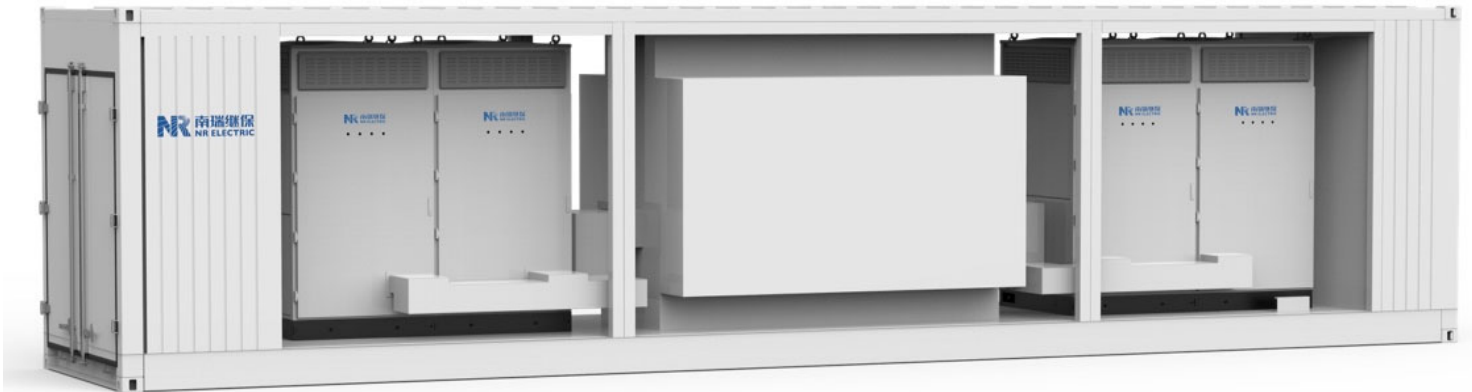




# PCS – 9567

## Integrated Medium Voltage Skid



### Designed for Grid Reliability and Resilience

- Full four-quadrant operation with bidirectional power conversion system
- State of the art three-level technology with max.conversion efficiency 99%.
- Full power operation at 1500V and wide DC voltage operation range.
- Suitable for most local standards and severe environmental conditions.
- Endured extensive quality, safety and reliability.

### Investment with Higher Returns

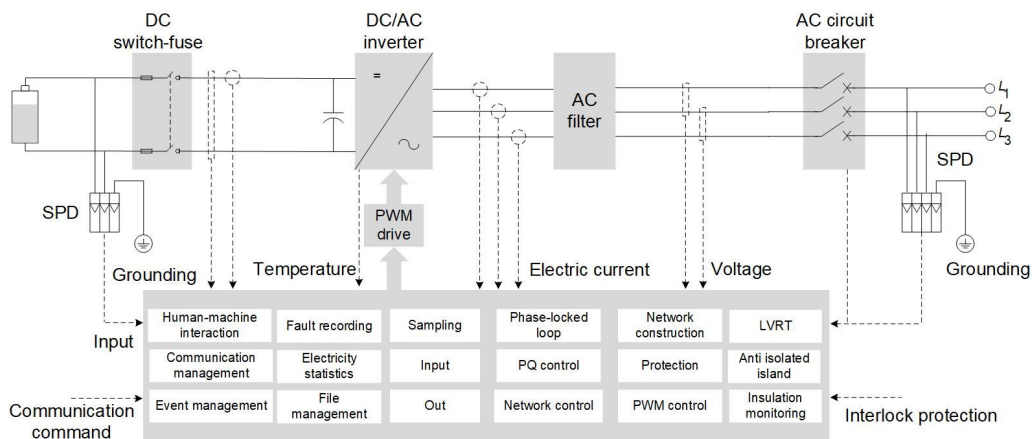
- Compressed construction lead-times through factory integrated solution.
- Reduced off-loading, on-site labor expense and transportation cost.
- Enhanced system reliability owing to reliable and qualified designs.

### Easy to Install and Service

- Fully monitored solution for online analysis and fast troubleshooting.
- Convenient modular design provides easy access to all components for maintenance purposes.
- 40 feet container for ease of shipment and installation worldwide.
- Pre-assembled solution, configured & tested to reduce on-site labor and project duration.

