

## TRANSFORMERLESS CENTRAL INVERTERS WITH A MASTER-SLAVE CONFIGURATION

UL 1741  
CERTIFIED

## 500TL U X275 Outdoor / 660TL U X275 Outdoor

The central inverter with a Master-Slave configuration, in any of its versions, is equipped with three 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 98.6% 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. Optionally, the PowerMax U inverters can be supplied with DC fuses. Optional positive or negative grounding, or non-grounded.



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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 20 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 data, 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.
- Insulation failure.
- 4 DC fuse-holders per power block.
- Non-grounded inverters have both poles protected.
- DC and AC surge arresters, type 2.
- Motorized DC switch for the automatic disconnection of the inverter from the PV array.
- AC fuses.

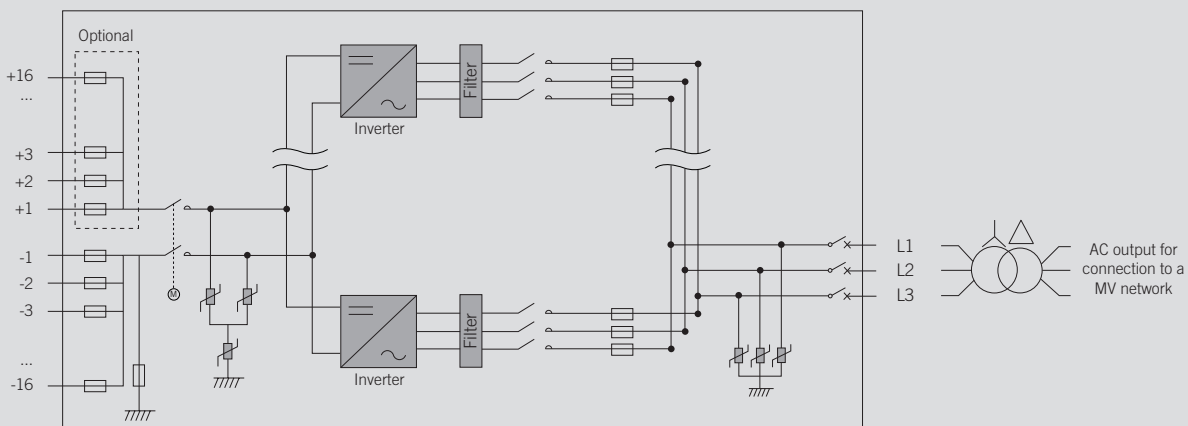
#### OPTIONAL ACCESSORIES

- GSM / GPRS remote communication.
- 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.

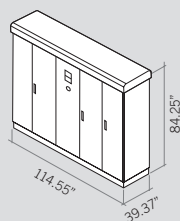
#### ADVANTAGES OF THE MASTER-SLAVE VERSION

- 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.

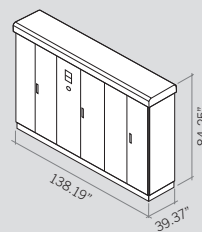
### PowerMax TL U X Series Outdoor



### Size and weight (inches and lbs)



**500TL U X275 Outdoor**  
4,520 lbs

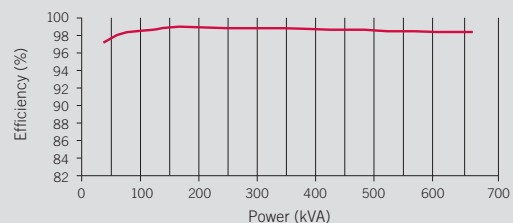


**660TL U X275 Outdoor**  
5,950 lbs

	500TL U X275 Outdoor	660TL U X275 Outdoor
<b>Input (DC)</b>		
Recommended PV array power range <sup>(1)</sup>	508.4 - 669.5 kWp	671.1 - 897.1 kWp
Voltage Range MPP	403 - 820 V	403 - 820 V
Maximum voltage <sup>(2)</sup>	1,000 V	1,000 V
Maximum current	1,170 A	1,560 A
N° inputs with fuse holders	8 - 16 (16 - 32 for floating configuration)	8 - 16 (16 - 32 for floating configuration)
Fuse dimensions	125 A / 1,000 V to 400 A / 1,000 V fuses, maximum current from 82 to 260 A for positive and negative poles	
Type of connection	Connection to copper bars	
Power blocks	3	4
MPPT	1	1
Current at each input	82 to 260 A	82 to 260 A
<b>Input protections</b>		
Overvoltage protections	DC surge arresters, type 2	
DC switch	Motorized DC switch	
Other protections	DC insulation monitor with alarm. Optionally, from 8 to 16 pairs of DC fuses (16 to 32 pairs for floating configuration)	
<b>Output (AC)</b>		
Rated power <sup>(3)</sup>	500 kVA	660 kVA
Maximum current	1,050 A	1,400 A
Rated voltage	275 V IT System	275 V IT System
Frequency	50 / 60 Hz	50 / 60 Hz
Phi Cosine <sup>(4)</sup>	1	1
Phi Cosine adjustable	Yes. Smax=500 kVA	Yes. Smax=500 kVA
THD (Total Harmonic Distortion) <sup>(5)</sup>	<3%	<3%
<b>Output protections</b>		
Overvoltage protections	AC surge arresters, type 2	
AC switch	Yes	
Anti-islanding protection	Yes, with automatic disconnection (for each power stage)	
Other protections	AC fuses, AC short circuits and overloads (for each power stage)	
<b>Features</b>		
Maximum efficiency	98.3%	98.3%
CEC	98%	98%
Stand-by consumption <sup>(6)</sup>	90 W	120 W
Consumption at night	90 W	120 W
<b>General Information</b>		
Ambient temperature	-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%
Protection class	NEMA 3R	NEMA 3R
Maximum altitude <sup>(7)</sup>	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	37.96 ft³/s (fans: 1,300 VA)	45.56 ft³/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	
Marking	CE, ETL	
EMC and security standards	UL1741, FCC Part 15, IEEE C37.90.1, IEEE C37.90.2	
Grid connection standards	IEC 62116, UL1741, IEEE1547, IEEE1547.1, NEC CODE	

**Notes:** <sup>(1)</sup> Depending on the type of installation and geographical location. Data for STC conditions <sup>(2)</sup> Consider the voltage increase of the 'Voc' at low temperatures <sup>(3)</sup> 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 <sup>(4)</sup> For P<sub>OUT</sub>>25% of the rated power <sup>(5)</sup> For P<sub>OUT</sub>>25% of the rated power and voltage in accordance with IEEE 1547.1 <sup>(6)</sup> Consumption from PV field <sup>(7)</sup> Over 3,300 ft temperature for rated power 122 °F (50 °C) is reduced 2.42 °F each 1,000 ft.

**Efficiency INGECON® SUN 660TL U X275 Outdoor** V<sub>dc</sub> = 403 V





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