INGECON SUN

PowerMax Master-Slave
320 Vac

400TL X320 DCAC Indoor / 605TL X320 DCAC Indoor / 800TL X320 DCAC Indoor

TRANSFORMERLESS CENTRAL INVERTERS WITH A MASTER-SLAVE CONFIGURATION

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 protection
These three phase inverters are equipped with a motorized DC load break switch to decouple the PV generator from the inverter. Optionally, the inverters can be supplied with an AC thermal magnetic breaker with door control, in addition to fuses, grounding kit and input current monitoring.

Maximum efficiency values
Through the use of innovative electronic conversion topologies, efficiency values of up to 98.8% can be 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.

A complete range of equipment for all types of projects
The PowerMax 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.

Enhanced functionality
This new INGECON® SUN PowerMax 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 45 ºC.

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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 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 feature a low voltage ride-through capability, and 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 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 incidents. All this helps to simplify and facilitate maintenance tasks.

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

PROTECTIONS

- DC Reverse polarity.
- Short-circuits and overloads at the output.
- Anti-islanding with automatic disconnection.
- Insulation failure DC.
- To 4 pairs of DC fuse-holders per power block.
- Lightning induced class 2 DC and AC surge arrestors.
- DC contactor for the automatic disconnection of the inverter from the PV array.

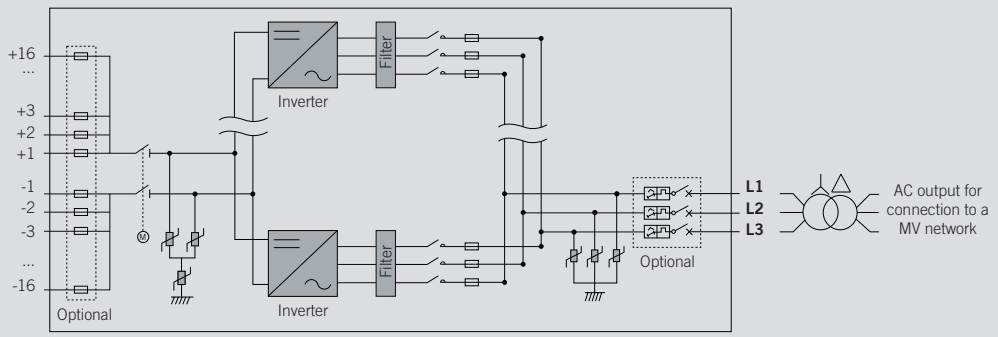
OPTIONAL ACCESSORIES

- AC thermal magnetic breaker.
- Motorization kit for the AC thermal magnetic breaker.
- Inter-inverter communication via Ethernet, Bluetooth or GSM/GPRS.
- Insulation failure AC.
- Grounding kit.
- Kit for operating at an ambient temperature of up to -30ºC.
- DC fuses.
- Blown fuse sensor at the DC input.
- Monitoring of the group currents at the DC input.
- Remote tripping of the AC protection.
- Wattmeter on the AC side.

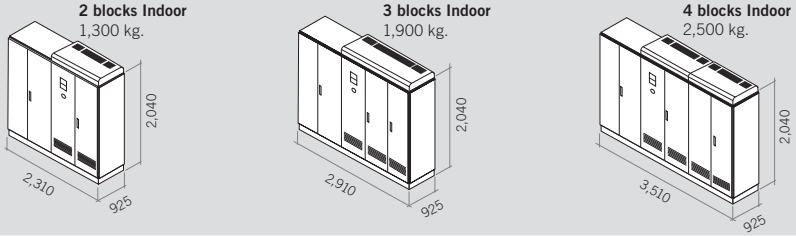
ADVANTAGES OF THE MASTER-SLAVE VERSION

- 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.

PowerMax X DCAC



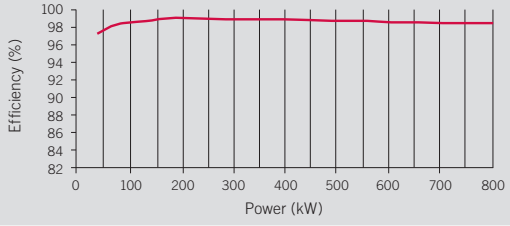
Weight and dimensions (mm)



	400TL X320 DCAC Indoor	605TL X320 DCAC Indoor	800TL X320 DCAC Indoor
Input (DC)			
Recommended PV array power range[1]	409 - 475 kWp	617 - 715 kWp	819 - 949 kWp
Voltage Range MPP	540 - 820 V	540 - 820 V	540 - 820 V
Maximum voltage DC[2]	1,000 V	1,000 V	1,000 V
Maximum current DC	900 A	1,350 A	1,800 A
Nº DC inputs with fuse holders	8	12 (extendable up to 16)	12 (extendable up to 16)
DC fuse dimensions	125 A / 1,000 V to 250 A / 1,000 V fuses, maximum current from 100 to 200 A for positive and negative poles		
Type of connection	Connection to fuse-holder copper bars. Cable entry from the ground through D40 cable glands (max. cable diameter: 40 mm)		
Power blocks	2	3	4
MPPT	1	1	1
Current at each input	100 to 200 A	100 to 200 A	100 to 200 A
Input protections			
Overvoltage protections	DC surge arresters, type 2 (for each power stage)		
DC breaker	Motorized DC load breaker		
Other protections	Up to 16 pairs of DC fuses, DC insulation monitor with alarm, emergency pushbutton		
Output (AC)			
Rated power AC[3]	401 kW	605 kW	803 kW
Maximum current AC	736 A	1,104 A	1,472 A
Rated voltage AC	320 V IT System	320 V IT System	320 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=401 kVA	Yes. Smax=605 kVA	Yes. Smax=803 kVA
THD (Total Harmonic Distortion)[5]	<3%	<3%	<3%
Output protections			
Overvoltage protections	AC surge arresters, type 2		
AC breaker	Optional AC thermal magnetic breaker with door control, remote trip or 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	98.7%	98.7%	98.7%
Euroefficiency	98.5%	98.5%	98.5%
CEC	97.9%	97.9%	97.9%
Stand-by consumption[6]	60 W	90 W	120 W
Consumption at night	60 W	90 W	120 W
General Information			
Ambient temperature	-20ºC to +65ºC	-20ºC to +65ºC	-20ºC to +65ºC
Relative humidity (non-condensing)	0 - 95%	0 - 95%	0 - 95%
Protection class	IP20	IP20	IP20
Max. altitude[7]	3,000 m	3,000 m	3,000 m
Cooling system	Air forced with temperature control (230 V phase + neutral power supply)		
Air flow	2,670 m³/h (fans: 1,000 VA)	4,640 m³/h (fans: 1,300 VA)	5,340 m³/h (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	CE		
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 45ºC ambient temperature. For each ºC of increase, the output power will be reduced at the rate of 1.8% [4] For P_{out}>25% of the rated power [5] For P_{out}>25% of the rated power and voltage in accordance with IEC 61000-3-4 [6] Consumption from PV field [7] Over 1,000 m temperature for rated power (45ºC) is reduced at the rate of 4.5ºC for each 1,000 m.

Efficiency INGECON® SUN 800TL X320 Vdc = 550 V



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