

	<b>Battery datasheet</b>	Document: <u>WS6LF20(12.8V20AH)</u> Doc. Version: <u>V1.3</u> Issue Date: <u>15-03-2021</u>
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## LFP PACK Datasheet

Customer WESTAR ENERGY

Cell Type LiFeO4

Model WS6LF20

Approved:



## ►Overview

WS6LF20 is 12.8V20Ah Lithium iron phosphate battery module which designed for storage and power supply system application. This battery module integrated with intelligent BMS with big advantages on safety, cycle life, energy density, temperature range and environmental protection. This product specification describes the type, size, structure, electrochemistry performance, service life, and BMS characteristics. The specification will be updated based on different customer requirement.

## ►Advantages

The battery module consists of single LFP cells, wire, BMS and ABS container.

- Packed with high performance LFP single cell, long life, safety and wide temperature range
- High energy density, small size, light weight, no pollution;
- Packing with single cell container, fire retardant wire and copper connecting bar, stable and safe.
- Built-in BMS, with battery voltage, current, temperature and health management.
- LCD(optional) indicate the battery SOC and operating status.
- Support Max 4pcs in series but no limit for parallel application.
- Flexible customization of dimensions
- More than 20 years design life, Stable performance, maintenance-free

## ►Module Drawing



## ►Battery module specification

Item		Specification	Conditions
Nominal	Voltage	12.8V	25°C,0.2C
	Capacity	20Ah	
Module weight		2.2kg	±1kg
Dimensions(W*D*H), mm		181X77X167	±2mm
Operating parameters	Charging Voltage	14.8V	
	Discharging Voltage	11.8V	Recommended
	Charging current	Max constant charge: 20A	Recommended 10A
	Discharging current	Max constant discharge: 20A	
Pulse discharge: 45A for 3S			
Temperature	Charge range	0°C~45°C	
	Discharge range	-20°C~60°C	
	Storage range	-20°C~45°C	
BMS	Built-in BMS	Voltage, current, temperature management & cell balance	
Service life	Design life	>10years	0.2C, 25°C
	Cycle life (90%DOD to 80% end)	>2000 times	
	Cycle life (100%DOD to 50% end)	>6000 cycles	@0.5C, 25°C

## ►BMS specification

BMS provides complete management and protection for the battery.

- Voltage warning and protection for module and each single cell.
- Current warning and protection, and the maximum operating current can be customized.
- Temperature warning and protection, 4 sensors for battery pack and 1 sensor for BMS.
- Battery module SOC and SOH calculation, display the accurate battery status.
- Communicate with the SMPS or monitor device, report the battery data.
- Pre-charge logic, make sure safety charge for the module if under low voltage condition.
- Switch-off mode, sleep mode, and operating mode, different mode for different condition.

# Battery datasheet

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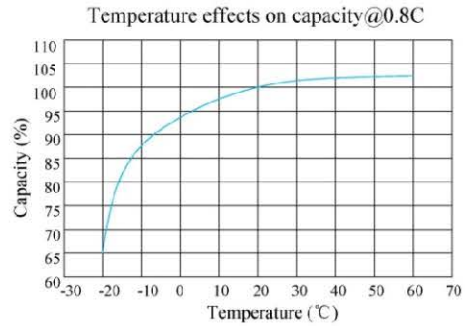
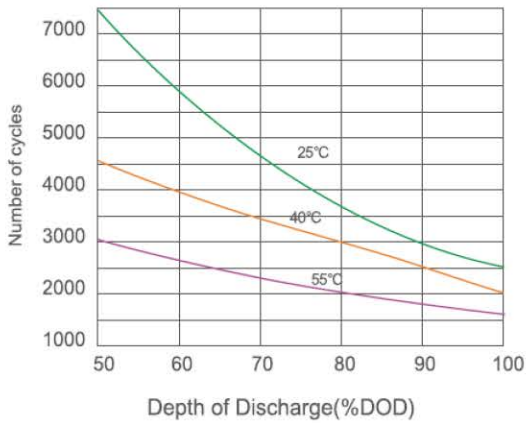
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## ► BMS parameters.

Item		Parameters		Condition
Charge	Cell voltage protection	3.7V	Delay 1~2S	Recover when discharge current >1A or Cell voltage<3.38V or module voltage<13.52V
	Module voltage protection	14.8V	Delay 1~2S	
	Over charging current 1	20A ~25A	Delay 20~30S	Turn to pre-charge mode and try to recover in every 3min
	Over charging current 2	≥ 27A	Delay 2~3S	
	Temperature protection	< -10°C or >70°C	Delay 1~2S	Recover when >0°C or <60°C
Discharge	Cell voltage protection	2.7V		Recover when charge current >1A or Cell voltage>2.95V or module voltage>11.8V
	Module voltage protection	10.8V	Delay 1~2S	
	Over discharging current 1	20A~25A	Delay 3S	Recover when charging current>1A, or recover in every 60S
	Over discharging current 2	≥ 50A	Delay 1S	
	Short circuit	>52A	Delay 0.1mS	
	Temperature protection	< -20°C or >75°C	Delay 1~2S	Recover when > -10°C or <65°C
BMS	PCB Temp protection	>115°C	Delay 1~2S	Recover when <80°C
	Cell balance	150mA	Passive balance	Cell voltage difference > 40mV
	Temperature accuracy	±2°C	Cycle measurement	Measuring range -40~100°C
	Voltage accuracy	±20mV	Cycle measurement	For cells and module
	Current accuracy	FSC±5%	Cycle measurement	Measuring range -200~+200
	SOC	5%		Integral calculation
	Power consumption with different condition	<300uA	Switch-off mode	Storage & transportation
		<500uA	Sleep mode	Protection & stand-by
		<15mA	Operating mode	Operating
		<28mA	Pre-charge mode	Low voltage to start Pre-charge
Communication ports	NA		Can be customized to match the device	

## ►Performance curve

**Different DOD Discharge Cycle Life Curve 1C 25C**



## ►Packing List

No.	Item	Specification	Number	Remarks
1	LiFePO4 battery PACK	WS6LF20 12.8V20Ah battery PACK	1pc	
2	LCD Screen(Optional)	Integrated on the battery	1pc	
3	Terminal	Screw in terminal	2sets	
4	User manual	User manual provided	1pcs	