Cloud-connected solution for utility-scale renewable power

Conext SmartGen™ Power System

Global power conversion system for the next generation of PV and Energy Storage power plants connected to smart grids.

Solution at a glance

Introducing the Conext SmartGen Power System. A cloud-connected solution for utility scale renewable power with unmatched reliability, lower total cost of ownership and faster return on investment.

Key benefits:

- **Intelligent**: Advanced remote diagnostics to minimize downtime and lower service costs
- **Adaptable**: Ready for worldwide deployment; complies with local grid code requirements and your project needs
- **Longer service life**: Designed to withstand harsh environments with a 30 year service life, and created under the True Design for Service™ principles
- **Configurable**: Customized to order, delivered as an easy to assemble kit for simplified logistics or as a factory integrated skid to limit on-site labor
- **Proven and trusted worldwide**: Quality control and commissioning checks leveraging extensive experience in utility scale power conversion stations.

Solar power has entered a new era

As power and communication technologies evolved, we saw the potential for power equipment and control systems to communicate, and for intelligent systems enable remote diagnostics and data analytics.

The Conext SmartGen Power System is a medium voltage power conversion substation delivering up to 4.8 MVA of solar power. It features two Conext SmartGeninverters, medium voltage transformer(s) and protection equipment. Cloud-connection and data collection enable remote diagnostics and servicing, as well as predictive maintenance.
North American version up to 4.8 MVA
Conext SmartGen Power System

1500V power conversion station designed for optimal performance in any environment

- Option for factory-assembled skid, or modular kit version
- Ready for PV Power Plant and Energy Storage applications
- One or two Conext SmartGen inverters per SmartGen Power System (SPS)
- Complete outdoor solution designed and tested for the harshest environments
- Compliant with NFPA 70: NEC 2014 Edition
- Built entirely from Schneider Electric components

LV/MV Transformer
- Pad-mounted transformer including MV protection and disconnect
- High-efficiency
- Natural cooling to avoid auxiliary power consumption
- Biodegradable FR3 oil optional

Auxiliary Panel
- Supplies auxiliary power to SPS equipment

Conext SmartGen Inverter
- Integrated DC combiner with optional disconnects
- Integrated auxiliary power distribution
- Integrated communications hub

AC Connection
- Above ground, side AC bus connection
- Flexible conductors for easy connection

Slab
- **Skid version:** optimized slab prefabricated in our factory
- **Kit version:** concrete platform built-on-site
IEC version up to 4.8 MVA
Conext SmartGen Power System

1500V power conversion station designed for optimal performance in any environment

- Option for factory-assembled skid, or modular kit version
- Ready for PV Power Plant and Energy Storage applications
- One or two Conext SmartGen inverters per SmartGen Power System (SPS)
- Complete outdoor solution designed and tested for the harshest environments
- Designed and tested to meet EN 50532 / IEC 62271-212, including IAC-A arc flash
- Built entirely from Schneider Electric components

LV/MV Transformer
- High-efficiency
- Natural cooling to avoid auxiliary power consumption
- Optional retention tank

AC Connection
- Above ground, side AC bus connection
- Flexible conductors for easy connection

Conext SmartGen Inverter
- Integrated DC combiner
- Integrated auxiliary power distribution
- Integrated communications hub

Slab
- Kit version: concrete platform built-on-site

MV compartment
- Multiple configurations available (voltage, number of functions, etc.)
- Cubicle designed to withstand harsh environmental conditions
- Optional motorization for automatic progressive reconnection and remote control
- Supplies auxiliary power to SPS equipment
Skid and kit versions
Conext SmartGen Power System

The Conext SmartGen Power System is available in skid and kit versions, both offering:

- Validation by Schneider Electric before commissioning
- All-inclusive warranty
- Single contract for the full solution
- Simple and fast installation
- Quality and reliability of components

Skid version
Equipment is installed on the slab, connected, factory-tested and shipped to the site.

- Plug and play system
- Assembled and tested in a factory environment
- Delivered as a single piece on site
- Minimal civil works and installation

<table>
<thead>
<tr>
<th>Your Needs</th>
<th>Our Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Simplify logistics flow at site</td>
<td>• Plug and play system</td>
</tr>
<tr>
<td>• Minimize site manpower</td>
<td>• Assembled and tested in a factory environment</td>
</tr>
<tr>
<td>• Limit the impact of adverse weather conditions on the installation timelines</td>
<td>• Delivered as a single piece on site</td>
</tr>
<tr>
<td>• Reduce amount of verification and testing at site</td>
<td>• Minimal civil works and installation</td>
</tr>
</tbody>
</table>

Kit version
Equipment, power connections, auxiliary and communication harnesses and all accessories are shipped to the site for assembly.

