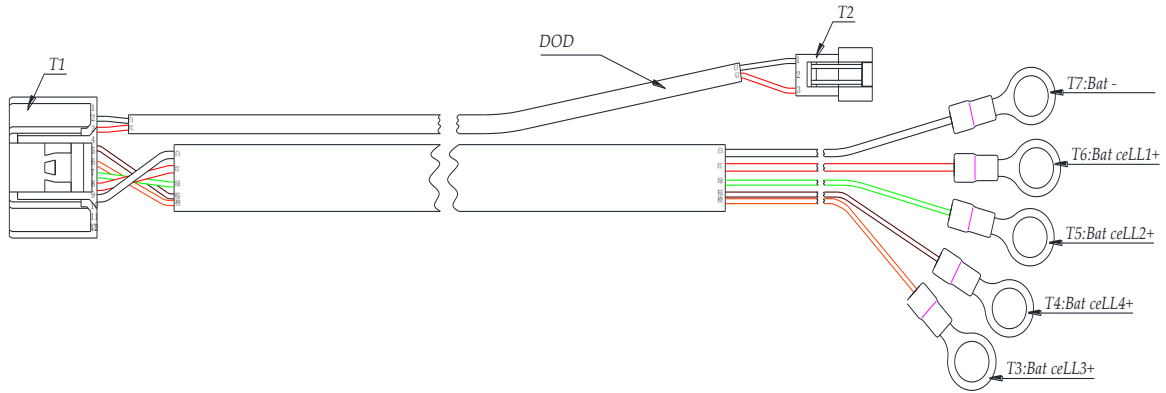


T1	--	Connect to Port Cells+DOD of Monitor Module
T2	DOD	To connect to DOD module
T3	Bat cell3+	To connect to Batt Cell3 +
T4	Bat cell4+	To connect to Batt Cell4 +
T5	Bat cell2+	To connect to Batt Cell2 +
T6	Bat cell1+	To connect to Batt Cell1 +
T7	Bat cell8+	To connect to Batt Cell8 +
T8	Bat cell7+	To connect to Batt Cell7 +
T9	Bat -	To connect to Batt -
T10	Bat cell6+	To connect to Batt Cell6 +
T11	Bat cell5+	To connect to Batt Cell5 +

**Connection schematic diagram**

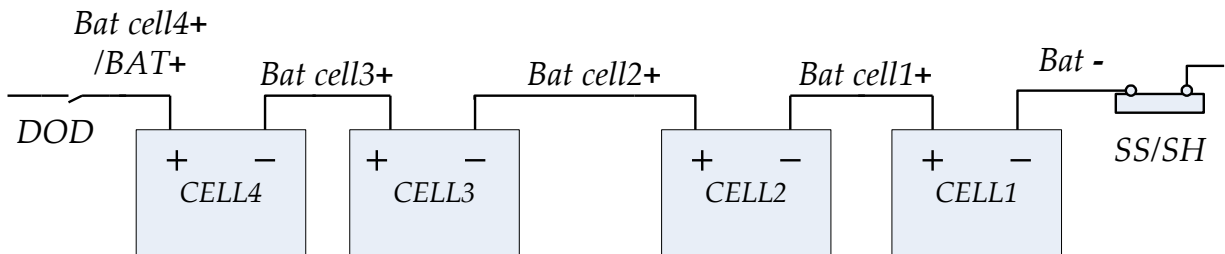


### Cable-L4-D/03



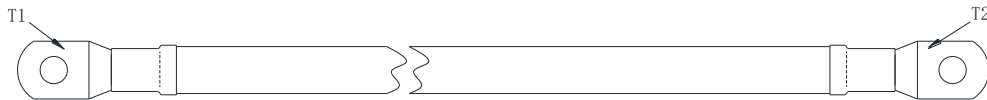
T1	--	To PortCells+DOD of Monitor Module
T2	DOD	To connect to DOD
T3	Bat cell3+	To connect to Batt Cell3 +
T4	Bat cell4+	To connect to Batt Cell4 +
T5	Bat cell2+	To connect to Batt Cell2 +
T6	Bat cell1+	To connect to Batt Cell1 +
T7	Bat -	To Batt -

### Connection schematic diagram



## Cable-Flex-50/30 or Cable-Flex-25/30

Cable-Flex-50/30 and Cable-Flex-25/30 are to connect between battery negative connector and BAT- connector of current detector module (SS or SH).



## Installation Request

Work temperature: -20~60°C

Storage temperature: -40~85°C

Cooling: Natural cooling

Humidity: 0%-95% non-condensing

**Install the unit at the location where has well ventilation.**

**Recommended working temperature is 0~25°C**

**Recommended humidity is around 50%**

## Installation



**Professional electrical technician is required for the installation.**

Please make sure BML is powered off during the installation which means the connection between Cable-BM/03 and Cable-Starter-Batt-Volt/01 BAT+ / Cable-Service-Batt-Volt/01 S-BAT+ is the last step of the installation.

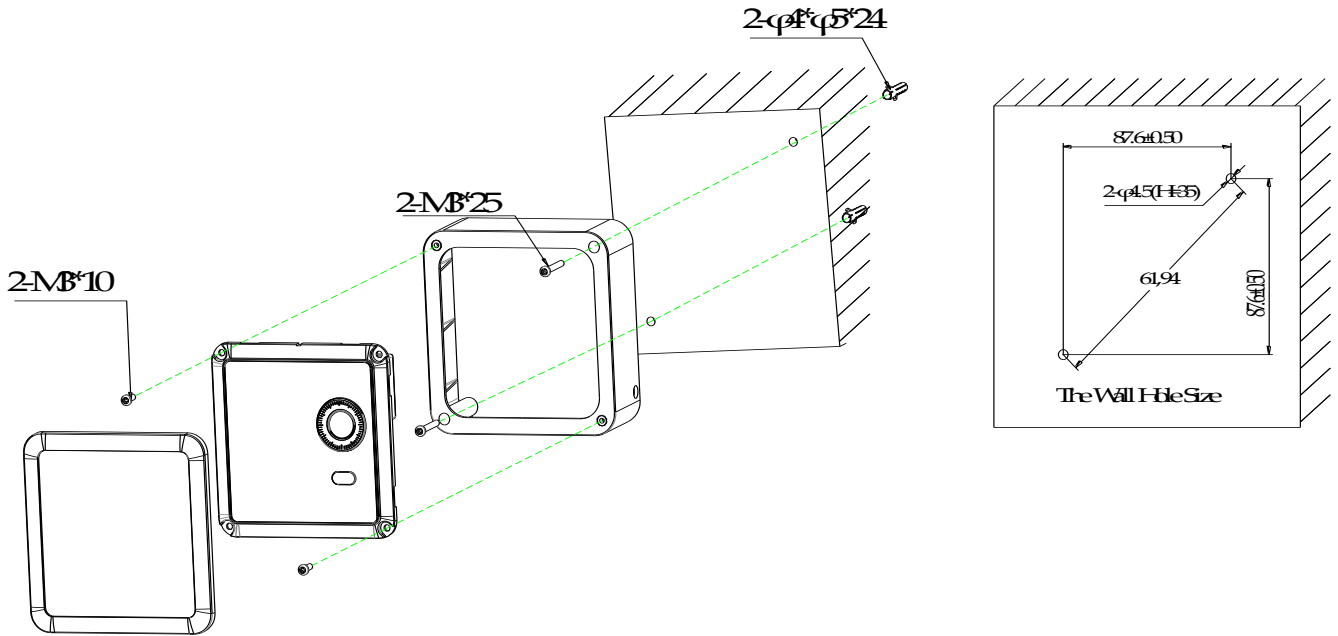
Please make sure all of the equipments are powered off during the installation.

