

## Static (FIXED) Voltage / Frequency Converter

## SPF Series 10KVA~1000KVA

- USA MILITARY Approved
- Frequency Conversion :
  - 50Hz ←→ 60Hz, 50Hz ←→ 400Hz,
  - 60Hz ←→ 400Hz Fixed
  - 400Hz Input / Output Fixed
- Output Frequency Adjustable
- 10% Output Voltage Adjustable
- 50Hz/60Hz Output Frequency Selectable
- Single and Three Phase Configurations
- BATTERY Added for UPS Backup (Option)



### **Application**

- Voltage and / or Frequency Conversion
- Power Conditioning & Freq. Stabilization
- Factory Automation Equipment
- Auto-test Equipment
- Alarm / Security Monitoring Systems
- Cellular Sites
- Export Product Testing
- Laboratory
- Medical Equipment
- Precise Measuring & Testing Equipment
- Sophisticated Monitoring Systems

- Sophisticated Instruments
- TV & Radio Broadcasting Stations
- Option: 400HZ APPLICATIONS:
  - Military System Diagnostics
  - Telecommunication Facilities
  - Avionics, Marine, Missile, Projectile Facilities
  - Airport Grounding Facilities include Airport Terminal, Control Tower
  - Navigation
  - Any Facilities / Instruments have 400Hz frequency Power System



Factory Automation Equipment



Laboratory



Sophisticated Instruments



**Export Product Testing** 



Alarm / Security Monitoring Systems



Cruise



**Cellular Sites** 



**Airport Terminal** 

# SATECH POWER

**USA Military Approved Power System** 

## SPF Series Static (FIXED) Voltage / Frequency Converter

The SPF series Static (FIXED) Voltage / Frequency Converter is available from 10 to 1000 KVA as standard, in single or three-phase output configurations and may be customized to reach up to 2000KVA.

# Power Conditioning & Frequency Stabilization

The SPF series provides clean and stable, regulated power to the load, and the chosen crystal oscillator controlled frequency, free from any spikes, surges, lightning and frequency fluctuation.

# High Efficiency, Optimum Stability, and Superior Heat Dissipation

By use of advanced Technology DPS, IGBT and Switching Components to increase the reliability, efficiency and heat dissipation.

# Complete Input to Output True Galvanic Isolation design

Solve ultimately power problems, including noise, lightning, ground leakage current, and CEMF (Couter -electromotive Force) etc.

#### Ruggedness

The rectifier employs phase control technology to regulate the DC bus Voltage. This is the most efficient method to charge the batteries.

The SCR used are inherently rugged. Additionally, a large inductor is added at the input to avoid deforming the AC source waveform.

#### **Reliable Input Protection**

Circuit breakers are placed in each individual input loop to ensure power can continuous through another loop in case of breaker trip caused by an abnormal condition.

# Diagnostic Panel with LCD and LED Display

# 400Hz Input / Output Frequency (Option)

Precise frequency (oscillated by crystal oscillator). Designed for application of Airforce, Military, Navy, Aviation, Navigation ...etc.

#### +/-20% Wide Input Voltage Range

The SPF series is designed to accept a wide input range, it can work effectively under any unstable AC source. All of the input components used are specially selected to handle extremely high voltage and high current.

# Multi-CPU Design and Software / Hardware Cooperate Control

Make the SPF series extremely high reliable.

#### Plug & Play Modular design

The power circuit is separated into several modules plugged into several slots in the unit, which are easy to pull out, permitting quick maintenance and easier trouble-shooting (MTTR <25 minutes).

#### **Tolerate Harsh Environment**

Each component is chosen with large safety margin to accommodate Extreme environments, such as temperature, humidity, altitude, shock or Contamination.

## Intelligent Fan Rotation Rate Control

The fan rotation rate can automatically change according to the load condition, so that the fan's life expectancy is extended and audible noise is reduced.

# BATTERY added for UPS Backup (Option)

The SPF series can be started without an AC source, that is, can be started with battery power only. This is possible because current limit circuitry is added, preventing the problem of large inrush current from blowing the battery fuse and damaging the DC capacitors when batteries are connected to an empty DC bus (before the DC bus is energized).

#### Reasonable Heat Evacuation Passage Design

Control circuitry and power circuitry are physically separated. Thus, the SPF series can operate under harsh environment.

