



FIRSTLINE P/FC

THREE PHASE ON-LINE DOUBLE CONVERSION FREQUENCY CONVERTER

52.5 - 400 KVA PARALLEL UP TO 3200 KVA

APPLICATIONS INCLUDE

- International Equipment
- Manufacturing Process
- Hospitals, Medical - MRI, CT, PET, X-Ray
- Test Equipment
- Laboratories, Bio-tech
- Renewable Energy

PRODUCT FEATURES

- **Compact & Reliable**
Front accessibility to minimize footprint. Cooler operation extends internal component life.
- **AC Input Performance**
High input power factor of 0.99. Low input current distortion of $\leq 3\%$ (THDi) @ Full Load. Soft Start Power walk-in function that ensures progressive rectifier start-up.
- **Upgrades to a UPS**
When your application changes, simply add batteries with no major re-wire required.





MORE FEATURES

2 LEVEL IGBT WITH 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.

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 THE 8 UNITS

Provides redundancy for mission critical applications.

SEISMIC CERTIFIED

For environments requiring seismic certification, the FirstLine® P/FC is available.

WORLDWIDE SERVICE PROGRAM

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

WARRANTY

ELECTRONICS

A full Two Year On-site Warranty (Continental U.S., Canada or Mexico)

BATTERY *IF BATTERIES ARE INCLUDED

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 and preventative maintenance plans are also available. Please refer to our warranty statement for complete details.



FIRSTLINE P/FC FREQUENCY CONVERTER

Provides the clean, regulated precision power for all your sensitive loads. Protects your application from sags and surges that would normally damage your expensive devices. The P/FC has an input range of +15% /-10% with instantaneous response to voltage fluctuations while maintaining the output within +/- 1%.

AC INPUT PERFORMANCE

FirstLine® P/FC 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 Frequency Converter on the local supply and simplifies installation where there is limited power capacity in the form of available electrical supply rating or generator size. The FirstLine® P/FC 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 systems are connected in the system.

The FirstLine® P/FC 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/FC models feature an output transformer with galvanic isolation to provide greater versatility and installation options.

MAIN CHARACTERISTICS

- Efficiency above 93% at full load
- Reduced Weight

The entire FirstLine® P/FC range is suitable for a wide range of applications thanks to the flexibility of configurations, accessories, options, and choice of performance levels. The Frequency Converter 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. 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 or N+1),



FirstLine® P/FC Frequency Converter shown



COMMUNICATION OPTIONS

SNMP CARD

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

EXPANSION CARD

Provides additional remote alarm functions. 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 Frequency Converter remotely (same functions as on the Frequency Converter) and detailed Frequency Converter status overview in real time. It is compatible with all FirstLine P/FC Frequency Converters and can display values for Frequency Converter 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 Frequency Converter 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.

SUPERVISION SOFTWARE

Centralizes Frequency Converter 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 Frequency Converter management wherever they are located.

COMMUNICATION SOFTWARE

Used with the SNMP Card for monitoring and shutdown for multiple Frequency Converters. Provides efficient, user-friendly Frequency Converter management using bar chart displays to show major operational information such as the input voltage, Frequency Converter load % and battery charge %. The software also provides detailed information on fault conditions and Frequency Converter 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.

OTHER OPTIONS

TOP OR SIDE CABLE ENTRY

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

POWER DISTRIBUTION UNIT (PDU)

A Wide Range of Service Programs are Available to Suit all User Requirements. Consult Factory.

