

# KOHLER®

UNINTERRUPTIBLE  
POWER



## KOHLER Lithium-ion Batteries

# Reliable, lightweight and compact.

Reliable, lightweight and compact UPS energy storage for critical applications such as data centres, healthcare, building infrastructures, transportation, and manufacturing.

Capable of high density energy storage with much lower weight and space requirements than VRLA batteries, lithium-ion battery systems now offer a proven alternative.

Approved for use with KUP UPS systems and selected for their reliability, performance, safety and cost-effectiveness, KUP offers lithium-ion UPS battery solutions from leading manufacturers Samsung SDI and Vision Group.



3 x Samsung SDI cabinets in parallel

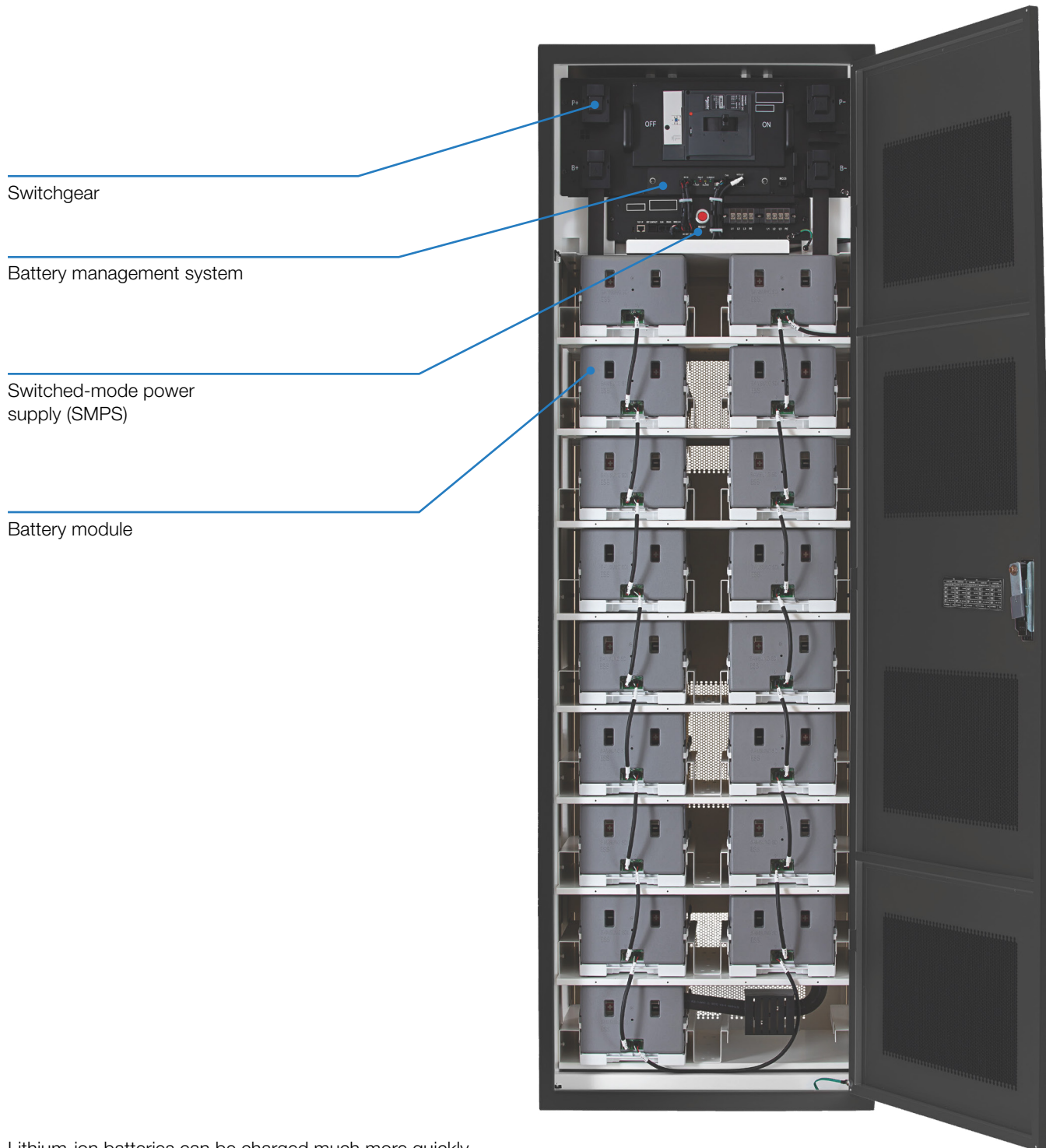
## Introducing lithium-ion batteries

Though Valve-Regulated Lead Acid (VRLA) batteries have for a long time been the mainstay in UPS systems, recent developments in lithium-ion battery technology now make it an attractive option to consider, especially where high energy density and low weight are important. Using lithium-ion designs specifically for UPS applications, advantages such as longer lifespan, smaller size and weight, shorter recharging times and falling prices only add to their appeal.

