

THREE-PHASE TRANSFORMERLESS 1,500 V STRING INVERTER WITH THE MAXIMUM POWER DENSITY

160TL

A three-phase inverter family for commercial, industrial and utility-scale PV plants.

Greater cost-effectiveness

Thanks to its greater output power (up to 160 kW if connected to a 690 Vac network), the new INGECON® SUN 160TL allows to drastically reduce the number of inverters required for designing a PV power plant. Thus, it minimises the labour cost and reduces the global cabling cost. Furthermore, it enables up to a 20% cost reduction in AC cabling as this PV inverter does not require a neutral wire.

Moreover, it does not require DC combiner boxes, nor AC combiner boxes, ensuring the minimum possible CAPEX (Capital Expenditures).

Furthermore, its string inverter philosophy permits an easy and immediate replacement that does not require qualified technicians.

Higher flexibility and power density

The highest flexibility thanks to its maximum DC voltage (1,500 V) and to its wide voltage range MPP (570-1,250 V). Awesome power density, with up to 161 kW in a 75 kg inverter.

Rugged design

Aluminium casing, especially conceived for indoor and outdoor applications (IP65). The INGECON® SUN 3Play TL inverters have been designed to guarantee a long life expectancy and to withstand extreme temperatures.

Advanced communications as standard

Thanks to the Power Line Communication (PLC) that this inverter integrates the power plant can be monitored and controlled without any additional communication cabling. Moreover, it is supplied with Wi-Fi communication as standard for local inverter configuration and monitoring. It also integrates Ethernet communication. These features, together with the webserver that the inverter integrates, enable a fast and reliable commissioning using a mobile phone, a tablet or a laptop. Furthermore, it is compatible with external Cloud Connect software.

Standard 5 year warranty, extendable for up to 25 years



160TL

Fully equipped

The 1,500 V series within the INGECON® SUN 3Play inverter family is supplied fully equipped with the main electric protections, aiming to reach the maximum performance with the greatest cost-effectiveness.

Integrated features

	STD version	PRO version
DC inputs terminal Block	✓	
PV fast connectors ⁽¹⁾		✓
DC switch	✓	✓
DC surge arresters (type I+II)	✓	✓
AC surge arresters (type II)	✓	✓
DC fuses		✓ ⁽²⁾
Strings current metering kit		✓
PLC, Wi-Fi and Ethernet communications	✓	✓

Notes: ⁽¹⁾ No crimping tool needed ⁽²⁾ Only for the positive pole. Optionally, DC fuses for the negative pole also available.

MAIN FEATURES

- Low-voltage ride-through capability.
- Reactive power capability.
- Compatible with external Cloud Connect software.
- 99.1% maximum efficiency.
- Power Line Communication (PLC), Ethernet and Wi-Fi communications supplied as standard.
- Integrated Webserver.
- Software INGECON® SUN Monitor for PV plant monitoring.
- Suitable for indoor and outdoor installations (IP65).
- High temperature performance.

- Different versions to satisfy every project needs.
- 3 digital inputs and 2 digital outputs.
- DRMO Input Ready (for the Australian market).

PROTECTIONS

- Reverse polarity.
- Shortcircuits and overloads at the output.
- Anti-islanding with automatic disconnection.
- Insulation faults.
- AC overvoltages with type 2 surge arresters.
- DC overvoltages with type 1+2 surge arresters.

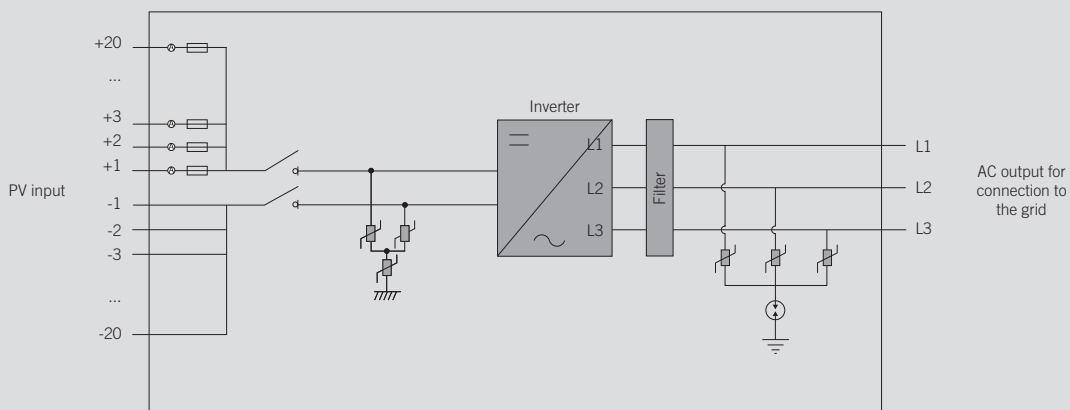
OPTIONAL ACCESSORIES

- Self-consumption kit.
- RS-485 communication.
- DC fuses for the negative pole.
- Compatibility with night power supply.

