# ZK-CM30 Coulometer Battery Charge Discharge Monitor

## 1.Description:

ZK-CM30 is a high-precision current acquisition type battery meter, also known as a coulomb meter. It can display the real-time capacity and charging/discharging time of the battery in real-time, convenient for battery discharge/discharge management, playing a role in protecting the battery.

It is a discharge monitor at discharge mode and a charge monitor at charge mode. It can connect voltage from DC 6V-60V battery and the output voltage is the same to input voltage. It can set battery discharge/charge voltage to prevent the battery from over-discharging/over-charging and causing damage.

## 2.Features:

1>.Charge/Discharge Monitor : Automatic Switch Charge/Discharge Mode by right C/P terminal. It is a Charge Monitor if connect a charger or Discharge Monitor if connect a load, which integrates charging and discharging control functions. It monitors the parameters of battery charging and discharging in real-time.

2>.Coulomb Meter: Real time display of battery capacity value and percentage, providing a very intuitive understanding of the current state of the battery's ability to continue working. At the same time, can calculate the time when the battery can continue to discharge or discharge.

3>.Battery Voltage Monitor: Not only can it display battery voltage, capacity, percentage, but also display charging and discharging current/power/battery capacity. Fully demonstrate the working performance and parameters of the battery.

4>.Various Battery Type: It can measure lithium battery, lead-acid battery,LiFePO4 battery and others type batteries. also can support multiple batteries in series within 6V~60V.

5>.Power-down memory function: The parameters can be permanently saved after completing the setting, so there is no need to worry about loss data when the power is turned off.

## 3.Functions:

1>.Automatic Switch Charge/Discharge Mode
2>.High precision Hall type Coulomb Meter
3>.Real-time Battery Voltage Monitor
4>.Programmable battery stop value and start value
5>.Adjustable backlight brightness
6>.30A high current control
7>.Parameter power-off save
8>.HD LCD display screen
9>.Display Battery capacity Ah, percentage %, energy Wh
10>.Display Battery charging/discharging current A,power W, countdown time H:M 00:00

## 4.Parameters:

1>.Measured voltage:DC 6.0-60V
2>.Output voltage:Same to input
3>.Load current:30A(Max)
4>.Control precision:0.2V/0.1A
5>.Work Power consumption:<2W
6>.Static power consumption:0.2W-0.4W
7>.Work mode:Charge and discharge mode
8>.Appropriate types:Storage battery, Lithium battery
9>.Work Temperature:-25℃~85℃
10>.Work Humidity:5%~95%RH
11>.Size:79*43*27mm

## 5.Set Parameters:

**1>.Set Work Mode:**

1.1>.Automatic Switch Charge/Discharge Mode by C/P terminal.

1.2>.It is a Charge Monitor when C/P terminal connect a charger.

1.3>.It is a Discharge Monitor when C/P terminal connect a load.

**2>.Set Battery Effective Capacity Value CAP:**

2.1>.Keep press 'SET' button more than 5second enter into parameters set mode. User can set CAP,ALA,UP, dn, oAP at set mode.

2.2>.The first parameter is CAP after enter set mode.

2.3>.Press 'ON/OFF' button can switch parameter bit which waiting to be modified.

2.4>.Press ' UP ' or ' DOWN ' button to change Battery Effective Capacity Value CAP.

2.5>.Press 'SET' to switch others parameter which waiting to be modified or keep press 'SET' button more than 5second to save and exit set mode if no need set others.

2.6>.Note:Users need to measure the effective battery capacity value in advance and modify CAP value, otherwise the capacity percentage will display incorrectly.

2.7>.**Method-1**: Set Capacity Value for the first time.

2.7.1>.Method-1 is available if the battery capacity is known. Then calibration percentage display value as following:

2.7.2>.Set Battery Effective Capacity Value CAP as according to the above steps.

2.7.3>.Start charging the battery.

2.7.4>.Switch to Capacity Ah display interface after charged.

2.7.5>.Keep press ' UP ' to set current Capacity Ah is corresponds to 100%

2.8>.**Method-2**: Set Capacity Value for the first time.

