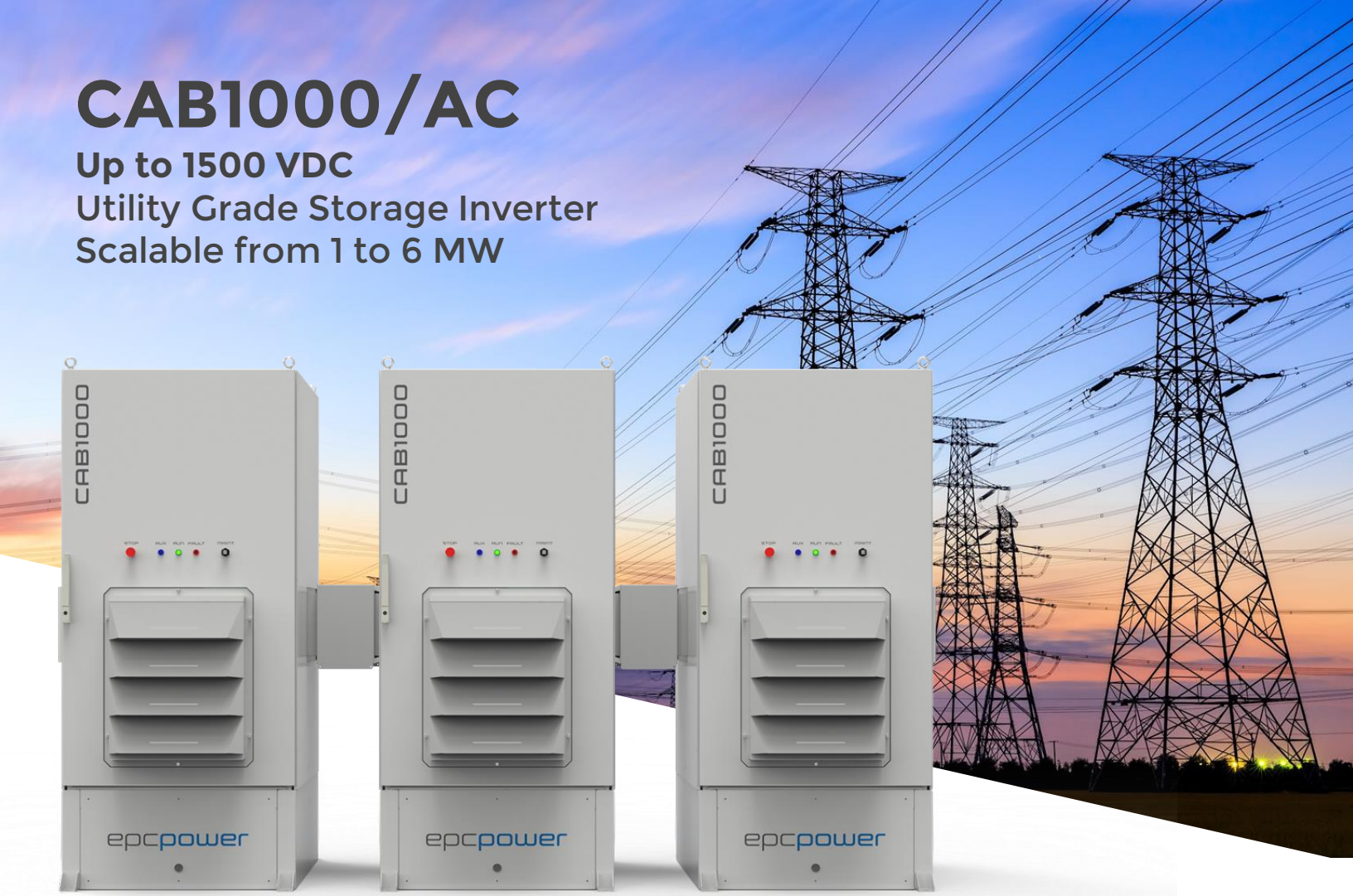
CAB1000/AC

Up to 1500 VDC
Utility Grade Storage Inverter
Scalable from 1 to 6 MW



Return on Investment
- 99% max conversion efficiency
- Low shipping & installation cost
- Modular 1-1.5 MW blocks
- Monetizable dynamic performance

Modular / flexible configuration
- 1-1.5 MW blocks, up to 1500 VDC
- Configurable up to 6 MW
- Individual AC connections or combined throat
- Able to mix storage, PV & DC-DC in a single lineup

Simple O&M
- Easily maintainable
- Modular design with low component count
- Extended warranty available

Easily Transportable
- Standard freight = low transportation cost
- Moveable with pallet jack or standard forklift
- No crane required
- Separable building blocks

Advanced Technology
- Parallel UPS functionality
- Fully parameterizable grid support
- Certified to standards: UL1741 / IEC
- ZVRT / LVRT / 4-quadrant high bandwidth control
- Harmonic control

The CAB1000 scalable platform was specifically developed to offer a straightforward and simple solution to developers of Utility-grade energy storage systems. In ~1 MW blocks, the CAB1000 platform offers a single modular system which is tailored to Utility systems of all sizes. The scalable power conversion system also boasts high-performance controls and system redundancy.

