TYPE TEST APPROVAL

No:230263-TTA

Licence Holder	INGETEAM POWER TECHNOLOGY, SA Avda. Ciudad de a Innovación, 13, E-31621 Sarriguren, Navarra, Spain
Applicant	INGETEAM POWER TECHNOLOGY, SA Avda. Ciudad de a Innovación, 13, E-31621 Sarriguren, Navarra, Spain
Product	Three-Phase Solar Inverter (tested model)/ Three-phase battery inverter
Trademark/ Series/ Model	INGECON / INGECON SUN 3 PLAY/ INGECON SUN 100TL (tested model) INGECON SUN 160TL INGECON SUN STORAGE 100TL INGECON SUN STORAGE 100TL HV INGECON SUN STORAGE 140TL HV
Serial Number	380117260002
Firmware Version	up to version ABS1004_K (Three-Phase Solar Inverter) up to version ABS1008 _I (Three-phase battery inverter)
Standard	**IEC 61000-6-1:2005,** Electromagnetic compatibility (EMC) -- Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments **IEC 61000-6-2:2005.** Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments. **IEC 61000-6-4:2006.** Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments.

The above-mentioned generating unit complies the requirement of:

IEC 61000-6-1:2005, Electromagnetic compatibility (EMC) -- Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments

IEC 61000-6-2:2005. Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments.

IEC 61000-6-4:2006. Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments.

Having assessed the test results in the test report 3170040 performed by CEMITEC.
There is no verification of the manufacturing process.

Place, Date*:* Madrid, 23/03/2023

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(Technical Director)

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Technical data

INGECON SUN 100TL						
Input (DC)						
Recommended PV array power range	56 - 80.2 kWp	91.1 - 130.5 kWp	96.2 - 137.8 kWp	101.2 - 145 kWp	106.3 - 152.3 kWp	111.3 - 159.5 kWp
Voltage range MPP (1)	513 - 850 V	513 - 850 V	541.5 - 850 V	570 - 850 V	598.5 - 850 V	627 - 850 V
Maximum voltaje (2)	1,100 V					
Maximum current (3)	185 A					
Output (AC)						
Rated power at rated Vac	55.3 kW	90 kW	95 kW	100 kW	105 kW	110 kW
Maximum current	145 A					
Rated voltage	220 V	360 V	380 V	400 V	420 V	440 V
Rated frequency	50 Hz					
Adjustable power factor	0 – 1 (leading / lagging)					

(1) Vmpp,min is for rated conditions (Vac=1 p.u. and Power Factor=1). Vmpp,min Efficiency INGECON® SUN 100TL Vdc = 570 V will depend on the grid voltage (Vac), according to this relation: Vmpp,min=1.425*Vac "
(2) The inverter does not start operating until Vdc <1,000 V. If the DC fuses for the negative pole have been installed, then the maximum DC voltage is 1,000 V
(3) The maximum current per PV connector is 15 A for the PRO version (4) For each ºC of increase, the output power will be reduced at the rate of 2.3%.

INGECON SUN 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
Voltage range MPP (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 voltaje (2)	1.500 V					
Maximum current (3)	168 A					
Output (AC)						
Rated power at 25 ºC / 40 ºC / 50 ºC	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 ºC / 40 ºC / 50 ºC	134 A / 124 A / 121 A					
Rated voltage	400 V	480 V	600 V	630 V	650 V	690 V
Rated frequency	50 Hz					
Adjustable power factor	0 – 1 (leading / lagging)					

(1) Vmpp,min is for rated conditions (Vac=1 p.u. and Power Factor=1). Vmpp,min will depend on the grid voltage (Vac), according to this relation: Vmpp,min=1.44*Vac
(2) The inverter does not start operating until Vdc <1,450 V
(3) The maximum current per PV connector is 20 A for the PRO version

INGECON SUN STORAGE 100TL	
Input (DC)	
Voltage range (1)	627 - 850 V
Maximum Voltage (2)	1100 V
Maximum power charge/discharge	60 kW / 100 kW
Maximum current charge/discharge	96 A / 159 A
Output (AC)	
Maximum active power charge/discharge	60 kW / 100 kW
Maximum power	If Smáx=100 kVA Qmáx=60 kVAR
Maximum current charge/discharge	87 A / 145 A
Nominal voltage	400 V
Frequency	50 Hz

(1) Minimum voltage of the batteries 627V (Vredmax = 1,085 and Cos(Phi) = 1). If Vgridmax is different from that value, then the minimum battery voltage must be calculated as Vbatmin = Voltage range (Min.) * Vgridmax / 1.085.
(2) The inverter does not start until Vdc <1000V (3) For each ºC increase, the output power will decrease by 2.3%.

