LINOVISION

SOLAR-CMP10A

User Manual

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1.Products Introduction

1.1 Products Description

SOLAR-CMP10A series MPPT solar controller, using the maximum power point tracking technology, real-time tracking of the best working point of solar panel, with maximum power from PV to charge the battery, PV charge efficiency can be significantly improved. Because the product can be used for charging current, the voltage can be accurately controlled. Therefore, it is very suitable for the lithium battery charging, especially for small off-grid solar power system.

Multiple operation modes are provided including automatic mode, light-control mode, and manual mode. A test mode is also available for engineering installation.

1.2 Main Features

1. MPPT Technology Compatible with Gel, AGM, Li, etc. battery type
2. Peak conversion efficiency up to 98%
3. High tracking efficiency of 99%
4. Automatic 12v/24v Detection
5. Times periods Load Control (Timer+Dimmer)
6. Max output efficient of 96%
7. Aluminum housing for better cooling
8. Motion sensor function(optional).

1.3 Technical Parameters

MPPT Solar Charge Controller(Waterproof)	
Model	SOLAR-CMP10A
System voltage	12/24V Auto
Load parameter	
Max boost output voltage	17~55v/12V(27~55V/24V)
Rated output current	10A
Typical efficiency	98%
Over Load Capability	110% normal run, 125% 1min, 150% 20s
PV parameter	
Max PV Output power	170W12V/340W24V
Max PV open circuit voltage	100V
Max PV current	10A
Battery parameter	
Type of Battery	AGM
Max Battery voltage	34V
Main charge voltage	14.2V
Boost charge voltage*	14.6V
Float charge voltage	13.6V
Equalization charge voltage	14.6V
Over Discharge voltage	11.1V
Reconnect voltage	12.6V
Temp. compensation	4mV/33.8°F/2V(4mV/°C/2V)
Others	
External Communication	RS485/2400pbs,Modbus(optional)
Self-consumption	<14mA
low voltage protect	30% energy

Over Term	185°F(85℃)
Dimensions (L*W*H)	3.46*3.46*0.82″(88*88*21mm)
Net weight	1.124lb(510g)
Enclosure	IP67
Working temperature	-40°F to +131°F(-40℃ to +55℃)
Note: Technical data for 12V system at 77°F(25℃), x2 in 24V system	

1.4 Dimension

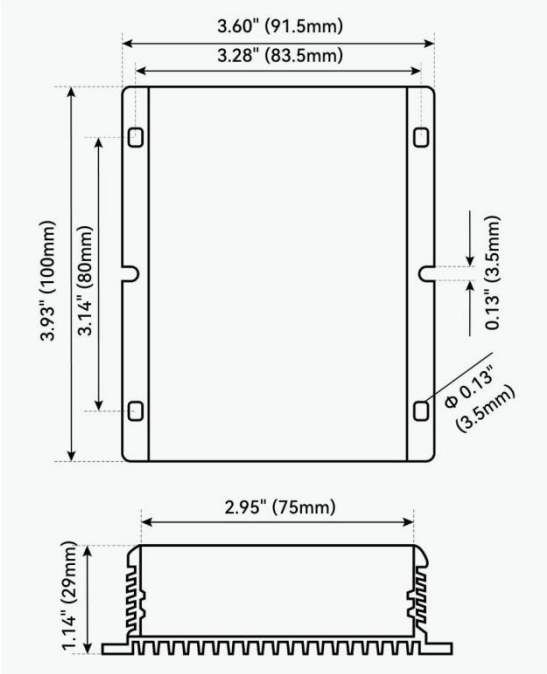
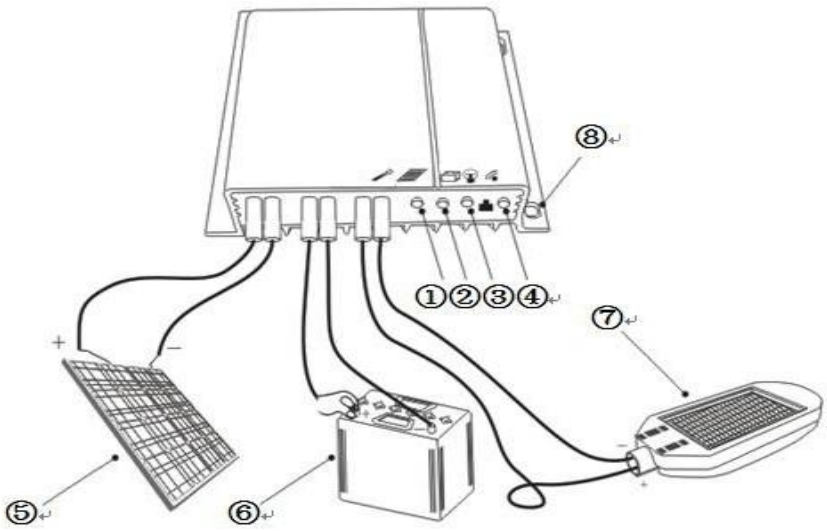