With world-class power density and an easy to install design, your energy storage system will be commissioned quickly and easily. The energy storage PCS has never been more flexible or straightforward.

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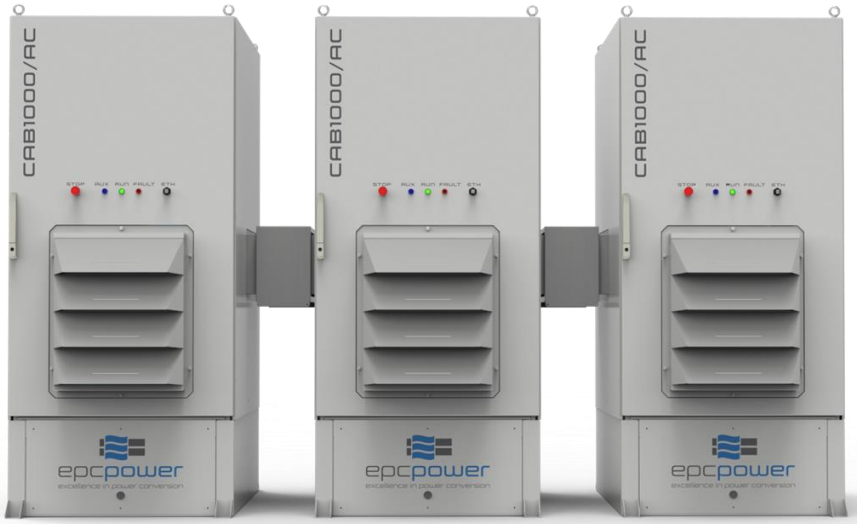


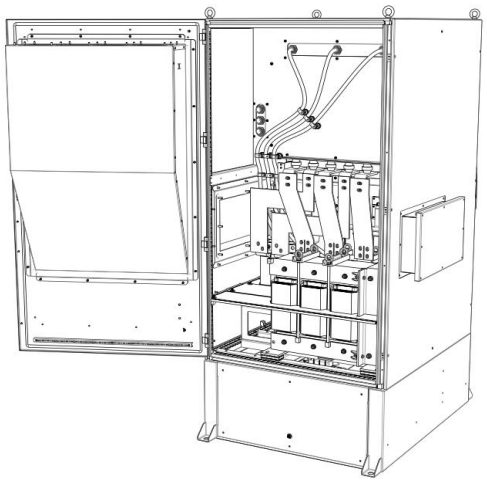
Full-function, independent blocks

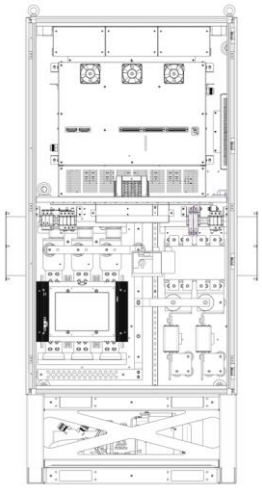
Each 1-1.5 MW block is designed to support connections to independent battery banks.

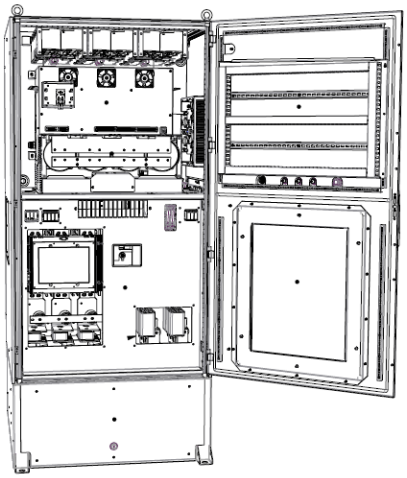
Each CAB1000 contains fully independent AC & DC disconnects, fuses, utility-grade surge suppression, environmental controls, and precharge, enabling an easy installation.