BENEFITS

- Greater power density.
- Greater cost-effectiveness thanks to the cabling cost reduction.
- High availability compared to central inverters.
- High efficiency rates.
- Easy maintenance.

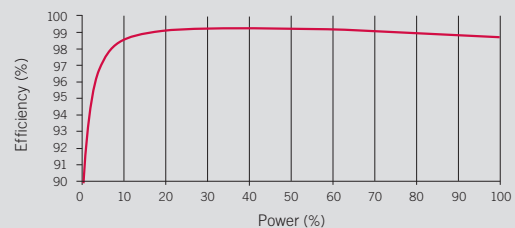
INGECON® SUN 160TL PRO version



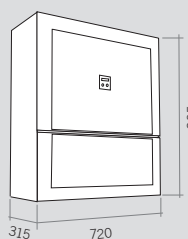
160TL						
Input (DC)						
Recommended PV array power range	95 - 136 kWp	113 - 162.5 kWp	141 - 203 kWp	148 - 213 kWp	153.5 - 220 kWp	162 - 233.5 kWp
MPP Operating voltage range ⁽¹⁾	570 - 1,250 V	685 - 1,250 V	860 - 1,250 V	900 - 1,250 V	928 - 1,250 V	985 - 1,250 V
Maximum voltage ⁽²⁾	1,500 V					
Maximum current ⁽³⁾	168 A					
Short-circuit current	250 A					
Inputs (STD / PRO)	1 / 20					
MPPT	1					
Output (AC)						
Rated power at 25 °C / 40 °C / 50 °C	92.8 kW / 85.9 kW / 83.8 kW	111.4 kW / 103.1 kW / 100.6 kW	139.3 kW / 128.9 kW / 125.8 kW	146.2 kW / 135.3 kW / 132 kW	150.9 kW / 139.6 kW / 136.2 kW	160.1 kW / 148.2 kW / 144.6 kW
Maximum current at 25 °C / 40 °C / 50 °C	134 A / 124 A / 121 A					
Rated voltage	400 V	480 V	600 V	630 V	650 V	690 V
Frequency	50 / 60 Hz					
Type of grid ⁽⁴⁾	TT / TN					
Power Factor	1					
Power Factor adjustable ⁽⁵⁾	Yes, 0 - 1 (leading / lagging)					
THD (Total Harmonic Distortion) ⁽⁶⁾	<3%					
Efficiency						
Maximum efficiency	99.1%					
Euroefficiency	98.7%					
General Information						
Refrigeration system	Forced ventilation					
Air flow	570 m ³ /h					
Stand-by consumption	20 W					
Consumption at night	1 W					
Ambient temperature	-25 °C to 60 °C					
Relative humidity (non-condensing)	0 - 100%					
Protection class	IP65 / NEMA 4					
Residual current monitoring unit	Yes					
Max. operating altitude	4,000 m					
Connection	AC: Max. Cross section: 240 mm ² (one wire). DC connection (PRO): 6 mm ² (20 pairs of PV connectors). Copper and Aluminium cabling permitted for DC and AC					
Marking	CE					
EMC and safety standards	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3, EN 61000-3-11, EN 61000-3-12, EN 62109-1, EN 62109-2, IEC62103, EN 50178, FCC Part 15, IEC60068-2-1:2007, IEC60068-2-2:20007, IEC60068-2-14:2009, IEC60068-2-30:2005, IEC62116, IEC61683 y EN50530					
Grid connection standards	DIN V VDE V 0126-1-1, Arrêté du 23 avril 2008, EN 50438, EN 50439, EN 50549, CEI 0-21, CEI 0-16 VDE-AR-N 4105:2011-08, G59/3, P.O.12.3, AS4777.2, BDEW, IEC 62116, IEC 61727, UNE 206007-1, ABNT NBR 16149, ABNT NBR 16150, Brazilian Grid Code, South African Grid Code, Chilean Grid Code, DEWA 2.0, Jordanian Grid Code, Thailand MEA & PEA requirements					

Notes: ⁽¹⁾ V_{mpp,min} is for rated conditions (V_{ac}=1 p.u. and Power Factor=1). V_{mpp,min} will depend on the grid voltage (V_{ac}), according to this relation: V_{mpp,min}=1.425*V_{ac}
⁽²⁾ The inverter does not start operating until V_{dc} < 1,450 V ⁽³⁾ The maximum current per PV connector is 13 A for the PRO version ⁽⁴⁾ These units must be connected to a three-phase grid with a star formation with grounded neutral. They cannot be connected to IT grids or delta grids with one of their lines grounded ⁽⁵⁾ Extended adjustment range for nominal working points ⁽⁶⁾ According to IEC 61000-3-4.

Efficiency INGECON® SUN 160TL V_{dc} = 860 V



Size and weight (mm)



160TL STD
75 kg.

160TL PRO
78 kg.



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