Figure 1.4 CMP10A appearance

2. Installation

2.1 Panel Installation



①PV indicator (green ②Battery indicator (red/green) ③Load indicator (yellow) ④IR communication connector

⑤PV connection terminal ⑥Battery connection terminal ⑦Load connection terminal ⑧Installation hole

2.2 LED Indicators

A. PV Indicator

Color	Indication	Working State
Green	On Solid	PV is charging Battery
Green	Flash Fast	Battery Over Voltage,refer to Trouble shooting.
---	OFF	PV voltage is low

B. Battery Indicator

Color	Indication	Working State
Green	On Solid	Battery is Normal
Green	Flash	Battery is full

Yellow	On Solid	Battery is under voltage
Red	On Solid	Battery is over-discharged, turn off Load auto

C. Load Indicator

Color	Indication	Working State
Yellow	On Solid	Load is ON
--	OFF	Load is off
Yellow	Flash Fast	Load short circuit or open circuit
Yellow	Flash Slow	Load string number is too low Or overload limited power output

2.3 Fix the Controller

Fix the controller at a place free of direct sunlight, high temperature, and immersion risks. Take care of the radiator under the device, which is used to decrease device temperature during full-power operation. Measures should be taken to avoid obstruction and to ensure heat dissipation through natural convection. For installations in confined space such as lamp post, the radiator ribs should be preferably oriented along the air flow direction.

2.4 Connection method

A connection method commonly used by electricians is recommended below.
Please connect each wire of the controller according to standard procedures.

All delivered wires for the controller have reserved cuts, which facilitate easy stripping during connection while preventing short circuit due to contact between wires.Please follow the steps below during installation and avoid removing insulation of all six wires at one time.

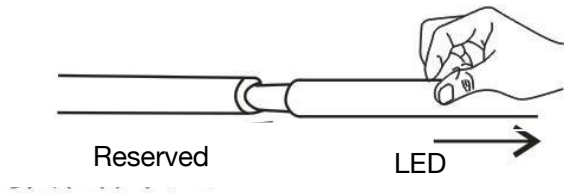


Figure 2.4.1 First step during wiring – wire stripping

Cross the copper wires in the controller lead and load lead, and then twist them around the rear section of each other and tighten them. This wiring method provides a large contact area and a high connection force, thus ensuring long-time reliable connection. The connectors should be tightened as well. The wires should be preferably fixed with cable ties to prevent loosening of connectors during wire vibration in mobile applications.

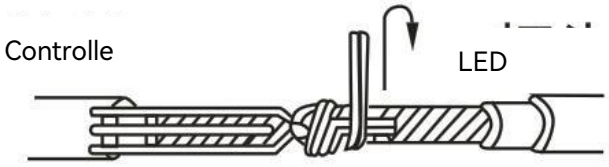


Figure 2.4.2 Second step during wiring - connection

Use waterproof insulation tapes to wrap around exposed parts of wires. To ensure their reliability, high-pressure rubber self-adhesive tapes can be used as the inner wrapping layer and electrical tapes as outer layer. Measures should be taken to prevent aging and falling of the electrical tapes and consequent short-circuit accidents due to long-time use in humid and hot environments.

Figure 2.4.3 Third step during wiring – wrapping of insulation layers

Standard wiring is critical for long-time reliable system operations. Loose or unstable wire connections may lead to excessive resistance and consequent heating at connection parts. In these occasions, the wire insulations tend to experience premature aging, which will in turn lead to short circuit, open circuit, and other failures.

