

**TRANSFORMERLESS
CENTRAL
INVERTERS WITH
A MASTER-SLAVE
CONFIGURATION**

**440TL U X360 Outdoor / 660TL U X360 Outdoor
880TL U X360 Outdoor**

The central inverter with a Master-Slave configuration, in any of its versions, is equipped with two to four power blocks, connected in parallel to the same PV generator and to the same medium voltage transformer.

DC and AC supplies in the same cabinet

The input and output lines are integrated into the same cabinet, facilitating maintenance and repair work.

Maximum efficiency values

Through the use of innovative electronic conversion topologies, efficiency values up to 98.8% can be easily achieved. Thanks to a sophisticated control algorithm, this equipment can guarantee maximum efficiency through the selective operation of its power blocks, based on the PV power available. This maximizes the efficiency and service life of the equipment. In this way, in periods of low irradiance, it is able to increase performance by up to 1.8 points.

Enhanced functionality

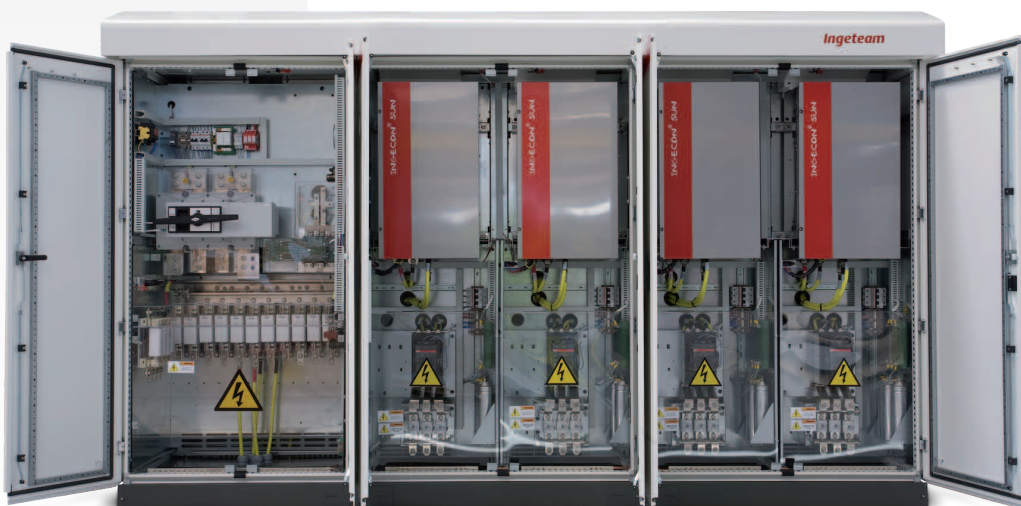
This new INGECON® SUN PowerMax U inverter range features a revamped, improved enclosure which, together with its innovative air cooling system, makes it possible to increase the ambient operating temperature to deliver its rated power up to 122°F (50°C).

A complete range of equipment for all types of projects

The PowerMax U inverters are fully adaptable to all types of engineering projects. This is made possible thanks to their wide range of power outputs and to the variety of possible configurations.

Maximum protection

These three-phase inverters are equipped with a motorized DC load break switch to decouple the PV generator from the inverter. The grounding kit and the input current monitoring kit are supplied as standard. Optionally, the PowerMax U inverters can be supplied with DC fuses.



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Long-lasting design

The inverters have been designed to guarantee a service life of more than 20 years, as demonstrated by the stress tests they are subjected to. Standard 5 year warranty, extendable for up to 25 years.

Grid support

The INGECON® SUN PowerMax U family has been designed to comply with the grid connection requirements in different countries, contributing to the quality and stability of the electric system. These inverters therefore can deliver reactive power and control the active power delivered to the grid.

Ease of maintenance

Easily replaceable modular power blocks for shorter maintenance times.

Easy to operate

The INGECON® SUN PowerMax U inverters feature an LCD screen for the simple and convenient monitoring of the inverter status and a range of internal variables. The display also includes a number of LEDs to show the inverter operating status with warning lights to indicate any incident. All this helps to simplify and facilitate maintenance tasks.

Monitoring and communication

RS-485 communications supplied as standard for monitoring the internal operating variables (alarms, real time production, etc.) in addition to the historical production data. Ethernet, GSM/GPRS and Bluetooth are also available. The following applications are included at no extra cost: INGECON® SUN Manager, INGECON® SUN Monitor and its iSun Monitor Smartphone version for monitoring and recording the inverter data over the Internet.

