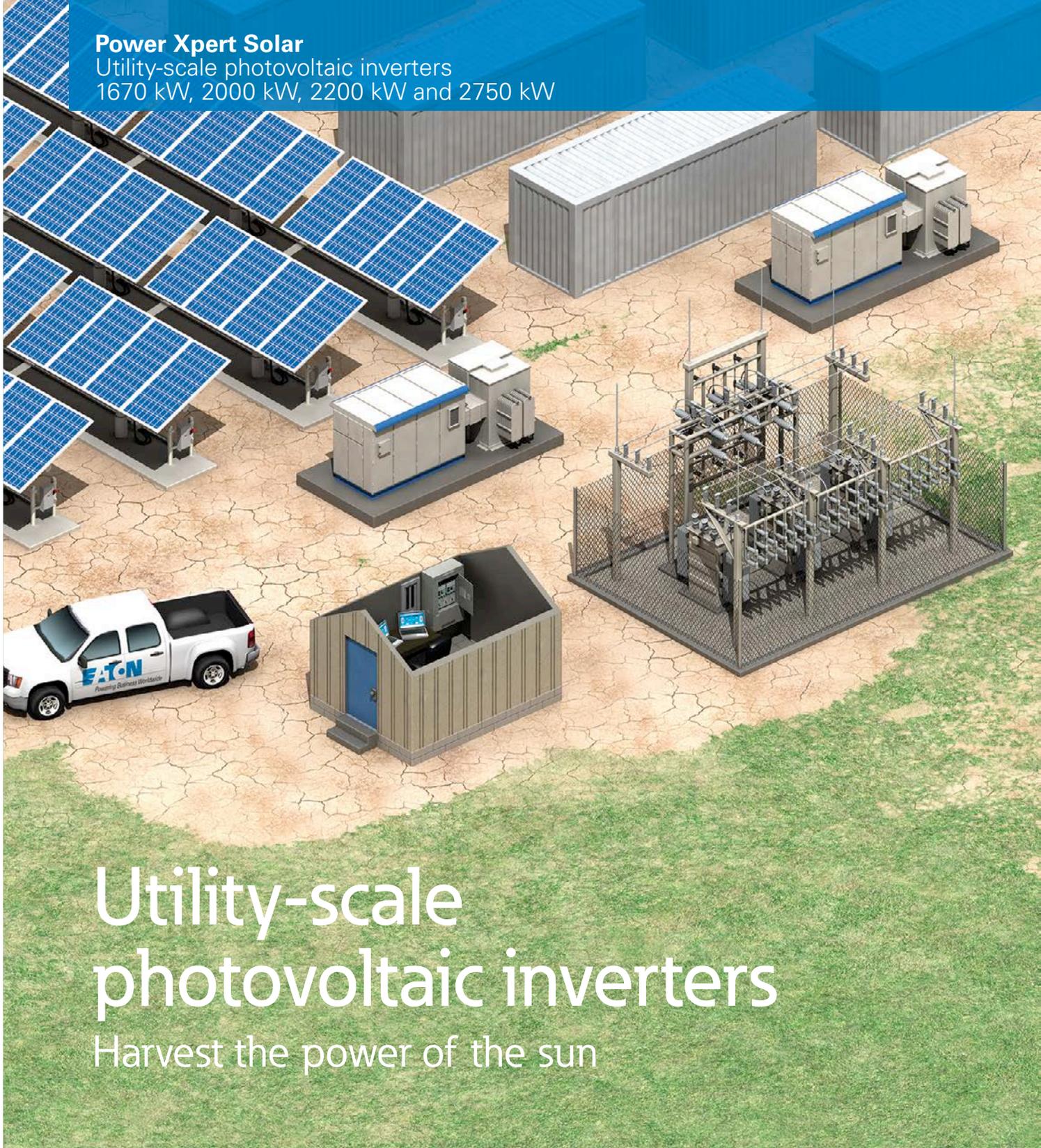


Power Xpert Solar
Utility-scale photovoltaic inverters
1670 kW, 2000 kW, 2200 kW and 2750 kW



