INGECON SUN STORAGE

Power U Dual B Series
1,500 Vdc

THREE-PHASE TRANSFORMERLESS DUAL BATTERY INVERTER

Battery inverter up to 3.28 MVA

The INGECON® SUN STORAGE Power is a three-phase bidirectional battery inverter that can be used in grid-connected and stand-alone systems. This inverter offers a high-power density divided in two power stacks providing different configurable operating modes. Besides, it features the same technology as Ingeteam's PV inverters, facilitating the supply of spare parts.

Easy maintenance
String inverter philosophy has been applied in the design of this central inverter, facilitating the inverter usage. Moreover, the input and output lines are integrated into the same cabinet, in order to make maintenance work easier.

Battery management
The INGECON® SUN STORAGE Power features a highly advanced battery control technology, ensuring the maximum life of the storage system. The battery temperature could be controlled at all times ensuring an enhanced lifespan of the accumulator. This inverter is 100% compatible with Ingeteam's PV inverters.

Software included
Included at no extra cost the software INGECON® SUN Manager for monitoring and recording the inverter data over the Internet. Ethernet communications are supplied as standard.

The INGECON® SUN STORAGE Power three-phase inverter complies with the most demanding international standards.

Standard 5 year warranty, extendable for up to 25 years

PROTECTIONS

- Lightning induced DC and AC surge arresters, type II.
- Output short-circuits and overloads.
- Insulation failures.
- Motorized DC load break disconnect.
- Motorized AC circuit breaker.
- Additional protection for the power stack, as it is air cooled by a closed loop.

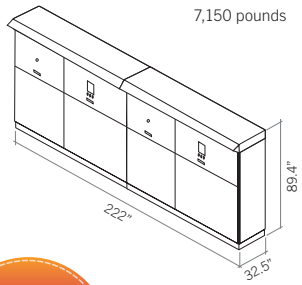
INTEGRATED ACCESSORIES

- Ethernet communication.
- DC pre-charge system.
- AC pre-charge system.

OPTIONAL ACCESSORIES

- DC fuses.
- Heating kit, for expanding the temperature range down to -40 ºF.
- Sand trap kit.

Size and weight (inches and lbs)



