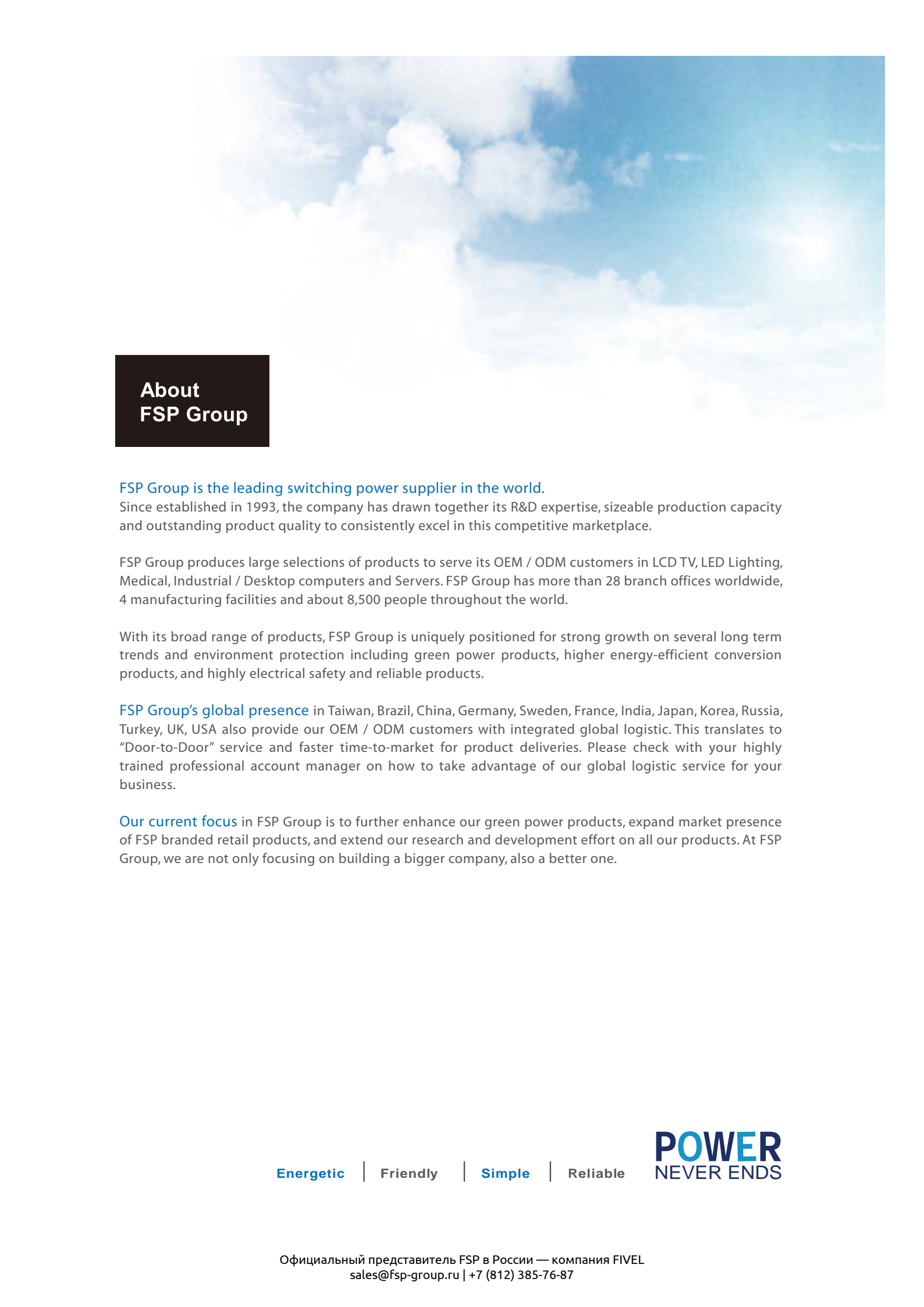




POWER  
NEVER ENDS

STANDBY UPS  
LINE INTERACTIVE UPS  
ONLINE UPS  
OFF-GRID INVERTER  
ON-GRID INVERTER WITH ENERGY STORAGE  
ACCESSORY

**UPS.SOLAR INVERTER**



## About FSP Group

**FSP Group is the leading switching power supplier in the world.**

Since established in 1993, the company has drawn together its R&D expertise, sizeable production capacity and outstanding product quality to consistently excel in this competitive marketplace.

FSP Group produces large selections of products to serve its OEM / ODM customers in LCD TV, LED Lighting, Medical, Industrial / Desktop computers and Servers. FSP Group has more than 28 branch offices worldwide, 4 manufacturing facilities and about 8,500 people throughout the world.

With its broad range of products, FSP Group is uniquely positioned for strong growth on several long term trends and environment protection including green power products, higher energy-efficient conversion products, and highly electrical safety and reliable products.

**FSP Group's global presence** in Taiwan, Brazil, China, Germany, Sweden, France, India, Japan, Korea, Russia, Turkey, UK, USA also provide our OEM / ODM customers with integrated global logistic. This translates to "Door-to-Door" service and faster time-to-market for product deliveries. Please check with your highly trained professional account manager on how to take advantage of our global logistic service for your business.

**Our current focus** in FSP Group is to further enhance our green power products, expand market presence of FSP branded retail products, and extend our research and development effort on all our products. At FSP Group, we are not only focusing on building a bigger company, also a better one.

**Energetic**

| **Friendly**

| **Simple**

| **Reliable**

**POWER**  
NEVER ENDS



## Applications:



TV



HI-FI


Game  
Console


Computer

## Standby UPS

Nano UPS provides comprehensive protection in a small and economic package, the compact size offer basic protection to against utility abnormal situations - surges and spikes. FSP Nano will continue generating stable power to serve the connected equipments and able to shutdown PC safely when input power failure. Embedded Microprocessor controller guarantees its reliability and suitable for home, small office, and power backup application.

## GENERAL FEATURES

Compact size with stand and mounting flexibility  
Excellent microprocessor controller guarantees high reliability  
Auto restart while AC is recovering  
Simulated sine wave output  
Cold start function  
Full protection: discharge, overcharge, short circuit, and thermal protection

## TECHNICAL SPECIFICATIONS

MODEL	Nano400	Nano600	Nano800
CAPACITY	400 VA / 240 W	600 VA / 360 W	800 VA / 480 W
INPUT			
Voltage		220/230/240 VAC	
Voltage Range		180-270 VAC	
Frequency Range		50 Hz or 60Hz (Auto sensing)	
OUTPUT			
AC Voltage Regulation(Batt. Mode)		±10%	
Frequency Range(Batt. Mode)		50 Hz or 60 Hz ± 1 Hz	
Transfer Time		2-6 ms	
Waveform(Batt. Mode)		Simulated Sine Wave	
BATTERY			
Battery Type	12V / 4.5 Ah	12V / 7 Ah	12V / 9 Ah
Numbers	1	1	1
Typical Recharge Time		8 Hours recover to 90% capacity	
INDICATORS			
AC Mode		Green lighting	
Battery Mode		Green flashing every 10 seconds	
Low Battery (Batt. Mode)		Green flashing every second and red lighting	
Fault		Red lighting	
ALARM			
Battery Mode		Sounding every 10 seconds	
Low Battery (Batt. Mode)		Sounding every second	
Fault		Continuously sounding	
PHYSICAL			
Dimension, D x W x H(mm)		228 (D) x 207 (W) x 82.5(H)	
Net Weight (kgs)	2.2	2.7	3.1
ENVIRONMENT			
Humidity		0-90 %	
Operating Temperature		0- 40°C (non-condensing)	

Product specifications are subject to change without further notice



# FP SERIES

Line Interactive UPS

400VA-2KVA

## Applications:



Built-in AVR



Generator compatible



Game Console



Computer

## Simple Solution for Home and Office Users

FP Series is a "Lite" UPS to protect your power issue on personal computers. It provides comprehensive protection in a small and economic package. Not only offering greater comprehensive power protection against surges and spikes, it also provides pure voltage with built-in AVR stabilizer. The UPS will continue providing clean and stable power to connected equipment while its embedded microprocessor controller guarantees high reliability, perfect for any home or small office application.

## GENERAL FEATURES

- Compact size
- Excellent microprocessor control guarantees high reliability
- Boost and buck AVR for voltage stabilization
- Auto restart while AC is recovering
- Simulated sine wave
- Off-mode charging
- Cold start function
- Generator compatible(option)



## TECHNICAL SPECIFICATIONS

MODEL	FP 400	FP 600	FP 800	FP 1000	FP 1500	FP 2000
PHASE	1-phase in / 1-phase out					
CAPACITY	400 VA / 240 W	600 VA / 360 W	800 VA / 480 W	1000 VA / 600 W	1500 VA / 900 W	2000 VA / 1200 W
INPUT						
Voltage	220/230/240 VAC					
Voltage Range	162-290 VAC					
Frequency Range	60/50 Hz (Auto sensing)					
OUTPUT						
Output Voltage	220/230/240 VAC					
AC Voltage Regulation(Batt. Mode)	±10%					
Frequency Range(Batt. Mode)	50 Hz or 60 Hz ±1 Hz					
Transfer Time	Typical 2-6 ms					
Waveform(Batt. Mode)	Simulated Sine Wave					
BATTERY						
Battery Type	12V / 4.5 Ah	12V / 7 Ah	12V / 9 Ah	12V / 7 Ah	12V / 9 Ah	12V / 9 Ah
Numbers	1	1	1	2	2	2
Typical Recharge Time	4 hours recover to 90% capacity			4-6 hours recover to 90% capacity		
PROTECTION						
Full Protection	Overload, discharge, and overcharge protection					
INDICATORS						
AC Mode	Green lighting			Green lighting		
Battery Mode	Green flashing			Yellow flashing		
Fault	N/A			Red lighting		
ALARM						
Battery Mode	Sounding every 10 seconds					
Low Battery	Sounding every second					
Overload	Sounding every 0.5 second					
Fault	Continuously sounding					
PHYSICAL						
Dimension, D x W x H(mm)	279 (D) x 101 (W) x 142 (H)			320 (D) x 130 (W) x 182 (H)		
Net Weight (kgs)	3.55	4.2	4.9	8.2	10.4	10.6
ENVIRONMENT						
Operation Humidity	0-90% RH @ 0-40°C (non-condensing)					
Noise Level	Less than 40 dBA @ 1 Meter					

Product specifications are subject to change without further notice



## Backup time table for FP series

MODEL	Battery			Back Time (Min)		
	Type of Battery	Total Q'ty	25% Load	50% Load	75% Load	100% Load
FP 400	12V 4.5Ah	1	15.0	8.0	3.0	0.67
FP 600	12V 7.0Ah	1	19.0	6.0	0.5	0.08
FP 800	12V 9.0Ah	1	20.0	3.0	0.13	0.08
FP 1000	12V 7.0Ah	2	18.0	5.0	1.83	0.46
FP 1500	12V 9.0Ah	2	18.0	6.5	3.5	1.33
FP 2000	12V 9.0Ah	2	15.0	3.73	1.6	0.6

NOTE : Data given are the average values, not the minimum values.

# CP SERIES

Line Interactive UPS

## 750VA-2KVA

### Applications:



Built-in AVR



POS



Mini Servers



Computer

### Pure Sine Wave UPS

With pure sine wave output waveform, FSP CP 750/1K/1.5K/2K Series offers perfect power protection for sensitive equipment. It provides comprehensive LCD display for users to monitor the power and UPS status. CP implemented powerful protection and built-in automatic voltage regulator, it secures your data loss from power outage, surge, brownout and swell.

### GENERAL FEATURES

- Line interactive pure sine wave UPS
- Digitalized PWM-based controller
- Excellent microprocessor control guarantees high reliability
- Boost and buck AVR for voltage stabilization
- Optional USB and RJ45 protection
- Perfect protection for mini servers, POS, & workstation



## TECHNICAL SPECIFICATIONS

MODEL	CP 750	CP 1000	CP 1500	CP 2000
PHASE	1-phase in / 1-phase out			
CAPACITY	750 VA / 480 W	1000 VA / 700 W	1500 VA / 1050 W	2000 VA / 1400 W
INPUT				
Voltage	220/230/240 VAC			
Voltage Range	162-290 VAC			
Frequency Range	60/50 Hz (Auto sensing)			
OUTPUT				
AC Voltage Regulation(Batt. Mode)	±10%			
Frequency Range(Batt. Mode)	50 Hz or 60 Hz ± 1 Hz			
Transfer Time	Typical 2-6 ms, 10ms max.			
Waveform(Batt. Mode)	Pure SineWave			
BATTERY				
Battery Type	12V / 9 Ah	12V / 7 Ah	12V / 9 Ah	12V / 10 Ah
Numbers	1	2	2	2
Typical Recharge Time	6 hours recover to 90% capacity			
PROTECTION				
Full Protection	Overload, discharge, and overcharge protection			
INDICATORS				
LCD Display	AC Mode, Battery Mode, Load Level, Battery Level, Input Voltage, Output Voltage, Overload, Fault, and Low Battery			
ALARM				
Battery Mode	Sounding every 10 seconds			
Low Battery	Sounding every second			
Battery Mode	Sounding every 0.5 seconds			
Overload	Sounding every 2 second			
Fault	Continuously sounding			
PHYSICAL				
Dimension, D x W x H(mm)	350 (D) x 146 (W) x 160 (H)		397 (D) x 146 (W) x 205 (H)	
Net Weight (kgs)	6.8	9.0	12.2	13.7
ENVIRONMENT				
Operation Humidity	0-90 % RH @ 0- 40°C (Non-condensing)			
Noise Level	Less than 45dB		Less than 55dB	
MANAGEMENT				
USB & RS-232 Port	Supports Windows® 2000/2003/XP/Vista/2008, Windows® 7/8/10, Linux and MAC			

Product specifications are subject to change without further notice



## Backup time table for CP series

MODEL	Battery			Back Time (minutes)		
	Type of Battery	Total Q'ty	25% Load	50% Load	75% Load	100% Load
CP 750	12V 9.0Ah	1	18.0	6.5	2.5	0.17
CP 1000	12V 7.0Ah	2	28.0	7.5	4.3	1.50
CP 1500	12V 9.0Ah	2	18.0	5.5	3.0	0.67
CP 2000	12V 10Ah	2	16.0	4.0	2.17	0.17

NOTE : Data given are the average values, not the minimum values.

# EUFO SERIES



High-Level Line-Interactive UPS

1.1KVA-3KVA

## Applications:



Work-Stations



Rack server



Network device



Multiple communication

## Professional Line-Interactive UPS Solutions

Eufo series rating is from 1.1kVA to 3.0kVA and implemented protect functions for power failure, surge overvoltage and brownout. Rack/Tower with easy-shift LCD design is flexible for installation. moreover, this series built-in Efficiency corrective Optimizer(ECO) that the efficiency is up to 98% for more energy saving. The application is suitable for networking, telecom, server and mission-critical applications.

## GENERAL FEATURES

- Pure sine wave
- Output power factor 0.9
- Microprocessor control optimizes reliability
- User-friendly and easy-shift LCD design
- Rack/Tower 2 in 1 design
- Built-in boost and buck AVR
- Programmable power management outlets
- ECO operation for energy saving (Efficiency Corrective Optimizer)
- Emergency power off function (EPO)
- RJ45 Surge protector
- Hot-swappable battery design
- Built-in internal battery & extend battery function
- Multiple communication available



## Microprocessor-based line interactive design

Eufo series UPS is designed with microprocessor controller for fast response to power disturbances.

## Pure sine wave output

With pure sine wave output, Eufo series guarantees compatibility for all kinds of loads. It's perfect power protection for versatile applications such as networking, telecom and other mission-critical applications.

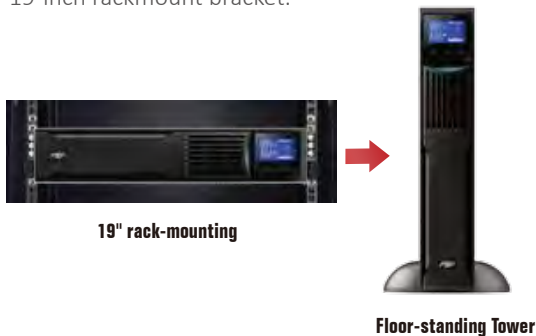
## User-friendly and easy-shift LCD display

The front panel digital display can be easily shifted through LCD setting to suit the installation format, vertically stand or flat wall mount.



## Rack / Tower design

Eufo series is designed in true universal-mount case. It can be easily installed as floor-standing tower or in 19-inch rackmount bracket.



## Built-in boost and buck AVR

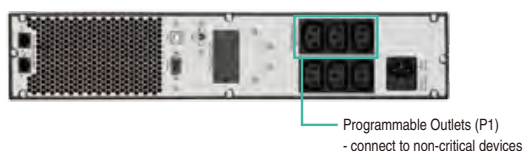
With built-in voltage regulator, the UPS will maintain regulated nominal output without using battery power during brownouts and overvoltages.

## Output power factor 0.9

Eufo series is a high-density UPS with output power factor 0.9 to provide higher performance and efficiency to critical applications.

## Programmable power management outlets

With programmable power management outlets, users can easily and independently control load segments. During power failure, this feature enables users to extend battery time to missioncritical devices by shutting down the non-critical devices.



Programmable Outlets (P1)  
- connect to non-critical devices

## ECO operation for energy saving (Efficiency Corrective Optimizer)

The ECO function allows cost-effective operation of UPS Systems as high as 98%. In this operation mode, load is supplied by the mains. When battery is fully charged, the fan will stop running for energy saving. In the event of a mains failure, the inverter takes over the load and provides supply continuity to the connected systems.



## Emergency Power Off Function (EPO)

This feature can secure the personnel and equipment in case of fires or other emergencies.

