

<b>Product Certificate Number</b>	<b>10978-23-1-CER</b>
<b>Applicant</b>	Ingeteam Power Technology S.A. - Energy Avenida Ciudad De La Innovación, 13. 31621. Sarriguren. Navarra. SPAIN
<b>Model/</b>	INGECON SUN 1250TL B450
<b>Type of generating unit</b>	Photovoltaic Inverter
<b>Technical Data</b>	See page 2
<b>Standard</b>	IEC 61683: 1999 Photovoltaic systems. Power conditioners. Procedure for measuring efficiency

Having assessed the test report number: 10978-23-1-TR performed by Certification Entity for Renewable Energies, S.L. (EA Accredited Laboratory Nº 1239/LE2396) based on the requirements of the EN ISO/IEC 17025:2005.

The above-mentioned generating unit complies with the requirements of the: IEC 61683: 1999 Photovoltaic systems. Power conditioners. Procedure for measuring efficiency.

This certification is according the CERE internal process PET-CERE-09 Rev 10 based on the requirements of the EN ISO/IEC 17065:2012. For this certification process the conformity assessment activities was based on:

- Testing of production samples selected by CERE.
- Audit of quality system according ISO 9001 with certificate number: 0.04.12231 issued by a certification body accredited according EN ISO/IEC 17021.
- Inspection of the manufacturing process.

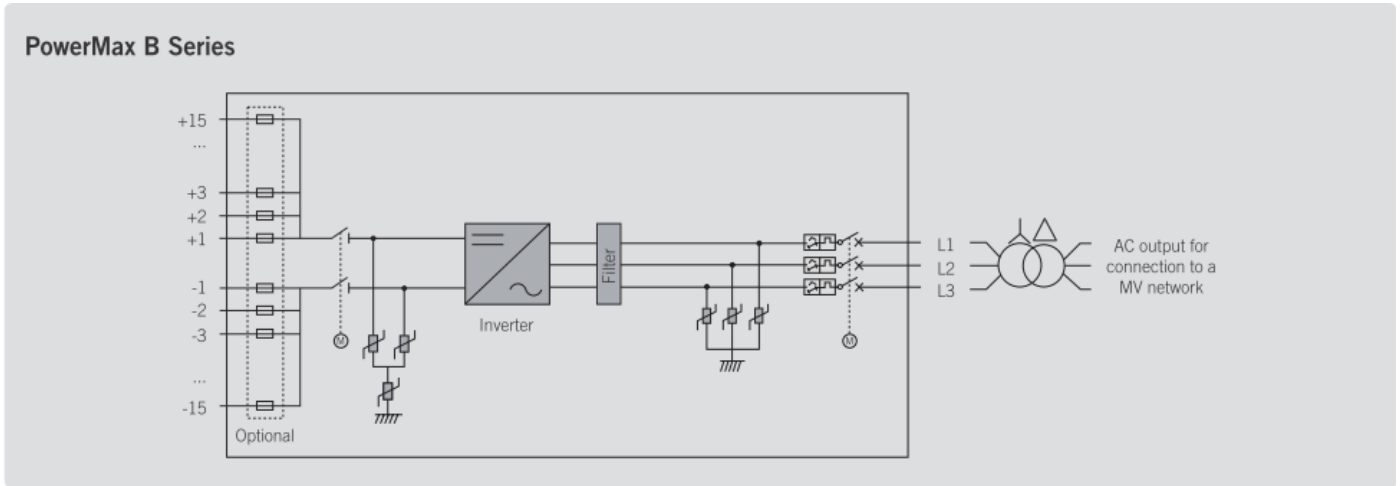
Madrid, June 23, 2017. This certificate is valid until June 23, 2020

Miguel Martínez Lavin  
Certification Manager

## INGECON SUN 1250TL B450

<b>Model:</b>	<b>1250TL B450</b>
<b>Input (DC)</b>	
Recommended PV array power range	1262 – 1621 kWp
Voltage Range	653 – 820 V
Maximum Voltage	1050 V
Maximum Current	2000 A
Nº inputs	5 up to 15 (up to 12 with the combiner box)
Fuse dimensions	63A/1000 V to 630A/1000 V fuses (optional)
Type of Connection	Connection to cooper bars
Number of Power Blocks	1
MPPT	1
Max. Current at each input	From 40A to 410A for positive and negative poles
<b>Output (AC)</b>	
Power 35°C/46 °C /52°C	1247 kVA / 1208 kVA / 1169 kVA
Current 35°C/46 °C /52°C	1600 A/ 1550 A/ 1500 A
Rated Voltage	450 V IT System
Frequency	50/60 Hz
Phi Cosine	1
Phi cosine adjustable	Yes. $S_{max}=1247$ kVA

Electrical Diagram:



Manufacturer:

Ingeteam Power Technology, S.A - Paneles  
Pol. Ind. El Juncarillo, Nave 1  
31293 Sesma (Navarra) - SPAIN

The sample selected to test was representative of the production.  
The sample was selected in manufacture facilities.

