

ST2752UX-US

Liquid Cooling Energy Storage System



LOW COSTS

- Highly integrated ESS for easy transportation and O&M
- All pre-assembled, no battery module handling on site
- 8 hour installation to commission, drop on a pad and make electrical connections



SAFE AND RELIABLE

- Integrated DC/DC converters actively limit fault current
- DC electric circuit safety management includes fast breaking and anti-arc protection
- Multi level battery protection layers formed by discreet standalone systems offer impeccable safety



EFFICIENT AND FLEXIBLE

- Intelligent liquid cooling ensures higher efficiency and longer battery cycle life
- Modular design supports parallel connection and easy system expansion
- IP54 outdoor cabinet and optional C5 anti-corrosion



SMART AND ROBUST

- Fast state monitoring and faults record enables pre-alarm and faults location
- Integrated battery performance monitoring and logging

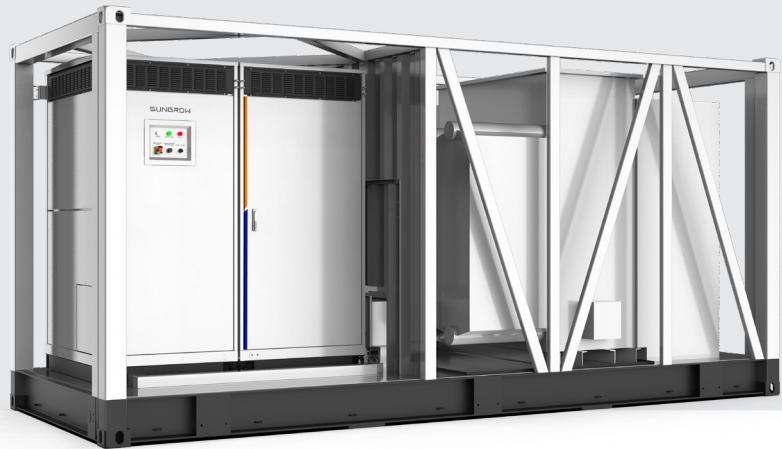


Type designation	ST2752UX-US
Battery Data	
Cell type	LFP
Battery capacity (BOL)	2752 kWh
Battery voltage range	1036.8 ~ 1401.6 V
General Data	
Dimensions of battery unit (W * H * D)	9340*2600*1730 mm
Weight of battery unit	26,400 kg
Degree of protection	IP 54 / Type 3R
Operating temperature range	-30 to 50 °C (> 45 °C derating)
Relative humidity	0 – 95 % (non-condensing)
Max. working altitude	3000 m
Cooling concept of battery chamber	Liquid cooling
Fire safety standard / Optional	Fused sprinkler heads, NFPA 69 explosion prevention and ventilation IDLH gases
Communication interfaces	RS485, Ethernet
Communication protocols	Modbus RTU, Modbus TCP
Compliance	UL9540, UL9540A / NFPA 855
2 HOURS APPLICATION-ST11000kWh-5000kW-MV-2h-US	
BOL kWh (DC)	11,008 kWh
ST2752UX Quantity	4
PCS Model	SC5000UD-MV-US
4 HOURS APPLICATION-ST22015kWh-5000kW-MV-4h-US	
BOL kWh (DC)	22,016 kWh
ST2752UX Quantity	8
PCS Model	SC5000UD-MV-US
Grid Connection Data	
Max.THd of current	< 3 % (at nominal power)
DC component	< 0.5 % (at nominal power)
Power factor	> 0.99 (at nominal power)
Adjustable power factor	1.0 leading ~ 1.0 lagging
Nominal grid frequency	60 Hz
Grid frequency range	55 ~ 65 Hz
Transformer	
Transformer rated power	5,000 kVA
LV / MV voltage	0.9 kV / 34.5 kV
Transformer cooling type	ONAN (Oil Natural Air Natural)
Oil type	Mineral oil (PCB free) or degradable oil on request



