Multilink®
Simply More...

THE NEW STANDARD IN Battery Technology

PantheonCell™

LiFePO4 *The Battery For Life*

- Maintenance Free
- Long Life-Span 10+ Years
- Green Safe Technology

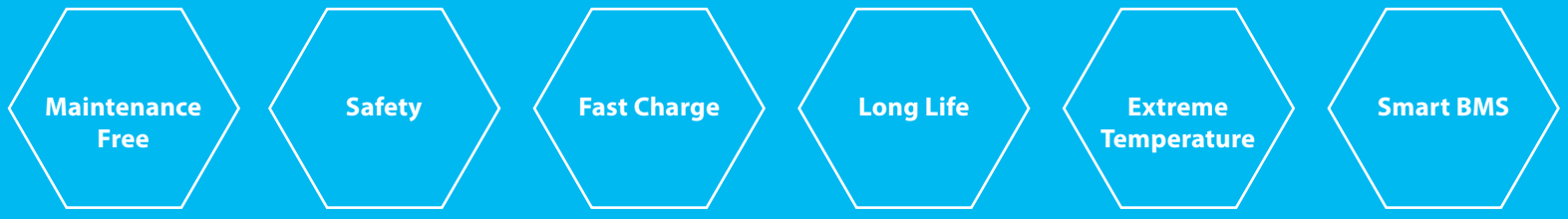
MAJOR BENEFITS OF THE

PantheonCell™

LiFePO4 ***The Battery For Life***

- Maintenance Free
- Long Life-Span – 10 years+
- Green Safe Technology
- Fast recovery time, fast-changing
- Internal Battery Management System
- Stable in hot environments, no thermal runaway

When you think about what you know about batteries, think again. The PantheonCell™ LiFePO4 technology is proven to meet the standards that today's environment demands. The PantheonCell™ LiFePO4 is maintenance-free.



PantheonCell™

LiFePO4 *The Battery For Life*

1| Light Weight

2| Battery Connection Point
Short Circuit Protection
Over Current Protection
Over Voltage Protection
Under Voltage Protection
Temperature Protection

3| 16 Guage Steel Case
Powder Control, Leek Free

4| Puncture Resistant

5| Built-in Battery Management System

6| Reset

7| Unit Address

8| Dry Contacts

9| State of Change

Maintenance Free

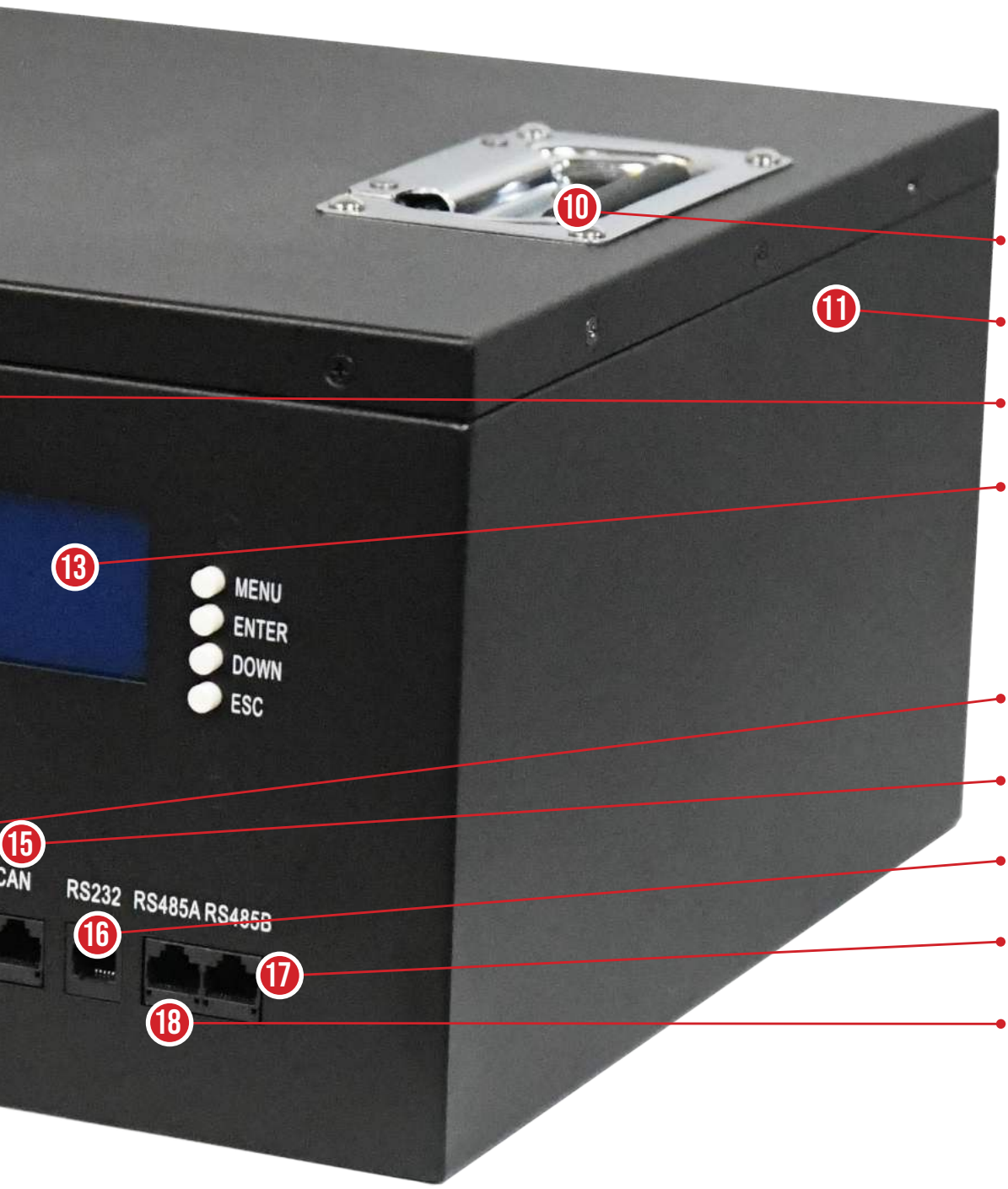
Safety

Fast Charge

Long Life

Extreme Temperature

Smart BMS



10| Comfort Grip Handle

11| No Out-Gassing

12| On/Off Switch

13| LCD Display
The LCD displays battery voltage, state of discharge, charge current, discharge current, battery temperatures, cell voltages, MOS state, alarms

14| RS485

15| CAN Bus

16| RS232

17| RS485B

18| RS485A

UL/CSA listing in process

How Does The PantheonCell™ Hold Up to Other Batteries?

