



CLEANVERTER

INVERTER FOR RENEWABLES



RENEWABLE SOURCES

VARIABLE SPEED RENEWABLE ENERGY

WIND



HYDRO



COGENERATION



INTRODUCTION

Inverters in the CLEANVERTER TL series have been designed specifically for grid connection of variable speed renewable source power plants using a permanent magnet synchronous generator or excited synchronous or asynchronous.

CLEANVERTER TL is a comprehensive system built in an cabinet without transformer, with a double (back to back) inverter configuration with DSP (Digital Signal Processor) digital control meaning the electrical generator is managed as effectively as possible.

The contactors are controlled by a safety circuit.

The cooling fans are controlled by a temperature sensor so as to minimise consumption for their own maintenance and their functioning is continuously monitored to prevent damage through their malfunctioning.

CLEANVERTER

Consists essentially of:

- Automatic circuit breaker
- EMI filter
- Mains contactor
- L-C-L filter
- Three-phase IGBT AFE inverter
- C Filter
- Generator-side three-phase IGBT inverter
- Generator-side contactor



CLEANVERTER 500 TL



CLEANVERTER 150-250 TL

The CLEANVERTER TL design has placed special emphasis on reliability:

- **Total elimination (power and control)** of the electrolytic capacitors; particularly the capacitive filter between the two inverters has been made with film capacitors with a life span, under operating conditions, of 500,000 hours.
- **Tropicalization of the electronic cards** and use of industrial standard extended temperature components on them
- **Fans with a life span of 50,000 hours**

The system is complete of a braking chopper connected to the d.c. bus of the double inverter, to manage a prospective braking resistor.

In the wind field ELPOWER contributes its knowledge of the process by developing, together with the customer, integrated solutions to turbine management issues in various functioning situations in relation to the characteristics of the turbine itself (pitch control, yaw control, hydraulic or electric braking) through the study of dedicated logics. Furthermore the notable overload inverter capacity means that gusts of wind can be exploited.



CLEANVERTER 40-100 TL



CLEANVERTER 15-30 TL

FEATURES

CLEANVERTER	15TL	20TL	25TL	30TL
Rated power AC (W)	15.000	20.000	25.000	30.000
Current overload capacity on generator side	150% per 1min/10 min			
Power factor grid side	in compliance with CEI 0-21 standard			
Operating environment temp. (°C)	from -20 to +50			
Dimensions (HxWxD) (mm)	1700 x 600 x 600			
Protection degree	IP 54			
Weight (Kg)	210	230	240	260
Certifications	CEI 0-21, G99, JET			
In compliance with	CE; EN 61000-6-1; EN 61000-6-3; EN 61000-2-2; EN 61000-3-12; EN 61000-3-11; EN 62109-1; EN62109-2; G59-3			

Max voltage generator side (Vac)	500	THDI harmonic distortion gen. side		< 5%
Frequency generator side (Hz)	Variable up to 300	Max efficiency (%)		95,5%
Voltage grid side (Vrms)	400 V + 15%	Standby consumption (W)		< 50
Grid connection	Three-phase without neutral	Relative humidity		0 – 95%
Frequency grid side (Hz)	50 / 60	Altitude		< 2000 m a.s.l.
Power factor generator side	Automatic	Communication ports		RS 232, RS 485 prot. MODBUS
THDI harmonic distortion grid side	3%	User interface		Display with keyboard

CLEANVERTER	40TL	50TL	60TL	80TL	100TL
Rated power AC (W)	40.000	50.000	60.000	80.000	100.000
Current overload capacity on generator side	150% per 1min/10 min				
Power factor grid side	in compliance with CEI 0-21 standard				
Operating environment temp. (°C)	from -20 to +50				
Dimensions (HxWxD) (mm)	1700 x 800 x 800				
Protection degree	IP 54				
Weight (Kg)	430	450	470	500	550
Certifications	CEI 0-21, VDE AR N 4105, G99, JET				
In compliance with	CE; EN 61000-6-1; EN 61000-6-3; EN 61000-2-2; EN 61000-3-12; EN 61000-3-11; EN 62109-1; EN62109-2; G59-3				

Max voltage generator side (Vac)	500	THDI harmonic distortion gen. side			< 5%
Frequency generator side (Hz)	Variable up to 300	Max efficiency (%)			95,5%
Voltage grid side (Vrms)	400 V + 15%	Standby consumption (W)			< 50
Grid connection	Three-phase without neutral	Relative humidity			0 – 95%
Frequency grid side (Hz)	50 / 60	Altitude			< 2000 m a.s.l.
Power factor generator side	Automatic	Communication ports			RS 232, RS 485 prot. MODBUS
THDI harmonic distortion grid side	3%	User interface			Display with keyboard

CLEANVERTER	150TL	200TL	250TL
Rated power AC (W)	150.000	200.000	250.000
Current overload capacity on generator side	150% per 1min/10 min	150% per 1min/10 min	120% per 1min/10 min
Power factor grid side	In compliance with CEI 0-16 standard		
Operating environment temp. (°C)	from -20 to +50		
Dimensions (HxWxD) (mm)	2100 x 1400 x 800		
Protection degree	IP 30		
Weight (Kg)	1200	1400	1500
Certifications	CEI 0-16, G99		
In compliance with	CE; EN 61000-6-2; EN 61000-6-4; EN 61400-21		

Max voltage generator side (Vac)	500	THDI harmonic distortion gen. side	< 5%
Frequency generator side (Hz)	Variable up to 300	Max efficiency (%)	95,5%
Voltage grid side (Vrms)	400 V + 15%	Standby consumption (W)	< 50
Grid connection	Three-phase without neutral	Relative humidity	0 – 95%
Frequency grid side (Hz)	50 / 60	Altitude	< 2000 m a.s.l.
Power factor generator side	Automatic	Communication ports	RS 232, RS 485 prot. MODBUS
THDI harmonic distortion grid side	3%	User interface	Display with keyboard

CLEANVERTER	500TL		
Rated power AC (W)	500.000		
Apparent power (kVA)	527		
Current overload capacity on generator side	150% per 1min/10 min		
Power factor grid side	in compliance with CEI 0-16 standard		
Operating environment temp. (°C)	from -20 to +50		
Water cooling (°C)	18		
Max power dissipation (kW)	15÷30		
Dimensions (HxWxD) (mm)	2000 x 1800 x 800		
Protection degree	IP 55		
Weight (Kg)	1120		
Certifications	CEI 0-16		
In compliance with	EN55011; EN61000-6-2; EN55016; EN61000-4-2; EN61000-4-4; EN61000 4-5; EN61000-4-6; EN61400-21		

Max voltage generator side (Vac)	760	THDI harmonic distortion gen. side	< 5%
Frequency generator side (Hz)	Variable up to 100	Max efficiency (%)	95,5%
Voltage grid side (Vrms)	660÷690 V + 15% - 10 %	Standby consumption (W)	< 100
Grid connection	Three-phase without neutral	Relative humidity	0 – 95%
Frequency grid side (Hz)	50 / 60	Altitude	< 2000 m a.s.l.
Power factor generator side	Automatic	Communication ports	RS 232, RS 485 prot. MODBUS RTU
THDI harmonic distortion grid side	3%	User interface	Display with keyboard



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