The location of SS/SH is recommended to be as close as possible to the battery. Shorter cable between SS/SH and battery is better.

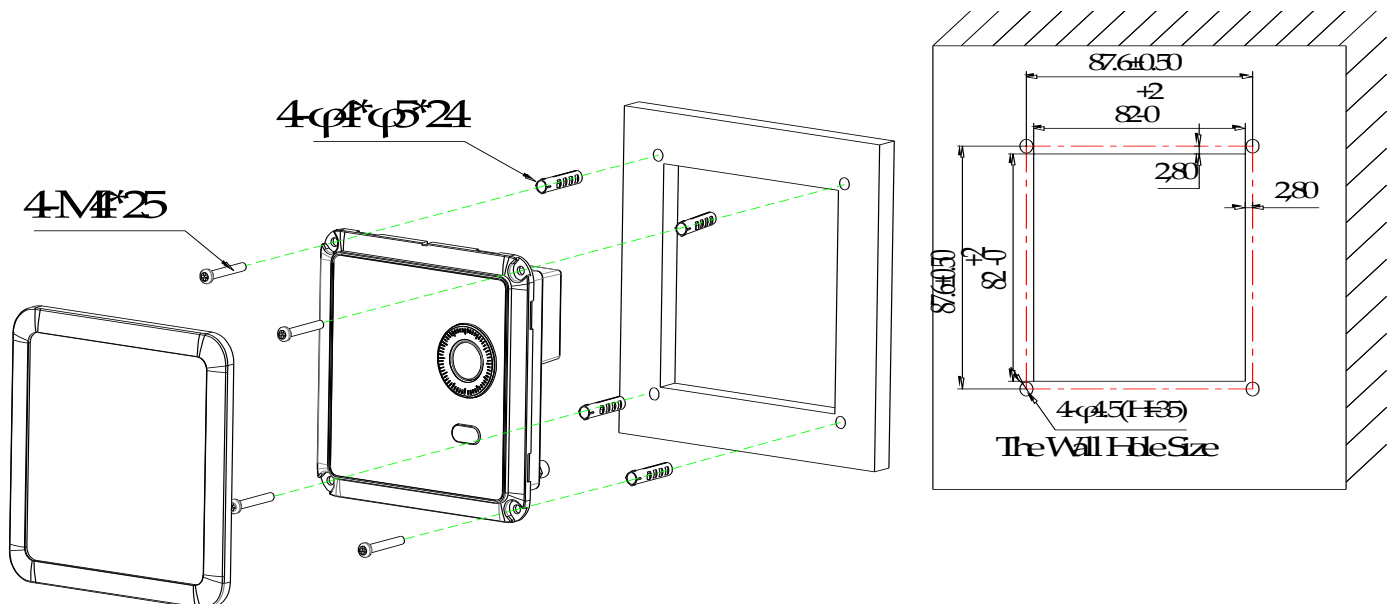
## Monitor Module

Mounting holder is optional accessory. Please consult to the distributor or TBB Power if you need it.