- Equipment and cables delivered to your site
- Simple guidelines for civil work and installation provided
- Limited weight of individual components
- Easy to connect wiring harnesses for auxiliary power and communications
- All wiring accessories and earthing system included
- Final check and validation by Schneider Electric

<table>
<thead>
<tr>
<th>Your Needs</th>
<th>Our Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ship everywhere even to sites with difficult access</td>
<td>• Equipment and cables delivered to your site</td>
</tr>
<tr>
<td>• Avoid building heavy-duty roads at site</td>
<td>• Simple guidelines for civil work and installation provided</td>
</tr>
<tr>
<td>• Use light lifting equipment</td>
<td>• Limited weight of individual components</td>
</tr>
<tr>
<td>• Meet aggressive delivery lead time to the site</td>
<td>• Easy to connect wiring harnesses for auxiliary power and communications</td>
</tr>
<tr>
<td></td>
<td>• All wiring accessories and earthing system included</td>
</tr>
<tr>
<td></td>
<td>• Final check and validation by Schneider Electric</td>
</tr>
</tbody>
</table>

Your Needs Our Solution

Inverter
Transformer(s) and MV protections
Inverter
Kit version: fast installation on site
Conext SmartGen Power System

Installation is simple, fast, and reliable for any installer:

1. Follow our simple guidelines and drawings for civil work and installation
2. Prepare the foundation based on our recommendations
3. All components are delivered directly to your PV power plant site
4. Unload using light load equipment (<5 tons)
5. Fasten equipment in the correct location with the template provided
6. Install the auxiliary power and communication wiring harnesses
7. Install the power connection kits provided
8. Test the connections based on our procedures
9. Schneider Electric checks and validates your installation at the time of commissioning

Proven in full scale conditions
• Installation time: 5 to 8 hours
• Effort: 12 to 20 man hours

1 All equipment is less than 6 tons except 4MVA transformer in North American version
Lower LCOE, higher availability
Conext SmartGen Power System

Improving the levelized cost of electricity (LCOE) of solar power

- 30-year service life to help reduce the total cost per MWh
- Optimized maintenance schedule with robust, durable component selection
- 3-year interval for basic preventive maintenance
- Cloud connected: Cloud-based data collection and analytics for enhanced remote service, technical support, and predictive maintenance services.
- Improved total cost of ownership combining the benefits of a 30-year service life and a 3-year interval for basic preventative maintenance, and digital service support tools for greater efficiency

Increasing system availability

- Reduce downtime with condition-based maintenance services and advanced remote diagnostics
- Faster time to repair: 1-hour component replacement time on average, including lockout-tagout (LOTO)
- Locally or remotely, service personnel can view the inverter’s status, logs and alerts

Deploy anywhere

- A global platform, meeting North American (UL) and International (IEC) safety and EMC standards.
- Compliant with all major electrical codes and grid interconnection standards
- Proven capabilities in a broad range of voltage, frequency and ride-through events
- Operating temperature range from -25°C to +60°C (consult us for lower temperature limits)
- Designed and tested to withstand extreme humidity, pressurized water, dust, salt fog and seismic conditions.

Designed for quality, leveraging over 2 decades of experience in solar power conversion

Worldwide compliance

Desert
Coastal
Continental
Tropical
The Conext SmartGen is at the center of Schneider Electric’s Power EcoSystem—a suite of integrated applications that provides remote control, visibility and analytics for owners, operators and service staff. In addition to the Conext SmartGen, our full ecosystem of products and solutions work together to secure your return on investment.

**Power Plant Controller:** Ensures that requests and compliance requirements from the utility are met

**Conext™ Advisor 2:** Web-based software for control-room administration and performance management of PV power plants

**Cloud Data Collection:** Cloud-based data collection and analytics for enhanced remote service, technical support, and predictive maintenance services.