## Hot-swappable battery design

This design ensures clean and uninterruptible power to protected equipment during battery replacement.



## Extend battery capacity Function

Eufo series offer extend battery capacity function for long back up time purpose.



## RJ-45 Surge protector

Eufo Series implements RJ-45 Surge Protection ports to prevent Ethernet network damage caused by lightning or ground surges.

## Multiple communication

- USB port
- RS-232 port
- Intelligent slot for SNMP or Relay Card (option)

Also offer free monitoring software, ViewPower, downloaded from the internet. This advanced and networking software supports various operating systems and multiple languages.



## TECHNICAL SPECIFICATIONS

MODEL	EU-1101RS/TS		EU-1102RS/TS	EU-1103RS/TS
PHASE	Single phase with ground			
CAPACITY	1100 VA / 990 W		2000 VA/ 1800 W	3000 VA/ 2700 W
INPUT				
Voltage Range	208/220/230/240 VAC			
Acceptable Voltage Range	162-290 VAC			
Frequency Range	50Hz/60Hz (Auto sensing)			
OUTPUT				
Output Voltage	208/220/230/240VAC			
Voltage Regulation	± 1.5% (Before battery Alarm)			
Frequency Range(Batt. Mode)	50 Hz or 60 Hz ± 1 Hz			
Current Crest Ratio	3:1 (max.)			
Harmonic Distortion	2% max @ 100% linear Load ; 5% max @ 100% non linear load (Before low battery alarm)			
Transfer Time	2-6ms (typical), 10ms max.			
Waveform (Batt. Mode)	Pure Sinewave			
EFFICIENCY				
ECO Mode	97%			
Boost/Buck Mode	95%			
Battery Mode	89%	91%	92%	
BATTERY				
Standard Model	Battery Type & Numbers	12 V/9 Ah x 2	12 V/9 Ah x 4	12 V/9 Ah x 6
	Charging Current (max.)		1.5 A	
	Charging Voltage	27.4 VDC ± 1%	54.8 VDC ± 1%	82.1 VDC ± 1%
	Typical Recharge Time	4 hours recover to 90% capacity		
Long-Run Model	Charging Current (max.)		1A/2A/4A/6A/8A	
	Charging Voltage	27.4 VDC ± 1%	54.8 VDC ± 1%	82.1 VDC ± 1%
ALARM				
Battery Mode	Sounding every 10 seconds			
Low Battery	SSounding twice every second			
Overload	Sounding every second			
Fault	Continuously sounding			
AC INPUT & OUTPUT CONNECTORS				
AC Input Connector	1 x IEC 320 C14		1 x IEC 320 C14	1 x IEC 320 C20
AC Output Connector	8 x IEC 320 C13		8 x IEC 320 C13	6 x IEC 320 C13 / 1 x IEC C19
STANDARDS				
Safety / EMC	IEC 62040-1 (safety) / IEC-62040-2 (EMC) / CE			
PHYSICAL				
Standard Model	Dimension, D x W x H(mm)	410 (D) x 438 (W) x 88 (H)	510 (D) x 438 (W) x 88 (H)	630 (D) x 438 (W) x 88 (H)
	Net Weight (kgs)	13.4	21.5	29.3
Long-Run Model	Dimension, D x W x H(mm)	410 (D) x 438 (W) x 88 (H)	410 (D) x 438 (W) x 88 (H)	410 (D) x 438 (W) x 88 (H)
	Net Weight (kgs)	9.0	10.8	11.9
ENVIRONMENT				
Operation Humidity	0-90% RH @ 0-40°C (Non-condensing)			
Noise Level	Less than 45 dBA @ 1 Meter			
MANAGEMENT				
Smart RS-232 / USB	Supports Windows 2000/2003/XP/Vista/2008/7/8/10, Linux and MAC			
Optional SNMP	Power management from SNMP manager and web browser			

Product specifications are subject to change without further notice



Backup Time Table for Eufo Series

		Backup Time with Load (Min)			
	Battery Bank	25%	50%	75%	100%
EU-1101	+ 1 BB-24/18RT ( 4 x 9Ah Batteries)	112	57	36	25
	+ 2 BB-24/18RT ( 8 x 9Ah Batteries)	256	139	86	60
	+ 3 BB-24/18RT (12 x 9Ah Batteries)	358	221	152	98
	+ 4 BB-24/18RT (16 x 9Ah Batteries)	512	280	218	153
EU-1102	+ 1 BB-48/18RT ( 8 x 9Ah Batteries)	60	28	17	10
	+ 2 BB-48/18RT (16 x 9Ah Batteries)	130	62	40	26
	+ 3 BB-48/18RT (24 x 9Ah Batteries)	230	100	60	44
	+ 4 BB-48/18RT (32 x 9Ah Batteries)	288	163	94	69
EU-1103	+ 1 BB-72/18RT (12 x 9Ah Batteries)	58	28	17	10
	+ 2 BB-72/18RT (24 x 9Ah Batteries)	131	66	41	26
	+ 3 BB-72/18RT (36 x 9Ah Batteries)	225	107	62	43
	+ 4 BB-72/18RT (48 x 9Ah Batteries)	270	167	92	68



# KNIGHT SERIES



PF0.8 Online UPS

1KVA-10KVA

## Applications:



Server



POS



ATM



Computer

## Reliable UPS Solution

Knight Series is specifically designed for operation in poor power areas. Built-in internal battery and extend battery connector in tower model, user can extend autonomy time via plug and play battery design. The Reliable design is ideal for Banking, ATM, and other business critical application.

## GENERAL FEATURES

- True double-conversion
- Microprocessor control optimizes reliability
- Input power factor correction  $\geq 0.99$
- Output power factor 0.8
- Wide input voltage (110V–300V)
- Converter mode available
- ECO mode for energy saving
- Generator compatible
- SNMP Function operate with USB or RS-232 synchronizingly
- Comprehensive LCD Display for access & setting



## TECHNICAL SPECIFICATIONS

MODEL		KN-1101-TS	KN-1102-TS	KN-1103-TS
PHASE		Single phase with ground		
CAPACITY		1000 VA / 800W	2000 VA / 1600W	3000 VA / 2400 W
INPUT				
Voltage Range	Low Line Transfer	160 VAC / 140 VAC / 120 VAC / 110 VAC ± 5 % (Based on load percentage 100%- 80 % / 80 %- 70 % / 70 - 60 % / 60 %- 0)		
	Low Line Comeback	168 VAC / 148 VAC / 128VAC / 118 VAC ± 5 % (Based on load percentage 100%- 80 % / 80 %- 70 % / 70 - 60 % / 60 %- 0)		
	High Line Transfer	300 VAC ± 5 % or 150 VAC ± 5 %		
	High Line Comeback	290 VAC ± 5 % or 145 VAC ± 5 %		
Frequency Range		40Hz ~ 70 Hz		
Power Factor		≥ 0.99 @ Nominal Voltage (100% Last)		
OUTPUT				
Nominal Voltage		200/208/220/230/240VAC		
AC Voltage Regulation		± 1%		
Frequency Range(Synchronized Range)		47~ 53 Hz or 57 ~ 63 Hz		
Frequency Range(Batt. Mode)		50 Hz ± 0.25 Hz or 60Hz ± 0.3 Hz		
Current Crest Ratio		3:1		
Harmonic Distortion		≤ 3 % THD (Linear Load), ≤ 6 % THD (Non-linear Load)		
Transfer Time	AC mode to Battery mode	Zero		
	Inverter to Bypass	4 ms (Typical)		
Waveform (Batt. Mode)		Pure Sinewave		
EFFICIENCY				
Line Mode		88%	90%	91%
Battery Mode		93%	85%	96%
ECO Mode		87%	88%	89%
BATTERY				
Battery Type		12V / 7 Ah	12V / 7 Ah	12 V / 9 AH
Numbers		3	6	6
Typical Recharge Time		4 hours recover to 90% capacity		
Charging Current (max.)		1.0 A	1.0 A	1.0 A
Charging Voltage		41.0 VDC ± 1%	82.1 VDC ± 1%	82.1 VDC ± 1%
INDICATORS				
LCD Display		Last level, Battery level, AC mode, Battery mode, Bypass mode, and Fault indicators		
ALARM				
Battery Mode		Sounding every 4 seconds		
Low Battery		Sounding every second		
Overload		Sounding twice every second		
Fault		Continuously sounding		
AC INPUT & OUTPUT CONNECTORS				
AC Input Connector		1 x IEC 320 C14	1 x IEC 320 C14	1 x IEC 320 C20
AC Output Connector		4 x IEC 320 C13	8 x IEC 320 C13	6 x IEC 320 C13 / 1 x IEC C19
STANDARDS				
Safety / EMC		IEC 62040-1 (safety) / IEC-62040-2 (EMC) / CE		
PHYSICAL				
Dimension, D x W x H(mm)	UPS Unit: 397 (D) x 145 (W) x 220 (H)	UPS Unit: 419 (D) x 190 (W) x 318 (H)	UPS Unit: 419 (D) x 190 (W) x 318 (H)	
	Battery Pack: 397 (D) x 145 (W) x 220 (H)	Battery Pack: 535 (D) x 190 (W) x 318 (H)	Battery Pack: 535 (D) x 190 (W) x 318 (H)	
Net Weight (kgs)	UPS Unit:13	UPS Unit:26	UPS Unit:28	
	Battery Pack:18	Battery Pack:49.4	Battery Pack:67.5	
ENVIRONMENT				
Operation Humidity		20-90% RH @ 0-40°C (non-condensing)		
Noise Level		Less than 50 dBA @ 1 Meter		
MANAGEMENT				
Smart RS-232 / USB		Supports Windows 2000/2003/XP/Vista/2008/7/8/10, Linux and MAC		
Optional SNMP		Power management from SNMP manager and web browser		

\*Derate to 80% of capacity in Frequency converter mode and to 80% when the output voltage is adjusted to 100/200/208VAC  
Product specifications are subject to change without further notice



Backup Time Table for Knight Series

		Backup Time with Load (Min)			
	Battery Bank	25%	50%	75%	100 %
KN-1101TS	Internal Battery 36V / 7Ah	29.41	15.55	8.46	5.85
	+ 1 BB-36/14T - 36V / 14 Ah	97.66	49.80	27.83	18.20
	+ 2 BB-36/14T - 36V / 28 Ah	155.41	78.56	46.20	31.70
	+ 3 BB-36/14T - 36V / 42 Ah	249.08	125.16	63.40	45.36
KN-1102TS	Internal Battery 72V / 7Ah	35.08	18.18	12.08	6.76
	+ 1 BB-72/14T - 72V / 14 Ah	113.41	57.50	28.35	20.00
	+ 2 BB-72/14T - 72V / 28 Ah	190.41	95.53	66.35	34.21
	+ 3 BB-72/14T - 72V / 42 Ah	261.08	131.13	56.15	45.68
KN-1103TS	Internal Battery 72V / 9Ah	25.08	13.18	8.50	5.45
	+ 1 BB-72/18T - 72V / 18 Ah	97.75	49.80	28.26	17.33
	+ 2 BB-72/18T - 72V / 36 Ah	140.41	71.46	45.40	30.16
	+ 3 BB-72/18T - 72V / 54 Ah	201.25	101.30	59.16	44.76



## TECHNICAL SPECIFICATIONS

MODEL		KN-1101RL	KN-1102RL	KN-1103RL	KN-1106RL	KN-1110RL
PHASE		Single phase with ground				
CAPACITY		1000 VA / 800W	2000 VA / 1600W	3000 VA / 2400 W	6000 VA / 4800 W	10000 VA / 8000 W
INPUT						
Nominal Voltage		200/208/220/230/240VAC				
Voltage Range		110-300 VAC ± 5%	110-300 VAC ± 5%	110-300 VAC ± 5%	110-300 VAC @50% Load 176-300 VAC @100% Load	
Frequency Range		40Hz ~ 70 Hz			46Hz ~ 54 Hz or 56Hz ~ 64 Hz	
Power Factor		≥ 0.99 @ Nominal Voltage (100% Last)				
OUTPUT						
Nominal Voltage		200/208/220/230/240VAC				
AC Voltage Regulation		± 3%			± 1%	
Frequency Range(Synchronized Range)		47~ 53Hz or 57 ~ 63Hz			46~ 54Hz or 56 ~ 64Hz	
Frequency Range(Batt. Mode)		50Hz ± 0.25Hz or 60Hz ± 0. Hz			50Hz ± 0.1Hz or 60Hz ± 0.1Hz	
Overload		100%~110%:audible warning , 110%~130%: UPS shut down in 30 seconds at battery mode or transfer to bypass when the utility is normal >130%:UPS shuts down immediately at battery mode or transfer to bypass mode when the utility is normal 3:1 ( Max)				-
Current Crest Ratio		3:1 (Max)				
Harmonic Distortion		≤ 3 % THD (Linear Load), ≤ 6 % THD (Non-linear Load)			≤3% THD (Linear Load), ≤ 5% THD (Non-linear Load)	
Transfer Time	AC mode to Battery mode	Zero				
	Inverter to Bypass	4 ms (Typical)			Zero	
Waveform (Batt. Mode)		Pure Sinewave				
EFFICIENCY						
Line Mode		88%	90%	91%	90.3%	90.7%
Battery Mode		93%	95%	96%	95.0%	96.0%
ECO Mode		87%	88%	89%	88.0%	89.0%
BATTERY						
Battery Type		12V / 9 Ah	12V / 9 Ah	12V / 9 Ah	12 V / 9 AH	12 V / 9 AH
Numbers		3	6	6	20 pcs (16-20 pcs adjustable)*	
Typical Recharge Time		Depending on the capacity of external battery bank				
Charging Current (max.)		1.0/2.0/4.0/6.0A ± 10%			Default:1.0 A ± 10%, Max.:2.0A ± 10%	
Charging Voltage		41 VDC ± 1%	82.1 VDC ± 1%	82.1 VDC ± 1%	273 VDC ± 1% (Based on 20 pcs batteries)	
INDICATORS						
LCD Display		Last level, Battery level, AC mode, Battery mode, Bypass mode, and Fault indicators				
ALARM						
Battery Mode		Sounding every 4 seconds				
Low Battery		Sounding every second				
Overload		Sounding twice every second				
Fault		Continuously sounding				
AC INPUT & OUTPUT CONNECTORS						
AC Input Connector		1 x IEC 320 C14			Terminal	
AC Output Connector		4 x IEC 320 C13			Terminal	
STANDARDS						
Safety / EMC		IEC 62040-1 (safety) / IEC-62040-2 (EMC) / CE				
PHYSICAL						
Dimension,D x W x H(mm)		Battery Pack: 410 (D) x 438 (W) x 88 (H)	UPS Unit: 410 (D) x 438 (W) x 88 (H) Battery Pack: 510 (D) x 438 (W) x 88 (H)	Battery Pack: 630 (D) x 438 (W) x 88 (H)	UPS Unit: 580 (D) x 438 (W) x 88 (H) Battery Pack: 580 (D) x 438 (W) x 131 (H)	UPS Unit: 668 (D) x 438 (W) x 88 (H) Battery Pack: 668 (D) x 438 (W) x 131 (H)
Net Weight (kgs)		UPS unit: 13 Battery Pack: 21.3	UPS unit: 8.3 Battery Pack: 28.7	UPS unit: 10 Battery Pack: 40.8	UPS unit: 15 Battery Pack: 48	UPS unit: 18 Battery Pack: 63
ENVIRONMENT						
Operation Humidity		20-90% RH @ 0-40°C (non-condensing)				
Noise Level		Less than 50 dBA @ 1 Meter			Less than 55dBA@1 Meter Less than 58dBA@1 Meter	
MANAGEMENT						
Smart RS-232 / USB		Supports Windows 2000/2003/XP/Vista/2008/7/8/10, Linux and MAC				
Optional SNMP		Power management from SNMP manager and web browser				

\*Derate to 80% of capacity in Frequency converter mode and to 80% when the output voltage is adjusted to 100/200/208VAC  
Product specifications are subject to change without further notice



Backup Time Table for Knight Series

		Backup Time with Load (Min)			
	Battery Bank	25 %	50 %	75%	100%
KN-1101RL	+1 BB-36/09RT	60	31.0	17.0	12
KN-1102RL	+1 BB-72/09RT	30.9	23.3	13.2	8.5
	+2 BB-72/09RT	70.0	47.0	27.0	18.0
KN-1103RL	+1 BB-72/09RT	27.0	13.2	8.5	5.3
	+2 BB-72/09RT	58.0	27.0	18.0	11.0
KN - 1106RL	+1 BB-240/09RT	57	40.0	23.0	9.0
	+2 BB-240/09RT	120	57.0	48.0	40.0
KN - 1110RL	+1 BB-240/09RT	29.0	12.0	7.0	4.0
	+2 BB-240/09RT	64.0	46.0	31.0	17.0



# CHAMP SERIES



PF0.9 Online UPS

1KVA-3KVA

## Applications:



Work-Stations



Network  
device



Generator  
compatible



Computer

## Compact & Small-Scale Online UPS Solutions

Champ Series is the high power density double-conversion online UPS with a output power factor 0.9. It's designed in small cabinet with microprocessor controller.

Champ Series also have USB and RS-232 communication ports as standard, with a built-in intelligent slot for additional adapters, protocol converters and relate contact cards.