Utility-scale photovoltaic inverters

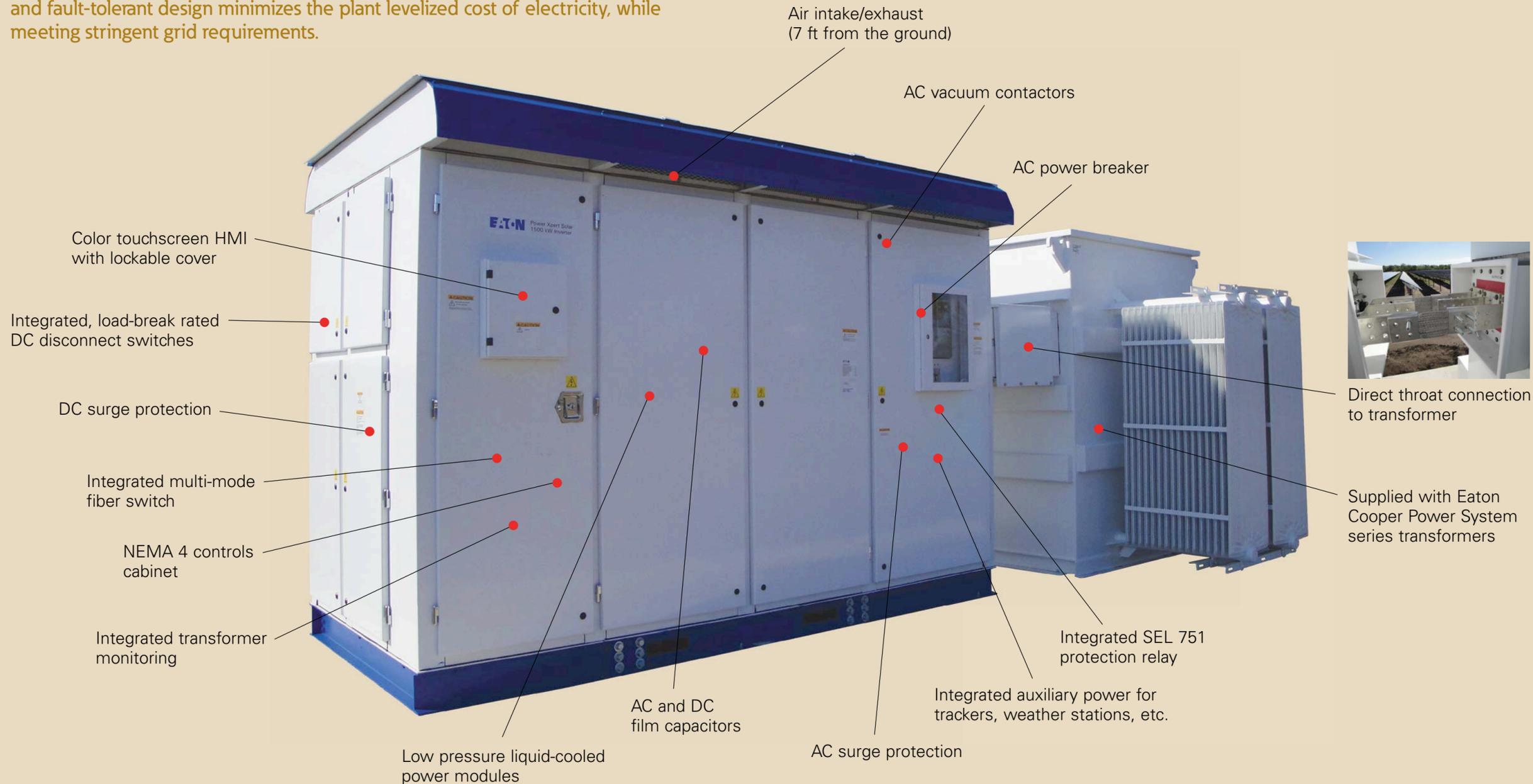
Harvest the power of the sun

EATON

Powering Business Worldwide

High-performance for utility-scale photovoltaic inverters

Eaton's Power Xpert® Solar 1670 kW, 2000 kW, 2200 kW and 2750 kW inverters offer some of the highest kW ratings in the utility-scale class. A reliable, efficient and fault-tolerant design minimizes the plant levelized cost of electricity, while meeting stringent grid requirements.