### Product Applications

- Typical applications - energy shifting, frequency regulation, peak shaving
- Grid forming control, reactive power control, L/HVRT, L/HFRT, soft start/stop, and specified power factor control.
- Compliant with CE, TUV, ISO, UL1741, IEC62477 and G99 etc.
- Multiple communication interfaces such as CAN, RS485 and Ethernet



| PCS SKID GENERAL                |                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------|
| Transformer                     |                                                                                                         |
| Transformer Model               | Oil type <sup>[1]</sup>                                                                                 |
| Transformer Vector              | Dy11-y11                                                                                                |
| Protection Level                | IP54 <sup>•</sup> / IP55 <sup>°</sup>                                                                   |
| Anti-corrosion Grade            | C4-H <sup>• [2]</sup> / C4-VH <sup>°</sup> / C5-M <sup>°</sup> / C5-H <sup>°</sup> / C5-VH <sup>°</sup> |
| Cooling Method                  | ONAN <sup>•</sup> / ONAF <sup>°</sup>                                                                   |
| Oil Retention Tank              | None <sup>•</sup> / Galvanized steel <sup>° [3]</sup>                                                   |
| Winding Material                | Aluminum <sup>•</sup> / Copper <sup>°</sup>                                                             |
| Transformer Oil                 | 25# /45# mineral oil <sup>•</sup> / Natural ester insulation oil <sup>°</sup>                           |
| Transformer Efficiency          | IEC standard <sup>•</sup> / IEC Tier-2 <sup>°</sup>                                                     |
| MV Operating Voltage Range (V)  | 6.6~33kV ± 10%                                                                                          |
| Power Factor Range              | 0.9 (Leading) ~ 0.9 (Lagging) <sup>[4]</sup>                                                            |
| Nominal Frequency (Hz)          | 50 / 60 Hz                                                                                              |
| Operating Frequency (Hz)        | 45~55 / 55~65 Hz                                                                                        |
| Connection Phases               | Three-phase-three-wire                                                                                  |
| Switchgear                      |                                                                                                         |
| Switchgear Type                 | Ring Main Unit, CCV <sup>[5]</sup>                                                                      |
| Rated Operating Current         | 630A                                                                                                    |
| Switchgear Short Circuit Rating | 20kA 1s                                                                                                 |
| Switchgear IAC                  | A FL 20kA 1S                                                                                            |
| Protection                      |                                                                                                         |
| DC Input Protection             | Disconnecter + Fuse inside of inverter                                                                  |
| AC Output Protection            | Motorized Circuit breaker inside of Inverter                                                            |
| DC Overvoltage Protection       | Surge arrester, type II <sup>•</sup> / I+II <sup>°</sup>                                                |
| AC Overvoltage Protection       | Surge arrester, type II <sup>•</sup> / I+II <sup>°</sup>                                                |
| Ground Fault Protection         | Insulation monitoring for DC side                                                                       |
| Transformer Protection          | Protection relay for pressure, temperature, gassing, dielectric level decrease with PT100               |
| Fire Extinguishing System       | Smoke detector sensor (dry contact)                                                                     |
| Communication Interface         |                                                                                                         |
| Communication Method            | CAN / RS485 / RJ45 / Optical fiber                                                                      |
| Supported Protocol              | CAN / Modbus / IEC60870-103 / IEC61850                                                                  |
| Ethernet Switch Qty             | One for standard <sup>[6]</sup>                                                                         |
| UPS                             | 1kVA for 15min <sup>•</sup> / 1h <sup>°</sup> / 2h <sup>°</sup>                                         |
| Skid General                    |                                                                                                         |
| Dimensions (W*H*D)(mm)          | 6058*2896*2438 mm (20ft) / 12192*2896*2438 mm (40ft)                                                    |
| Weight (kg)                     | 23000kg (20ft) / 32000kg (40ft)                                                                         |
| Protection Level                | IP54                                                                                                    |
| Operating Temperature (C)       | -35~60C, >45C derating                                                                                  |
| Storage Temperature (C)         | -40~70C                                                                                                 |

