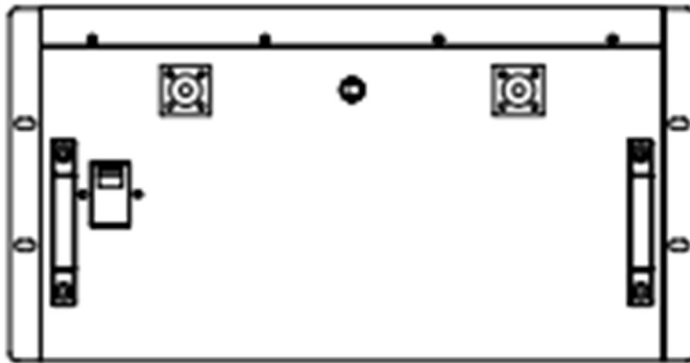

User Guide

LiFePO4 Battery



IFOS-48100

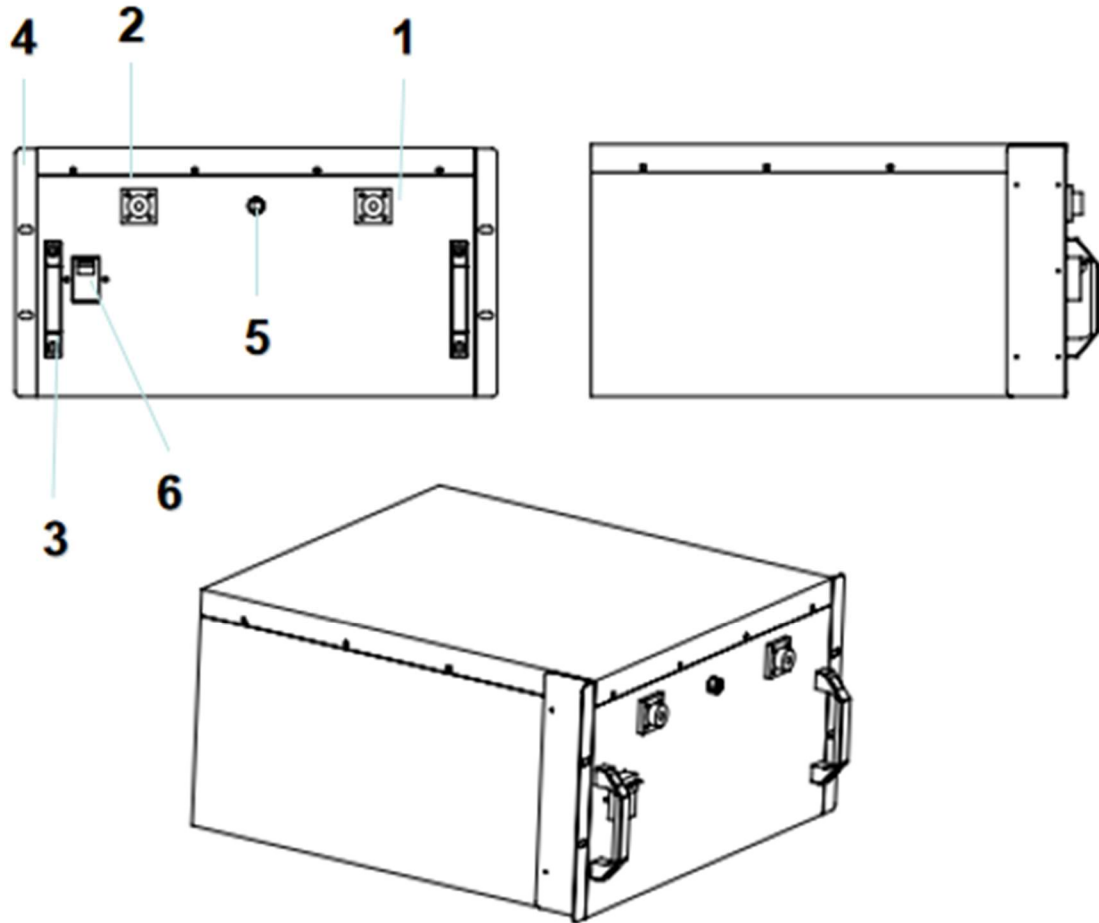
1. Product & safety introductions

The LiFePO₄ Battery used in this product belongs to a new type of power battery with excellent charge-discharge performance, and 100%DOD cycle life is more than 5000 times, the use of Daly BMS board, safe and reliable, cost-effective, is the best choice in the home solar energy system energy storage part.

