

STACO ENERGY[®] PRODUCTS CO.

FIRSTLINE[®] P **65 - 500 kVA**



Full Two Year
Warranty

Three-Phase Double-Conversion On-Line UPS

Up to 98% Efficient

- Lower energy costs and carbon footprint

Compact & Reliable

- Requires either front, top or bottom access, so it can be placed against a wall to minimize footprint
- Cooler operation extends internal component life

AC Input Performance

- High input power factor of 0.99
- Low input current distortion of $\leq 3\%$
- Power walk-in function that ensures progressive rectifier start-up

2 Level IGBT and DPS Processing

- Reduces the impact of the UPS on the local supply
- Simplifies installation where there is limited power capacity in the form of available electrical supply rating or generator size

Single or Dual input

- Main power and secondary emergency standby power increase resilience of single or parallel system configuration

High Performance Filter

- Protects upstream power supply sources from harmonics and reactive power generated by the loads

Menu Select Display

- User friendly display is easy to see and intuitive to use

Parallel up to 8 Units

- Provides redundancy for mission critical applications with no additional hardware

Seismic Certified

- For environments requiring seismic certification, the P Series UPS is available with an optional OSHPD Certified mounting system which makes the UPS and Battery Cabinet(s) OSHPD Certified. (excludes 300-500kVA units)

Worldwide Service Program

- Factory trained service personnel maximize equipment life
- Full start-up service & preventive maintenance lowers cost of ownership

FirstLine® P UPS

In the event of an AC power failure, the FirstLine® P UPS will automatically transfer to battery power and continue to provide power without any interruption for the full amount of time you select. When power returns, the FirstLine® P UPS will automatically recharge the batteries for the next unexpected power outage or disturbance.

AC Input Performance

FirstLine® P is a further evolution of the FirstLine® series with the added advantages offered by an IGBT-based rectifier/inverter assembly. This feature reduces the impact of the UPS on the local supply and simplifies installation where there is limited power capacity in the form of available electrical supply rating or generator size. FirstLine® P is classed as a “Zero Impact Source” and provides:

- Low input current distortion— $\leq 3\%$
- High input power factor 0.99
- Power walk-in function that ensures progressive rectifier start up
- Delayed start up phased with the return of mains power supply, when several UPS are connected in the system.



FirstLine® P also performs the role of a high performance filter, protecting its upstream power supply sources from any harmonics and reactive power generated by the loads powered.

Flexibility

FirstLine® P models feature an output transformer with galvanic isolation (between the load and the battery supply) to provide greater versatility and installation options. The UPS can be supplied from two separate power sources (main power and a second emergency standby source) which helps increase the resilience of parallel system configurations.

Main Characteristics

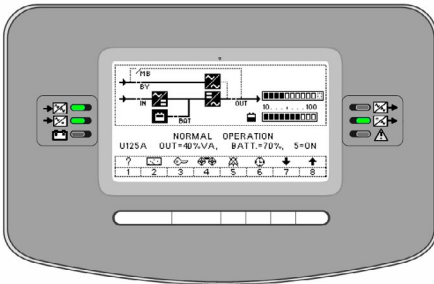
- Efficiency up to 98%
- Reduced weight
- Double electronic and galvanic protection of the load from the battery

The entire FirstLine® P range is suitable for a wide range of applications thanks to the flexibility of configurations, accessories, options, and choice of performance levels. The UPS is compatible with capacitive loads, such as blade servers, without any reduction in active power, ranging from 0.9 lead to 0.8 lag and up to 0.8 capacitive power with a low derating equal to 15% of the active power (kW). Efficient and reliable power supply for mission critical applications is guaranteed by operating in redundancy and power parallel mode with up to 8 units (N+1), and by the Dual Bus System and Dynamic Dual Bus system configurations.

Battery Care System

FirstLine® P uses the Battery Care System which optimizes battery performance while extending battery life.

Front Panel Display



FirstLine® P UPS shown with optional external battery cabinet

Applications

- Data Centers
- Computer Networks
- Industrial Process Manufacturing
- Hospitals/Medical (OSHPD Certified)
- Education/Research
- Laboratories, Bio-Tech
- Pharmaceuticals/Chemical
- Critical Power Management Requirements
- Any areas needing computer grade power and a high level of available power

Two Year Warranty

Electronics:

A full **Two Year On-site Warranty** (Continental U.S.)

