# INGECON HYBRID

AC Link
With transformer

## 2.4 / 3 / 5 / 6

**SINGLE-PHASE INVERTER WITH TRANSFORMER FOR OFF-GRID SYSTEMS**

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. Also, it is possible to create three-phase AC networks from three off-grid inverters.

**Standard 3 year warranty, extendable for up to 25 years**

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## 2.4 / 3 / 5 / 6

**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 will satisfy the demand, increasing the self-consumption ratio.

PROTECTIONS

- Galvanic isolation between the DC and AC side.
- AC overvoltages.
- Insulation faults.
- Reverse polarity
- It withstands shortcircuits at the ouput.

OPTIONAL ACCESORIES

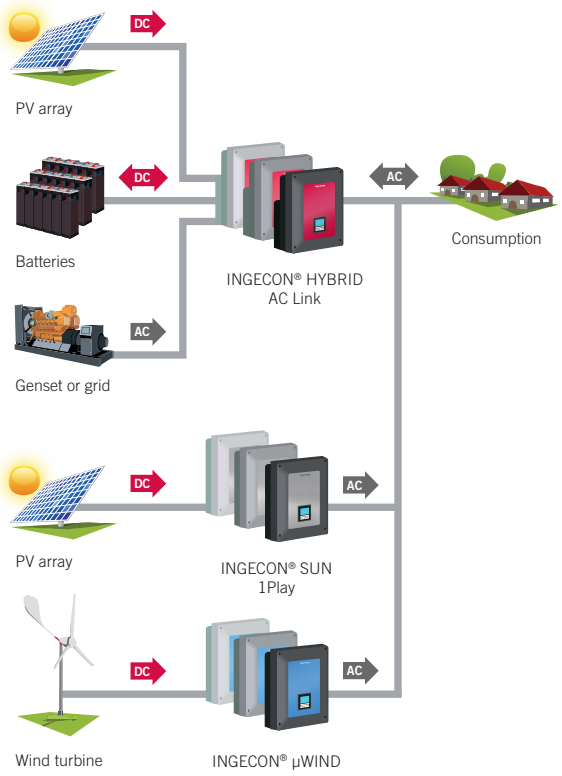
- Inverter communication via RS-485, Ethernet, Bluetooth or GSM / GPRS.
- DC breaker for the PV field.
- INGECON® EMS Battery Box.

ACCESSORIES BY DEFAULT

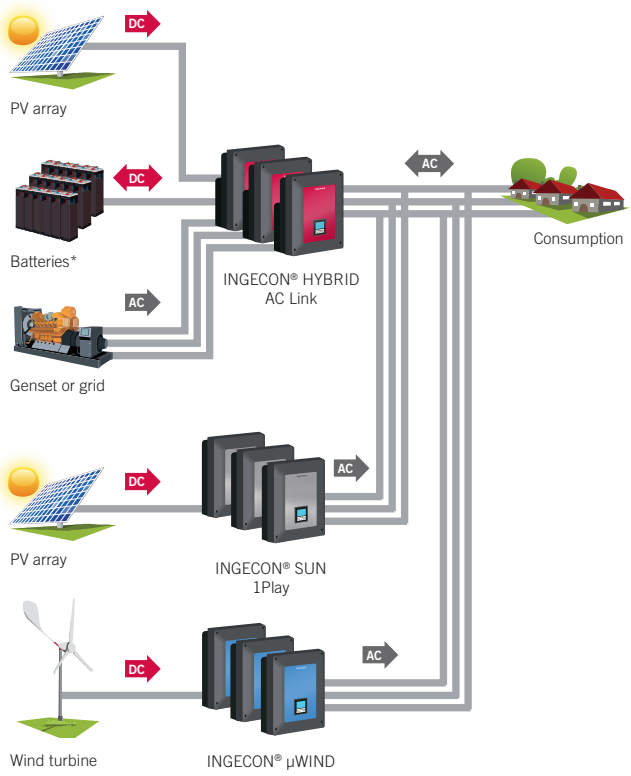
- CAN communication for Li-ion batteries.
- Configurable potential-free input.
- 2 configurable potential-free outputs, one of them for connection and disconnection of the back-up generator.
- DC and AC precharge systems.
- PT100 (3-wire) battery temperature measurement.

**Wiring diagram**

**Single-phase**




**Three-phase**




*It must be a single battery bank.

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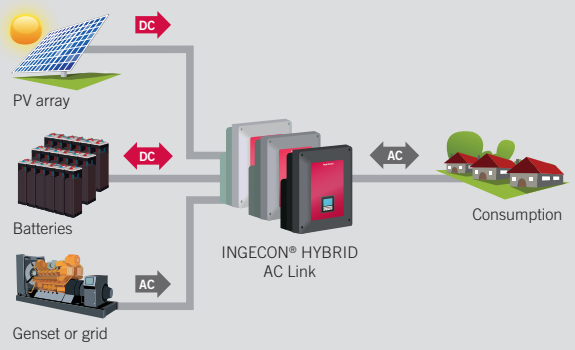
|---|---|---|---|---|
| **PV Input (DC)** | | | | |
| PV array max. power | 6.5 kWp | 6.5 kWp | 6.5 kWp | 6.5 kWp |
| Voltage range MPP | 300 - 450 V | 300 - 450 V | 300 - 450 V | 300 - 450 V |
| Voltage range[1] | 300 - 550 V | 300 - 550 V | 300 - 550 V | 300 - 550 V |
| Maximum current | 20 A | 20 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[2] | 96 - 330 V | 96 - 330 V[2] |
| 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[3] | 2.4 kW | 3 kW | 5 kW | 6 kW |
| Power (25ºC) 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[4] | 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 | -20ºC to +70ºC | -20ºC to +70ºC | -20ºC to +70ºC | -20ºC to +70ºC |
| Relative humidity (non-condensing) | 0 - 95% | 0 - 95% | 0 - 95% | 0 - 95% |
| Protection class | IP65 | IP65 | IP65 | IP65 |

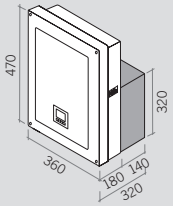
**Compliance with standards:** EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-12, EN 61000-3-11, EN 62109-1, EN 62109-2, IEC62103, EN 50178, FCC Part 15, AS 3100, RD1699/2011, DIN V VDE V 0126-1-1, EN 50438, CEI 0-21, VDE-AR-N 4105:2011-08, G59/2, G83/2[5], AS4777.2, AS4777.3, IEC 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] Consider the maximum charge / discharge current [3] AC Power for 40ºC ambient temperature [4] Voltage configurable through the display [5] Related only inverters up to 16 A.

## Hybrid AC Link




## Size and weight (mm)




**2.4 / 3**
43.3 kg.

**5 / 6**
65 kg.

Transformer

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