

FIRSTLINE[®] P

**65, 80, 100, 125, 160,
200, 250kVA**

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

IGBT and Digital Signal Processor (DSP)

- 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

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 power

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

Worldwide Service Program

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



**Full
Two Year
Warranty**

**STACO
ENERGY[®]
PRODUCTS CO.**

Your tailored power solutions provider™



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.



Applications

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

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

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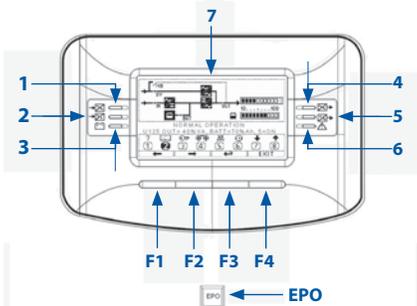
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of performance levels. The UPS is compatible with capacitive loads, such as blade servers, without any reduction in active power, ranging from 0.9 lead to 0.8 lag and up to 0.8 capacitive power with a low derating equal to 15% of the active power (kW). 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

Front Panel Display



- 1 LED Bypass line indicator
- 2 LED Main line indicator
- 3 LED Battery powering the load
- 4 LED Load on bypass
- 5 LED Normal output
- 6 LED Alarm for internal fault
- 7 Graphic display

F1, F2, F3, F4 = FUNCTION KEYS.
The function of each key is shown at the bottom of the display

EPO = Button for the emergency power off



FirstLine® P UPS shown with optional external battery cabinet

Two Year Warranty

Electronics:

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

Battery:

A full **One Year Warranty, 10-year pro-rated**, 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)						
	65	80	100	125	160	200	250
INPUT							
Nominal voltage	480Vac 3 phase, 3 or 4-Wire + Grd. (208V Optional with IP 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)	78.2	94	118	147	188	235	294
Maximum current absorbed at full load and battery recharging (Amps)	90	109	136	168	212	265	331
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%						
• load 75%	≤ 5%						
• load 25+50%	≤ 8%						
Progressive rectifier (Walk-in)	from 0 to 30 seconds (configurable)				from 0 to 120 sec. (configurable)		
Delay of Progressive start of rectifier (Power Walk-in delay timer)	from 0 to 120 seconds (configurable)						
D.C. INTERMEDIATE CIRCUIT							
Number of cells	240						
Float voltage (2.26 V/ℓ, can be calibrated) – Vdc	542						
Recharge Voltage (2.34 V/ℓ, can be calibrated) – Vcc	561			542			
Maximum output voltage (Vcc)	600						
End of discharge voltage Vcc (1.6 V/ℓ, can be calibrated) – Vcc	384						
Ripple current with recharged battery (%)	Approx. 0						
Maximum DC current at cutoff voltage (Amps)	159.5	196	236	296	383.0	478.7	598.4
Maximum current to charge battery with 240 cells (mains voltage 480V)							
• Load 100%	16	20	24	30	36	45	56
• Load ≤ 70%	49	60	76	96	110	145	180
INVERTER							
Factor of power reduction for 0.9 o/p leading power factor	0.89						
Nominal voltage	480Vac 3 phase, 3-Wire + Grd. (208V Optional with OP Transformer)						
Nominal frequency	60Hz						
Nominal voltage	+5%, -10%						
Static variation	± 1%						
Dynamic variation	± 5%						
Resistor time within ± 1%	20ms						
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 °ℓ						
Overload in referred to the nominal power	110% for 60 minutes, 125% for 10 minutes, 150% for 1 minute				200% for 6 seconds		
• Three phase	200% for 7 seconds						
• Single phase							
Short circuit Current							
• Phase / Phase	180% for 1 second						
• Phase / Neutral	300% for 1 second						
Inverter efficiency	94%						