SC4000UD-MV-US SC5000UD-MV-US

Power Conversion System



HIGH YIELD

- Advanced three-level technology, max. efficiency 99%
- Effective forced air cooling, no derating up to 45 °C (113 °F) (SC4000UD-US)
- Wide DC voltage operation window, full power operation at 1500 V

SMART O&M

- Modular design, easy for maintenance
- High protection degree, easy for outdoor installation
- Optional C5 anti-corrosion degree, adjust to applications close to the sea

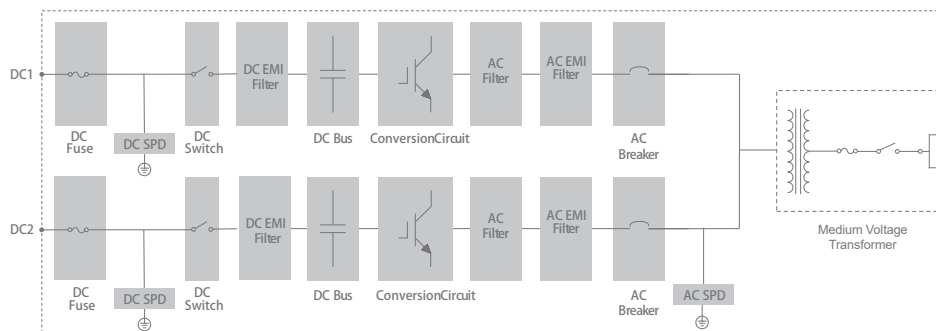
FLEXIBLE APPLICATION

- Bidirectional power conversion system with full four-quadrant operation
- Compatible with high voltage battery system, low system cost
- Battery charge & dis-charge management and black start function integrated

GRID SUPPORT

- Compliant with UL1741, IEEE1547, UL1741 SA, Rule 21 and HECO 14H
- Fast active/reactive power response
- L/HVRT, L/HFRT, soft start/stop, specified power factor control and reactive power support

CIRCUIT DIAGRAM



System Type	SC4000UD-MV-US	SC5000UD-MV-US
DC side		
Max. DC voltage	1500 V	
Min. DC voltage	1150 V	1370 V
DC voltage range	1150 – 1500 V	1370 – 1500 V
Max. DC current	1775 A * 2	1862 A * 2
No. of DC inputs	2	
AC side (Grid)		
AC output power	4000 kVA @ 45 °C	5000 kVA @ 40 °C
Nominal AC voltage	800 V	950 V
AC voltage range	704 – 880 V	836 – 1045 V
Nominal grid frequency / Grid frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 55 – 65 Hz	
Harmonic (THD)	< 3 % (at nominal power)	
Power factor at nominal power / Adjustable power factor	>0.99 / 1 leading – 1 lagging	
Adjustable reactive power range	-100 % – 100 %	
Feed-in phases / AC connection	3 / 3-PE	
AC side (Off-Grid)		
Inverter port nominal AC voltage	800 V	950 V
Inverter port AC voltage range	704 – 880 V	836 – 1045 V
AC voltage distortion	< 3 % (Linear load)	
DC voltage component	< 0.5 % Un (Linear balance load)	
Unbalance load Capacity	100 %	
Nominal Voltage frequency / Voltage frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 55 – 65 Hz	
Efficiency		
Inverter max. efficiency	99.00%	
Transformer		
Transformer rated power	4000 kVA	5000 kVA
Transformer max. power	4000 kVA	5000 kVA
LV / MV voltage	0.8 kV / 34.5 kV	0.95 kV / 34.5 kV
Transformer vector	Dy1 or Dy11	
Transformer cooling type	ONAN (Optional: KNAN)	
Oil type	Mineral oil (PCB free) or degradable oil on request	
Protection		
DC input protection	Load break switch + fuse	
Inverter output protection	Circuit breaker	
AC output protection	Load break switch + fuse	
Surge protection	DC Type II / AC Type II	
Grid monitoring / Ground fault monitoring	Yes / Yes	
Insulation monitoring	Yes	
Overheat protection	Yes	
General Data		
Dimensions (W*H*D)	6058*2896*2438 mm 238.5"*114.0"*96.0"	
Weight	16000 kg 35274 lbs	
Degree of protection	NEMA 4X (Electronic for Inverter) / NEMA 3R (Others)	
Operating ambient temperature range	-35 to 60 °C (> 45 °C derating) -31 to 140 °F (> 113 °F derating)	-35 to 60 °C (> 40 °C derating) -31 to 140 °F (> 104 °F derating)
Allowable relative humidity range	0 – 100 %	
Cooling method	Temperature controlled forced air cooling	
Max. operating altitude	1000 m (standard) / > 1000 m (optional) 3280.8 ft (standard) / > 3280.8 ft (optional)	
Display	LED, WEB HMI	
Communication	RS485, CAN, Ethernet	
Compliance	UL1741, UL1741 SA, IEEE 1547, Rule 21, HECO 14H, CSA C22.2 No.107.1-01	
Grid support	L/HVRT, L/HFRT, active & reactive power control and power ramp rate control, Volt-var, Volt-watt, Frequency-watt	

