INGECON SUN STORAGE 1Play

3TL / 6TL

SINGLE-PHASE BATTERY INVERTER WITHOUT TRANSFORMER

The INGECON® SUN STORAGE 1Play battery inverter is a single-phase, two-way unit that can either be used in off-grid systems or connected to the general supply network.

Battery management
The INGECON® SUN STORAGE 1Play inverters feature cutting-edge technology to control the charging and discharging of the storage system in order to maximise the battery service life. The battery temperature could be controlled at all times, ensuring correct battery operation and durability. The inverter incorporates a pre-charge system to avoid battery inrush currents.

Back-up genset
The INGECON® SUN STORAGE 1Play permits the connection of a back-up genset, should this be necessary. Furthermore, the inverter can be started-up using this generator, in order to charge the batteries when these are completely discharged.

PV input
INGECON® SUN STORAGE 1Play inverters incorporate a PV input. Thanks to this input, the PV array can be connected directly to the inverter. Moreover, this inverter can be also operated without batteries, as a conventional grid-tied photovoltaic inverter, allowing a later addition of the energy storage system.

Energy Management System
Optionally, the inverter can integrate an energy management system (EMS Board). The EMS Board enables some more advanced features, as self-consumption or peak shaving.

5 year warranty, extendible up to 25 years

PROTECTIONS

- AC overvoltages.
- Insulation faults.
- Output shortcircuits and overloads.
- DC switch for the PV field.

OPTIONAL ACCESSORIES

- Inverter communication via RS-485 and Ethernet.
- AC power supply system.
- INGECON® SUN EMS Board.
- USB port for Wi-Fi communication (in combination with EMS Board).

MAIN FEATURES

- PV input.
- CAN communication for smart batteries.
- Configurable potential-free inputs.
- Configurable potential-free outputs, some for the connection and disconnection of the back-up genset.
- DC pre-charge system.
- Battery temperature measurement circuit built-in. PT100 (3-wire) needed.

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Operating modes:

- **Stand-alone mode**
  The INGECON® SUN STORAGE 1Play inverter generates a stand-alone AC grid and acts as a grid manager, guaranteeing the correct balance between generation, consumption and the storage system. To do so, it controls the energy flow between the grid and the batteries, based on the status at any given time.

  The INGECON® SUN STORAGE 1Play inverter makes it possible to integrate a solar energy source into the grid, as it integrates a photovoltaic input. An advanced control system, requiring no communications, manages the power generated by the PV inverters, based on consumption data and the battery charge status. The back-up power source (a genset or the public grid) only connects when the battery state of charge is below a certain programmable threshold.

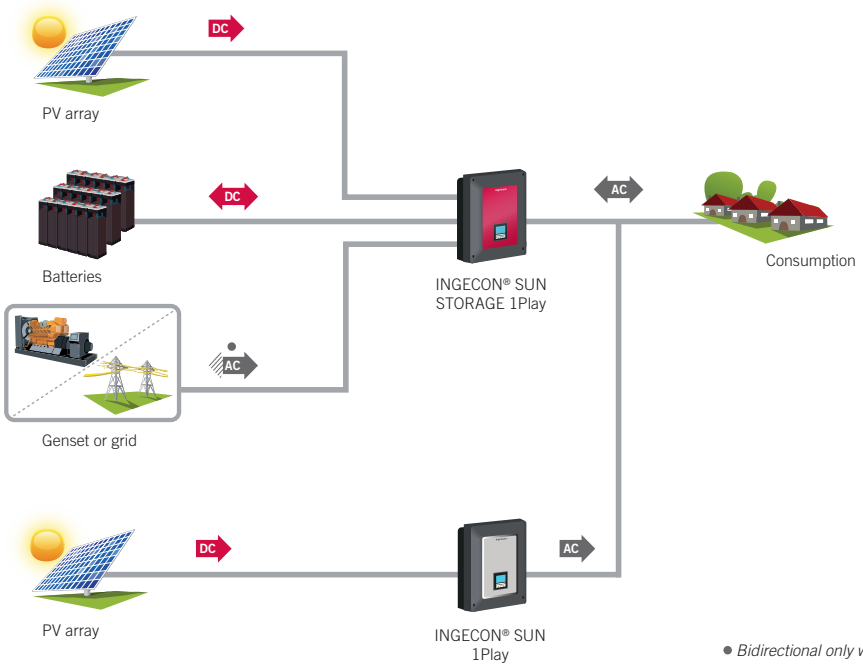
- **Back-up mode**
  This operating mode has been designed for grid-connected systems, where grid outages are long and frequent, meaning that a back-up power source is required. The INGECON® SUN STORAGE 1Play inverter operates through a connection to the AC grid. In order to guarantee a power source, the inverter maintains the batteries charged. During a grid outage, the battery inverter generates the AC network and the energy stored in the batteries is used to power the loads. If any renewable energy sources are connected to the grid and the energy generated is greater than the one demanded, then the surplus could be injected into the grid.