Battery Option Comparison

PantheonCell™ LiFePO4	Lead Pb / GEL /AGM[1]
Maintenance free, minimal maintenance	Requires annual maintenance, testing, rotating series batteries
One harness power hookup	Requires a series connection with multiple jumpers
Faster installation	More interconnections, more complicated, more chance for errors
Light Weight, 4.8kWh weights approximately 90lbs	Heavy, 4.8kWh weights approximately 280lbs (4x 100AH Grp31)
Folding carrying handles, comfortable design	Plastic carrying handle, unreliable and uncomfortable
Built-in management and balancing system	Management system not available, requires external manager and balancing hardware
Greater than 10 life expectancy	Life expectancy of 3 to 4 years typical
Durable steel case, puncture resistant	Plastic case, easily damaged or punctured
No leaks	Plastic case, vents, and seals around terminals are prone to leaking
Recyclable	Recyclable
Faster recharge time, faster charge recovery, no cool down time	Slower recharge, slower charge recovery, cool down time before full capacity is achieved
Runtime, capacity, and recharge time remain constant over much of the life of the battery	Runtime, capacity, and recharge time degrade with each charge/discharge cycle
Depth of discharge has minimal long term effect on battery life	Depth of discharge significantly effects the life of the battery
High cycle life, >3000 at 50% discharge	Low cycle life, <1000 at 50% (400 typical)
No Peukert Effect which limits capacity at higher output	Peukert Effect limits capacity at high discharge rates
Short circuit protected	No short circuit protection
No off-gassing	Over-charging produces explosive gasses, internal cell pressure, and heat
Temperature stability, minimal heat from charging and discharging	Increased temperature during charging and discharging, possible thermal runaway
Predictable State of Charge, charge state information visiblity through LCD display and monitoring system	Unknown state of charge
Round trip efficiency of >95%	Round trip efficiency <85%, more power is required
Full capacity is usable, 100% depth of discharge without effecting the life of the battery	Not all of the capacity is usable, It is recommended to only discharge to 50%. Deeper discharge will degrade the life of the battery.
LCD display, complete status at a glance includes: battery voltage, state of charge, capacity, discharge current, charge current, individual cell voltage, cell temperature, MOS temperature, alarms and more	No LCD, no status available
Automatic charge and discharge management	No charge management
Dry contact alarm	No alarms
Stable in hot environments	Not stable

Quick Points	
Not flammable	Flammable
No thermal runaway	Possible thermal runaway
Puncture resistant case	Plastic case easily punctured/damaged
Short circuit protection	No short circuit protection
Over-discharge protection	No over-discharge protection
Over-charge protection	No over-charge protection
Over-current protection	No over-current protection
Temperature protection (over and under)	No temperature protection
No worry ablout explosion or catching fire	Over-charging, short circuit, physical damage can cause explosion and fire
Eco-friendly, no lead no acid	Not so eco-friendly, contains lead and acid

MAJOR FEATURES OF THE

PantheonCell™

LiFePO4 ***The Battery For Life***

- Stability
- Predictability
- Environmentally safe
- Easy installation, simple
- Efficiency, high roundtrip efficiency
- Compact package
- Upcoming UL/CSA certification

PantheonCell™

LiFePO4 *The Battery For Life*

Runtimes ATS/DOT

These values are based on constant load voltage and load current.

AH 100

Voltage 48

Lithium Iron Phosphate Battery

Loaded Output Voltage[4]	PS Eff. Generic	PS Load Amps	Load Power W	Battery Current	Estimated Runtime Hours @ 25°C	Estimated Runtime Minutes @ 25°C
120.0	**87.0**	0.8333	100	2.4	42.07	2524
120.0	**87.0**	1.6667	200	4.8	20.89	1253
120.0	**87.0**	2.5	300	7.2	13.87	832
120.0	**87.0**	3.3333	400	9.6	10.37	622
120.0	**87.0**	4.1667	500	12.0	8.28	497
120.0	**87.0**	5	600	14.4	6.89	413
120.0	**87.0**	5.8333	700	16.8	5.89	354
120.0	**87.0**	6.6667	800	19.2	5.15	309
120.0	**87.0**	7.5	900	21.6	4.57	274
120.0	**87.0**	8.3333	1000	23.9	4.11	247
120.0	**87.0**	9.1667	1100	26.3	3.73	224
120.0	**87.0**	10	1200	28.7	3.42	205
120.0	**87.0**	10.833	1300	31.1	3.15	189
120.0	**87.0**	11.667	1400	33.5	2.93	176
120.0	**87.0**	12.5	1500	35.9	2.73	164
120.0	**87.0**	13.333	1600	38.3	2.56	153
120.0	**87.0**	14.167	1700	40.7	2.41	144
120.0	**87.0**	15	1800	43.1	2.27	136
120.0	**87.0**	15.833	1900	45.5	2.15	129
120.0	**87.0**	16.667	2000	47.9	2.04	122
120.0	**87.0**	17.5	2100	50.3	1.94	117
120.0	**87.0**	18.333	2200	52.7	1.85	111
120.0	**87.0**	19.167	2300	55.1	1.77	106

These values are based on constant load voltage and load current.