# Serial & Parallel Redundant Connection (Option)

# 12-Pulse Full Controlled Rectifier (Option)

Reduce harmonic current for 80KVA and above SPF series.

## **Technical Specification (3-Phase Input / 3-Phase Output)**

MODEL	SPF	SPF	SPF	SPF	SPF	SPF	SPF	SPF	SPF	SPF	SPF
	3310	3315	3320	3330	3340	3350	3360	3380		33120	33160
Capacity (KVA)	10	10   15   20   30   40   50   60   80   100   120   160								160	
INPUT	<u> </u>										
Input Voltage		3phase 3W:200VΔ/220VΔ/380VΔ/460VΔ ( <b>Option:480VΔ/600VΔ</b> )									
(Select One)	3phas	3phase+N:200VY/208VY/220V/380VY/400VY/415VY/440VY (Option:480VY/600VY)									
Input Voltage Range		±20% (> ±20% is available upon request)									
Input Frequency						r 400Hz					
Input Frequency Range			±	3Hz (wid		es offere		e consu	lt)		
Power Walk In					0% ~	100%: 2					
Efficiency						= 98%					
Rectification Type		6	Pulse S	tandard,	12 Puls	e Option	al		12 P	ulse Stai	ndard
OUTPUT											
Voltage									0VΔ/600		
(Select One)	3phas	se+N:20							Option:4	80VY/6	00VY)
,			(	Option:		djustab		nomina	)		
Voltage Regulation	<u> </u>					from Set					
Frequency	1		Ontion	4. 400!!		60Hz ±		o o to bila	EO/COL!-		
(Select One)		(							50/60Hz		
Wave Form	<del>                                     </del>		Copulon	-э. ггес		e Sine W		o II OIII N	ominal)	1	
Power Factor	<del>                                     </del>				Ful		lave				
Phase Shift		0.8 120° ±0.5° (100% Unbalance Load)									
Total Harmonic Distortion		120 ±0.5 (100% Oribalance Load) < 3% (0~100% Linear Load)									
Overload Capacity		,									
Efficiency (100% Load) (%)	93	<110% Continuous, 125%/15Mins, 150%/10Mins, >150%/30Secs 93 93 93 93 93 93 94 94.5 94.5 95 95									
Overall Efficiency (%)	91	91	91	91	91.5	92	92	92.5	92.5	93	93
Max. Heat Dissipation (kw)	1.1	1.2	1.3	1.9	2.6	3.0	3.5	4.6	5.4	6.5	8.7
BTU/h @ Full Load (K)	2.4	3.6	4.8	6.5	8.9	10.3	12	16	19	22	30
PROTECTION		0.0		0.0			. =				
Over/Under Voltage						Alarm					
Output Short Circuit			Cur	rent Lim	ited and	cut-off a	nd fuse	and bre	aker		
Overload		Α							to norm	al	
Over Temperature						o-shutdo					
Lightning / EMC Filter				MOV /	Input &	Output (	FCC CL	ASS A)			
Galvanic Isolation						True Ga					
INDICATORS & ALAR	М			·							
LCD Data Display		me Stati	ıs Data	or Histo	rical Eve	nts Par	ameters	Real Ti	me Clocl	k Inv & I	Buzzer
LED Data Display	rtcai iii								ible Aları		Juzzei
INTERFACE			op to dat	0 111101111	ation (O	atao) to	1110 000	7 4 7 144	ibio / tiai i	<u>''</u>	
Contact Closure,				Sunr	orte Ra	mote Co	ntrol Mo	dula			
RS-232/485		Supports Remote Control Module, Option: SNMP card Model MEGATEC Net Agent II									
STANDARDS			<u> </u>								
EMI/EMC					NEO001	1 2 CE	Approve	o d			
				<u></u>	1100091-	1,-2, CE	Approvi	eu			
OUTLOOKS		I	I	ı	I	I			ı	I	
Capacity (KVA)	10	15	20	30	40	50	60	80	100	120	160
Size (H*W*D/mm)	<u> </u>	П	160	00*550*8	300	П	Ī		1600*1	100*800	
Net Weight	280	290	300	400	480	550	680	820	950	1180	1450
at 220/380V (Kgs)											
ENVIRONMENT											
Audible Noise(at 1m)(dBA)				<65					<	67	
Relative Humidity				0	%~90%	(Non-Co	ndensin	g)			
Operating Temperature						°C (32~1					
Altitude		<1500M Above Sea Level									

6.25~60KVA



80~160KVA

- Remarks: 1. Different specifications required are available 2. All specifications mentioned above are subject to change without prior notice.