2.5 Connection Steps

For the sake of safety, please complete wiring in the following order: ①load ②battery ③pv

①Load connection: As the controller has not started operation, there is no response from the controller after load connection

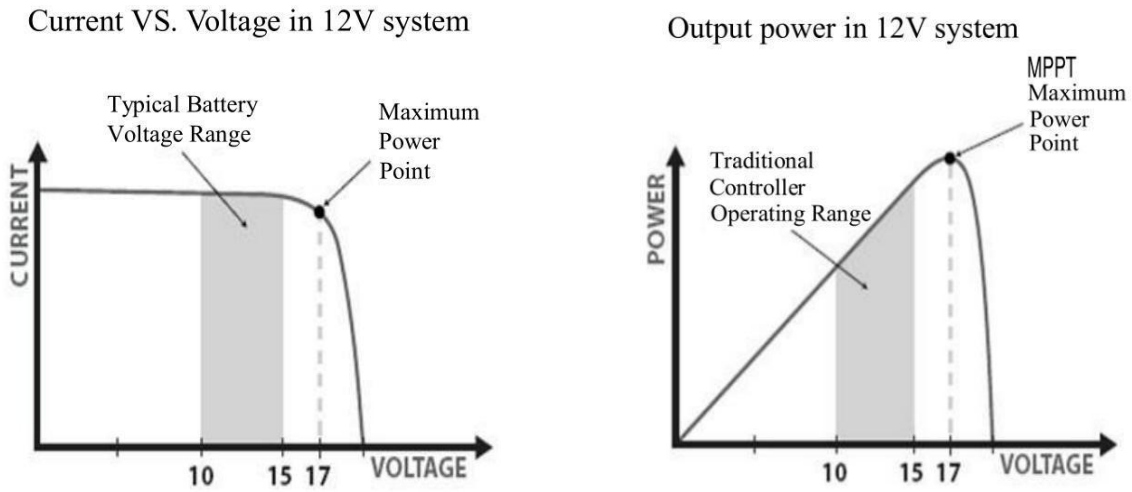
②Battery connection: Before connection of the battery, make sure that the battery voltage is higher than 9V so that the controller can be started. For a 24V system, make sure that the battery voltage is not lower than 18V. After completion of battery connection, the controller will start to work. 10s later, the load will be light up automatically to confirm correct wiring.

③Solar panel connection: The controller can be used for both standard 12V or 24V solar panel components and those with an open-circuit input voltage not exceeding the specified maximum input voltage. The voltage at the highest power point of solar components should not be lower than the battery voltage.

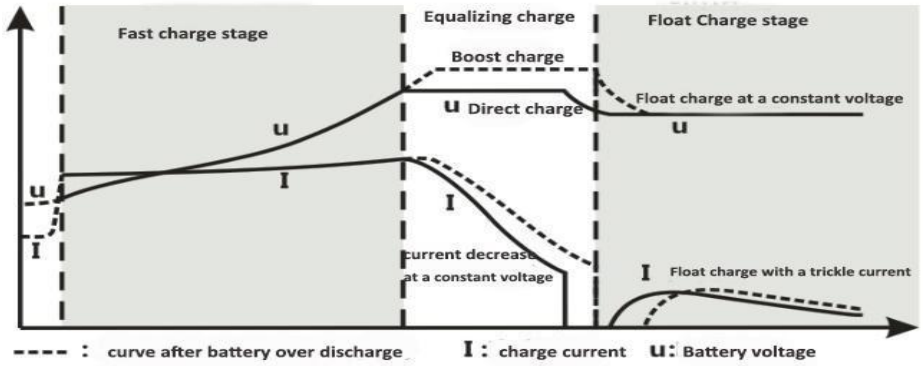
3. Instruction

3.1 Charge Description

The controller utilizes Maximum Power Point Tracking technology to extract maximum power from the solar module (s). The tracking algorithm is fully automatic and does not require user adjustment, MPPT technology will track the array maximum power point voltage (Vmp) as it varies with weather conditions, ensuring that maximum power is harvested from the array through the course of the day.



Charging of lead acid or gel battery: The controller manages battery charging based on specified charging curves for different types of cells and settings. If the cell type defined in the controller is lead acid or gel battery, the whole charging process includes three phases: Fast charge stage, equalize charge stage, and float charge stage.