April 13, 2015

Sample Report Number:

10978-1-TM

The inspection of manufacturing process was performed in  
manufacture facilities:

June 28, 2016

Inspection Report Number:

11129-IF\_Ingeteam Paneles

Model of inverter 1250TL B450								
$V_{DCmin} = 650 \pm 36,5 \text{ V}$ - Measured =677,58 V								
Reference Test load (Resistive)% Pn	$P_{aDC}$ (W)	$P_{aAC}$ (W)	$\eta_p$ (%)	$P_{fDC}$ (W)	$P_{fAC}$ (W)	$\eta_c$ (%)	Ripple I (%)	THD %
5	63,94	62,77	98,17	64,99	62,65	96,40	11,18	0,62
10	128,04	126,16	98,53	128,85	126,01	97,79	12,19	0,63
20	255,17	252,06	98,78	257,10	253,11	98,45	11,50	0,66
25	319,46	315,66	98,81	320,00	315,43	98,57	11,03	0,67
30	383,84	379,26	98,81	384,34	379,13	98,64	10,65	0,69
50	641,49	633,37	98,73	639,17	630,66	98,67	11,01	0,86
75	952,96	939,28	98,56	952,52	938,37	98,51	12,69	1,05
100	1277,00	1255,66	98,33	1272,07	1250,36	98,29	14,88	1,18
<b>Euroefficiency</b>		98,44						
<b>No-load losses</b>		169 W						
<b>Standby loss</b>		1730 W						

Model of inverter 1250TL B450								
$V_{DCmed} = 690 \pm 36,5 \text{ V}$ - Measured =697,25 V								
Reference Test load (Resistive)% Pn	$P_{aDC}$ (W)	$P_{aAC}$ (W)	$\eta_p$ (%)	$P_{fDC}$ (W)	$P_{fAC}$ (W)	$\eta_c$ (%)	Ripple I (%)	THD %
5	64,23	62,60	97,47	64,33	62,66	97,41	16,04	0,62
10	128,18	126,01	98,30	128,26	126,02	98,25	16,64	0,63
20	255,31	251,93	98,67	255,63	252,21	98,66	16,31	0,66
25	319,54	315,52	98,74	319,58	315,51	98,72	15,91	0,67
30	383,91	379,12	98,75	383,86	379,11	98,76	15,83	0,69
50	628,31	620,34	98,73	634,82	626,71	98,72	15,47	0,86
75	946,12	932,78	98,59	945,86	932,54	98,59	17,49	1,05
100	1270,21	1249,50	98,37	1262,23	1241,72	98,37	19,18	1,18
<b>Euroefficiency</b>		98,58						
<b>No-load losses</b>		169 W						
<b>Standby loss</b>		1730 W						

Model of inverter 1250TL B450								
$V_{DCnom} = 712 \pm 36,5 \text{ V} - \text{Measured} = 714,53 \text{ V}$								
Reference Test load (Resistive)% Pn	$P_{aDC} \text{ (W)}$	$P_{aAC} \text{ (W)}$	$\eta_p \text{ (%)}$	$P_{fDC} \text{ (W)}$	$P_{fAC} \text{ (W)}$	$\eta_c \text{ (%)}$	Ripple I (%)	THD %
5	63,96	62,55	97,80	62,67	61,23	97,70	16,88	0,62
10	127,78	125,87	98,50	127,71	125,75	98,46	17,33	0,63
20	254,77	251,76	98,80	255,89	252,90	98,83	16,96	0,66
25	318,66	315,05	98,90	318,35	314,74	98,86	16,29	0,67
30	383,19	378,64	98,80	383,24	378,75	98,83	15,80	0,69
50	634,37	626,64	98,80	637,25	629,45	98,78	15,63	0,86
75	945,49	932,08	98,60	947,90	934,48	98,58	17,14	1,05
100	1269,63	1248,75	98,36	1264,04	1243,29	98,36	19,22	1,18
<b>Euroefficiency</b>		98,65						
<b>No-load losses</b>		169 W						
<b>Standby loss</b>		1730 W						

Model of inverter 1250TL B450								
$0,9 * V_{DCmax} = 738 \pm 36,5 \text{ V} - \text{Measured} = 735,84 \text{ V}$								
Reference Test load (Resistive)% Pn	$P_{aDC} \text{ (W)}$	$P_{aAC} \text{ (W)}$	$\eta_p \text{ (%)}$	$P_{fDC} \text{ (W)}$	$P_{fAC} \text{ (W)}$	$\eta_c \text{ (%)}$	Ripple I (%)	THD %
5	63,41	61,93	97,66	64,31	61,77	96,05	17,28	0,62
10	127,44	125,31	98,33	128,14	125,13	97,64	17,98	0,63
20	254,63	251,23	98,66	256,34	252,28	98,41	17,56	0,66
25	318,85	314,77	98,72	319,18	314,55	98,55	16,79	0,67
30	382,93	378,09	98,73	383,49	378,19	98,62	16,48	0,69
50	634,44	626,18	98,70	635,79	627,32	98,67	16,49	0,86
75	951,72	938,13	98,57	950,82	937,33	98,58	18,13	1,05
100	1268,43	1248,17	98,40	126142,66	124124,12	98,40	20,29	1,18
<b>Euroefficiency</b>		98,44						
<b>No-load losses</b>		169 W						
<b>Standby loss</b>		1730 W						