## **Technical Specification (3-Phase Input / 3-Phase Output)**



200~320KVA

MODEL	SPF	SPF	SPF	SPF	SPF	SPF	SPF	SPF	SPF			
	33200	33240	33300	33320	33400	33500	33600	33800	331000			
Capacity (KVA)	200	240	300	320	400	500	600	800	1000			
INPUT												
Input Voltage		3phase	3W:200V	Δ/220VΔ/		)VΔ <mark>(Optic</mark>	n:480VΔ/	600V∆)				
(Select One)	3phase	+ <u>N:200V</u>	// <u>208VY/2</u>	22 <u>0V/380V</u>	Y <u>/400VY/</u>	415VY/440	VY <mark>(Optio</mark>	on:480VY	(600VY)			
Input Voltage Range		±20% (> ±20% is available upon request)										
Input Frequency		50Hz or 60Hz or 400Hz (Please specify)										
Input Frequency Rang	е	±3Hz (wider ranges offered, please consult)										
Power Walk In		0% ~ 100%: 20Sec										
Efficiency					≒ 98%							
Rectification Type				12 F	Pulse Stan	dard						
OUTPUT												
		3nhase	3///-200//	^/22N\/^/	220\/\//460	)VΔ <mark>(Optio</mark>	n:480VA/	SOUNT N				
Voltage	3phase	3priaso N:200V+	//208VY/2	20V/380V	Y/400VZ/700	15VY/440	VY (Optio	n:480VY/	600VY)			
(Select One)	9,	///··				e from no			,			
Voltage Regulation				±1%	from Set	Point						
			<del></del>		r 60Hz ±0			<del></del>				
Frequency			<b>(0</b> =4		tion-1: 40		211.4					
(Select One)		(0)				table 50/6		221)				
Wave Form		(Option-3: Frequency Adjustable ±10% from nominal)  Pure Sine Wave										
Power Factor		0.8										
Phase Shift		120° ±0.5° (100% Unbalance Load)										
Total Harmonic Distort					100% Line							
Overload Capacity						%/10Minut						
Efficiency(100% Load)		95	95	95	95	94.5	94.5	95	96.5			
Overall Efficiency (%) Max.Heat Dissipation	93 (kw) 10.8	93 13	93 17.4	93 21.7	94 27	95 32.55	95 40.6	95 43.4	96 56.4			
PROTECTION	(KW)   10.0	10	11.7	41.1		J2.55	40.0	70.1	30,			
Over/Under Voltage	ı				Alarm							
Output Short Circuit			Current I	imited and		nd fuse and	d hreaker					
Overload		Auto				tore when		ormal				
Over Temperature				Αι	uto-shutdo	wn						
Lightning / EMC Filter						CC CLAS						
Galvanic Isolation			Inpu	ut & Outpu	t True Gal	vanic Isola	ition					
INDICATORS & A												
LCD Data Display	Real Tim					ameters, R			& Buzzer			
LED Data Display		Up t	o date info	rmation (S	Status) to T	he User &	Audible A	Jarm				
INTERFACE												
Contact Closure,						trol Modul						
RS-232/485			Option: S	NMP card	Model ME	GATEC N	et Agent II					
STANDARDS												
EMI/EMC				EN50091	-1,-2, CE	Approved						
OUTLOOKS												
Capacity (KVA)	200	240	300	320	400	500	600	800	1000			
Height (mr	n)	16		I	1900	1900	19	00	1900			
Size Width (mm		22			2220	3340		10	4460			
Depth (mn	· -							1000				
	<i>'</i>	2620	2880	2980	3720	5000	6000	7800	9000			
N.W. at 220/380V (Kgs												
N.W. at 220/380V (Kgs	IRA)		< 67			∠7 <b>5</b>	∠80	ار ا	85			
N.W. at 220/380V (Kgs <b>ENVIRONMENT</b> Audible Noise(at 1m)(c	dBA)		<67	Do/- DDo/	(Non-Car	<75	<80	<	85			
N.W. at 220/380V (Kgs			<67		(Non-Cor )°C (32~10	ndensing)	<80	<	85			