Please note the following matters when using this product

- .Do not use in series
- .Do not immerse the battery in water or allow it to get wet.
- .Do not use or store the battery near sources of heat such as a fire or heater.
- .Do not reverse the positive(+) and negative(-) terminals.
- .Do not connect the battery directly to wall outlets or car cigarette-lighter sockets.
- . Do not put the battery into a fire or apply direct heat to it.
- .Do not short-circuit the battery by connecting wires or other metal objects to the positive(+) and negative(-) terminals.
- .Do not pierce the battery casing with a nail or other sharp object, break it open with a hammer, or step on it.
- .Do not strike, throw or subject the battery to sever physical shock.Do not directly solder the battery terminals.
- .Do not attempt to disassemble or modify the battery in any way.Do not place the battery in a microwave oven or pressurized container.Do not use the battery in combination with primary batteries(such as dry-cell batteries) or batteries of different capacity, type or brand.
- .Do not use the battery if it gives off an odor, generates heat, becomes discolored or deformed, or appears abnormal in any way. If the battery is in use or being recharged, remove it from the device or charger immediately and discontinue use.
- .Do not use or store the battery where is exposed to extremely hot, such as under window of a car in direct sunlight in a hot day. Otherwise, the battery may be overheated. This can also reduce battery performance and/or shorten service life.
- . If the battery leaks and electrolyte gets in your eyes, do not rub them. Instead, rinse them with clean running water and immediately seek medical attention.If left as is, electrolyte can cause eye injury.

2. Product appearance



No.	Item	Functional Description	Remark
1	Battery +	Positive terminal	
2	Battery -	Negative terminal	
3	Handle		
4	Hanger		For mounting the battery pack
5	Communication method	UART、RS485、CAN	
6	Switch	ON/OFF	

3. Specification

Model	LIFOS-48100
Capacity	10KWH
Voltage	48V
Normal voltage	51.2V
Normal voltage range	44.8-57.6V
Charge cut-off voltage	57.6V
Discharge cut-off voltage	44.8V (Recommend 46V)
Max. Charge & discharge current	150A
Recommend Charge & discharge current	≤75A
Normal output power	3840W
Max. Output power	7680W
Discharge DOD	≥98%
Parallel connection amount	1-6
Ingress protection	IP21
Cycle times	≥3200 @25°C
Working temperature	Discharge: -20~65°C Charge: 0~55°C
Net weight(KG)	82kg
Gross weight	95 kg
Product dimension	449*480*255mm
Package dimension	600*555*350mm

4. installation

4.1 Packing List

LiFePO4 Battery pack * 1

Specification * 1

Cables*2

4.2 Caution

- .Make sure the air switch is off before wiring
- .Do not use in series
- .Make sure the battery voltage is close to the same before using in parallel
- .The earthing wire must be connected
- .Do not allow two or more batteries stacked on top of each other

5 running

After connecting the wire, turn on the air switch and there is power output.

6.warranty

3 years

7.Specification for protection board

BMS Specification

Introduction

With the wide application of lithium battery in Lithium Battery Industry, high performance, high reliability and high cost performance are required for battery management system. This product is designed specifically for lithium-ion batteries in BMS, it can collect, process and store the information data of the battery in real time, and ensure the safety, availability and stability of the battery.

