

UNINTERRUPTIBLE POWER SUPPLY from 500VA up to 800kVA

RECTIFIERS FOR TELECOMMUNICATIONS

PHOTOVOLTAIC INVERTERS AND PANELS

TRANSMISSION AND DISTRIBUTION APPARATUS

BATTERY CHARGERS

SWITCHGEARS

## The company

My family has been working for ages in the field of energy conversion and uninterruptible power systems. Powergen was established by Ernesto Borri, technician, who since 1940 has been creating industrial electronic and electro-mechanic devices. So we are glad to inform you that a complete line of uninterruptible power systems has been added to the current traditional and high frequency battery chargers lines, produced in our two factories.

The diffusion of the UPS depends usually on a more and more deep dependence on electric energy and on the need to protect sophisticated devices, very important data and processes. Power electronics is focused on the design and development of increasingly performing static UPS allowing an appropriate energy saving and a lower environmental impact. Today, uninterrupted high quality power supply is a more and more urgent need. More and more consumers to be supplied play crucial role in the companies life, for people security, for the data treatment and conservation and for communication. Then, the devices performing these functions are sophisticated and sensitive and can be affected by troubles coming from the power supply. Electric events endangering electronic devices constantly, can be various as the effects on the loads availability (e.g. IT systems).

There are many kinds of trouble: under tension, which means short-term drop of voltage levels. It's the most common trouble (87%) ascribable to power supply and caused by starting of electric devices such as engine, compressor, elevator and hoist. The effects are: Decrease of the power needed by a computer to run correctly, stop of the keyboard or unexpected crash of the system, loss and damage of the data being processed. A blackout shall cause the total stop of power supply. It can be caused by an excessive consumption of energy, storm, ice on the lines, road accident, excavation, earthquake, etc.

The consequences are loss of data, interruption of communication, no lighting, production line block, stop of the company work, danger for people, etc. Other troubles are Spike, Overvoltage, Noise, EMI / rFI, Armonic and Eddy Currents, Frequency Variations. Different types of static UPS are available in the market: Off-Line, Line Interactive, On Line, Double Conversion, Digital On Line, In-Line etc. Most of these names are imposed more by commercial needs and choices than by the adopted technology. The 30 year experience of our collaborators in the battery chargers industry together with the reliable microprocessor control systems we are able to supply you with a new line of UPS offering higher performance that can be interesting for you.

The strengths of our products are the following:

**SECURE DEVICES.** We use digital technology for a constant supervision of the basic electric parameters with microprocessors guaranteeing the correct functioning of the UPS, so the usual work execution.

**RELIABLE DEVICES.** We use components by leading manufacturers and having wide margins, in order to guarantee HIGHER QUALITY and RELIABILITY producing no failure and no need of assistance.

**COMPETITIVE DEVICES.** Our experience and knowing of the components market allowed us to optimize the costs, for the benefit of our Customers.

Our devices are designed and manufactured according to the most advanced criteria of Power Electronics and offer a great reliability, high characteristics, precision and functionality.

Besides the above, we offer an effective and fast service: It's possible to make deliveries during the same working day of the order.

Our aim is to create a fruitful collaboration with your company, guaranteeing our willingness to satisfy any need. All the production by Powergen Italia is manufactured in our factory in Tuscany, in the industrial area "Corsalone" in BIBBIENA, at about 30 km from Arezzo, Via XXV Aprile, no. 5, in a new and modern headquarters including our Sales Dept. and Account Dept. Moreover, we have a factory for the production of high frequency battery chargers near the head office.