400~100KVA

Altitude

1. Different specifications required are available

Remarks:

2. All specifications mentioned above are subject to change without prior notice.

<1500M Above Sea Level

## **Technical Specification (3-Phase Input / 1-Phase Output)**

MODEL	SPF	SPF	SPF	SPF	SPF	SPF	SPF					
	3110	3115	3120	3130	3140	3150	3160					
Capacity (KVA)	10	15	20	30	40	50	60					
INPUT												
Input Voltage		3phase 3W:200VΔ/220VΔ/380VΔ/460VΔ (Option:480VΔ/600VΔ)										
(Select One)	3phase+N:2	3phase+N:200VY/ 208VY/220V/380VY/400VY/415VY/440VY (Option:480VY/600VY)										
Input Voltage Range		±20% (> ±20% is available upon request)										
Input Frequency		50Hz or 60Hz or 400Hz (Please specify)										
Input Frequency Range		±3Hz (wider ranges offered, please consult)										
Power Walk In		0% ~ 100%: 20Sec										
Efficiency				≒ 98%								
OUTPUT												
Voltage		1 Phase 100	)V/110V/115	V/120V/ 200	V/208V/220\	//230V/240V						
(Select One)		(0		6 adjustable		nal)						
Phase				2W+G (Opti								
Voltage Regulation				% from Set F								
_				or 60Hz ±0.1								
Frequency (Select One)		"		ption-1: 400		<b>-</b> \						
(Select One)		(Option-2: Switch Selectable 50/60Hz)										
Power Factor		(Option-3: Frequency Adjustable ±10% from nominal) 0.8										
Total Harmonic Distortion	0.6 < 3% (0~100% Linear Load)											
Overload Capacity	<110% Continuous, 125%/15Minutes, 150%/10Minutes, >150%/30seconds											
Efficiency (100% Load) (%)	93	93	93	93	93.5	93.5	94					
Overall Efficiency (%)	91	91	91	91	91.5	92	92					
Max. Heat Dissipation (kw)	1.1	1.2	1.3	1.9	2.6	3.0	3.5					
BTU/h @ Full Load (k)	2.4	3.6	4.8	6.5	8.9	10.3	12					
PROTECTION												
Over/Under Voltage				Alarm								
Output Short Circuit		Curre	nt Limited ar	nd cut-off and	d fuse and bi	eaker						
Overload		Auto-shutde		e. Auto Resto		ck to normal						
Over Temperature				uto-shutdow								
Lightning / EMC Filter				& Output (FC		•						
Galvanic Isolation	_		input & Outp	ut True Galv	anic Isolatior	<u>1</u>						
INDICATORS & ALARM												
LCD Data Display	Real Time			· · · · · · · · · · · · · · · · · · ·		ime Clock, Inv	v & Buzzer					
LED Data Display		Up to date	information (	(Status) to Th	ne User & Au	idible Alarm						
INTERFACE												
Contact Closure, RS-232/485		Supports Remote Control Module, Option: SNMP card Model MEGATEC Net Agent II										
STANDARDS												
EMI/EMC			EN5009	1-1,-2, CE A	pproved							
OUTLOOK												
Capacity (KVA)	10	15	20	30	40	50	60					
Size (H*W*D/mm)		_		600*550*800	)							
Net Weight at						_						
220/380V (Kgs)	370	400	450	580	600	710	850					
ENVIRONMENT				<u> </u>		<u> </u>						
Audible Noise (At 1m) (dBA)				<65								
Relative Humidity			0%~9nº		densing)							
Operating Temperature	0%~90% (Non-Condensing)											
		0~40°C (32~104°F)										
Altitude	<1500M Above Sea Level											



10~60KVA

80~160KVA

Remarks:

- 1. Different specifications required are available
- 2. All specifications mentioned above are subject to change without prior notice.

