



Energy Storage Solution – UPS

Li-ion Battery / Delta InfraSuite UZR Series

Features

- Safety and reliability with Lithium-ion battery solution
- 45% reduction of space and weight
- 2-3x longer life and easy installation and maintenance compared to traditional batteries
- Enhanced system safety, predictability, and manageability via a built-in battery management system
- Reduced total cost of ownership



Residential
Area



Commercial
Building



DELTA

Li-ion Battery UPS for Critical Infrastructure

Featuring long operation life, safety, easy maintenance, and TCO reduction, the Li-ion battery is a crucial and innovative energy storage solution for critical infrastructure in IT industry

Why a Li-ion Battery UPS?

2–3x Longer Life

2–3x longer life brings it in line with the replacement cycle of IT equipment.

1/3 Footprint

Only 1/3 of a general UPS footprint is needed, allowing users to reserve more space for IT equipment.

10x Faster

Up to 10x faster charging performance for improved charge times. (2C vs. 0.2C)



45% Lighter

45% lighter than lead-acid batteries makes for easier installation and maintenance.

Higher Safety

Integrated BMS makes battery management easier and safer.

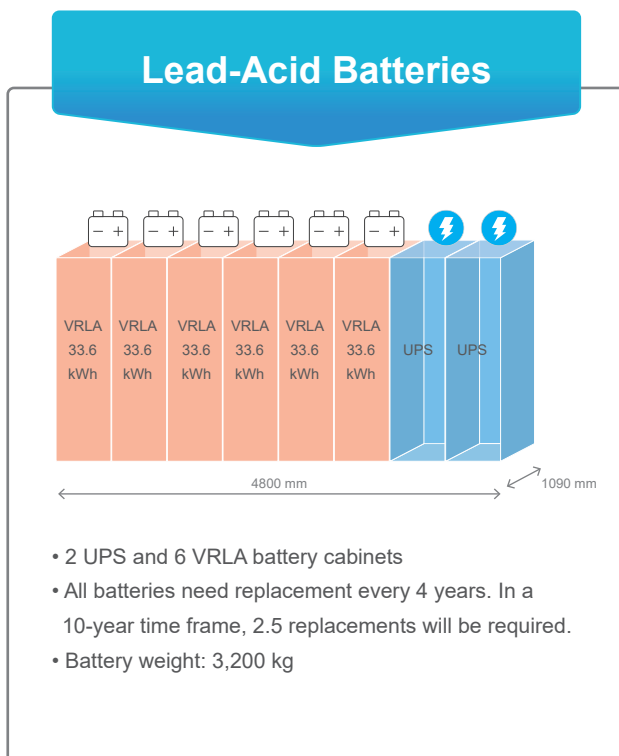
Lower OPEX

Less self-discharge and heat dissipation saves OPEX and improves efficiency.

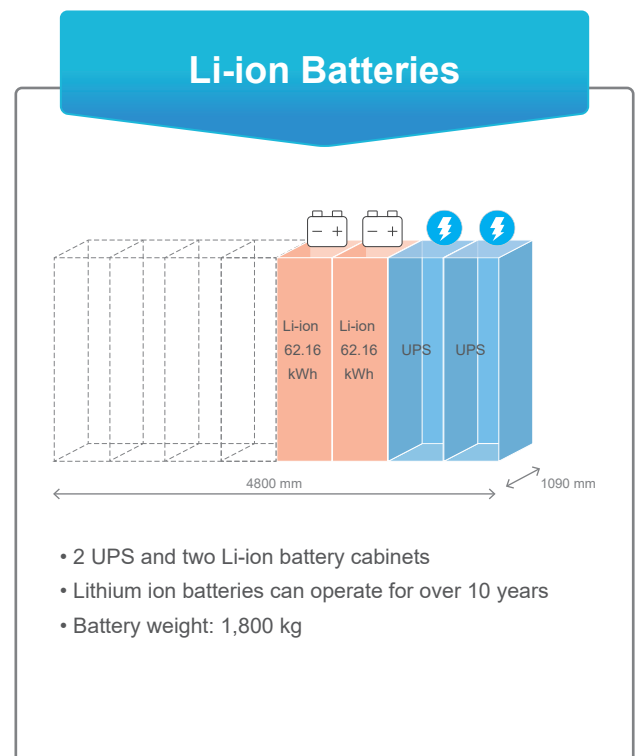
Li-ion Battery vs. Lead-Acid Battery

Example

- IT load: 100kW
- Backup time: 30 minutes
- Battery redundancy: 1+1 sets
- Data center's years of use: 10 years minimum



VS.