## PWR 3TSI Serie

### Key Features

On line double conversion output p.f. 0.9

Wide input voltage range from 110 to 288 Vac

Cold Start

Advance battery management

Automatic battery charging on/off mode

Lighting and surge protection

Automatical fan speed adjustment

Complete protection function

Network/fax/modem surge protection

LCD/LED display option

EMI/RFI noise filter

Smart Rs232 port with free monitoring software

PFC technology

model	3TSI 100010	3TSI 100010-L	3TSI 100020	3TSI 100020-L	3TSI 100030	3TSI 100030-L	3TSI 100060	3TSI 100060-L	3TSI 100100	3TSI 100100-L
<b>input</b>										
capacity	1KVA/0,9 KW		2KVA/1,8 KW		3KVA/2,7 KW		6KVA/5,4 KW		10KVA/9 KW	
cold Start	yes, default frequency=50 Hz or settable									
acceptable input voltage	110VAC-288VA									
	100% load @>176VAC									
	80% load @>154VAC									
	70% load @>132VAC									
phase	single phase in, single phase out									
	50% load @>110VAC									
input power factor	≥0,99									
input current	4,8A		9,6A		14,4A		27,5A		47A	
input frequency range	40-70Hz									
frequency adaptable	settable									
<b>output</b>										
output PF	0,9									
nominal voltage	220/230/240VAC									
waveform	pure sine wave									
voltage regulation	± 1%									
THD	> 1% THD, linear load									
	≥ 3% THD, non linear load									
frequency online	± 5Hz									
frequency battery mode	± 0,1Hz									
efficiency (line mode)	92,00 %									
eco mode	98,00%									
transfer time	0 ms (line mode to battery mode), 2ms (inverter to bypass)									
charger	1A	8A	1A	8A	1A	8A	1A	8A	1A	8A
overload capability (line mode)	105%-130%: transfer to bypass after 1 min						110%: transfer to bypass after 60 mins			
	150%: transfer to bypass after 30 secs						130%: transfer to bypass after 1 min			
crest ratio	3 : 1									
<b>battery</b>										
battery type	sealed lead acid maintenance free battery									
battery voltage Vdc	36		72		96		192		192	
<b>Indicator &amp; alarm</b>										
display	led+lcd									
<b>interface</b>										
communication	DB9 port, dry contact, USB port (optional), RS232 port, SNMP (optional)									
<b>mechanical</b>										
noise	<47dB		<50dB		<50dB		<55dB			
W*L*H* (mm)	144x353x222		190x374x336		190x426x336		250x526x640	250x526x480	250x526x640	250x526x480
net weight (kg)	12	6	21	11	26	12	57	18	65	20

all information contained in this brochure is purely indicative and cannot be used to form any contractual obligations. Specification or design can be changed at anytime without notice



