

TSI BRAVO EPC Pack 48/230

Triple port inverter platform without single point of failure



Fig.1: TSI-BRAVO EPC Pack 300



Fig.2 : TSI BRAVO EPC Pack 600

Parallelable, rack-mounted inverter systems provide a pure AC sine wave output at 220/230Vac, 50 or 60Hz, with a THD <3% for any kind of load. Utilizing 48Vdc input, these high density systems range from 5kVA to 15 kVA and are mountable in either a standard 19" or ETSI cabinets.

The TSI sets the standard for True Redundant Systems:

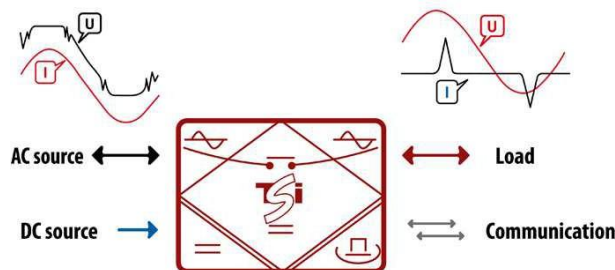
- Hot Swappable means of disconnect
- Distributed Static Transfer Switch (STS) function – removes system Single Point of Failure
- Parallelable for redundancy and increased reliability
- Automatic load sharing when paralleled
- System sound handling of internal or load generated short circuits

Unlike traditional inverters, the TSI features an AC-AC conversion that double filters and isolates the AC input. When operated in this "Enhanced Power Conversion" (EPC) mode, your overall efficiency is increased to 96% without compromise to the quality and stability of the output wave form. Unlike hard transfers between energy input sources the TSI "soft-switching" method is disturbance free. The TSI delivers pure power to your critical load despite usual disturbances such as harmonics, surges, glitches, voltage fluctuations, etc.. Pure sinusoidal output current delivered even with non-linear load conditions.

Pure sine wave at the output and ideal power factor at the input without drawing any energy from your DC supply source

Your future power demands are likely to be unknown and unpredictable. You get TOTAL MODULARITY with the TSI since there is no need to size a single static switch for the future power demand of the system. With the TSI you can configure your system as you gradually increase its capacity in line with your increasing load demands. No need to oversize or overspend on your initial purchase.

Compact in size, these inverters enable you to deliver maximum power in limited space. Its massive power density provides up to 7500VA in a 2U package or 15 kVA in 4U. This package includes the space savings of built-in STS function, DC and AC output MCB. External distribution panel including DCIn, ACIn and ACout with MBP (Manual By Pass) also available in option. All BRAVO packs are compatible with all TSI monitoring equipment (CANDIS, SNMP,...).



GENERAL

EMC (immunity)	IEC 1000-4	
EMC (emission)		
Safety	EN60950	
Cooling	Forced	
MTBF	>200 000 hrs	
Efficiency (MAX)	On Line	90%
	Enhanced Power Conversion	96%
Dielectric strength DC/AC (@ 0,6mA)	2830Vdc	
True Redundant Systems	Compliant	
3 disconnection levels on AC _{out} and DC _{in} power ports		
4 disconnection levels on AC _{in} port		
RoHS	Compliant	
Connection I/O	AC output breaker 40A or 80A	
Protected against inversion of polarity		
Self adaptive to wide operating conditions and comprehensive table of troubleshooting codes		

AC OUTPUT POWER

Nominal Output power (**)	n x 2500 VA	
Output power (resistive load) (**)	n x 2000 W	
Short time overload capacity	150% 15 sec	
Permanent overload capacity	110 %	
Load power factor	Full power rating from 0 inductive to 0 capacitive	
Internal temperature management and cut off		

DC INPUT SPECIFICATIONS

Nominal voltage (DC)	48 V	
Voltage range (DC)	40 - 60 V	
Nominal current (at 40Vdc) (**)	n x 56 A	
Maximum input current (for 5 sec.) (**)	n x 84 A	
Voltage ripple	< 2mV	
Input voltage boundaries user selectable		

AC INPUT SPECIFICATIONS

Nominal voltage (AC)	220V/230V 1P	
Voltage range (AC)	185 – 265 V	
Conformity range	Adjustable	
Power Factor	>99%	
Frequency range (selectable)	50 - 60 Hz	
Synchronization range	47 – 53 Hz / 57 – 63 Hz	