System Overview

Battery Cabinet

- Standard 19" rack cabinet
- Pre-installed series connection bus bar
- Integrated master BMS with gateway hub design for parallel communication connection
- Top cable entry (power and signal)
- Front access for Integrated easy maintenance

Safety Control Box

- High-power applications
- Built-in safety breaker (MCCB)
- Dual relay/diode protection loop
- Built-in battery management unit (BMU)
- Meets isolation standard for power & control

Module

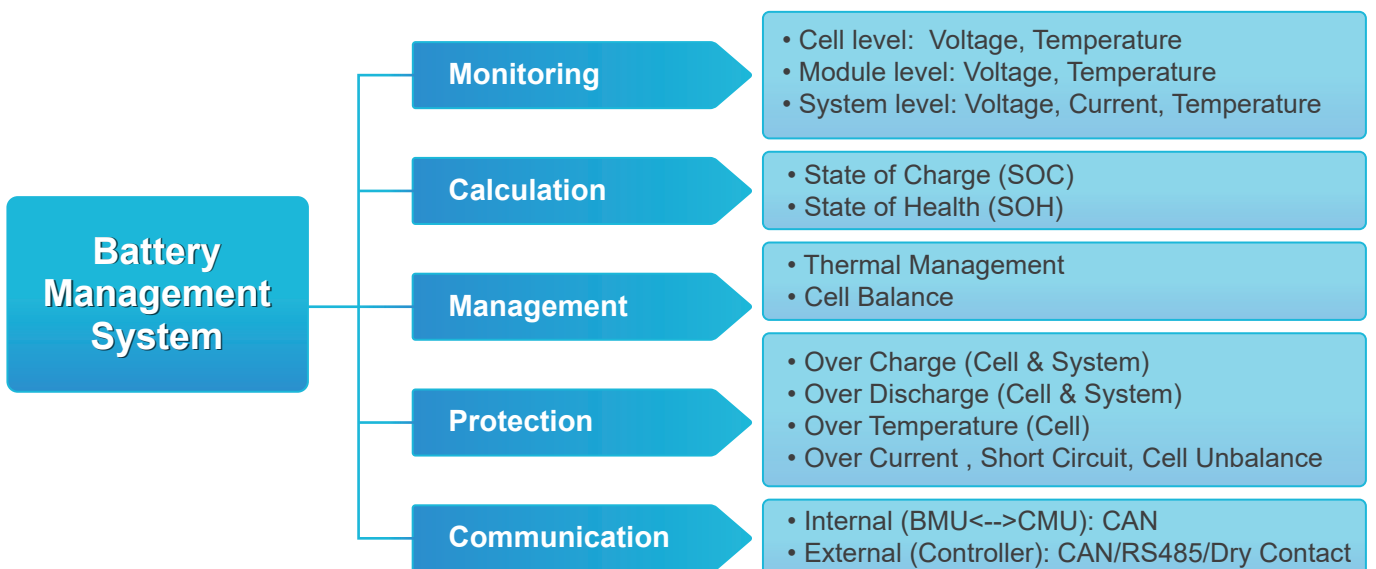
- IP20 rating
- Contains 14 cells in a series (14S1P) in a 3U rack with plug-in safety design
- Integrated cell monitor unit (CMU)
 - Monitor the voltage and temperature of each cell.
 - Communicate with the BMU for data collection and alarm notifications

Cell

- High-power/long-life prismatic cell
- High capacity 60Ah – Delta P140
- Nominal voltage 3.7V



Battery Management System Ensures System Safety



System Components

Battery Cell

Prismatic Cell-technology
DeltaP140-222-0

High Power

- Up to 10C-rate discharge
- Up to 2C-rate charge

Ultra Long Life

- More than 4000 cycles @ SOC range 90%-10%, 1C rate , 25 °C, EOL: 70% SOH

Safety and reliability

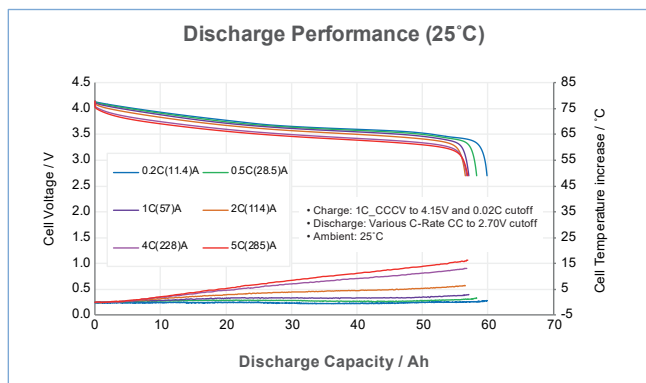
- UL1973, IEC62619, JIS C 8715-2 certified