2.8.1>.Method-2 is available if the battery capacity is unknown. Then calibration percentage display value as following:

2.8.2>.Set Battery Effective Capacity Value CAP as large as possible by according to the above steps. It is recommended to set it to 30Ah if the estimated battery capacity is 20Ah.

2.8.3>.Connect load and ensure that the battery has completed discharged and entered the undervoltage protection state.

2.8.4>.Keep press ' Down ' to set current Capacity Ah is corresponds to 00%

2.8.5>.Start charging the battery.

2.8.6>.Switch to Capacity Ah display interface after charged.

2.8.7>.Keep press ' UP ' to set current Capacity Ah is corresponds to 100%

2.8.8>.Set this right Battery Effective Capacity Value CAP again as according to the above steps.

**3>.Set Low Voltage Alarm Value ALA:**

3.1>.Press 'SET' to switch parameter after set 'CAP'.

3.2>.Press ' UP ' or ' DOWN ' button to change the Low Voltage Alarm Value ALA value in percentage.

3.3>.Press 'SET' to switch others parameter which waiting to be modified or keep press 'SET' button more than 5second to save and exit set mode if no need set others.

3.4>.Display screen keep flashing if battery capacity percentage is less than ALA value.

3.5>.Note: Low Voltage Alarm Value ALA and Lower Limit Voltage Value dn are different. It just screen flashing alarm but battery keep discharging for ALA value. The remaining battery capacity is 0% if the battery voltage is less than dn value.

3.6>.Note:It is just a battery monitor, so it keep output voltage if battery voltage is less than this value.

**4>.Set Upper Limit Voltage Value UP:**

4.1>.Press 'SET' to switch parameter after set 'ALA'.

4.2>.Press ' UP ' or ' DOWN ' button to change the Upper Limit Voltage Value UP.

4.3>.Press 'SET' to switch others parameter which waiting to be modified or keep press 'SET' button more than 5second to save and exit set mode if no need set others.

4.4>.Its set value can not be less than Lower Limit Voltage Value dn. The system will automatically determine.

4.5>.The remaining battery capacity is 100% if the battery voltage is more than UP value.

4.6>.It can be set to 00.00V if no need this function.

**5>.Set Lower Limit Voltage Value dn:**

5.1>.Press 'SET' to switch parameter after set 'UP'.

5.2>.Press ' UP ' or ' DOWN ' button to change the Lower Limit Voltage Value dn.

5.3>.Press 'SET' to switch others parameter which waiting to be modified or keep press 'SET' button more than 5second to save and exit set mode if no need set others.

5.4>.Its set value can not be greater than Upper Limit Voltage Value UP. The system will automatically determine.

5.5>.Stop discharging if battery voltage is less than dn value. It means battery is discharged and enter the over-discharge voltage protection state.

5.6>.It can be set to 00.00A if no need this function.

5.7>.Note: Low Voltage Alarm Value ALA and Lower Limit Voltage Value dn are different. It just screen flashing alarm but battery keep discharging for ALA value. The remaining battery capacity is 0% if the battery voltage is less than dn value.

5.8>.Note:It is just a battery monitor, so it keep output voltage if battery voltage is less than this value.

**6>.Set Output Over Current Value oAP:**

6.1>.Press 'SET' to switch parameter after set 'dn'.

6.2>.Press ' UP ' or ' DOWN ' button to change the Output Over Current Value oAP.

6.3>.Press 'SET' to switch others parameter which waiting to be modified or keep press 'SET' button more than 5second to save and exit set mode if no need set others.

6.4>.LCD keep flashing and buzzer alarm if charge or discharge current is greater than this oAP value and lasts for more than 1.5 second.

6.5>.It can be set to 00.00A if no need this function.

6.6>.The default value is 30A and suggest enabling this function.

**7>.Switch Display Parameters Value:** Short press 'SET' to switch display battery voltage V, current A, power W, percentage %, charging/discharging countdown time in hour : minute, capacity Ah, energy Wh.

