



The most efficient stand-alone inverter, providing superior energy efficiency in a compact size!

Telecom

Datacom

Mass transport

Industry

Power Utilities

Renewable

AC In
120 Vac

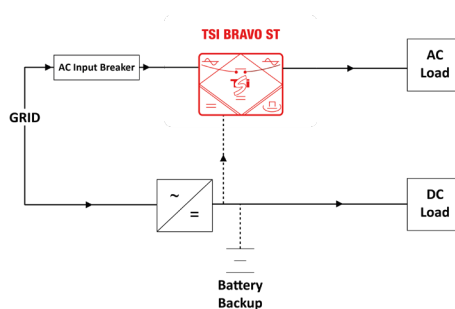
DC In
48 Vdc

AC Out
120 Vac

Power
5 kVA
4 kW

Description

The TSI Bravo ST solution secures AC loads at 120 Vac from a 48 Vdc infrastructure. Additional AC input is used under normal conditions to achieve an overall conversion efficiency of 95%. In the event of a grid failure, it automatically switches to the DC to secure the loads.



In addition to this, this solution includes a bypass that feeds AC loads directly from the grid if there is a problem in the system. The modules included are hot swappable for ease of maintenance and extensibility (from 2.5 to 5kVA).

Applications

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

Main Features

- Permanent AC to AC double conversion
- Great disturbance rejection rate
- Redundant AC & DC input sources
- Source changeover not visible by the load
- Highly efficient energy conversion
- Preserve battery life expectancy
- Compact form factor with short depth
- Operates until 65°C (de-rating may apply)

Illustrations are non-binding and may include customized fittings.

TSI Bravo ST 5000 - 48/120

General	
Part number	S32P33E0202S
Applicable standards	IEC 61000-4 / FCC part 15 / cULus 1778 Listed / ROHS
MTBF (each module)	240,000 hrs
Nominal Output power (VA) / (W) ⁽⁶⁾	5 kVA / 4 kW
Efficiency (Typical): Enhanced Power Conversion / On Line	95% / 91%
Dielectric strength DC/AC	4,300 Vdc
True Redundant Systems - Compliant	3 Disconnection levels on AC out and DC in power ports 4 Disconnection levels on AC in port
Vibration	GR63 office vibration: 0 to 100Hz - 0.1g Transport vibration: 5 to 100Hz - 0.5g, 100 to 500Hz - 1.5g / Drop test
Altitude above sea	< 1500m; no derating, >1500m; 0.8 % / 100 m derating
Operating temperature (Ambient & measured @ air inlet)	-20 to 40 °C; -4°F to 104°F for rated power ⁽¹⁾ 40 °C to 65°C with 2%/°C derating ⁽²⁾ 104°F to 149°F with 1%/°F derating ⁽²⁾
Ambient / storage temperature / relative humidity	-40 to 70 °C (-40°F to 158°F)
Relative humidity	95%, non-condensing
Operating ambience / Ingress Protection	Free from dust and corrosive materials / NEMA 1
Material (casing)	Coated steel-ALU ZINC
Power	
AC Output Data	
Nominal voltage (AC)	120 Vac L-N
Nominal AC output current. Protected against reverse current ⁽⁶⁾	41.66 A
Admissible load power factor	Full VA power rating from 0 inductive to 0 capacitive Limited to W power rating from Pf 0.8 to 1
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	30 s
Short duration overload capacity	150% - 15 seconds
Long duration overload capacity	110% permanent
Crest factor at nominal power with short circuit management and protection	3.1
Short circuit clear up capacity ⁽⁵⁾	10 x In for 20 ms
Short circuit clear up capacity when AC is not present	1.5 x In for 15 seconds
Short circuit current after clear up capacity ⁽⁶⁾	62.5 A
DC Input Data	
Nominal voltage (DC) / Voltage range	48 Vdc (40 – 60 Vdc*)
Nominal DC current (at floating voltage and 2000W per module output) ⁽⁶⁾	92.6 A No1 feeder
Voltage ripple	<2 mV Psopho
Input voltage boundaries	Adjustable from 40V to 57V
DC input connection ⁽⁴⁾	Terminal block
DC input protections	None
AC Input Data	
Nominal voltage (AC)	120 Vac L-N
Voltage range (AC) (Full power rating)	104 – 138 Vac
Nominal AC input current ^{(3) (6)} (at 120Vac and 2000W per module output)	35.08 A
Brownout range and behavior	80 – 104 Vac use DC source contribution if need be (can be disabled)
Conformity range before transfer to DC	Adjustable from 80 to 138Vac
Power factor	>99%
Frequency range (selectable) / synchronization range	50 – 60 Hz / 47 – 53 Hz or 57 – 63 Hz
AC input connection / protection ⁽⁴⁾	Terminal block / none
Energy Source Changeover	
Total transient voltage duration (max) (as seen from the load)	0 s (and no glitch)
Signaling & Supervision	
Display	LED w/module status and power bar graph + CANDIS Display (1/ph) (optional)
Alarms output / supervision	3 Dry Contacts (Major, Minor, User adjustable)
Remote Monitoring	TCP-IP with SNMP V1 (optional)
Remote on / off	via T2S controller