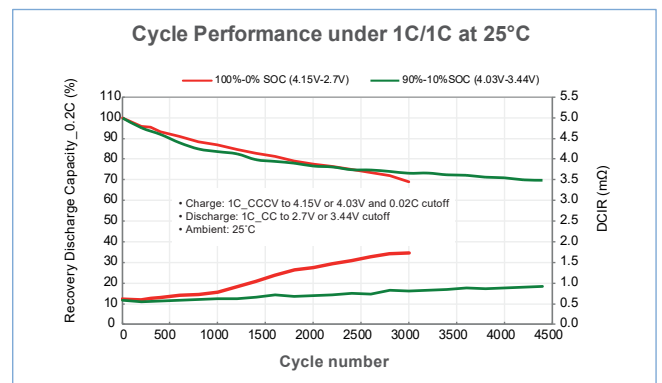
Specifications

Model Name	DeltaP140-222-0
Nominal Voltage	3.7 V (NCM Chemistry)
Nominal Capacity	60 Ah
Nominal Energy	222 Wh
Energy Density	339 Wh / L, 158 Wh / Kg
Dimension (mm)	110.1 (W) x 38.2 (D) x 155.6 (H)
Weight	1.4 Kg +/- 100g
Certifications	UL1973 / 9540A, JIS C 8715-2 (S-Mark) IEC62619 , IEC 62660-3, UN 38.3
Operating Temperature	Charge : 0°C to +55°C, Discharge: -20°C to +55°C