- **Self-consumption mode**
  This operating mode is conceived for grid-connected systems with renewable energy sources, in order to minimise grid consumption. If the energy generated is greater than the one demanded, any surplus energy could charge the batteries or, if they are fully charged, the energy could be injected into the grid.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.

- **Grid support**
  In this operating mode the inverter operates under the instructions of an external controller (EMS). Thus, in combination with the EMS Board and an external wattmeter, the inverter is able to adapt the output power to a required value. In this way, different options are available: ramp rate control, self-consumption or constant power output in a PV plant. Furthermore, this operating mode makes it possible to implement peak-shaving strategies to reduce the electricity bill by decreasing the contracted power.

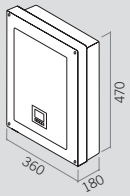
CONNECTION SCHEMA

Single-phase



● *Bidirectional only when grid is connected.*

Size and weight (mm)



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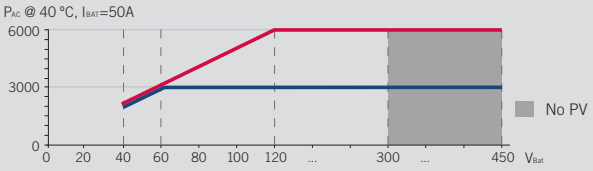
26 kg.

Output power versus battery voltage



	3TL	6TL
Nominal power	3 kVA	6 kVA
Max. temperature for rated power	40 °C	
Storage system input (DC)		
Voltage range with PV installed[1]	40 ~ 300 V	
Voltage range without PV installed[1]	40 ~ 450 V	
Maximum charge / discharge current	50 A	
Battery type	Lead-Acid, Li-ion[2]	
Communication with Li-Ion batteries	CAN Bus 2.0	
PV array input (DC)		
PV array maximum power	7.5 kWp	11.5 kWp
MPP Voltage range	330[3] ~ 480 V	
Maximum input voltage	550 V[4]	
Maximum input current	20 A	30 A
MPPT	1	
Number of strings	2	
Auxiliary grid / genset input (AC)		
Rated voltage	230 V	
Voltage range	172 ~ 264 V	
Nominal frequency	50 / 60 Hz	
Frequency range	40 ~ 70 Hz	
Maximum power	11,500 VA	
Maximum current	50 A rms	
Cosine of Phi	0 ~ 1	
Consumption grid output (AC)		
Stand-alone mode		
Power (25 °C) 30 min, 2 min, 3 s[5]	3,500 / 3,900 / 5,080 W	6,400 / 6,900 / 7,900 W
Maximum current	13 A rms	26 A rms
Rated voltage[6]	220 ~ 240 V	
Nominal frequency[6]	50 / 60 Hz	
Cosine of Phi	-0.8 ~ 1 ~ 0.8	
On-grid mode		
Maximum current	50 A rms	
Voltage range	172 ~ 264 V	
Frequency range	40 ~ 70 Hz	
Cosine of Phi	-0.8 ~ 1 ~ 0.8	
Response time of the Back-up function	12 ms	
Performance		
Maximum efficiency	95.5%	96%
Euroefficiency	95.1%	95.2%
General data		
Cooling system	Forced ventilation	
Air flow	27 m³/h	45 m³/h
Stand-by consumption	< 10 W	
Operating temperature	–20 ~ +65 °C	
Relative humidity (without condensation)	4 ~ 100 %	
Protection class	IP65	
Maximum altitude	2,000 m	
Marking	CE	
EMC and safety regulations	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-11, EN 61000-3-12, EN 62109-1, EN62109-2, EN 50178, IEC62103, AS62040.1, FCC Part 15	
Distribution grid connection regulations	DIN V VDE V 0126-1-1, EN 50438, CEI 0-21, VDE-AR-N4105:2011-08, G59/3, G83/2, AS4777.2:2015, IEC 62116, IEC 61727, UNE 206007-1:2013, UNE 206006:2011, UNE 217001 IN:2015,NRS097-2-1, ABNT NBR 16149, ABNT NBR 16150, DEWA, South African Grid code, IEEE 929 Thailand MEA & PEA requirements, Netbilling Chile	

Notes: [1] The maximum power of the inverter is a calculation of the battery voltage multiplied by the maximum discharge current (50 A) [2] See the list of compatible Li-Ion batteries [3] In On-grid mode $V_{mpp,min}$ = 1.44 x Vac (distribution grid voltage). In Off-grid mode $V_{mpp,min}$ = 1.44 x Vac (rated voltage configured for the consumption grid) [4] Never exceed this value. Consider the voltage increase of the panels 'Voc' at low temperatures [5] This power will be available if the battery voltage multiplied by the maximum discharge current reaches these values [6] This parameter can be set on the display.

CE

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