J3TSI Serie

## Key Features

On line double conversion - Wide input voltage range

Sizes available from 1 to 10 kVA single phase

All technical parameters as IST3, except dimensions

Cold start and advanced battery management

Automatic battery charging on/off mode

Lighting and surge protection

Automatical fan speed adjustment

Complete protection function

Network/fax/modem surge protection

LCD/LED display option

EMI/RFI noise filter

Smart Rs232 port with monitoring software

PFC technology



4TSI Serie

## Key Features

On line double conversion

Wide input voltage range

Cold Start

Advance battery management

Automatic battery charging on/off mode

Lighting and surge protection

Automatical fan speed adjustment

Complete protection function

Network/fax/modem surge protection

LCD/LED display option

EMI/RFI noise filter

Smart Rs232 port with monitoring software

PFC technology

model	4TSI100100	4TSI100150	4TSI100200
<b>input</b>			
capacity	10KVA/9Kw	15KVA/13,5Kw	20KVA/18Kw
cold start	yes, default frequency=50 Hz or settable 380 - 400 - 415 Vac		
acceptable input voltage	100% load @ -20% + 25%		
	90% load @ -30% + 25%		
	80% load @ -40% + 25%		
	65% load @ -50% + 25%		
phase	three phase in, single phase out		
input power factor	≥ 0,95		
input current	17A	25,5A	34A
input frequency range	40-70Hz		
frequency adaptable	settable		
<b>output</b>			
output PF	0,9		
nominal voltage	220/230/240VAC		
waveform	pure sine wave		
voltage regulation	± 1%		
THD	≥ 1% THD, linear load		
	≥ 3% THD, non linear load		
frequency online	± 5Hz		
frequency battery mode	± 0,1Hz		
efficiency (line mode)	93,00%		
eco mode	99,00%		
transfer time	0ms (line mode to battery mode), 2ms (inverter to bypass)		
charger	5A		
overload capability (line mode)	110%:transfer to bypass after 1 min		
	130%:transfer to bypass after 30 secs		
	150%:transfer to bypass after 30 secs shutdown after 1 min		
crest ratio	3 : 1		
<b>battery</b>			
battery type	sealed lead acid maintenance free battery		
battery voltage Vdc	240		
<b>Indicator &amp; alarm</b>			
display	led+lcd		
<b>interface</b>			
communication	DB9 port, dry contact, USB port (optional), RS232 port, SNMP (optional)		
<b>mechanical</b>			
noise	<50dB		
W*L*H* (mm)	526x250x640	544x250x750	
net weight (kg)	23	33	
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## 5TSI Serie

## Key Features

Latest digital transformerless true double conversion on line IGBT technology

Input power factor > 0.99

Parallel up to 6 units

Excellent performance and maximum reliability designed for best equipment protection

Advanced microprocessor control technology, enhancing UPS performance

Self protection and self diagnostic electronic components

Protection against lightning and HF interference

EMI/RFI filters

PFC technology for low input harmonic

Modularized design of subsystem, convenient field Maintenance

Intelligent battery management, extending battery lifetime

Large LDC display





model	5TSI5010	5TSI5015	5TSI5020	5TSI5030	5TSI5040	5TSI5060	5TSI5080	5TSI50100	5TSI50120	
capacity	10KVA	15KVA	20KVA	30KVA	40KVA	60KVA	80KVA	100KVA	120KVA	
<b>input</b>										
input voltage	380V/400V/415V (line to line), 50/60 Hz									
input connection	3Ph+N+PE									
input power factor	≥ 0,99									
input current THD	<3%									
input voltage window	-20% - +25% full load									
frequency window	-40 -20 % power derating between 70% to 100% 40-70Hz									
<b>bypass input</b>										
bypass voltage	380V/400V/415V (line to line)									
bypass voltage window	-20% - +15% full load									
frequency window	±5Hz									
<b>battery</b>										
battery voltage	± 240Vdc									
charger power	20% power									
charger voltage precision	1,00%									
<b>output</b>										
output voltage	380V/400V/415V (line to line)									
voltage precision	± 0,5% (balance load), 1% (unbalance load)									
output voltage transient	5% (0-100% load step)									
voltage THD	THD <1% (linear load), THD <5% (non linear load)									
power factor	0,8 – 0,9 (optional)									
frequency tracking range	50/60 Hz ± 3Hz, adjustable									
frequency precision(free running)	± 0,02%									
phase tolerance	120° ± 0,5° (balance and unbalance load)									
voltage unbalance degree (100% unbalance load)	± 1,00%									
frequency tracking speed	0,5 Hz/s to 5Hz/s adjustable									
crest factor	3 : 1									
overload capability	102% long time operation									
	110% transfer to bypass after 1 hour									
	125% transfer to bypass after 10 minutes									
	150% transfer to bypass after 1 minute									
bypass overload capability	< 150% transfer to bypass after 200 ms									
	125% long time operation									
	125% <load<130% last for more than 1 hour									
	130% <load<150% last for more than 6 minutes									
>1000% <load<130% last for more than 100 ms										
<b>system</b>										
system efficiency	normal mode 95%									
battery mode efficiency	eco mode 99%									
battery configuration	12V 40pcs (36-44 pcs acceptable)									
display	led+lcd, keyword				led+lcd touch screen keyboard					
EMI	IEC62040-2									
EMS	IEC61000-4-2(ESD), IEC61000-4-3(RS), IEC61000-4-4(EFT), IEC6100-4-5(surge)									
insulation resistance	> 2m (500Vdc)									
dielectric strength	Input, output to PE 2820Vdc, leakage current lower than 3,5mA, no flashover in 1 minute									
surge protection	comply with IEC60664-1 class IV, endure surge of 1,2/50us + 8/20us higher than 6kVA/3kVA									
IP class	IP20									
interface (communication ports)	RS232, RS485, dry contacts, SNMP card, EPO, generator interface									
Installation/connection	top or bottom cable connection									
operation temperature	0-40° C									
relative humidity	0-90% (non condensing)									
noise (dB)	<55dB									
weight (kg)	46		60		182		204		226	
	68 (internal battery)		75 (int batt)						270	
dimension (w*d*h*) mm	280x730x668		320x781x788		600x855x1350		600x855x1600			
	540x690x1100 (internal battery)									
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## UA5TSI Serie

