

CAB1000 / AC

Skid Mounted Utility Grade
Storage System from 1-5.3MW



Return on Investment

- 98.4% CEC efficiency
- Low shipping & installation cost
- Crane required



Modular / flexible configuration

- Configurable up to 5.3 MW
- Individual AC connections or combined throat
- Configurable skid sizes in 1-1.5MW increments



Simple O&M

- Minimal O&M
- Integrated systems & options
- Extended warranty available



Advanced Technology

- High DC side short circuit capability
- Advanced grid support features including 4-quadrant control and VSG
- Fast seamless transition and fast response time
- Blackstart
- Grid connected



One inverter

- Frequency regulation (FFR)
- Renewable capacity firming
- Load leveling (Energy time shifting)
- Parallel UPS functionality
- Synthetic inertia
- Micro-grids
- Bi-Directional DC source

CAB1000 Overview

The CAB1000 scalable platform has been developed to offer a straightforward and simple solution to developers of Utility-grade energy storage systems for both UL and IEC markets.

CAB1000/AC - 2L.1 | Model 50-100100

Bidirectional Energy Storage & Microgrid PCS



AC	AC configuration max. cables per phase (1)		3-wire (3P3W) 6 x 600 kcmil or 6 x 300 mm ²							
	Nominal AC voltage (+/- 10%) (2)		208 VRMS	350 VRMS	400 VRMS	480 VRMS	600 VRMS			
	Nominal AC current (export/import) (3)		1255 ARMS							
	AC export/import capacity @ 40°C (4)		452 kVA	761 kVA	869 kVA	1043 kVA	1304 kVA			
	Max overload capacity @ 40°C, starting from 66% full load. (7)		115 % for 2 sec and 105 % for 5 min							
	Allowed grid short ckt. current ratios		Current mode: >4			Voltage mode: all				
	Max. fault current allowed from AC source		100 kA (AC RMS) throated version		180 kA (AC RMS) non-throated version					
	Nominal frequency range		50 / 60 Hz (configurable)							
	Harmonic distortion		UL1741 / IEEE 1547, <3% TDDi at rated power per IEEE 519 <3% according to VDE-AR-N 4110/4120							
	Efficiency (@ 480 VAC): Peak CEC Euro		98.5%		97.7%	98.1%				
DC	DC voltage range, maximum (5)		310 - 1250 VDC	522 - 1250 VDC	596 - 1250 VDC	715 - 1250 VDC	895 - 1250 VDC			
	DC voltage range, at nominal power (5)		330 - 1150 VDC	555 - 1150 VDC	634 - 1150 VDC	760 - 1150 VDC	951 - 1150 VDC			
	Recommended minimum battery voltage		1,65 x nominal AC voltage							
	Maximum DC current		1400 ADC							
	Max. fault current allowed from DC source		230 kA (with internal DC fuses, per input)							
	Number of DC inputs max. cables per pole		1 8 x 600 kcmil or 8 x 300 m ² m							
	Max. deviation of DC voltage between parallel units		75 VDC							
	Environmental	Ambient temperature (operation)		-20°C to 60°C (-40°C with option)						
Ambient temperature (storage)		-40°C to 60°C								
Relative humidity		5 to 100% non-condensing								
Protection degree		OUTDOOR: IP55 NEMA 3R. Salt fog kit available for coastal sites.								
Max elevation		3,000m+ [9,842 ft.+] (Consult EPC for any higher elevation)								
Max noise level (A-weighted equivlent)		<70 dBA @ 3m								
Seismic		ICC-ES AC 156 Sds @ 1.35 G								
Altitude derating (current)		10% per 1,000m above 1000m elevation								
Temperature de-rating		1.7% per degree °C from 40-55 °C								
Cabinet	Maximum dimensions (H x W x D)		mm: [2641.6 x 7620 x3073.4] in.: [104 x 300 x 121]							
	Weight		1370 kg [3020 lb.]							
	Mounting		Pad mount / skid mount							
	Cooling		Hybrid liquid / air, temperature controlled							
Certifications	Safety		UL 1741	C22.2 No. 107.1-16		IEC 62477-1, IEC 62909-1				
	EMC		FCC Part 15 subpart B		IEC/EN 61000-6-2, 6-4	EN 55011	CISPR 32; CISPR 11	IEEE C37.90.2		
	Utility interconnect		UL 1741 (SA)	IEEE 1547-2003	CA Rule 21	Hawaii Rule 14	AS4777.2	VDE-AR-N 4110/4120/4130	EN 50549-2	
Protections	AC disconnection		Contactor							
	DC disconnection		Motorized disconnect							
	AC fuses DC fuses (6)		2 x 1000 A, 200 kA _{Ic} (24kA SC min)			3 x 750 A, 180 kA _{Ic} (20kA SC min)				
	AC DC surge protection (SPD)		Type 2 (Optionally Type 1-heavy duty)			Type 1-heavy duty				
	Safety features		F-stop, AC / DC overvoltage, AC timed overvoltage, inst. & timed overcurrent, overtemperature (both instantaneous and time-overload), condensation, etc.							
	Ground fault detection (optional)		IMD							
Control	Control interface		CAN, Modbus TCP/IP							
	Command latency		1 ms (CAN), 3 ms (Modbus TCP/IP)							
	Response time; (time to accomplish full power step)		down to 2 ms; adjustable longer via parameters							
	On-off grid transitions (optional)		Yes		UPS mode available					
	Black-start capable (optional)		Yes; requires external control power							
	Grid-tied control modes		Voltage mode		PQ (power)	DQ (current)	cos ϕ (pf)	STATCOM		
	Grid-support functions		Active/Reactive control		Volt/VAR	Hz/Watt	Volt/Watt	L/HVRT & L/HFRT	Inertia	ramp rate, etc.
	Islanded control modes		V&f	droop control		VSG	Ok to parallel with other sources			
	Island overload avoidance		active inrush limiting for starting large loads							
	Control power voltage		208 V 1-ph 60 Hz or 240 V 1-ph 50 Hz							
	Self-consumption:									
	Abs. Max. Typ. 100% load, 30C 50% load, 30C		2400 W 1500 W 1200 W [160 W]							
	[standby]									