## GENERAL FEATURES

- True double-conversion
- Microprocessor control optimizes reliability
- Input power factor correction  $\geq 0.99$
- Output power factor 0.9
- Wide input voltage (130V-280V)
- Converter mode available
- ECO mode for energy saving
- Generator compatible
- Smart SNMP works well with either USB or RS-232 together display allows easy monitoring and access of UPS status



## TECHNICAL SPECIFICATIONS

MODEL		CH-1101-TS	CH-1102-TS	CH-1103-TS
PHASE		Single phase with ground		
CAPACITY		1000 VA / 900W	2000 VA / 1800W	3000 VA / 2700 W
INPUT				
Voltage Range	Low Line Transfer	160 VAC / 140 VAC / 120 VAC / 110 VAC ± 5 % (Based on Last percentage 100%- 80 % / 80 %- 70 % / 70- 60 % / 60 %- 0)		
	Low Line Comeback	168 VAC / 148 VAC / 128VAC / 118 VAC ± 5 % (Based on Last percentage 100%- 80 % / 80 %- 70 % / 70- 60 % / 60 %- 0)		
	High Line Transfer	300 VAC ± 5 % or 150 VAC ± 5 %		
	High Line Comeback	290 VAC ± 5 % or 145 VAC ± 5 %		
Frequency Range		40Hz ~ 70 Hz		
Power Factor		≧ 0.99 @ Nominal Voltage (100% Last)		
OUTPUT				
Nominal Voltage		200/208/220/230/240VAC		
AC Voltage Regulation		± 1%		
Frequency Range(Synchronized Range)		47~ 53 Hz or 57 ~ 63 Hz		
Frequency Range(Batt. Mode)		50 Hz ± 0.25 Hz or 60Hz ± 0.3 Hz		
Current Crest Ratio		3:1		
Harmonic Distortion		≦ 2 % THD (Linear Load), ≦ 4 % THD (Non-linear Load)		
Transfer Time	AC mode to Battery mode	Zero		
	Inverter to Bypass	4 ms (Typical)		
Waveform (Batt. Mode)		Pure Sinewave		
EFFICIENCY				
Line Mode		88%	88%	90%
Battery Mode		83%	87%	88%
ECO Mode		94%	95%	96%
BATTERY				
Battery Type		12V / 9 Ah	12V / 9 Ah	12 V / 9 AH
Numbers		2	4	6
Typical Recharge Time		4 hours recover to 90% capacity		
Charging Current (max.)		1.0 A	1.0 A	1.0 A
Charging Voltage		27.4 VDC ± 1%	54.7 VDC ± 1%	82.1 VDC ± 1%
INDICATORS				
LCD Display		Last level, Battery level, AC mode, Battery mode, Bypass mode, and Fault indicators		
ALARM				
Battery Mode		Sounding every 4 seconds		
Low Battery		Sounding every second		
Overload		Sounding twice every second		
Fault		Continuously sounding		
AC INPUT & OUTPUT CONNECTORS				
AC Input Connector		1 x IEC 320 C14	1 x IEC 320 C14	1 x IEC 320 C20
AC Output Connector		3 x CEE 7/4 (Schuko)	3 x CEE 7/4 (Schuko)	4 x CEE 7/4 (Schuko)
STANDARDS				
Safety / EMC		IEC 62040-1 (safety) / IEC-62040-2 (EMC) / CE		
PHYSICAL				
Dimension, D x W x H(mm)		282 (D) x 145 (W) x 220 (H)	397 (D) x 145 (W) x 220 (H)	421 (D) x 190 (W) x 318 (H)
Net Weight (kgs)		9.8	17.0	27.6
ENVIRONMENT				
Operation Humidity		20-90% RH @ 0-40°C (non-condensing)		
Noise Level		Less than 50 dBA @ 1 Meter		
MANAGEMENT				
Smart RS-232 / USB		Supports Windows 2000/2003/XP/Vista/2008/7/8/10, Linux and MAC		
Optional SNMP		Power management from SNMP manager and web browser		

\*Derate to 80% of capacity in Frequency converter mode and to 80% when the output voltage is adjusted to 200/208VAC  
Product specifications are subject to change without further notice



Backup Time Table for Champ Series

		Backup Time with Load (Min)			
	Battery Bank	25%	50%	75%	100 %
CH 1101TS	Internal battery only (24V:12V-9Ah x 2)	24	11	6.0	4.0
CH 1102TS	Internal battery only (48V:12V-9Ah x 4)	26	12	6.5	4.0
CH 1103TS	Internal battery only (72V:12V-9Ah x 6)	31	13	7.0	4.5

# CUSTOS 9X+ SERIES



High-Level Online UPS

1KVA-10KVA

## Applications:



Data Center



Telecom



Networking



Computer

## Professional On-Line UPS Solutions

Ideal for medium-density power protection demand, Power guardian, FSP Custos 9X+ series provides Rack/ Tower to fit diverse environment. Despite its compact footprint, Custos 9X+ incorporates internal battery packs which can be accessed via the front panel for maintenance checks and replacement without removing the UPS from its rack mounting. The LCD display panel can be easily shifted by pressing buttons to suit the installation format, vertical stand or horizontal rack mount. Besides, IT personnel can manage equipment well from learning Intuitive information via LCD display.

## GENERAL FEATURES

- True double-conversion online UPS
- Output power factor 0.9
- User-friendly and easy-shift LCD display
- Rack/Tower design
- Programmable power management outlets
- 50/60 Hz frequency converter mode
- ECO and advanced ECO mode for energy saving
- Emergency Power Off Function (EPO)
- Hot-swappable battery design
- Parallel option for 6K-10K models



### True double-conversion online UPS

A true double conversion UPS will rectify input power to offer clean, pure, high level quality power with  $\pm 1\%$  voltage output regulation to fully protect mission-critical devices such as sensitive networks, small computer centers servers, telecom applications, as well as for industrial applications.

### Output power factor 0.9

Custos 9X+ series is a high-density UPS with output power factor 0.9 to provide higher performance and efficiency to critical applications.

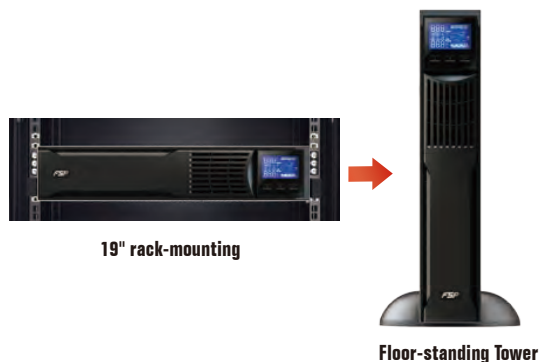
### User-friendly and easy-shift LCD display

The front panel digital display can be easily shifted through LCD setting to suit the installation format, vertically stand or flat wall mount.



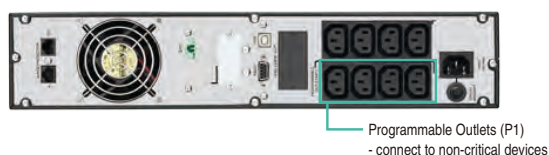
### Rack / Tower design

Custos 9X+ series is designed in true universal-mount case. It can be easily installed as floor-standing tower or in 19-inch rackmount bracket.



### Programmable power management

With programmable power management outlets, users can easily and independently control load segments. During power failure, this feature will extend battery time to mission critical devices by shutting down the non-critical devices.



### 50/60 Hz frequency converter mode

Lock output frequency at 50Hz or 60Hz to suit power sensitive equipments.

### ECO and advanced ECO mode for energy saving

Thanks FSP Custos9X+ smart design, operation efficiency up to 97% ECO mode implemented. Furthermore, Custos 9X+ 1-3K even offers advanced ECO mode to allow UPS to operate at higher efficiency up to 98% for more energy saving.

In these operation modes, load is supplied by the utility. When utility failure, UPS inverter will assume control the load and provide clean power continuity to the connected devices.



### Emergency Power Off function (EPO)

The safety function can guarantee & secure the emergency responders, fire fighters not exposed to dangerous voltage, electrical hazard from the device. This is important if equipment is emitting smoke, fire, or flood, or if person is being electrocuted.

### Hot-swappable battery design

This design ensures clean and uninterruptible power to protected equipment during battery replacement.



### RJ-45 Surge protector

Custos 1-3kVA implements RJ-45 Surge Protection ports to prevent Ethernet network damage caused by lightning or ground surges.

### Intelligent slot for SNMP or Relay Card



### Parallel Option N+X for 6K-10K models

Custos 9X+ 6K/10K can be parallel operated with up to 3 units to accommodate increases in power demand as well as to attain power redundancy with high system integrity.



## TECHNICAL SPECIFICATIONS

MODEL		CU-1101	CU-1102	CU-1103
PHASE		Single phase with ground		
CAPACITY		1000 VA / 900 W	2000 VA / 1800 W	3000 VA / 2700 W
INPUT				
Voltage Range	Low Line Transfer	80 VAC / 70 VAC / 60 VAC / 55 VAC ± 5 % or 160 VAC / 140 VAC / 120 VAC / 110 VAC ± 5 % (Based on load percentage 100%- 80 % / 80 %- 70 % / 70- 60 % / 60 %- 0)		
	Low Line Comeback	85 VAC / 75 VAC / 65 VAC / 60 VAC ± 5 % or 170 VAC / 150 VAC / 130 VAC / 120 VAC ± 5 % (Based on load percentage 100%- 80 % / 80 %- 70 % / 70- 60 % / 60 %- 0)		
	High Line Transfer	150 VAC ± 5 % or 300 VAC ± 5 %		
	High Line Comeback	140 VAC ± 5 % or 290 VAC ± 5 %		
Frequency Range		40Hz ~ 70Hz		
Power Factor		≥ 0.99 @ Nominal Voltage (100% load)		
OUTPUT				
Output Voltage		110/115/120/127 VAC or 208/220/230/240 VAC		
AC Voltage Regulation (Batt. Mode)		± 1%		
Frequency Range (Synchronized Range)		47 ~ 53 Hz or 57 ~ 63 Hz		
Frequency Range (Batt. Mode)		50 Hz ± 0.2 Hz or 60Hz ± 0.2 Hz		
Current Crest Ratio		5:1 (max.)		
Harmonic Distortion		≤ 2 % THD (Linear Load) ; ≤ 4 % THD (Non-linear Load)		
Transfer Time	Line mode to Battery mode	Zero		
	Inverter to Bypass	4 ms (Typical)		
Waveform (Batt. Mode)		Pure Sinewave		
EFFICIENCY				
AC Mode		87%	88%	89%
Battery Mode		94%	95%	97%
ECO Mode		85%	86%	87%
BATTERY				
Battery Type		12 V / 9 AH	12 V / 9 AH	12 V / 9 AH
Numbers		2	4	6
Typical Recharge Time		4 hours recover to 90% capacity	STD 4hr recover to 90% cap/ LongRun Model depend on external battery capacity	
Charging Current (max.)		1.0 A	Standard:1.0A / LongRun Model: 1A/2A/4A/8A	
Charging Voltage		27.4 VDC ± 1%	54.8 VDC ±1%	82.1 VDC ±1%
INDICATORS				
LCD Display		Load level, Battery level, AC mode, Battery mode, Bypass mode, and Fault indicator		
ALARM				
Battery Mode		Sounding every 4 seconds		
Low Battery		Sounding every second		
Overload		Sounding twice every second		
Fault		Continuously sounding		
AC INPUT & OUTPUT CONNECTORS				
AC Input Connector		1 x IEC 320 C20	1 x IEC 320 C20	1 x IEC 320 C20
AC Output Connector		8 x IEC 320 C13	8 x IEC 320 C13	1 x IEC 320 C19 / 6 x IEC 320 C13
PHYSICAL				
Dimension, D x W x H (mm)		410 x 438 x 88 [2U]	Standard:630 x 438 x 88 [2U] / LongRun Model: 410 x 438 x 88 [2U]	Standard:630 x 438 x 88 [2U] / LongRun Model: 510 x 438 x 88 [2U]
Net Weight (kgs)		12.9	Standard:20.6/ LongRun Model: 11.3	Standard:27.4 / LongRun Model: 13.8
ENVIRONMENT				
Humidity		0-95 % RH @ 0- 40°C (non-condensing)		
Noise Level		Less than 50dBA @ 1 Meter		
MANAGEMENT				
Smart RS-232 / USB		Supports Windows 2000/2003/XP/Vista/2008, Windows7/8/10, Linux and MAC		
Optional SNMP		Power management from SNMP manager and web browser		

\*LongRun Model without internal battery.

Product specifications are subject to change without further notice



Backup Time Table for Custos Series

Battery Bank		Backup Time with Load (Min)			
		25%	50%	75%	100%
CU-1101	internal battery (2 x 9Ah Batteries)	27.0	11.0	6.0	3.5
	+1 BB-24/18RT (6 x 9AH Batteries)	87.3	37.7	22.6	16.0
	+2 BB-24/18RT (10 x 9AH Batteries)	156.0	70.4	43.0	33.2
CU-1102	+1 BB-48/9RT (4 x 9AH Batteries)	21.0	8.9	4.8	4.2
	+1 BB-48/18RT (8 x 9AH Batteries)	52.1	22.0	13.1	8.9
	+2 BB-48/18RT (16 x 9AH Batteries)	117.5	52.0	31.6	22.0
	+3 BB-48/18RT (24 x 9AH Batteries)	184.0	84.0	52.0	36.0
CU-1103	+1 BB-72/9RT (6 x 9AH Batteries)	21.9	8.9	4.9	4.0
	+1 BB-72/18RT (12 x 9AH Batteries)	52.1	21.9	13.1	8.9
	+2 BB-72/18RT (24 x 9AH Batteries)	117.6	52.0	31.6	21.9
	+3 BB-72/18RT (36 x 9AH Batteries)	184.0	84.5	52.2	36.6



## TECHNICAL SPECIFICATIONS

MODEL		CU-1106	CU-1110
PHASE		Single phase with ground	
CAPACITY		6000 VA / 5400 W	10000 VA / 9000 W
INPUT			
Voltage Range	Low Line Transfer	176 VAC @ 100% load 110VAC @ 50% load	
	Low Line Comeback	186 VAC @ 100% load 120VAC @ 50% load	
	High Line Transfer	300 VAC	
	High Line Comeback	290 VAC	
Frequency Range		46~54 Hz or 56~64 Hz	
Power Factor		≥ 0.99 @ 100% Load	
OUTPUT			
Nominal Voltage		200/208/220/230/240 VAC	
AC Voltage Regulation		± 1%	
Frequency Range(Synchronized Range)		46~54 Hz or 56~64 Hz	
Frequency Range(Batt. Mode)		50 Hz ± 0.1 Hz or 60 Hz ± 0.1 Hz	
Current Crest Ratio		3:1 (max.)	
Harmonic Distortion		≤ 2 % THD (Linear Load), ≤ 4 % THD (Non-linear Load)	
Transfer Time	AC mode to Battery mode	Zero	
	Battery mode to AC mode	Zero	
	Inverter to Bypass	Zero	
	Bypass to Inverter	Zero	
Waveform (Batt. Mode)		Pure Sinewave	
EFFICIENCY			
Line Mode		91%	
Battery Mode		96%	
ECO Mode		88%	
BATTERY			
Nominal Voltage		240 VDC	
Battery Type		12 V / 7 AH	12 V / 9 AH
Numbers		20 (18-20 pcs adjustable)*	20 (18-20 pcs adjustable)*
Charging Current (max.)		4.0 A	4.0 A
Float Charging Voltage		273 VDC (based on battery numbers at 20 pcs)	
INDICATORS			
LCD Display		UPS status, Load level, Battery level, Input/Output voltage, Discharge timer, and Fault conditions	
ALARM			
Battery Mode		Sounding every 4 seconds	
Low Battery		Sounding every second	
Overload		Sounding twice every second	
Fault		Continuously sounding	
AC INPUT & OUTPUT CONNECTORS			
AC Input Connector		Terminal	
AC Output Connector		Terminal	
PHYSICAL			
Dimension, D x W x H(mm)		UPS unit: 606 x 438 x 133 [3U] Battery pack: 606 x 438 x133 [3U]	UPS unit: 668 x 438 x 133 [3U] Battery pack: 606 x 438 x133 [3U]
Net Weight (kgs)		UPS unit: 20 Battery pack: 58	UPS unit: 23.5 Battery pack: 65
ENVIRONMENT			
Operation Humidity		0-95 % RH @ 0- 40°C (non-condensing)	
Noise Level		Less than 58 dBA @ 1 Meter	Less than 60 dBA @ 1 Meter
MANAGEMENT			
Smart RS-232 / USB		Supports Windows 2000/2003/XP/Vista/2008, Windows7/8/10, Linux and MAC	
Optional SNMP		Power management from SNMP manager and web browser	

\*When using internal batteries from 18-19, the unit will de-rate according to below formula:  $P = P_{Rating} \times N/20$

\*\* If the UPS is installed or used in a place where the altitude is above than 1000m, the output power must be derated one percent per 100m.

\* L means long-run model

Product specifications are subject to change without further notice



## Backup Time Table for Custos Series

		Backup Time with Load (Min)			
Battery Bank		25%	50%	75%	100%
CU-1106	+1 BB-240/9RT (20 x 9AH Batteries)	43.0	20.0	12.9	8.0
	+2 BB-240/9RT (40 x 9AH Batteries)	99.0	46.0	31.7	22.7
	+3 BB-240/9RT (60 x 9AH Batteries)	150.0	71.0	43.5	30.4
CU-1110	+1 BB-240/9RT (20 x 9AH Batteries)	22.0	9.0	6.0	3.0
	+2 BB-240/9RT (40 x 9AH Batteries)	54.0	23.0	16.9	12.0
	+3 BB-240/9RT (60 x 9AH Batteries)	88.0	38.0	23.0	16.0



# PROLINE SERIES

3Phase in -3/Single Phase Out  
Online UPS

10KVA-40KVA

## Applications:



Data Center



Networking



Computer



Banking



Generator compatible

## On-Line UPS Solutions

3 Phase Tower UPS Solutions FSP Proline 3P/3P, 3P/1P Online UPS series integrates true double conversion design, DSP technology, and active input power factor correction design to ensure output power quality and performance at all times. N+X redundancy function available reduce power failure or lost risk. Besides, easy-configurable program via LCD panel enhances the flexibility to meet ever-increasing power demand of IT and networked environment.