Product Summary:

Professional high current wiring design & workmanship, thus can withstand the shock of high current high

The appearance is sealed by injection molding process to improve moisture-proof and oxidation-proof components and prolong the service life of the products

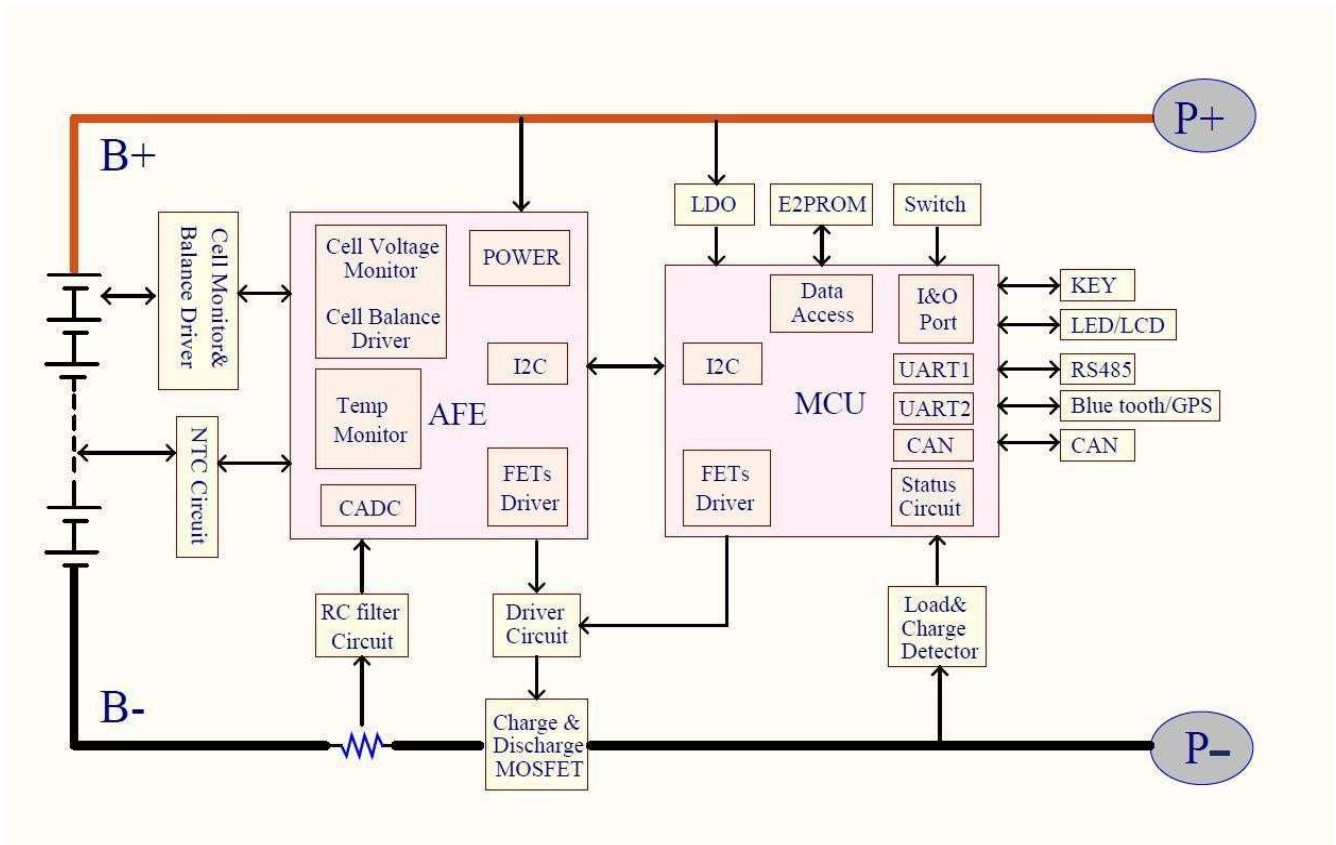
dust proof, shockproof, anti-squeezing and other protective functions

There is a complete over-charge, over-discharge, over-current, short-circuit, balance function

With the integrated design, the collection, management, communication and other functions are integrated

With communication function, it can set the parameters of over-current, over-discharge, over-current, charge-discharge, over-current, balance, over-temperature, under-temperature, dormant, capacity, etc.

