



# TSI BRAVO ST 230 VAC



## STANDALONE INVERTER SYSTEM

INPUT 24 / 48 / 110 / 220 Vdc  
OUTPUT 230 Vac

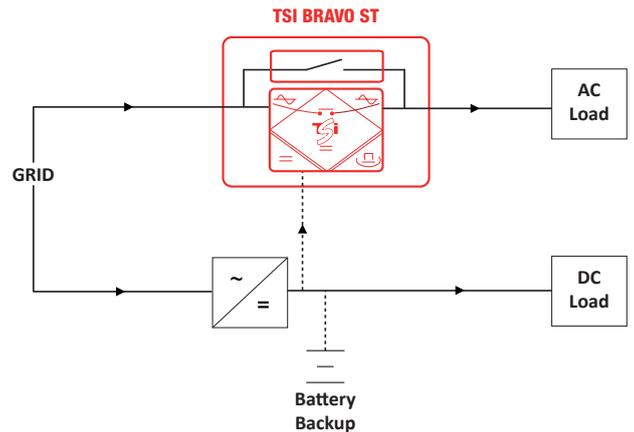
### DESCRIPTION

BRAVO-ST is a compact inverter with automated by-pass solution providing a pure sine wave AC supply. In conjunction with a DC Power system, it provides an excellent AC backup solution. It uses the latest inverter technology, providing superior energy efficiency in a compact size.

The "Twin Sine Inverter" (TSI) technology allow 3 operations mode (EPC double conversion AC to AC, ON LINE DC to AC from battery and off line by-pass to AC). The automatic by-pass to AC allow easy hot plug module replacement without stopping the load giving highest AC output availability and avoid the need of an external manual by-pass.

### APPLICATIONS

All business critical applications and all types of AC loads. The solution is design for highest AC output availability. Both inverter modules and by-pass are hot-swappable which ensures low Mean Time to Repair (MTTR), reduction in service costs.



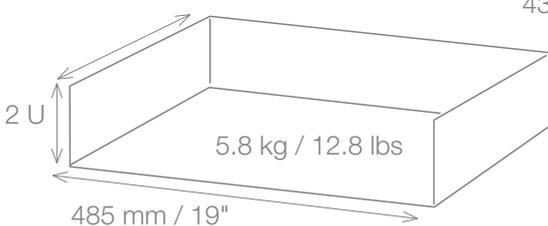
### MAIN FEATURES

- » Dual input sources (AC & DC) with wide AC input range 150 VAC to 265 VAC
- » Compact design
- » High efficiency 94% in 24 V and 96% in 48 V, 110 V, 220 Vdc
- » Transfer time AC/DC and DC/AC 0 ms
- » up to 5 kVA in 2 U with power module and automatic by-pass