## GENERAL FEATURES

- True double-conversion
- DSP technology guarantees high performance
- Output power factor 0.8
- Wide input voltage range (110-300 VAC)
- Active power factor correction in all phases
- 50Hz/60Hz frequency converter mode
- ECO mode operation for energy saving
- Emergency power off function (EPO)
- SNMP+USB+RS-232 multiple communications
- 3-stage extendable charging design for optimized battery performance
- Accepts dual-mains inputs
- Generator compatible
- Battery number adjustable
- Maintenance bypass available
- Optional N+X parallel redundancy
- Optional isolation transformer offers full isolation and complete common mode noise rejection

## TECHNICAL SPECIFICATIONS

MODEL	PR-3110TL	PR-3120TL	PR-3130TL
PHASE	3-phase in / 1-phase out		
CAPACITY	10.0 kVA / 8kW	20.0 kVA / 16kW	30.0 kVA / 24kW
INPUT			
Voltage Range	305-478 VAC (3-phase) @ 100% Last 190-520 VAC (3-phase) @ 50% Last		
Frequency Range	46Hz ~ 54Hz or 56Hz ~ 64Hz		
Power Factor	≥ 0.99 @ 100% Last		
OUTPUT			
Output Voltage	208/220/230/240 VAC (3Ph + N)		
Voltage Regulation	± 1%		
Frequency Range ( Synchronized Range)	46Hz ~ 54Hz or 56Hz ~ 64Hz		
Frequency Range (Batt. Mode)	50Hz ± 0.1Hz or 60Hz ± 0.1Hz		
Current Crest Ratio	3:1 (max.)		
Harmonic Distortion	≤ 2% THD (Linear Last) ; ≤ 5% THD (Non-linear Last)		
Transfer Time	Bypass to Inverter	Zero	
	Inverter to Bypass	Zero	
Waveform (Batt. Mode)	Pure Sinewave		
EFFICIENCY			
AC Line Mode	89%	89%	91.3%
Battery Mode	86%	88%	88%
BATTERY			
Battery Type	Depending on the capacity of external batteries		
Numbers			
Charging Current (max.)	4.0 A	4.0 A	4.0 A
Charging Voltage	273 VDC ± 1% (based on 20 pcs batteries)		
ALARM			
Battery Mode	Sounding every 4 seconds		
Low Battery	Sounding every second		
Overload	Sounding twice every second		
Fault	Continuously sounding		
AC INPUT & OUTPUT CONNECTORS			
AC Input Connector	Terminal		
AC Output Connector	Terminal		
STANDARDS			
Safety / EMC	IEC 62040-1 (safety) / IEC-62040-2 (EMC) / CE		
PHYSICAL			
Dimension, D x W x H(mm)	592 (D) x 250 (W) x 826 (H)	592 (D) x 250 (W) x 826 (H)	815 (D) x 250 (W) x 826 (H)
Net Weight (kgs)	38	40	64
ENVIRONMENT			
Operation Humidity	0-90% RH @ 0-40°C (non-condensing)		
Noise Level	Less than 58dBa @ 1 Meter	Less than 60dBa @ 1 Meter	Less than 65dBa @ 1 Meter
MANAGEMENT			
Smart RS-232 / USB	Windows® 2000/2003/XP/Vista/2008 and Windows® 7/8 /Windows SBS 2011 and Windows server 2012		
Optional SNMP	Power management from SNMP manager and web browser		

\*When using internal batteries from 18-19, the unit will de-rate according to the below formula: P = PRating x N/20.  
Product specifications are subject to change without further notice



Rackmount/Rack Tower Battery Pack	
Form Factor	3U
Model Name	BB-240/RT
Battery Type	12 V / 9 Ah
Battery Number	20 pcs
Dimension (DxWxH) mm	580 x 438 x 131 [3U]
Net Weight (kgs)	65

Tower Battery Pack	
Form Factor	Tower
Model Name	BB-240/18T BB-240/27T
Battery Type	12 V / 9 Ah 12 V / 9 Ah
Battery Number	40 pcs 60 pcs
Charger	x 4A
Dimension (DxWxH) mm	592 x 250 x 576 830 x 250 x 576
Net Weight (kgs)	125 190



## TECHNICAL SPECIFICATIONS

MODEL	PR-3310TL	PR-3320TL	PR-3330TL	PR-3340TL
PHASE	3 phase in / 3 phase out			
CAPACITY	10.0 kVA / 8kW	20.0 kVA / 16kW	30.0 kVA / 24kW	40.0 kVA / 36kW
INPUT				
Voltage Range	305-478 VAC (3-phase) @ 100% Load 190-520 VAC (3-phase) @ 50% Load			
Frequency Range	46Hz ~ 54Hz or 56Hz ~ 64Hz			
Power Factor	≥ 0.99 @ 100% Load			
OUTPUT				
Output Voltage	3x400 VAC (3Ph + N)			
Voltage Regulation	± 1%			
Frequency Range ( Synchronized Range)	46Hz ~ 54Hz or 56Hz ~ 64Hz			
Frequency Range (Batt. Mode)	50Hz ± 0.1Hz or 60Hz ± 0.1Hz			
Current Crest Ratio	3:1 (Max.)			
Harmonic Distortion	≤ 2% THD (Linear Load) ; ≤ 5% THD (Non-linear Load)			
Transfer Time	Bypass to Inverter	Zero		
	Inverter to Bypass	Zero		
Waveform (Batt. Mode)	Pure Sinewave			
EFFICIENCY				
AC Line Mode	89%	89%	89%	94%
Battery Mode	86%	88%	87%	93.5%
BATTERY				
Battery Type	Depending on the capacity of external batteries			32 ~40 pcs (Adjustable)
Numbers				
Charging Current (max.)	4.0 A	4.0 A	4.0 A	1.0A / 2.0A / 3.0A / 4.0 A
Charging Voltage	273 VDC ± 1% (based on 20 pcs batteries)			+/- 13.65V x N (N=16~20)
ALARM				
Battery Mode	Sounding every 4 seconds			
Low Battery	Sounding every second			
Overload	Sounding twice every second			
Fault	Continuously sounding			
AC INPUT & OUTPUT CONNECTORS				
AC Input Connector	Terminal			
AC Output Connector	Terminal			
STANDARDS				
Safety / EMC	IEC 62040-1 (safety) / IEC-62040-2 (EMC) / CE			
PHYSICAL				
Dimension, D x W x H(mm)	592 (D) x 250 (W) x 826 (H)	592 (D) x 250 (W) x 826 (H)	815 (D) x 250 (W) x 826 (H)	592 (D) x 250 (W) x 576 (H)
Net Weight (kgs)	38	40	62	45
ENVIRONMENT				
Operation Humidity	0-90% RH @ 0-40°C (non-condensing)			< 95% RH @ 0-40°C (non-condensing)
Noise Level	Less than 58dBa @ 1 Meter		Less than 60dBa @ 1 Meter	Less than 70dBa @ 1 Meter
MANAGEMENT				
Smart RS-232 / USB	Windows® 2000/2003/XP/Vista/2008 and Windows® 7/8 /Windows SBS 2011 and Windows server 2012			
Optional SNMP	Power management from SNMP manager and web browser			

\*When using internal batteries from 18-19, the unit will de-rate according to the below formula: P = PRating x N/20.  
Product specifications are subject to change without further notice



Backup Time Table for Proline Series

		Backup Time with Load (Min)			
	Battery Bank	25 %	50 %	75 %	100 %
PR-3310TL PR-3110TL	+ 1 BB-240/9RT - 240V / 9 Ah	25	12.5	5.5	2.5
	+ 1 BB-240/18T - 240V / 18 Ah	61	26	15.5	12.5
	+ 2 BB-240/18T - 240V / 36 Ah	136	61	37	51
	+ 1 BB-240/27T - 240V / 27 Ah	98	43	26	18
	+ 2 BB-240/27T - 240V / 54 Ah	200	98.2	61	43
PR-3320TL PR-3120TL	+ 1 BB-240/18T - 240V / 18 Ah	25.9	10.6	6.0	7.1
	+ 2 BB-240/18T - 240V / 36 Ah	61	26	15.5	12.7
	+ 1 BB-240/27T - 240V / 27 Ah	43	18	10.6	7.1
	+ 2 BB-240/27T - 240V / 54 Ah	98	43	26	18
PR-3330TL PR-3130TL	+ 1 BB-240/27T - 240V / 27 Ah	26	11	6.0	4
	+ 2 BB-240/27T - 240V / 54 Ah	61	26	16	10.6
	+ 3 BB-240/27T - 240V / 81 Ah	98.2	43	26	18.0

# AGIES SERIES

3 Phase High Efficiency UPS

10-120kVA

## Applications:



Telecom



Networking



Medical



Industrial  
machinery

## 3-Level Design UPS

Agies is applied to the high technology to reach high efficiency with output power factor 0.9. It can easily adapt to all kinds of diverse and complicated loads, such as the non-linear systems (IT systems), strongly inductive or capacitive loads, discharge lamps, and induction motors. To meet diverse applications, it is allowed to have alternative battery configuration based on different backup time requirement. To facilitate expansion easily, this unit can be set up in parallel-redundant systems with up to 4 units.



## GENERAL FEATURES

- Online double conversion technology with DSP control
- Advanced control with Adaptive Feed Forward Cancellation (AFC) technology for
- Low harmonic distortion
- Input current distortion THDi < 1%
- Input power factor 0.99 at 10% load
- Output efficiency up to 95%
- Space-saving compact design
- Front access makes maintenance and replacement easily
- Control designed to withstand all kinds of loads
- Parallel redundant operation with up to 4 units
- Variety of communication options available
- Remaining backup time calculation
- 5.7" Graphic LCD panel design with multiple languages for easy-configuration

## The Most Versatile Solution for Power Protection

Agies, applied with state-of-the-art PWM-transformerless technology, can easily adapt to all kinds of diverse and complicated loads, such as the non-linear systems (IT systems), strongly inductive or capacitive loads, discharge lamps, and induction motors. Ranging from 10K-120KVA, Agies is designed in terms of criteria of maximum efficiency and energy savings with highly compact format. It makes installation and operation easily and eco-environmentally. Each unit also has a wide range of communication possibilities and a large variety of options to fill out customers' diverse inquiries. To facilitate expansion easily, this unit can be set up in parallel-redundant systems without any need for additional hardware in the near future

### Online double conversion technology with DSP control

Agies is applied online double conversion technology to effectively insulate against network disturbances and enable higher load uptime. A Digital Signal Processor (DSP) control provides an improved solution with high performance.

### Advanced control with Adaptive Feed Forward Cancellation (AFC) technology for very low harmonic distortion

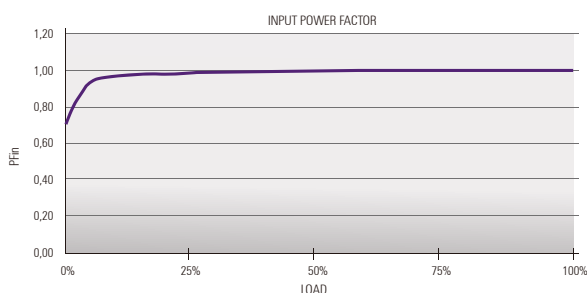
By cancelling input current and output voltage harmonics, the harmful effects of harmonic injection into the power network is eliminated and it will enhance load integrity.

### Very low input current distortion (THDi < 1%)

AFC cells are used to achieve extremely low distortion values. Low input current distortion rate THDi < 1% at full load and also THDi < 5% with very small load (10% of load). This will avoid the distortion of the electrical network upstream of the UPS, resulting in savings from the optimal use of the cables and protection devices in the electrical network.

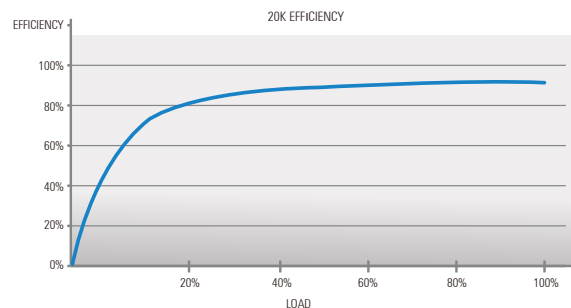
### Input power factor 0.99 at 10% load

Lower power losses would result in reduced consumption, lower operation and maintenance costs.



### Output efficiency up to 95%

Applied with DSP controller and the forth generation IGBT transistors, the UPS can achieve high efficiency of up to 95%. It will save consumed energy due to lower heat losses and make a longer lifespan for the critical components of the unit.



### Space-saving compact design

The use of transformerless technology allows a considerable reduction of the weight and volume of the units.

### Front access makes maintenance and replacement easily

An important consideration has been given to allow generous access to the unit's electronic cards and power components. All the boards are accessible by front panel for easily maintenance and replacement.



## Control designed to withstand all kinds of loads

In Agies series, the control is designed to be able to withstand all kinds of loads: resistive, capacitive, non-linear, discharge lamps, induction motors, speed drivers, etc. It makes the UPS tremendously versatile and flexible in supplying power to different types of electronics. To make it simple to adapt the UPS for different environment, there are a large number of parameters that can be programmed locally or remotely.

## Parallel redundant operation with up to 4 units

Up to 4 units in parallel can be operated without additional hardware, to accommodate increases in power demand as well as to attain power redundancy with high system integrity.

## Variety of communications and options available

The UPS has provided the following standard communication selections:

- ▶ Relay interface
- ▶ RS-232/485 port
- ▶ 1 x SNMP slot
- ▶ Modbus RTU / SEC protocol
- ▶ 2 x connectors for parallel connection

## Over 60% materials recyclable

The UPS uses more than 60% recyclable materials for being more respectful of the environment.



## Remaining backup time calculation

By using powerful algorithms, an estimated remaining backup time can be calculated and help users for further arrangement in the event of a prolonged power outage.

## Optional fast-access touch screen for 5.7" LCD panel

We also offer touch panel for 5.7" LCD panel. Touch screen provides higher operability on configuration and information display.



## 5.7" graphic LCD panel design with multiple languages for easy-configuration

With graphic design, it becomes more intuitive to configure programs. Besides, we also offer multiple languages for 5.7" LCD version. Users can easily configure programs and read displayed messages.



## Applications:

Agies vides great flexibility and adaptability to suit versatile applications.

- ▶ Data centers (computing centers, centralized sales/distribution systems, hosting, housing, ...)
- ▶ IT-networks (server farms, local computer networks, network switches and hubs,...)
- ▶ Financial services (bank offices, automatic cash dispensers, card payment authorisation systems,...)
- ▶ Industrial processes (productive and control systems, industrial machinery, emergency and lighting systems,...)
- ▶ Telecommunications
- ▶ Infrastructures (hospitals, airports, tunnels,...)

## TECHNICAL SPECIFICATIONS

MODEL	Agies 10K	Agies 15K	Agies 20K	Agies 30K	Agies 40K	Agies 60K	Agies 80K	Agies 100K	Agies 120K
PHASE	3-phase in / 3-phase out								
CAPACITY	10KVA/9KW	15KVA/13.5KW	20KVA/18KW	30KVA/27KW	40KVA/36KW	60KVA/54KW	80KVA/72KW	100KVA/90KW	120KVA/108KW
INPUT									
Nominal Voltage	3 x 400V (3Ph + N)								
Acceptable Voltage Range	+15% or –20%								
Frequency	50 / 60 Hz ±5 %								
Total Harmonic Distortion (THDi)	< 1.5% @ 100% load < 2.5% @ 50% load < 6.0% @ 10% Load		< 1.0% @ 100% load < 2.0% @ 50% Load < 5.0% @ 10% Load				< 1.5% @ 100% Load < 2.0% @ 50% Load < 6.0% @ 10% Load		
Current Limitation	High overload: PFC Limit (discharging batteries)								
Power Factor	1.0								
INVERTER									
Nominal Voltage	3 x 400V (3Ph + N)								
Precision	Stationary: ±1% ; Transitory: ±2% (load variations 100-0-100%)								
Frequency	50/60 Hz synchronised ±4 % With mains absent ±0.05%								
Max. Synchronisation Speed	10 Hz/s								
Waveform	Pure Sinewave								
Total Harmonic Distortion (THDv)	< 0.5% (Linear Load) ; < 1.5% (Non-linear Load)								
Phase Displacement	120º ±1% (Balanced load) ; 120º ±2% (imbalances 50% of the load)								
Dynamic Recovery Time	10 ms. at 98 % of the static value								
Admissible Overload	Phase Overload: 125% for 10 min., 150% for 60s ; Total Overload: 112.5% for 10 min., 135% for 60s								
Admissible Crest Factor	3.4 : 1		3.2 :1				2.8 : 1		3.2 :1
Admissible Power Factor	0.7 inductive to 0.7 capacitive								
Imbalance Output Voltage@ 100% Unbalanced Load	<1%								
Current Limit	High overload, short-circuit: RMS Voltage Limit ; High Crest-Factor current: Peak Voltage Limit								
STATIC BYPASS									
Type	Solid state								
Voltage	3x400V (3Ph + N)								
Frequency	50/60 Hz								
Activation Criterion	Microprocessor control								
Transfer Time	Zero								
Admissible Overload	400% for 10 sec.								
Transfer to Bypass	Immediate, for overloads above 150%								
Retransfer	Automatic after alarm clear								
MAINTENANCE BYPASS									
Type	Without interruption								
Voltage	3 x 400V (3Ph + N)								
Frequency	50/60 Hz								
Overall Efficiency (Line mode)	90.0%	90.5%	91.0%	92.0%	92.5%	93.0%	94.0%	93.0%	93.3%
BATTERY									
Built-in Battery Type (2x31)	12V 4.5Ah	12V 4.5Ah	12V 7Ah	12V 9Ah	12V 12Ah	-			
Back-up Time (minutes)	5	3	5	3	3	-			
Max. Charging Current	23.5 A		47 A				70.5 A		188 A
PHYSICAL									
Dimension, D x W x H(mm)	770 x 450 x 1100						805 x 590 x 1320		
Net Weight (without batteries) (Kg)	78	86	94	110	122	162	231	255	
Net Weight (w/built-in batteries) (Kg)	178	186	249	290	357	-			

\*NOTE: When temperature is above 30°C, the output power will be derated. The output power is derated to 90% at 31°C-35°C and 80% at 36°C-40°C.