### Key Features

Latest digital transformerless true double conversion on line IGBT technology

Input power factor 1

Parallel up to 8 units

Excellent performance and maximum reliability designed for best equipment protection

Advanced microprocessor control technology, enhancing UPS performance

Self protection and self diagnostic electronic components

Protection against lightning and HF interference

EMI/RFI filters

PFC technology for low input harmonic

Modularized design of subsystem, convenient field Maintenance

Intelligent battery management, extending battery lifetime

Large LDC display

Special and innovative cooling system "climasystem" with refrigerant liquid

model	UA5TSI		
capacity	120KVA	160KVA	200KVA
<b>main input</b>			
input voltage	380V/400V/415V (line to line), 50/60 Hz		
input connection	3Ph+N+PE		
power factor	1		
input current THD	<3%		
input voltage window	330-480 Vac		
frequency window	-40 -20 % power derating between 70% to 100%		
frequency window	40-70Hz		
<b>bypass input</b>			
bypass voltage	380V/400V/415V (line to line)		
bypass voltage window	-20% - +15% full load		
frequency window	±5Hz		
<b>battery</b>			
battery voltage	720 Vdc		
charger power	20% power		
charger voltage precision	1,00%		
<b>output</b>			
output voltage	380V/400V/415V (line to line)		
voltage precision	± 1,00%		
output voltage transient	5% (0-100% load step)		
voltage THD	THD <1% (linear load), THD <5% (non linear load)		
power factor	0,8		
frequency tracking range	50/60 Hz ± 3Hz, adjustable		
frequency precision(free running)	± 0,02%		
phase tolerance	120° ± 0,5° (balance and unbalance load)		
voltage unbalance degree (100% unbalance load)	± 1,00%		
frequency tracking speed	0,5 Hz/s to 5Hz/s adjustable		
crest factor	3 : 1		
<b>system</b>			
system efficiency	normal mode 95%		
battery mode efficiency	eco mode 99%		
battery configuration	12V 60pcs		
display	led+lcd, keyword		
EMI	IEC62040-2		
EMS	IEC61000-4-2(ESD), IEC61000-4-3(RS), IEC6100-4-4(EFT), IEC6100-4-5(surge)		
insulation resistance	> 2m (500Vdc)		
dielectric strength	Input, output to PE 2820Vdc, leakage current lower than 3,5mA, no flashover in 1 minute		
surge protection	comply with IEC60664-1 class IV, endure surge of 1,2/50us + 8/20us higher than 6kVA/3kVA		
IP class	IP20		
interface (communication ports)	RS232, RS485, dry contacts, SNMP card, EPO, generator interface		
operation temperature	0-40° C		
relative humidity	0-95% (non condensing)		
noise (dB)	64dB		
dimension (w*d*h*) mm	800x840x1800		
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OTHER PRODUCTS AVAILABLE UPON REQUEST ARE :

THREE PHASE MODULAR TYPE UPS SYSTEMS  
RECTIFIERS FOR TELECOMMUNICATIONS  
PHOTOVOLTAIC INVERTERS AND PANELS  
TRANSMISSION AND DISTRIBUTION APPARATUS  
BATTERY CHARGERS  
SWITCHGEARS  
DRY TYPE TRANSFORMERS  
SCADA AND CHARGERS FOR RAILWAYS AND SUBWAYS

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