AH 50

Voltage 48

Lithium Iron Phosphate Battery

Loaded Output Voltage[4]	PS Eff. Generic	PS Load Amps	Load Power W	Battery Current	Estimated Runtime Hours @ 25°C	Estimated Runtime Minutes @ 25°C
120.0	**87.0**	0.8333	100	2.4	20.89	1253
120.0	**87.0**	1.6667	200	4.8	10.37	622
120.0	**87.0**	2.5	300	7.2	6.89	413
120.0	**87.0**	3.3333	400	9.6	5.15	309
120.0	**87.0**	4.1667	500	12.0	4.11	247
120.0	**87.0**	5	600	14.4	3.42	205
120.0	**87.0**	5.8333	700	16.8	2.93	176
120.0	**87.0**	6.6667	800	19.2	2.56	153
120.0	**87.0**	7.5	900	21.6	2.27	136
120.0	**87.0**	8.3333	1000	23.9	2.04	122
120.0	**87.0**	9.1667	1100	26.3	1.85	111
120.0	**87.0**	10	1200	28.7	1.70	102
120.0	**87.0**	10.833	1300	31.1	1.57	94
120.0	**87.0**	11.667	1400	33.5	1.45	87
120.0	**87.0**	12.5	1500	35.9	1.36	81
120.0	**87.0**	13.333	1600	38.3	1.27	76
120.0	**87.0**	14.167	1700	40.7	1.19	72
120.0	**87.0**	15	1800	43.1	1.13	68
120.0	**87.0**	15.833	1900	45.5	1.07	64
120.0	**87.0**	16.667	2000	47.9	1.01	61
120.0	**87.0**	17.5	2100	50.3	0.96	58
120.0	**87.0**	18.333	2200	52.7	0.92	55
120.0	**87.0**	19.167	2300	55.1	0.88	53

These values are based on constant load voltage and load current.

AH 100

Voltage 36

Lithium Iron Phosphate Battery

Loaded Output Voltage[4]	PS Eff. Generic	PS Load Amps	Load Power W	Battery Current	Estimated Runtime Hours @ 25°C	Estimated Runtime Minutes @ 25°C
120.0	**87.0**	0.8333	100	3.2	31.46	1888
120.0	**87.0**	1.6667	200	6.4	15.62	937
120.0	**87.0**	2.5	300	9.6	10.37	622
120.0	**87.0**	3.3333	400	12.8	7.76	465
120.0	**87.0**	4.1667	500	16.0	6.19	372
120.0	**87.0**	5	600	19.2	5.15	309
120.0	**87.0**	5.8333	700	22.3	4.41	264
120.0	**87.0**	6.6667	800	25.5	3.85	231
120.0	**87.0**	7.5	900	28.7	3.42	205
120.0	**87.0**	8.3333	1000	31.9	3.07	184
120.0	**87.0**	9.1667	1100	35.1	2.79	168
120.0	**87.0**	10	1200	38.3	2.56	153
120.0	**87.0**	10.833	1300	41.5	2.36	142
120.0	**87.0**	11.667	1400	44.7	2.19	131
120.0	**87.0**	12.5	1500	47.9	2.04	122
120.0	**87.0**	13.333	1600	51.1	1.91	115
120.0	**87.0**	14.167	1700	54.3	1.80	108
120.0	**87.0**	15	1800	57.5	1.70	102
120.0	**87.0**	15.833	1900	60.7	1.61	96
120.0	**87.0**	16.667	2000	63.9	1.53	92
120.0	**87.0**	17.5	2100	67.0	1.45	87
120.0	**87.0**	18.333	2200	70.2	1.39	83
120.0	**87.0**	19.167	2300	73.4	1.33	80

These values are based on constant load voltage and load current.

AH 50

Voltage 36

Lithium Iron Phosphate Battery

Loaded Output Voltage[4]	PS Eff. Generic	PS Load Amps	Load Power W	Battery Current	Estimated Runtime Hours @ 25°C	Estimated Runtime Minutes @ 25°C
120.0	**87.0**	0.8333	100	3.2	15.62	937
120.0	**87.0**	1.6667	200	6.4	7.76	465
120.0	**87.0**	2.5	300	9.6	5.15	309
120.0	**87.0**	3.3333	400	12.8	3.85	231
120.0	**87.0**	4.1667	500	16.0	3.07	184
120.0	**87.0**	5	600	19.2	2.56	153
120.0	**87.0**	5.8333	700	22.3	2.19	131
120.0	**87.0**	6.6667	800	25.5	1.91	115
120.0	**87.0**	7.5	900	28.7	1.70	102
120.0	**87.0**	8.3333	1000	31.9	1.53	92
120.0	**87.0**	9.1667	1100	35.1	1.39	83
120.0	**87.0**	10	1200	38.3	1.27	76
120.0	**87.0**	10.833	1300	41.5	1.17	70
120.0	**87.0**	11.667	1400	44.7	1.09	65
120.0	**87.0**	12.5	1500	47.9	1.01	61
120.0	**87.0**	13.333	1600	51.1	0.95	57
120.0	**87.0**	14.167	1700	54.3	0.89	54
120.0	**87.0**	15	1800	57.5	0.84	51
120.0	**87.0**	15.833	1900	60.7	0.80	48
120.0	**87.0**	16.667	2000	63.9	0.76	45
120.0	**87.0**	17.5	2100	67.0	0.72	43
120.0	**87.0**	18.333	2200	70.2	0.69	41
120.0	**87.0**	19.167	2300	73.4	0.66	39

Why PantheonCell™ LiFePO4

(Lithium Iron Phosphate Battery)

Lithium Iron Phosphate Battery

Introducing the PantheonCell™ Lithium Iron Phosphate (LiFePO4) battery; a type of lithium-ion battery. This battery utilizes lithium iron phosphate as the cathode material and a graphitic carbon electrode with a metallic backing as the anode. The PantheonCell™ LiFePO4 boasts a lower energy density and lower operating voltage than that of other common lithium-ion battery types (Nickel Manganese Cobalt and Nickel Cobalt Aluminum).

CATL's LFP batteries are currently at 125-watt hours (Wh) per kg, up to possibly 160 Wh/kg with improved packing technology, while BYD's LFP batteries are at 150 Wh/kg, compared to over 300 Wh/kg for the highest NMC batteries. Notably, the energy density of Panasonic's "2170" NCA batteries used in 2020 in Tesla's Model 3 is around 260 Wh/kg, which is 70% of its "pure chemicals" value.

With features such as lower cost over time, high safety, low toxicity, long cycle life and other factors, The PantheonCell™ LiFePO4 battery is ideal for vehicles, utility applications, and backup power. These cobalt-free batteries are making their way into industries such as ITS/traffic, telecom, and automotive to name a few.