## External Battery Cabinet for HV

Type 1		
Dimensions, D x W x H (mm)	700 x 450 x 1100	700 x 450 x 1100
Built-in Battery Type	12V 12Ah	12V 18Ah
Battery Numbers	62 pcs (2 x 31)	
Net Weight (Kg)	250	410
Type 2		Type 3
Dimensions, D x W x H (mm)	805 x 590 x 1320	980 x 650 x 1320
Built-in Battery Type	12V 26Ah	12V 40Ah
Battery Numbers	62 pcs (2 x 31)	
Net Weight (Kg)	710	1020

\*Product specifications are subject to change without further notice.

# MPLUS SERIES



Hot Swappable Modular UPS

30-210kVA / 20-200kVA

## Applications:



Data Center



Networking



Industrial



Banking

## PowerFactor 1 Modular UPS

Mplus series is a truly double conversion online modular UPS with high scales from 20kW/30kW to 200kW/210kW. Modular design implemented in STS, Power module, and battery, it achieves low MTTR, technician will streamline and simplify their maintenance and replacement, furthermore end customer will be more flexible, more convenient to escalate their power demand in the future.

## GENERAL FEATURES

- Power Factor 1.0\*\* (kVA = kW)
- Efficiency up to 94.5%
- 20/30 kVA per module
- Adjustable charging current
- Adjustable Battery Voltage
- Dual input function
- Power modules are hot swappable
- Redundancy ready
- Easy maintenance in service
- Emergency power off function (EPO)
- Maintenance Bypass included
- 5,7" LCD Panel



## High efficiency online double conversion technology

Mplus is applied online double conversion technology with high performance over 94.5% at 50% load. It significantly reduces overall Total Cost of Ownership (TCO).

## High scalability

DSP control provides an improved solution with high performance. Integrated with modular design and parallel technology, Mplus simplifies future power expansion.

## Unity output power factor

Mplus delivers unity output power (kVA=kW) providing the maximum power capacity to mission critical loads. It satisfies the requirements of the latest servers and optimizes IT investment with every penny.

## Modular design lowers MTTR

Modular design is applied in power module, STS module and battery module. It will simplify maintenance and replacement with low MTTR (Mean Time To Repair).

## N+1 or N+X parallel redundancy for power guarantee

Scalable architecture allows you to optimize cost expense to meet power demands by vertically expanding in a single rack enclosure from 30KVA to 210KVA and achieve N+1 or N+X redundancy in the same rack.

## Optional 10" touch LCD panel



## Ease of installation and maintenance

Built-in maintenance bypass assures continuous power to critical loads during UPS maintenance. Besides, to facilitate installation and maintenance, all panel control and connectors are front accessibility.

## Flexible battery configuration adapts different applications

Battery numbers can be adjusted flexibly. It will adapt different power demands and shorten system downtime.

Battery voltage can be set from 32 to 40 pieces per string.

## Graphic 5.7" LCD design for easy management

Designed for easy management, Mplus is equipped with 5.7" graphic LCD screen. Intuitive design enhances display information identified and advanced configuration.

## High reliable operation with redundant power supply in STS

Mplus provides 2 power supplies in STS. It will ensure no shutdown risk for STS.

## User-adjustable charging current

Mplus provides maximum 8A or 6A charging current for every power module and it's user-adjustable based on requirement.

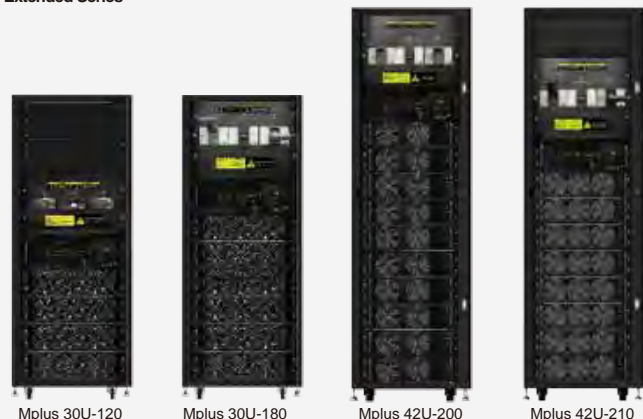
## High overload capability

Mplus supports, 110% overload for 60 minutes, 125% for 10 minutes, and 150% for 1 minute.

Standard Series



Extended Series

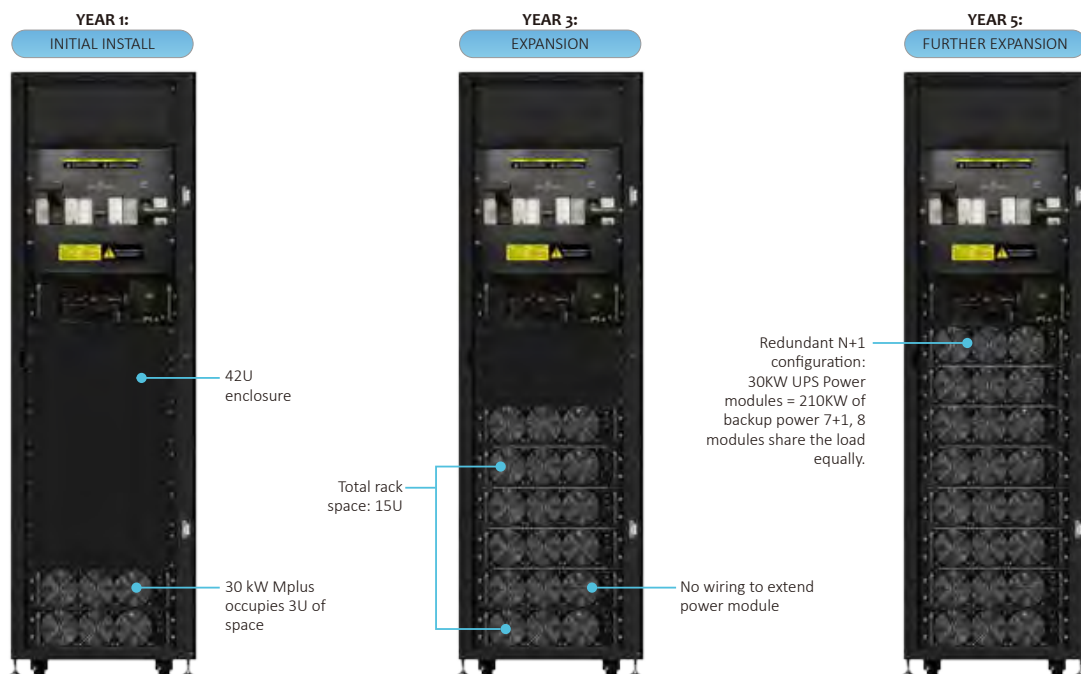




## Expandability. Flexibility. Uninterruptibility. Via Modular architecture

Thanks MPLUS Modular design architecture, scalable and compact size 3U rackmount power module that supplies 30kW of backup power protection. Whole system can be easily expanded as your data center growth. Plug and play N+X,N+1 redundancy design optimizes customer's power demand and enhance the capital investment plan and deployment.

MPLUS smart intelligent load sharing system proportionates workload into each power module without linking any extra communication, paralleled, current share cables. Besides, system is no need to shutdown or interrupt, MPLUS can provide backup support during power module maintenance.



MPLUS Offers 20KVA and 30KVA power module, no matter which model, e.g, in 30U extend model, power module can be installed up to 6PC, 120KVA with 20KVA or 180KVA with 30kVA 6PC power modules. In addition, same cabinet reduces wiring, or human error operation issue and ensures backup power increased to cover new power demand in a right way.

MPLUS also offers 15U cabinet as economy purpose, full range power rating is not only suitable for large IT room, Datacenter, but also adequate to infrastructures and different purposes.

MPLUS 30U/42U extremely flexible characteristic, One power module with 30KW unity power factor can be single or multi module operation. In 42U cabinet model can up to 7+1 modules 210kW, elastic design offers proper backup power protection with appropriate capital investment whenever needed.



15 U 90kW

## TECHNICAL SPECIFICATIONS

MODEL	Mplus 15U-90	Mplus 30U-90	Mplus 42U-120	Mplus 30U-120	Mplus 30U-180	Mplus 42U-200	Mplus 42U-210
PHASE	3-phase in / 3-phase out						
CABINET CAPACITY*	90KW or 60KW	90KW	120KW	120KW or 80KW	180KW or 120KW	200 KW	210 KW
BATTERY TYPE	External Battery	Built-in Battery			External Battery		
ONE POWER MODULE CAPACITY	PM-20HV : 20KVA/20KW or PM-30HV : 30KVA/30KW	PM-30HV : 30KVA/30KW	PM-30HV : 30KVA/30KW	PM-20HV : 20KVA/20KW or PM-30HV : 30KVA/30KW		PM-20HV : 20KVA/20KW	PM-30HV : 30KVA/30KW
MAX. POWER MODULE NO.	3	3	4	4	6	10	8
MAX. BATTERY SET NO.**	3	3	5	-	-		-
INPUT							
Nominal Voltage	3 x 380VAC/400VAC/415VAC (3Ph+N)						
Voltage Range	305 ~ 478 VAC at 100% load; 208 ~ 304VAC at <70% load						
Nominal Frequency	50/60Hz (Auto Sensing)						
Frequency Range	40Hz ~70Hz						
Power Factor	> 0.99 @ 100% Load , >0.98 @ 50% Load						
Harmonic Distortion (THDi)	< 3% @ 100% load						
OUTPUT							
Nominal Voltage	3 x 380VAC/400VAC/415VAC (3Ph+N)						
Voltage Regulation (Steady state)	≤ ± 1% Typical (balanced load) ; ≤ ± 2% Typical (imbalanced load)						
Nominal Frequency	50/60Hz						
Frequency Range (Synchronized)	46Hz ~ 54Hz or 56Hz ~ 64Hz						
Overload Capability	1 hour for 110%, 10 mins for 125%;, 1 min for 150%, 200ms for >150%						
Harmonic Distortion	≤ 2% THD (Linear Load) ; ≤ 4% THD (Non-linear Load)						
Efficiency	Up to 94.5%						
ECO Mode	Max 99%						
BATTERY / CHARGER							
Nominal Voltage	+/- 216V (12V x 36 pcs)						
Maximum Voltage	+/- 240V (12V x 40 pcs)						
Minimum Voltage	+/- 192V (12V x 32 pcs)						
Float Charging Voltage	2.25V / Cell						
Boost Charging Voltage	2.35V / Cell						
Temperature Compensation	Yes						
Maximum Charging Current (Per Power Module)	8A		8A for 30KW power module 6A for 20KW power module		6A		8A
PHYSICAL							
Cabinet Dimension (D x W x H) mm	1100 x 514 x 763	1100 x 600 x 1475	1100 x 600 x 2010	1100 x 600 x 1475	1100 x 600 x 1475	1100 x 600 x 2010	
Net Weight (Kg)	182	675	932	335 or 333	437.5 or 434.5	625	549
ENVIRONMENT							
Operation Temperature	0 ~ 40°C						
Relative Humidity	0 ~ 95% non-condensing						
Altitude	<1000m for Nominal power						
IP Class	IP 20						
MANAGEMENT							
RS-232/USB	Supports Windows 2000/2003/XP/Vista/2008,Windows 7/8/10, Linux and MAC						
Optional SNMP	Power management from SNMP manager and web browser						
STANDARDS							
Safety	IEC/EN 60950-1; IEC/EN 62040-1						
EMC	IEC/EN 62040-2 Category C3						

\*When temperature is above 30°C , the output power factor will be de-rated, 0.9 at 31°C ~35°C and 0.8 at 36°C ~40°C .

\*\* One battery module contains 10 pcs of 12V/7Ah or 12/9Ah sealed lead acid batteries in one tray. One complete battery set contains 4 battery modules.

\*\*\*If the UPS is installed or used in a place where the altitude is above than 1000m, the output power must be derated one percent per 100m.

Product specifications are subject to change without further notice



Model	Description	Dimension DxWxH(mm)	Weight (kg)
PM-20HV	3P/3P 20KVA / 20KW power module	650 x 440 x 132 (3U)	34
PM-30HV	3P/3P 30KVA / 30KW power module	650 x 440 x 132 (3U)	34.5
Battery Module	10 pcs of 12V 9Ah batteries	735 x 107 x 155	26



# FSP Compact Series



1U Lightweight Online UPS

1KVA

## Applications:



Security equipment



monitoring & control system



Small IT rack system



Network, storage device

## 1U On-Line UPS Solution

As small rack limitation, FSP compact 1U UPS is the most reliable and trustworthy power guardian. With true double conversion technology(VFI), its avoid annoyed grid issue, e.g. voltage fluctuations, frequency variations, distortion. Easy front battery pack access will be helpful for maintenance check and replacement without removing it from rack mounting.

## GENERAL FEATURES

- True double conversion online topology
- Microprocessor control optimizes reliability
- Output power factor 0.8
- 1U compact size perfect fits for data processing and transmission such as servers, networking and IP telephone services.
- Input power factor correction
- Converter mode available via software setting
- ECO mode for energy saving
- Built-in serial communication port/Dry contact
- Emergency Power off (EPO) function



## TECHNICAL SPECIFICATIONS

<b>MODEL</b>		<b>CO-1101RS</b>
<b>CAPACITY</b>		1000 VA / 800 W
<b>INPUT</b>		
Voltage		220/230/240 VAC
Acceptable Voltage Range		110-300 VAC @ 50% load 160-300 VAC @ 100% load
Frequency Range		40-70 Hz
Power Factor		≥ 0.99 @ Nominal voltage (full load)
<b>OUTPUT</b>		
Output Voltage		220/230/240 VAC
Voltage Regulation		± 1%
Frequency Range (Synchronized Range)		57 ~ 63 Hz or 47 ~ 53 Hz
Frequency Range (Batt. Mode)		60 Hz or 50 Hz ± 0.3 Hz
Current Crest Ratio		5:1 (110/120 VAC) 3:1 (220/230/240 VAC)
Harmonic Distortion		≥ 3 % THD (Linear Load) ≥ 5 % THD (Non-linear Load)
Transfer Time	AC Mode to Battery Mode	0ms
	Inverter to Bypass	4 ms (Typical)
Waveform (Batt. Mode)		Pure Sinewave
<b>EFFICIENCY</b>		
AC Mode		86%
ECO Mode		92%
Battery Mode		83%
<b>BATTERY</b>		
Battery Type		Sealed Lead-acid battery
Battery Spec & Numbers		6 V / 9 Ah x 4
Typical Recharge Time		9 Hours recover to 90% capacity
Charging Current		1A
<b>INDICATORS</b>		
LED		AC mode, Battery mode, and fault indicators
<b>ALARM</b>		
Battery Mode		Sounding every 4 seconds
Low Battery		Sounding every second
Overload		Sounding twice every second
Fault		Continuously sounding
<b>AC INPUT &amp; OUTPUT CONNECTORS</b>		
AC Input Connector		1 x IEC 320 C14
AC Output Connector		4 x IEC 320 C13
<b>STANDARDS</b>		
Safety / EMC		IEC 62040-1 (Safety) / IEC 62040-2 (EMC) / CE
<b>PHYSICAL</b>		
Dimension, (D x W x Hmm)		477 x 438 x 44
Net Weight (kgs)		12.6
<b>ENVIRONMENT</b>		
Humidity		20-90 % RH @ 0- 50°C (non-condensing)
Noise Level		Less than 50dB @ 1 Meter
<b>MANAGEMENT</b>		
USB or RS-232		Supports Windows® 2000/2003/XP/Vista/2008, Windows® 7/8/10, Linux and MAC
Dry Contact (Option)		Signal for AC Power Normal, Battery OK and Fault Alarm

Product specifications are subject to change without further notice



# DINRail SERIES



DINRail UPS

500VA/1000VA

Applications:



Eqt. of Mfg



Material  
Packing Mgmt



Automation  
Control &  
Monitoring



Ind. IP-based  
Device

## Control Panel Solution

FSP DINRail UPS offers a dependable, cost effective solution to increase equipment stability and system reliability for control panels or different industrial segments. DINRail UPS series with Pure Sine Wave design protects connected devices and guarantees to get through utility grid issues, e.g. Under/OverVoltage, Surge, strike, lighting and outage, these problems will cause industrial processes and manufacturing issue to impact product quality, even safety. Moreover, as UPS Compact size and front access will allow layout-technician to have more space to design the control panel.

