PV Box ST 2040

Containerized plug and play power conversion system adapted to customer requirements and local standards up to 2MVA

The PV Box is a power conversion system. In a PV plant installation, it operates between DC field and AC MV grid connection point. The PV Box performs the DC power concentration, the DC/AC conversion, and the AC voltage elevation to the grid voltage level. The PV Box protects maintenance staff and the installation against electrical faults, such as short-circuit and lightning. The optimized versions of the PV Box reduce the balance-of-systems costs, increase reliability, and improve construction lead times.

Why choose PV Box ST 2040?

- **Higher return on investment**
  - Compressed construction lead-times through factory integrated solution
  - Reduced transportation, off-loading and on-site labor costs
  - Enhanced uptime thanks to qualified and reliable designs

- **Designed for reliability**
  - Industrialized solution according to Schneider Electric proven industrial processes
  - Equipment and integration made in Schneider Electric factories
  - Configurable to withstand severe weather conditions: continental, tropical, and desertic environments
  - Undergone extensive safety, quality, and reliability risk mitigation
  - Proven robust design through rigorous Custom Reliability Testing

- **Flexible**
  - Vast choice of power and AC medium voltage levels
  - Suitable for most environmental conditions and local standards
  - Configurable to be optimized for specific project needs

- **Easy to service**
  - Fully monitored solution
  - Convenient and safe enclosure design for maintenance purposes
  - Local Schneider Electric service and maintenance available in 100+ countries

- **Easy to install**
  - Standard 40 feet ISO certified container for ease of shipment worldwide
  - Solution delivered pre-assembled, configured and tested to reduce on-site labor and project duration

**Product applications**

- PV power plants centralized
- Commercial grid-tie centralized

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## Electrical specifications

<table>
<thead>
<tr>
<th>DC input</th>
<th>PV Box ST+ 1620</th>
<th>PV Box ST+ 1890</th>
<th>PV Box ST+ 2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage range, MPPT</td>
<td>440 - 885 V (at PF=1)</td>
<td>510 - 885 V (at PF=1)</td>
<td>550 - 885 V (at PF=1)</td>
</tr>
<tr>
<td>Max. input voltage, open circuit</td>
<td>1000 V</td>
<td>1000 V</td>
<td>1000 V</td>
</tr>
<tr>
<td>Max. DC current</td>
<td>3 x 1280 A</td>
<td>3 x 1280 A</td>
<td>3 x 1280 A</td>
</tr>
</tbody>
</table>

### AC output

<table>
<thead>
<tr>
<th>Nominal power</th>
<th>1620 kVA</th>
<th>1890 kVA</th>
<th>2040 kVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage</td>
<td>up to 36 kV</td>
<td>up to 36 kV</td>
<td>up to 36 kV</td>
</tr>
<tr>
<td>Frequency</td>
<td>50/60 Hz</td>
<td>50/60 Hz</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Power factor range (PQ dispatch)</td>
<td>0 to 1 leading and lagging</td>
<td>0 to 1 leading and lagging</td>
<td>0 to 1 leading and lagging</td>
</tr>
</tbody>
</table>

### Equipment

<table>
<thead>
<tr>
<th>Inverters</th>
<th>3 x XC 540</th>
<th>3 x XC 630</th>
<th>3 x XC 680</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC connection</td>
<td>3 x DC Box 6 input or 3 x DC Box 10 input (+/-)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transformer type</td>
<td>Schneider Electric Minera oil type ONAN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transformer losses</td>
<td>CDBk (according to EN 50464-1) or compliant with Ecodesign regulation (depending on geographies)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium voltage switchgear U&lt; 24 kV</td>
<td>Schneider Electric RM6 ring main unit type NE-DI with Sepam 10 protection relay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium voltage switchgear 24 kV &lt; U &lt; 36 kV</td>
<td>Schneider Electric Flusarc ring main unit type CB-C with Sepam 10 protection relay</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Optional content

- Monitoring and control: Conext Control™ (by Schneider Electric) monitoring cabinet with secured power supply
- Automatic progressive reconnection[2]: MV circuit breaker motorization, configurable timer
- Auxiliary nominal power transformer: 15 kVA / 400V
- DC input measurement: DC Box monitored
- Safety kit: Fire-extinguisher, insulated MV rod and gloves, insulating stool
- Service kit: Contacts on doors and smoke detector (available with Conext Control option)
- Service contract: Worldwide service team - consult your sales representative for service offer

### External operating conditions

#### Temperature

<table>
<thead>
<tr>
<th>Standard temperature range</th>
<th>-10°C / +45°C[3]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other temperature ranges</td>
<td>Desert (-10°C / +50°C)</td>
</tr>
</tbody>
</table>

#### Pollution

- Standard low polluted environment: G4 filters
- Option polluted environment (desert, urban...)[4]: Internal filter box (G4 and F9 filters, fans, speed drives)
- Option saline environment: C5 paint

#### Other conditions

- Max. relative humidity: 100%
- Max. altitude above sea level[5]: 2000 m
- Max. wind speed: 180 km / h
- Max. snow load: 250 kg / m²
- IP grade: LV / MV compartment: IP54

### General specifications

<table>
<thead>
<tr>
<th>Dimensions and weight</th>
<th>During transportation (H x W x D)</th>
<th>Assembled on site (H x W x D)</th>
<th>Weight approx. with standard content</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.90 x 2.44 x 12.19 m</td>
<td>2.90 x 3.38 (or 3.29) x 12.19 m</td>
<td>&lt; 26 tons</td>
</tr>
</tbody>
</table>

#### Material

- Basement: Light basement to be done on site for PV Box
- Walls and roof: Standard 40' ISO high cube container with insulating layer

#### Cooling

- LV and MV switchboard compartment[7]: Ensured by inverter fans
- Transformer compartment: Natural

### Regulatory approvals

- Electrical standards: IEC 62271-202, IEC 61439, IEC 62271-200, IEC 60076
- Internal arc classification (acc. to IEC 62271-202): IAC-A
- General ventilation filters standard: EN779:2012
- Building standards: Eurocodes

Specifications are subject to change without notice.