Battery:

Three (3) Year Full, Limited Warranty,

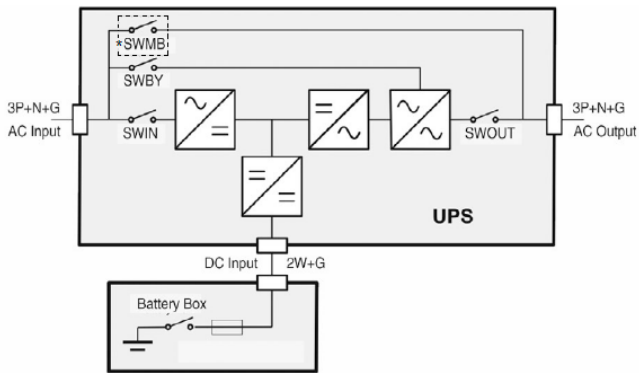
on the Battery System ensures that your batteries are protected from system failure now and in the future. *(Warranty provided by battery manufacturer.)*

Extended warranties, customized service plans and preventative maintenance are also available. *Please refer to our warranty statement for complete details.*

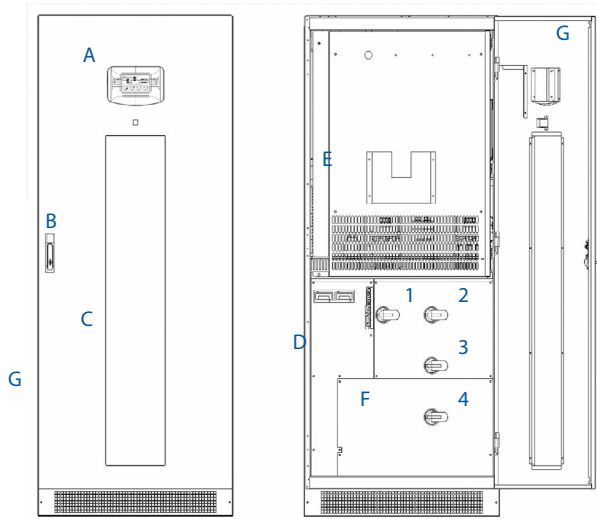
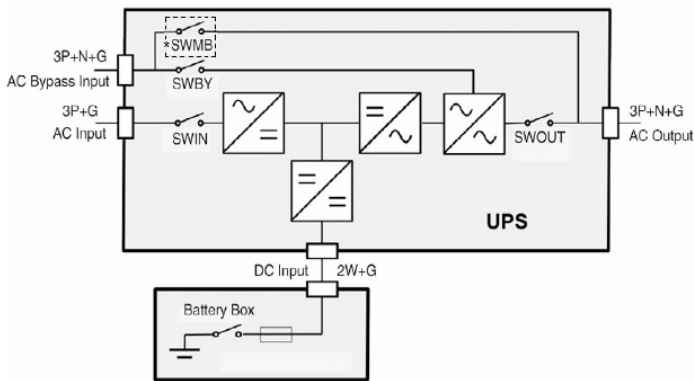
Electrical Specifications

