

## SINGLE-PHASE BATTERY INVERTER WITH TRANSFORMER

### 3 / 6 - 3TL / 6TL

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.

#### Energy Management System

Optionally, the inverter can integrate an energy management system (EMS Board or EMS Manager). The EMS Board can be integrated inside the inverter. It enables some more advanced features, like peak shaving. Additionally, the EMS Manager offers load control possibilities.

#### 3 year warranty, extendible up to 25 years

#### PROTECTIONS

- Galvanic isolation between the DC and AC sides.
- AC overvoltages.
- Insulation faults.
- Output shortcircuits and overloads.

#### OPTIONAL ACCESSORIES

- Inverter communication via RS-485 and Ethernet.
- DC switch for the PV field.
- AC power supply system.
- INGECON® SUN EMS Board.
- INGECON® SUN EMS Manager.
- 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

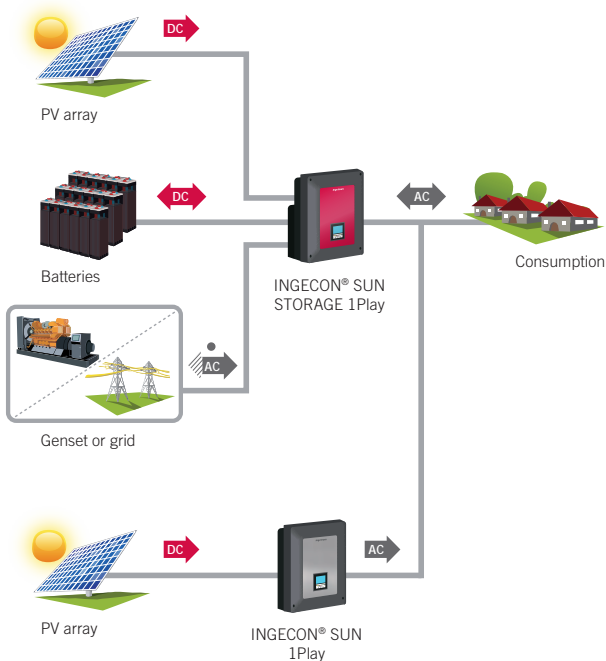
generated is greater than the one demanded, any surplus energy could charge the batteries or, if they are fully charged, the energy could be injected into the grid. If the loads demand more energy than the one produced by the renewable sources, then the batteries would cover this demand, increasing the 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 or the EMS Manager 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.

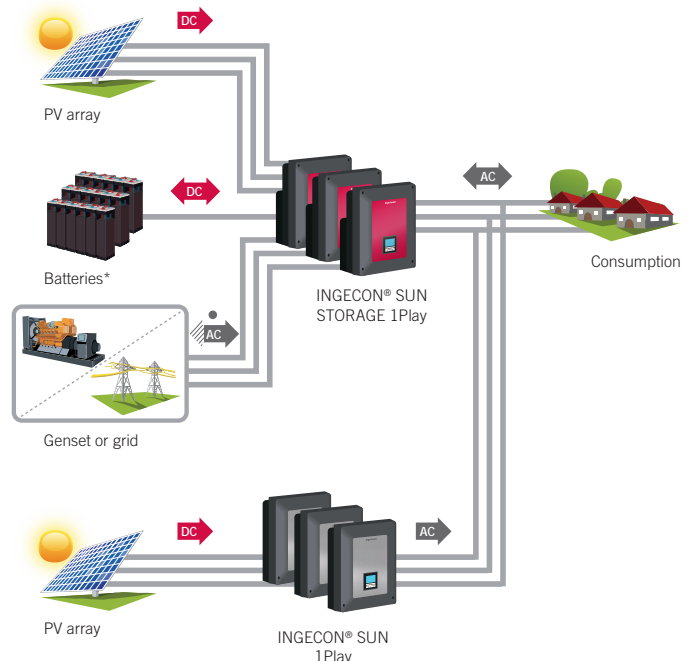
CONNECTION SCHEMA

Single-phase



● Bidirectional only when grid is connected.

