

**SINGLE-PHASE
TRANSFORMERLESS
INVERTER FOR
OFF-GRID SYSTEMS**
2.4TL / 3TL / 5TL / 6TL

The INGECON® HYBRID AC Link single-phase inverter complies with the most demanding international standards.

The core of the off-grid system

The INGECON® HYBRID AC Link inverter generates an off-grid AC network and acts as a grid manager, guaranteeing the correct balance between generation, consumption and the storage system. To do so, the INGECON® HYBRID AC Link controls the energy flow between the grid and the batteries, based on the situation at any given time.

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

Back-up genset

Furthermore, the INGECON® HYBRID AC Link permits the connection of a back-up generator, should this be necessary. It is possible to start-up the inverter by using the genset, in order to charge the batteries when they are completely discharged.

Battery management

The INGECON® HYBRID AC Link features a highly advanced battery control technology that ensures the maximum life of the storage system. The battery temperature is controlled at all times ensuring an enhanced lifespan of the accumulator. The inverter integrates a precharge system for the battery input.

Photovoltaic input

As a new feature, these inverters incorporate a photovoltaic entrance. Thanks to this input, the PV field can be connected directly to the INGECON® HYBRID AC Link inverter, without using a solar inverter.

Maximum compatibility

This inverter is 100% compatible with INGECON® SUN and INGECON® uWIND converters. The scale of the schema can be increased by connecting in parallel several grid-tied power converters to the AC grid created and managed by the INGECON® HYBRID AC Link inverter.

Standard 3 year warranty, extendable for up to 25 years



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Operating modes:

– Stand-alone mode

In this mode, the INGECON® HYBRID AC Link inverter generates an AC grid. The renewable energy source is used to feed the loads and to charge the batteries. The auxiliary source (a genset or the public grid) is only connected when the batteries' state of charge is lower than a certain threshold.

– Back-up mode

The INGECON® HYBRID AC Link inverter is connected to the public grid, when it is present. Thus, if the energy generated is bigger than the one demanded, the surplus could be injected into the grid. The batteries are kept charged, in order to guarantee an energy source if a grid outage occurs. The energy stored will only be used when the public grid is not available.

– Self-consumption mode

The INGECON® HYBRID AC Link inverter operates when the grid is available. If the energy generated is bigger than the one demanded, the surplus will be used to charge the batteries or it may be injected into the grid if the batteries are fully charged. If the loads demand more energy than the one produced by the renewable sources, the batteries will satisfy the demand.

PROTECTIONS

- AC overvoltages.
- Insulation faults.
- Reverse polarity.
- It withstands shortcircuits at the output.

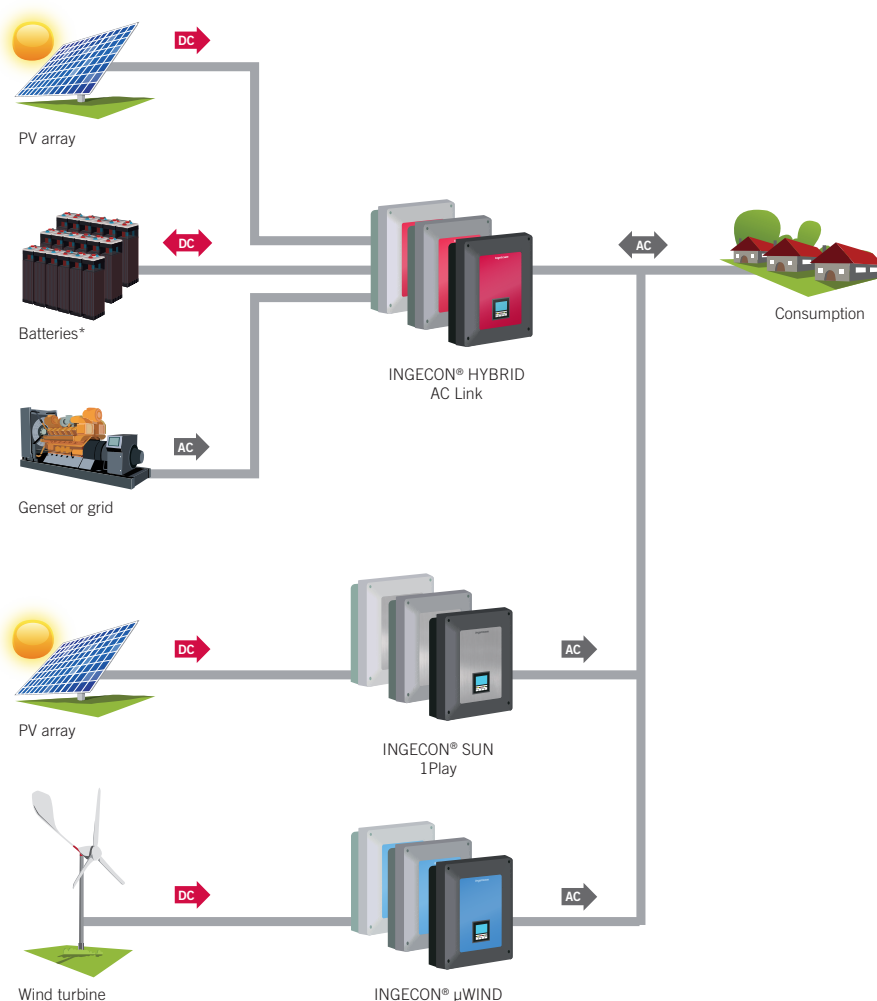
OPTIONAL ACCESSORIES

- Inverter communication via RS-485, Ethernet, Bluetooth or GSM / GPRS.
- DC breaker for the PV field.
- INGECON® EMS Battery Box.