Electrical Data	UPS Power (kVA)							
	65	80	100	125	160	200	250	
BY-PASS								
Nominal voltage	480Vac 3-phase (with or without neutral)							
Nominal voltage tolerance	± 15% (can be regulated from ± 10% to ± 25% from the control panel)				±20% (can be regulated from ±5% to ±25% from the control panel)			
Nominal frequency	60 Hz							
Frequency tolerance	± 2% (can be regulated up to ± 6% from the control panel)							
Switching time inverter-by-pass with Inverter synchronized (UPS Normal)	Approx. 0ms							
Switching time inverter-by-pass with non-synchronized Inverter (UPS in "Normal Mode")	20ms (Can be calibrated from 10 to 100 ms or with inhibition of transfer onto bypass)							
Switching time from by-pass to Inverter (Stand-by / On Mode)	from 2 to 5ms							
Delay in transferring to Inverter after the switching onto by-pass	4 sec							
Overload Capacity of by-pass line (kVA)	125 % for 60 minutes, 150 % for 10 minutes				110% for 60 min., 125% for 10 min.			
Short circuit capacity of by-pass line (x nominal current)	65	80	100	125	160	200	250	
1 second	20	15	12	10	9	7	9	
500 ms	23	18	15	12	10	8	10	
200 ms	26	21	17	14	11	9	11	
100ms	30	22	18	15	12	10	12	
10ms	40	30	25	20	18	14	18	
SYSTEM								
On-Line AC/AC efficiency	93 %				93.5%	94%		
• Full load	93.5 %				94%	94.5%		
• Load 50%								
Efficiency with UPS in STAND-BY mode	98 %							
Full Load Heat Rejection BTU/hr	15,033	18,500	23,120	28,900	36,880	46,230	57,780	
Maximum current dispersion	300mA maximum							
MECHANICAL								
Dimensions – inches	UPS Power (kVA)							
	65	80	100	125	160	200	250	
Height x Width x Depth – inches (mm)	75 (1900) x 31.5 (800) x 33.5 (850)				75 (1900) x 39 (1000) x 33.5 (822)			
Weight – lbs. / Kg	1,213 / 550	1,213 / 550	1,433 / 650	1,544 / 700	1984 / 900	2,205 / 1000	2,425 / 1100	
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			

FirstLine P 80, 100, 125kVA Part Numbers

Model	kVA / kW	Voltage
FLU-65-00	65VA/58.5kW	480V - 480Y/277
FLU-80-00	80kVA/72kW	480V - 480Y/277
FLU-100-00	100kVA/90kW	480V - 480Y/277
FLU-125-00	125kVA/112.5kW	480V - 480Y/277
FLU-160-00	160kVA/144kW	480V - 480Y/277
FLU-200-00	200kVA/180kW	480V - 480Y/277
FLU-250-00	250kVA/225kW	480V - 480Y/277

Standards

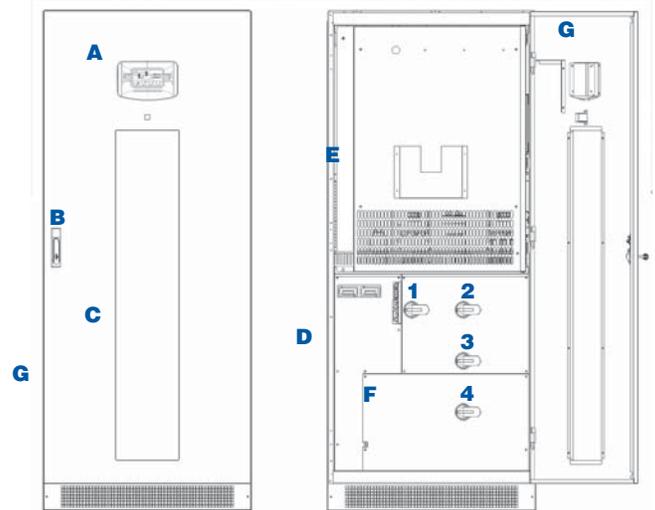
- Underwriters Laboratories, Listed to UL1778 (Designed to 60950); c-UL to CSA C22.2
- CE
- NEMA PE-1
- ASME
- ASA-C-39.1-1984
- FCC PT 15, Subpart J, Class B
- National Electrical Code
- OSHA
- IEEE 587 ANSI C 62.41-1980
- ISO 9001
- IBC (International Building Code) Ratings A-F, Site Specific