## **Technical Specification (3-Phase Input / 1-Phase Output)**



80~160KVA

		SPF	SPF	SPF	SPF					
MODEL		3180	31100	31120	31160					
Capacity (k	(VA)	80	100	120	160					
INPUT										
Input Voltag	Input Voltage 3phase 3W:200VΔ/220VΔ/380VΔ/460VΔ (Option:480VΔ/600VΔ)									
(Select One	e)	3phase+N:200VY/ 2	08VY/220V/380VY/400	0VY/415VY/440VY <mark>(O</mark> p	tion:480VY/600VY)					
Input Voltag	ge Range									
Input Frequ	iency		±20% (> ±20% is available upon request)  50Hz or 60Hz or 400Hz (Please specify)							
Input Frequ	lency Range		±3Hz (wider ranges of	ffered, please consult)						
Power Wall	k In		0% ~ 100	%: 20Sec						
Efficiency			≒ !	98%						
Rectificatio	n Type	6 Pulse Standard,	12 Pulse Optional	12 Pulse	Standard					
OUTPUT										
Output Volt	age	1nhasa 2\\/+C:	200///220///230///240/	/ (Special voltage can l	ne customized)					
(Select One	e)	Tphase 2VV+O.	200 1/220 1/230 1/240 1	(Opeciai voltage carri	Je customizeu)					
Voltage Re	-		±1	<u>, ,                                   </u>						
Output Wav			Pure Sir	ne Wave						
Output Pov	ver Factor		0.							
				lz ±0.1Hz						
Frequency			• •	1: 400Hz)						
(Select One	e)	(0.4)	(Option-2: Switch Selectable 50/60Hz)							
_	0. 1.33	(Optio		stable ±10% from nor	ninai)					
Frequency	•									
Iotal Harm	onic Distortion		< 3% (0~100%							
	<110%	Continuous								
Overload	110~124%		15 mi							
	125~149%		5 mir							
Efficiency (	>/=150%	94.5%	30 se	l I	050/					
STATIC S	<u> </u>	94.5%	94.5%	95%	95%					
	_	470 077 \	(A.O. (I. NI) (D:#							
Voltage Rar	-	1/3 ~ 2// V		tages are available upo	on request.)					
Mains <>			0 ms (True Online)	Zero cross transfer						
	L CHARACTERI			I						
Capacity (K	•	80	100	120	160					
Overall Effic		92.5	92.5	93	93					
	Dissipation (Kw)	4.6	5.4	6.5	8.7					
Size (W*D*			1100*80	00*1600 I						
weight (Kg, at I/O 380/2	, w/o battery)	980	1250	1400	1600					
			<u> </u>	7dB						
Audible Noi Relative Hu		<67dBA								
Temperature		0%~90% (Non-Condensing)								
Protection	o , , minuue	titude 0~40°C (32~104°F) / <1500M Above Sea Level Over/Under Voltage, Output Short Circuit, Overload, Over Temperature Protection								
Lightning / I	FMC Filter	Over/orider voitag		·	STATUTE T TOTECHOTT					
Galvanic Iso										
Diagnostic I		LCD Display Real T		Events, 24 Status LED	Indicators & Alarm					
Remote Co				Iltaneously, distance up to						
	ation Interface		•	al MobBus protocol or	· ·					
STANDA					_ ··· • · · · · · · · · · · · · · · · ·					
EMI/EMC			EN50091-1,-2	, CE Approved						
		l .		11						

Remarks:

- 1. Different specifications required are available
- 2. All specifications mentioned above are subject to change without prior notice.