3.1.1 Lead Acid or Gel battery

a. Trickle pre-charge stage: At the beginning of charging. If the battery voltage is too low, in order to protect the battery, to avoid large current impact caused damage to the internal structure of the battery. The controller will charge battery in a small current. And will enter fast charge stage after the battery voltage be some improvement.

b. Fast charge stage: The battery voltage has not reached the setting, and the controller will provide the maximum solar power to charge the battery. During Fast charging, the solar panel and the battery are connected directly. The voltage of the solar panel is clamped at the battery voltage.

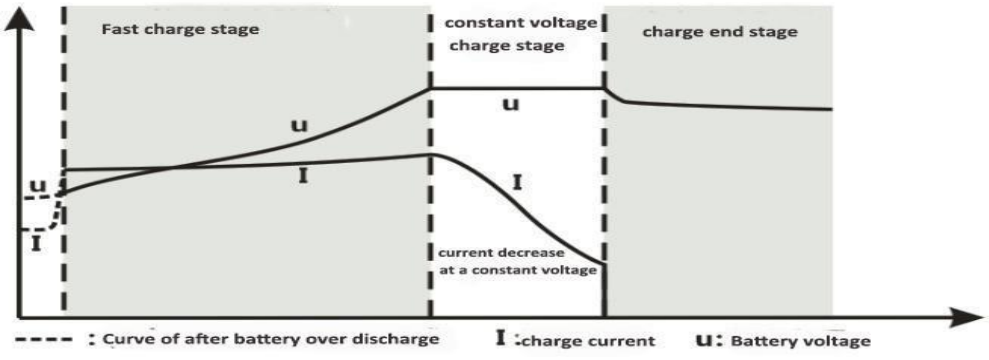
b. Equalize charge stage: When the equalizing charge voltage is reached, pulse width modulation (PWM) is activated. When the battery voltage reaches the setting, the controller continues to adjust battery voltage to maintain it at the setting and prevent over-charging of battery.and this stage will keep 2hours then enter Float charge stage.

d. Float charge stage: In this phase, the battery requires no further power, but the controller still provides weak charging to meet power consumption needs of small loads and to make up for power consumption by the battery itself. In this way, the battery is always kept at a saturated state for a longer service life.

Charging of Lithium battery: When the battery type selected for the lithium battery,

the controller of the charging curve to be adjusted to accommodate the lithium

battery charging characteristic.



3.1.2 Lithium battery

a. Trickle pre-charge stage: At the beginning of charging, If the battery voltage is too low, in order to protect the battery, to avoid large current impact caused damage to the internal structure of the battery. The controller will charge battery in a small current. And will enter fast charge stage after the battery voltage be some improvement.

b. Fast charge stage: The battery voltage has not reached the setting, and the controller will provide the maximum solar power to charge the battery. During Fast charging, the solar panel and the battery are connected directly. The voltage of the solar panel is clamped at the battery voltage.

c. Constant-voltage charge stage: The constant-current charge phase ends when the cell voltage rises to a predefined level, followed by a constant-voltage charge phase. Depending on saturation degree of the battery cell, the current drops from the maximum level gradually as the charging process proceeds. This charge voltage is typically defined as 4.2V for a single-string battery. The specific voltage should be set according to the parameters provided by the battery manufacturer. (C is a notation representing correspondence between cell nominal capacity and current. For example, for a cell capacity of 1000mAh, 1C means a charging current of 1000mA.)

d. Charge end stage: The charging current during the constant-voltage charge phase is monitored, and the charging process is ended when the charging current drops to the end-of-charge current, which is typically 0.02C.

3.2 Discharge Description

Discharge operation mode:

The SOLAR-CMP10A series controller can run automatically and unattended by following preset modes.

3.2.1 Manual work mode

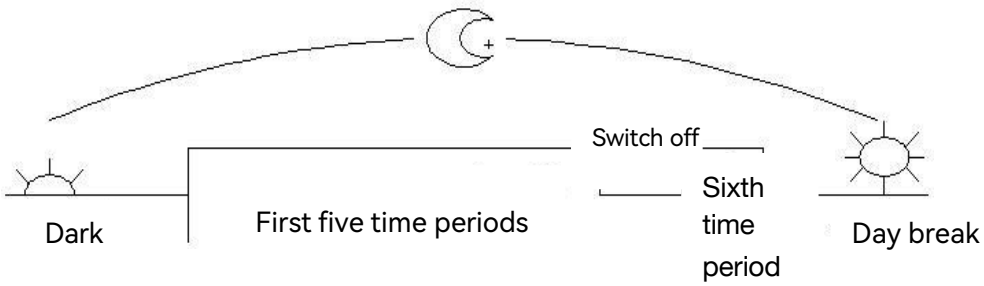
Manual mode: When applied to an independent power system, the controller work mode defaults to "manual ON/OFF". By pressing RC-3 remote control F1 button, manually open or close the controller output. If the controller restarted, the operating status of the controller will not be affected.