## Technical Parameters | NR MEDIUM VOLTAGE SKID DATASHEET

|                                        |                                                                      |
|----------------------------------------|----------------------------------------------------------------------|
| Maximum Altitude (above sea level) (m) | 6000, $\geq 3000$ derating <sup>[7]</sup>                            |
| Environment Humidity                   | 0~ 100% , No condensation                                            |
| Type of Ventilation                    | Nature air cooling <sup>●</sup> / Forced air cooling <sup>○</sup>    |
| Auxiliary Power Consumption (w)        | 25kVA                                                                |
| Certificate                            | IEC 62271-212, IEC 62271-200, IEC 60076, IEC 62477, IEC 6100, UL1741 |

### Notes:

● Standard ○ Optional

1). If dry transformer is required, please contact with NR for more information

2). Lower protection level will be covered by C4-H

3). Standard for no supply of oil retention tank. If required to be integrated with PCS skid, please contact with NR

4). Typical value without any derating condition

5). If other type of switchgear is required, please contact with NR for more information

6). If more ethernet switch is required, please contact with NR for more information

7). When altitude is between 3000~4000m, the system LV AV voltage shall be less than 600V; When altitude is between 4000~4500m, the system LV AC voltage shall be less than 550V; When altitude is between 4500~6000m, please contact with NR for more information.

| Type                             | PCS-9567-2000 (20ft)    |                      |                      |                      |                      |
|----------------------------------|-------------------------|----------------------|----------------------|----------------------|----------------------|
| DC Side                          |                         |                      |                      |                      |                      |
|                                  | PCS-9567TU-1000         | PCS-9567TU-1250      | PCS-9567TU-1375      | PCS-9567TU-1575      | PCS-9567TU-1750      |
| DC Input Voltage Range (V)       | 600~1500V               | 780~1500V            | 850~1500V            | 970~1500V            | 1050~1500V           |
| Max. DC input Current (A)        | 1833A*2                 |                      |                      |                      |                      |
| DC Voltage Ripple                | < 1%                    |                      |                      |                      |                      |
| DC Current Ripple                | < 3%                    |                      |                      |                      |                      |
| LV AC Side                       |                         |                      |                      |                      |                      |
|                                  | PCS-9567TU-1000         | PCS-9567TU-1250      | PCS-9567TU-1375      | PCS-9567TU-1575      | PCS-9567TU-1750      |
| LV Nominal Operating Voltage (V) | 400V                    | 500V                 | 550V                 | 630V                 | 690V                 |
| LV Operating Voltage Range (V)   | 360~440V                | 450~550V             | 500~600V             | 567~690V             | 630V~760V            |
| PCS Efficiency                   | 97.4% <sup>[1]</sup>    | 98.0% <sup>[1]</sup> | 98.1% <sup>[1]</sup> | 98.3% <sup>[1]</sup> | 98.5% <sup>[1]</sup> |
| Max. AC Output Current (A)       | 1588A*2                 |                      |                      |                      |                      |
| Total Harmonic Distortion Rate   | < 3%                    |                      |                      |                      |                      |
| Reactive Power Compensation      | Four quadrant operation |                      |                      |                      |                      |
| MV AC Side                       |                         |                      |                      |                      |                      |
| Nominal Output Power (kW)        | 2000kVA                 |                      |                      |                      |                      |
| Max. AC Power (kVA)              | 2200kVA                 |                      |                      |                      |                      |

| Type                             | PCS-9567-2500 (20ft)    |                      |                      |                      |
|----------------------------------|-------------------------|----------------------|----------------------|----------------------|
| DC Side                          |                         |                      |                      |                      |
|                                  | PCS-9567TU-1250         | PCS-9567TU-1375      | PCS-9567TU-1575      | PCS-9567TU-1750      |
| DC Input Voltage Range (V)       | 780~1500V               | 850~1500V            | 970~1500V            | 1050~1500V           |
| Max. DC input Current (A)        | 1833A*2                 |                      |                      |                      |
| DC Voltage Ripple                | < 1%                    |                      |                      |                      |
| DC Current Ripple                | < 3%                    |                      |                      |                      |
| LV AC Side                       |                         |                      |                      |                      |
|                                  | PCS-9567TU-1250         | PCS-9567TU-1375      | PCS-9567TU-1575      | PCS-9567TU-1750      |
| LV Nominal Operating Voltage (V) | 500V                    | 550V                 | 630V                 | 690V                 |
| LV Operating Voltage Range (V)   | 450~550V                | 500~600V             | 567~690V             | 630V~760V            |
| PCS Efficiency                   | 97.9% <sup>[1]</sup>    | 98.1% <sup>[1]</sup> | 98.3% <sup>[1]</sup> | 98.5% <sup>[1]</sup> |
| Max. AC Output Current (A)       | 1588A*2                 |                      |                      |                      |
| Total Harmonic Distortion Rate   | < 3%                    |                      |                      |                      |
| Reactive Power Compensation      | Four quadrant operation |                      |                      |                      |
| MV AC Side                       |                         |                      |                      |                      |
| Nominal Output Power (kW)        | 2500kVA                 |                      |                      |                      |
| Max. AC power (kVA)              | 2750kVA                 |                      |                      |                      |

