

# MOTIVATION

INDUSTRIAL DEEP CYCLE BATTERY

MODEL: ML48-32

**CERTIFICATIONS**  
 UL1642 (Cell), CE (Pack), IEC62133 (Cell), UN38.3 (Cell / Pack), IEC62619 (Cell), ROHS (Cell)



## Specifications

Electrical Specifications	Nominal Voltage	51.2V	
	Nominal Capacity	32 Ah	
	Nominal Power	1638 Wh	
	Parallel Connection	max 4 units (4P)	
	Series Connection	1 unit only (1S)	
	Circuit Protection	Overcharge, over discharge, over current, high temperature, short circuit, cell balancing	
	Cycle life	3000 cycles @100% DOD 6000 cycles @80%DOD	
Charge Specifications	Charge Profile	CC @ 0.2C to 14.4V, then CV @ 14.4V until current $\leq 0.01C$ (CC/CV)	
	Max Charge Voltage	57.6 $\pm$ 0.2V	
	Standard Current	6.4A	
	Max Current	16A	
Discharge Specifications	Standard Current	$\leq 16A$	
	Max Continuous Current	50A	
	Cut-off Voltage	40V	
Environmental Specifications	Charge Temperature	0°C to 55°C	60 $\pm$ 25% Relative Humidity
	Discharge Temperature	-20°C to 60°C	
	Storage Temperature	-5°C to 45°C	
Mechanical Specifications	Dimensions, mm	260x180x265 (GC2)	
	Approx Weight, kg	12	
	Terminal type	M8	
	Case Material	Plastic ABS	
	IP Rating	IP65	
	Cell Type	Cylindrical LiFePO <sub>4</sub>	

Circuit Protection	Characteristic	Parameters
Overcharge protection	High voltage protection	30V $\pm$ 0.4V
	Reset/Recovery voltage	28.4V $\pm$ 0.4V
	Reset trigger	below reset value
	Time delay	0.9s—1.5s
Over discharge protection	Low voltage protection	17.6V $\pm$ 0.4V
	Reset/Recovery voltage	21.6V $\pm$ 0.4V
	Reset trigger	Cut Load, Auto release
	Time delay	20-300ms
Overcurrent	Max charge current protection	—
	Charge current protection reset	—
	Time delay	—
	Max discharge current protection	500A $\pm$ 50A
	Discharge current protection reset	Cut Load, Auto release
	Time delay	170-410ms

Circuit Protection	Characteristic	Parameters
High temperature	Max charge temperature	65°C $\pm$ 3°C
	Recovery point	45°C $\pm$ 3°C
	Time delay	10s
	Max discharge temperature	65°C $\pm$ 3°C
	Recovery point	45°C $\pm$ 3°C
	Time delay	10s
	MOSFET over temperature protection	90°C $\pm$ 5°C
Cell balance	Balance condition voltage (per cell)	$\geq 3.6V$
	Balance condition voltage difference (cell)	—
	Balanced closed voltage difference (cell)	—
	Cell balance current	36 $\pm$ 10mA
Short circuit protection	Short circuit protection	1600A
	Time delay	$\leq 800\mu s$

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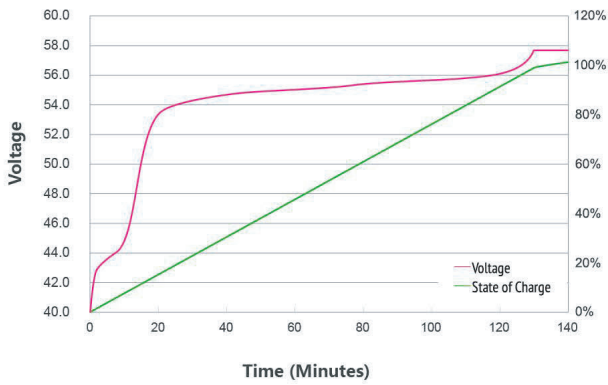
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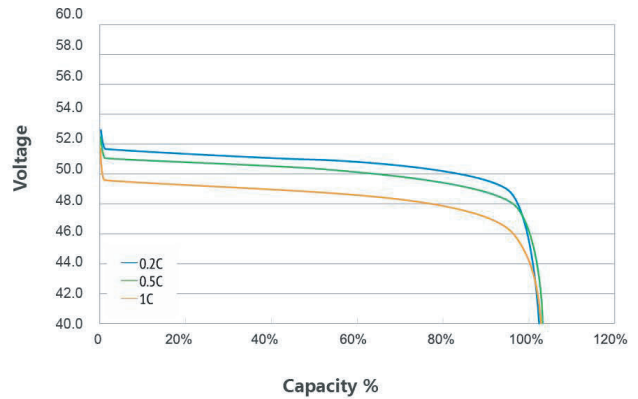


## 48V32Ah Characteristics Curve

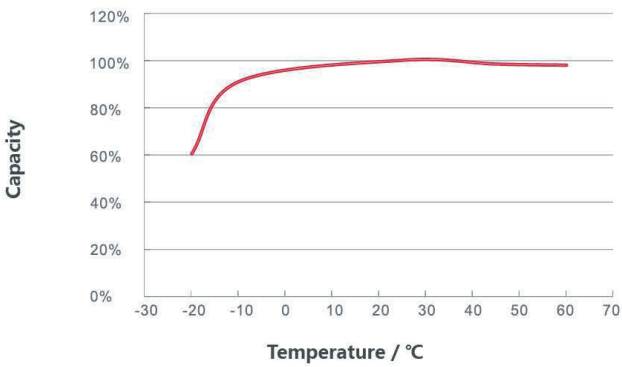
Charging Characteristics (0.5C @25°C)



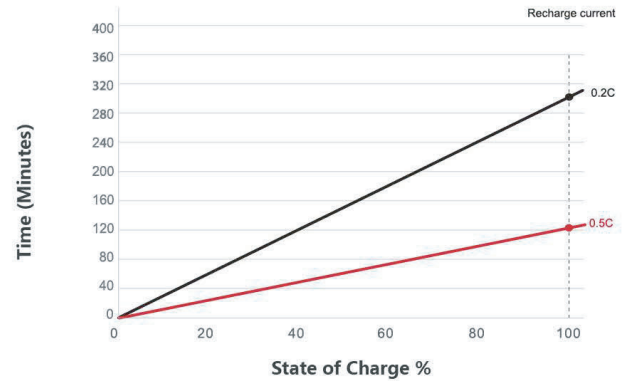
Discharging Characteristics (0.2C, 0.5C, 1C @25°C)



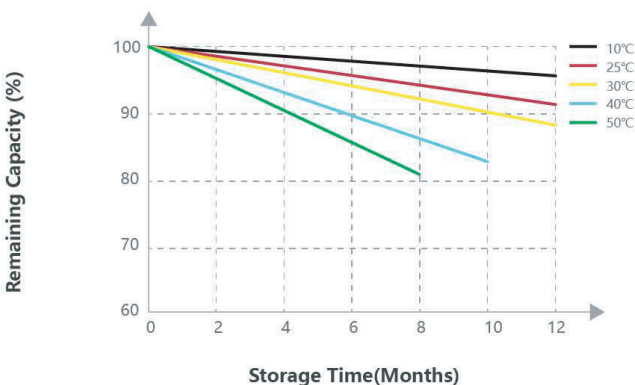
Different Temperature Capacity Curve



Typical Charge Time Curve



Different Temperature Self Discharge Curve



Different DOD Discharge Cycle Life Curve