Three-phase



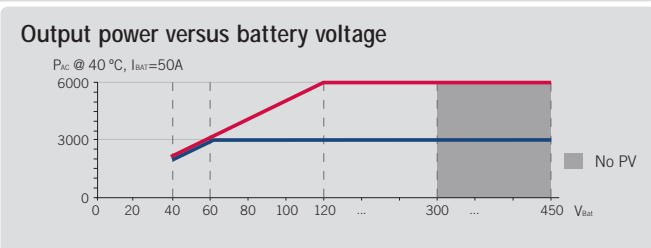
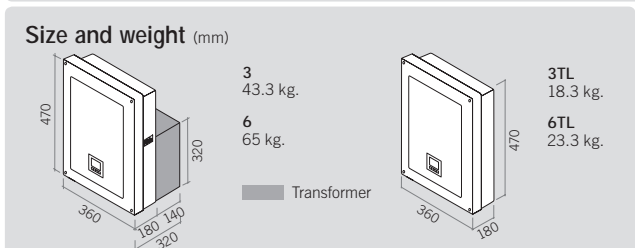
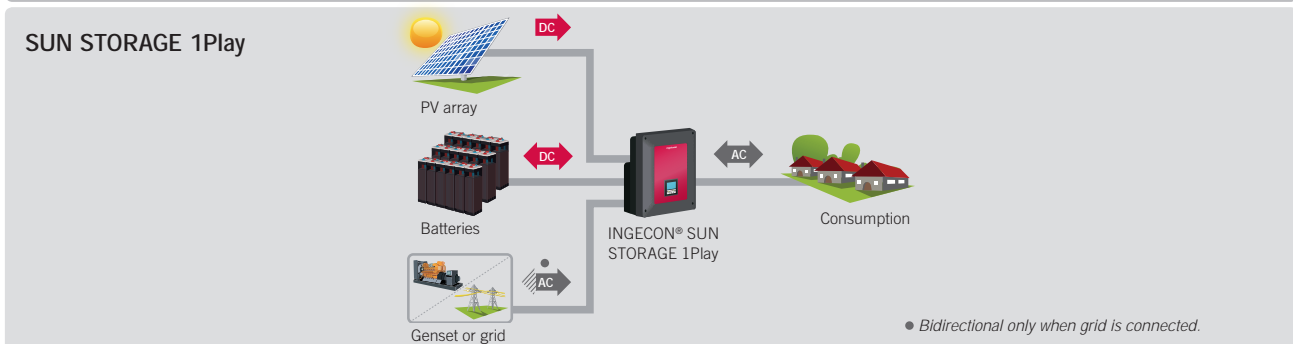
\* It must be a single battery bank.

● Bidirectional only when grid is connected.

	3	6	3TL	6TL
<b>PV Input (DC)</b>				
PV array max. power	7.5 kWp	11.5 kWp	7.5 kWp	11.5 kWp
Voltage range MPP for stand-alone mode	300 - 480 V			
Voltage range MPP for grid-connected modes <sup>(1)</sup>	330 - 480 V			
Maximum open circuit voltage	550 V			
Maximum current	20 A	30 A	20 A	30 A
Inputs	2			
MPPT	1			
<b>Battery Input (DC)</b>				
Voltage range with PV installation <sup>(2)</sup>	40 - 300 V			
Voltage range without PV installation <sup>(2)</sup>	40 - 450 V			
Maximum charge / discharge current	50 A			
Battery type	Lead, Ni-Cd, Li-ion			
<b>Generator / Grid Input (AC)</b>				
Rated voltage	230 V			
Voltage range	172 - 264 V			
Rated frequency	50 / 60 Hz			
Frequency range	40 - 70 Hz			
Charge current range	0 - 13 A	0 - 26 A	0 - 13 A	0 - 26 A
Generator or grid maximum power	11,500 W			
<b>Output (AC)</b>				
Rated power <sup>(3)</sup>	3 kW	6 kW	3 kW	6 kW
Power (25 °C) 30 min, 2 min, 3 s <sup>(4)</sup>	3,500 / 3,900 / 5,080 W	6,400 / 6,900 / 7,900 W	3,500 / 3,900 / 5,080 W	6,400 / 6,900 / 7,900 W
Current	13 A	26 A	13 A	26 A
Rated voltage <sup>(5)</sup>	200 - 240 V			
Rated frequency <sup>(5)</sup>	50 / 60 Hz			
<b>Efficiency</b>				
Maximum efficiency	95.5%	96%	95.5%	96%
<b>General Information</b>				
Stand-by consumption	<10 W			
Ambient temperature	-20 °C to +65 °C			
Relative humidity (non-condensing)	0-100%			
Protection class	IP65			

**Compliance with standards:** EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-12, EN 61000-3-11, EN 62109-1, EN 62109-2, IEC62103, EN 50178, FCC Part 15, AS 3100\*, RD1699/2011, DIN V VDE V 0126-1-1, EN 50438, CEI 0-21\*, VDE-AR-N 4105:2011-08, G59/2, G83/2<sup>(6)</sup>, AS4777.2\*, AS4777.3\*, IEC 62116, IEC 61727, UNE 206007-1, NRS 097-2-1.

**Notes:** <sup>(1)</sup> Grid-connected modes include Back-up, Self-consumption and Grid Support. Minimum voltage DC ( $V_{DC, min}$ ) for  $V_{grid, max} = 1.1$  p.u. If  $V_{grid, max}$  is higher than this value, the minimum voltage should be corrected as  $V_{DC, min} * V_{grid, max} / 1.1$  <sup>(2)</sup> The inverter's maximum power will be the battery voltage multiplied by the maximum discharge current (50 A) <sup>(3)</sup> AC power up to 40 °C ambient temperature <sup>(4)</sup> This power is only available if the battery voltage multiplied by the maximum discharge current reaches these values <sup>(5)</sup> This parameter is configurable through the display <sup>(6)</sup> Related only to inverters up to 16 A.





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