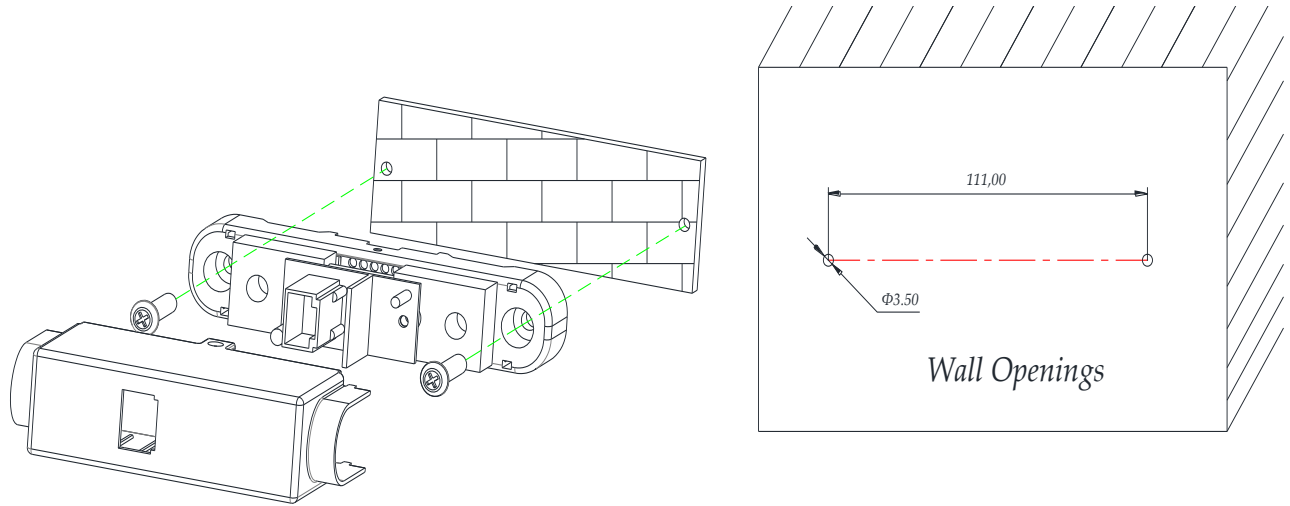
- Installation with the mounting holder



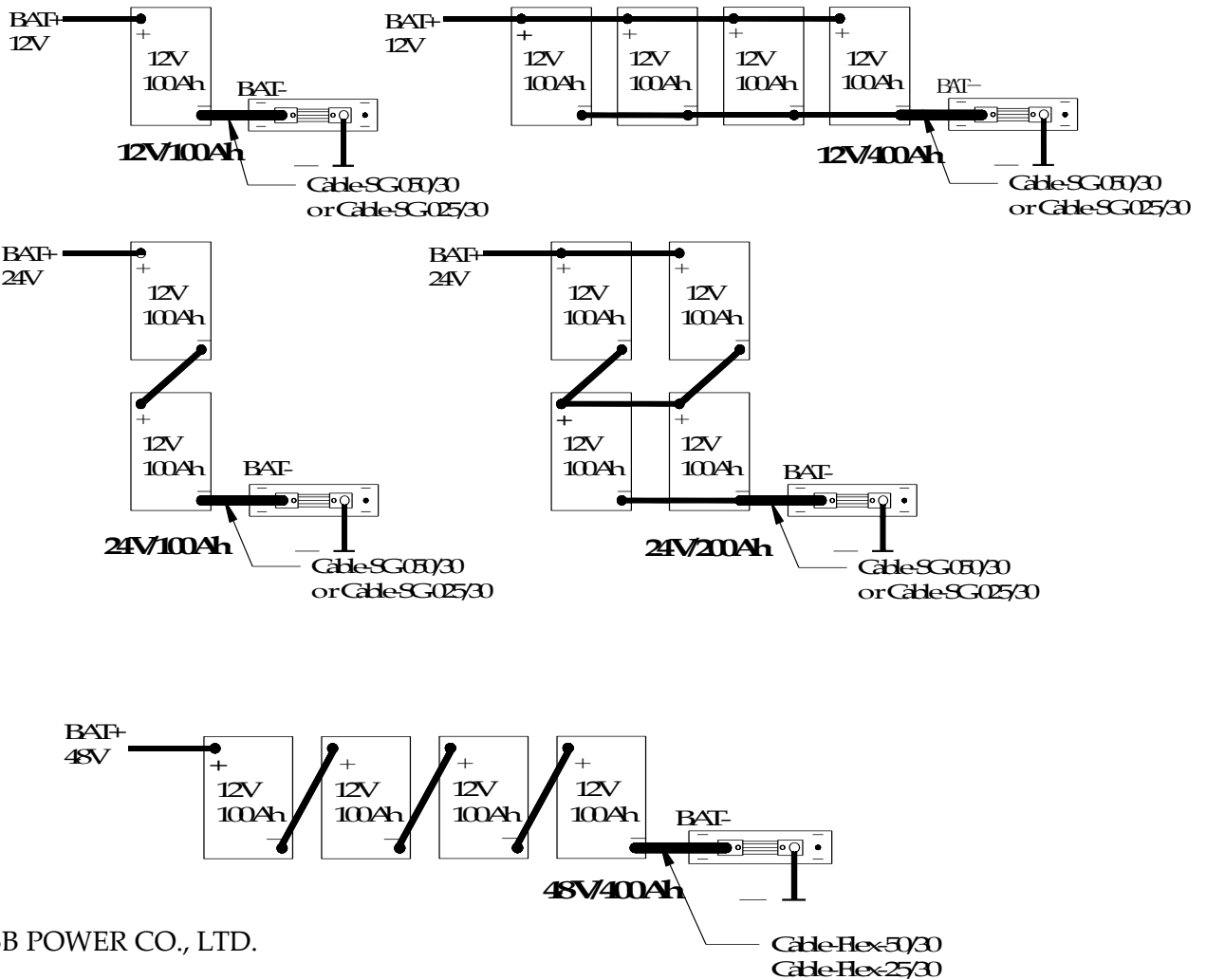
- Installation without the mounting holder



● SS/SH Installation

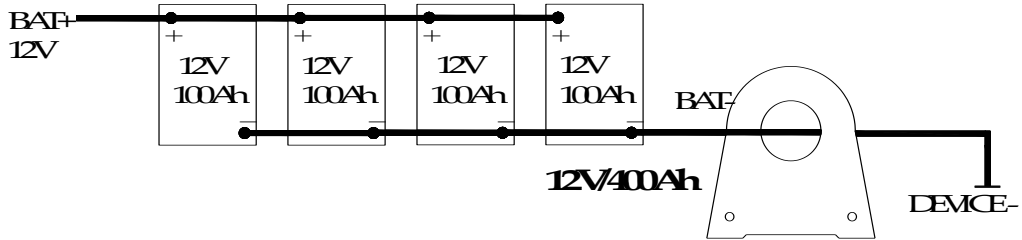


Connection to battery groups.

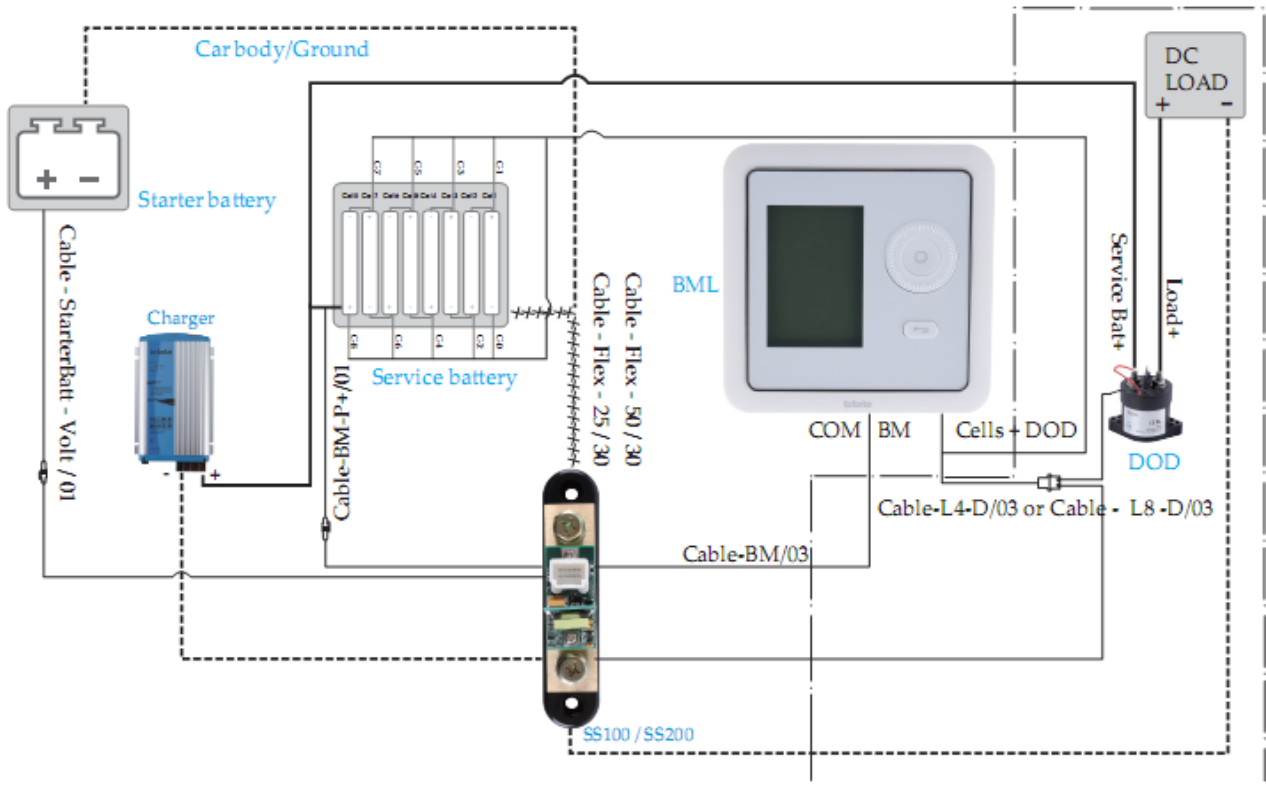




### SH Installation.



### BML Connection Diagram



## Operation

- **First power on**

1. Confirm the connections are correct as the manual guided and fastened.
2. Connect Cable-Starter-Batt- Volt/01and Cable-BM/03.
3. Connect Cable-Service-Batt-Volt/01 and Cable-BM/03.