Lithium Iron Phosphate Battery

Specific Energy	90-160 Wh/kg (320-580 J/g or kJ/kg)[1]
Energy Density	325 Wh/L (1200 kJ/L)[1]
Specific Power	Around 200 W/kg[2]
Energy/Consumer - Price	1-4 Wh/US$[3 4]
Time Durability	>10 years
Cycle Durability	2,750 -12,000[5] cycles
Nominal Cell Voltage	3.2V

PantheonCell™ LiFePO4 Battery – Better than the Rest!

With over 4 times the life cycle of other lithium-ion batteries, the LiFePO4 battery is also the safest lithium battery type on the market.

LiFePO4 batteries accommodate a reach of 3,000-5,000 cycles or more and can reach 100% depth of discharge (DOD). This is important because with LiFePO4 (unlike other batteries) over discharging your battery is no longer a concern.

The life span of the LiFePO4 far surpasses that of other batteries. With its rating of about 5,000 cycles, the LiFePO4 will serve you 10 years, providing a savings over time.

In addition to raising the bar on life span and savings over the Lithium Ion Batteries, the LiFePO4 batteries take a step beyond all other batteries in the following areas as well:

Safe and Stable Chemistry
The dangers of certain batteries have hit the news recently with lithium-ion laptops exploding. This issue has been addressed and resolved with the LiFePO4 which serves not only as the safest lithium battery type but of any battery type.

The LiFePO4 can be described as incombustible. Its lithium chemistry allows it to be the safest battery on the market. The thermal and structural stability of lithium iron phosphate outshines lead acid and most other battery types. For battery use such as uninterruptible power systems and in everyday use such as vehicles, high temperatures are not met with decomposition or thermal runaway. The LiFePO4 will keep cool at room temperature and maintain high efficiency and safety in the event of hazardous situations such as short-circuiting or a crash.

Considering the Environment
The eco-friendly, LiFePO4 battery takes a step in the right direction in protecting our planet. As a rechargeable battery with a longer life span than the typical battery, one LiFePO4 can replace up to 9-12 lead acid batteries over its expected 10 years of service. A lead acid battery lasts only 300-400 recharging cycles; paling in comparison to the expected 5,000 cycles of the LiFePO4. In addition, they are non-toxic and will not leak, unlike lead acid and nickel oxide lithium batteries.

Efficiency and Performance

In addition to safety, efficiency and performance quality are key in selecting the right battery. The LiFePO4 tops the list in the following benefits as well:

- Charge efficiency: the LiFePO4 battery reaches full charge in 2 hours or less.
- Self-discharge rate when not in use: Only 2% per month. *(Compared to 30% for lead acid batteries)*.
- Runtime is longer than lead acid batteries and other lithium batteries.
- Consistent power: the amperage remains the same throughout the run of the battery, even when below 50% battery life.
- No maintenance needed.
- Small and Lightweight – LiFePO4 is nearly 50% lighter than lithium manganese oxide batteries and 70% less than lead acid batteries.

LiFePO4 Batteries vs. Other Batteries

How does the PantheonCell™ LiFePO4 battery compare to other rechargeable batteries on the market today?

Lead Acid Batteries - Require Maintenance

With lead acid batteries, constant maintenance is required. They also must be replaced more often than the LiFePO4 alternative. The cost involved in both the maintenance and replacement of lead-acid batteries, in turn, will cost more in the long run than the PantheonCell™ LiFePO4 battery which will last 2-4x longer, with no maintenance needed.

Gel Batteries – Charging Speed

Similar to LiFePO4 batteries, gel batteries do not require frequent recharging. In addition, they also do not lose charge while stored. However, there are a few differences that once again, put the PantheonCell™ ahead in the benefits category. Gel batteries are known to charge extremely slow and must be disconnected once they are 100% charged to avoid ruining them. The PantheonCell™ LiFePO4, on the other hand, charges in 2 hours or less and can remain installed within the cabinet.

AGM Batteries– Limited Drain

The expensive AGM Battery has a drain limit. If an AGM battery is drained beyond 50% of its capacity, there is a high risk of damage to the battery. It is also a challenge to maintain this battery option. The great news is that the PantheonCell™ LiFePO4 battery can be discharged completely risk-free with no damage and no maintenance required.

Lithium-ion Batteries – Known Safety Issues
Lithium-ion batteries have been known to overheat and even catch fire which is concerning. The PantheonCell™ LiFePO4 removes this fear with its non-combustible design. The LiFePO4 battery also dominates the lithium-ion battery by lasting 4-5 times longer.

Have Questions?

How is the PantheonCell™ Cost Effective?
When you evaluate the costs of batteries, you need to factor in the life cycle. How often will they need replaced? How much will maintenance cost? LiFePO4 batteries tend to appear expensive upfront, but look at the long-term cost. Their life cycle is 3-4 times longer than that of other battery options. The LiFePO4 requires more expensive materials in the manufacturing process, but these quality materials are one reason this is the preferred battery for many.

We know that LiFePO4 is safer than lithium-ion batteries, but what about AGM or lead-acid batteries?
The PantheonCell™ LiFePO4 is actually quite a bit safer than AGM and lead acid batteries. LiFePO4 batteries:

- They DO NOT leak toxic fumes
- They DO NOT spill sulfuric acid like many other batteries *(like lead acid.)*
- They DO NOT overheat or catch fire.

…making the PantheonCell™ safer than lithium-ion, gel, AGM and lead acid batteries.

How can the LiFePO4 be prevented from overcharging?
The PantheonCell™ LiFePO4 battery has a built-in battery management system. This is designed to prevent the battery from overcharging.