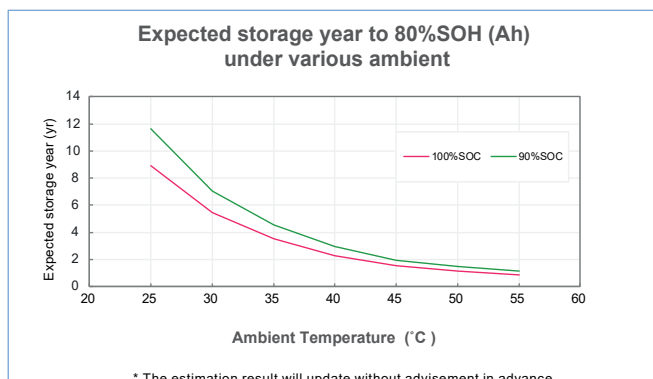
Performance



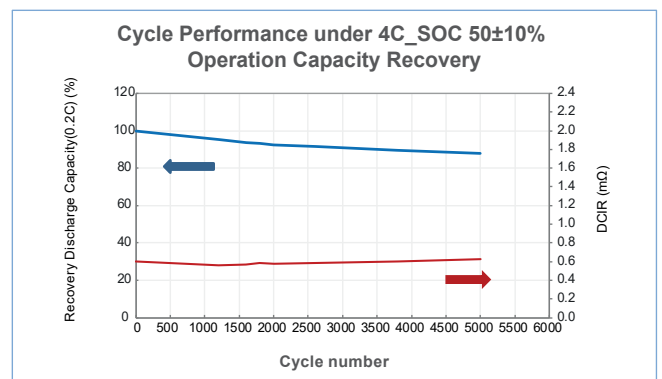
a) Discharging Performance



b) Cycle Life Performance



c) Calendar Life Performance



d) DCR Degradation Characteristic

Li-ion Battery Module

Plug-in Connector



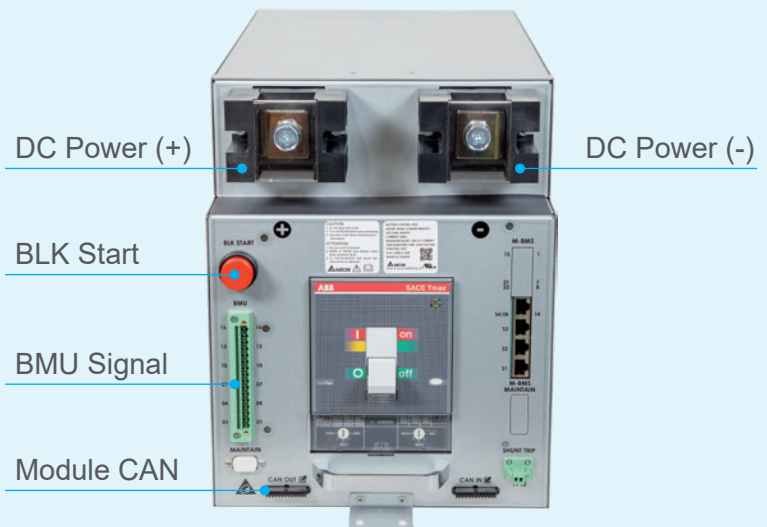
- Plug-in design: Greater safety and easier maintenance
- Smaller footprint with a 3U height design
- Lightweight: <30kg with handle
- Built-in cell monitoring unit monitors all voltages and temperatures
- Interface: CAN 2.0B

Specifications

Model Name	Plug-in Connector
Nominal Voltage	51.8 Vdc
Nominal Capacity	3.10 kWh
Nominal Voltage	51.8 Vdc
Dimension (mm)	214 x 730.2 x 118.6 (w/ handle)
Weight	29.2 kg ± 0.3 kg
Interface	CAN 2.0B
Certifications	UN 38.3, UL1973, IEC62619
Protection	IP20

Safety Control Box

- High-power application design
- Built-in safety breaker (MCCB)
- Fast melting fuse
- Pre-charge circuit
- Dual charge/discharge loop
- Relay protection (charge)
- Diode connection (discharge)
- Functional safety certification (IEC 60730/UL1998 & 991)
- Integrated BMU