## GENERAL FEATURES

- Pure Sine Wave
- High frequency inverter
- Microprocessor controller
- Line mode efficiency > 98%
- Cold start function
- Compact size
- DIN rail mounting, Front access
- Horizontal or vertical installation
- RS485 communication available
- Suitable for PLC, I/O controllers, IPC and control panel



## TECHNICAL SPECIFICATIONS

MODEL		DINRail 500	DINRail 1000
CAPACITY		500VA / 300W	1000VA / 600W
INPUT			
Nominal Voltage		220VAC/230VAC/240VAC	
Acceptable Voltage Range		170 ~ 270 VAC	
Frequency		50Hz / 60Hz Auto Sensing	
Frequency Range		63Hz ~ 40Hz	
Line Low Transfer		170Vac ± 5%	
Line Low Return		180Vac ± 5%	
Line High Transfer		270Vac ± 5%	
Line High Return		260Vac ± 5%	
OUTPUT			
Voltage		220VAC/230VAC/240VAC	
Waveform		Pure Sine wave	
Short Circuit Protection	Line Mode	Circuit Breaker	
	Battery Mode	Electronic Circuit	
DC Start			
Cold Start		Yes	
TRANSFER TIME			
Typical		2-6 ms ( 10ms max ).	
BATTERY			
Battery Voltage		12VDC	12VDC
INDICATOR			
LED		AC Mode(Continuously ), Inverter Mode(Flash)	
AUDIBLE ALARM			
Battery Mode		Sounding every 7 seconds	
Low Battery		Sounding every second	
UPS Fault		Continuously Sounding	
INTERFACE			
Communication port		RS-485	
ENVIRONMENT			
Operation Temperature		0-40°C ; 32-104°F	
Relative Humidity		0-90% non-dondensing	
PHYSICAL			
Dimensions,(WxHxD)mm		250 x 135 x 115	
Net Weight(Kgs)		2.8Kg	3.2Kg

Product specifications are subject to change without further notice



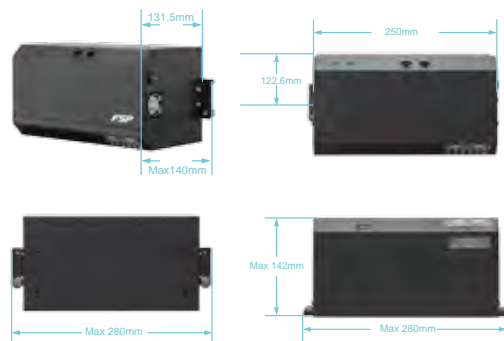
### Dimension information

#### Simple & Easy your design

FSP DINRail UPS implements compact design to mount in control panel for more space saving.

The silent service guarantees power quality to protect, to enhance your system functionality and reliability.

Not like traditional UPS, DINRail UPS with front access function solves assembly wiring layout issue and engineer will more flexible to arrange the equipments.



### Backup Time Table for DINRail Series

	Backup Time with Load (Min)			
	25 %	50 %	75 %	100 %
500VA	50.25	12.0	7.50	4.52
1000VA	12.0	4.47	1.17	0.11

# iDL SERIES



Industrial UPS

10KVA-800KVA

## Applications:



Oil & Gas offshore  
and onshore



Refining and  
petrochemical



Conventional  
power generation



Industrial  
process

## Reliable & Dependable Power Solution

FSP iDL industrial UPS designed true double conversion and galvanic isolation with static bypass switch which solves ultimately all types of input power disturbances, such as noise, lightning, and leakage current etc. Through advanced technology of PWM, DSP and IGBT designed, iDL UPS continually process control and become a high frequency and efficiency product, also choosed the high reliable components which can tolerant & endure extreme power problems to ensure, to offer the best power quality for the protection of industrial mission critical equipments. Product rating range is from 10kVA - 800kVA that can fullfill different industrial segments, heavy-duty, heavy reliability.



## GENERAL FEATURES

- True Galvanic isolation
- Microprocessor DSP design
- Multi-CPU design and software/hardware cooperate control Make the system extremely high reliable
- Plug & Play modular
- Protection against detaching and floating of the neutral
- Protection from user error Advanced circuitry prohibits damage to the system
- Intelligent charger with temperature compensation
- Intelligent, safe battery test circuitry Test
- Cold start function
- Multiple output sockets
- Hot swappable battery function
- RS232 communication port
- Tel/modem internet surge suppression
- Mini- remote control panel (option)

### ■ True Galvanic isolation

An isolation transformer is placed at the output. This can solve the problem of poor input grounding, can allow a different ground between input and output, can avoid the annoying problem of ground leakage current, and can be tied to any potential provided on site. The AC output is isolated under every mode of operation. Additionally, the user gets the bonus of attenuation of common mode noise from the output isolation transformer.

### ■ High frequency design

The inverter uses high frequency, high efficiency IGBT, PWM methodology to convert the DC power to AC power. Therefore, the number of components is fewer, reliability is improved, and the size and weight of UPS is reduced, performance is improved, and acoustic noise is minimized.

### ■ Cold start function

The UPS 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 blowing the battery fuse and damaging the DC capacitors when batteries are connected to an empty DC bus (before the DC bus is energized).

### ■ Plug & Play Modular design

The power circuit is separated into several modules plugged into slots in the UPS, which are easy to pull out, permitting quick maintenance and easier trouble shooting.

### ■ Multi-CPU design

Several CPUs are employed in the control circuit, and critical functions are designed with parallel redundancy to improve reliability. Therefore, in case of one CPU failure, the other CPUs keep the UPS operational, and the output AC is not affected.

### ■ Intelligent battery test

The batteries are tested after every boost (initiated by battery discharge or by the monthly boost charge cycle). This is done without interrupting the operation of the rectifier, preventing the risk of output AC failure in case of a bad battery. The user is informed of the battery condition, so that action can be taken before the full capacity of the batteries is needed.

### ■ Intelligent charger

The UPS will automatically recharge (boost charge) the batteries every time the batteries are depleted to a voltage level equal to 2V/Cell. Thus, the batteries can be restored to full capacity as soon as possible, and made ready for the next back-up requirement. In order to keep the batteries in the best condition, the UPS will boost charge the batteries for several hours (selectable) automatically every month. To avoid over charging the batteries, boost charge will stop when the ambient temperature is over 35°C (95°F).

### ■ Protection against misuse

The UPS is designed with breaker on/off sensor, power supply sensor, etc. Therefore, any operational mistake made by the user causes no harm to the UPS.

### ■ Variety of accessory (options)

With built-in intelligent communication interface as well as output ports of RS-232, RS-485, and dry contacts, there are several options are hence available such as remote control panel, 3 phases software for PC monitoring, auto dialing module, battery monitoring module, 3 phases SNMP card, and emergent power off (EPO) switch. Please refer to the chapter 7 of options for details.



## TECHNICAL SPECIFICATIONS

MODEL	10	20	30	40	50	60
RECTIFIER						
Input Voltage	380 / 400 / 415VAC 3 Phase 4 Wire (Special spec can be customized)					
Input Range	± 20%					
Input Frequency	50 / 60 Hz ± 7%					
Input Power Factor	0.8					
Power Walk In	0%- 100% : 20 sec					
Efficiency	99%					
Voltage Regulation	1%					
Ripple Voltage	0.5%					
BATTERY						
Battery Type	SEAL LEAD ACID / NiCd					
No. Of Cells	174 / 271					
Voltage Range	295 – 410VDC / 285-415VDC					
Battery Low Voltage	320VDC / 305VDC					
Battery Low Stop Voltage	295VDC / 285VDC					
Boost Charge	402VDC / 415VDC					
Float Charge	390VDC / 410VDC					
INVERTER						
DC Input Range	285 – 420VDC					
Wave Form	Sinusoid					
Output Voltage	380 / 400 / 415 VAC 3 Phase 4 Wire (Special spec can be customized)					
Output Power Factor	0.8					
Voltage Regulation 100% Unbalance Load	± 1 %					
Frequency Lock Range	45 – 55 Hz / 55 – 65 Hz					
Output Frequency (Free Running)	50 / 60 Hz± 0.1 Hz					
Phase Shift Under 100% Unbalance Load	120 % + /- 0.5°					
Thd (Linear Load)	< 3 %					
Overload	<110%	Continuous				
	110 – 124%	15 min				
	125 – 149%	5 min				
	>= 150%	30 sec				
Efficiency (100% Load)	92%	92%	93%	93.5%	93.5%	94%
STATIC SWITCH						
Voltage Range	173 – 277 VAC (Line To Neutral)					
Frequency Range	45 – 55 Hz / 55 – 65 Hz					
Efficiency	99.5%					
Transfer Time	- Mains-> Inverter	0 ms				
	- Inverter-> Mains	0 ms				
Overload	150%	30 sec				
	300%	1 sec				
Isolation With Output	YES					
OVERALL CHARACTERISTICS						
Overall Efficiency	90%	90%	91%	91.5%	92%	92%
Operating Environment	- Temperature	0 – 40°C ( 32 – 104°F )				
	- Humidity	0%- 90% ( Non–condensing )				
	- Altitude	<1500m Above Sea Level				
PHYSICAL						
Dimension, D X W X H (mm)	800 x 550 x 1600					
Maximum Heat Dissipation(Kw)	0.65	1.3	1.9	2.6	3	3.5
Weight(Kg) (No Battery)	300	400	470	520	560	630
STANDARDS						
Safety	- EN50091-1,-2 & FCC CLASS A					
PROTECTIONS						
- Short Circuit	Rectifier, Reserve, Bypass Nfb					
- Lightning	Mov					
- Emc Filter	Input & Output					
- Galvanic Isolation	Between Input & Output					

Product specifications are subject to change without further notice



## TECHNICAL SPECIFICATIONS

MODEL	80	100	120	160	200	240
RECTIFIER						
Input Voltage	380 / 400 / 415VAC 3 Phase 4 Wire (Special spec can be customized)					
Input Range	± 20%					
Input Frequency	50 / 60 Hz ± 7%					
Input Power Factor	0.8					
Power Walk In	0%- 100% : 20 sec					
Efficiency	99%					
Voltage Regulation	1%					
Ripple Voltage	0.5%					
BATTERY						
Battery Type	SEAL LEAD ACID / NiCd					
No. Of Cells	174 / 271					
Voltage Range	295 – 410VDC / 285-415VDC					
Battery Low Voltage	320VDC / 305VDC					
Battery Low Stop Voltage	295VDC / 285VDC					
Boost Charge	402VDC / 415VDC					
Float Charge	390VDC / 410VDC					
INVERTER						
Dc Input Range	285 – 420VDC					
Wave Form	Sinusoid					
Output Voltage	380 / 400 / 415 VAC 3 Phase 4 Wire (Special spec can be customized)					
Output Power Factor	0.8					
Voltage Regulation 100% Unbalance Load	+ /- 1 %					
Frequency Lock Range	45 – 55 Hz / 55 – 65 Hz					
Output Frequency (Free Running)	50 / 60 Hz + /- 0.1 Hz					
Phase Shift Under 100% Unbalance Load	120 % + /- 0.5 °					
Thd (Linear Load)	< 3 %					
Overload	<110%	CONTINUOUS				
	110 – 124%	15 min				
	125 – 149%	5 min				
	>= 150%	30 sec				
Efficiency (100% Load)	94.5%	94.5%	95%	95%	95%	95%
STATIC SWITCH						
Voltage Range	173 – 277 VAC (LINE TO NEUTRAL)					
Frequency Range	45 – 55 Hz / 55 – 65 Hz					
Efficiency	99.5%					
Transfer Time	- Mains-> Inverter	0 ms				
	- Inverter-> Mains	0 ms				
Overload	150%	30 sec				
	300%	1 sec				
Isolation With Output	YES					
OVERALL CHARACTERISTICS						
Overall Efficiency	94.5%	94.5%	95%	95%	94%	94%
Operating Environment	Temperature	0- 40°C ( 32- 104°F )				
	Humidity	0%- 90% ( Non-condensing )				
	Altitude	<1500 m above sea level				
PHYSICAL						
Dimension, D X W X H (mm)	800 x 1100 x 1600			800 x 2240 x 1600		
Maximum Heat Dissipation(Kw)	4.6	5.4	6.5	8.7	11.5	13
Weight(Kg) (No Battery)	950	1250	1400	1600	2500	2700
STANDARDS						
Safety	- EN50091-1,-2 & FCC CLASS A					
PROTECTIONS						
- Short Circuit	Rectifier, Reserve, Bypass Nfb					
- Lightning	Mov					
- Emc Filter	Input & Output					
- Galvanic Isolation	Between Input & Output					

Product specifications are subject to change without further notice



## TECHNICAL SPECIFICATIONS

MODEL	320	400	500	600	700	800
RECTIFIER						
Input Voltage	380 / 400 / 415VAC 3 Phase 4 Wire					
Input Range	± 20%					
Input Frequency	50 / 60 Hz ± 7%					
Input Power Factor	0.8					
Power Walk In	15%- 100% : 15 sec					
Efficiency	99%					
Voltage Regulation	1%					
Ripple Voltage	0.5%					
BATTERY						
Battery Type	Seal Lead Acid / Nicd					
No. Of Cells	174 / 271					
Voltage Range	295 – 410VDC / 285-415VDC					
Battery Low Voltage	320VDC / 305VDC					
Battery Low Stop Voltage	295VDC / 285VDC					
Boost Charge	402VDC / 415VDC					
Float Charge	390VDC / 410VDC					
INVERTER						
Dc Input Range	285 – 420VDC					
Wave Form	Sinusoid					
Output Voltage	380 / 400 / 415 VAC 3 Phase 4 Wire					
Output Power Factor	0.8					
Voltage Regulation 100% Unbalance Load	+ / - 1 %					
Frequency Lock Range	45 – 55 Hz / 55 – 65 Hz					
Output Frequency (Free Running)	50 / 60 Hz + /- 0.1 Hz					
Phase Shift Under 100% Unbalance Load	120 % + /- 0.5 °					
Thd (Linear Load)	< 5 %					
Overload	<110%					
	Continuous					
	110 – 124%					
	15 min					
	125 – 149%					
	5 min					
	>= 150%					
	30 sec					
Efficiency (100% Load)	95%	95%	95%	95%	95%	95%
STATIC SWITCH						
Voltage Range	173 – 277 VAC (Line To Neutral)					
Frequency Range	45 – 55 Hz / 55 – 65 Hz					
Efficiency	99.5%					
Transfer Time	- Mains-> Inverter		0 ms			
	- Inverter-> Mains		0 ms			
Overload	150%		30 sec			
	300%		1 sec			
Isolation With Output	YES					
OVERALL CHARACTERISTICS						
Overall Efficiency	92%	93%	93%	93%	93%	93%
Operating Environment	Temperature		0- 40°C ( 32- 104°F )			
	Humidity		0%- 90% ( Non–condensing )			
	Altitude		<1500 m above sea level			
PHYSICAL						
Dimension, D X W X H (mm)	800 x 2240 x 1600	1000 x 2220 x 1900	1000 x 3340 x 1900	1000 x 4460 x 1900		
Weight(Kg) (No Battery)	3000	3600	4500	6000	7200	7500
STANDARDS						
Safety	- EN50091-1,-2 & FCC CLASS A					
PROTECTIONS						
- Short Circuit	Rectifier, Reserve, Bypass Nfb					
- Lightning	Mov					
- Emc Filter	Input & Output					
- Galvanic Isolation	Between Input & Output					

Product specifications are subject to change without further notice



## FSP SOLAR POWERMANAGER OFF-GRID SERIES



Power Solution for Unstable or  
without Utility Grid

1kVA-5kVA

### FSP Solar PowerManager Off-Grid

An ideal Off-Grid inverter for households, FSP Solar PowerManager Off-Grid with specific AC and high efficiency MPPT Solar charger built-in, Dual charging sources (utility+solar) up to 140A current satisfying battery charging under different weather conditions and ensuring your power continuously.

Wide input range from 90-280Vac will overcome most of grid power instabilities.

Design as true sine wave off-grid inverter with 1kVA to 5kVA rating, 4/5kVA parallel function up to 30kVA (single phase) suitable for different applications and supporting 3-Phase power system in anymode. FSP Solar PowerManager Off-Grid with smart user-friendly control panel is an adjustable power source for optimal settings according to end users needs. The unit also offers USB Port for PC monitoring purpose.

As non-household application, FSP Solar PowerManager Off-Grid is able to provide power e.g. for a water pump.