BML is powered on after the above steps.

4. Initial settings for BML.
  - a) Set battery type and capacity.
  - b) Set System datetime and installation datetime.
  - c) Battery capacity correction. Use a proper battery charger to charge the battery until there is no alarms on the BML display.
  - d) Any change of the battery type or battery capacity setting needs a repeat for step b) and c)



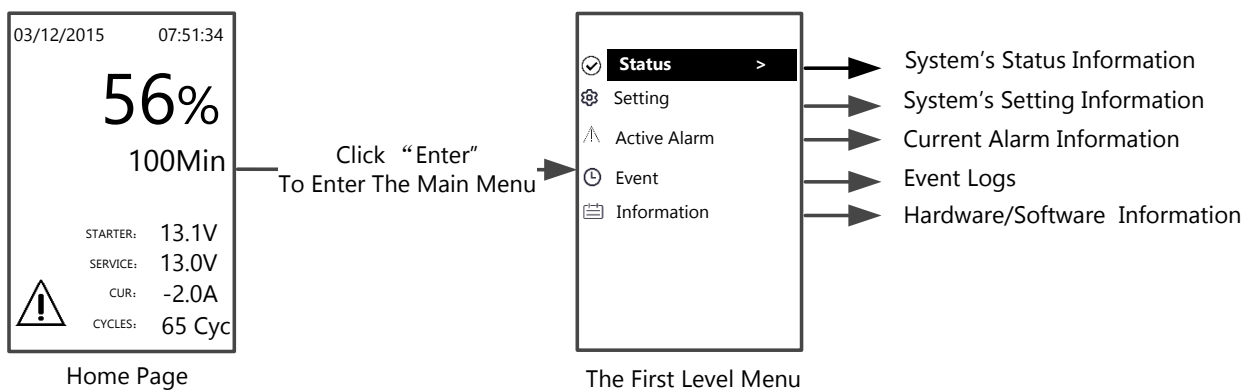
DO NOT plug out any connectors on the BML during it is working.

- **Power Off**

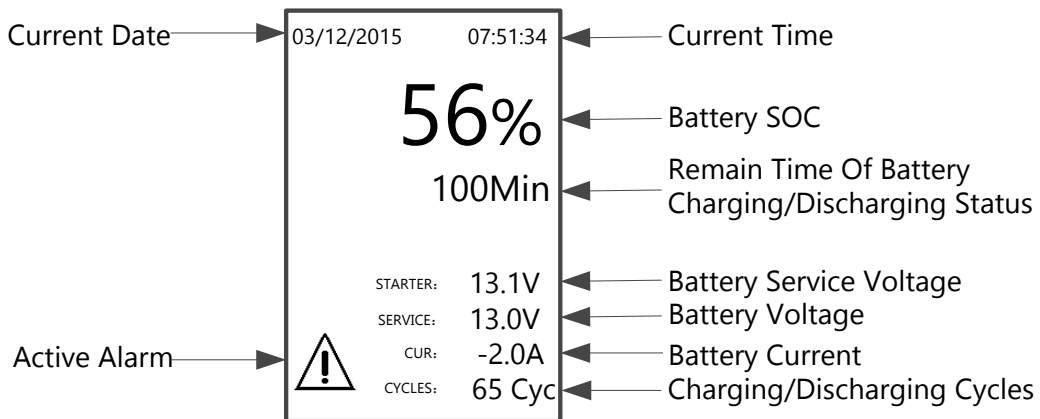
- a) If there is starter battery connected, disconnect the cable connect with the starter battery first, then disconnect the cable connected to the service battery,Cable-Service-Batt-Volt/01 and Cable-BM/03 to complete the shut down of BML.
- b) If there is no starter battery connected, disconnect disconnect the cable connected to the service battery, Cable-Service-Batt-Volt/01 and Cable-BM/03 to complete the shut down of BML.