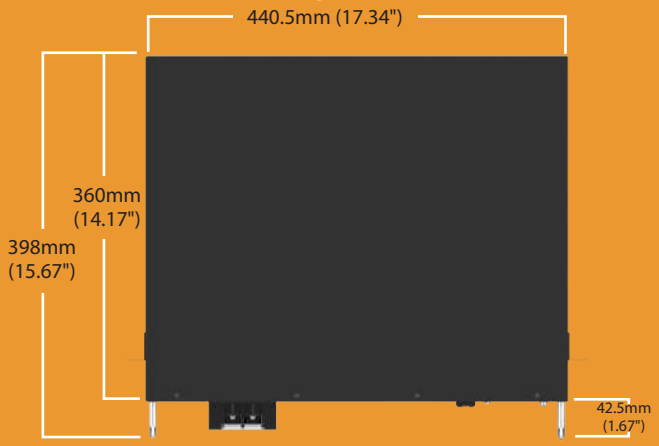
What is the life expectancy of LiFePO4 batteries?
With a life expectancy of around 5,000 cycles, the PantheonCell™ LiFePO4 will provide backup for about 10 years (and often more). Of course, this depends upon its usage.

Also worthy of noting, is that after those 5,000 cycles, the PantheonCell™ can still function at 70% capacity. Additionally, it can discharge past 80% without a single issue, unlike lead acid batteries which tend to gas out when discharged past 50%.

Available with Mountable Wings

FRONT

TOP



SIDE

Dimensions: NS

PantheonCell™ LiFePO4 48/100 TN SD

Product Description

- Advantages – The lithium battery cathode material for lithium iron phosphate allows for high safety performance, high stability, long cycle life, high specific energy, specific power, low-temperature performance, and large current charge and discharge.

  High-performance Battery Management System (BMS) – Monitors the charge, over-discharge, short circuit, over-current (load), temperature, flow, total pressure protection, charging under the secondary electricity, as well as balanced and various protective functions. These ensure the life of the lithium battery and reduce daily maintenance.

- With an upfront investment, the LiFePO4 can save considerably on maintenance costs in the later stage.

- The standard design is easy to assemble and install, small in size, lightweight, and has low operating environment requirements (can be in -20°C ~ 60°C, humidity < 95% normal work) with simple maintenance.

Product Features

The internal single battery utilizes the anode material of lithium ferrous phosphate (LiFePO4), which boasts high safety, high energy density and excellent cycling performance.

The high-performance battery management system (BMS) equips the battery pack. This provides protection for functions such as over-discharge, overcharge, over current, high temperature and low temperature; ensuring the safety of the battery pack. The monitoring unit also automatically measures the charge and discharge current of the battery by managing the floating charge and even the charge of the battery.

Should the battery voltage drop lower than the alarm value, it will signal a notification. Also, when the voltage is too low, it will automatically power down; protecting the battery. In addition, the battery pack has good electromagnetic compatibility.

BMS Function

1. Voltage detection and protection function: total voltage, cell voltage detection, overvoltage protection, under-voltage protection function, cell voltage acquisition accuracy ≤20mV.
2. Current detection and protection function.
3. Temperature detection and protection function.
4. Short circuit protection function.
5. Passive balance function.

BMS Parameter Table

Item	Protection	Release
Total Voltage Overvoltage	54.7V/1S	50V/1S
Cell Overvoltage	3.65V/1S	3.33V/1S
Total Voltage Undervoltage	37.5V/1S	40.5V/1S
Cell Undervoltage	2.5V/1S	2.7V
Charging Overcurrent	110A/1S	/
Discharge Overcurrent	110A/1S	Remove loader||Charge
Short Circuit	Yes	Remove loader||Charge
Discharge Over Temperature	65°C ±5 (149°F ±9)	55°C (131°F)
Discharge Under Temperature	-20°C ±5 (-4°F ±9)	-10°C (14°F)
Charge Over Temperature	65°C ±5 (149°F ±9)	55°C (131°F)
Charge Under Temperature	-5°C ±5 (23°F ±9)	0°C (32°F)
MOS Over Temperature	90°C ±5 (194°F ±9)	65°C (149°F)
Power Consumption	≤200uA	
Balance	3.5V/40mA	
Internal Resistance	≤50 mΩ	

Technical Data

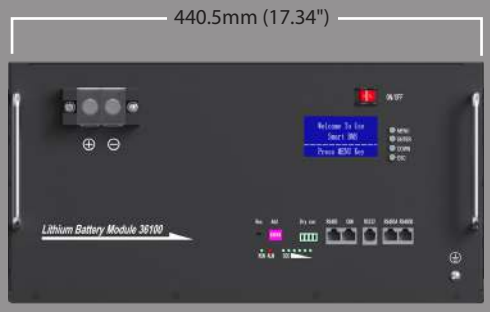
Parameter	Value / Function
Nominal Capacity	100Ah
Watt Hour	4800Wh
Rated Voltage	48V
Operating Voltage Range	37.5V~53.2V
Standard Charging Current	50A
Maximum Continuous Charging Current	100A
Standard Discharging Current	50A
Maximum Continuous Discharging Current	100A
Pulse Discharge Current	110A/0.3S
Cycle Life	≥3000 cycles (0.5C charge, 0.5C discharge) Capacity retention≥80%
Operating Temperature	Discharge: -20°~55°C (-4°~131°F) Charge: 0°~55C° (32°-131°F)
Storage Temperature	-10°~45C° (14°-113°F)
Communication Method	RS232/RS485/Dry contact
Display Method	LCD
Voltage at Shipment	≥48V
Weight	Approximately 41.5kg
Dimension(mm)	(L 440.5 x W 360x H 222.5 mm) ±5mm
Designed Life	10 Year
Guarantee Period	3 Year

ORDERING INFORMATION

PantheonCell™

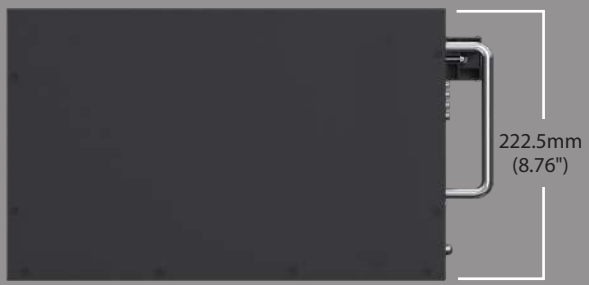
STOCK ID	DESCRIPTION	NOMINAL DIMENSIONS	WEIGHT
032-053-10	Rack mountable PantheonCell™ LiFePO4 48V/100A TN SD S01 Series	440.5L x 360W x 222.5H mm	Approximately 41.5kg

FRONT



TOP

SIDE



Dimensions: NS

PantheonCell™ LiFePO4 36/100 TN PT

Product Description

- Advantages – The lithium battery cathode material for lithium iron phosphate allows for high safety performance, high stability, long cycle life, high specific energy, specific power, low-temperature performance, and large current charge and discharge.