3.2.2 Auto work mode

Automatic work with two modes. Light control mode and automatic mode can be used in conjunction with the LED driver to control the solar street lights. When the PV voltage is continuously higher than the set light control voltage for more than two minutes (20s to 10 minutes adjustable), the controller to determine the system in the daytime; when the PV voltage is continuously lower than the set light control voltage exceeds two minutes, the controller judges that the system is at night.

a. Light-control mode: Under this mode, the controller will closed the output at daytime and open output at night

b.Automatic mode: under this mode, the controller will close the output in the daytime and at night the output can work in 6 different periods. Among them, the sixth period is the morning light period.



3.2.3 Test

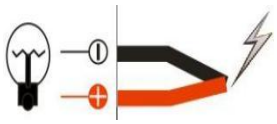
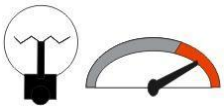
Testing mode: This mode is used for system testing. It's almost the same as the complete light-control mode. The only difference is elimination of the delay time before optical signal determination, and all other functions are preserved to facilitate checking of proper system functions during installation and testing.

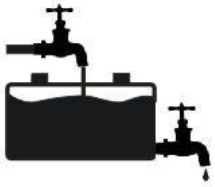
4.Trouble Shooting

Phenomenon	Analysis	Solutions
·In daytime,PV indicator is dark ·In daytime,Load is on ·Load work only for the one whole night	·solar panel cables Connection mistake.	·check solar panel cables connection is correct or not. ·cut off the solar panel cables connection with solar controller, check the voltage of VOC,then reconnect.
·Load Indicator flash fast & LED lamp not work.	·LED lamp cable is open circuit or short circuit. ·LED lamp is broken or LED chips connection not meet driver range.	·recheck the LED lamp cables connection is correct or not. ·cut off LED lamp connection cables,then reconnect.
·Load Indicator flash fast & LED lamp flash also.	·after LED lamp power on,work for few seconds, then off,LED lamp flash fast.	·LED chips series connection over the controller output range. LED chips series connection is too much or less, please refer to parameter table to adjust the LED chips connection.
·Load Indicator flash slowly	·Output power over the controller rated power	Low down the output current

·Battery indicator is red ·LED turn on for a short time。	·Battery voltage is low。 ·Cables resistance is too big or the battery is damaged	·If this occurs often,then need to check PV charging is normal or not,solar panel is blocked or not,or other reasons caused PV not charge normally. ·Battery quality is good or not. ·Check the battery cables is too long or if there is any connection not good to battery.

5.Protection

	Load Fault:In case of any short circuit or open circuit in the controller load connections, the controller will provide automatic protection, and the load indicator will flash rapidly. The system detects the load fault at a regular interval to determine if it has been eliminated. If the fault persists for over 7 minutes, the controller will make no further attempts to switch on the load until another attempt is made on the next day, or a manual switch-on operation will be made after the fault has been eliminated by maintenance personnel.
	Over Power Protection: When the load power exceeds the rated power by 5%, power protective mode will be initiated to prevent damage to the controller.
	Over Charge Protection:When charging the battery voltage is too high,the controller will automatically disconnect the charging circuit , in order to avoid damage to the battery.
	Over Discharge protection:When battery voltage discharge too low,controller will cut off the load output automatically to protect battery.
	PV modules reverse polarity protection: When PV modules reverse polarity(NOT suggested), the controller will not damage,will continue to work after the correction of wiring errors.

	Battery polarity protection: When battery reverse polarity(NOT suggested), the controller will not damage,will continue to work after the correction of wiring errors.
	Temperature sensor damage fault protection: When the temperature sensor short circuit or damage , the controller will default working at 25 ℃. In order to avoid battery errors and damage caused by "broken" temperature compensation.
	Over-current protection: A over-current (1.25 times rated current) protection with 60s delay is provided with inverse time lag characteristics.