Aluminum Uniblend® PVC High Speed

EPR/Copper Tape Shield/PVC, Medium-Voltage Power, Shielded
25 kV and 35 kV, UL Type MV-105, 133%/100% Ins. Levels, 345 MILS



Product Construction:

Conductor:

- 1/0 AWG thru 1000 kcmil 1350 aluminum compact Class B strand

Extruded Strand Shield (ESS):

- Extruded thermoset semi-conducting stress-control layer over conductor

Insulation:

- Lead-free Ethylene Propylene Rubber (EPR) insulation, contrasting in color to the black semi-conducting shield layers

Extruded Insulation Shield (EIS):

- Thermoset semi-conducting polymeric layer free stripping from insulation

Metallic Shield:

- 5 mil annealed copper tape with an overlap of 25%

Jacket:

- Low-friction, lead-free, flame-retardant, moisture- and sunlight-resistant Polyvinyl Chloride (PVC)

Options:

- STRANDFILL® - blocked conductor. Tested in accordance with ICEA T-31-610

Applications:

- Superior performance in petrochemical plants, pulp and paper mills, sewage and water treatment plants, environmental protection systems, railroads, mines, utility power generating stations, steel mills, textile plants and other industrial three-phase applications



Applications (cont'd.):

- For use in wet or dry locations when installed in accordance with NEC
- For use in aerial, conduit, open tray and underground duct installations
- For use in direct burial if installed in a system with a ground conductor that is in close proximity, and conforms with NEC 250.4(A)(5)

Features:

- Rated at 105°C
- High Speed low friction technology for easy cable pulling
- Excellent heat, moisture and sunlight resistance
- Excellent flame resistance
- Outstanding corona resistance
- Flexibility for easy handling
- High dielectric strength
- Low moisture absorption
- Electrical stability under stress
- Low dielectric loss
- Chemical-resistant
- Meets cold bend test at -35°C
- 105°C rating for continuous operation
- 140°C rating for emergency overload conditions
- 250°C rating for short circuit conditions

Compliances:

- National Electrical Code (NEC)
- UL 1072
- ICEA S-93-639/NEMA WC74
- ICEA S-97-682
- AEIC CS8
- UL listed as Type MV-105 for use in accordance with NEC, UL File # E90501
- UL 1685 UL Flame Exposure Test
- IEEE 1202 (70,000 BTU/hr)/CSA FT4
- EPA 40 CFR, Part 261 for leachable lead content per TCLP method
- OSHA Acceptable
- RoHS Compliant

Packaging:

- Material cut to length and shipped on non-returnable wood reels. Lengths in excess of 10,000 lbs. are provided on returnable steel reels that require a deposit
- Extra charges apply for cuts less than 1000 ft., lagging, pulling eyes, paralleling and triplexing