  High-performance Battery Management System (BMS) – Monitors the charge, over-discharge, short circuit, over-current (load), temperature, flow, total pressure protection, charging under the secondary electricity, as well as balanced and various protective functions. These ensure the life of the lithium battery and reduce daily maintenance.

- With an upfront investment, the LiFePO4 can save considerably on maintenance costs in the later stage.

- The standard design is easy to assemble and install, small in size, lightweight, and has low operating environment requirements (can be in -20°C ~ 60°C, humidity < 95% normal work) with simple maintenance.

Product Features

The internal single battery utilizes the anode material of lithium ferrous phosphate (LiFePO4), which boasts high safety, high energy density and excellent cycling performance.

The high-performance battery management system (BMS) equips the battery pack. This provides protection for functions such as over-discharge, overcharge, over current, high temperature and low temperature; ensuring the safety of the battery pack. The monitoring unit also automatically measures the charge and discharge current of the battery by managing the floating charge and even the charge of the battery.

Should the battery voltage drop lower than the alarm value, it will signal a notification. Also, when the voltage is too low, it will automatically power down; protecting the battery. In addition, the battery pack has good electromagnetic compatibility.

BMS Function

1. Voltage detection and protection function: total voltage, cell voltage detection, overvoltage protection, under-voltage protection function, cell voltage acquisition accuracy ≤20mV.
2. Current detection and protection function.
3. Temperature detection and protection function.
4. Short circuit protection function.
5. Passive balance function.

BMS Parameter Table

Item	Protection	Release
Total Voltage Overvoltage	43.8V/1S	40V/1S
Cell Overvoltage	3.65V/1S	3.33V/1S
Total Voltage Undervoltage	30V/1S	32.4V/1S
Cell Undervoltage	2.5V/1S	2.7V
Charging Overcurrent	110A/1S	/
Discharge Overcurrent	110A/1S	Remove loader||Charge
Short Circuit	Yes	Remove loader||Charge
Discharge Over Temperature	65°C ±5 (149°F ±9)	55°C (131°F)
Discharge Under Temperature	-20°C ±5 (-4°F ±9)	-10°C (14°F)
Charge Over Temperature	65°C ±5 (149°F ±9)	55°C (131°F)
Charge Under Temperature	-5°C ±5 (23°F ±9)	0°C (32°F)
MOS Over Temperature	90°C ±5 (194°F ±9)	65°C (149°F)
Power Consumption	≤200uA	
Balance	3.5V/40mA	
Internal Resistance	≤50 mΩ	

Technical Data

Parameter	Value / Function
Nominal Capacity	100Ah
Watt Hour	3840Wh
Rated Voltage	38.4V
Operating Voltage Range	30V~42.6V
Standard Charging Current	50A
Maximum Continuous Charging Current	100A
Standard Discharging Current	50A
Maximum Continuous Discharging Current	100A
Pulse Discharge Current	110A/0.3S
Cycle Life	≥3000 cycles (0.5C charge, 0.5C discharge) Capacity retention≥80%
Operating Temperature	Discharge: -20°~55°C (-4°~131°F) Charge: 0°~55C° (32°-131°F)
Storage Temperature	-10°~45C° (14°-113°F)
Communication Method	RS232/RS485/CAN/Dry contact
Display Method	LCD
Voltage at Shipment	≥38.4V
Weight	Approximately 35kg
Dimension(mm)	(L 440.5 x W 360x H 222.5 mm) ±5mm
Designed Life	10 Year
Guarantee Period	3 Year

ORDERING INFORMATION

PantheonCell™

STOCK ID	DESCRIPTION	DIMENSIONS	WEIGHT
032-051-10	PantheonCell™ LiFePO4 36V/100A TN PT Series	440.5L x 360W x 222.5H mm	Approximately 35kg

FRONT

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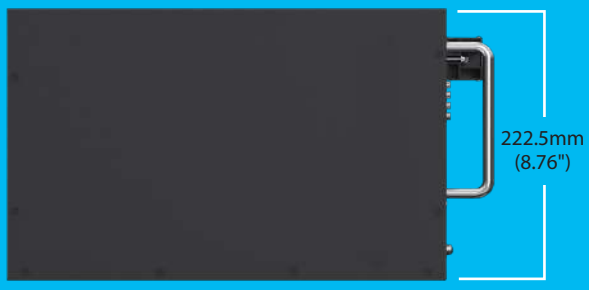
SIDE



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PantheonCell™ LiFePO4 48/100 TN PT

Product Description

- Advantages – The lithium battery cathode material for lithium iron phosphate allows for high safety performance, high stability, long cycle life, high specific energy, specific power, low-temperature performance, and large current charge and discharge.

  High-performance Battery Management System (BMS) – Monitors the charge, over-discharge, short circuit, over-current (load), temperature, flow, total pressure protection, charging under the secondary electricity, as well as balanced and various protective functions. These ensure the life of the lithium battery and reduce daily maintenance.

- With an upfront investment, the LiFePO4 can save considerably on maintenance costs in the later stage.

- The standard design is easy to assemble and install, small in size, lightweight, and has low operating environment requirements (can be in -20°C ~ 60°C, humidity < 95% normal work) with simple maintenance.

Product Features

The internal single battery utilizes the anode material of lithium ferrous phosphate (LiFePO4), which boasts high safety, high energy density and excellent cycling performance.

The high-performance battery management system (BMS) equips the battery pack. This provides protection for functions such as over-discharge, overcharge, over current, high temperature and low temperature; ensuring the safety of the battery pack. The monitoring unit also automatically measures the charge and discharge current of the battery by managing the floating charge and even the charge of the battery.

Should the battery voltage drop lower than the alarm value, it will signal a notification. Also, when the voltage is too low, it will automatically power down; protecting the battery. In addition, the battery pack has good electromagnetic compatibility.