Additionally, lithium-ion UPS batteries typically have a wider operating temperature range than VRLA equivalents. This means significant reductions in cooling can be achieved, saving energy and costs.

- | Longer service life than VRLA
- | Reduced footprint and volume (approx. 50% vs VRLA)
- | Lightweight (approx. 50% less than VRLA)
- | Fast charge and discharge rate
- | Reduced need for cooling
- | Increased power density
- | Battery monitoring as standard
- | UPS specific, high safety designs

# Samsung Battery Features



Lithium-ion batteries can be charged much more quickly than conventional batteries, so after use they can be charged back up to full strength in a shorter time. This means full availability in less time.

Lithium-ion batteries also provide higher power density and efficiency, especially under heavy discharge rates. This means that no battery oversizing is needed.

Low weight (60–80 percent less than VRLA) means reduced civil engineering overheads and easier physical installation.

# Technical specification

## Vision Revo 2.5 Lithium-ion Battery Systems

| System specific data                | TP100  | TP110       | TP120       | TP200       | TP220             | TP240       |
|-------------------------------------|--|-------------|-------------|-------------|-------------------|-------------|
| General Specifications              |  |             |             |             |                   |             |
| Nominal energy (kWh)                | 25.6   | 28.2        | 30.7        | 51.2        | 56.3              | 61.4        |
| Rated capacity (Ah)                 | 50   |             |             | 100         |                   |             |
| Number of modules                   | 10   | 11          | 12          | 10          | 11                | 12          |
| Cell type                           | 3.2V 50Ah  |             |             |             |                   |             |
| Rated voltage (Vdc)                 | 512  | 563.2       | 614.4       | 512         | 563.2             | 614.4       |
| Charging current (A)                | 10-25  |             |             | 20-50       |                   |             |
| Discharge cut off voltage (V)       | 448.0  | 492.8       | 537.6       | 448.0       | 492.8             | 537.6       |
| Charge voltage (V)                  | 544.0 552.0  | 598.4 607.2 | 652.8 662.4 | 544.0 552.0 | 598.4 607.2       | 652.8 662.4 |
| Cabinet dimensions WxDxH (mm)       | 600 x 1000 x 2000  |             |             |             | 600 x 1000 x 2300 |             |
| Cabinet weight with batteries (kg)  | 550  | 580         | 620         | 900         | 970               | 1040        |
| General data                        |  |             |             |             |                   |             |
| Battery type                        | LFP (lithium iron phosphate) lithium ion                             |             |             |             |                   |             |
| Cycle life                          | >2500 cycles (at 25°C, 1C/1C, 100% depth of discharge)               |             |             |             |                   |             |
| Operating temperature               | Charging 0°C to + 50°C Discharging 20°C to +65°C                     |             |             |             |                   |             |
| Operating humidity                  | <95% RH, non condensing  |             |             |             |                   |             |
| Ingress Protection (IP) rating      | IP 21  |             |             |             |                   |             |
| Storage temperature (recommended)   | 20°C to + 35°C at 35-85% RH, non-condensing                          |             |             |             |                   |             |
| Thermal management                  | Air cooling  |             |             |             |                   |             |
| Status indication                   | Standard: LED status indicators      Optional: Additional LCD screen |             |             |             |                   |             |
| External communication              | RS 485   |             |             |             |                   |             |
| Dry contact                         | Yes  |             |             |             |                   |             |
| Fire supression                     | Standard: LED status indicators<br>Optional: Additional LCD screen   |             |             |             |                   |             |
| Product compatibility               |  |             |             |             |                   |             |
| PW 9250DPA                          | Yes  |             |             |             |                   |             |
| PW 9500DPA                          | Yes  |             |             |             |                   |             |
| MF Series                           | Yes  |             |             |             |                   |             |
| PW6000 (60-120 kVA and 400-500 kVA) | Yes  |             |             |             |                   |             |

### Revo version 2.5 system enhanced features:

- | Enhanced performance eg +2X higher discharge rate
- | Laser welded (vs manually crimped) cell connections improve reliability and reduce resistance
- | Module level fire protection as standard – perfluorohexanone fire extinguishing agent activated within 10 seconds of fire starting, plus optional second-generation cabinet level fire extinguisher
- | Battery module structure includes improved insulation and corrosion resistant polycarbonate material tray
- | Module level fuse protection - can be activated by the battery management system, protecting against serious faults such as short circuit or insulation failures / damage
- | Improved, better protected and more robust routing of fan and sampling cables
- | Integrated bus-bar for simpler, more reliable screw and cable-free cell connections
- | Improved user interface