- Throat connection available as an option. Max 4 unit parallel connection allowed with throat connection due to current limit. Up to 6 inverters parallel connection allowed when using cable connection for AC.
- Nominal voltage 208-690 VAC +/- 10%. Consult EPC Power for ratings of alternative AC voltages.
- AC current limited above 1150 VDC, for details see manual
- Power ratings at nominal line voltage and at cos φ = 1. Available power reduces in proportion to any AC voltage reduction from nominal.
- DC voltage range at nominal AC voltage and at cos φ = 1. Minimum DC voltage increases with higher AC voltage and if reactive power is required. See manual for details.
- Consult EPC Power for higher interrupt current requirements. Minimum available grid fault currents must be observed for proper operation of AC fuses.
- Overload capacity depends on used DC voltage, it is reduced in lower DC values. Contact EPC power for detailed overload capacity.



CAB1000/AC - 3L.2 | Model 50-100181

Bidirectional Energy Storage & Microgrid PCS



AC	AC configuration max. cables per phase (1)		3-wire (3P3W)		6 x 600 kcmil or 6 x 300 mm ²			
	Nominal AC voltage (+/- 10%) (2)		480 VRMS	600 VRMS	630 VRMS	660 VRMS	690 VRMS	
	Nominal AC current (export/import)		1255 ARMS					
	AC export/import capacity @ 40°C (3)		1043 kW	1304 kW	1369 kW	1435 kW	1500 kW	
	Max overload capacity @ 40°C, starting from 66% full load (8)		120 % for 2 sec and 110 % for 5 min					
	Reactive power capacity (4), (5)		Power Factor 0.8...1 leading/lagging					
	Allowed grid short ckt. current ratios		Current mode: >4 Voltage mode: all					
	Max. fault current allowed from AC source		100 kA (AC RMS) throat version 180 kA (AC RMS) non-throated version					
	Normal frequency range		50 / 60 Hz (configurable)					
	Harmonic distortion		UL1741 / IEEE 1547, <2% TDDi at rated power per IEEE 519 <3% according to VDE-AR-N 4110/4120					
Efficiency (@ 690 VAC): Peak CEC Euro		98.8% 98.4% 98.5%						
DC	DC voltage range, maximum (6)		720 - 1500 VDC	900 - 1500 VDC	945 - 1500 VDC	990 - 1500 VDC	1035 - 1500 VDC	
	DC voltage range, at nominal power (6)		761 - 1200 VDC	951 - 1500 VDC	999 - 1500 VDC	1046 - 1500 VDC	1094 - 1500 VDC	
	Recommended minimum battery voltage		1,65 x nominal AC voltage					
	Maximum DC current		1400 ADC					
	Max. fault current allowed from DC source		230 kA (with internal DC fuses, per input)					
	Number of DC inputs max. cables per pole		1 8 x 600 kcmil or 8 x 300 mm ²					
	Max. deviation of DC voltage between parallel units		100 VDC					
	Environmental	Ambient temperature (operation)		-20°C to 60°C (-40°C as option)				
Ambient temperature (storage)		-40°C to 60°C						
Relative humidity		5 to 100% non-condensing						
Protection degree		Outdoor: IP55 / NEMA 3R. Salt fog kit available for coastal sites.						
Max elevation		3,000m+ [9,842 ft.+] (Consult EPC for any higher elevation)						
Max noise level (A-weighted equivalent)		<70 dB @ 3m						
Seismic		ICC-ES AC 156 Sds @ 1.35 G						
Altitude derating (current)		10% per 1,000m above 1000m elevation						
Cabinet	Temperature de-rating		1.7% per degree °C from 40-55 °C					