AC OUTPUT SPECIFICATIONS

Nominal voltage (AC)	220Vac/230Vac	
(Single or dual phase selectable at order)		
Voltage range (AC) (adjustable)	200 to 240 Vac	
Voltage accuracy	2 %	
Frequency	50 – 60 Hz	
Frequency accuracy	0.03 %	
Total harmonic distortion (resistive load)	<2 %	
Load impact recovery time	0.4 ms	
Turn on delay	30 s	
Nominal current (**)	n x11 A	
Protected against reverse current		
Crest factor at nominal power	3:1	
With short circuit management and protection		
Short circuit clear up capacity	10 x I _n for 20msec	
Available while Mains is available at AC input port		
With magnitude control and management		

TRANSFER PERFORMANCE

Total transient voltage duration (max)	0 s	
Max Voltage interruption	0 s	

ENVIRONMENT

Altitude above sea	<1500m	
Ambient temperature (**)	n x 2500VA -20 to 50 °C P _{max} at 100% LOAD Derating up to 65°C	
Storage temperature	-40 to 70 °C	
Relative humidity	95% , non condensing	

SIGNALING & SUPERVISION

Display	Synoptic LED	
Alarms output	Dry contacts on shelf	
Supervision	Use optional devices	

WEIGHT & DIMENSIONS

Width	19 inches rack	
Depth	20-inches – 500 mm	
Height	Maximum 4U	
Weight	Shelf : 12Kg Module 8 Kg	
Material (casing)	Coated steel	

(*) Operation within lower voltage networks leads to derating of power performances

(**) "n" stands for Number of Modules in parallel

The BRAVO EPC Pack solution exist in 9 configurations listed below :

Model	Part Number (pack + T2S ETH)	AC in / DC in	Max output Power	Number of Unit installed	Free slot	Dimensions H x D x W mm
TSI-EPC-48V-230Vac-Pack-100 + T2S TEH	S32E73E0103S	230Vac / 48V	7.5 kVA	1x2,5 kVA (2,5 kVA)	2x2500 VA	89 x 510 x 483
TSI-EPC-48V-230Vac-Pack-150 + T2S TEH	S32E73E0106S	230Vac / 48V	15 kVA	1x2,5 kVA (2,5 kVA)	5x2500 VA	178 x 510 x 483
TSI-EPC-48V-230Vac-Pack-200 + T2S TEH	S32E73E0203S	230Vac / 48V	7.5 kVA	2x2,5 kVA (5 kVA)	1x2500 VA	89 x 510 x 483
TSI-EPC-48V-230Vac-Pack-250 + T2S TEH	S32E73E0206S	230 Vac / 48V	15 kVA	2x2,5 kVA (5 kVA)	4x2500 VA	178 x 510 x 483
TSI-EPC-48V-230Vac-Pack-300 + T2S TEH	S32E73E0303S	230 Vac / 48V	7,5 kVA	3x2,5 kVA (7,5 kVA)	NA	89 x 510 x 483
TSI-EPC-48V-230Vac-Pack-350 + T2S TEH	S32E73E0306S	230 Vac / 48V	15 kVA	3x2,5 kVA (7,5 kVA)	3x2500 VA	178 x 510 x 483
TSI-EPC-48V-230Vac-Pack-400 + T2S TEH	S32E73E0406S	230 Vac / 48V	15 kVA	4x2,5 kVA (10 kVA)	2x2500 VA	178 x 510 x 483
TSI-EPC-48V-230Vac-Pack-500 + T2S TEH	S32E73E0506S	230 Vac / 48V	15 kVA	5x2,5 kVA (12,5 kVA)	1x2500 VA	178 x 510 x 483
TSI-EPC-48V-230Vac-Pack-600 + T2S TEH	S32E73E0606S	230 Vac / 48V	15 kVA	6x2,5 kVA (15 kVA)	NA	178 x 510 x 483

T2S	Module	Module	Dummy Module or TSI Module	General MCB	Present		Future		Maximum		MCB
					Output power (VA)	Expandability	Possible	Output			
Module	Rack	Nr module	VA	VA	VA	A					
19"											
BRAVO	Pack 250				4U	2500	5000	4	10000	15000	80
BRAVO	Pack 300				2U	2500	7500	0	0	7500	40
BRAVO	Pack 350				4U	2500	7500	3	7500	15000	80
BRAVO	Pack 400				4U	2500	10000	2	5000	15000	80
BRAVO	Pack 500				4U	2500	12500	1	2500	15000	80
BRAVO	Pack 600				4U	2500	15000	0	0	15000	80

Specifications can change without notice. New data will be updated on our Web site:

www.cet-power.com

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