## **Technical Specification (1-Phase Input / 3-Phase Output)**



10~60KVA

MODEL	SPF	SPF	SPF	SPF	SPF	SPF	SPF	SPF			
	1310	1315	1320	1330	1340	1350	1360	1380			
Capacity (KVA)	10	15	20	30	40	50	60	80			
INPUT	T										
Voltage (Select One)		1 Phase 100V/110V/115V/120V/ 200V/208V/220V/230V/240V									
Voltage Range		±20% (> ±20% is available upon request)									
Input Frequency		50Hz or 60Hz or 400Hz (Please specify)									
Input Frequency Range		±3Hz (wider ranges offered, please consult)									
Power Walk In					00%: 20Se	ec					
Efficiency				<u> </u>	98%						
OUTPUT	T										
Voltage		•		20VΔ/380		• •		•			
(Select One)	3phase+N	N:200VY/2						80VY/600VY)			
			(Option:	± 10% ad			inal)				
Voltage Regulation					m Set Poi						
_					$0Hz \pm 0.1H$						
Frequency					n-1: 400H	•					
(Select One)		(0.41)		-2: Switch			•				
Davis Factor		(Optio	n-3: Freq	uency Ad	_	£10% fron	n nomina	1)			
Power Factor	0.8										
Phase Shift	120° ±0.5° (100% Unbalance Load)										
Distortion (THD) Overload Capacity	< 3% (0~100% Linear Load) <110% Continuous, 125%/15Minutes, 150%/10Minutes, >150%/30seconds										
Efficiency (100% Load) (%)	93	93	93	93	93.5	93.5	94	94.5			
Overall Efficiency (%)	91	91	91	91	91.5	92.5	92	92.5			
Max.Heat Dissipation (kw)	1.1	1.2	1.3	1.9	2.6k	3.0	3.5	4.6			
BTU/h @ Full Load (k)	2.4	3.6	4.8	6.5	8.9	10.3	12	16			
PROTECTION											
Over/Under Voltage				ŀ	Alarm						
Output Short Circuit		Cı	ırrent Limi	ted and cu	ut-off and	fuse and b	reaker				
Overload				linute. A				mal			
Over Temperature		71010 0110	itaowii i iv		shutdown		dor to noi	mai			
Lightning / EMC Filter			MOV//	Input & O			۸)				
Galvanic Isolation				Output Ti							
	\ <i>A</i>		input &	Output 11	ue Gaivar	iic isolatic	on				
INDICATORS & ALARI LCD Data Display		Ctatus D	oto or I liote	riaal Evani	la Darama	toro Dool	Time Cleal	Inv 9 Dunna			
LED Data Display	Real Tillie			ation (Stat				, Inv & Buzzer			
INTERFACE		Op to de	ate illioilli	ation (Otal	43) 10 1116	OSEI WA	daible Ala	1111			
Contact Closure,			Supr	orts Remo	nte Contro	l Module					
RS-232/485	Supports Remote Control Module, Option: SNMP card Model MEGATEC Net Agent II										
STANDARDS											
EMI/EMC			Εl	N50091-1,	-2, CE Ap	proved					
OUTLOOKS											
Capacity (KVA)	10	15	20	30	40	50	60	80			
Size (H*W*D/mm)			6	00*550*80	0			1600*1100 *800			
Net Weight at	370	400	450	E00	600	710	850	980			
220/380V(Kgs)	3/0	+00	450	580	600	710	000	900			
ENVIRONMENT											
Audible Noise(at 1m)(dBA)				<65dBA				<67dBA			
Relative Humidity			09	%~90% (N							
Operating Temperature					(32~104°)	•					
Altitude	<1500M Above Sea Level										



80~160KVA

Remarks: 1. Dit

1. Different specifications required are available

2. All specifications mentioned above are subject to change without prior notice.

## **Technical Specification (1-Phase Input / 1-Phase Output)**

MODEL	SPF 1110	SPF 1115	SPF 1120	SPF 1130	SPF 1140	SPF 1150	SPF 1160				
Capacity (KVA)	10	15	20	30	40	50	60				
INPUT											
Voltage (Select One)	,	1 Phase 100	\//110\//115	\//120\// 200	\//208\//220\	\//230\//240\	/				
Voltage Range		1 Phase 100V/110V/115V/120V/ 200V/208V/220V/230V/240V ±20% (>±20% is available upon request)									
Frequency		±20% (>±20% is available upon request)  50Hz or 60Hz or 400Hz ±3Hz (Please specify)									
Power Walk In		30112				eony)					
OUTPUT		0~100%: 20 seconds									
	<u> </u>	1 Phase 100V/110V/115V/120V/ 200V/208V/220V/230V/240V									
Voltage (Select One)			.,	adjustable	.,	.,	V				
Phase		(0		2W+G (Opt		ilai)					
Voltage Regulation				% from Set F							
vollage regulation				or 60Hz ± 0.							
Frequency				ption: 400H							
(Select One)		(	Option: Sw	itch Selecta	ble 50/60Hz	z)					
		(Optio	n: Frequen	cy Adjustal	ole ±10% fro	om nominal)					
Wave Form			P	ure Sine Wa	ve						
Power Factor		0.8									
Total Harmonic Distortion		< 3% (0~100% Linear Load)									
Overload Capacity	<110% Continuous, 125%/15Minutes, 150%/10Minutes, >150%/30seconds										
Efficiency (100% Load) (%)	93	93	93	93	93.5	93.5	94				
Overall Efficiency (%)	91	91	91	91	91.5	92	92				
Max. Heat Dissipation (kw)	1.1	1.2	1.3	1.9	2.6	3.0	3.5				
BTU/h @ Full Load (K)	2.4	3.6	4.8	6.5	8.9	10.3	12				
PROTECTION											
Over/Under Voltage	Alarm										
Output Short Circuit		Curre	nt Limited ar	nd cut-off and	d fuse and b	reaker					
Overload	ŀ	Auto-shutdo	wn 1 Minute	. Auto Rest	tore when ba	ack to norma	l				
Over Temperature			A	uto-shutdow	/n						
Lightning / EMC Filter		N	/IOV / Input	& Output (FO	CC CLASS A	A)					
Galvanic Isolation		I	nput & Outp	ut True Galv	anic Isolatio	n					
<b>INDICATORS &amp; ALAR</b>	M										
LCD Data Display	Real Time S	Status, Data o	r Historical E	vents, Param	eters, Real T	ime Clock, In	/ & Buzzer				
LED Data Display		Up to date i	nformation (	Status) to Th	ne User & Aı	udible Alarm					
INTERFACE											
Contact Closure,			Supports F	Remote Cont	rol Module,						
RS-232/485	Option: SNMP card Model MEGATEC Net Agent II										
STANDARDS											
EMI/EMC			EN5009	1-1,-2, CE A	pproved						
OUTLOOK											
Capacity (KVA)	10	15	20	30	40	50	60				
Size (H*W*D/mm)				600*550*80	l .	•					
Net Weight at 220V (Kgs)	370	400	450	580	600	710	850				
ENVIRONMENT											
Audible Noise(at 1m)(dBA)				< 65							
Relative Humidity			0%~909		densina)						
Operating Temperature	0%~90% (Non-Condensing) 0~40°C (32~104°F)										
Altitude	0~40 € (32~104 F) <1500M Above Sea Level										