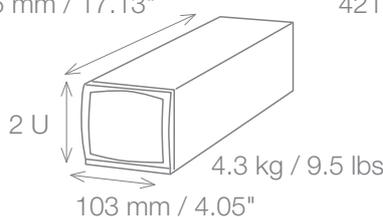
	ST - 24 / 230	ST - 48 / 230	ST - 110 / 230	ST - 220 / 230
<b>GENERAL</b>				
EMC (immunity)	EN 61000-4-2 / EN 61000-4-3 / EN61000-4-4 / EN 61000-4-5 / EN 61000-4-6 / EN 61000-4-8			
EMC (emission) (class)	EN 55022 (A)	EN 55022 (B)	EN 55022 (B)	
Safety	IEC 60950 / EN62040-1 / EN62040-2			
Cooling / Isolation	Forced / Doubled			
MTBF	240 000 hrs (MIL-217-F)			
Efficiency (Typical): Enhanced power conversion / on line	> 95.5% / > 89.5%	96% / 91%		96.5% / 92.5%
Dielectric strength DC/AC	4300 Vdc			
RoHS 6	Compliant			
Vibration	GR63 office vibration 0 to 100 hz-0.1 g / transport vibration 5-100 Hz 0.5 g 100 to 500 hz-1.5 g / Drop test			
Operating conditions	Designed for installation in an IP20 or IP21 environment. When installed in a dusty or corrosive environment, appropriate measures (air filtering, ...) must be taken.			
Altitude above sea without de-rating	< 1500 m / derating > 1500 m – 0.8 % per 100 m			
Ambient / storage temperature / relative humidity	-20 to 50 ° C / -40 to 70 ° C / 95 %, non-condensing			
Material (casing)	Coated steel-ALU ZINC			
<b>AC OUTPUT POWER</b>	BRAVO ST 1500 - ST 3000		BRAVO ST 2500 - ST 5000	
Nominal Output power (VA)	1500 / 3000		2500 / 5000	
Nominal Output power (W)	1200 / 2400		2000 / 4000	
Short time overload capacity	150 % (15 seconds) 110 % permanent within T° range			
Admissible load power factor	Full power rating from 0 inductive to 0 capacitive			
Internal temperature management and switch off	Above 50°C ambient T° derating up to 65°C. Automatic restart with hysteresis +/- 5°C			
<b>DC INPUT SPECIFICATIONS</b>				
Nominal voltage (DC)	24 V	48 V	110 V	220 V
Voltage range (DC)	19 – 35 V	40 - 60 V	90 - 160 V	170 - 300 V
Nominal current at nominal DC voltage and max power W	56 A @ 1200 W/1500 VA 112 A @ 2400 W/3000 VA	46A (at 48 Vdc and 2000 W output) 93 A (at 48Vdc and 4000 W output)	20,2 A (at 110 Vdc and 2000 W output) 41 A (at 110Vdc and 4000 W output)	10,1 A (at 220 Vdc and 2000 W output) 20,5 A (at 220 Vdc and 4000 W output)
Maximum input current (for 15 second) / voltage ripple	84 A / < 100 mV rms	84 A / < 2 mV Psopho	29 A / < 200 mV rms	14.9 A / < 200 mV rms
Input voltage boundaries	User selectable with T2S interface min and max value			
<b>AC INPUT SPECIFICATIONS</b>				
Nominal voltage (AC)	220 Vac / 230 Vac / 240 Vac			
Voltage range (AC)	150-265 V			
Brownout	150 to 185 V linear derating 150 VA/120 W per 10 Vac for 2500 VA model and 300 VA/240 W for 5000 VA model			
AC input range min and max value	Adjustable between 150 Vac and 265 Vac (fixed hysteresis 10 Vac)			
AC input power factor (EPC operation mode)	> 99%			
Frequency range (selectable) / synchronization range	50 – 60 Hz / range 47 – 53 Hz / 57 – 63 Hz			
<b>AC OUTPUT SPECIFICATIONS</b>				
Nominal voltage (AC*)	230 V / 220V / 240 Vac adjustable (default 230 Vac - 50 Hz)			
Frequency / frequency accuracy	50 - 60 Hz / 0.03 %			
Total harmonic distortion (resistive load)	< 1.5 %			
Load impact recovery time	0.4 ms			
Turn on delay	20 s to 40 s depending on the number of module installed			
Nominal current. Protected against reverse current	6.6 A	10.9 A		
Crest factor at nominal power	2.8 : 1	3 : 1		
With short circuit management and protection	10 x I <sub>n</sub> for 20 msec - Available while Mains is available at AC input port With magnitude control and management			
Short circuit clear up capacity	2.1 I <sub>n</sub> during 15 s and 1.5 I <sub>n</sub> after 15 s			
Short circuit current after clear up capacity				
<b>IN TRANSFER PERFORMANCE</b>				
Max. voltage interruption AC to DC module - Module to bypass	0 ms between DC to AC and AC to DC / <10 ms between BRAVO mode and automatic bypass			
<b>SIGNALING &amp; SUPERVISION</b>				
Display	Synoptic LED			
Alarms output / supervision	Dry contacts on shelf / Standard USB port and MODBUS on T2S, optional : Candis Display / Candis TCP-IP			
Remote on / off	on rear terminal of the shelf via T2S			

TSI BRAVO ST 230 – Datasheet v1.2 Specifications can change without notice. New data will be updated on our Web site: [www.cet-power.com](http://www.cet-power.com). The present equipment is protected by several international patents, trademarks and copyrights.

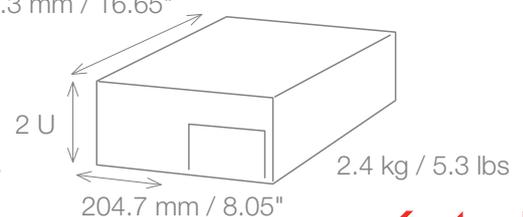
515 mm / 20.28"



435 mm / 17.13"



421.3 mm / 16.65"



Illustrations are non-binding and may include customized fittings.