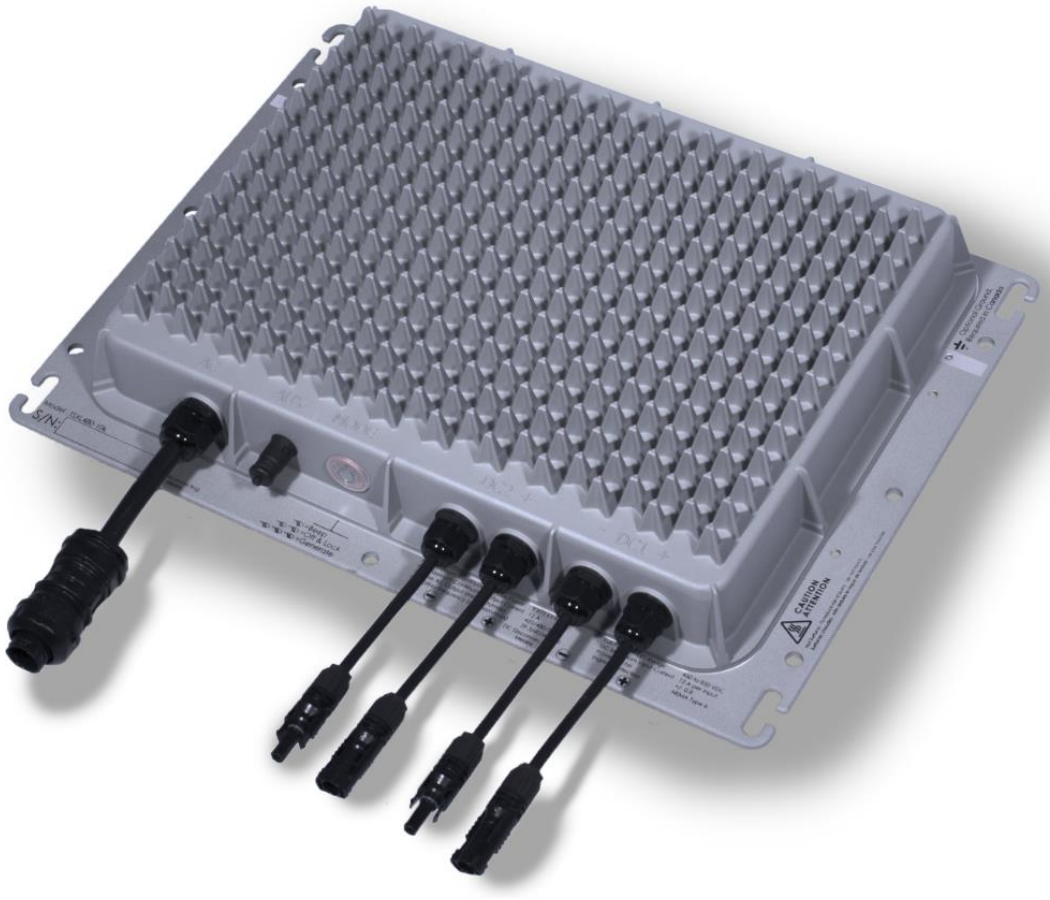
HiQ Solar TrueString XL 480V Energy Storage Inverter TSXL480-10k-ES-D specifications



Features

- Rugged 3-phase 480V fully bi-directional inverter system
- Small and light (hand holdable, 30.6 lb.)
- Non-isolated inverter for use with ungrounded DC systems
- Peak 98.2% efficiency, CEC efficiency of 97.5%
- 450-850V full power DC ports input/output voltage range
- 10 kW AC input/output power
- DC and AC ports equipped with independent monitoring and power management for Energy Storage
- Waterproof NEMA6, silent convection cooling
- Designed for high reliability, uses no electrolytic capacitors
- Wide temperature range, -40 to +65°C
- Grid Support Utility-Interactive; UL1741SA Listed; UL Certified

Applications

- **AC Battery Energy Storage Solutions** - Certified for use with Avalon Flow Battery energy storage technology—however pending certification approval—inverter hardware is capable of being used with other battery chemistries.
- **Front of the Meter (FTM) Applications** - For Utility Grid Services. Including Peak Shaving, Frequency Response, Capacity Firming, Active power Control, Renewable Integration Ramp Rates and Spinning Reserves,
- **Behind the Meter (BTM) Applications** -For Commercial and Industrial Demand Charge Reduction.