BMS Function

1. Voltage detection and protection function: total voltage, cell voltage detection, overvoltage protection, under-voltage protection function, cell voltage acquisition accuracy ≤20mV.
2. Current detection and protection function.
3. Temperature detection and protection function.
4. Short circuit protection function.
5. Passive balance function.

BMS Parameter Table

Item	Protection	Release
Total Voltage Overvoltage	54.7V/1S	50V/1S
Cell Overvoltage	3.65V/1S	3.33V/1S
Total Voltage Undervoltage	37.5V/1S	40.5V/1S
Cell Undervoltage	2.5V/1S	2.7V
Charging Overcurrent	110A/1S	/
Discharge Overcurrent	110A/1S	Remove loader||Charge
Short Circuit	Yes	Remove loader||Charge
Discharge Over Temperature	65°C ±5 (149°F ±9)	55°C (131°F)
Discharge Under Temperature	-20°C ±5 (-4°F ±9)	-10°C (14°F)
Charge Over Temperature	65°C ±5 (149°F ±9)	55°C (131°F)
Charge Under Temperature	-5°C ±5 (23°F ±9)	0°C (32°F)
MOS Over Temperature	90°C ±5 (194°F ±9)	65°C (149°F)
Power Consumption	≤200uA	
Balance	3.5V/40mA	
Internal Resistance	≤50 mΩ	

Technical Data

Parameter	Value / Function
Nominal Capacity	100Ah
Watt Hour	4800Wh
Rated Voltage	48V
Operating Voltage Range	37.5V~53.2V
Standard Charging Current	50A
Maximum Continuous Charging Current	100A
Standard Discharging Current	50A
Maximum Continuous Discharging Current	100A
Pulse Discharge Current	110A/0.3S
Cycle Life	≥3000 cycles (0.5C charge, 0.5C discharge) Capacity retention≥80%
Operating Temperature	Discharge: -20°~55°C (-4°~131°F) Charge: 0°~55C° (32°-131°F)
Storage Temperature	-10°~45C° (14°-113°F)
Communication Method	RS232/RS485/Dry contact
Display Method	LCD
Voltage at Shipment	≥48V
Weight	Approximately 41.5kg
Dimension(mm)	(L 500 x W 320x H 245 mm) ±5mm
Designed Life	10 Year
Guarantee Period	3 Year

ORDERING INFORMATION

PantheonCell™

STOCK ID	DESCRIPTION	DIMENSIONS	WEIGHT
032-052-10	PantheonCell™ LiFePO4 48V/100A TN PT Series	500L x 320W x 245H mm	Approximately 41.5kg

PantheonCell™ LiFePO4 36/50 TN PT

Product Description

- Advantages – The lithium battery cathode material for lithium iron phosphate allows for high safety performance, high stability, long cycle life, high specific energy, specific power, low-temperature performance, and large current charge and discharge.

  High-performance Battery Management System (BMS) – Monitors the charge, over-discharge, short circuit, over-current (load), temperature, flow, total pressure protection, charging under the secondary electricity, as well as balanced and various protective functions. These ensure the life of the lithium battery and reduce daily maintenance.

- With an upfront investment, the LiFePO4 can save considerably on maintenance costs in the later stage.

- The standard design is easy to assemble and install, small in size, lightweight, and has low operating environment requirements (can be in -20°C ~ 60°C, humidity < 95% normal work) with simple maintenance.

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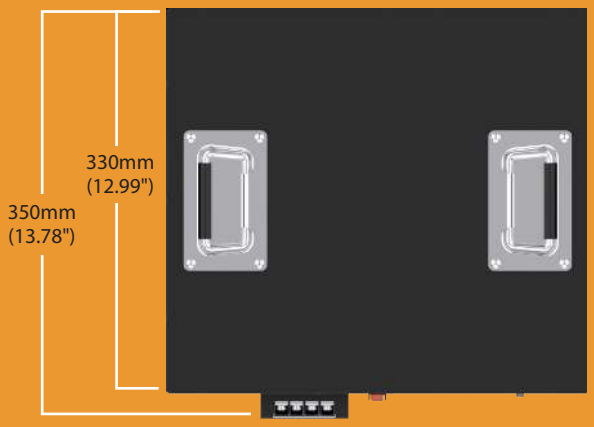

SIDE

Dimensions: NS

Product Features

The internal single battery utilizes the anode material of lithium ferrous phosphate (LiFePO4), which boasts high safety, high energy density and excellent cycling performance.

The high-performance battery management system (BMS) equips the battery pack. This provides protection for functions such as over-discharge, overcharge, over current, high temperature and low temperature; ensuring the safety of the battery pack. The monitoring unit also automatically measures the charge and discharge current of the battery by managing the floating charge and even the charge of the battery.

Should the battery voltage drop lower than the alarm value, it will signal a notification. Also, when the voltage is too low, it will automatically power down; protecting the battery. In addition, the battery pack has good electromagnetic compatibility.

BMS Function

1. Voltage detection and protection function: total voltage, cell voltage detection, overvoltage protection, under-voltage protection function, cell voltage acquisition accuracy ≤20mV.
2. Current detection and protection function.
3. Temperature detection and protection function.
4. Short circuit protection function.
5. Passive balance function.