Electrical Data	UPS Power (kVA / kW)										
	65 / 58.5	80 / 72	100 / 90	125 / 112.5	160 / 144	200 / 180	250 / 225	300 / 300	400 / 400	500 / 450	
INPUT											
Nominal voltage	480Vac 3 phase, 3 or 4-Wire + Grd. (208V Optional with Input Transformer)										
Nominal voltage range without battery contribution	-10%, +15%										
Voltage range in battery mode	-40%, +15%										
Input frequency range	From 45 to 65Hz										
Nominal current absorbed (480V)	76	94	118	147	188	235	294	320	425	484	
Maximum current absorbed at full load and battery recharging (Amps)	89	109	136	160	212	265	331	433	640	640	
Power factor at nominal voltage (480 V) and battery charged from 25% to 100% of the load	>0.99										
Current Harmonic distortion (THDi) (with mains distortion <2%)											
• load 100%	≤ 3%					≤ 3%					
• load 75%	≤ 5%					≤ 3%					
• load 50%	≤ 8%					≤ 5%					
• load 25%	≤ 8%					≤ 8%					
Progressive rectifier (Walk-in)	from 0 to 125 seconds (configurable)										
Delay of Progressive start of rectifier (Power Walk-in delay timer)	from 0 to 125 seconds (configurable)										
D.C. INTERMEDIATE CIRCUIT											
Number of cells	240										
INVERTER											
Static variation	± 1%										
Dynamic variation	± 5%										
Crest Factor	3:1										
Voltage distortion with linear load	1% (typical), 2% (max)										
Voltage distortion with non-linear load	< 3%										
Frequency stability with synchronized inverter to the by-pass network.	± 2% (± 1% to ± 6% from control panel)										
Frequency stability with not synchronized inverter to the by-pass line	± 0.05%										
Speed of frequency variation	1Hz/sec (parallel units can be calibrated from 0.1 to 1Hz/s)										
Phase voltage asymmetry with balanced and unbalanced load.	≤ 1%										
Phase displacement of the voltages with balanced and unbalanced loads.	120 ± 1 °el										
Overload in referred to the nominal power	110% for 60 minutes, 125% for 10 minutes, 150% for 1 minute 200% for 7 seconds										
• Three phase											
• Single phase											
Inverter efficiency	95%										
BY-PASS											
Nominal voltage	480Vac 3-phase (with or without neutral)										
Nominal voltage tolerance	± 10% (can be regulated from ± 5% to ± 15% from the control panel)										
Nominal frequency	60 Hz										
Frequency tolerance	± 2% (can be regulated up to ± 6% from the control panel)										
SYSTEM											
AC/AC efficiency at full load	93 %										
Efficiency with UPS in STAND-BY mode	98 %										
Full Load Heat Rejection BTU/hr	15,033	18,500	23,120	28,900	37,009	46,262	57,827	56,150	74,870	84,225	
Maximum current dispersion	300mA maximum										
MECHANICAL											
Dimensions	UPS Power (kVA / kW)										
	65 / 58.5	80 / 72	100 / 90	125 / 112.5	160 / 144	200 / 180	250 / 225	300 / 300	400 / 400	500 / 450	
Height x Width x Depth – inches (mm)											
-00	75.02" x 31.43" x 33.47" (1905.5 x 798.2 x 850.0)				75.02" x 39.37" x 33.47" (1905.5 x 1000.0 x 850.0)			74.80" x 59.06" x 39.37" (1900.0 x 1500.0 x 1000.0)			
-T	-										
-CEC	75.02" x 31.43" x 33.47" (1905.5 x 1198.2 x 850.0)				75.02" x 55.12" x 33.47" (1905.5 x 1400.0 x 850.0)			74.80" x 74.80" x 39.37" (1900.0 x 1900.0 x 1000.0)			
-T-CEC	-										
Weight – lbs. / Kg											
-00	1,499 / 680		1,609 / 730	1,742 / 790	1,984 / 900	2,205 / 1,000	2,425 / 1,100	4,190 / 1,900	4,741 / 2,150		
-T	-				2,236 / 1,055	2,546 / 1,155	2,767 / 1,255	4,200 / 1,905	4,751 / 2,155		
-CEC	1,749 / 793		1,859 / 843	1,992 / 904	2,234 / 1,013	2,455 / 1,114	2,675 / 1,213	4,410 / 2,000	4,961 / 2,250		
-T-CEC	-										
Freestanding NEMA 1 enclosure, powder coat painted black color with textured finish, bottom access for conduit entries											
ENVIRONMENTAL											
Ambient temperature	0° C to 40° C										
Storage temperature	-25° C to 70° C										
Relative humidity	20 – 90% non-condensing										
Altitude	3,281 feet without derating										
Audible noise	65 dBA @ 1 meter				68 dBA @ 1 meter			72 dBA @ 1 meter			

Single Input Unit



Dual Input Unit



- A Control panel with graphic display
 - B Door handle
 - C Ventilation grills
 - D Communication area
 - E Front Cover panel with ventilation grills
 - F Switch cover panel
 - G Door
- 1 Input isolating switch
 - 2 Output isolating switch
 - 3 Maintenance isolating switch
 - 4 Bypass isolating switch

FirstLine P 65–500kVA Part Numbers

Model	kVA / kW
2 FLU-065-00	65kVA/58.5kW
2 FLU-080-00	80kVA/72kW
2 FLU-100-00	100kVA/90kW
2 FLU-125-00	125kVA/112.5kW
1 FLU-160-00	160kVA/144kW
2 FLU-160-T	160kVA/144kW
1 FLU-200-00	200kVA/180kW
2 FLU-200-T	200kVA/180kW
1 FLU-250-00	250kVA/225kW
2 FLU-250-T	250kVA/225kW
1 FLU-300-00	300kVA/300kW
FLU-300-T	300kVA/300kW
1 FLU-400-00	400kVA/400kW
FLU-400-T	400kVA/400kW
1 FLU-500-00	500kVA/450kW
FLU-500-T	500kVA/450kW

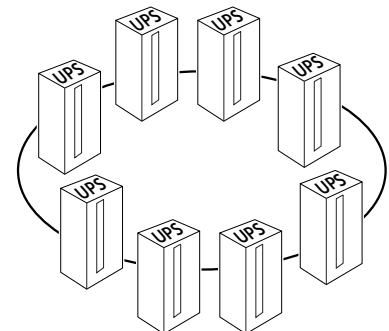
¹ Models do not have internal bypass. Order -T unit when an internal bypass is required.

² For OSHPD, add "-S" to model number.

Top entry available.