**Notes:**

1). Typical discharge value for each PCS running at DC 1200V under IEC62933-2-1 environment condition

| Type                             | PCS-9567-2750 (20ft)    |                      |                      |
|----------------------------------|-------------------------|----------------------|----------------------|
| DC Side                          |                         |                      |                      |
|                                  | PCS-9567TU-1375         | PCS-9567TU-1575      | PCS-9567TU-1750      |
| DC Input Voltage Range (V)       | 850~1500V               | 970~1500V            | 1050~1500V           |
| Max. DC input Current (A)        | 1833A*2                 |                      |                      |
| DC Voltage Ripple                | < 1%                    |                      |                      |
| DC Current Ripple                | < 3%                    |                      |                      |
| LV AC Side                       |                         |                      |                      |
|                                  | PCS-9567TU-1375         | PCS-9567TU-1575      | PCS-9567TU-1750      |
| LV Nominal Operating Voltage (V) | 550V                    | 630V                 | 690V                 |
| LV Operating Voltage Range (V)   | 500~600V                | 567~690V             | 630V~760V            |
| PCS Efficiency                   | 98.0% <sup>[1]</sup>    | 98.2% <sup>[1]</sup> | 98.5% <sup>[1]</sup> |
| Max. AC Output Current (A)       | 1588A*2                 |                      |                      |
| Total Harmonic Distortion Rate   | < 3%                    |                      |                      |
| Reactive Power Compensation      | Four quadrant operation |                      |                      |
| MV AC Side                       |                         |                      |                      |
| Nominal Output Power (kW)        | 2750kVA                 |                      |                      |
| Max. AC power (kVA)              | 3025kVA                 |                      |                      |

| Type                             | PCS-9567-3150 (20ft)    |                      |
|----------------------------------|-------------------------|----------------------|
| DC Side                          |                         |                      |
|                                  | PCS-9567TU-1575         | PCS-9567TU-1750      |
| DC Input Voltage Range (V)       | 970~1500V               | 1050~1500V           |
| Max. DC input Current (A)        | 1833A*2                 |                      |
| DC Voltage Ripple                | < 1%                    |                      |
| DC Current Ripple                | < 3%                    |                      |
| LV AC Side                       |                         |                      |
|                                  | PCS-9567TU-1575         | PCS-9567TU-1750      |
| LV Nominal Operating Voltage (V) | 630V                    | 690V                 |
| LV Operating Voltage Range (V)   | 567~690V                | 630V~760V            |
| PCS Efficiency                   | 98.2% <sup>[1]</sup>    | 98.4% <sup>[1]</sup> |
| Max. AC Output Current (A)       | 1588A*2                 |                      |
| Total Harmonic Distortion Rate   | < 3%                    |                      |
| Reactive Power Compensation      | Four quadrant operation |                      |
| MV AC Side                       |                         |                      |
| Nominal Output Power (kW)        | 3150kVA                 |                      |
| Max. AC power (kVA)              | 3465kVA                 |                      |

**Notes:**

1). Typical discharge value for each PCS running at DC 1200V under IEC62933-2-1 environment condition

| Type                             | PCS-9567-3450 (20ft)    |
|----------------------------------|-------------------------|
| <b>DC Side</b>                   |                         |
|                                  | PCS-9567TU-1750         |
| DC Input Voltage Range (V)       | 1050~1500V              |
| Max. DC input Current (A)        | 1833A*2                 |
| DC Voltage Ripple                | < 1%                    |
| DC Current Ripple                | < 3%                    |
| <b>LV AC Side</b>                |                         |
|                                  | PCS-9567TU-1750         |
| LV Nominal Operating Voltage (V) | 690V                    |
| LV Operating Voltage Range (V)   | 630V~760V               |
| PCS Efficiency                   | 98.3% <sup>[1]</sup>    |
| Max. AC Output Current (A)       | 1588A*2                 |
| Total Harmonic Distortion Rate   | < 3%                    |
| Reactive Power Compensation      | Four quadrant operation |
| <b>MV AC Side</b>                |                         |
| Nominal Output Power (kW)        | 3450kVA                 |
| Max. AC power (kVA)              | 3795kVA                 |