### GENERAL FEATURES

- High frequency pure sine wave
- Wide AC input range 90-280 Vac
- Solar and AC Dual charger built in
- Charging Ability up to 140A (AC+Solar)
- Built-in dry-contact for Generator
- Double surge capacity of rating
- 4k/5kVA parallel function support single Phase up to 30kVA
- 3Phase AnyMode support
- Intuitive LCD Display
- User friendly LCD Panel control & setting
- Source Priority programmable
- Remote Control Panel support
- User defined Bulk/Float Charging voltage
- Free monitoring software

## TECHNICAL SPECIFICATIONS

MODEL	PM-OffGrid 1K-24	PM-OffGrid 1K-48	PM-OffGrid 2K-24	PM-OffGrid 3K-24	PM-OffGrid 3K-48	PM-OffGrid 4K	PM-OffGrid 5K
<b>RATED POWER</b>	1000VA/800W	1000VA/1000W	2000VA/1600W	3000VA/2400W	3000VA/2400W	4000VA/3200W	5000VA/4000W
<b>INPUT</b>							
Voltage	230 VAC						
Selectable Voltage Range	170-280 VAC (For Personal Computers) 90-280 VAC (For Home Appliances)						
Frequency Range	50 Hz/60 Hz (Auto sensing)						
<b>OUTPUT</b>							
AC Voltage Regulation (Batt. Mode)	230VAC $\pm$ 5%						
Surge Power	2000VA	4000VA	6000VA	8000VA	10000VA		
Efficiency (Peak)	90%-93%		93%				
Transfer Time	10 ms (For Personal Computers); 20 ms (For Home Appliances)						
Waveform	Pure sine wave						
<b>BATTERY &amp; AC CHARGER</b>							
Battery Voltage	24 VDC	48 VDC	24 VDC	24 VDC	48 VDC	48 VDC	48 VDC
Floating Charge Voltage	27 VDC	54 VDC	27 VDC	27 VDC	54 VDC	54 VDC	54 VDC
Overcharge Protection	31 VDC	62 VDC	31 VDC	31 VDC	62 VDC	60 VDC	60 VDC
<b>SOLAR CHARGER &amp; AC CHARGER</b>							
Maximum PV Array Power	600 W	900 W	600 W	600 W	900 W	4000 W	4000 W
MPPT Range @ Operating Voltage	30VDC~ 66VDC	60VDC~ 88VDC	30VDC~ 66VDC	30VDC~ 66VDC	60VDC~ 88VDC	60VDC~ 115VDC	60VDC~ 115VDC
Maximum PV Array Open Circuit Voltage	75VDC	75VDC	75VDC	75VDC	102VDC	145VDC	145VDC
Maximum Solar Charge Current	25A	18A	25A	25A	18A	80A	80A
Maximum AC Charge Current	20A	15A	30A	30A	15A	60A	60A
Maximum Charge Current	45A	33A	55A	55A	33A	140A	
	AC charger and solar charger can't work at the same time						
Maximum Efficiency	98%						
Standby Power Consumption	2 W						
<b>PHYSICAL</b>							
Dimension, D x W x H (mm)	100 x 272 x 355					120 x 295 x 468	
Net Weight (kgs)	6.8	7	7.4	11			
Ingress Protection Rating	IP20						
Cooling system	AirForce cooling						
<b>OPERATING ENVIRONMENT</b>							
Humidity	5% to 95% Relative Humidity(Non-condensing)						
Operating Temperature	0°C- 55°C						
Storage Temperature	-15°C- 60°C						

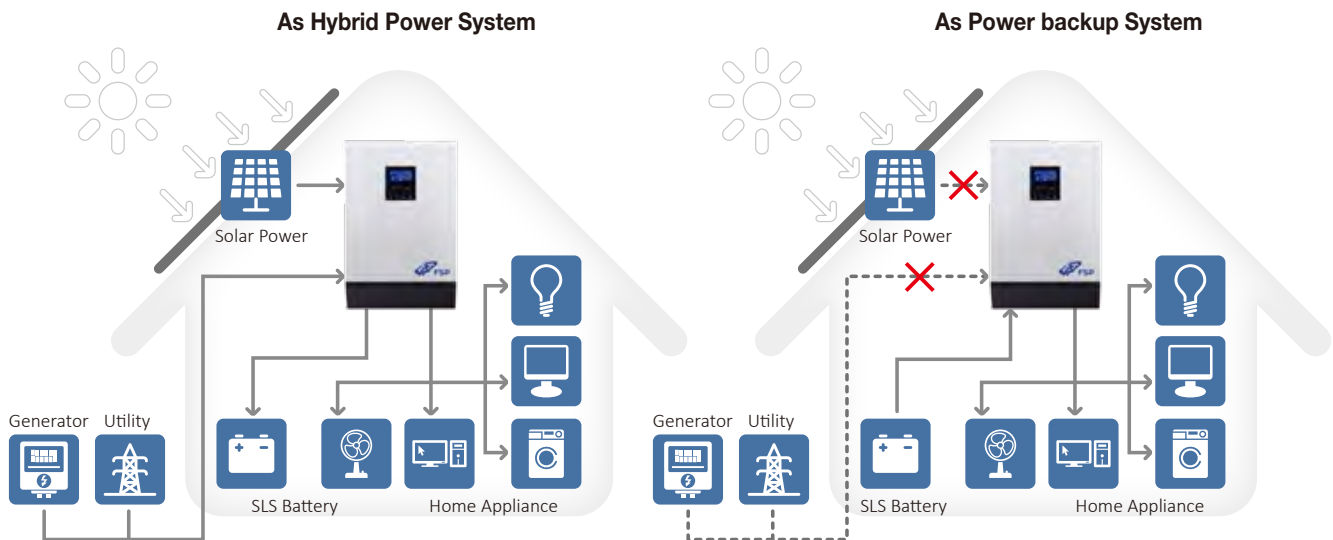
MODEL	PM-OffGrid 2K-24+	PM-OffGrid 2K-48+	PM-OffGrid 3K-24+	PM-OffGrid 3K-48+
<b>RATED POWER</b>	2000VA/1600W	2000VA/1600W	3000VA/2400W	3000VA/2400W
<b>INPUT</b>				
Voltage	230 VAC			
Selectable Voltage Range	170-280 VAC (For Personal Computers) 90-280 VAC (For Home Appliances)			
Frequency Range	50 Hz/60 Hz (Auto sensing)			
<b>OUTPUT</b>				
AC Voltage Regulation (Batt. Mode)	230VAC $\pm$ 5%			
Surge Power	4000VA	6000VA		
Efficiency (Peak)	90%-93%			
Transfer Time	10 ms (For Personal Computers); 20 ms (For Home Appliances)			
Waveform	Pure sine wave			
<b>BATTERY &amp; AC CHARGER</b>				
Battery Voltage	24 VDC	48 VDC	24 VDC	48 VDC
Floating Charge Voltage	27 VDC	54 VDC	27 VDC	54 VDC
Overcharge Protection	31 VDC	62 VDC	31 VDC	62 VDC
<b>SOLAR CHARGER &amp; AC CHARGER</b>				
Maximum PV Array Power	1500 W	3000 W	1500 W	3000 W
MPPT Range @ Operating Voltage	60VDC~ 115VDC	60VDC~ 115VDC	60VDC~ 115VDC	60VDC~ 115VDC
Maximum PV Array Open Circuit Voltage	145VDC			
Maximum Solar Charge Current	60A			
Maximum Efficiency	98%			
Standby Power Consumption	2W			
<b>PHYSICAL</b>				
Dimension, D x W x H (mm)	140 x 295 x 479			
Net Weight (kgs)	11.5			
Ingress Protection Rating	IP20			
Cooling system	AirForce cooling			
<b>OPERATING ENVIRONMENT</b>				
Humidity	5% to 95% Relative Humidity(Non-condensing)			
Operating Temperature	0°C- 55°C			
Storage Temperature	-15°C- 60°C			

Product specifications are subject to change without further notice

## Ideal Off-Grid inverter

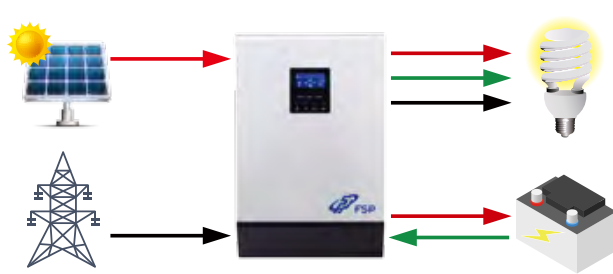
Programmable Power Source Priority function.  
More Flexible, More Independent for energy usage and storage.

### The Principle of FSP Solar PowerManager Off-Grid



### FSP Solar PowerManager Off-Grid Smart Power Priority

Power and charging source priority of FSP Solar PowerManager Off-Grid smart design can be set up by the front LCD panel according to the power consumption environment, storing and withdrawal of energy are also user-defined.



O/P Source Priority 1 → 2 → 3

**Output source Priority is Solar-> Bat-> Utility**  
**Charging source priority is Solar Power Only**

Solar energy is sufficient to charge the battery and carry the loads. Once solar power is low, system will switch to battery mode automatically until battery reaches low warning then system transfers to utility.



**Output source is Utility first**  
**Charging source priority is solar first**

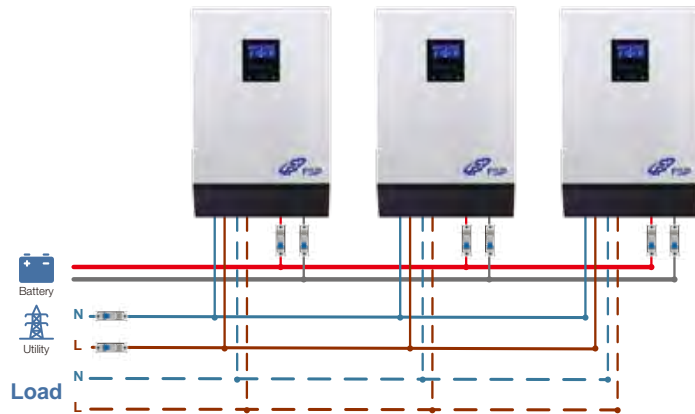
Utility will feed output loads, Solar power will charge the battery until solar power ceases. Solar and battery energy will be used when utility fails.  
Power source priority is Utility-> Solar & Battery  
Charging source priority is Solar-> Utility

## Single Phase Parallel and 3-Phase AnyMode

High expansion ability: FSP Solar PowerManager Off-Grid 4kVA and 5kVA design can be expanded to 30kVA in parallel mode, single phase, and also specifically supports 3 Phase AnyMode. The Power capacity can satisfy most of household energy demand.

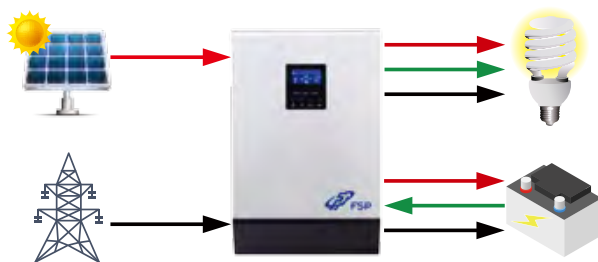
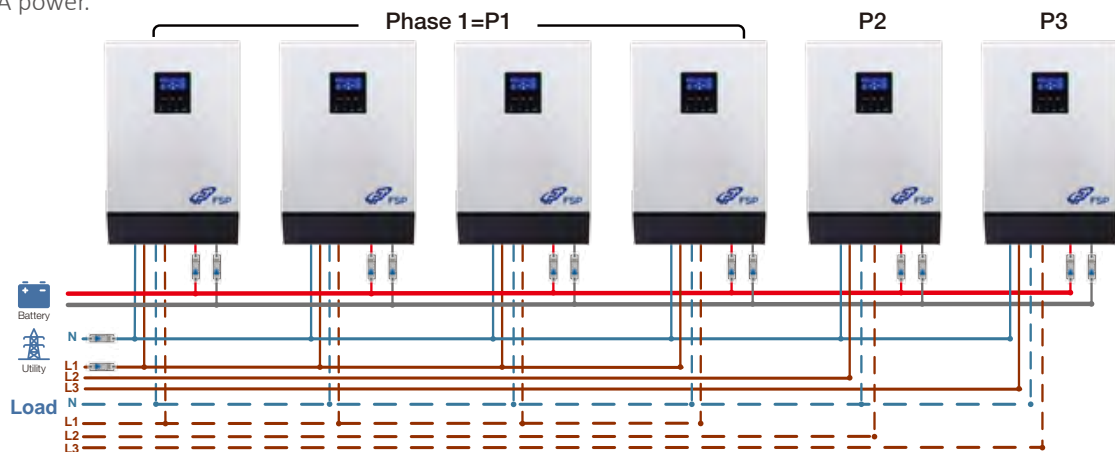
### Parallel 3 units in Single Phase

Up to 30kVA parallel ability: FSP Solar PowerManager Off-Grid will achieve expansion function by parallel kits in order to get more power capacity. (The drawing presents 3 units in parallel mode, power capacity is 15kVA.)



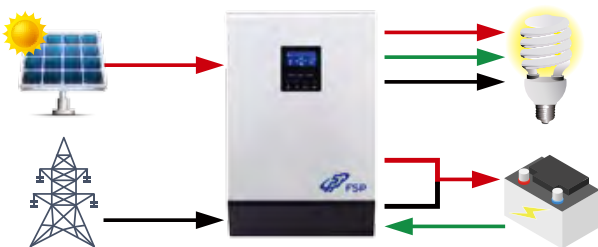
### Parallel 6 units in 3 Phase AnyMode

FSP Solar PowerManager Off-Grid supports 3 Phase AnyMode. By consulting and measurement user can define which phase needs more power support, e.g. P1 = Phase 1 is consuming most of the power in the house, system can install Max 4 PC in L1 to get 20kVA power.



#### Output source & Charger source priority is solar first

When Solar energy is sufficient to charge the battery and feed the loads, utility will stand by until Solar power ceases or battery voltage drops to user's setting. Power source priority is Solar-> Battery or Utility. Charging source priority is Solar-> Utility.



#### Output source is Solar-Bat-Utility

#### Charging source priority is Solar & Utility (4/5k only)

System will adapt Solar and utility both source to charge battery at the same time. Once solar power is low, system will switch to battery mode automatically until reach low bat warning then transfer to utility. Power source priority is Solar-> Battery-> Utility. Charge source priority is Solar & Utility.

## FSP SOLAR POWERMANAGER HYBRID SERIES



Smart Energy for Smart Home

### 3KW-10KW

#### FSP Solar PowerManager-Hybrid

Offers a more intelligent power solution for our customers to reduce the energy bill and make a contribution to our homeland, to our earth. Your energy can be used as efficiently, as smart as possible under current power consumption environment.

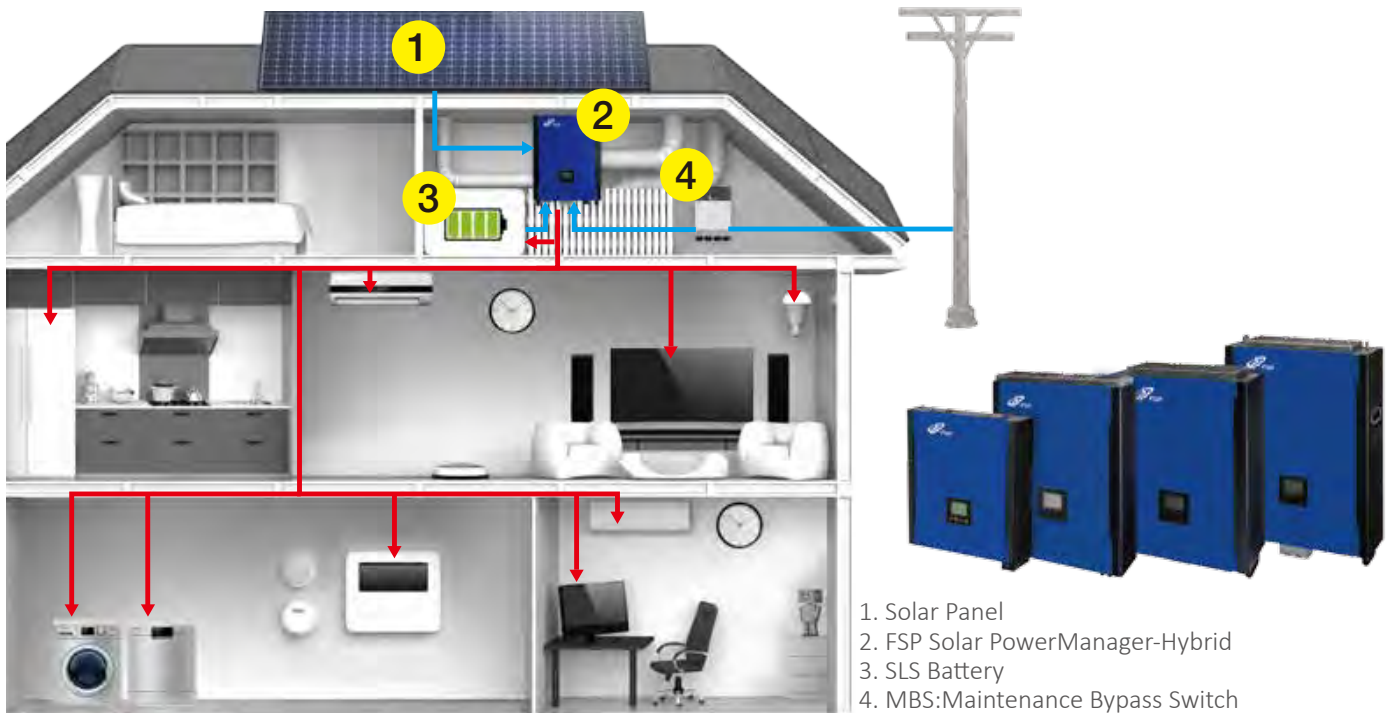
#### YOUR ENERGY, YOU DECIDE!

By the unique optimum technology of FSP Solar PowerManager-Hybrid Series you can control whether or how to use your energy, to store the generated power into battery or feed into the grid. Moreover, if grid power failed, by the brilliant ability of FSP Solar PowerManager-Hybrid Series, the load will be handled smartly by direct support from solar, by combining solar & storage energy or withdrawing storage power only. Multiple communication methods for different applications: FSP Solar PowerManager-Hybrid Series implements USB, RS232 ports and also fits with intelligent slot for SNMP card monitoring or Modbus Card for smart meter compensation applicable to keep your electricity meter at zero. to stay your electricity meter at zero.



#### GENERAL FEATURES

- Just ONE integrated design of Grid-tied & Off-Grid function
- Solar PowerManager-Hybrid implements AC I/P breaker and DC switch
- Solar Energy Storage
- Optimized Self-Consumption
- Load Dual-compensated: Solar & Storage Power or Grid & Storage Power
- Power securing during Grid Failure
- Back-up function
- Intuitive LCD Display
- SNMP, Modbus AS400 Support
- Certified VDE0126 & VDE4105
- 5kW&10kW Model Parallel function available, up to 6PC



## Multi-Operation Mode



### Solar Energy Multi-Use

Intelligent design adding more options to use Solar Energy: It is not just conventional PV inverter Feed-in function, the system with sufficient solar power will not only feed in grid, but also store energy and support loads.



### Self-Consumption

When Solar Energy is low e.g. at night, the FSP Solar PowerManager will automatically withdraw the power from Energy storage (Battery) without using power from utility; saving & reducing your energy bill.