DC ports (two identical inputs/outputs)	
DC maximum voltage	1,000 VDC
DC voltage range, full power, per DC port	450-850 VDC
DC maximum current, per DC port	12 A each, 24 A total
DC maximum source short circuit current, per DC port	30 A each, 60 A total
AC port	
AC maximum continuous total input/output power to +40 °C	9.975 kW
AC de-rate with temperature, +40 to +65 °C	-175 W/ °C
AC nominal input/output current, per phase	12 A
AC maximum continuous input/output current, per phase	12 A
AC maximum branch circuit overcurrent protection	80 A
AC synchronization in-rush current	0 A
Maximum output fault current and duration	12A, <0.1ms
AC minimum wire gauge for grid connection	14 AWG
AC 3-phase system compatibility	480V WYE, 3 phases, neutral and ground
AC voltage range[1], phase to phase (min / nominal / max)	422 / 480 / 528 V (Limits adjustable, see below)
AC voltage range[1], phase to neutral (min / nominal / max)	244 / 277 / 305 V (Limits adjustable, see below)
AC output frequency range[1] (min / nominal / max)	58.5 / 60 / 62 Hz (Limits adjustable, see below)
AC reconnect time delay[1] (min/default/max)	1 / 300 / 1000 s
Power Factor	≥0.99 (settable from 0.8 leading to 0.8 lagging) See P-Q Curves in manual.
AC disconnect means	The AC connector has been evaluated and approved by UL for use as the load-break disconnect required by the NEC[2]
Other Specifications	
Peak efficiency	98.2 %
CEC efficiency	97.5 %
AC Voltage Trip Limit Accuracy	±2.7 V
Frequency Trip Limit Accuracy	0.05 Hz
Trip Time Accuracy	±34 ms or 1%
Dimensions	515 x 378 x 86 mm (20.25" x 14.9" x 3.4")
Weight	13.6 kg (30.6 lb.)
Operating temperature range	-40 to +65 °C (-40 to 150 °F)
Power consumption standby/ night	<8.3 W
Cooling	Natural convection, no fan
Communication	Powerline or Modbus/RS485
Environmental rating	Outdoor / rooftop, NEMA type 6
Certification, inverter	CA Rule 21 (UL1741-SA), UL1741/IEEE1547, CAN/CSA C22.2 NO. 107.1, FCC Part 15 Part A

Note 1: These parameters can be adjusted as required by the Utility, see following page for ranges.

Note 2: NEC section 690.17, allowed by the exception of meeting requirements specified in 690.33

Operating Parameter	Condition	Unit	Default	Min	Max
AC Voltage, Ride Through	High, Region 2	Voltage (Vrms, L-N)	332.4	332.4	360.1
		Time (seconds)	0.16	-	-
	High, Region 1	Voltage (Vrms, L-N)	304.7	304.7	332.4
		Time (seconds)	13	1	13
	Low, Region 1	Voltage (Vrms, L-N)	243.8	193.9	243.8
		Time (seconds)	21	2	21
	Low, Region 2	Voltage (Vrms, L-N)	193.9	138.5	193.9
		Time (seconds)	11	2	11
	Low, Region 3	Voltage (Vrms, L-N)	138.5	83.1	138.5
		Time (seconds)	1.5	0.16	5
Frequency, Ride Through	High, Region 2	Frequency (Hz)	62	62	64
		Time (seconds)	0.16	0.16	1000
	High, Region 1	Frequency (Hz)	62	60.1	62
		Time (seconds)	300	0.18	1020
	Low, Region 1	Frequency (Hz)	58.5	57	59.9
		Time (seconds)	300	0.18	1020
	Low, Region 2	Frequency (Hz)	57	53	57
		Time (seconds)	0.16	0.16	1000
Ramp Rate	Soft Start Ramp Rate	% Inominal/second	100	0.1	100
	Normal Ramp Rate	% Inominal/second	100	0.1	100
Volt/VAR	Inflection Point 4	Voltage (Vrms, L-N)	332.4	304.7	332.4
		VAR	-1000	-6000	0
	Inflection Point 3	Voltage (Vrms, L-N)	290.9	277	304.7
		VAR	0	0	0
	Inflection Point 2	Voltage (Vrms, L-N)	263.2	249.3	277
		VAR	0	0	0
	Inflection Point 1	Voltage (Vrms, L-N)	221.6	193.9	249.3
		VAR	1000	0	6000
	Specified Reactive Power	VAR	0	0	6000
	Response Time	Time (seconds)	1	0.25	1000
Frequency/Watt	High/Low Frequency Deadband	Frequency (Hz)	0.036	0.017	1
	High/Low Frequency Scaling Factor	-	0.05	0.03	0.05
	Response Time	Time (seconds)	5	1	10
Volt/Watt	V/W Starting Voltage	Voltage (Vrms, L-N)	290.9	290.9	301.9
	V/W Ending Voltage	Voltage (Vrms, L-N)	304.7	293.6	304.7
	Power Limit	Watts	2000	0	10000
	Response Time	Time (seconds)	10	0.5	60