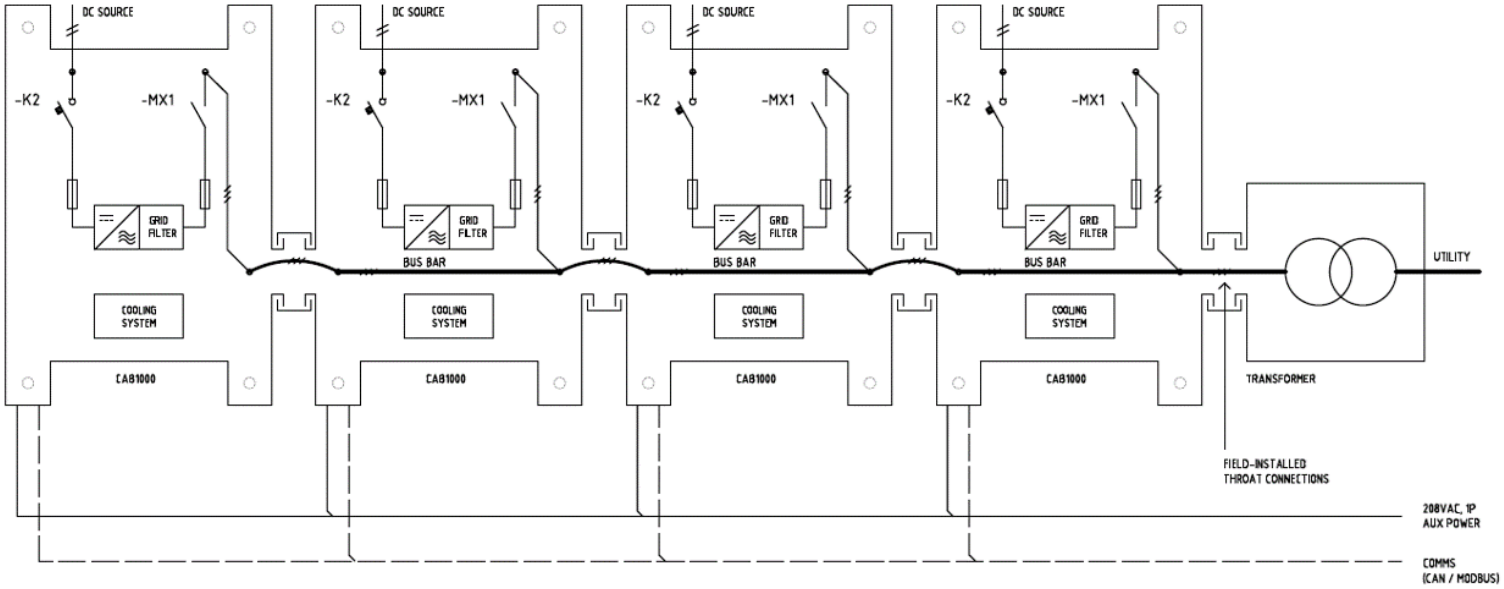
Keep the transformer simple, please

The MV transformer can be obtained from EPC Power or directly from Tier 1 suppliers who have pre-engineered units ready to suit your application's power and voltage needs.









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CAB1000/AC - 2L.1
Bidirectional Energy Storage & Microgrid PCS

DG

MODEL	50-100100	CAB1000/AC-2L.1			
AC	AC configuration | max. cables per phase **(1)**	3-wire (3P3W) | 6 x 600 kcmil or 6 x 300 mm²			
	Nominal AC voltage (+/- 10%) **(2)**	208 VRMS	350 VRMS	480 VRMS	600 VRMS
	Nominal AC current (export/import) **(3)**	1255 ARMS			
	AC export/import capacity @ 40°C **(4)**	452 kW | 452 kVAr	761 kW | 761 kVAr	1043 kW | 1043 kVAr	1304 kW | 1304 kVAr
	Export power overload capacity @ 40°C, starting from 66% full load.	115 % for 3 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, <2% TDDi at rated power per IEEE 519 <3% according to VDE-AR-N 4110/4120			
	Efficiency (@ 480 VAC): Peak | CEC | Euro	98.5% | 97.5% | 98,1%			
DC	DC voltage range **(5)**	310 - 1250 VDC	525 - 1250 VDC	715 - 1250 VDC	895 - 1250 VDC
	Maximum DC current	1400 ADC			
	Max. fault current allowed from DC source	180 kA (with internal DC fuses, per input)			
	Number of DC inputs | max. cables per pole	1 | 8 x 600 kcmil or 8 x 300 mm²			
	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: IP54 / NEMA 3R. Salt fog kit available for coastal sites.			
	Max elevation	3,000m+ [9,842 ft.+] (Consult EPC for any higher elevation)			
	Airborne noise	<75 dBA @ 3m			
	Seismic	ICC-ES AC 156 Sds @ 1.35 G			
	Altitude derating (current)	10% per 1,000m above 1000m elevation			
	Altitude derating (voltage)	10% per 1,000m above 2000m elevation			
	Temperature de-rating	1.7% per degree °C from 40-55 °C			
Cabinet	Maximum dimensions (H x W x D)	mm: [2281 x 1000 x 1636] in.: [89.8 x 39.4 x 64.4]			
	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 | EN 50549-2 |			
Protections	AC disconnection	Contactor			
	DC disconnection	Motorized disconnect			
	AC fuses | DC fuses **(6)**	2 x 1000 A, 200 kAIc (24kA SC min) | 3 x 750 A, 180 kAIc (20kA SC min)			
	AC | DC surge protection	Low energy/Class II SPD (Optionally heavy duty/Class I) | None (Optionally heady duty/Class I)			
	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)	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 [standby]	2400 W | 1500 W | 1200 W [160 W]			