## Display

- **BML Menu**

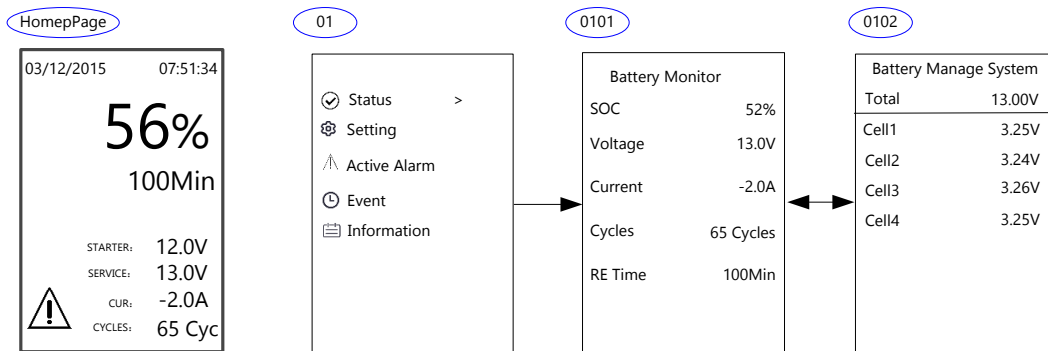


### 1. Home page



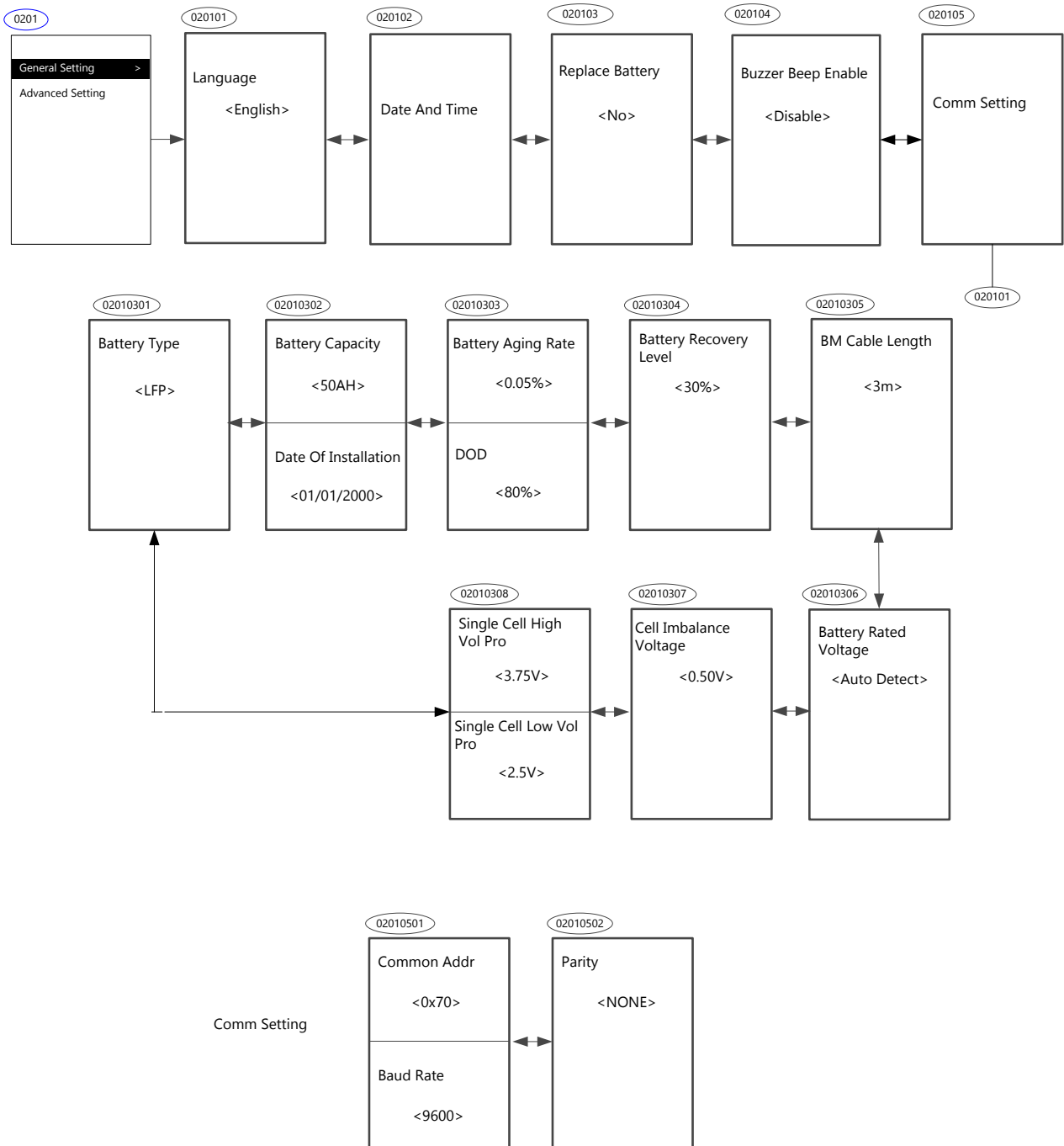
- “Active Alarm” is ON, means the battery capacity correction is not completed.
- “Active Alarm” is flashing, means the battery capacity correction is completed with alarms. Please consult the technician.
- “Active Alarm” is OFF, means the battery capacity correction is completed successfully.

## 2. Status



<p>0101</p> <table border="1"> <thead> <tr> <th colspan="2">Battery Monitor</th> </tr> </thead> <tbody> <tr> <td>SOC</td> <td>52%</td> </tr> <tr> <td>Voltage</td> <td>13.0V</td> </tr> <tr> <td>Current</td> <td>-2.0A</td> </tr> <tr> <td>Cycles</td> <td>65 Cycles</td> </tr> <tr> <td>RE Time</td> <td>100Min</td> </tr> </tbody> </table>	Battery Monitor		SOC	52%	Voltage	13.0V	Current	-2.0A	Cycles	65 Cycles	RE Time	100Min	<p><b>SOC:</b> Battery State of Charge , 0%~100%</p> <p><b>Voltage:</b> Battery Voltage</p> <p><b>Current:</b> Battery current. "-" means discharged current. Without "-" means charging current.</p> <p><b>Cycles:</b> Battery cycles</p> <p><b>RE Time:</b> Battery left to go.</p>
Battery Monitor													
SOC	52%												
Voltage	13.0V												
Current	-2.0A												
Cycles	65 Cycles												
RE Time	100Min												
<p>0102</p> <table border="1"> <thead> <tr> <th colspan="2">Battery Manage System</th> </tr> </thead> <tbody> <tr> <td>Total</td> <td>13.00V</td> </tr> <tr> <td>Cell1</td> <td>3.25V</td> </tr> <tr> <td>Cell2</td> <td>3.24V</td> </tr> <tr> <td>Cell3</td> <td>3.26V</td> </tr> <tr> <td>Cell4</td> <td>3.25V</td> </tr> </tbody> </table>	Battery Manage System		Total	13.00V	Cell1	3.25V	Cell2	3.24V	Cell3	3.26V	Cell4	3.25V	<p><b>Total:</b> Battery Voltage</p> <p><b>Cell1~Cell8:</b> Voltage of each cell. Cell1~Cell4 for 12V battery, Cell1~Cell8 for 24V battery.</p>
Battery Manage System													
Total	13.00V												
Cell1	3.25V												
Cell2	3.24V												
Cell3	3.26V												
Cell4	3.25V												

### 3. Setting



<p style="text-align: center;">020101</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p>Language</p> <p style="text-align: center;">&lt;English&gt;</p> </div>	<p><b>Language:</b> Only support English.</p>
<p style="text-align: center;">020102</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p>Date And Time</p> </div>	<p><b>Date and time:</b> System Date time setting.</p>
<p style="text-align: center;">020103</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p>Replace Battery</p> <p style="text-align: center;">&lt;No&gt;</p> </div>	<p><b>Replace Battery:</b> Set “Yes” for replacing the battery and doing the related setting for battery parameters.</p>
<p style="text-align: center;">020104</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p>Buzzer Beep Enable</p> <p style="text-align: center;">&lt;Disable&gt;</p> </div>	<p><b>Buzzer Beep Enable:</b> “Enable” to forbid the buzzer beep.</p>

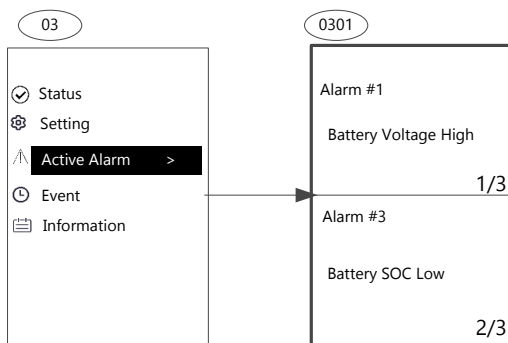
<p style="text-align: center;">020105</p> <div style="border: 1px solid black; padding: 10px; width: 100px; margin: 0 auto;"> <p style="text-align: center;">Comm Setting</p> </div>	<p><b>Comm Setting:</b> To set the address, baud rate and parity check bit of RS485.</p>
<p style="text-align: center;">02010301</p> <div style="border: 1px solid black; padding: 10px; width: 100px; margin: 0 auto;"> <p style="text-align: center;">Battery Type</p> <p style="text-align: center;">&lt;LFP&gt;</p> </div>	<p><b>Battery Type:</b> LFP or Polymer</p>
<p style="text-align: center;">02010302</p> <div style="border: 1px solid black; padding: 10px; width: 100px; margin: 0 auto;"> <p style="text-align: center;">Battery Capacity</p> <p style="text-align: center;">&lt;50AH&gt;</p> <hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/> <p style="text-align: center;">Date Of Installation</p> <p style="text-align: center;">&lt;01/01/2000&gt;</p> </div>	<p><b>Battery Capacity:</b> Default is 50AH, setting range 50~2000AH. Please set the value as the capacity of your battery.</p> <p><b>Date of Installation:</b> Installation date of battery. It is request to reset when replacing the battery. Default:01/01/2000, setting range 01/01/2000-31/12/2099。</p>
<p style="text-align: center;">02010303</p> <div style="border: 1px solid black; padding: 10px; width: 100px; margin: 0 auto;"> <p style="text-align: center;">Battery Aging Rate</p> <p style="text-align: center;">&lt;0.05%&gt;</p> <hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/> <p style="text-align: center;">DOD</p> <p style="text-align: center;">&lt;80%&gt;</p> </div>	<p><b>Battery Aging Rate:</b> Permitted battery aging rate every year. Default is 0.05%, setting range 0.00%~5.00%.</p> <p><b>DOD :</b> Depth of Discharge. Default is 80%. Setting range 50%~80%.</p>