**8>.Adjustable Backlight Brightness:**

8.1>.Press ' UP ' button to increase backlight brightness.

8.2>.Press ' DOWN ' button to decrease backlight brightness.

**9>.Turn ON/OFF Backlight:** Short press 'ON ' to turn ON/OFF Backlight. But it keeps output voltage.

**10>.Clear Capacity:** Keep press ' DOWN ' button about 5second can clear current capacity value when display capacity.

**11>.Calibration Current:**

11.1>.Switch to current display interface and just connect charger. NOTE: Just connect charger, and don't connect battery or load.

11.2>.Keep press ON/OFF button more than 10s can calibration current.

## 6.Discharge Mode OUT:

1>.'C/P' terminals connect to load such as lamp, motor and so no.

2>.The working voltage of the load must be equal to the rated voltage of the battery.

3>.Green indicator turn ON and display symbol 'OUT' without ALA or Alarm status.

4>.Green indicator turn OFF and display symbol 'OUT' and screen flashing with ALA or Alarm status.

## 7.Charge Mode IN:

1>.' C/P ' terminals connect to battery charger.

2>.The output voltage of the charger must be equal to the rated voltage of the battery.

3>.Green indicator turn ON and display symbol 'IN' without ALA or Alarm status.

4>.Green indicator turn OFF and display symbol 'IN' with ALA or Alarm status.

## 8.Frequently Asked Questions:

**1>.What is the control voltage range? What is the applicable battery range?**

Q: Control voltage range is DC 6V-60V. But battery voltage max is 48V. Because the voltage of 48V

battery can reach 60V after fully charged.

**2>.Why does the output always have a voltage value?**

Q: Because it is a monitor but can not turn OFF output.

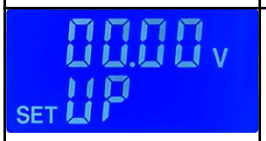
**3>.Can it limit the current?**

Q: It can limit current, the charging current is completely dependent on your charger but can not more than the set value oAP.

**4>.Can I charge a 24V battery by inputting 12V?Or charge a 12V battery by inputting 48V?**

Q: This is a simple voltage controller just for ON/OFF.It can not change output voltage.So what kind of charger should you prepare for charging the battery!

## 9.Display Interface:

| Discharge Mode Display Interface : Symbol OUT | | | | | |
|---|---|---|---|---|---|
|  | V: Battery Voltage<br>A: Discharge Current |  | V: Battery Voltage<br>W: Discharge Power |  | V: Battery Voltage<br>%: Battery Percentage |
|  | V: Battery Voltage<br>h: Remain Discharge Time in Hour : Min |  | V: Battery Voltage<br>Ah: Battery Capacity |  | V: Battery Voltage<br>Wh: Battery Energy |
| **Charge Mode Display Interface : Symbol IN** | | | | | |
|  | V: Battery Voltage<br>A: Charge Current |  | V: Battery Voltage<br>W: Charge Power |  | V: Battery Voltage<br>%: Battery Percentage |
|  | V: Battery Voltage<br>h: Remain Charge Time in Hour : Min |  | V: Battery Voltage<br>Ah: Battery Capacity |  | V: Battery Voltage<br>Wh: Battery Energy |
| **Parameter Set Interface : Symbol SET** | | | | | |
|  | CAP : Battery Effective Capacity Value<br>Users need to measure the effective battery capacity value in advance and modify CAP value, otherwise the capacity percentage will display incorrectly. | | | | |
|  | ALA : Low Voltage Alarm Value<br>Display screen keep flashing and buzzer alarm if battery capacity percentage is less than ALA value. | | | | |
|  | UP : Upper Limit Voltage Value<br>The capacity is automatically set to 100% when the battery voltage is higher than UP. It can be set to 00.00V if no need this function. | | | | |
|  | dn : Lower Limit Voltage Value<br>The capacity is automatically set to 0% when the battery voltage is higher than UP.It can be set to 00.00A if no need this function. | | | | |
|  | oAP : Output Over Current Value<br>Display screen keep flashing and buzzer alarm if current is greater than this oAP value and lasts for more than 1.5 second. It can be set to 00.00A if no need this function.Default 30A and enable function. | | | | |

## 10.Notes:

1>.It is a charging/discharging monitor but not a charger or voltage converter!