(1) 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.

(2) Nominal voltage 208-690 VAC +/- 10%. Consult EPC Power for ratings of alternative AC voltages.

(3) AC current limited above 1150 VDC, for details see manual

(4) Power ratings at nominal line voltage and at cos φ = 1. Available power reduces in proportion to any AC voltage reduction from nominal.

(5) DC voltage range at nominal AC line voltage and at cos φ = 1. Higher or lower AC voltages change DC voltage range proportionally.

(6) Consult EPC Power for higher interrupt current requirements. Minimum available grid fault currents must be observed for proper operation of AC fuses.

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CAB1000/AC - 3L.2
Bidirectional Energy Storage & Microgrid PCS

DG

MODEL	50-100181	CAB1000/AC-3L.2			
AC	AC configuration | max. cables per phase **(1)**	3-wire (3P3W) | 6 x 600 kcmil or 6 x 300 mm²			
	Nominal AC voltage (+/- 10%) **(2)**	480 VRMS	600 VRMS	630 VRMS	690 VRMS
	Nominal AC current (export/import)	1255 ARMS			
	AC export/import capacity @ 40°C **(3)**	1043 kW	1304 kW	1369 kW	1500 kW
	Export power overload capacity @ 40°C, starting from 66% full load.	120 % for 3 sec and 116 % for 5 min			
	Reactive power capacity **(4), (5)**	480 kVAr overexcited 380 kVAr underexcited	600 kVAr overexcited 480 kVAr underexcited	640 kVAr overexcited 500 kVAr underexcited	700 kVAr overexcited 550 kVAr underexcited
	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, <2% TDDi at rated power per IEEE 519 <3% according to VDE-AR-N 4110/4120			
	Efficiency (@ 690 VAC): Peak | CEC | Euro	98.9% | 98,4% | 98,6%			
DC	DC voltage range **(6)**	766 - 1500 VDC	957 - 1500 VDC	1005 - 1500 VDC	1100 - 1500 VDC
	Maximum DC current	1400 ADC			
	Max. fault current allowed from DC source	180 kA (with internal DC fuses, per input)			
	Number of DC inputs | max. cables per pole	1 | 8 x 600 kcmil or 8 x 300 mm²			
	Max. deviation of DC voltage between parallel units	150 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: IP54 / NEMA 3R. Salt fog kit available for coastal sites.			
	Max elevation	3,000m+ [9,842 ft.+] (Consult EPC for any higher elevation)			
	Airborne noise	<75 dBA @ 3m			
	Seismic	ICC-ES AC 156 Sds @ 1.35 G			
	Altitude derating (current)	10% per 1,000m above 1000m elevation			
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	AC | DC surge protection	Low energy/Class II SPD (Optionally heavy duty/Class I) | None (Optionally heady duty/Class I)			
	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)	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.			
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	Self-consumption: Abs. Max. | Typ. 100% load, 30C | 50% load, 30C [standby]	2400 W | 1500 W | 1200 W [160 W]			

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(2) Nominal voltage 480-690 VAC +/- 10%. Consult EPC Power for ratings of alternative AC voltages.

(3) Power ratings at nominal line voltage and at cos φ = 1. Available power reduced in proportion to any AC voltage reduction from nominal.

(4) With minimum DC and nominal AC voltage. Capacity will vary depending on min DC and AC voltage range requirements at inverter terminals. Additional reactive power capability available as option.

(5) Overexcited is reactive power that increases AC voltage at inverter terminals. Underexcited is reactive power that decreases the reactive power at inverter terminals.

(6) DC voltage range at nominal AC line voltage and at cos φ = 1. Higher or lower AC voltages change DC voltage range proportionally.

(7) Consult EPC Power for higher interrupt current requirements. Minimum available grid fault currents must be observed for proper operation of AC fuses.

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