Communication Option Part Numbers	Description
FLU-NetMan	NetMan Network SNMP Card
FLU-MultiCOM1	Monitoring MODBUS/JBUS Card
FLU-MultiCOM2	Serial/USB Card
FLU-Multi-I/O	I/O Protocol Converter Card
FLU-AS400	AS 400 Communication Kit
FLU-Sensor	Environmental Sensor Module
FLU-MultiPanel	Remote Monitoring Panel
FLU-PowerShield	Communication Software
FLU-PowerNetGuard	Supervisory Software
FLU-I/O-Expansion	Expansion Card with 6 output contacts for alarms

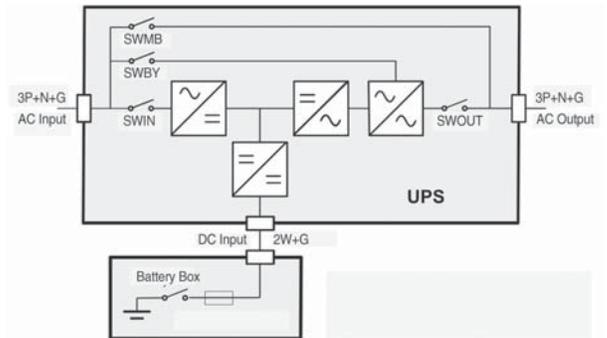
FirstLine P 65 – 250kVA UPS: Battery Run Times (Minutes)

kVA/Watts/Ah	# Cabinets	# Strings	50% LOAD	75% LOAD	100% LOAD	Weight (lbs.)
65kVA 200W/50AH	1	1	26	14	8	2,307
	1	2	66	39	26	3,932
	2	3	107	66	46	6,239
	2	4	149	93	66	7,864
	3	5	190	121	86	10,171
	3	6	229	149	107	11,796
	4	7	266	171	128	14,103
80kVA 200W/50AH	1	2	38	30	19	3,932
	2	3	84	51	35	6,239
	2	4	118	73	51	7,864
	3	5	152	95	67	10,171
	3	6	185	118	84	11,796
	4	7	217	141	101	14,103
	4	8	248	163	118	15,728
100kVA 200W/50AH	1	2	38	21	14	3,932
	2	3	64	38	25	6,239
	2	4	90	55	38	7,864
	3	5	118	73	51	10,171
	3	6	145	90	64	11,796
	4	7	172	109	77	14,103
	4	8	198	127	90	15,728
125kVA 200W/50AH	1	2	30	16	10	3,932
	2	3	51	30	20	6,239
	2	4	73	44	30	7,864
	3	5	95	58	40	10,171
	3	6	118	73	50	11,796
	4	7	141	88	62	14,103
	4	8	164	103	73	15,728
160kVA 200W/50AH	2	3	35	19	12	6,239
	2	4	51	30	19	7,864
	3	5	67	40	27	10,171
	3	6	84	51	35	11,796
	4	7	101	61	43	14,103
	4	8	118	73	51	15,728
	200kVA 200W/50AH	2	3	25	14	8
2		4	38	21	14	7,864
3		5	51	30	19	10,171
3		6	64	38	25	11,796
4		7	77	46	32	14,103
250kVA 200W/50AH	2	4	28	15	9	7,864
	3	5	38	21	14	10,171
	3	6	48	28	18	11,796
	4	7	58	34	23	14,103
	4	8	69	41	28	15,728

