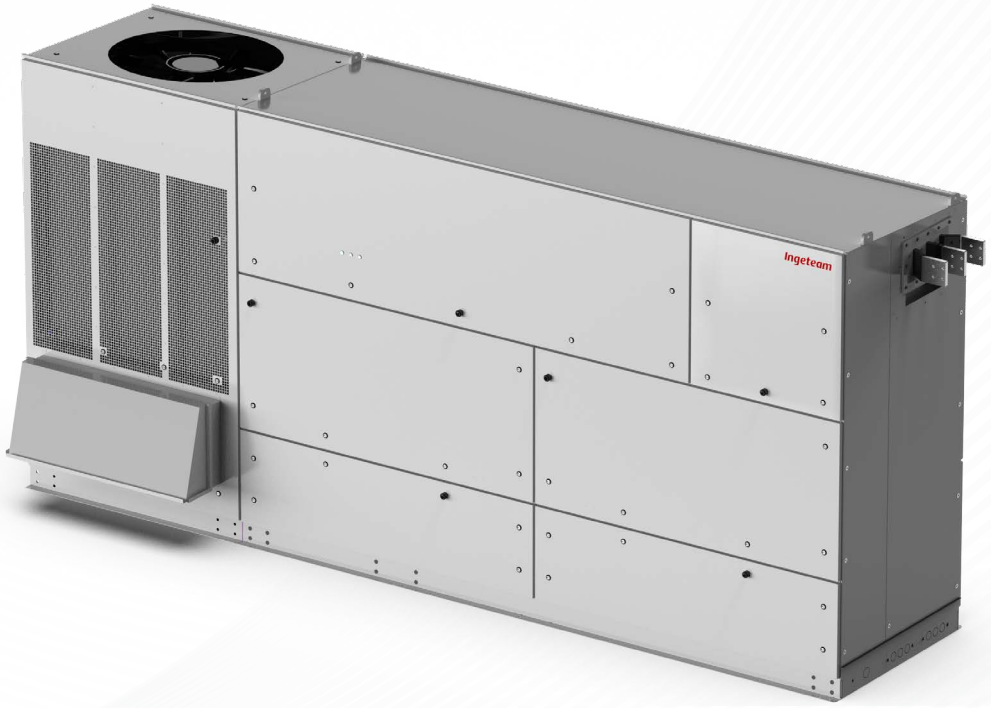
INGECON SUN

3Power C Series Plus



SOLAR PV CENTRAL INVERTER UP TO 5.4 MVA

TRANSFORMERLESS PV INVERTER WITH AN EXTRA THERMAL STABILITY AND A GREATER POWER DENSITY

Greater power density

This solar PV inverter achieves a market-leading power density as it provides up to 5,378 kVA in just one power stack.

Latest generation electronics

The INGECON® SUN 3Power C Series Plus PV inverter features an innovative control unit that performs a more efficient and sophisticated inverter control, as it uses a last-generation digital signal processor.

Liquid Cooling System (LCS)

Ingeteam has already supplied +57 GW of liquid-cooled wind power converters world-wide. It offers a greater thermal stability and a more optimized component usage. The LCS has been designed to refrigerate the IGBTs, the power phases and the IP65 / NEMA 3 compartment. It features less moving components, so it consumes a lower amount of power and it requires less maintenance works.

The LCS is a closed circuit supplied totally filled and purged, equipped with fast connectors with an anti-dripping system, so it offers zero risk of particle entrance. It has been designed to avoid siphons in order to easily purge it if necessary. The coolant used is a biodegradable glycol water mixture. There is no need of emptying the LCS in order to replace the phases, nor the sensors.

IP65 protection

A secondary liquid cooling system is used to refrigerate the air inside the IP65-protected compartment. A water-air heat exchanger is used for that. This compartment contains the power and control electronics, the DC fuses, the DC and AC protections, the busbars and the power phases.

Advanced functionalities

The only photovoltaic inverters on the market with advanced electroluminescence function, developed to simplify maintenance and optimize the performance of solar plants.

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300001906/C01

SOLAR PV CENTRAL INVERTER UP TO 5.4 MVA

Transformerless pv inverter with an extra thermal stability and a greater power density

Monitoring and communication

Dual Ethernet to communicate with the SCADA and the PPC (power plant controller). Moreover, it features Wi-Fi communication as access point to connect with the inverter during commissioning and O&M works. Ingeteam's advanced PV plant monitoring system INGECON® SUN Monitor is also available at no extra cost. The Smartphone application of the INGECON® SUN Monitor available on the App Store and on the Play Store makes it easier and more comfortable to monitor the PV plant.