Features

Highly reliable and available

The Power Xpert Solar has a fault-tolerant design, allowing for maximum energy harvest. Fault tolerance is achieved by a segmented inverter design with multiple inverter stacks. Each stack can be independently isolated so that the system can run at partial power in the case of a fault.

Specifically designed to lower the levelized cost of electricity (LCOE), the inverters reduce installation and upfront costs while boosting plant reliability and minimizing maintenance expenses.

Grid management features

The Power Xpert Solar ensures that stringent grid inter-connection requirements are achieved. Proprietary control algorithms allow for true zero voltage ride-through and compliance of the following grid requirements:

- Low and high voltage ride-through (LVRT and HVRT)
- Frequency ride-through (FRT)
- Islanding detection
- Power ramp control
- Voltage control—var support during grid disturbances

Energy harvest maximization with a 98.5% CEC weighted efficiency

A proprietary control strategy coupled with an optimized filter design yields a CEC efficiency level of 98.5%, which also accounts for all auxiliary losses in the inverter. A wide MPPT voltage range maximizes inverter operation time. It boosts energy harvest and ensures that the unit will not trip under high irradiance and cold weather conditions, especially in installations designed with a high DC/AC ratio.

Configurable interface

A configurable interface enables easy communications and control of the inverter. Communication links to the system supervisory controller give the capability to receive instructions and send data.

Rugged construction

The enclosure is designed to achieve a seismic rating of High as per IEEE 693-2005 and is outdoor rated. Liquid cooling provides excellent thermal performance without needing greenhouse gas producing refrigerants.

Minimizes installation cost

A large power block inverter reduces the pieces of equipment that need to be installed, field wiring, and transportation and handling costs. Power Xpert Solar enables "skid-less" inverter stations. Through a close-coupled connection to the step-up transformer, several benefits are realized such as smaller pad sizes, dramatic weight reduction and easier inverter placement.