2>.Both the monitor and the load consume the power of the input terminal battery. Therefore, even if display 0%, monitor will continue to consume the battery, which is used to monitor the battery voltage.

3.Users need to measure the effective battery capacity value in advance and modify CAP value, otherwise the capacity percentage will display incorrectly.

4>.The module will heat up if input voltage is more than 50V or current is more than 25A.

5>.It uses the Hall principle to detect the current value, so it must be at least 15cm away from magnetic objects when using, otherwise it will affect the current test results.

6>.Static working power consumption is 0.2W, 15mA/12V, 9mA/24V, 7mA48V when screen both OFF.

7>.Static working power is 0.4W, 30mA/12V, 16mA/24V, 10mA48V when screen in the brightest state.

8>.It is recommended disconnecting battery or set brightness in the darkest if not used for a long time.

9>.Please read use manual and description before use.

## 11.Application:

1>.Industrial control equipment

2>.Instrumentation test

3>.Experimental data testing and monitoring

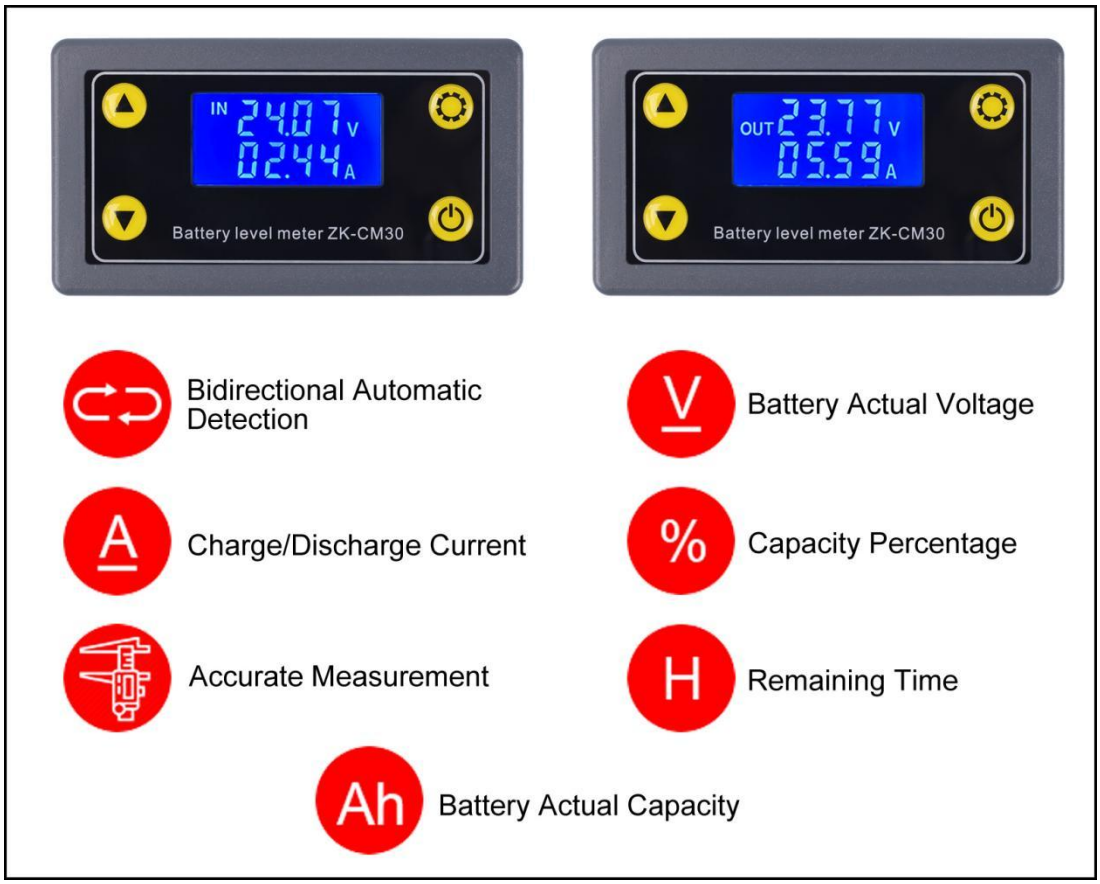
4>.Solar and wind power supply system

5>.Electric bicycle

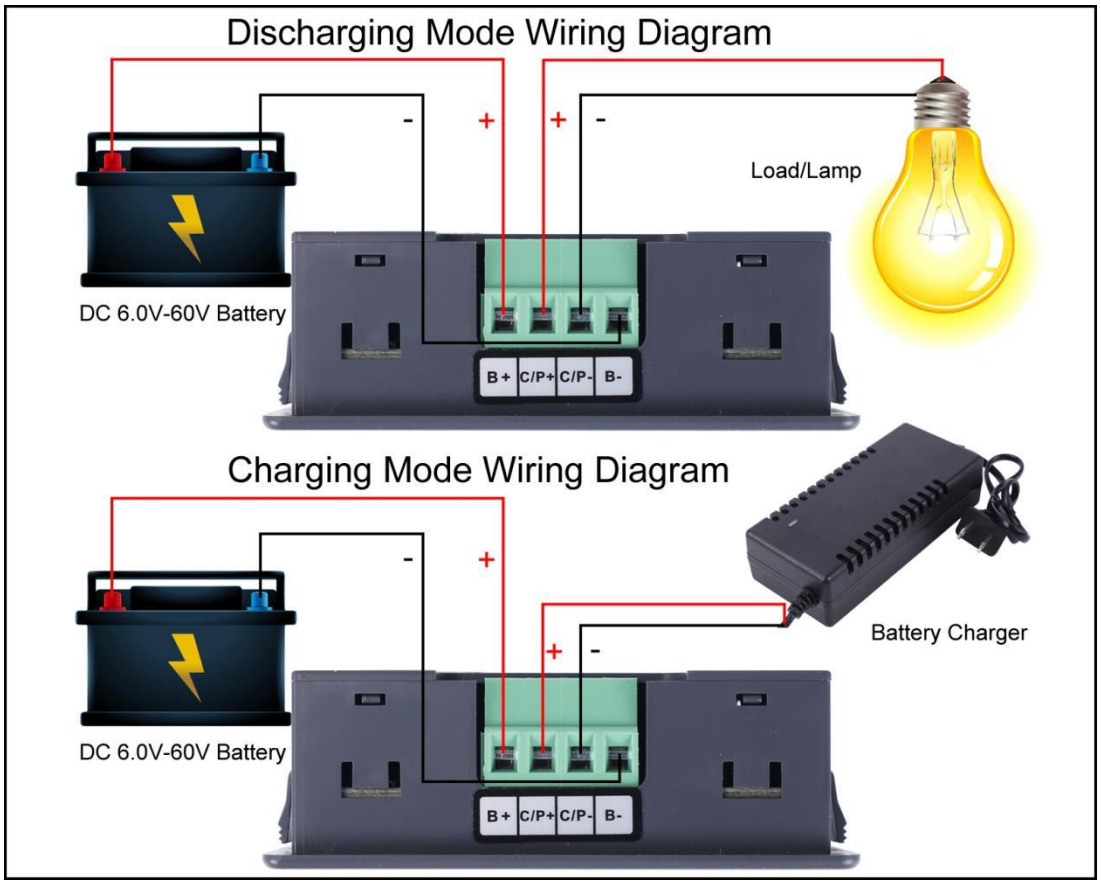
6>.New energy vehicles

## 12.Package:

1>.1pcs ZK-CM30 Coulometer Battery Charge Discharge Controller




Short Press: Switch Display Parameters
Keep Press: Enter/Exit Set Mode
Short Press: Increase Backlight Brightness
Keep Press when Display Capacity: Set 100%
Short Press at Set Mode: Increase Parameter Values
Short Press at Set Mode:
Change be Modified Parameter
HD LCD Display Screen
OUT
10.09
V
99.5
%
Battery level meter ZK-CM30
Short Press: Decrease Backlight Brightness
Keep Press when Display Capacity: Set 00%
Short Press at Set Mode: Decrease Parameter Values
Short Press: ON/OFF Screen
Keep Press: Enable/Disable Buzzer
Short Press at Set Mode:
Change be Modified Parameter Bit