Low voltage panel designed for the protection and power supply of auxiliary services, as well as housing the monitoring of signals and communications from the inverter.

Standard 5 year warranty, extendable for up to 25 years.

Advanced grid support

- Low Voltage Ride Through.
- Fast Frequency Regulation.
- Reactive Power at Night
- Voltage Droop Control.
- Active Power Reserve Without Batteries.
- Grid Following & Grid Forming.
- Black Start Capability
- Automatic Voltage Regulation.

Protections

- DC Reverse polarity.
- Short-circuits and overloads at the output.
- Anti-islanding with automatic disconnection.
- Insulation failure DC.
- Up to 32 pairs of fuse-holders.
- Lightning induced DC and AC surge arresters, type II.
- Motorized DC switch to automatically disconnect the inverter from the PV array.
- Motorized AC circuit breaker.
- Hardware protection via firmware.
- Additional protection for the power stack, liquid cooled, IP65 rated and air cooled by a closed loop.

Optional Accessories

- Grounding kit.
- Heating kit, for operating at an ambient temperature between -20 °C and -40 °C.
- DC surge arresters type I+II.
- AC surge arresters type I+II.
- DC fuses.
- Monitoring of the currents at the DC input.
- PID prevention kit (PID: Potential Induced Degradation).
- DC coupling ready option.
- Auxiliary transformer

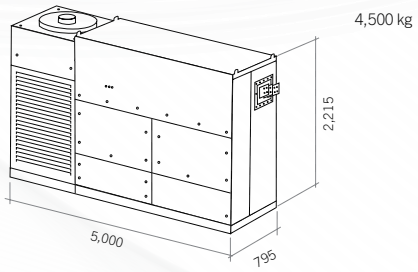
Auxiliary services

- Auxiliary transformer kit (20 kVA, 40 kVA or 60 kVA)
- Auxiliary services of Power Station kit (Three Phase 400 V):
  - LV Panel Basic
  - Optional services
- Kit premium for customers (Three Phase 400 V)

Liquid cooling system

- LCS to refrigerate the IGBTs.
- More optimized component usage: greater thermal stability.
- Less moving components: lower power consumption and less maintenance works.
- No risk of particle entrance.
- Anti-corrosion protection with stainless steel components.
- LCS is used in many industries. Thus, it is very reliable, as its components are subject to many validation tests.
- Fast connectors with anti-dripping system.
- Biodegradable glycol water mixture.
- No need of emptying the LCS in order to replace the phases, nor the sensors.

Size and weight (mm and kg)