<p style="text-align: center;">02010304</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Battery Recovery Level</p> <p>&lt;30%&gt;</p> </div>	<p><b>Battery Recovery Level:</b></p> <p>The level recovered from the battery low voltage protection.</p> <p>Default is (1-DOD+10%), setting range is (1-DOD+10%) ~90%.</p>
<p style="text-align: center;">02010305</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>BM Cable Length</p> <p>&lt;3m&gt;</p> </div>	<p><b>BM Cable Length:</b></p> <p>The cable length from shunt to MCU.</p> <p>Default is 3m.</p> <p>Setting range is 3m/5m/7m/10m.</p>
<p style="text-align: center;">02010306</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Battery Rated Voltage</p> <p>&lt;Auto Detect&gt;</p> </div>	<p><b>Battery Rated Voltage:</b></p> <p>Battery nominal voltage.</p> <p>Default is "Auto Detect"</p> <p>It could be Auto Detect/12V/24V.</p>
<p style="text-align: center;">02010307</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Cell Imbalance Voltage</p> <p>&lt;0.50V&gt;</p> </div>	<p><b>Cell Imbalance Voltage:</b></p> <p>When the imbalance voltage between the cells is above the setting point, the alarm is triggered.</p> <p>Default is 0.5V, setting value is 0.02V~0.6V.</p>
<p style="text-align: center;">02010308</p> <div style="border: 1px solid black; padding: 5px;"> <div style="border: 1px solid black; padding: 2px; text-align: center; margin-bottom: 5px;"> <p>Single Cell High Vol Pro</p> <p>&lt;3.75V&gt;</p> </div> <div style="border: 1px solid black; padding: 2px; text-align: center;"> <p>Single Cell Low Vol Pro</p> <p>&lt;2.5V&gt;</p> </div> </div>	<p><b>Single Cell High Vol Pro:</b></p> <p>When the voltage of any single cell is higher than the setting value during the charging, BML triggers the beep alarm.</p> <p>Default for LFP is 3.75V, setting range 3.65~3.85V.</p> <p>Default for Three element lithium battery is 4.45V, setting range 4.3~4.6V.</p>

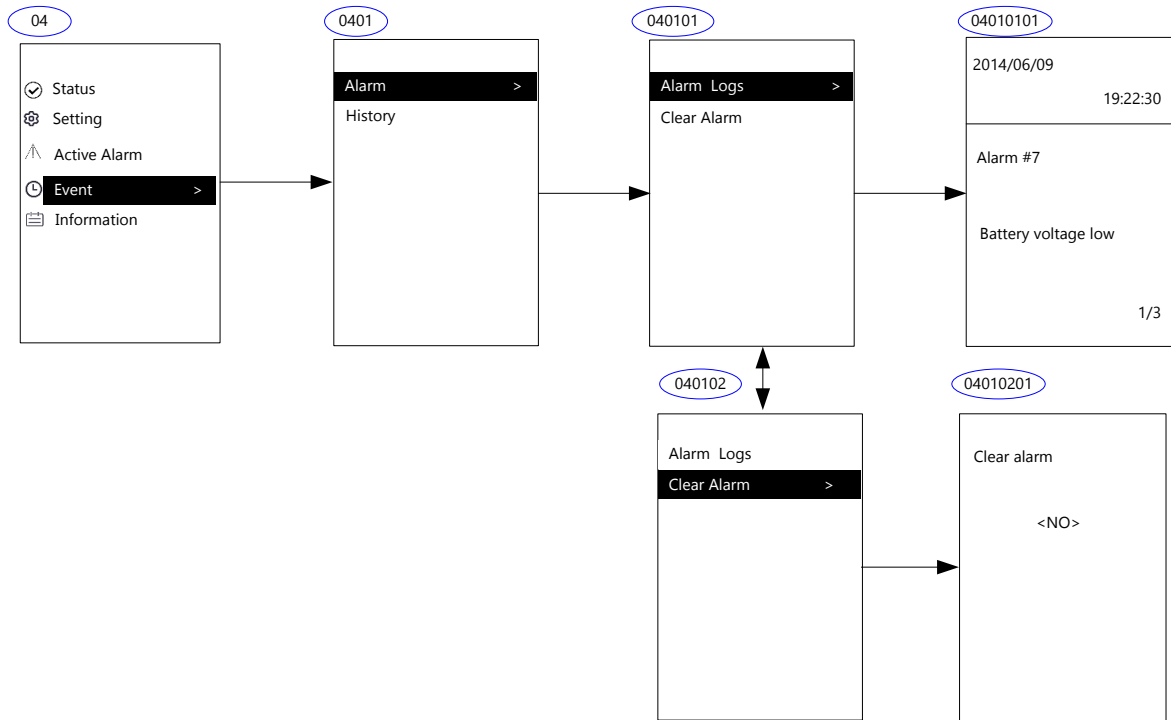


	<p><b>Single Cell Low Vol Pro:</b>          The low voltage protection of Monomer lithium battery.          If one of the cells Voltage below the set value in charging, the machine will enter standby state protection.</p> <p>The default values and setting the range :</p> <p>Default for LFP is 2.5V, setting range 2.5~3.0V.          Default for Three element lithium battery is 3.33V, setting range 3.0~3.5V.</p>
<p>02010501</p> <div style="border: 1px solid black; padding: 5px;"> <p>Common Addr</p> <p style="text-align: center;">&lt;0x70&gt;</p> <hr/> <p>Baud Rate</p> <p style="text-align: center;">&lt;9600&gt;</p> </div>	<p><b>Common Addr:</b>          RS485 address setting.          Default is 0x70. Setting range is 0x01~0xF6.          It is recommended to keep the default value.</p> <p><b>Baud Rate:</b>          RS485 baud rate setting.          Default is 9600.          Setting range is 38400/19200/ 9600/4800/2400/1200.          It is recommended to keep the default value.</p>
<p>02010502</p> <div style="border: 1px solid black; padding: 5px;"> <p>Parity</p> <p style="text-align: center;">&lt;NONE&gt;</p> </div>	<p><b>Parity:</b>          RS485 parity setting.          It can be set as ODD/EVEN/NONE.          Default is NONE.</p>