Functional Block Diagram



Electrical characteristics

Basic parameters

No	IT est content		Factory default parameters	Unit	Note
1	Discharge	Continuous discharge current	150	A	
	Charging	Charging voltage	58.4	V	
		Continuous charging current	75	A	
2	Balanced	Balance detect Voltage	3.2	V	
		Turn on the pressure difference	50	mV	set default
		Balanced opening condition	At the same time to meet: 1. Charging case		

			2. Atain set balance open pressure difference 3. Balanced switching voltage set		
3	Single overcharge protection	Single overcharge protection voltage	3.75 ± 0.05	V	
		Single overcharge protection voltage	1	S	
		Single overcharge protection and release voltage	3.65 ± 0.05	V	
		Release delay of single overcharge protection	1	S	
4	Monomer over-discharge protection	Single over-release protection voltage	2.2 ± 0.05	V	
		Time-lapse of single over release protection	1	S	
		Single over release protection and release voltage	2.3 ± 0.05	V	
		Discharge delay of monomer over discharge protection	1	S	
5	Total overcharge protection	Overall overcharge protection voltage	60	V	Deviation <3%FSR
		Overall overcharge protection delay	1	S	
		Overall overcharge protection release voltage	58.4	V	
		Overall release delay of overcharge protection	1	S	
6	Total pressure discharge protection	Overall overcast protection voltage	35.2	V	Deviation <3%FSR
		Overall over-release protection delay	1	S	
		Overall over-release protection and release voltage	36.8	V	
		Overall over release protection release delay	1	S	
7	Charge/Discharge overflow protection	Discharge current level 1 alarm current	$180 \pm 3\%$	A	
		Discharge current level 1 alarm delay	1	S	
		Discharge current level 2 protection current	$225 \pm 3\%$	A	
		Discharge current level 2 protection delay	1	S	

		Discharge conditions	Removing the load is lifted		
		Charge the over current protection current	225 ± 3%	A	
		Charge over current protection delay	1	S	
		Discharge conditions	Remove charger release		
8	Remove charger release	Short circuit protection conditions	External load short circuit		
		Short circuit protection delay	/	uS	The actual measurement shall prevail
		Short circuit protection is lifted	Removing the load is lifted		
9	Temperature protection	Charging high temperature alarm temperature	63	°C	
		Charging high temperature protection temperature	65	°C	
		Charging high temperature protection delay	1	S	
		Charging high temperature release temperature	60	°C	
		Charge the low temperature alarm temperature	-38	°C	
		Charging is the low- temperature protection temperature	-40	°C	
		Charging low- temperature protection delay	1	S	
		Charge it at a low temperature to release the temperature	-35	°C	
		Discharge high temperature alarm temperature	68	°C	
		Discharge high temperature protection temperature	70	°C	
		Discharge high-temperature protection delay	1	S	
		Discharge high temperature release temperature	65	°C	
		Discharge low temperature alarm temperature	-38	°C	
		Discharge the low- temperature protection temperature	-40	°C	
		Discharge low- temperature protection delay	1	S	

		Discharge at low temperature release temperature	-35	°C	
		Temperature protection release conditions	Reaching recovery temperature and dis load		
		Number of temperatures	1	PCS	
10	The pressure difference is reported to the police	The pressure difference is called to the police	0.5	v	DALY Standard Condition
		Poor pressure big alarm recovery	0.45	v	
11	Internal impedance	The main circuit leads through internal resistance	<20	mΩ	
12	consume current	Self-current current consumption during operation	35	mA	module self-consumption is included
		Hibernate mode self- consumption current	800	uA	Enter: no communication, no current, no key Spoon signal
		Sleep time	3600	S	
13	Communication method	<input checked="" type="checkbox"/> UART <input type="checkbox"/> RS485 <input type="checkbox"/> CAN <input type="checkbox"/> Bluetooth · GPS <input type="checkbox"/> LCD <input type="checkbox"/> SOC indicator			
14	Control switch	· have <input checked="" type="checkbox"/> not have			
15	Protection plate size	Long * Width * High (mm) 212*95*20			