Standards

- Underwriters Laboratories, Listed to UL1778 (Designed to 60950); c-UL to CSA C22.2
- CE
- NEMA PE-1
- ASME
- ASA-C-39.1-1984
- FCC PT 15, Subpart J, Class B
- National Electrical Code
- OSHA
- IEEE 587 ANSI C 62.41-1980
- ISO 9001
- IBC (International Building Code) Ratings A-F, Site Specific
- OSHPD (excludes 300-500kVA units)



FirstLine® P
Up to Eight Units in Parallel

Communication Options

SNMP Card with UPSMON Monitoring and Shutdown Software allows for single unit UPS management across a LAN using any of the main network communication protocols—TCP/IP, HTTP and network interface (SNMP). A SNMP Card enables the UPS to integrate easily into medium and large sized networks and provides reliable communications between the UPS and management systems employed.

Battery Sensor Module monitors the battery internal cabinet environmental conditions of one (1) Battery Cabinet connected to the UPS and displayed on the UPS front mimic panel.

Expansion Card provides additional remote alarm functions as identified below. The card contains 6 outputs: potential-free contacts for alarms (programmable from the display panel) and capable of switching up to 30 V AC or DC at UP 1 Amp, 2 inputs (programmable from the panel) and (1) 12V DC maximum 100mA auxiliary input. (2) additional slots shall be available for a total of 12 additional contacts.

Remote Monitoring Panel provides monitoring & control of the UPS remotely (same functions as on the UPS) and detailed UPS status overview in real time. It is compatible with all FirstLine P UPS's and can display values for UPS specific input and output supplies, and battery set measurements. It has a high-definition graphical display and can report in seven languages: English, Spanish, French, Chinese, German, Italian and Russian.

Includes three independent serial ports, one of which allows for UPS monitoring via the MODBUS/JBUS protocol (on either an RS485 or RS232 serial line). The others can be used with devices such as the SNMP Card or a PC running communication software.

Communicaiton Software used with the SNMP Card for monitoring and shutdown for multiple UPS's. Provides efficient, user-friendly UPS management using bar chart displays to show major operational information such as the input voltage, UPS load % and batteries charge %. The software also provides detailed information on fault conditions and UPS operating characteristics. It has been developed with a client/server architecture that makes it flexible and easy to use, and provides multi-lingual and on-line support.

Supervision Software centralizes UPS management using network interface (SNMP) communications. It is ideal for data center managers and medium to large sized networks. It uses the RFC1628 standard Management Information Base (MIB) and ensures standardized UPS management wherever they are located.

Other Options

Top or Side Cable Entry

A "side-car" cabinet expansion is offered to accommodate top or side incoming cable entry.

External Maintenance Bypass, 3 Breaker with Electronic Interlocks

Make-Before-Break, Line Up and Match wrap-around MBP for total UPS isolation during maintenance or removal of the UPS.

Power Distribution Unit (PDU)

Transformerless PDU provides 208Y/120VAC output electrical distribution capabilities to peripheral devices. Line Up and Match Cabinet with (2) 42 Pole Panelboards or Sub-Feed Circuit Breakers. (UPS output must be 208Y/120VAC)

Battery Monitoring System (BMS)

The FirstLine BMS is a wireless system that monitors and records battery cycle data of each battery string or jar. Provides a clean cable free installation..

Harsh Environment Enclosure

UPS and accessories mounted and pre-wired internal, with AC cooling inside any NEMA (12, 3R, 4X) type enclosure.

Seismic Withstand Certification

Site specific seismic certification and documentation. All units come standard with bolt down capability without the use of brackets.

Start-Up Service, Preventative Maintenance Programs

A wide range of service programs are available to suit all user requirements. Consult factory.

Service Options

Staco Service offers a wide range of planned maintenance and extended service options to maximize equipment life and reliability of your FirstLine® UPS. Through an extensive network of factory trained professionals you receive:

- Annual Service Plan
- 24/7 Emergency Service
- Preventive Maintenance
- Programs tailored to meet your needs

About Staco Energy Products

Since 1937, customers worldwide have been relying on Staco Energy Products Company to deliver voltage control and power quality solutions tailored to their needs.

As a leading power quality resource, we offer our customers world-class support; from our thorough applications assessment, to our ability to design and deliver a solution that is tailored to the specific needs of our customers; through delivery and commissioning.

Our professional, factory trained service team is in place to ensure that our customers' revenues are protected, and their investment provides them with many years of trouble free operation.

Staco develops total power solutions for OEM and end user applications.

Represented locally by:

In addition to the FirstLine® products we offer a wide array of power quality products, including:

- **Uninterruptible Power Supplies**
- **Power Conditioners**
- **Voltage Regulators**
- **Power Factor Correction and Harmonic Mitigation**
- **Active Harmonic Filters**
- **Variable Transformers**
- **Custom Engineered Test Sets**



Your Tailored Power Solutions Provider™

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For more information about the FirstLine P
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