

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

INGECON® SUN 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 (576-1,250 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 Wi-Fi communication that this inverter integrates, the power plant can be monitored and controlled without any additional communication cabling. Moreover, 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		✓
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.
- 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

- 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.

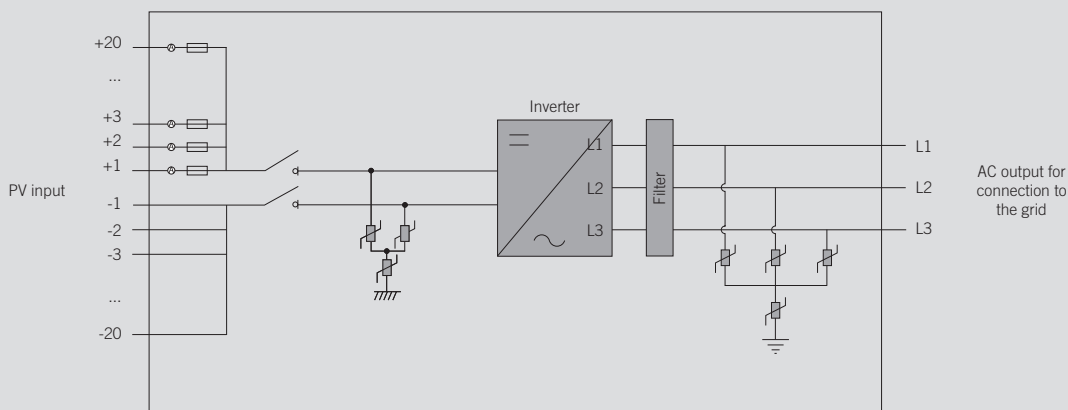
OPTIONAL ACCESSORIES

- 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.

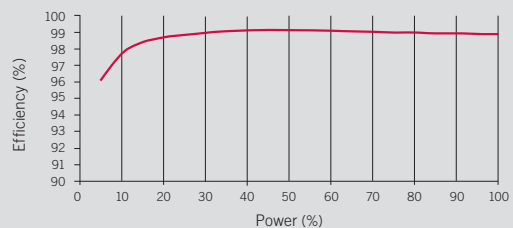
INGECON® SUN 160TL PRO version



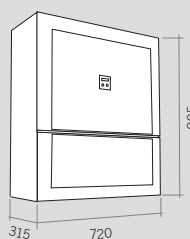
160TL						
Input (DC)						
Recommended PV array power range	95 - 136 kWp	113 - 162.5 kWp	141 - 203 kWp	148 - 213 kWp	153.5 - 220 kWp	162 - 233.5 kWp
MPP Operating voltage range ⁽¹⁾	576 - 1,250 V	692 - 1,250 V	864 - 1,250 V	908 - 1,250 V	936 - 1,250 V	994 - 1,250 V
Maximum voltage ⁽²⁾	1,500 V					
Maximum 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	IT					
Power Factor	1					
Power Factor adjustable ⁽⁴⁾	Yes, 0 - 1 (leading / lagging)					
THD (Total Harmonic Distortion) ⁽⁵⁾	<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}=1.44*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⁾ Extended adjustment range for nominal working points ⁽⁵⁾ For rated AC power and voltage in accordance with IEC 61000-3-4 .

Efficiency INGECON® SUN 160TL [600 Vac] V_{dc} = 1,075 V



Size and weight (mm)



160TL STD
75 kg.

160TL PRO
78 kg.



Ingeteam Power Technology, S.A.
Avda. Ciudad de la Innovación, 13
31621 Sarriguren (Navarra) - Spain
Tel.: +34 948 288 000 / Fax: +34 948 288 001
e-mail: solar.energy@ingeteam.com

Ingeteam S.r.l.
Via Emilia Ponente, 232
48014 Castel Bolognese (RA) - Italy
Tel.: +39 0546 651 490 / Fax: +39 054 665 5391
e-mail: italia.energy@ingeteam.com

Ingeteam SAS
La Naurouze B - 140 rue Carmin
31670 Labège - France
Tel: +33 (0)5 61 25 00 00 / Fax: +33 (0)5 61 25 00 11
e-mail: france@ingeteam.com

Ingeteam INC.
3550 W. Canal St.
Milwaukee, WI 53208 - USA
Tel.: +1 (414) 934 4100 / +1 (855) 821 7190 / Fax: +1 414 342 0779
e-mail: solar.us@ingeteam.com

Ingeteam, a.s.
Technologická 371/1
70800 Ostrava - Pustkovec
Czech Republic
Tel.: +420 59 732 6800 / Fax: +420 59 732 6899
e-mail: czech@ingeteam.com

Ingeteam, S.A. de C.V.
Leibniz 13 des 1101, Col. Anzures
Del. Miguel Hidalgo,
11590 - Mexico - CDMX
Tel +5255 6586 9930-31
e-mail: northamerica@ingeteam.com

Ingeteam Ltda.
Rua Estácio de Sá, 560
Jd. Santa Genebra
13080-010 Campinas/SP - Brazil
Tel.: +55 19 3037 3773
e-mail: brazil@ingeteam.com

Ingeteam Pty Ltd.
Unit 2 Alphen Square South
16th Road, Randjiespark
Midrand 1682 - South Africa
Tel.: +2711 314 3190 / Fax: +2711 314 2420
e-mail: southafrica@ingeteam.com

Ingeteam SpA
Los militares 5890, Torre A, oficina 401
7560742 - Las Condes
Santiago de Chile - Chile
Tel.: +56 2 29574531
e-mail: chile@ingeteam.com

Ingeteam Power Technology India Pvt. Ltd.
2nd Floor, 431
Udyog Vihar, Phase III
122016 Gurgaon (Haryana) - India
Tel.: +91 124 420 6491-5 / Fax: +91 124 420 6493
e-mail: india@ingeteam.com

Ingeteam Sp. z o.o.
Ul. Koszykowa 60/62 m 39
00-673 Warszawa - Poland
Tel.: +48 22 821 9930 / Fax: +48 22 821 9931
e-mail: polska@ingeteam.com

Ingeteam Australia Pty Ltd.
iAccelerate Centre, Building 239
Innovation Campus, Squires Way
North Wollongong, NSW 2500 - Australia
Tel.: +61 455 521 490
e-mail: australia@ingeteam.com

Ingeteam Panama S.A.
Av. Manuel Espinosa Batista, Ed. Torre Internacional
Business Center, Apto./Local 407 Urb.C45 Bella Vista
Bella Vista - Panama
Tel.: +50 761 329 467

Ingeteam Service S.R.L.
Bucuresti, Sector 2, Bulevardul
Dimitrie Pompeiu Nr 5-7
Cladirea Hermes Business Campus 1,
Birou 236, Etaj 2 - Romania
Tel.: +40 728 993 202

Ingeteam Philippines Inc.
Office 2, Unit 330, Milelong Bldg.
Amorsolo corner Rufin St.
1230 Makati
Gran Manila - Philippines
Tel.: +63 0917 677 6039

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