6.communication protocol

1.protocol specification

Suitable for communication control of SOLAR-CMP10A .

2.Agreement content

2.1 Hardware interface: 485 interface, red line A, blue line B. Double-line half-duplex mode.

2.2 Baud rate: 9600bps, 8 data bits 8 bits, 1 stop bit.

2.3 Signaling type: read parameters, write parameters, state control, Four types of response.

2.4 Message format: prefix + signaling type + data length + data + checksum, each paragraph is described as follows:

- prefix: one byte in length, signal source transmitting device number, 0X40 is CMP10A terminal, 0X20 refers to sending set.

- Signaling type: one byte in length. The values are expressed as follows:

0x01 Read the CMP10A terminal parameters;

0x02 Write the CMP10A terminal parameters;

0x03 For the abnormal state, to clear the abnormal state instruction; if there is no abnormal state and the CMP10A terminal is in the manual mode; if there is no abnormal state and the CMP10A terminal is not in the manual mode, for the test instruction, the CMP10A terminal will enter the test mode.

- Data length: a length of one byte, whose value is the actual byte length of the subsequent data.

- Data: The length is the byte length defined by Data Length and the CMP10A controller parameters, see the attached table.

- Checksum: 1 byte in length. For the prefix + command + data length + data 1 + data 2 +..... Data N, the lowest number of bytes retained after accumulation.

2.5 Signal response mode:

The master device issues the reading instruction: the controller returns the reading instruction to answer, see the message read example.

The main control device issues write instruction: the controller returns to write instruction answer, see message writing example.

The master control equipment issues the state control command: the controller performs the command, but does not respond.

2.6 Data format:

Schedule: Definition of the data area

When the CMP10A terminal answers the reading command of the master device, all data bits in the table must be included and cannot be omitted.

The word	order	DL	data field	Accumulation and verification
Terminal device 0x40 Master control device 0x20	0x01 Read the command 0x02 Write the command 0x03 Load switch reverse or abnormal state clear or test command 0x24 Read status	Data area data length N bytes	Data 1 Data 2... Data N	Accumulation: prefix + command + data length + data 1 + data 2 +.....+ Data N, take the last byte of the cumulative sum.

When the master device sends the write command to the CMP10A terminal, all data bits in the table must be included and cannot be omitted.

Data shall be defined in order in the table, in the following format.

Write command		
The main control equipment is sent		
order	Functional representation	Content definition
0	The word	0x20 Master device sent
1	order	0x02 Write instructions
2	DL	71 Data

3	Product model	--
4	maximumoutput	--
5	The first time	High four byte hours, four lower ten digits of minutes, after the same. Example 0x12 represents 1 hour and 20 minutes
6	First time current	0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
7	The second time	Four bytes higher represent hours, and four lower indicate ten digits in minutes
8	Second period current	0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
9	The third time	Four bytes higher represent hours, and four lower indicate ten digits in minutes
10	Third period current	0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
11	intelligent control	0x00 off 0x01 mode 1 0x02 Mode 2
12	advanced setup	0x00 off 0x01 open
13	Load control mode	0x01 Manual mode 0x02 auto-mode mode 0x03 Debug mode 0x04 Pure light control mode
14	Light control delay time	Minutes; such as 0x10, representing 16 minutes

15	Optical control voltage	0x01 is for the 0.1V,59=5.9V
16	Battery type	0x01 colloid 0x02 lead acid 0x03 custom 0x04 lithium battery
17	Overvoltage voltage	0x01 is for the 0.1V,170=17.0V
18	Over and over voltage	0x01 is for the 0.1V,111=11.1V
19	Over-put back voltage	0x01 is for the 0.1V,126=12.6V
20	Raise the charging voltage	0x01 is for the 0.1V,146=14.6V
21	floating charge voltage	0x01 is for the 0.1V,136=13.6V
22	Power supply priority	The default value is 00
23	The fourth time	Four bytes higher represent hours, and four lower indicate ten digits in minutes
24	Fourth period current	0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
25	The fifth time	Four bytes higher represent hours, and four lower indicate ten digits in minutes
26	Fifth period current	0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
27	The sixth time	Four bytes higher represent hours, and four lower indicate