CATALOG NUMBER	COND. SIZE (AWG/kcmil)	NOMINAL CONDUCTOR DIAMETER		INSULATION DIAMETER INCHES		NOMINAL JACKET THICKNESS		NOMINAL CABLE				COPPER WEIGHT		AMPACITY				CONDUIT SIZING (4) (INCHES)				
		INCHES	MM	MIN.	MAX.	INCHES	MM	DIAMETER		WEIGHT		LBS/1000 FT	kg/km	CONDUIT IN AIR (1)		UNDERGROUND DUCT (2)			TRAY (3)			
								INCHES	MM	LBS/1000 FT	kg/km			90°C	105°C	90°C	105°C		90°C	105°C		
25 kV* & 35 kV**, UL TYPE MV-105, 133%/100% INS. LEVEL, 345 MILS																						
17061.135108*	1/0	0.34	8.76	1.020	1.120	0.080	2.03	1.31	33.27	863	1285	99	147	99	147	150	170	155	165	150	170	5
17061.135208*	2/0	0.38	9.65	1.060	1.160	0.080	2.03	1.35	34.29	925	1377	125	186	103	153	175	200	175	190	175	195	5
17061.135308*	3/0	0.43	11.05	1.105	1.205	0.080	2.03	1.40	35.56	1000	1488	158	235	107	159	200	225	200	215	205	225	5
17061.135408	4/0	0.48	12.19	1.160	1.260	0.080	2.03	1.45	36.83	1093	1626	199	296	112	167	230	260	230	245	235	260	5
17061.136008*	250	0.53	13.41	1.210	1.315	0.080	2.03	1.51	38.35	1174	1747	234	348	116	173	255	290	250	270	260	285	5
17061.136208	350	0.62	15.75	1.310	1.410	0.080	2.03	1.60	40.64	1356	2018	329	490	125	186	310	350	305	330	325	355	5
17061.136508	500	0.74	18.80	1.430	1.530	0.080	2.03	1.72	45.21	1707	2540	468	696	135	201	385	430	370	400	400	445	6
17061.137008	750	0.91	23.18	1.610	1.710	0.110	2.79	1.96	49.78	2120	3155	703	1046	151	225	485	540	455	490	515	575	6
17061.137508	1000	1.06	26.93	1.760	1.865	0.110	2.79	2.10	53.59	2500	3720	937	1394	162	241	565	640	525	565	620	690	8

Dimensions and weights are nominal. Subject to industry tolerances.

* Non-stock item; minimum runs apply. Please consult Customer Service for price and delivery.

(1) Ampacities are in accordance with Table 310.60(C)(7) of the NEC for triplexed or three single conductor aluminum cables in isolated conduit in air based on a conductor temperature of 90°C (194°F) or 105°C (221°F), temperature denoted in column header, and an ambient air temperature of 40°C (104°F).

(2) Ampacities are in accordance with Table 310.60(C)(7)(b) of the NEC for triplexed or three single conductor aluminum cables in underground ducts (three conductors per duct), based on a conductor temperature of 90°C (194°F) or 105°C (221°F), temperature denoted in column header, and an ambient earth temperature of 20°C (68°F), electrical duct arrangement per Figure 310.60 Detail 1, 100% load factor, and earth thermal resistance (rho) of 90.

(3) Ampacities are based on single conductor Type MV-105 sizes #1/0 AWG and larger in an uncovered tray in accordance with Section 392.80(B)(2) of the NEC at an ambient air temperature of 40°C (104°F) the ampacities are based on 75% of the values per Table 310.60(C)(7), operating temperature denoted in column header. For cable trays with unventilated covers for more than 6 feet, the ampacities shall not exceed 70% of the values per Table 310.60(C)(7).

(4) Based on nominal cable diameters, three single cables in the duct (PVC Schedule 40) with no ground wire and a maximum of 40% fill. Jam ratio has been considered but should be checked for individual installations.

Y 100% insulation level is available upon request.

YY 133% insulation level is available upon request.

Note: a) Sizes smaller than 1/0 AWG do not include "FOR CT USE".

b) The NESC Lightning bolt symbol is on all Uniblend® constructions.