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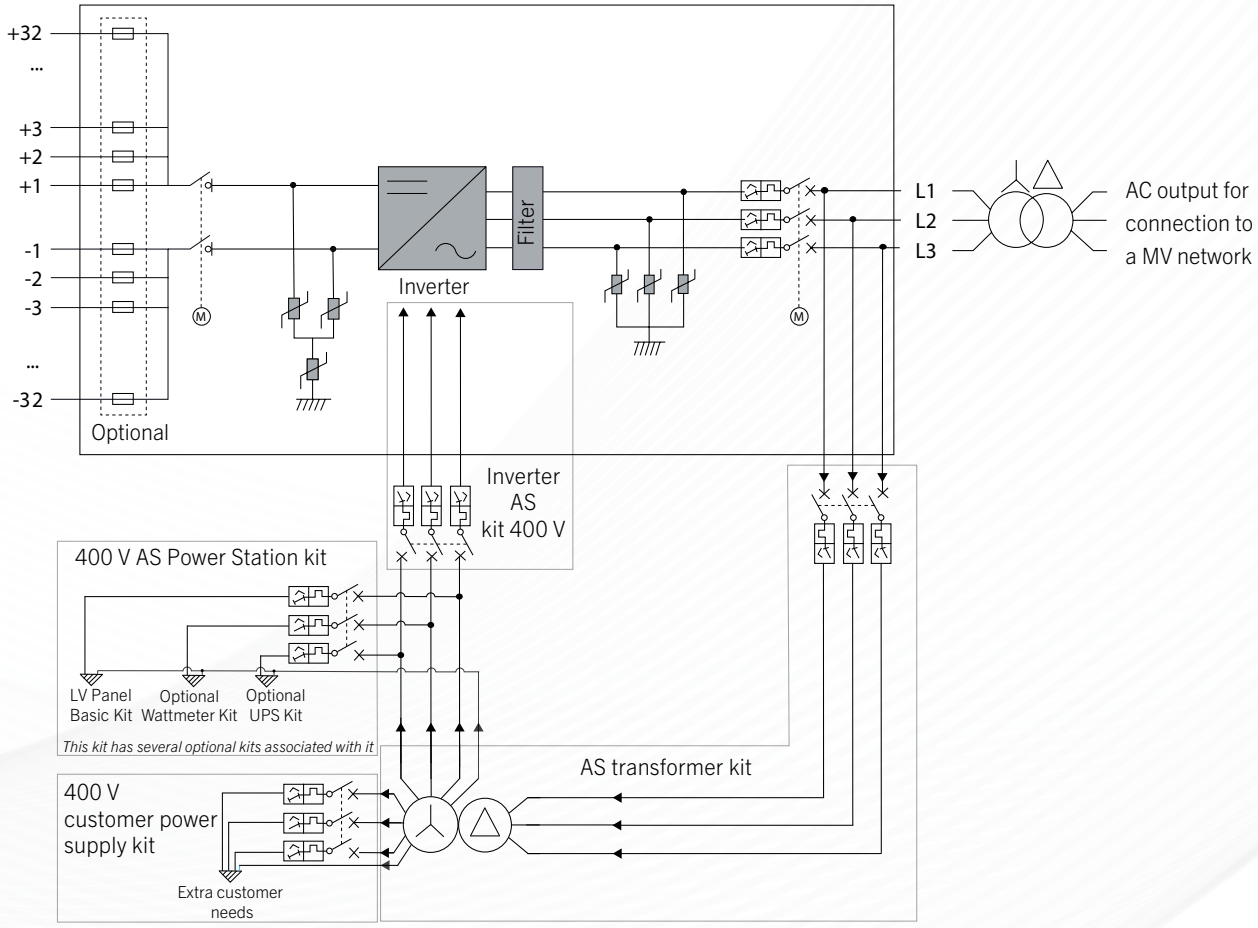
SOLAR PV CENTRAL INVERTER UP TO 5.4 MVA

Transformerless pv inverter with an extra thermal stability and a greater power density

SLD (Single Line Diagram)



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300001906/C01

INGECON® SUN **5380TL**

INPUT (DC)	C600	C615	C630	C645
Recommended PV array power range[1]	4,715 - 6,080 kWp	4,832 - 6,231 kWp	4,950 - 6,383 kWp	5,068 - 6,535 kWp
Voltage range MPP[2]	863 - 1,300 V	883 - 1,300 V	904 - 1,300 V	925 - 1,300 V
Maximum voltage[3]	1,500 V			
Maximum current	5,625 A			
Nº inputs with fuse-holders	Up to 32			
Fuse dimensions	Up to 630 A / 1,500 V / gPV / 100 kA (L/R 5mS) (optional)			
Type of connection	Connection to copper bars			
Power blocks	1			
MPPT	1			

INPUT PROTECTIONS	
Overvoltage protections	Type II surge arresters (type I+II optional)
DC switch	Motorized DC load break disconnect
Other protections	Up to 32 pairs of DC fuses (optional) / Reverse polarity / Insulation failure monitoring / Anti-islanding protection

OUTPUT (AC)				
Power @37 °C	4,677 kVA	4,793 kVA	4,910 kVA	5,027 kVA
Power @40 °C	4,572 kVA	4,686 kVA	4,801 kVA	4,915 kVA
Power @50 °C	4,032 kVA	4,133 kVA	4,234 kVA	4,335 kVA
Current @37 °C	4,500 A			
Current @40 °C	4,400 A			
Current @50 °C	3,880			
Rated voltage[4]	600 V IT System	615 V IT System	630 V IT System	645 V IT System
Frequency	50 / 60 Hz			
Power Factor[5]	1			
Power Factor adjustable	Yes, 0 - 1 (leading / lagging)			
THD (Total Harmonic Distortion)[6]	<3%			

OUTPUT PROTECTIONS	
Overvoltage protections	Type II surge arresters (type I+II optional)
AC breaker	Motorized AC circuit breaker
Anti-islanding protection	Yes, with automatic disconnection
Other protections	AC short-circuits and overloads