Selectable Options

Bulk output

AC output connection / protection ⁽⁴⁾	Terminal block / none
Mechanical	Figure 1

15R output

AC output connection / protection ⁽⁴⁾	12 x 15R receptacle / 6 x 20A breakers
Mechanical	Figure 2

20R output

AC output connection / protection ⁽⁴⁾	6 x 20R receptacle / 6 x 20A breakers
Mechanical	Figure 3

15R-20R mix output

AC output connection / protection ⁽⁴⁾	4 X 15R + 4 x 20R receptacle / 6 x 20A breakers
Mechanical	Figure 4

(1) Internal temperature management and switch off

(2) Operation beyond 40°C (104°F) and derating are not UL certified

(3) Inverter module current consumption only. Use output current for circuit sizing as bypass is present.

(4) Refer to specific document for NEC compliance for external protections and cable sizing

(5) While the boost function is enabled and AC source present

(6) When fully populated

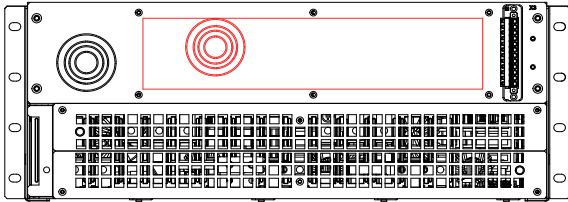


Figure 1

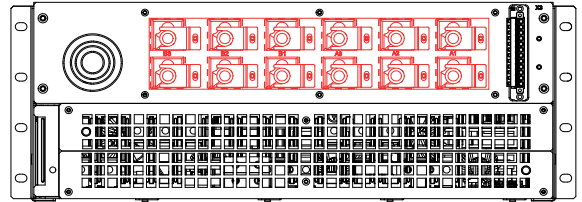


Figure 2

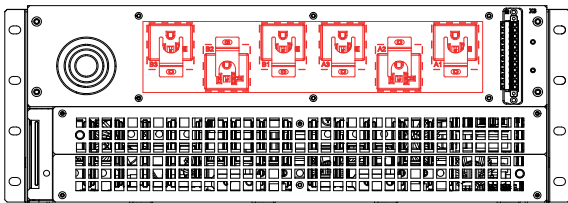


Figure 3

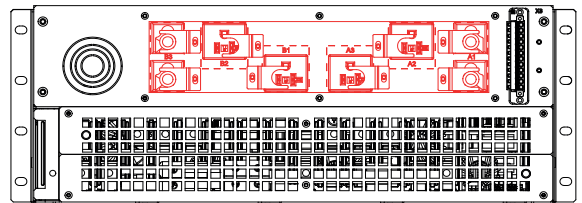


Figure 4