UL 1741 SA COMPLIANT

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Ingeteam

Battery inverter up to 1.64 MVA

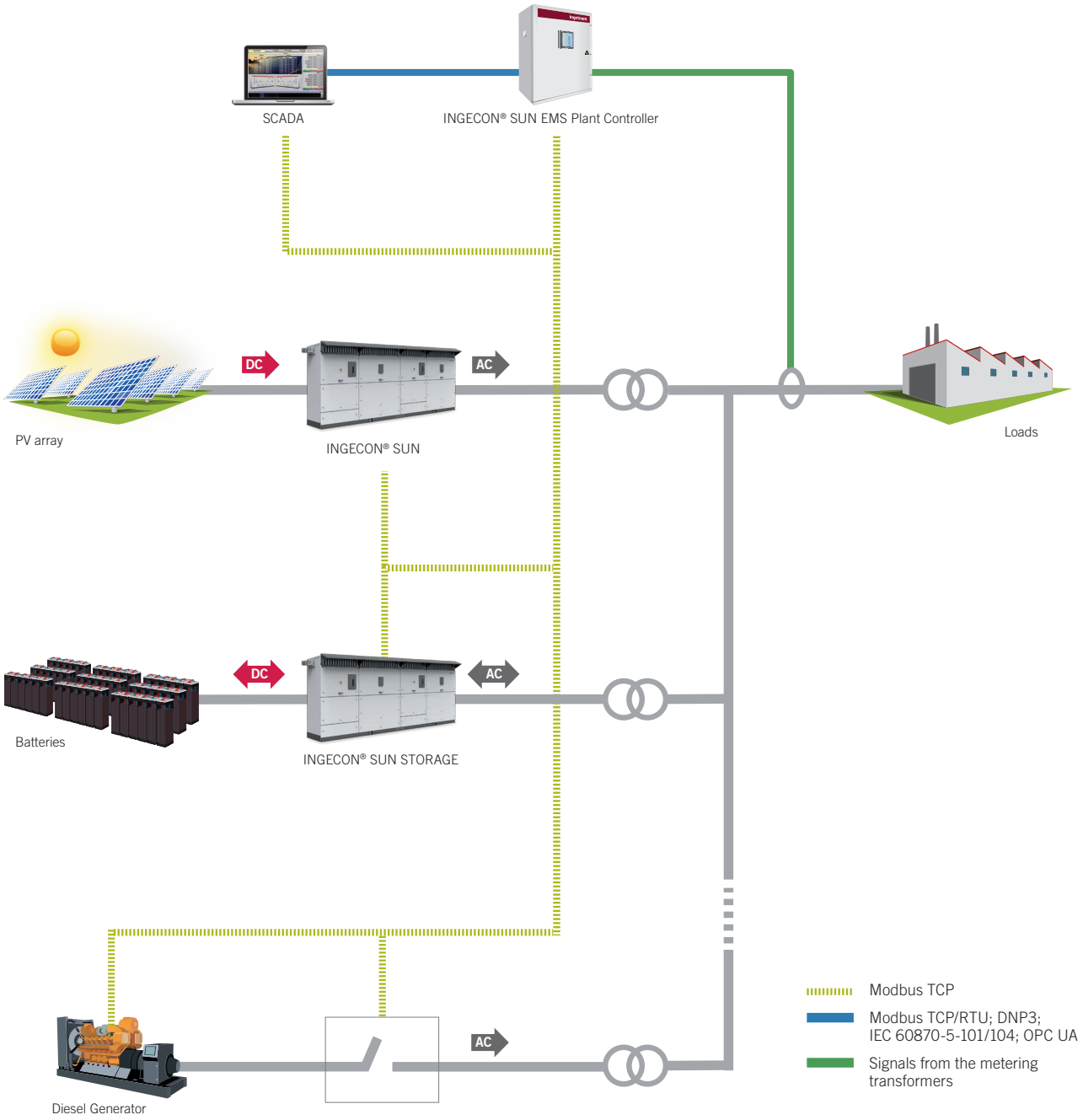
Stand-alone operating mode:

The INGECON SUN® STORAGE Power, together with Ingeteam's Plant Controller, generates the stand-alone AC grid (to which the PV inverters -both string and central models- and the loads are connected). The ISS Power is able to control the energy flows between this grid and the batteries, based on their status at any given time.

An advanced control system, based on a frequency droop and requiring no communications, manages the power generated by the INGECON SUN® PV inverters based on the consumption data and the battery state of charge.

The back-up power source (a diesel generator) will only start when the battery state of charge is below a certain programmable threshold.

Schema for stand-alone mode



Grid-connected operating modes:

– Self-consumption

This operating mode is conceived for grid-connected systems with renewable energy sources, in order to minimise grid consumption. If the loads demand more energy than the one produced by the renewable sources then the batteries would cover this demand, increasing the self-consumption ratio.

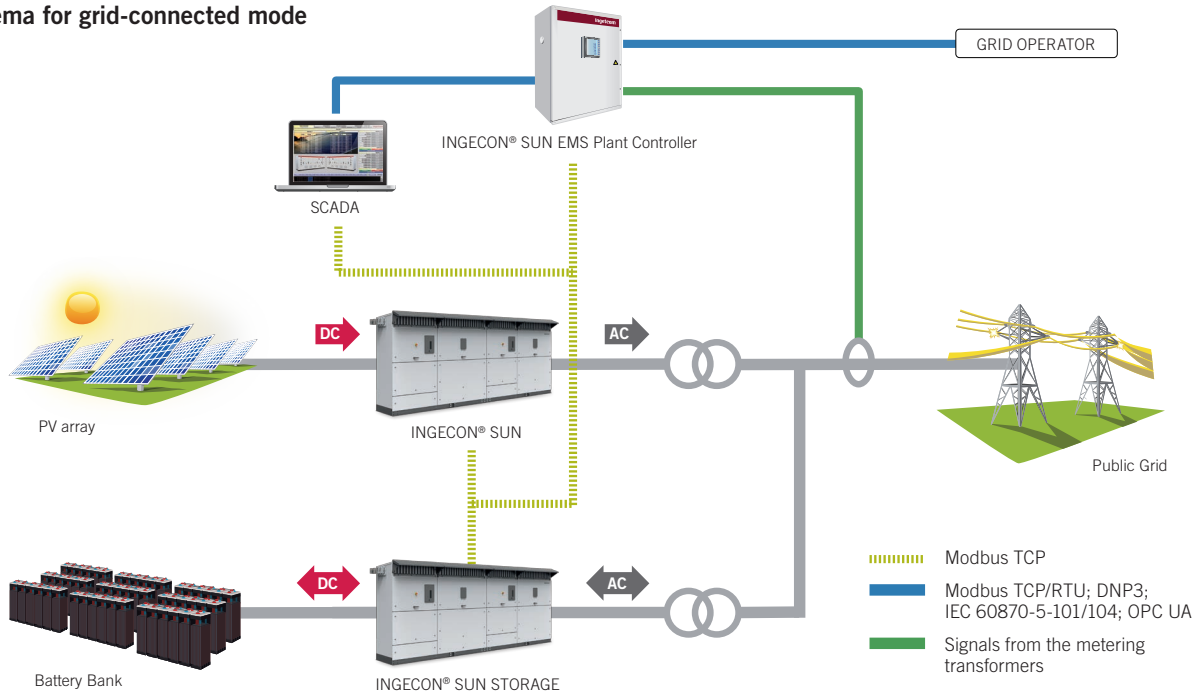
Back-up functionality is also available. If a grid outage occurs, the battery inverter generates the AC network and the energy stored in the batteries is used to power the loads.