| Type                             | PCS-9567-4000 (40ft)    |                      |                      |                      |                      |
|----------------------------------|-------------------------|----------------------|----------------------|----------------------|----------------------|
| DC Side                          |                         |                      |                      |                      |                      |
|                                  | PCS-9567TU-1000         | PCS-9567TU-1250      | PCS-9567TU-1375      | PCS-9567TU-1575      | PCS-9567TU-1750      |
| DC Input Voltage Range (V)       | 600~1500V               | 780~1500V            | 850~1500V            | 970~1500V            | 1050~1500V           |
| Max. DC input Current (A)        | 1833A*4                 |                      |                      |                      |                      |
| DC Voltage Ripple                | < 1%                    |                      |                      |                      |                      |
| DC Current Ripple                | < 3%                    |                      |                      |                      |                      |
| LV AC Side                       |                         |                      |                      |                      |                      |
|                                  | PCS-9567TU-1000         | PCS-9567TU-1250      | PCS-9567TU-1375      | PCS-9567TU-1575      | PCS-9567TU-1750      |
| LV Nominal Operating Voltage (V) | 400V                    | 500V                 | 550V                 | 630V                 | 690V                 |
| LV Operating Voltage Range (V)   | 360~440V                | 450~550V             | 500~600V             | 567~690V             | 630V~760V            |
| PCS Efficiency                   | 97.4% <sup>[1]</sup>    | 98.0% <sup>[1]</sup> | 98.1% <sup>[1]</sup> | 98.3% <sup>[1]</sup> | 98.5% <sup>[1]</sup> |
| Max. AC Output Current (A)       | 1588A*4                 |                      |                      |                      |                      |
| Total Harmonic Distortion Rate   | < 3%                    |                      |                      |                      |                      |
| Reactive Power Compensation      | Four quadrant operation |                      |                      |                      |                      |
| MV AC Side                       |                         |                      |                      |                      |                      |
| Nominal Output Power (kW)        | 4000kVA                 |                      |                      |                      |                      |
| Max. AC power (kVA)              | 4400kVA                 |                      |                      |                      |                      |

**Notes:**

1). Typical discharge value for each PCS running at DC 1200V under IEC62933-2-1 environment condition

| Type                             | PCS-9567-5000 (40ft)    |                      |                      |                      |
|----------------------------------|-------------------------|----------------------|----------------------|----------------------|
| DC Side                          |                         |                      |                      |                      |
|                                  | PCS-9567TU-1250         | PCS-9567TU-1375      | PCS-9567TU-1575      | PCS-9567TU-1750      |
| DC Input Voltage Range (V)       | 780~1500V               | 850~1500V            | 970~1500V            | 1050~1500V           |
| Max. DC input Current (A)        | 1833A*4                 |                      |                      |                      |
| DC Voltage Ripple                | < 1%                    |                      |                      |                      |
| DC Current Ripple                | < 3%                    |                      |                      |                      |
| LV AC Side                       |                         |                      |                      |                      |
|                                  | PCS-9567TU-1250         | PCS-9567TU-1375      | PCS-9567TU-1575      | PCS-9567TU-1750      |
| LV Nominal Operating Voltage (V) | 500V                    | 550V                 | 630V                 | 690V                 |
| LV Operating Voltage Range (V)   | 450~550V                | 500~600V             | 567~690V             | 630V~760V            |
| PCS Efficiency                   | 97.9% <sup>[1]</sup>    | 98.1% <sup>[1]</sup> | 98.3% <sup>[1]</sup> | 98.5% <sup>[1]</sup> |
| Max. AC Output Current (A)       | 1588A*4                 |                      |                      |                      |
| Total Harmonic Distortion Rate   | < 3%                    |                      |                      |                      |
| Reactive Power Compensation      | Four quadrant operation |                      |                      |                      |
| MV AC Side                       |                         |                      |                      |                      |
| Nominal Output Power (kW)        | 5000kVA                 |                      |                      |                      |
| Max. AC power (kVA)              | 5500kVA                 |                      |                      |                      |