		ten digits in minutes
28	Load sleep output power	0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.
29	Sensor enabling period	The highest bit of binary code indicates the on / off state of the sensor function at a time, 1 on 0 off.1111 1111 means that the sensor is valid during all periods, 0111 1111 means that the sensor is invalid in the first period and the remaining periods are valid.
30	Current in the sixth period	0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
31	System voltage level	0x01 is 12V (valid only if the battery type is lithium battery) 0x02 for 24V
32	charging voltage	0x01 is 0.1V,140=14.0V (valid only if battery type is lithium battery)
33	charging current	0x01 is 0.1A,100=10.0A (valid only if battery type is lithium battery)
34	Charging end current	0x01 is 0.1A,3=0.3A (valid only if battery type is lithium battery)
35	Manufacturer setting	Fix to 0x00
36	Customer Settings	Fix to 0x00
37	Protocol version number	36
38	Charging high temperature protection	65 for 77°F(25℃) 40 for 32°F(0℃)
39	Charging low temperature	65 for 77°F(25℃) 40 for 32°F (0℃)

	protection	
40	Discharge high temperature protection	65 for 77°F(25℃) 40 for 32°F(0℃)
41	Discharge low temperature protection	65 for 25℃ 40 for 0℃
42	Sensor delay start time	1 for a 1-day delay
43	The sensor triggers the delay-off time	1 representation 10s. Example: 5 is for 5 * 10s.
44	continue to have	
45	First-order reduced power voltage H	High 8 bits, 1201 indicates 12.01V
46	First-order reduced power voltage L	Lower 8 bits, 1201 indicates 12.01V
47	Second-order reduced power voltage H	High 8 bits, 1201 indicates 12.01V
48	Second-order reduced power voltage L	Lower 8 bits, 1201 indicates 12.01V
49	Third-order reduced power voltage H	High 8 bits, 1201 indicates 12.01V
50	Third-order	Lower 8 bits, 1201 indicates 12.01V

	reduced power voltage L	
51	First-order reduced power reduction amplitude	80 indicates that the battery voltage decreases to the first order reduced power voltage to 80% of the current voltage
52	Second-order reduced power amplitude	80 indicates that the battery voltage decreases to the second order reduced power voltage to 80% of the current power
53	Third-order reduced power reduction magnitude	80 indicates that the battery voltage decreases to the third order reduced power voltage to 80% of the current voltage
54	No one power H at a time	High 8 bits, 0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
55	No one power L	Low 8 bits, 0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
56	Two period of unmanned power H	High 8 bits, 0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
57	Two period of unmanned power L	Low 8 bits, 0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA

58	Three periods of unmanned power H	High 8 bits, 0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
59	Three periods of unmanned power L	Low 8 bits, 0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
60	Four periods of unmanned power H	High 8 bits, 0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
61	Four periods of unmanned power L	Low 8 bits, 0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
62	Five periods of unmanned power H	High 8 bits, 0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
63	Five periods of unmanned power L	Low 8 bits, 0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
64	Six periods of unmanned power H	High 8 bits, 0 is 150 mA 1 is 200 mA; and so on, for every 1 increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
65	Six periods of	Low 8 bits, 0 is 150 mA 1 is 200 mA; and so on, for every 1

	unmanned power L	increase in this value, the corresponding output current increases by 50 mA.255 for 0 mA, 254 for 50 mA and 253 for 100 mA
66	continue to have	
67	……	
68	……	
69	……	
70	……	
71	……	
72	Custom power reduction mode	1 Open 0
73	continue to have	
74	Accumulation and verification	

Read the state		
The main control equipment is sent		
order	Functional representation	Content definition
0	The word	0x20 Master device sent
1	order	0x24 Read the state instruction
2	DL	0x02 No data bits
3	Sensor status	0x00 still 0x01 trigger
4	Customer code	
5	Accumulation and verification	
Terminal equipment sent		
order	Functional representation	Content definition
0	The word	0x40 The terminal equipment is sent