HARSH ENVIRONMENT ENCLOSURE

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

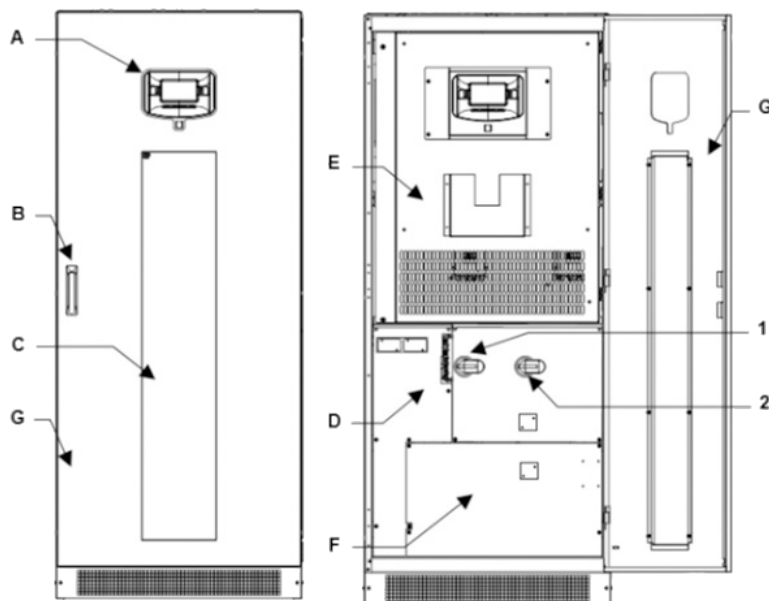
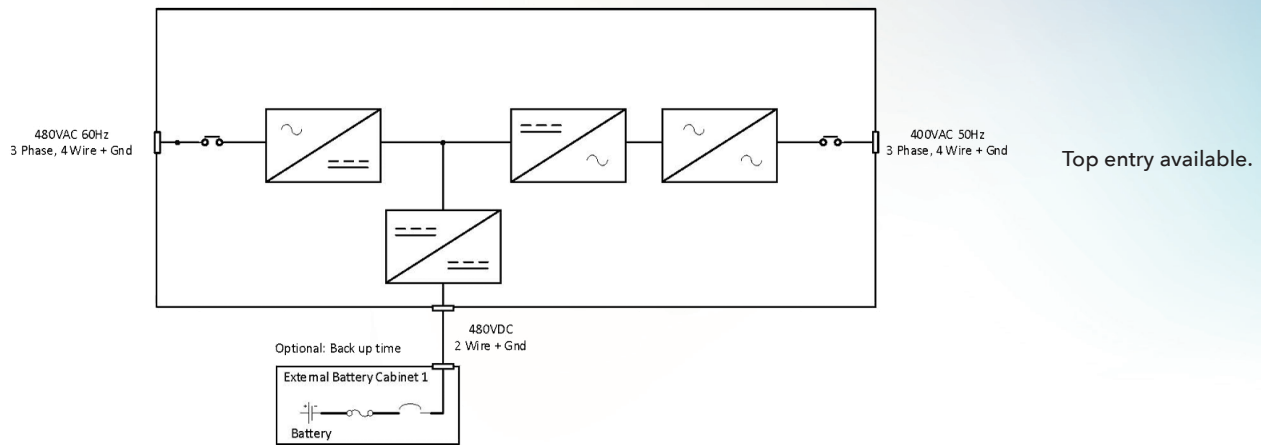
SEISMIC WITHSTAND CERTIFICATION

Site specific seismic certification and documentation.