PROTECTIONS

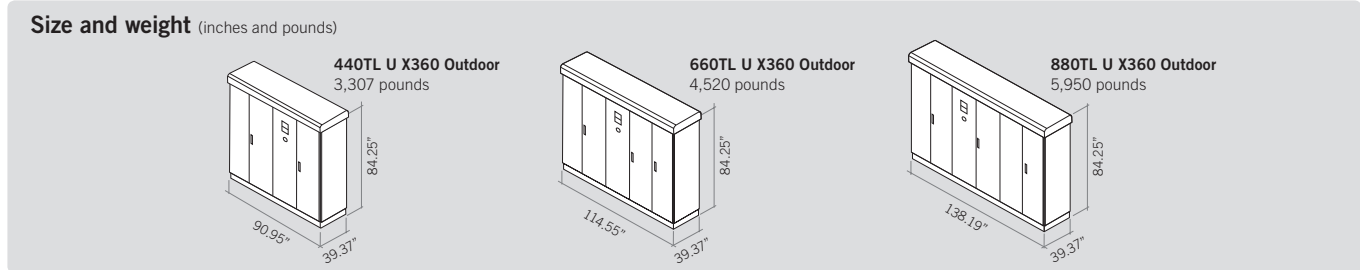
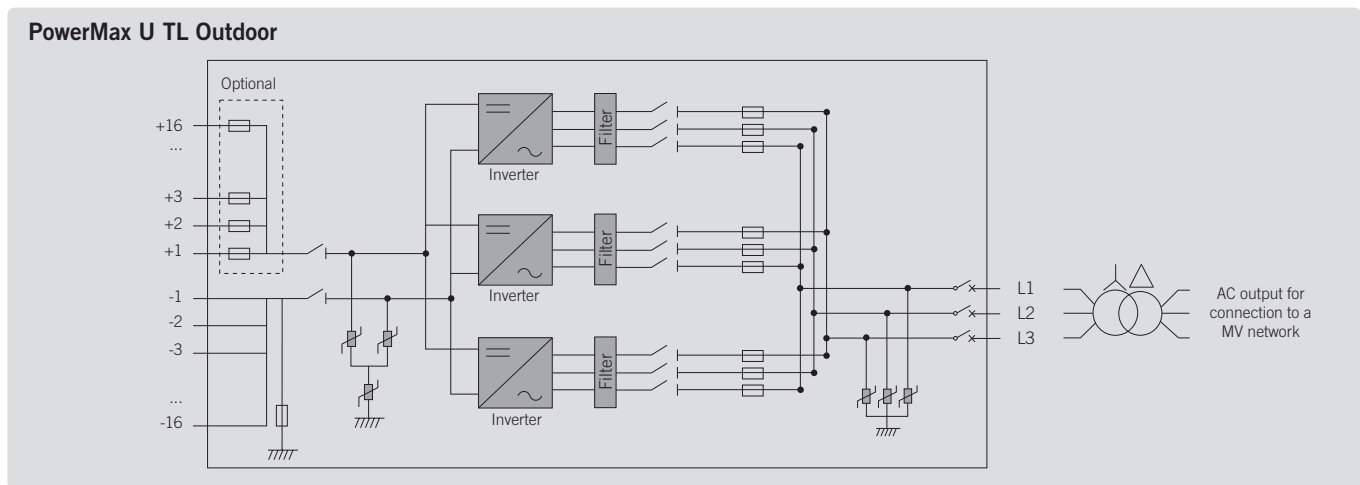
- DC reverse polarity.
- Short-circuits and overloads at the output.
- Anti-islanding with automatic disconnection.
- 4 DC fuse-holders per power block. Non-grounded inverters have both poles protected.
- Lightning induced type 2 DC and AC surge arrestors.
- Motorized DC switch for the automatic disconnection of the inverter from the PV array.
- Grounding kit.

OPTIONAL ACCESSORIES

- Inter-inverter communication via Ethernet or Bluetooth.
- Kit for operating at an ambient temperature of -22°F (-30°C).
- DC fuses.
- Monitoring of the input DC currents.
- Wattmeter on the AC side.
- Low voltage ride-through capability.
- Auxiliary services kit.
- Motorization of the AC switch.

ADVANTAGES OF THE MASTER-SLAVE VERSION

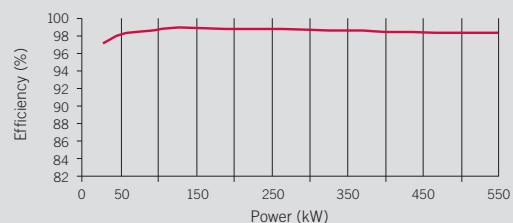
- Enhanced performance.
- In the event of the failure of one of the blocks, the power is then distributed amongst the remaining blocks.
- Lightweight spares, for shorter delivery times.
- It allows to ground the PV array, either the positive or the negative pole.