INGECON SUN STORAGE 100TL HV						
Input (DC)						
Voltage range (Min. / Max) (1)	673 - 1250 V	729 - 1250 V	800 - 1250 V	895 - 1250 V	935 - 1250 V	951 - 1250 V
Maximum voltage (2)	1,500 V					
Maximum power (charge / discharge)	80 kW / 97,5 kW	86,6 kW / 98,8 kW	95 kW / 98,8 kW	98,8 kW / 98,8 kW	98,8 kW / 98,8 kW	98,8 kW / 98,8 kW
Maximum current (charge / discharge)	119 A / 144,7 A	119 A / 135,5 A	119 A / 123,5 A	119 A / 110,4 A	119 A / 105,7 A	119 A / 103,9 A
Output (AC)						
Rated power charge (25°C / 40°C / 50°C)	81 / 75 / 73,6 kW	87,6 / 81,3 / 79,7 kW	96,2 / 89,2 / 87,5 kW	100 / 99,8 / 97,9 kW	100 / 100 / 100 kW	100 / 100 / 100 kW
Rated power discharge (25°C / 40°C / 50°C)	98,6 / 91,3 / 89 kW	100 / 98,8 / 96,4 kW	100 / 100 / 100 kW	100 / 100 / 100 kW	100 / 100 / 100 kW	100 / 100 / 100 kW
Maximum current charge (25°C / 40°C / 50°C)	110 / 102 / 100 A					
Maximum current discharge (25°C / 40°C / 50°C)	134 / 124 / 121 A	125,5 / 124 / 121 A	114,3 / 114,3 / 114,3 A	102,2 / 102,2 / 102,2 A	97,9 / 97,9 / 97,9 A	96,2 / 96,2 / 96,2 A
Rated voltage	425 V	460 V	505 V	565 V	590 V	600 V
Rated frequency	50 Hz					
Adjustable power factor	0 – 1 (leading / lagging)					

(1) The minimum battery voltage has been calculated for Vgridmax = 1.085 p.u. and Cos Phi = 1. If Vgridmax is different from that value, then the minimum battery voltage must be calculated as Vbatmin = Voltage range (Min.) * Vgridmax / 1.085.
(2) The inverter does not start operating until Vdc <1,450 V (3) For rated AC power and voltage in accordance with IEC 61000-3-4.

INGECON SUN STORAGE 140TL HV						
Input (DC)						
Voltage range (Min. / Max) (1)	673 - 1250 V	729 - 1250 V	800 - 1250 V	895 - 1250 V	935 - 1250 V	951 - 1250 V
Maximum voltage (2)	1,500 V					
Maximum power (charge / discharge)	80 kW / 97,5 kW	86,6 kW / 98,8 kW	95,1 kW / 115,8 kW	106,4 kW / 129,6 kW	111,1 kW / 135,3 kW	112,9 kW / 137,6 kW
Maximum current (charge / discharge)	119 A / 144,7 A					
Output (AC)						
Rated power charge (25°C / 40°C / 50°C)	81 / 75,1 / 73,6 kW	87,6 / 81,3 / 79,7 kW	96,2 / 89,2 / 87,5 kW	107,6 / 99,8 / 97,9 kW	112,4 / 104,2 / 102,2 kW	114,3 / 106 / 103,9 kW
Rated power discharge (25°C / 40°C / 50°C)	98,6 / 91,3 / 89,1 kW	106,8 / 98,8 / 96,4 kW	117,2 / 108,5 / 105,8 kW	131,1 / 121,3 / 118,4 kW	136,9 / 126,7 / 123,7 kW	139,3 / 128,9 / 125,7 kW
Maximum current charge (25°C / 40°C / 50°C)	110 / 102 / 100 A					
Maximum current discharge (25°C / 40°C / 50°C)	134 / 124 / 121 A					
Rated voltage	425 V	460 V	505 V	565 V	590 V	600 V
Rated frequency	50 Hz					
Adjustable power factor	0 – 1 (leading / lagging)					

(1) The minimum battery voltage has been calculated for Vgridmax = 1.085 p.u. and Cos Phi = 1. If Vgridmax is different from that value, then the minimum battery voltage must be calculated as Vbatmin = Voltage range (Min.) * Vgridmax / 1.085

(2) The inverter does not start operating until Vdc <1,450 V (3) For rated AC power and voltage in accordance with IEC 61000-3-4.

RECORD OF CHANGES

Version	Reason of the modifications	Modifications	Date
0	Initial Version	--------	23/03/2023