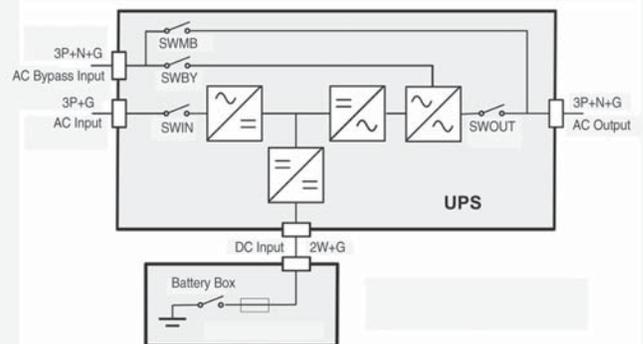


- A** Control panel with graphic display
- B** Door handle
- C** Ventilation grills
- D** Communication area
- E** Front Cover panel with ventilation grills
- F** Switch cover panel
- G** Door
- 1** Input isolating switch
- 2** Output isolating switch
- 3** Maintenance isolating switch
- 4** Bypass isolating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

Single Input Unit



Dual Input Unit



Communication Options

FLU-NetMan SNMP Adapter (Internal Network Card, external model available) allows UPS management across a LAN using any of the main network communication protocols—TCP/IP, HTTP and network interface (SNMP). NetMan Plus enabled UPS integrate easily into medium and large sized networks and provide reliable communications between the UPS and management systems employed.

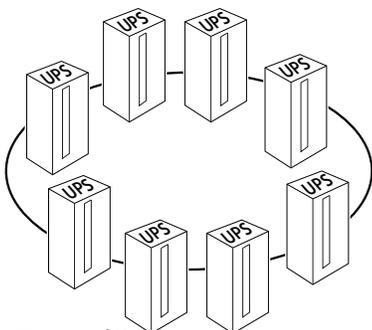
FLU-MultiCOM1 MODBUS/JBUS (Internal Protocol Converter Card, external model available) may be used to monitor the UPS using the MODBUS/JBUS protocol on RS232 or RS485 serial lines. It can also manage a second independent RS232 serial line that can be used to connect to other devices such as the Netman Plus or a PC using PowerShield software.

FLU-MultiCOM2 Serial/USB (Internal Serial/USB Card, external model available) provides a UPS with an additional RS232 serial interface or USB port. The USB port allows the UPS to communicate with Apple Macintosh computers as well as Windows and Linux operating systems.

FLU-Multi I/O (Internal Protocol Converter Card) has configurable input and output signal contacts to allow UPS integration with control systems. It can be used to connect two devices to a single UPS serial communication port. It can also communicate using the MODBUS/JBUS protocol on RS485 lines.

FLU-AS/400 (Communication Kit) has a single-level memory management feature that makes it compulsory for the system to be shutdown in a controlled and orderly manner. Without UPS protection an AS/400 is not protected from mains failures. A momentary loss of power can cause hardware damage, data corruption and a lengthy reboot period.

FLU-Sensor Environmental Sensor Module: Monitors and records environmental conditions as well as activities in protected areas and at the premises where the UPS is installed. Environmental sensors monitor and record environmental conditions and activities within a designated building area. The sensors provide extensive management and control, triggering cooling fans and locks in response to changes in temperature and humidity. Remote monitoring and control can be provided via the internet, SNMP and the PowerShield³ software. NetMan Plus can support up to 6 separate sensors. The environmental sensors are easy to install and do not need a separate external power supply.



FirstLine® P
Up to Eight Units in Parallel

FLU-MultiPanel (Remote Monitoring Panel) device that can provide a detailed UPS status overview in real time. It is compatible with all UPS and can display values for UPS specific input and output supplies, and battery set measurements. MultiPanel 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 Netman Plus or a PC running PowerShield software.

FLU-PowerShield (Communication Software) 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. PowerShield³ has been developed with a client/server architecture that makes it flexible and easy to use, and provides multi-lingual and on-line support.

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

Other Options

Top or Side Incoming Entry

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

External Maintenance Bypass, 3 Breaker with 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)

Line Up and Match Output Distribution Cabinet with (2) 42 Pole Panelboards or Sub-Feed Circuit Breakers.

Basic Battery Monitoring

Battery monitoring system that monitors each battery and each string.

Battery Cycle Monitor

Monitors and records battery cycle data of each battery string.

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.

Start-Up Service, Preventative Maintenance Programs

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

Service Options

With our ServiStar® program, a wide range of planned maintenance and extended service options are offered 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**



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