1	order	0x24 Read the state instruction
2	DL	The 0x2E 46-bit data
3	accumulator voltage H	120 representation 12V
4	accumulator voltage L	
5	Battery status	0x00 overrelease 0x01 underpressure 0x02 normal 0x03 charging limit 0x04 overpressure 0x09 over temperature protection
6	load current H	15 representation 0.15A
7	load current L	
8	load voltage H	350 representation 35V
9	load voltage L	
10	Load status	0x00 off 0x01 on 0x02 open circuit protection 0x06 straight through protection 0x09 short circuit protection 0x0A Overload protection 0x11 overload warning
11	Optical cell current H	50 indicates that 5A OxFF indicates the invalid data
12	Optical cell current L	
13	Optical cell voltage H	200 representation 20V
14	Optical cell voltage L	
15	Optical cell status	0x00 battery cell low voltage, 0x01 battery voltage high, 0x02 battery reaches charging voltage, 0x03 battery overvoltage, 0x0A charge overcurrent
16	external temperature	65 representation 25℃

17	Internal temperature	65 representation 25℃
18	Working days L	1 indicates 1 day
19	Overtimes (16 days)	1 represents 1 time
20	Today's discharge quantity is H	
21	Today's discharge quantity, L	1 representation 1WH
22	Yesterday the discharge quantity is H	
23	Yesterday the discharge quantity L	1 representation 1WH
24	Accumulated discharge quantity H	
25	Accumulated discharge quantity: L	1 representation 1KWH
26	Today's charge level is H	
27	Today's charge level is L	1 indicates that 1WH OxFF indicates the invalid data
28	Yesterday the charge is H	
29	Yesterday, the charge quantity is L	1 indicates that 1WH OxFF indicates the invalid data
30	Accumulated	

	charge quantity: H	
31	Accumulated charge quantity: L	1 indicates that 1KWH OxFF indicates the invalid data
32	Working days H	
33	Battery power H	--
34	Battery power L	--
35	Battery allowance	0~100 1 represents 1%
36	The number of overlets is H	1 Show 1 time
37	The number of overlets L	
38	Overpressure number H	1 Show 1 time
39	Overpressure number L	
40	Number of underpressure: 16 days	1 Show 1 time
...	continue to have...	
49	Accumulation and verification	

20 05 04 01 00 64

Remote control command		
The main control equipment is sent		
orde r	Functional representation	Content definition
0	The word	0x20 Master device sent

1	order	0x05 Remote control command
2	DL	0x04 Quad digit data
3	Remote mode switch	0 Close 1 open
4	load switch	0 Close 1 open
5	output power	0~100%。Maximum percentage of current value set for the active period For example, if 1 time period 150mA 2 time period 1000 mA, the rest of the time period is 00.00 output Power is set to 50. The actual output power is 100050 / 100 = 500mA
6	heartbeat time	0x01 indicates 1 min.60 indicates 60 min. After the telecommunication command is sent successfully The controller starts time. During the set heartbeat time, if the controller is not there again Receiving the communication command, then exit the remote control mode to run automatically.
7	Accumulation and verification	
Terminal equipment sent		
order	Functional representation	Content definition
0	The word	0x40 The terminal equipment is sent
1	order	0x05 Remote control command
2	DL	0x01 1-bit data
3	Set success	0x01
4	Accumulation and verification	0x47

Clears up the historical data command		
The main control equipment is sent		
order	Functional representation	Content definition
0	The word	0x20 Master device sent
1	order	0x28 Remote control command
2	DL	0
3	Accumulation and verification	0x48

The Baud rate setting command		
The main control equipment is sent		
order	Functional representation	Content definition
0	The word	0x20 Master device sent
1	order	0x27 Paud rate control
2	DL	0x02
3	Baud rate H	0x09
4	Baud rate L	0x60 (0x960, means 2400 baud rate)
5	Accumulation and verification	
Terminal equipment sent		
order	Functional representation	Content definition
0	The word	0x40 The terminal equipment is sent
1	order	0x27
2	DL	0x01

3	reply	The 0x01 was set successfully The 0x02 setting has failed
4	Accumulation and verification	

Baud rate read command		
The main control equipment is sent		
order	Functional representation	Content definition
0	The word	0x20 Master device sent
1	order	0x26 Paud rate control
2	DL	0x00
3	Accumulation and verification	
Terminal equipment sent		
order	Functional representation	Content definition
0	The word	0x40 The terminal equipment is sent
1	order	0x26
2	DL	0x02
3	Baud rate H	0x09
4	Baud rate L	0x60 (0x960, means 2400 baud rate)
5	Accumulation and verification	