• **Auxiliary module parameters**

NO	Name	Current	Yes/no standard accessories	Note
1	Pack parallel module	<input type="checkbox"/> 2A	no	
		<input type="checkbox"/> 5A	no	
		<input type="checkbox"/> 15A	no	

2	Heating Module	5~30A	no	<p style="text-align: right;">1.</p> <p>1. When the ambient temperature is detected below 0 ° c, the heating is started and the discharge is disconnected. When the ambient</p> <p>2. temperature is detected above 5 ° c, the heating is disconnected and the discharge can be charged</p>
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• **Reliability parameters**

NO	Item See	Article Part
1	Detection accuracy	Current detection accuracy: $\leq (\pm 3\%FSR)$ voltage detection accuracy: $\leq \pm 15mV$ Temperature detection accuracy: $\leq 2^{\circ}C$ SOC average accuracy: $\leq 8\sim 10\%$
3	Information storage	Max storage 380 resume information, including number of protection, current total voltage, current, temperature, SOC,, etc
4	SOC measurement	The current integration method is used
5	Working environment conditions	Operating temperature: $-20^{\circ}C \sim 60^{\circ}C$
		Relative humidity: 5%~90%RH
6	Storage environment conditions	Storage temperature: $-40^{\circ}C \sim 85^{\circ}C$
		Relative humidity: 5%~75%RH

• **Communication instructions**

The default is UART communication, customizing communication protocols such as customer RS485, MODBUS, CAN, UART

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The default lithium RS485 letter protocol, communication with the designated upper computer through the dedicated communication box, the port rate default is 9600bps. Thus, check the various information of the battery at the upper machine terminal, including the battery voltage, current, temperature, state, SOC, and battery production information, etc., and can conduct parameter setting and corresponding control operation to support the program upgrade function. (This upper bit computer is suitable for PC s on Windows series platforms).

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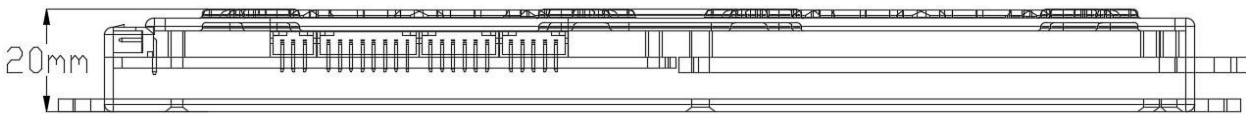
Default is up to the lithium CAN protocol, with a communication rate of 250KB/S.

PC software Description

The PC software DALY BMS-V1.0.0 function is mainly divided into six parts: data monitoring, parameter setting, parameter reading, engineering mode, historical alarm, and BMS upgrade.

- 1, parses the data information sent by each module, and then displays the voltage, temperature, configuration value, etc;
- 2, configures information to each module via the upper bit computer;
- 3, production parameter calibration;
- 4, BMS upgrade is available.

BMS Dimensional drawing (interface for reference only, unconventional standard, please refer to 7.1 Interface pin specification)



• **Interface pin instructions**

Interface name	Pin		Description of definition
B- Standard Parts	/	B-	Negative battery, negative battery
P-Standard Parts	/	p-	Protective plate charge and discharge negative electrode, connect to the charge and discharge negative end
Connecting wire Standard Parts XHB 2.5 17Pin	1	B0	Connect Section 1 Battery negative grade
	2	B1+	Connect section 1 battery level
	3	B2+	Connect section 2battery level
	Connect the last 1 positive battery level
NTC1 PH2.0 3Pin	1	NTC1	1 # Temperature line
	2	GND	GND
	3	NTC2	2 # Temperature line
NTC2 Optional accessories PH2.0 3Pin	1	NTC5	5 # Temperature line
	2	GND	GND
	3	NTC4	4 # Temperature line