Discharging Mode Wiring Diagram
-
+
+
-
Load/Lamp
DC 6.0V-60V Battery
B+
C/P+
C/P-
B-
Charging Mode Wiring Diagram
-
+
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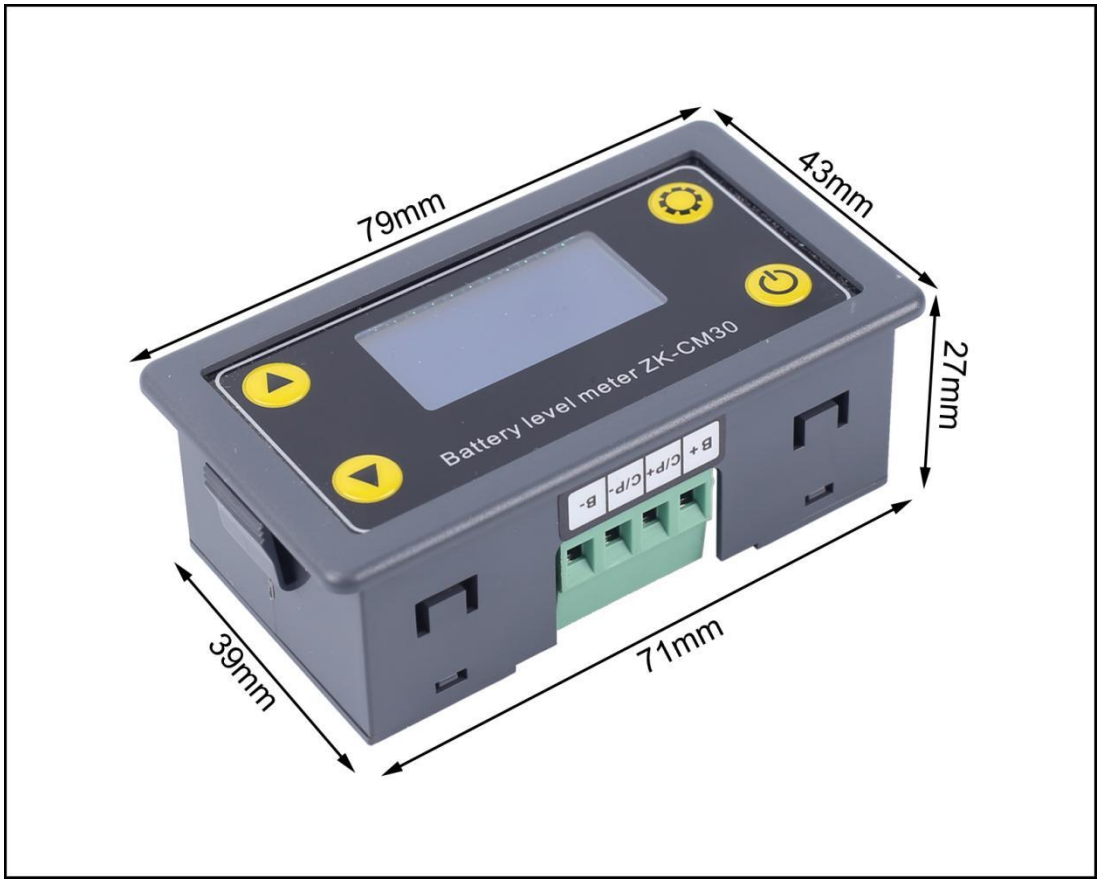
Battery Charger
DC 6.0V-60V Battery
B+
C/P+
C/P-
B-


79mm
43mm
27mm
71mm
39mm
Battery level meter ZK-CM30
B-
C/P-
C/P+
B+