FEATURES	
Maximum efficiency	98.9%
CEC	98.5%
Stand-by or no-switching[7]	185 W

GENERAL INFORMATION	
Ambient temperature	-20 °C to +60 °C
Ambient temperature (with heating kit)	-40 °C to +60 °C
Relative humidity (non-condensing)	0-100% (Outdoor)
Protection class	IP65[8]
Corrosion protection	External corrosion protection
Maximum altitude	4,500 m (for installations beyond 1,000 m, please contact Ingeteam's solar sales department)
Cooling system	Liquid cooling system and forced air cooling system with temperature control (400V 3 phase + neutral power supply, 50/60 Hz)
Air flow range	0 - 7,800 m^3/h
Average air flow	4,200 m^3/h per power block
Acoustic emission (100% / 50% load)	57 dB(A) at 10 m / 49.7 dB(A) at 10 m
Marking	CE,SGS
EMC and security standards	UL1741-SB, FCC Part 15, IEEE C37.90.1, IEEE C37.90.2, CSA22.2 No107
Grid connection standards	IIEC 62116, UL1741-SB, IEEE2800, IEEE1547, IEEE1547.1, NEC CODE, Electric Rule 21: 2015, CSA22.2 No107

Notes
(1) Depending on the type of installation and geographical location. Data for STC conditions.
(2) Vmpp.min is for rated conditions (Vac=1 p.u. and Power Factor=1) and floating systems.
(3) Consider the voltage increase of the 'Voc' at low temperatures.
(4) Other AC voltages and powers available upon request.
(5) For P_{out}>25% of the rated power.
(6) For P_{out}>25% of the rated power and voltage in accordance with IEC 61000-3-4.
(7) Consumption from PV field when there is PV power available.
(8) Except for the LC filter and the air-water heat exchanger, that are IP54.

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300001906/C01

INGECON® SUN **5380TL**

INPUT (DC)	C660	C675	C690
Recommended PV array power range(1)	5,186 - 6,687 kWp	5,304 - 6,839 kWp	5,422 - 6,991 kWp
Voltage range MPP(2)	946 - 1,300 V	966 - 1,300 V	987 - 1,300 V
Maximum voltage(3)	1,500 V		
Maximum input current	5,625 A		
Nº inputs with fuse-holders	Up to 32		
Fuse dimensions	Up to 630 A / 1,500 V / gPV / 100 kA (L/R 5mS) (optional)		
Type of connection	Connection to copper bars		
Power blocks	1		
MPPT	1		

INPUT PROTECTIONS	
Overvoltage protections	Type II surge arresters (type I+II optional)
DC switch	Motorized DC load break disconnect
Other protections	Up to 32 pairs of DC fuses (optional) / Reverse polarity / Insulation failure monitoring / Anti-islanding protection

OUTPUT (AC)			
Power @37 °C	5,144 kVA	5,261 kVA	5,378 kVA
Power @40 °C	5,029 kVA	5,144 kVA	5,258 kVA
Power @50 °C	4,435 kVA	4,536 kVA	4,637 kVA
Current @37 °C	4,500 A		
Current @40 °C	4,400 A		
Current @50 °C	3,880 A		
Rated voltage(4)	660 V IT System	675 V IT System	690 V IT System
Frequency	50 / 60 Hz		
Power Factor(5)	1		
Power Factor adjustable	Yes, 0 - 1 (leading / lagging)		
THD (Total Harmonic Distortion)(6)	<3%		

OUTPUT PROTECTIONS	
Overvoltage protections	Type II surge arresters (type I+II optional)
AC breaker	Motorized AC circuit breaker
Anti-islanding protection	Yes, with automatic disconnection
Other protections	AC short-circuits and overloads

FEATURES	
Maximum efficiency	98.9%
CEC	98.5%
Stand-by or no-switching(5)	185 W

GENERAL INFORMATION	
Ambient temperature	-20 °C to +60 °C
Ambient temperature (with heating kit)	-40 °C to +60 °C
Relative humidity (non-condensing)	0-100% (Outdoor)
Protection class	IP65(8)
Corrosion protection	External corrosion protection
Maximum altitude	4,500 m (for installations beyond 1000 m, please contact Ingeteam's solar sales department)
Cooling system	Liquid cooling system and forced air cooling system with temperature control (400V 3 phase + neutral power supply, 50/60 Hz)
Air flow range	0 - 7,800 m^3/h
Average air flow	4,200 m^3/h per power block
Acoustic emission (100% / 50% load)	57 dB(A) at 10 m / 49.7 dB(A) at 10 m
Marking	CE,SGS
EMC and security standards	UL1741-SB, FCC Part 15, IEEE C37.90.1, IEEE C37.90.2, CSA22.2 No107
Grid connection standards	IEC 62116, UL1741-SB, IEEE2800, IEEE1547, IEEE1547.1, NEC CODE, Electric Rule 21: 2015, CSA22.2 No107

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