FIRSTLINE P/FC TECHNICAL SPECIFICATIONS

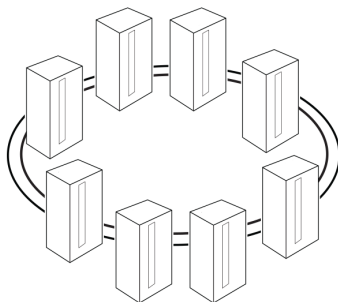
Electrical Data	Frequency Converter Power (KVA / KW)									
	52.5 / 47	65 / 58.5	80 / 72	100 / 90	125 / 112.5	160 / 144	200/180	250/250	300/300	400/360
Input										
Nominal Voltage	480VAC 3 Phase, 3 or 4-wire + Grd. (Up to 600V Optional with Input Transformer)									
Nominal Voltage Range	-10%, +15%							-10%, +10%		
Input Frequency Range	From 45 to 65Hz default									
Power Factor at Nominal Voltage (480V)	> 0.99									
Voltage Range	-10%, +15% -20%, +15% -30%, +15% -40%, +15%							-10%, +10% -20%, +10% -30%, +10% -40%, +10%		
• Load 100%										
• Load 85%										
• Load 75%										
• Load 65%										
Current Harmonic Distortion (THDi) (with Main Distortion <2%)	≤ 3% ≤ 5% ≤ 8% ≤ 8%							≤ 3% ≤ 3% ≤ 5% ≤ 8%		
• Load 100%										
• Load 75%										
• Load 50%										
• Load 25%										
Progressive Rectifier (Walk-in)	0 to 30 Seconds (Configurable)									
Delay of Progressive Start of Rectifier (Power Walk-in Delay Timer)	0 to 120 Seconds (Configurable)									
Output										
Nominal Voltage	400VAC 3 Phase, 3 or 4-wire + Grd. (Up to 600V Optional with Output Transformer)									
Static Voltage Regulation	± 1%									
Crest Factor	3:1									
Voltage Distortion with Linear Load	1% (Typical), 2% (max)									
Voltage Distortion with Non-Linear Load	< 3%									
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									
System										
AC/AC Efficiency at Full Load	93%									
Full Load Heat Rejection BTU/hr	11,300	13,900	17,100	21,400	26,700	34,200	42,700	59,100	71,200	85,400
Maximum Current Dispersion	300mA Maximum									
Mechanical										
Dimensions	(kVA/kW)									
	52.5 / 47	65 / 58.5	80 / 72	100 / 90	125 / 112.5	160 / 144	200/180	250/250	300/300	400/400
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	N/A				75.02 x 55.12 x 33.47 (1905.5 x 1400.0 x 850.0)					
-CEC	75.02 x 47.17 x 33.47 (1905.5 x 1198.2 x 850.0)							74.80 x 74.80 x 39.37 (1900.0 x 1900.0 x 1000.0)		
-T-CEC	N/A				N/A					
Weight - lbs. / Kg										
-00	1,499 / 680		1,742 / 790		2,447/ 1110			4,190 / 1,900	4,741 / 2,150	
-T	N/A				2,799 / 1,270			4,200 / 1,905	4,751 / 2,155	
-CEC	1,749 / 793		1,992 / 904		2,789/ 1,265			4,410 / 2,000	4,961 / 2,250	
-T-CEC	N/A				N/A			4,420 / 2,005	4,971 / 2,255	
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	-20° C to 70° C									
Relative Humidity	0 - 95% Non-Condensing									
Altitude	3,281 feet without derating									
Audible Noise	65 dBA @ 1 meter				68 dBA @ 1 meter			72 dBA @ 1 meter		

P Series Standard Frequency Converter



- 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



FirstLine® P/FC Up to Eight Units in Parallel

Standards

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



STACO SERVICE

FIELD SERVICE PROGRAM

Staco specializes in providing choice and flexibility by developing tailored solutions for preventive and remedial maintenance services, as well as emergency repairs for all of our products. Staco Service is built upon a nationwide network of highly trained and motivated customer support engineers and technicians who can provide professional services and care throughout the life of your equipment.

- Start-Ups
- Preventive Maintenance
- Spare Parts
- Battery Analysis/Refresh/Replacement
- On-Site Training
- Time & Material Services

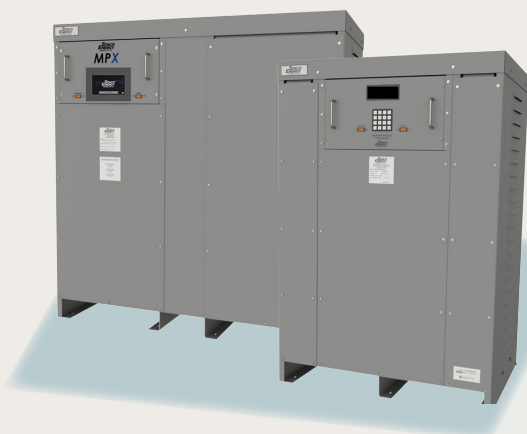
WHY STACO ENERGY PRODUCTS?

BECAUSE WE ARE YOUR CUSTOM POWER SOLUTIONS PROVIDER!

Unique application design demands, harsh environment concerns, the need to meet non-standard physical space requirements; providing the “not so usual” is what we do best. From leading edge uninterruptible power supplies, power conditioners, power factor and harmonic correction equipment, to the world’s most stable voltage control systems, we have the technology you need to protect and manage your business, and the knowledge to make it work for you.

Since 1937, customers worldwide have relied on Staco Energy as their custom solutions provider, to solve a wide range of electrical power problems. Headquartered in Miamisburg, Ohio, Staco Energy Products is a wholly owned subsidiary of Components Corporation of America, located in Dallas, Texas.

Voltage Control



UPS & Emergency Lighting



**STACO
ENERGY[®]**
PRODUCTS CO.

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