– Grid Support

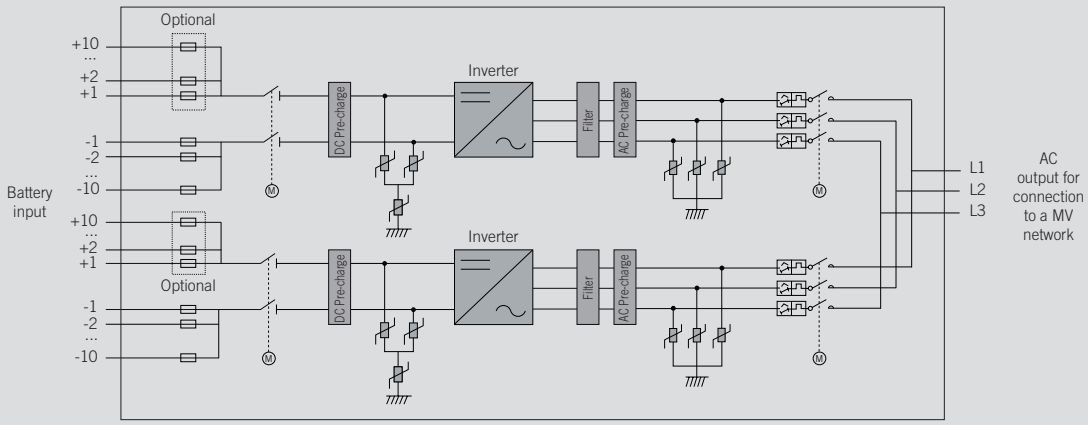
This operating mode is mainly based on active and reactive power control functions that can be implemented thanks to Ingeteam's power plant controller:

- Active Power Curtailment.
- Ramp Rate Control.
- Fast Frequency Regulation.
- Solar Power Reserve.
- Energy Time Shifting.
- P Open Loop.
- Hybrid Self-Consumption.
- Uninterrupted Power Supply.
- Stand-Alone Generation.
- Q Open Loop.
- Dynamic Reactive Compensation.
- Peak-Shaving.
- On Demand Q.
- Power Factor Control.
- Automatic Voltage Regulation.
- Voltage Droop Control.
- Power Oscillations Damping.
- Black Start capability.