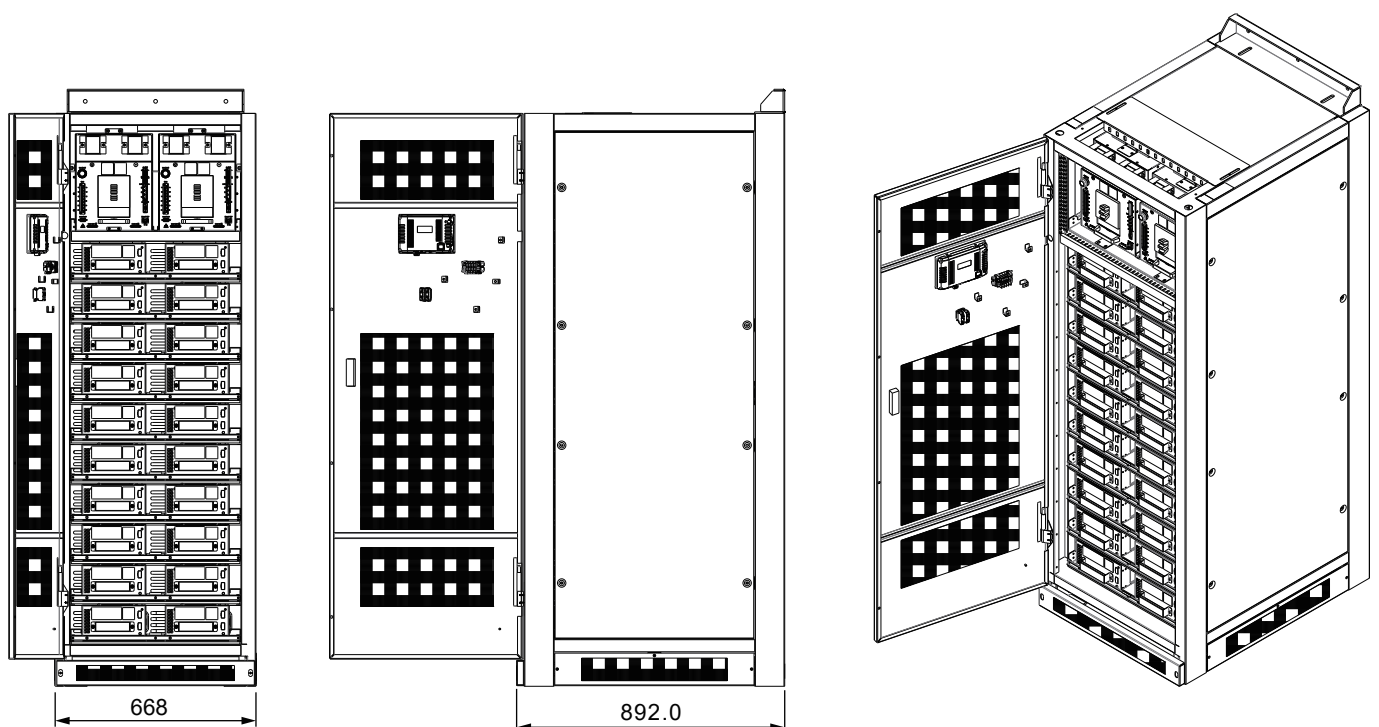


Battery Cabinet

Specifications

Model Name	UZR120	UZR240
Electrical		
Installation Capacity	31.0KWh	62.1KWh
Applied Cell type	DELTA P140-222-0 (60Ah)	
Nominal Voltage	518Vdc	
Charging Voltage (suggestion)	572Vdc	
Max Charging Power	45 kW (100A)	90 kW (100A/String)
Max Discharging Power	250 kW (550A)	500 kW (550A/Sting)
Minimum Voltage	420Vdc	
General		
Dimension (W x H x D)	668 x 1900 x 892 mm (exclude fixing bracket)	
Total Weight (approximate)	615 kg	930 kg
Communication Bus	Internal : CAN2.0 External : CAN 2.0 (Dry contact), Modbus RTU/TCP (Optional)	
Additional Accessories	Master BMS / Battery HMI / EPO	
Environmental		
Ambient Operation Temperature	5 °C to +35 °C	
Storage Humidity	5 ~ 85%	
Permissible Altitude	≤ 2000 m	
Certificate		
Ingression Protection	IP 20 class function	
Safety Standard	UL1973 (Cell / Module / Rack), IEC62619 (Cell / Rack) JIS C 8715-2 (S-Mark) (Cell), UN 38.3 (Cell / Module) IEC 62477-1 (BMS) IEC 60730 (BMS)	
Quality Standard	ISO 9001	

Dimension



System Back-up Time (in minutes)

UPS Power (kW)	Power Factor	Inverter Efficiency	Battery Power (kW)	1 Rack 1 string (31.1kWh)	1 Rack 2 strings (62.1kWh)	2 Racks 3 strings (93.2kWh)	2 Racks 4 strings (124.2kWh)
100	1	95.0%	105.3	13.4	28.3	43.6	60.2
150	1	95.0%	157.9	7.9	18.7	28.3	38.8
200	1	95.0%	210.5	4.9	13.4	21.0	28.3
250	1	95.0%	263.2	2.5*	10.1	16.1	22.3
300	1	95.0%	315.8	N/A	7.9	13.4	18.7
350	1	95.0%	368.4	N/A	6.2	11.3	15.8
400	1	95.0%	421.1	N/A	4.9	10.0	13.4
450	1	95.0%	473.7	N/A	3.5	7.9	11.6
500	1	95.0%	526.3	N/A	2.5*	6.5	10.1
600	1	95.0%	631.6	N/A	N/A	4.9	7.9
750	1	95.0%	789.5	N/A	NA	2.5*	5.3
1000	1	95.0%	1052.6	N/A	NA	NA	2.5*
1250	1	95.0%	1315.8	N/A	N/A	NA	NA

* Under specify operation condition and 400A control box

UPS Power (kW)	Power Factor	Inverter Efficiency	Battery Power (kW)	3 Racks 6 strings (186.3kWh)	4 Racks 8 strings (248.4kWh)	5 Racks 10 strings (310.5kWh)
100	1	95.0%	105.3	-	-	-
150	1	95.0%	157.9	60.2	-	-
200	1	95.0%	210.5	43.6	60.0	-
250	1	95.0%	263.2	33.9	45.2	56.5
300	1	95.0%	315.8	28.3	38.8	49.6
350	1	95.0%	368.4	24.3	32.4	41.5
400	1	95.0%	421.1	21.0	28.3	36.4
450	1	95.0%	473.7	18.7	25.2	31.4
500	1	95.0%	526.3	16.6	22.7	28.3
600	1	95.0%	631.6	13.4	18.7	23.6
750	1	95.0%	789.5	10.1	14.3	18.6
1000	1	95.0%	1052.6	6.5	10.1	13.4
1250	1	95.0%	1315.8	3.9*	7.0	10.1

* Under specify operation condition and 400A control box



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