10~60KVA

Remarks: 1. Different specifications required are available
2. All specifications mentioned above are subject to change without prior notice.

## **Peripheral Options**

#### **Communications Options**

■ UPSCAN™ - Remote Control Panel

A hand held remote display and control module with LCD and LED display that can monitor up to 99 Frequency Converters via RS-485 at a remote distance up to <1,000M (up to 3,000feet.)



In case of abnormal situation, it will automatically dial to specified service center for help. Multiple phone numbers can be set and no dedicated line is required.

■ NET AGENT

Can provide real-time three phases information of Frequency Converter connected on the line and monitor 31 Frequency Converters max. with one PC.



Can monitor and manage the Frequency Converters through Web browser and Java applet, providing simultaneously three phases data acquisition.

**■** Emergency Stop Switch (EPO)

Be installed outside or nearby the Frequency Converters for stopping the Frequency Converters output in case of emergency.

#### **Other Options**

Shock Mount Option

The cabinet can be shock mounted using optional rubber or coil type isolators. This will enable the unit to withstand shock levels as specified in MIL-S-901.

- Ruggedizing Option
- **Casters & Levelers**
- **Cable Entrance Direction** Cable entry can be from Front, Side, Rear or Top side

#### PRODUCT QUARANTEE

### Reliability and Serviceability (MTBF & MTTR)

Reliability is a feature that is designed and integrated into every piece of equipment that carries the Satech Power name. This is accomplished by utilizing state of the art circuitry which substantially reduces the total number of components (especially heat producing components). The result is greater efficiency, high reliability and low cost. A study of installed units has indicated a MTBF of over 300,000 hours! MTBF figures are based upon ground fixed normal 25-degree ambient temperature and proper and preventive maintenance.

The MTTR for all items offered is approximately 30 minutes. Part of the maintenance and repair philosophy of the units is to use the BIT equipment to aid in fault isolation. At that point, a decision is made to either replace an LRU or a component within the power supply with a spare. The construction methods used throughout the SPF Series provide for user friendly service. All circuit boards are plug in and are easily accessed from the front of the system. Power modules are designed on slide out trays for easy access to all power semiconductors and similar power components. The MTTR value specified is based upon proper training of local maintenance technicians and engineers.

## Military and Rugged Commercial (COTS) Designs

The SPF series feature robust construction quality and rugged designs. They are suitable for demanding military, industrial, and commercial applications. Most products can be equipped to meet MIL-STD-461, MIL-STD-810, MIL-STD-901, MIL-STD-167, MIL-STD-1399, MIL-STD-1472, and other important specifications as required. Please consult the factory about your specific application.