#### 4. Active Alarm



## 5. Events



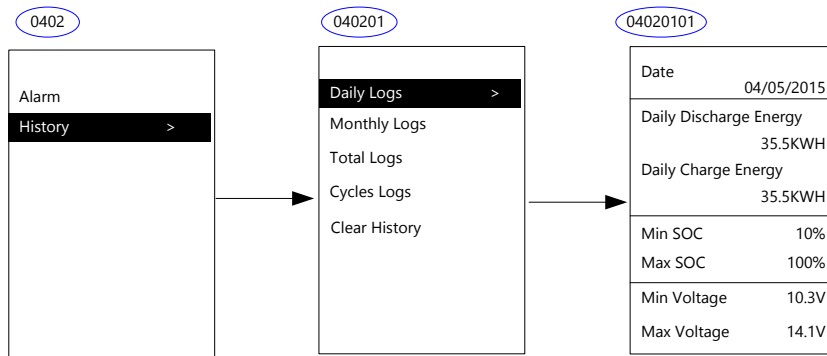
Please refer the below table for more details about the alarms in “Active Alarm” and “Alarm” of “Events”.(N=1~8)

No.	Alarms	Comments
#5001	Battery voltage high	High battery voltage alarm
#5002	Battery voltage low	Low battery voltage alarm
#5003	Battery SOC low	Battery SOC low alarm
#5004	Battery voltage high Pro	High battery voltage protection
#5005	Battery voltage low Pro	Low battery voltage protection
#5006	Battery SOC low Pro	Battery SOC low protection

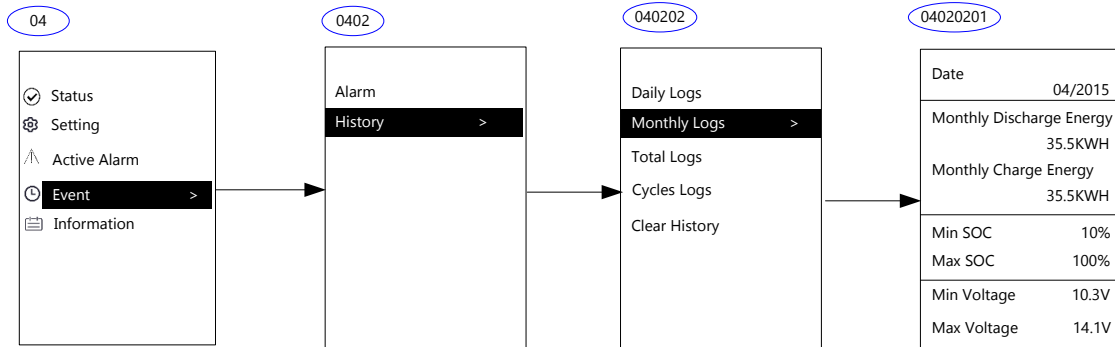


#6001	Cell N Voltage High	Cell N Voltage High alarm
#6002	CellN Voltage low	Cell N Voltage low alarm
#6003	CellN Voltage Imbalanced	Cell N Voltage Imbalanced alarm
#6004	Cell N Voltage High Pro	Cell N Voltage High Protection
#6005	Cell N Voltage low Pro	Cell N Voltage low Protection
#6006	Cell N Voltage Imbalanced Pro	Cell N Voltage Imbalanced Protection

## 6. History



<p>04020101</p> <table border="1"> <tr><td>Date</td><td>04/05/2015</td></tr> <tr><td>Daily Discharge Energy</td><td>35.5KWH</td></tr> <tr><td>Daily Charge Energy</td><td>35.5KWH</td></tr> <tr><td>Min SOC</td><td>10%</td></tr> <tr><td>Max SOC</td><td>100%</td></tr> <tr><td>Min Voltage</td><td>10.3V</td></tr> <tr><td>Max Voltage</td><td>14.1V</td></tr> </table>	Date	04/05/2015	Daily Discharge Energy	35.5KWH	Daily Charge Energy	35.5KWH	Min SOC	10%	Max SOC	100%	Min Voltage	10.3V	Max Voltage	14.1V	<p><b>Daily Energy, SOC and Voltage of the setting day.</b></p> <p><b>Date:</b> Choose the date. It offers 2 years' history records from the setting date.</p> <p><b>Daily Discharge Energy</b></p> <p><b>Daily Charge Energy</b></p> <p><b>Min SOC:</b> The lowest SOC level in the day.</p> <p><b>Max SOC:</b> The highest SOC level in the day.</p> <p><b>Min Voltage :</b>The lowest battery voltage in the day.</p> <p><b>Max Voltage:</b> The highest battery voltage in the day.</p>
Date	04/05/2015														
Daily Discharge Energy	35.5KWH														
Daily Charge Energy	35.5KWH														
Min SOC	10%														
Max SOC	100%														
Min Voltage	10.3V														
Max Voltage	14.1V														



Month	04/2015
Monthly Discharge Energy	35.5KWH
Monthly Charge Energy	35.5KWH
Min SOC	10%
Max SOC	100%
Min Voltage	10.3V
Max Voltage	14.1V

**Monthly information about energy, SOC and voltage.**

**Date:** Choose the month. It offers 10 years' history records from today.

**Monthly discharge energy**

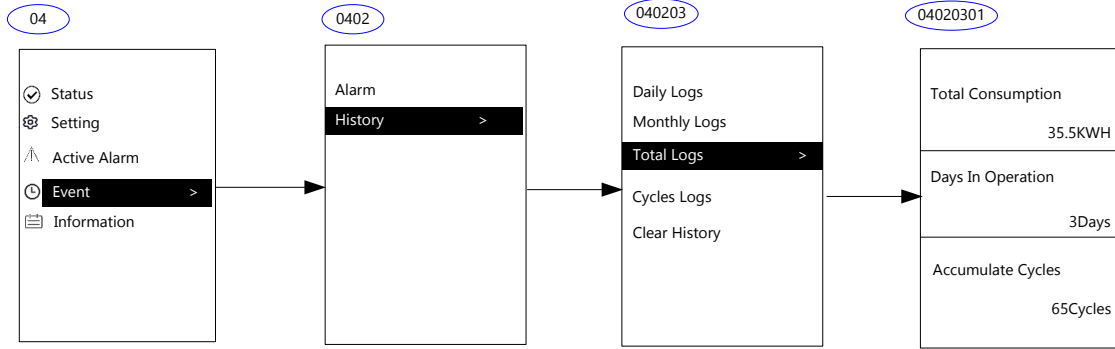
**Monthly charge energy**

**Min SOC:** The lowest SOC level in the month.

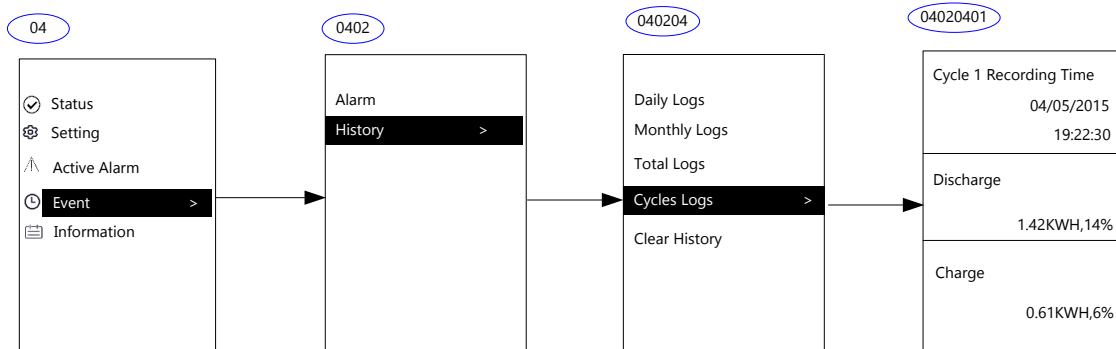
**Max SOC:** The highest SOC level in the month