	Maximum dimensions (H x W x D)		mm: [2281 x 1000 x 1744] in.: [89.8 x 39.4 x 68.7]					
	Weight		1370 kg [3020 lb.]					
	Mounting		Pad mount / skid mount					
Certifications	Cooling		Hybrid liquid / air, temperature controlled					
	Safety		UL 1741 C22.2 No. 107.1-16 IEC 62477-1, IEC 62909-1					
	EMC		FCC Part 15 subpart B IEC/EN 61000-6-2, 6-4 EN 55011 CISPR 32; CISPR 11 IEEE C37.90.2					
	Utility interconnect		UL 1741 (SB)	IEEE 1547-2018	CA Rule 21	Hawaii Rule 14	AS4777.2	VDE-AR-N 4110/4120/4130
Protections	AC disconnection		Contactor					
	DC disconnection		Motorized disconnect					
	AC fuses DC fuses (7)		2 x 1000 A, 200 kA _{IC} (24kA SC min) 2 x 1100 A, 230 kA _{IC} (20kA SC min)					
	AC DC surge protection (SPD)		Type 2 (Optionally Type 1-heavy duty) Type 1-heavy duty					
	Safety features		F-stop, AC / DC overvoltage, AC timed overvoltage, inst. & timed overcurrent, overtemperature (both instantaneous and time-overload), condensation, etc.					
	Ground fault detection (optional)		IMD					
	Control	Control interface		CAN, Modbus TCP/IP				
Command latency		1 ms (CAN), 3 ms (Modbus TCP/IP)						
Response time; (time to accomplish full power step)		down to 2 ms; adjustable longer via parameters						
On-off grid transitions (optional)		Yes UPS mode available						
Black-start capable (optional)		Yes; requires external control power						
Grid-tied control modes		Voltage mode	PQ (power)	DQ (current)	cos φ (pf)	STATCOM		
Grid-support functions		Active/Reactive control	Volt/VAR	Hz/Watt	Volt/Watt L/HVRT & L/HFRT	Inertia	ramp rate, etc.	
Islanded control modes		V&f	droop control	VSG	Ok to parallel with other sources			
Island overload avoidance		active inrush limiting for starting large loads						
Control power voltage		208 V 1-ph 60 Hz or 240 V 1-ph 50 Hz						
Self-consumption:		2400 W 1500 W 1200 W [160 W]						
Abs. Max. Typ. 100% load, 30C 50% load, 30C [standby]								

- Throat connection available as an option. Max 4 unit parallel connection allowed with throat connection due to current limit. Up to 6 inverters parallel connection allowed when using cable connection for AC.
- Nominal voltage 480-690 VAC +/- 10%. Consult EPC Power for ratings of alternative AC voltages.
- Power ratings at nominal line voltage and at cos φ = 1. Available power reduced in proportion to any AC voltage reduction from nominal.
- With nominal DC and nominal AC voltage. Reactive power capability will vary depending on DC and AC voltage range requirements at inverter terminals. Additional reactive power capability available as option.
- Overexcited (leading) is reactive power that increases AC voltage at inverter terminals. Under excited (lagging) is reactive power that decreases the reactive power at inverter terminals
- DC voltage range at nominal AC voltage and at cos φ = 1. Minimum DC voltage increases with higher AC voltage and if reactive power is required. See manual for details.
- Consult EPC Power for higher interrupt current requirements. Minimum available grid fault currents must be observed for proper operation of AC fuses.
- Overload capacity depends on used DC voltage, it is reduced in lower DC values. Contact EPC power for detailed overload capacity.