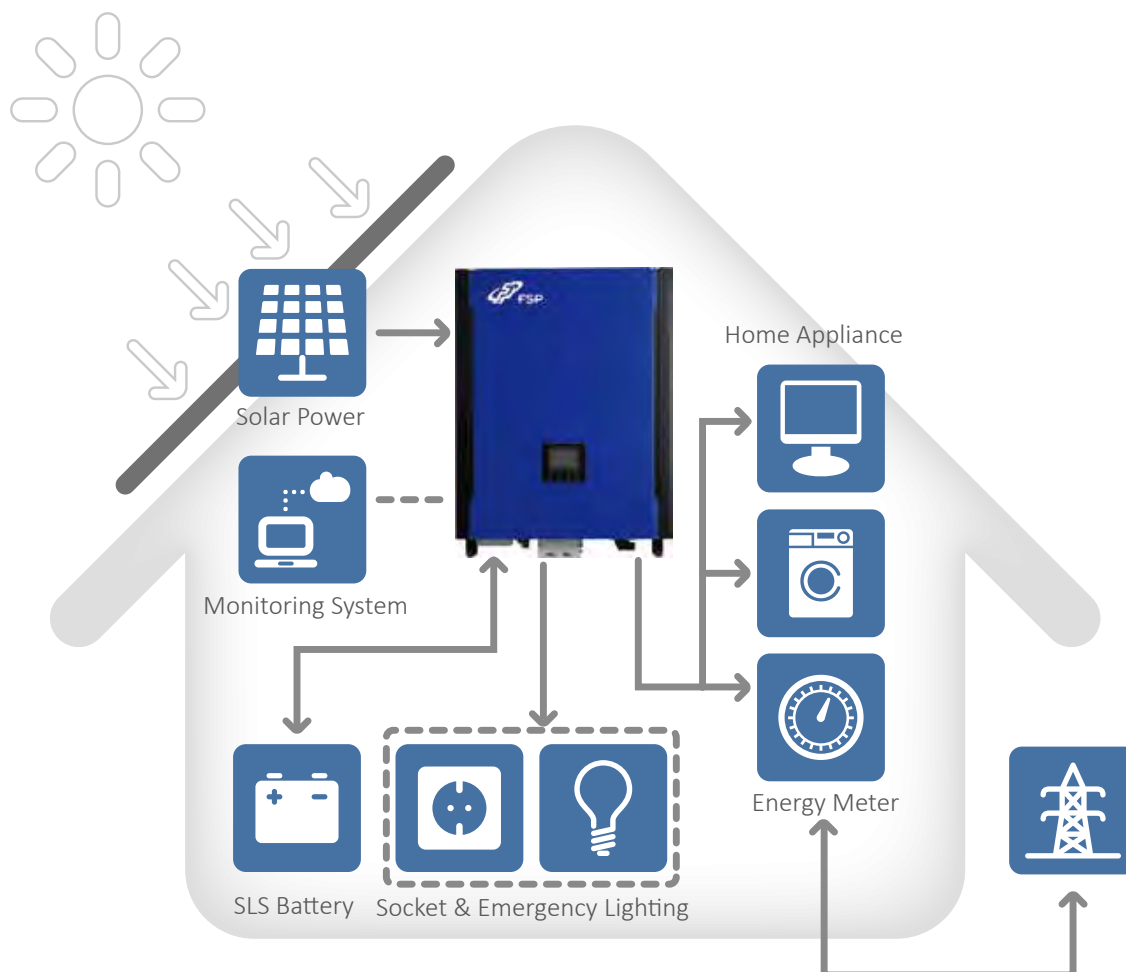


### Back-up Power when Grid Outage

FSP Solar PowerManager implements off-grid inverter function. If a utility failure or outage occurs, the system will switch to back-up mode and offer continuous power.

## Manage Your Own Power

FSP Solar PowerManager-Hybrid is an ingenious design unit. Product achieves tri-power source, Solar, Utility, and Battery Management.



## FSP Solar PowerManager-Hybrid Compensation Mode:

Modbus Card for smart meter compensation applicable to keep your electricity meter at zero. All the loads are connected with Grid FSP Solar PowerManager-Hybrid which is an auxiliary power. At daytime, Solar Power is sufficient to feed in grid and store energy at the same time. At nighttime, FSP Solar PowerManager-Hybrid will withdraw the power constantly from the battery providing energy to your home appliances in order to decrease your energy bill. If a utility outage occurs, FSP Solar PowerManager-Hybrid will generate the back-up power for emergency demand, e.g. lighting which is connected to the unit.

## TECHNICAL SPECIFICATIONS

MODEL	PowerManager-Hybrid 3kW	PowerManager-Hybrid 4kW	PowerManager-Hybrid 5kW	PowerManager-Hybrid 10kW
PHASE	Single phase		3-phase in / 3-phase out	
MAXIMUM PV INPUT POWER	4500 W	5000 W	10000 W	14850 W
RATED OUTPUT POWER	3000 W	4000 W	5000 W	10000 W
MAXIMUM CHARGING POWER	1200 W	4000 W	4800 W	9600 W
MAXIMUM CHARGING POWER				
PV INPUT				
Nominal DC Voltage / Maximum DC Voltage	360VDC / 500VDC	360VDC / 580VDC	720VDC / 900VDC	720VDC / 900VDC
Start-up Voltage / Initial Feeding Voltage	116VDC / 150VDC	116VDC / 150VDC	225VDC / 250VDC	320VDC / 350VDC
MPP Voltage Range	250VDC / 450VDC	280VDC / 500VDC	250VDC / 850VDC	400VDC / 800VDC
Number of MPP Trackers / Maximum Input Current	1/1 x 18A	1/1 x 18A	2/2 x 10A	2/2 x 18.6A
GRID OUTPUT				
Nominal Output Voltage	208/220/230/240VAC	202/208/220/230/240VAC	208/220/230/240VAC	230VAC(P-N) /400VAC(P-P)
Output Voltage Range	184- 265 VAC*		184-265 VAC* per phase	
Nominal Output Current	13 A	17.5 A	21 A	14.5A per phase
Power Factor	> 0.99	> 0.99		
EFFICIENCY				
Maximum Conversion Efficiency (DC/AC)	96 %	93 %	96 %	96 %
European Efficiency@ Vnominal	95 %	95 %	95 %	95 %
HYBRID / OFF-GRID OPERATION				
PV INPUT				
Nominal DC Voltage /Maximum DC Voltage	360VDC / 500VDC	360VDC / 580VDC	720VDC / 900VDC	720VDC / 900VDC
Start-up Voltage / Initial Feeding Voltage	116VDC / 150VDC	116VDC / 150VDC	225VDC / 250VDC	320VDC / 350VDC
MPP Voltage Range	250VDC / 450VDC	280VDC / 500VDC	250VDC / 850VDC	400VDC / 800VDC
Number of MPP Trackers / Maximum Input Current	1/1 x 18A	1/1 x 18A	2/2 x 10A	2/2 x 18.6A
GRID OUTPUT				
Nominal Output Voltage	202/208/220/230/240VAC		230VAC(P-N) /400VAC(P-P)	
Output Voltage Range	184- 264.5 VAC*		184-264.5 VAC* per phase	
Nominal Output Current	13 A	17.5 A	21 A	14.5A per phase
AC INPUT				
AC Start-up Voltage/Auto Restart Voltage	120- 140 VAC / 180 VAC		120-140VAC per phase / 180VAC per phase	
Acceptable Input Voltage Range	170- 280 VAC		170-280 VAC per phase	
Maximum AC Input Current	30 A	40 A	40 A	40 A
BATTERY MODE OUTPUT				
Nominal Output Voltage	202/208/220/230/240VAC		230VAC(P-N) /400VAC(P-P)	
Efficiency (DC to AC)	93%	91%	93%	91%
BATTERY & CHARGER				
Nominal DC Voltage	48 VDC		48 VDC	
Maximum Charging Current	30 A	80 A	Default 60A, 5A-100A (Adjustable)	Default 60A, 10A-200A (Adjustable)
GENERAL				
PHYSICAL				
Dimension, D x W x H (mm)	107 x 438 x 480	117 x 438 x 535	204.2 x 460 x 600	167.5 x 500 x 622
Net Weight (kgs)	15.5	16.2	29	45
INTERFACE				
Communication Port	RS-232 / USB		RS-232/USB and CAN Interface	
Intelligent Slot	Optional SNMP, Modbus, and AS-400 cards available			
ENVIRONMENT				
Humidity	0%- 95% RH (No condensing)	0%- 90% RH (No condensing)	0%- 95% RH (No condensing)	
Ingress Protection Rating	IP20			
Cooling system	AirForce cooling			
Operating Temperature	0 to 40°C		-10 to 55°C	
Altitude	0 ~ 1000 m** Max2000m			

\* These figures may vary depending on different AC voltage and country requirements.

\*\* \* Power derating 1% every 100 m when altitude is over 1000m.

\* Product specifications are subject to change without further notice

# SCC-MPPT



Solar Charger Controller

3KW

## Applications:



Solar Input



Flexible  
installation



Battery  
charger



CO<sup>2</sup> Free

## 98% Efficiency Solar Charger

SCC-MPPT Solar Charge Controller With advanced maximum-power-tracking technology, SCC-MPPT series ensures maximum performance from your solar array at all times and in all weather conditions.

## GENERAL FEATURES

- Intelligent Maximum Power Point Tracking technology
- Built-in DSP controller with high performance
- 12/24/48V Automatic battery voltage detection when initial
- Battery temperature compensation support
- Three-stage charging optimizes battery performance
- Multifunction LCD displays detailed information
- Reverse polarity protection for solar panel and battery
- Overcharge protection
- Suitable for battery types of sealed lead acid, vented Gel, and NiCd



## TECHNICAL SPECIFICATIONS

MODEL		SCC-MPPT 3KW	
INPUT			
MPPT Range @ Operating Voltage		60 VDC ~ 115 VDC	
Maximum PV Array Open Circuit Voltage		145VDC	
Maximum PV Array Power	800W	1600W	3200W
Maximum Current		50 A	
OUTPUT			
Nominal Battery Voltage	12 VDC	24 VDC	48 VDC
Connected Battery Type		Sealed lead acid, AGM or Gel	
Maximum Charging Current		60 A	
Maximum Efficiency		98%	
Charging Method		Three stages: bulk, absorption, and floating	
PROTECTION			
Overload Protection		> 110% : audible alarm	
Overcharge Protection		Yes	
Polarity Reversal Protection@Solar Cell & Battery		Yes	
INDICATORS			
LCD Panel	LCD panel indicating solar power, load level, battery voltage/capacity, charging current, and fault conditions		
LED Display	Three indicators for solar, charging, and load status		
PHYSICAL			
Dimension, D x W x H (mm)		315 x 165 x 128	
Net Weight (Kgs)		4.5	
Type of Mechanical Protection		IP 31	
ENVIRONMENT			
Humidity		5 ~ 95% RH (Non-condensing)	
Operating Temperature		0°C to 55°C	
Storage Temperature		-15°C to 60°C	
Altitude		0 ~ 3000 m	

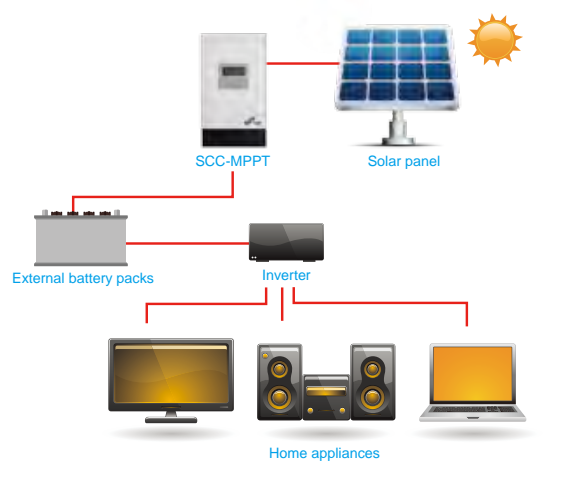
Product specifications are subject to change without further notice



### Standalone Solar Power System:

Combined MPPT technology and DSP controller, FSP Solar charger controller will convert best voltage and power to charge battery based on varied temperature. Compared to traditional solar charge controllers, it allows your solar panels to operate at their optimum power output voltage, providing higher efficiency up to 98% with lower power loss.

Integrated FSP Solar charger controller with inverter, solar panel, and external battery packs, it can become a standalone solar power system to generate green power for your home appliances.





### Synergy Super Charger

- Isolation design for 24/36/48/72/240VDC System
- Input power factor correction
- Microprocessor guarantee smart & stable three-stage charging
- User-adjustable charging current based on applications
- Output short circuit protection
- Maximum current restriction
- Over-voltage protection
- Thermal control protection and reversal polarity protection
- Parallel operation



### PDU & Maintenance Bypass Switch

- 1-3 kVA Tower/Rack PDU & MBS
- 16A for 208/220/230/240 VAC
- Provides continuous power to connected equipment during UPS maintenance
- Easy operation with simple rotary switch and indicators
- Simple installation with plug-and-play socket type
- AC input 1x IEC C20 (16A) connector
- UPS I/P 1x IEC C19 (16A) connector
- UPS O/P 1x IEC C20 (16A) connector
- O/P Socket 5 x IEC C13 + 1x IEC C19, 2 breakers



### External Maintenance Bypass Switch

- 6-10kVA Rack MBS
- 63A. max input current
- 100% make before break to provide continuous power to connected equipment during UPS maintenance
- Automatic UPS-protection design
- Easy operation with simple rotary switch
- Terminal block type

### 30kVA Wall-Mounted External Maintenance Bypass

- 3-Phase design
- Nominal current 63A
- Isolation Voltage 660VAC
- EN90647-3:2009+A1 TUV certificated



IEC Cable 16A C19/C20 (180cm)



IEC Cable 16A C20/C13 (180cm)



IEC Cable 16A C14/C19 (150cm)



Rackmount Slider

Simple installation for mounting Rack in your server rack enclosure.  
RMS-001 for 1-3kVA Rack UPS  
RMS-002 for 6-10kVA Rack UPS



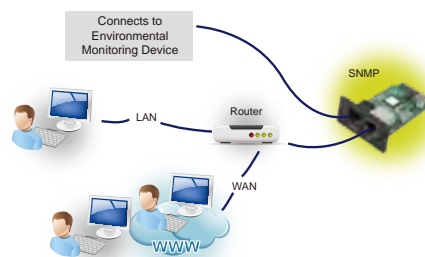
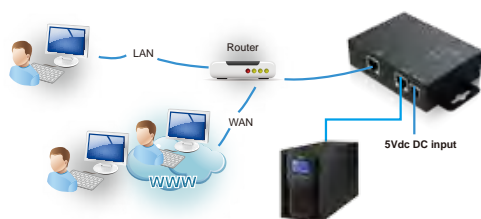
## Software

### ViewPower - UPS Management Software

ViewPower Pro is UPS management software which is perfect for home users and enterprises. It can monitor and manage from one to multiple UPSs in a networked environment including LAN, INTERNET and Modbus networks. Integrated with Shutdown Wizard, it can not only prevent data loss from power outage and safely shutdown systems, but also store programming data and scheduled shut down UPSs. All UPS working data and event records can be kept in local database system.

## UPS Remote Monitoring and Connectivity

FSP provides complete connectivity solutions with comprehensive products and software package. These connectivity products ensure communication compatibility with a variety external devices through relay, SNMP and Modbus.



## Connectivity Product



SNMP Card



SNMP Web Card



SNMP Web Card (DP801B)



SNMP Web Box



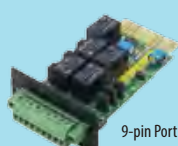
Modbus Card



Modbus Web Card



DB9 Port



9-pin Port



EMD



Energy meter

### SNMP Web Card/Box

- Allows control and monitoring of multiple inverters through RJ-45 network connection
- Real-time dynamic graphs of UPS / PowerManager data
- Warning notifications via audible alarm, broadcast, mobile messenger, e-mail and SNMP traps
- Historic data log stored in centralized PC database
- Simple firmware upgrade with one click
- Password security protection and remote access management
- Supports optional environmental monitoring detector for temperature, humidity and smoke

### Modbus Card

- Real-time control and monitoring of multiple inverters via RS-485 communication port
- Supports Modbus RTU protocol
- Provides MODBUS functions including read Holding Registers and write Registers
- Provides surge protection

### Modbus Web Box

- Supports to monitor off-grid inverter through modbus interface
- Implements MODBUS RTU protocol
- Integrated with WatchPower software
- Supports PowerManager Hybrid series

### Relay Card

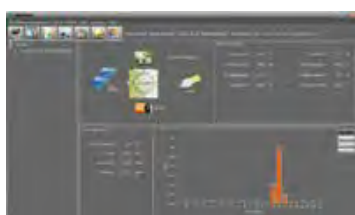
The AS400 communication card provides contact closures for remote monitoring UPS. To meet different application requirement, the AS400 card is capable of selection the status of the dry-contact signal (active close or active open) by setting jumper.

### Environmental Monitoring Device (EMD)

- Plug & use for simple installation with SNMP manager
- Monitor temperature and humidity to protect your precious equipment
- Allow 4 contact closure signals for user-defined usage
- Management software to remote monitor temperature and humidity status via web browser
- Measure temperatures between 0 to 100°C with an accuracy of  $\pm 1.5^{\circ}\text{C}$
- Measure relative humidity between 10 to 90% RH with an accuracy of  $\pm 3\%$
- Optional smoke alarm available

### Touch screen 3-phase multi-function meter

Measures and displays the parameter of voltage, frequency, current, active and reactive energy, imported or exported. Max Demand, THD of voltage and current can be measured over present periods of up to 60 minute. Built-in interfaces provide pulse and RS485 Modbus RTU output



## Software

### SolarPower -Solar inverter Management Software

SolarPower is a solar inverter monitoring software. It can monitor multiple devices via USB and Serial port at the same time. The major functions of SolarPower monitoring software include data log for devices, power generation statistics, alarm messages, fault messages and parameter setting for devices.

# **FSP POWER SOLUTION**