SOC indicator Optional accessories PH2.0 8Pin	1	GND	GND
	2	3.3V	Light board power supply is 3.3V
	3	S1	Lamp button
	4	LED5	Light board # 5th lamp
	5	LED4	Light board # 4th lamp
	6	LED3	Light board # 3th lamp
	7	LED2	Light board # 2th lamp
	8	LED1	Light board # 1th lamp
Bluetooth/GPS/UART/L CD Optional accessories PH2.0 6Pin	1	GND	GND
	2	3.3V	Power supply is 3.3V
	3	15V	Power supply is 15V
	4	S1	Lamp button
	5	TX	Communication sending end
	6	RX	Communication receiving end
RS485/CAN Optional accessories PH2.0 5Pin	1	485_B	485 Communication receiving terminal
	2	485_A	485 Communication sender
	3	GND	GND
	4	CAN_H	High CAN communication
	5	CAN_L	CAN communication is low
KEY PH2.0 2Pin Optional accessories	1	TRIG+	Activate ating input foot (short 1 and 2 Will activate BMS)
	2	TRIG-	Activate the output foot
Reserved interface 预留 DIO □ (选配) Optional accessories PH2.0 6Pin	1	DI2	Switch quantity signal
	2	NC	/
	3	DI1	Switch quantity signal
	4	VCC	Built-in 3.3 v
	5	DO1	Switch quantity signal
	6	GND	地GND

• **Wire rod**

Line name	Default specification
B- P- Output Line	3135 6AWG L=160mm M6 terminal
Collecting line	1007 22AWG L=450mm (17PIN)
NTC	24AWG L=250mm

Wiring

- **Description of wiring**

- First connect the B-cable of the protection board to the total negative pole of the battery pack. The cable starts from the thin black one connecting B-, the second red cable connects the positive pole of the first string of batteries, and the next string is connected in turn. The positive pole of the pool; then insert the cable into the protection board;

After finishing the wiring soldering, measure whether the battery B+, B-voltage and P+, P-voltage values are the same, only same, the protection board works positively. otherwise please follow the above re-operation;

When removing the protection board, first pull out the cable (if there are two cables, pull the high-voltage cable first, then pull the low-voltage cable), then remove Power cable B-.

- **Precautions for wiring**

Software board connection order

After confirming the welding is correct, the accessories with the product (e. g.: temperature control standard / battery panel selection / Bluetooth optional / GPS optional / display selection / customized communication interface selection) are installed on the protective panel, and then the row line is inserted into the protective panel socket; the blue B-line on the protection board connects the total negative electrode of the battery and

the black P-line to the negative electrode of charge and discharge.

The protection board requires activation for the first time Method:

Method 1: the SOC indicator Activation, the electricity board above is to have an activation button. Method 2: Charge and activate.

Method 3: Bluetooth Activation
Parameter modification

The serial number of the protective plate and the protective parameters (Ternary and iron lithium) have the default value when they leave the factory, but the capacity of the battery pack should be set according to the actual capacity AH of the battery pack. If the capacity AH is not set correctly, then the percentage of the remaining power will be inaccurate, the first use of the full 100% as a calibration, other protection parameters can also be set according to the customer' s own needs (do not recommend any changes to the parameters) .

● The wiring mode of the line arrangement refers to the hardware protection board wiring process on the back. Smart board APP modified parameter factory password: 123456

· **Points to note**

1.
· Lithium battery BMS with different voltage range which can not be mixed using., Life Po4 BMS can not be used for Li-ion battery.
 2.
Cables from different manufacturers are not common ones, please make sure to use Daly' s matching cable.
 3.
When testing, installing, contacting, and using the protective board, take measures to put static electricity on it;
 4.
Mustn' t let the heat dissipation surface of the protection board directly contact the battery core, otherwise the heat will be transmitted to the battery core, which will affect the safety of the battery;
 5.
Do not disassemble or change the components of the protection board by yourself;
 - 6.
-

The metal heat sink of the protection board of the company is anodized and insulated, and the oxide layer will still be conductive after being destroyed. Avoid contact between the heat sink and the battery core and the nickel strip

7.

If the protection board is abnormal, please stop using it. Then use it again after it is checked with OK;

8.

Do not use the two protective boards in series or in parallel