| Type                             | PCS-9567-5500 (40ft)    |                      |                      |
|----------------------------------|-------------------------|----------------------|----------------------|
| DC Side                          |                         |                      |                      |
|                                  | PCS-9567TU-1375         | PCS-9567TU-1575      | PCS-9567TU-1750      |
| DC Input Voltage Range (V)       | 850~1500V               | 970~1500V            | 1050~1500V           |
| Max. DC input Current (A)        | 1833A*4                 |                      |                      |
| DC Voltage Ripple                | < 1%                    |                      |                      |
| DC Current Ripple                | < 3%                    |                      |                      |
| LV AC Side                       |                         |                      |                      |
|                                  | PCS-9567TU-1375         | PCS-9567TU-1575      | PCS-9567TU-1750      |
| LV Nominal Operating Voltage (V) | 550V                    | 630V                 | 690V                 |
| LV Operating Voltage Range (V)   | 500~600V                | 567~690V             | 630V~760V            |
| PCS Efficiency                   | 98.0% <sup>[1]</sup>    | 98.2% <sup>[1]</sup> | 98.5% <sup>[1]</sup> |
| Max. AC Output Current (A)       | 1588A*4                 |                      |                      |
| Total Harmonic Distortion Rate   | < 3%                    |                      |                      |
| Reactive Power Compensation      | Four quadrant operation |                      |                      |
| MV AC Side                       |                         |                      |                      |
| Nominal Output Power (kW)        | 5500kVA                 |                      |                      |
| Max. AC power (kVA)              | 6050kVA                 |                      |                      |

**Notes:**

1). Typical discharge value for each PCS running at DC 1200V under IEC62933-2-1 environment condition

| Type                             | PCS-9567-6300 (40ft)    |                      |
|----------------------------------|-------------------------|----------------------|
| DC Side                          |                         |                      |
|                                  | PCS-9567TU-1575         | PCS-9567TU-1750      |
| DC Input Voltage Range (V)       | 970~1500V               | 1050~1500V           |
| Max. DC input Current (A)        | 1833A*4                 |                      |
| DC Voltage Ripple                | < 1%                    |                      |
| DC Current Ripple                | < 3%                    |                      |
| LV AC Side                       |                         |                      |
|                                  | PCS-9567TU-1575         | PCS-9567TU-1750      |
| LV Nominal Operating Voltage (V) | 630V                    | 690V                 |
| LV Operating Voltage Range (V)   | 567~690V                | 630V~760V            |
| PCS Efficiency                   | 98.2% <sup>[1]</sup>    | 98.4% <sup>[1]</sup> |
| Max. AC Output Current (A)       | 1588A*4                 |                      |
| Total Harmonic Distortion Rate   | < 3%                    |                      |
| Reactive Power Compensation      | Four quadrant operation |                      |
| MV AC Side                       |                         |                      |
| Nominal Output Power (kW)        | 6300kVA                 |                      |
| Max. AC power (kVA)              | 6930kVA                 |                      |

| Type                             | PCS-9567-6900 (40ft)    |
|----------------------------------|-------------------------|
| DC Side                          |                         |
|                                  | PCS-9567TU-1750         |
| DC Input Voltage Range (V)       | 1050~1500V              |
| Max. DC input Current (A)        | 1833A*4                 |
| DC Voltage Ripple                | < 1%                    |
| DC Current Ripple                | < 3%                    |
| LV AC Side                       |                         |
|                                  | PCS-9567TU-1750         |
| LV Nominal Operating Voltage (V) | 690V                    |
| LV Operating Voltage Range (V)   | 630V~760V               |
| PCS Efficiency                   | 98.3% <sup>[1]</sup>    |
| Max. AC Output Current (A)       | 1588A*4                 |
| Total Harmonic Distortion Rate   | < 3%                    |
| Reactive Power Compensation      | Four quadrant operation |
| MV AC Side                       |                         |
| Nominal Output Power (kW)        | 6900kVA                 |
| Max. AC power (kVA)              | 7590kVA                 |

**Notes:**

1). Typical discharge value for each PCS running at DC 1200V under IEC62933-2-1 environment condition