BMS Parameter Table

Item	Protection	Release
Total voltage overvoltage	43.8V/1S	40V/1S
Cell overvoltage	3.65V/1S	3.33V/1S
Total voltage undervoltage	30V/1S	32.4V/1S
Cell undervoltage	2.5V/1S	2.7V
Charging overcurrent	110A/1S	/
Discharge overcurrent	110A/1S	Remove loader||Charge
Short circuit	Yes	Remove loader||Charge
Discharge Over Temperature	65°C ±5 (149°F ±9)	55°C (131°F)
Discharge Under Temperature	-20°C ±5 (-4°F ±9)	-10°C (14°F)
Charge Over Temperature	65°C ±5 (149°F ±9)	55°C (131°F)
Charge Under Temperature	-5°C ±5 (23°F ±9)	0°C (32°F)
MOS Over Temperature	90°C ±5 (194°F ±9)	65°C (149°F)
Power consumption	≤200uA	
Balance	3.5V/40mA	
Internal resistance	≤50 mΩ	

Technical Data

Parameter	Value / Function
Nominal Capacity	50Ah
Watt Hour	1920Wh
Rated Voltage	38.4V
Operating voltage range	30V~42.6V
Standard charging current	25A
Maximum continuous charging current	50A
Standard discharging current	25A
Maximum continuous discharging current	50A
Pulse discharge current	110A/1S
Cycle Life	≥3000 cycles (0.5C charge, 0.5C discharge) Capacity retention≥80%
Operating Temperature	Discharge: -20°~55°C (-4°~131°F) Charge: 0°~55C° (32°-131°F)
Storage Temperature	-10°~45C° (14°-113°F)
Communication method	RS232/RS485/CAN/Dry contact
Display method	LED
Voltage at shipment	≥38.4V
Weight	Approximately 22kg
Dimension(mm)	(L 360 x W 330x H 185 mm) ±2mm
Designed life	10 Year
Guarantee period	3 Year

ORDERING INFORMATION

PantheonCell™

STOCK ID	DESCRIPTION	DIMENSIONS	WEIGHT
032-049-10	PantheonCell™ LiFePO4 36V/50A TN PT Series	360L x 330W x 185H mm	Approximately 22kg

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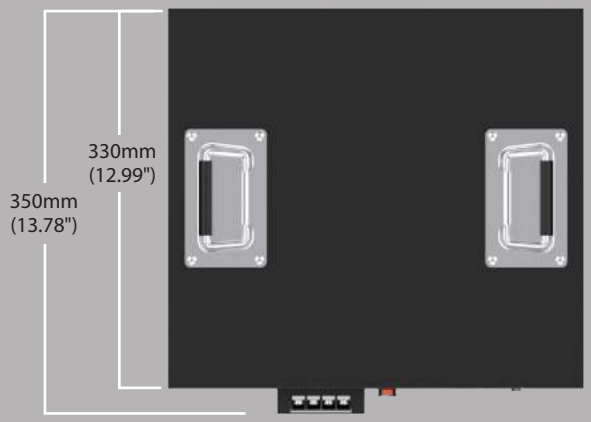

SIDE

Dimensions: NS

PantheonCell™ LiFePO4 48/50 TN PT

Product Description

- Advantages – The lithium battery cathode material for lithium iron phosphate allows for high safety performance, high stability, long cycle life, high specific energy, specific power, low-temperature performance, and large current charge and discharge.

  High-performance Battery Management System (BMS) – Monitors the charge, over-discharge, short circuit, over-current (load), temperature, flow, total pressure protection, charging under the secondary electricity, as well as balanced and various protective functions. These ensure the life of the lithium battery and reduce daily maintenance.

- With an upfront investment, the LiFePO4 can save considerably on maintenance costs in the later stage.

- The standard design is easy to assemble and install, small in size, lightweight, and has low operating environment requirements (can be in -20°C ~ 60°C, humidity < 95% normal work) with simple maintenance.

Product Features

The internal single battery utilizes the anode material of lithium ferrous phosphate (LiFePO4), which boasts high safety, high energy density and excellent cycling performance.

The high-performance battery management system (BMS) equips the battery pack. This provides protection for functions such as over-discharge, overcharge, over current, high temperature and low temperature; ensuring the safety of the battery pack. The monitoring unit also automatically measures the charge and discharge current of the battery by managing the floating charge and even the charge of the battery.

Should the battery voltage drop lower than the alarm value, it will signal a notification. Also, when the voltage is too low, it will automatically power down; protecting the battery. In addition, the battery pack has good electromagnetic compatibility.

BMS Function

1. Voltage detection and protection function: total voltage, cell voltage detection, overvoltage protection, under-voltage protection function, cell voltage acquisition accuracy ≤20mV.
2. Current detection and protection function.
3. Temperature detection and protection function.
4. Short circuit protection function.
5. Passive balance function.

BMS Parameter Table

Item	Protection	Release
Total voltage overvoltage	54.7V/1S	50V/1S
Cell overvoltage	3.65V/1S	3.33V/1S
Total voltage undervoltage	37.5V/1S	40.5V/1S
Cell undervoltage	2.5V/1S	2.7V
Charging overcurrent	110A/1S	/
Discharge overcurrent	110A/1S	Remove loader||Charge
Short circuit	Yes	Remove loader||Charge
Discharge Over Temperature	65°C ±5 (149°F ±9)	55°C (131°F)
Discharge Under Temperature	-20°C ±5 (-4°F ±9)	-10°C (14°F)
Charge Over Temperature	65°C ±5 (149°F ±9)	55°C (131°F)
Charge Under Temperature	-5°C ±5 (23°F ±9)	0°C (32°F)
MOS Over Temperature	90°C ±5 (194°F ±9)	65°C (149°F)
Power consumption	≤200uA	
Balance	3.5V/40mA	
Internal resistance	≤50 mΩ	

Technical Data

Parameter	Value / Function
Nominal Capacity	50Ah
Watt Hour	2400Wh
Rated Voltage	48V
Operating voltage range	37.5V~53.2V
Standard charging current	25A
Maximum continuous charging current	50A
Standard discharging current	25A
Maximum continuous discharging current	50A
Pulse discharge current	110A/1S
Cycle Life	≥3000 cycles (0.5C charge, 0.5C discharge) Capacity retention≥80%
Operating Temperature	Discharge: -20°~55°C (-4°~131°F) Charge: 0°~55C° (32°-131°F)
Storage Temperature	-10°~45C° (14°-113°F)
Communication method	RS232/RS485/CAN/Dry contact
Display method	LED
Voltage at shipment	≥48V
Weight	Approximately 24 kg
Dimension(mm)	(L 360 x W 330x H 185 mm) ±2mm
Designed life	10 Year
Guarantee period	3 Year

ORDERING INFORMATION

PantheonCell™

STOCK ID	DESCRIPTION	DIMENSIONS	WEIGHT
032-050-10	PantheonCell™ LiFePO4 48V/50A TN PT Series	360L x 330W x 185H mm	Approximately 24kg

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