Direct throat connection to transformer



Inverter specifications

Description	Rating (kW)				
	1670	2000	2000+	2200	2750 (preliminary)
AC output specifications					
Nominal AC apparent power at 50 °C	1831 kVA	2000 kVA	2200 kVA	2200 kVA	2750 kVA
Rated output power AC at 50 °C	1666 kW	2000 kW	2000 kW	2200 kW	2750 kVA
Nominal AC output current	2707 A	3000 A	3000 A	3000 A	3000 A
Nominal AC operating voltage	356 Vac	384 Vac	423 Vac	423 Vac	580 Vac
Operating voltage range	±10%	±10%	±10%	±10%	±10%
Nominal operating frequency	60 Hz	60 Hz	60 Hz	60 Hz	60 Hz
Total harmonic distortion at rated power	Per IEEE 1547	Per IEEE 1547	Per IEEE 1547	Per IEEE 1547	Per IEEE 1547
Power factor at rated power	±0.91	1.0	±0.91	1.0	1.0
Power factor range	Adjustable ±0.91	Adjustable 0 to 1.0 leading or lagging			
AC configuration	Delta or wye ungrounded				
DC input specifications					
DC input configuration	Customer-specified fuse arrangement (16–24 inputs) ①	Customer-specified fuse arrangement (16–24 inputs)			
Available fuse ratings	160 A, 200 A, 250 A, 315 A, 350 A, 355 A and 400 A ①	160 A, 200 A, 250 A, 315 A, 355 A and 400 A	160 A, 200 A, 250 A, 315 A, 355 A and 400 A	160 A, 200 A, 250 A, 315 A, 355 A and 400 A	160 A, 200 A, 250 A, 315 A, 355 A and 400 A
Maximum input open circuit voltage (VOC)	1000 Vdc	1000 Vdc	1000 Vdc	1000 Vdc	1500 Vdc
MPPT DC voltage range (full power production)	550–1000 Vdc	550–1000 Vdc	605–1000 Vdc	605–1000 Vdc	825–1300 Vdc
MPPT DC voltage range (for CEC weighted efficiency)	550–800 Vdc	550–800 Vdc	605–800 Vdc	605–800 Vdc	825–1100 Vdc
Maximum DC operating current	3100 Adc	3700 Adc	3700 Adc	3700 Adc	3700 Adc
PV array grounding	Negative or positive (optional)				
DC zone monitoring	Optional current sensors on each DC input				
DC disconnect interrupt rating	5600 Adc	5600 Adc	5600 Adc	5600 Adc	5600 Adc
Maximum DC array short-circuit current	4480 Adc	4480 Adc	4480 Adc	4480 Adc	4480 Adc
Efficiency and losses					
CEC weighted efficiency	98.5%	98.5% (estimated)	98.5% (estimated)	98.5% (estimated)	98.5% (estimated)
Maximum inverter efficiency	98.7%	98.7% (estimated)	98.7% (estimated)	98.7% (estimated)	98.7% (estimated)
Night time power consumption	335 W	335 W (estimated)	335 W (estimated)	335 W (estimated)	335 W (estimated)
Protection					
AC disconnect	AC circuit breaker				
AC surge suppression	Yes—monitored by inverter SCADA				
DC disconnects	Load break DC switch disconnects				
DC surge suppression	Yes—monitored by inverter SCADA				
Ground fault monitoring	Yes—monitored by inverter SCADA				
Communications and controls					
Communications with plant central controller	Modbus® TCP (integral gateway with copper and fiber connections)				
Power metering	Optional power metering device installed within the step-up transformer				
HMI	Local control and read-write parameters available (password protected for control and write parameters)				

① 400 A limited to 19 inputs.

Inverter specifications (continued)

Description	Rating (kW)				
	1670	2000	2000+	2200	2750 (preliminary)
Mechanical specifications					
Operating temperature range full power	-20 °C to +50 °C	-20 °C to +50 °C	-20 °C to +50 °C	-20 °C to +50 °C	-20 °C to +50 °C
Optional extended temperature range (cold weather package)	-40 °C to +50 °C	-40 °C to +50 °C	-40 °C to +50 °C	-40 °C to +50 °C	-40 °C to +50 °C
Storage temperature range	-30 °C to +70 °C	-30 °C to +70 °C	-30 °C to +70 °C	-30 °C to +70 °C	-30 °C to +70 °C
Enclosure protection	NEMA® 4 for controls equipment—NEMA® 3R overall				
Installation	Outdoor	Outdoor	Outdoor	Outdoor	Outdoor
Inverter mounting	Pad or skid mount	Pad or skid mount	Pad or skid mount	Pad or skid mount	Pad or skid mount
Enclosure construction	Powder-coated cold-rolled steel with corrosion-resistant hardware and fittings				
Relative humidity	0–100% condensing				
Cooling	Independent self-contained closed-loop liquid cooling and forced air convection				
Maximum operating altitude	3300 ft (1000 m) (higher altitudes possible with de-rating)				
Inverter dimensions (inches)	92.30 H x 130.80 W x 61.10 D				
Inverter dimensions (mm)	2344.4 H x 3322.3 W x 1552.0 D				
Inverter weight	12,700 lb (5773 kg)				
Seismic qualification level	High (per IEEE 693-2005)				
Standards and compliance					
Safety	Certified to UL® 1741 and CSA C22.2 No. 107.1	UL and CSA certifications pending			
Design features					
Grid management features	<ul style="list-style-type: none"> • Low voltage ride-through (LVRT) • High voltage ride-through (HVRT) • Frequency ride-through (FRT) • Reactive power support • Ramp control • Grid management features adjustable to meet FERC, WECC and ERCOT requirements 				

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