Schema for grid-connected mode



SUN STORAGE Power B Series



	1900 kVA DUAL ISS 950TL U B366	2340 kVA DUAL ISS 1170TL U B450	2490 kVA DUAL ISS 1245TL U B480	2650 kVA DUAL ISS 1325TL U B510	2760 kVA DUAL ISS 1380TL U B530	3000 kVA DUAL ISS 1500TL U B578	3120 kVA DUAL ISS 1560TL U B600	3280 kVA DUAL ISS 1640TL U B630
Input (DC)								
Battery voltage range for stand-alone mode	536 - 1,300 V	655 - 1,300 V	697 - 1,300 V	740 - 1,300 V	768 - 1,300 V	837 - 1,300 V	868 - 1,300 V	910 - 1,300 V
Battery voltage range for grid-connected modes[1]	588 - 1,300 V	715 - 1,300 V	762.6 - 1,300 V	812.3 - 1,300 V	843.6 - 1,300 V	916 - 1,300 V	950 - 1,300 V	998 - 1,300 V
Maximum voltage[2]	1,500 V							
Maximum current	1,850 A per power block							
Type of battery[3]	Li-ion, lead, Ni-Cd and flow batteries							
N° inputs with fuse holders	6 up to 10 per power block							
Fuse dimensions	630 A / 1,500 V / aR / 100 kA (L/R 5mS) (optional)							
Type of connection	Single copper bar (up to 30 cables per power block) or multiple copper bars with fuse holders							
Input protections								
Overvoltage protections	Type 2 surge arresters (type 1 optional)							
DC switch	Motorized DC load break disconnect							
Other protections	Up to 10 pairs of DC fuses per power block (optional) / Insulation failure monitoring / Anti-islanding protection / Emergency pushbutton							
Output (AC)								
Power @95 °F / @122 °F	1,901.8 kVA / 1,711.6 kVA	2,338 kVA / 2,104.5 kVA	2,494 kVA / 2,244.7 kVA	2,650 kVA / 2,385 kVA	2,754 kVA / 2,478 kVA	3,004 kVA / 2,703 kVA	3,118 kVA / 2,806 kVA	3,274 kVA / 2,946 kVA
Current @95 °F / @122 °F	3,000 A / 2,700 A							
Rated voltage	366 V IT System	450 V IT System	480 V IT System	510 V IT System	530 V IT System	578 V IT System	600 V IT System	630 V IT System
Frequency	50 / 60 Hz							
Power Factor[4]	1							
Power Factor adjustable	Yes, 0-1 (leading / lagging)							
THD (Total Harmonic Distortion)[5]	<3%							
Type of connection	Connection to cables or copper bars							
Output protections								
Overvoltage protections	Type II surge arresters							
AC breaker	Motorized AC circuit breaker							
Anti-islanding protection	Yes, with automatic disconnection							
Other protections	AC short circuits and overloads							
Features								
Maximum efficiency	98.9%							
CEC efficiency	98.5%							
Max. consumption aux. services	9,400 W (50 A)							
Stand-by or night consumption[6]	<180 W							
Average power consumption per day	4,000 W							
General Information								
Operational temperature range	-4 °F to +135 °F / -20 °C to +57 °C (operational temperature range expandable from -40 °F to +135 °F)							
Relative humidity (non-condensing)	0 - 100%							
Protection class	NEMA 3R (NEMA 4 with the sand trap kit)							
Maximum altitude	14,770 ft (for installations beyond 3,300 ft, please contact Ingeteam's solar sales department)							
Cooling system	Forced air with temperature control (230 V phase + neutral power supply)							
Air flow range	0 - 84 ft^3/s (0 - 7,800 m^3/h) per power block							
Average air flow	45 ft^3/s (4,200 m^3/h) per power block							
Acoustic emission (100% / 50% load)	<66 dB(A) at 10m / <54.5 dB(A) at 10m							
Marking	CE, SGS							
EMC & Security standards	UL9540, UL1741, FCC Part 15, IEEE C37.90.1, IEEE C37.90.2, CSA22.2 No107							
Grid connection standards	IEC 62116, UL1741SA, IEEE 1547, IEEE 1547.1, NEC CODE, Rule 21, Rule 14H, CSA22.2 No107							

Notes: [1] Minimum voltage DC ($V_{DC,\ min}$) for $V_{grid,max}$ = 1.1 p.u. and Power Factor=1 If $V_{grid,max}$ is higher than this value, the minimum voltage should be corrected as $V_{DC,\ min}$ * $V_{grid,max}$ / 1.1 [2] Beyond 1,300 V, the maximum current decreases gradually [3] Please contact Ingeteam's solar sales department to access the full list of compatible batteries and BMS [4] For P_{AC}>25% of the rated power [5] For P_{AC}>25% of the rated power and voltage in accordance with IEC 61000-3-4 [6] Consumption from battery.