ACCESSORIES BY DEFAULT

- CAN communication for Li-ion batteries.
- Configurable potential-free input.
- 2 configurable potential-free outputs, one of them for connection and disconnection of the back-up generator.
- DC and AC precharge systems.
- PT100 (3-wire) battery temperature measurement.

Wiring diagram



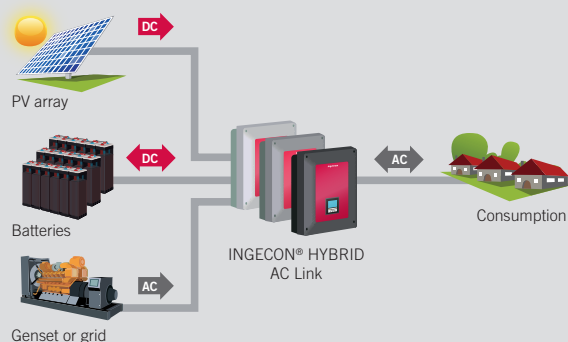
*Each inverter will have its own battery bank.

	2.4TL	3TL	5TL	6TL
PV Input (DC)				
PV array max. power	6.5 kWp	6.5 kWp	6.5 kWp	6.5 kWp
Voltage range MPP	300 - 450 V	300 - 450 V	300 - 450 V	300 - 450 V
Voltage range ⁽¹⁾	300 - 550 V	300 - 550 V	300 - 550 V	300 - 550 V
Maximum current	20 A	20 A	20 A	20 A
Inputs	2	2	2	2
MPPT	1	1	1	1
Battery Input (DC)				
Rated Battery voltage	48 - 330 V	48 - 330 V	96 - 330 V	96 - 330 V
Minimum operation voltage	40 V	40 V	40 V	40 V
Maximum charge / discharge current	50 A	50 A	50 A	50 A
Battery type	Lead, Ni-Cd, Li-ion	Lead, Ni-Cd, Li-ion	Lead, Ni-Cd, Li-ion	Lead, Ni-Cd, Li-ion
Generator / Grid Input (AC)				
Rated voltage	230 V	230 V	230 V	230 V
Voltage range	170 - 250 V	170 - 250 V	170 - 250 V	170 - 250 V
Rated frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Frequency range	40 / 70 Hz	40 / 70 Hz	40 / 70 Hz	40 / 70 Hz
Charge current range	0 - 14 A	0 - 14 A	0 - 26 A	0 - 26 A
Generator or grid maximum power	6,000 W	6,000 W	11,000 W	11,000 W
Output (AC)				
Rated power ⁽²⁾	2.4 kW	3 kW	5 kW	6 kW
Power (25°C) 30 min, 2 min, 3 s	2,800 / 3,100 / 4,070 W	3,500 / 3,900 / 5,080 W	5,400 / 5,800 / 6,670 W	6,400 / 6,900 / 7,900 W
Current	11 A	13 A	22 A	26 A
Rated voltage ⁽³⁾	220 - 240 V	220 - 240 V	220 - 240 V	220 - 240 V
Rated frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Efficiency				
Maximum efficiency	95.5%	95.5%	96%	96%
General Information				
Stand-by consumption	<10 W	<10 W	<10 W	<10 W
Ambient temperature	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C
Relative humidity (non-condensing)	0 - 95%	0 - 95%	0 - 95%	0 - 95%
Protection class	IP65	IP65	IP65	IP65

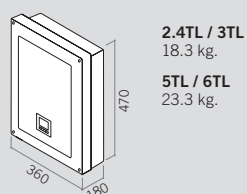
Compliance with standards: EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-12, EN 61000-3-11, EN 62109-1, EN 62109-2, IEC62103, EN 50178, FCC Part 15, AS 3100, RD1699/2011, DIN V VDE V 0126-1-1, EN 50438, CEI 0-21, VDE-AR-N 4105:2011-08, G59/2, G83/2⁽⁴⁾, AS4777.2, AS4777.3, IEC 62116, IEC 61727, UNE 206007-1, ABNT NBR 16149, ABNT NBR 16150, South African Grid code, IEEE 929, Thailand MEA & PEA requirements.

Notes: ⁽¹⁾ Must not be exceeded under any circumstances. Consider the voltage increase of the 'Voc' at low temperatures ⁽²⁾ AC Power for 40°C ambient temperature ⁽³⁾ Voltage configurable through the display ⁽⁴⁾ Related only inverters up to 16 A.

Hybrid AC Link TL



Size and weight (mm)





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