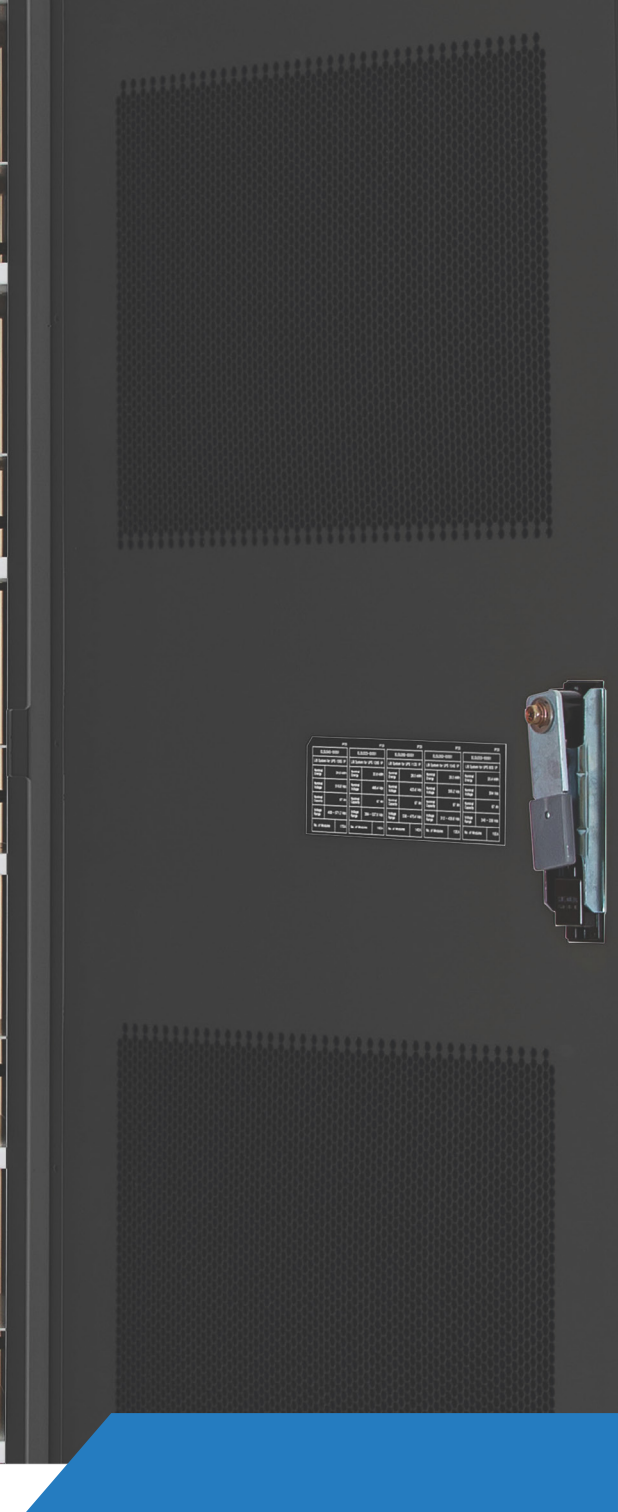
# Technical specification

## Samsung SDI Lithium-ion Battery System

| General data                           |   |
|--|---|
| Nominal energy (kWh)                   | 34.6  |
| Capacity (Ah)                          | 67  |
| Open circuit voltage (V)               | 516.8   |
| Number of modules                      | 17  |
| Operating temperature (recommended)    | +18°C to +28°C (+25°C)  |
| Maximum cell temperature               | 67°C  |
| Minimum discharge                      | 470A (60 sec) 600A (1 sec)  |
| Communication                          | RS485-TCP/IP – dry contact  |
| Connection type                        | 2 wires/top cable entry   |
| Maximum parallel cabinets              | To be confirmed   |
| Product compatibility                  |   |
| PW 9250DPA                             | Yes   |
| PW 9500DPA                             | Yes   |
| PW 6000 (60–120 kVA and 400-500kVA)    | Yes   |
| MF Series                              | Yes   |
| Batteries                              |   |
| Type                                   | LMO-NMC (Lithium manganese oxide – nickel manganese cobalt) lithium ion |
| Weight                                 |   |
| Weight with batteries (kg)             | 510   |
| Module weight (kg)                     | 17  |
| Dimensions                             |   |
| Dimensions WxDxH (mm) 650 x 530 x 2055 |   |

### Samsung SDI Lithium-ion battery system enhanced features:

- | Cell construction provides a safety function layer to prevent the possibility of an electrical short between the anode and cathode
- | Multilayer separator prevents overcharging by blocking the passage of lithium ions
- | Safety vent allows gas venting in case of internal overpressure



## Exceptional 24/7/365 Service Support

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the new name for Kohler Energy.