**Min Voltage :** The lowest battery voltage in the month

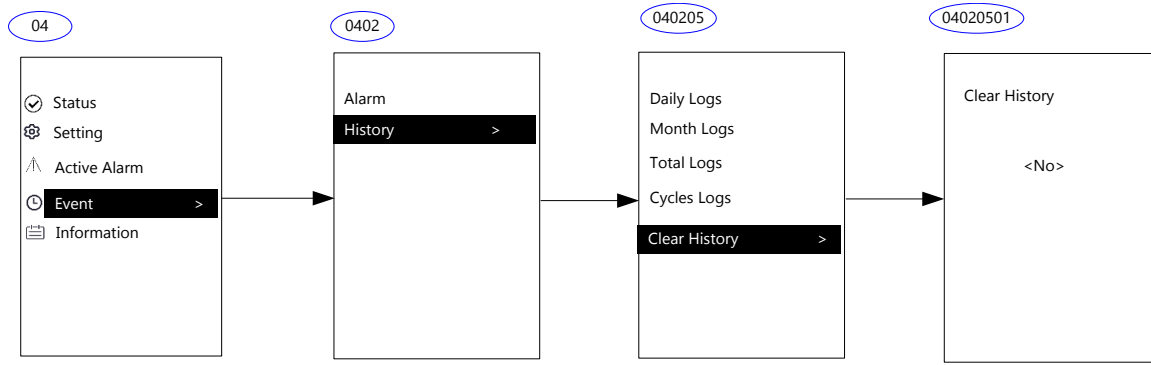
**Max Voltage:** The highest battery voltage in the month



<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">04020301</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Total Consumption</td> <td style="text-align: right; padding: 2px;">35.5KWH</td> </tr> <tr> <td style="padding: 2px;">Days In Operation</td> <td style="text-align: right; padding: 2px;">3Days</td> </tr> <tr> <td style="padding: 2px;">Accumulate Cycles</td> <td style="text-align: right; padding: 2px;">34Cycles</td> </tr> </table>	Total Consumption	35.5KWH	Days In Operation	3Days	Accumulate Cycles	34Cycles	<p><b>Total Consumption:</b> Total discharged energy of the battery since the latest setting for battery type and capacity.</p> <p><b>Days In Operation:</b> The accumulated days for the battery since the latest setting for battery type and capacity.</p> <p><b>Accumulate Cycles:</b> The accumulated charged/discharged cycles for battery since the latest setting for battery type and capacity.</p>
Total Consumption	35.5KWH						
Days In Operation	3Days						
Accumulate Cycles	34Cycles						

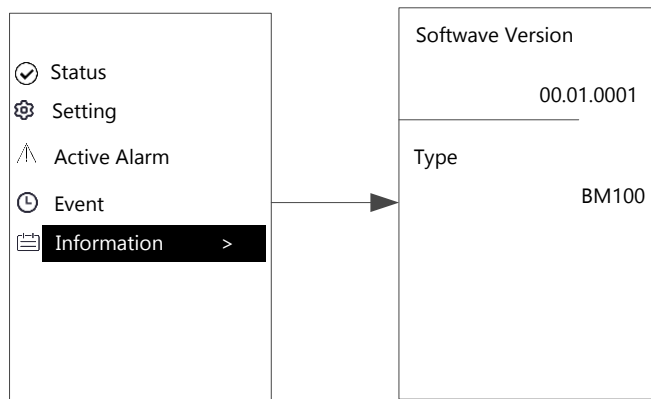


<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">04020401</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Cycle 1 Recording Time</td> <td style="text-align: right; padding: 2px;">04/05/2015 19:22:30</td> </tr> <tr> <td style="padding: 2px;">Discharge</td> <td style="text-align: right; padding: 2px;">1.42KWH, 14%</td> </tr> <tr> <td style="padding: 2px;">Charge</td> <td style="text-align: right; padding: 2px;">0.61KWH, 6%</td> </tr> </table>	Cycle 1 Recording Time	04/05/2015 19:22:30	Discharge	1.42KWH, 14%	Charge	0.61KWH, 6%	<p><b>The information about the latest 100 cycles.</b></p> <p><b>Cycle N Recording Time:</b> The ending time of the charging and discharging cycle.</p> <p><b>Discharge:</b> The energy consumption and the decreasing capacity after the discharged in the cycle.</p> <p><b>Charge:</b> The energy charged into the battery and the increasing capacity after the charging in the cycle.</p>
Cycle 1 Recording Time	04/05/2015 19:22:30						
Discharge	1.42KWH, 14%						
Charge	0.61KWH, 6%						



<p>04020501</p> <div style="border: 1px solid black; padding: 5px; width: 100px; margin: 0 auto;"> <p>Clear History</p> <p>&lt;No&gt;</p> </div>	<p><b>Clear History:</b> Clear all of the history records.</p>
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## 7. Information



The software version and the model of the BM unit.



## Specification

BML		BML1004/BML1008	BML2004/BML2008	BML4004/BML4008
<b>Electrical spec</b>				
Operation voltage range		8-33VDC	8-33VDC	8-33VDC
Operation current range		≤0.15A		
Battery voltage		12V/24V	12V/24V	12V/24V
Max battery voltage		33V	33V	33V
Max battery current		100A	200A	400A
Cell Number of Lithium battery		12V(4cell)/24V(8cell)		
Measuring Accuracy	Battery voltage	±1%		
	Cell voltage	±0.5%		
	Current	±3%		
	SOC	±5%		
Standby Consumption		<1W		
DOD dry contacts	Qty	1		
	Nominal switching capacity	0.5A/30VDC		
	Protection	Battery over voltage/Battery low voltage		
<b>Others</b>				
Communication		RS485		
Working temperature		-25°C ~ 65°C		
Dimension (LxWxH) - mm		101*101*43.45		
Height-g		500g		
IP protection		IP32(Monitor)/IP10 (SS100/SS100S/SS200/SS200S/SH400/SH400S)		
Cooling		Self cooling		
Standards		EN55022, EN60950		



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