**Conext Viewer:** Configuration and service software, including diagnostics, troubleshooting tools, and contextualized help
# Product specifications

Conext SmartGen Power System

## Electrical specifications

<table>
<thead>
<tr>
<th></th>
<th>North American Power System</th>
<th>IEC Power System</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AC Output</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal output power</td>
<td>Up to 4400kVA</td>
<td>Up to 4400kVA</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>Up to 38 kV (consult us for higher voltage)</td>
<td>Up to 36 kV (consult us for higher voltage)</td>
</tr>
<tr>
<td>Nominal frequency</td>
<td>60 Hz</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td><strong>DC Input</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. input voltage, open circuit</td>
<td>1500 V</td>
<td>1500 V</td>
</tr>
<tr>
<td>Number of inputs PV</td>
<td>Up to 2 x 14 x 400A</td>
<td>Up to 2 x 14 x 400A</td>
</tr>
</tbody>
</table>

## General specifications

<table>
<thead>
<tr>
<th></th>
<th>North American Power System</th>
<th>IEC Power System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>37 feet</td>
<td>14 meters</td>
</tr>
<tr>
<td>Width</td>
<td>10 feet 6 inches</td>
<td>2.28 meters</td>
</tr>
<tr>
<td>Height</td>
<td>7.5 feet above the slab</td>
<td>2.66 meters</td>
</tr>
<tr>
<td>Weight (metric tons)</td>
<td>&lt; 17 (Kit), &lt;33 (Skid)</td>
<td>&lt; 18.5 (Kit)</td>
</tr>
</tbody>
</table>

## External operating conditions

<table>
<thead>
<tr>
<th></th>
<th>North American Power System</th>
<th>IEC Power System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>-25°C to +60°C (consult us for lower temperature limits)</td>
<td>-25°C to +60°C (consult us for lower temperature limits)</td>
</tr>
<tr>
<td>Other conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. relative humidity</td>
<td>5% to 100% condensing</td>
<td>5% to 100% condensing</td>
</tr>
<tr>
<td>Max. altitude above sea level</td>
<td>up to 4000 meters with derating</td>
<td>up to 4000 meters with derating</td>
</tr>
<tr>
<td>Max. wind speed</td>
<td>150mph</td>
<td>50m/s, 66m/s (optional)</td>
</tr>
<tr>
<td>Max. snow load</td>
<td>0.35 lb/in²</td>
<td>250kg/m²</td>
</tr>
</tbody>
</table>

## Main electrical components

<table>
<thead>
<tr>
<th></th>
<th>North American Power System</th>
<th>IEC Power System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inverter</td>
<td>1 or 2 Conext SmartGen</td>
<td>1 or 2 Conext SmartGen</td>
</tr>
<tr>
<td>Type</td>
<td>CS1666, CS1800, CS2000, CS2200, CS2400</td>
<td>CS1800, CS2000, CS2200, CS2400</td>
</tr>
<tr>
<td>Transformer</td>
<td>1 LV/MV Schneider Electric Transformer</td>
<td>1 or 2 LV/MV Schneider Electric transformers</td>
</tr>
<tr>
<td>Type</td>
<td>Oil immersed, hermetically sealed, padmounted</td>
<td>Oil immersed, hermetically sealed</td>
</tr>
<tr>
<td>Main standards</td>
<td>IEEE C57.12 series</td>
<td>IEC 60076 series, EN 50588 in the European Union</td>
</tr>
<tr>
<td>Cooling</td>
<td>ONAN</td>
<td>ONAN</td>
</tr>
<tr>
<td>Vector group</td>
<td>Dy11 (consult us for other)</td>
<td>Dy11 (consult us for other)</td>
</tr>
<tr>
<td>Oil containment tank</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>MV protection</td>
<td>Fuses and disconnect switch integrated in the transformer</td>
<td>1 MV Switchgear</td>
</tr>
<tr>
<td>Type</td>
<td>--</td>
<td>Gas insulated switchgear</td>
</tr>
<tr>
<td>Main standards</td>
<td>--</td>
<td>IEC 62271 series</td>
</tr>
<tr>
<td>Possible configurations</td>
<td>--</td>
<td>2 functions (circuit breaker + incoming/outgoing connection)</td>
</tr>
<tr>
<td>Protection relay</td>
<td>--</td>
<td>3 functions (switch - circuit breaker - switch)</td>
</tr>
<tr>
<td>Circuit Breaker Motorization &amp; Automatic Progressive Reconnection</td>
<td>--</td>
<td>Optional</td>
</tr>
</tbody>
</table>

## Main options

<table>
<thead>
<tr>
<th></th>
<th>North American Power System</th>
<th>IEC Power System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary power supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary power supply for trackers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulatory approval</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical standards</td>
<td>NEC 2014</td>
<td></td>
</tr>
<tr>
<td>Internal arc classification (acc. to IEC62271-202)</td>
<td>--</td>
<td>IAC-A (20kA 1s)</td>
</tr>
<tr>
<td>Seism</td>
<td>Up to UBC Seismic Zone 4 / IEEE 693-2005 (high level optional)</td>
<td></td>
</tr>
</tbody>
</table>

Typical, may vary depending on configuration

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