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Input (DC)			
Recommended PV array power range ⁽¹⁾	446.7 - 589.2 kWp	670 - 884 kWp	892.6 - 1,178.3 kWp
Voltage Range MPP	606 - 820 V	606 - 820 V	606 - 820 V
Maximum voltage DC ⁽²⁾	1,000 V	1,000 V	1,000 V
Maximum current DC	780 A	1,170 A	1,560 A
N° DC inputs with fuse holders	8	12	16
DC fuse dimensions	63 A / 1,000 V to 400 A / 1,000 V fuses, maximum current from 63 to 400 A for positive and negative poles		
Type of connection	Connection to copper bars		
Power blocks	2	3	4
MPPT	1	1	1
Current at each input	40 to 250 A	40 to 250 A	40 to 250 A
Input protections			
Overvoltage protections	DC surge arresters, type 2		
DC breaker	Motorized DC load breaker		
Other protections	From 8 to 16 pairs of DC fuses, DC insulation monitor with alarm		
Output (AC)			
Rated power AC ⁽³⁾	440 kW	660 kW	880 kW
Maximum current AC	706 A	1,058 A	1,411 A
Rated voltage AC	360 V IT System	360 V IT System	360 V IT System
Frequency AC	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Phi Cosine ⁽⁴⁾	1	1	1
Phi Cosine adjustable	Yes. Smax=440 kVA	Yes. Smax=660 kVA	Yes. Smax=880 kVA
THD (Total Harmonic Distortion) ⁽⁵⁾	<3%	<3%	<3%
Output protections			
Overvoltage protections	AC surge arresters, type 2		
AC breaker	AC switch, optionally motorized		
Anti-islanding protection	Yes, with automatic disconnection (for each power stage)		
Other protections	AC fuses, AC short circuits and overloads (for each power stage)		
Features			
Maximum efficiency	98.5%	98.5%	98.6%
CEC	98.5%	98.5%	98.5%
Stand-by consumption ⁽⁶⁾	60 W	90 W	120 W
Consumption at night	60 W	90 W	120 W
General Information			
Ambient temperature	-4°F to 149°F (-20°C to 65°C)	-4°F to 149°F (-20°C to 65°C)	-4°F to 149°F (-20°C to 65°C)
Relative humidity (non-condensing)	0 - 95%	0 - 95%	0 - 95%
Protection class	NEMA 3R	NEMA 3R	NEMA 3R
Max. altitude ⁽⁷⁾	9,842 ft (3,000 m)	9,842 ft (3,000 m)	9,842 ft (3,000 m)
Cooling system	Air forced with temperature control (230 V phase + neutral power supply)		
Air flow	22.6 ft ³ /s (fans: 1,000 VA)	37.96 ft ³ /s (fans: 1,300 VA)	45.56 ft ³ /s (fans:1,500 VA)
Acoustic emission	< 55 dB (A) at 4 m and < 67 dB (A) at 1 m with fans working at maximum power		
Certification	UL1741, IEEE 1547.1		
EMC and security standards	EN 50178, EN 62109-1, EN 62109-2, EN 61000-6-2, EN 61000-6-4, EN 61000-3-11, EN 61000-3-12, FCC Part 15		
Grid connection standards	BDEW MT, RD 661/2007, P.O.12.3, CEI 0-16, CEI 11-20, CEI 11-20 V1, Allegato A70 TERNA, IEEE 1547, Arrêté 23-04-08		

Notes: ⁽¹⁾ Depending on the type of installation and geographical location. Data for STC conditions ⁽²⁾ Consider the voltage increase of the 'Voc' at low temperatures ⁽³⁾ AC Power for 122°F (50°C) ambient temperature. The output power will be reduced at the rate of 1% for each 1°F (0.56°C) of increase ⁽⁴⁾ For P_{out}>25% of the rated power ⁽⁵⁾ For P_{out}>25% of the rated power and voltage in accordance with IEEE 1547.1 ⁽⁶⁾ Consumption from PV field ⁽⁷⁾ Over 3,300 ft temperature for rated power 122°F (50°C) is reduced 2.42 °F each 1,000 ft.

Efficiency



Ingeteam

Ingeteam INC.

5201 Great American Parkway, Suite 320
SANTA CLARA, CA 95054 - USA
Tel.: +1 (415) 450 1869 / +1 (408) 524 2929 / Fax: +1 (408) 824 1327
e-mail: solar.us@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 0736
e-mail: solar.us@ingeteam.com

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 GmbH

Herzog-Heinrich-Str. 10
80336 MUNICH - Germany
Tel.: +49 89 99 65 38 0 / Fax: +49 89 99 65 38 99
e-mail: solar.de@ingeteam.com

Ingeteam SAS

La Naurouze C - 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, 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 Shanghai, Co. Ltd.

Shanghai Trade Square, 1105
188 Si Ping Road
200086 SHANGHAI - P.R. China
Tel.. +86 21 65 07 76 36 / Fax: +86 21 65 07 76 38
e-mail: shanghai@ingeteam.com

Ingeteam, S.A. de C.V.

Ave. Revolución, n° 643, Local 9
Colonia Jardín Español - MONTERREY
64820 - NUEVO LEÓN - México
Tel.: +52 81 8311 4858 / Fax: +52 81 8311 4859
e-mail: northamerica@ingeteam.com

Ingeteam Ltda.

Rua Luiz Carlos Brunello, 286
Chácara Sao Bento
13278-074 VALINHOS SP - Brazil
Tel.: +55 19 3037 3773 / Fax: +55 19 3037 3774
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

Bandera, 883 Piso 211
8340743 Santiago de Chile - Chile
Tel.: +56 2 738 01 44
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 6492 / 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