



## Energy Storage Solution

# Power Conditioning System / PCS3000

- 4150 kVA power capacity with 600 VAC
- Scalable system configuration and battery technology independence
- Designed for utility-grade energy storage applications



Utility Grid



Factory



Solar Power



# Optimizing the Value & Efficiency of Energy Storage System in Grid Applications

Delta Power Conditioning System (PCS) is a bi-directional energy storage inverter for grid applications including power backup, peak shaving, PV self-consumption, PV smoothing, etc. Delta Megawatt PCS provides power capacity from 4150 kVA with 98.4% efficiency. Featuring

high availability and adaptability, the PCS is battery technology independent and can control energy storage system exactly when it is required.



## Applications



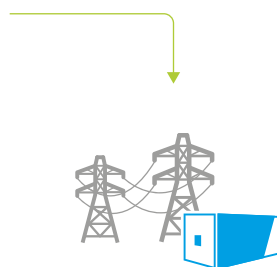
### Renewable Power Plant Integration

- Ramp rate control
- Energy shifting
- Smoothing
- Capacity firming



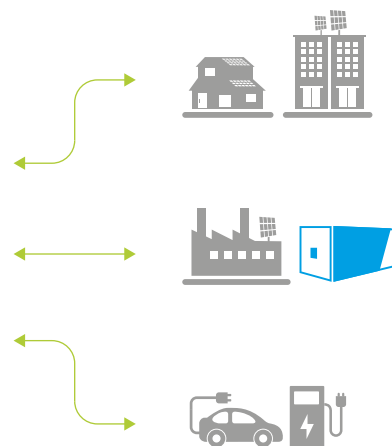
### Hybridized Thermal Power Plant

- Black start



### Grid Ancillary Control

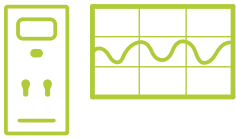
- Frequency regulation
- Peak shaving



### Distributed Network and Microgrid

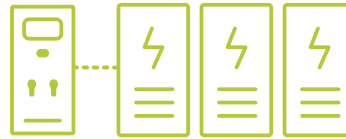
- Peak shaving

## Features



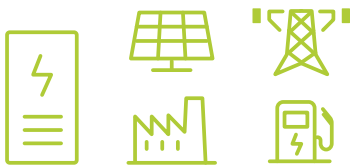
### Efficient and Precise Power Control

- Power Capacity: 4150 kVA
- AC Voltage: 600 Vac
- Peak Efficiency: 98.4%



### Flexible System Configuration

- Modular design realizes scalability and availability
- Battery independence provide high adaptability for energy storage



### Designed for Energy Storage Applications

- Advanced P/Q and Frequency/Voltage
- Utility-grade protection designed for harsh environment
- AC coupled storage application
- Automatic voltage and frequency regulation
- Active and reactive power compensation
- Anti-Islanding detection, islanding control operation

## Operating Modes

### 1. Power Dispatch

Respond to external power demand and meet the system load at the short-term determination.

### 2. Peak Shaving

Schedule for shaving the peak and avoiding high demand charge once detected consumption overload.

### 3. Frequency-Watt / Voltage-Watt / Voltage-Var

Monitor grid frequency or voltage continuously and adjust its output power based on the user-configured parameters dynamically.

### 4. Standalone

With an external UPS supplying emergency power, PCS can black start and continuously provide power from battery to critical loads.

## Product at a Glance



# Specifications

| Part Number  | DWE4150-EV-US                    |
|--|----------------------------------|
| <b>DC Connection</b>                                     |                                  |
| Input Voltage $V_{DC}$ Range <sup>(1)</sup>              | 875 - 1500 V                     |
| Input Voltage $V_{DC, max}$                              | 1500 V                           |
| Max. Input Current $I_{DC, max}$ (@ 50°C)                | 4359 A                           |
| Number of DC Inputs                                      | 1/2 (optional)                   |
| <b>AC Connection</b>                                     |                                  |
| AC Power (40°C / 45°C / 50°C)@ PF=1, 600 V <sub>AC</sub> | 4156 kVA / 4000 kVA / 3741 kVA   |
| Max. AC Current $I_{AC, max}$ (40°C / 45°C / 50°C)       | 4000 A / 3849 A / 3600 A         |
| Max. Total Harmonic Distortion <sup>(2)</sup>            | < 3% at full load                |
| Nominal AC Voltage                                       | 600 V                            |
| AC Power Frequency                                       | 50 / 60 Hz                       |
| Power Factor (depending on voltage)                      | 0 to 1 leading or lagging        |
| <b>Performance</b>                                       |                                  |
| Max. Efficiency <sup>(3)</sup>                           | 98.4%                            |
| CEC Efficiency   | 98%                              |
| Standby Loss <sup>(4)</sup>                              | < 350 W                          |
| <b>Protection</b>  |                                  |
| Input-side DC  | DC switch + fuses                |
| Output-side AC   | AC circuit breaker               |
| DC Overvoltage   | Surge arrester, class II         |
| AC Overvoltage   | Surge arrester, class II         |
| Ingress Protection                                       | Type 4X                          |
| Salt Tolerance   | C5H                              |
| <b>General</b>   |                                  |
| Dimensions (W x H x D)                                   | 4422 × 2224 × 1760 mm            |
| Weight   | 7000 kg                          |
| Power Module   | 4                                |
| <b>Environment</b>                                       |                                  |
| Operating Temperature                                    | -30°C to +60°C, de-rating > 50°C |
| Storage Temperature                                      | -40°C to +70°C                   |
| Relative Humidity  | 5 to 100% RH                     |
| Altitude   | < 3000 m, de-rating > 2000 m     |
| Acoustic Noise <sup>(5)</sup>                            | < 85 dB (A) @ 3 m                |
| Cooling  | Liquid cooling (integration)     |
| <b>Compliance</b>  |                                  |
| Safety   | UL 1741                          |
| EMC  | FCC class A                      |
| Grid Connection  | IEEE 1547                        |

\* This is a draft version and subject to change based on customer's final specification.

\* Specifications are subject to change without prior notice.

(1) Consult Delta for derating curves

(2)  $I_{thd}$  measured under grid short current ratio  $\geq 5$

(3) Efficiency measured without internal auxiliary power loss

(4) Standby loss measured under external power supply

(5) Readings taken 1 meter from the front of the unit



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