STACO ENERGY® PRODUCTS CO.

FIRSTLINE P 924

THREE PHASE CENTRAL INVERTER FOR EMERGENCY LIGHTING APPLICATIONS

58.5 - 225 KW

APPLICATIONS INCLUDE

- Theaters/Concert Halls
- Auditoriums
- Worship Facilities
- Conference/Banquet Centers
- Shopping Malls
- Casinos
- Sports Facilities
- University Buildings
- Healthcare Facilities
- Correctional Facilities
- Subway/Train Stations

PRODUCT FEATURES

- **Up to 98% Efficient**
  Lower energy costs and carbon footprint
- **Compact & Reliable**
  Requires front 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 <= 3%. Power walk-in function that ensures progressive rectifier start-up.

MORE FEATURES

IGBT AND DIGITAL SIGNAL PROCESSOR (DSP)
Reduces the impact of the ELS 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 bypass power increase resilience of single or parallel system configurations.

HIGH PERFORMANCE FILTER
Protects upstream power supply sources from harmonics and reactive power generated by the loads power.

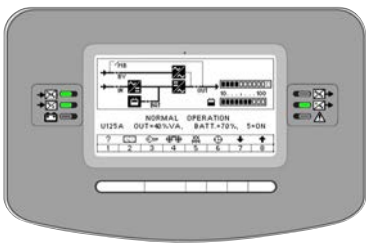
MENU SELECT DISPLAY
User friendly display is easy to see and intuitive to use.

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

FirstLine® P 924 Emergency Lighting System (ELS) delivers high performance, tailored to meet the demands of emergency lighting applications. With a cost-effective reliable design, the FirstLine® P 924 helps to ensure personnel safety, during an outage condition. The FirstLine® P 924 offers more security and versatility to meet illumination requirements, and is the perfect complement for all lighting applications. Our inverter technology effectively maintains critical equipment with extended brownout protection, tight voltage regulation, and power conditioning. Tight voltage regulation assures that facility egress lumens are maintained 100% at emergency lighting fixtures, in all modes of operation, and also extends ballast, LED driver, and lamp life. FirstLine® P 924 features unparalleled quality and reliability, with constant conditioned power to virtually any lighting type. The Staco optional Power Distribution Unit (PDU) makes for a well coordinated circuit distribution system.

BATTERY CARE SYSTEM
FirstLine® P 924 uses the Battery Care System which optimizes battery performance while extending battery life.

FRONT PANEL DISPLAY



WARRANTY

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

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

FIRSTLINE P 924

In the event of an AC power failure, the FirstLine® P 924 ELS automatically supports the connected lighting loads on battery power and will continue to provide power without any interruption for the specified backup time. When the utility power returns to normal, FirstLine® P 924 ELS will automatically recharge the batteries to be ready for the next power disturbance.

AC INPUT PERFORMANCE

FirstLine® P 924 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 ELS 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 924 is classed as a "Zero Impact Source" and provides:

- Low input current distortion <= 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 ELS are connected in the system. The FirstLine® P 924 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 924 models feature an output transformer with galvanic isolation (between the load and the battery supply) to provide greater versatility and installation options. The ELS can be supplied from two separate power sources (main power and a secondary bypass standby source) which helps increase the resilience of system configurations.

MAIN CHARACTERISTICS

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

The entire FirstLine® P 924 range is suitable for a wide range of applications thanks to the flexibility of configurations, accessories, options, and choice of performance levels. The ELS 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). In addition to meeting life safety requirements, the FirstLine® P 924 Emergency Lighting System can also increase the life expectancy of the protected lighting system and reduce long-term cost of ownership.

FIRSTLINE P 924 ELECTRICAL SPECIFICATIONS

Electrical Data	ELS Power (kW)							
	58.5	72	90	112.5	144	180	210	225
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)	78	96	120	150	188	235	294	
Maximum Current Absorbed at Full Load and Battery Recharging (Amps)	89	109	136	160	212	265	331	
Power Factor at Nominal Voltage (480V) and Battery Charged from 25% to 100% of the Load	> 0.99							
Current Harmonic Distortion (THDi) (with Main Distortion <2%) • Load 100% • Load 75% • load 25÷50%	≤ 3% ≤ 5% ≤ 8%							
Progressive Rectifier (Walk-in)	from 0 to 30 Seconds (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							
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 Line	± 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 • Three Phase • Single Phase	110% for 60 Minutes, 125% for 10 Minutes, 150% for 1 Minute 200% for 7 Seconds							
Inverter Efficiency	95%							
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)							
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	
Maximum Current Dispersion	300mA Maximum							
Battery	90 Minutes, VRLA Maintenance Free Cell. (Modified battery times can be provided under Category "OUST")							
Mechanical								
Dimensions	ELS Power (kW)							
	58.5	72	90	112.5	144	180	210	225
Height x Width x Depth – Inches (mm)	-				75 (1900) x 39.5 (1003) x 33.5 (822)			
Weight - lbs. / Kg	-	-	-	-	1,984 / 900	2,205 / 1,000	2,425 / 1,100	
Mechanical with Internal bypass Height x Width x Depth - inches (mm)	75 (1900) x 31.5 (800) x 33.5 (850)				75 (1900) x 55 (1397) x 33.5 (822)			
Weight - lbs. / Kg	1,499 / 680		1,609 / 730	1,742 / 790	2,326 / 1,055	2,546 / 1,154	2,767 / 1,255	
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	-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			
Options								
Refer to the Product Specification								
Agency Listing								
UL 924 listed as "Emergency Lighting Equipment" and "Auxiliary Lighting and Power Equipment". Complies with NFPA 101 Life Safety Code.								

FIRSTLINE P 924 58KW - 225KW UL924 90 MINUTE PART NUMBERS

Model Number	kW	Description	Dimensions (H" x W" x D")	# Battery Cabinets	Weight (lbs.)
FLU-P-924-58	58.65kW	4Y x 4Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5	2	10,439
FLU-P-924-58M	58.65kW	4Y x 4Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35	2	10,684
FLU-P-924-58-22	58.65kW	2Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Trans: 75 x 33.5 x 33.35	2	12,199
FLU-P-924-58-22M	58.65kW	2Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Trans/Bypass: 75 x 33.5 x 33.35	2	12,179
FLU-P-924-58-42	58.65kW	4Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Trans: 75 x 33.5 x 33.35	2	11,569
FLU-P-924-58-42M	58.65kW	4Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Trans/Bypass: 75 x 33.5 x 33.35	2	11,614
FLU-P-924-72	72kW	4Y x 4Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5	3	14,909
FLU-P-924-72M	72kW	4Y x 4Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35	3	15,154
FLU-P-924-72-22	72kW	2Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Trans: 75 x 33.5 x 33.35	3	16,669
FLU-P-924-72-22M	72kW	2Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35 I/P Trans: 75 x35 x 33.36 O/P Trans: 75 x 35 x 33.36	3	16,649
FLU-P-924-72-42	72kW	4Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Trans: 75 x 33.5 x 33.35	3	16,039
FLU-P-924-72-42M	72kW	4Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Trans/Bypass: 75 x 33.5 x 33.35	3	16,084
FLU-P-924-90	90kW	4Y x 4Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5	3	15,019
FLU-P-924-90M	90kW	4Y x 4Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35	3	15,269
FLU-P-924-90-22	90kW	2Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Trans: 75 x 33.5 x 33.35	3	16,954
FLU-P-924-90-22M	90kW	2Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35 I/P Trans: 75 x35 x 33.36 O/P Trans: 75 x 35 x 33.36	3	16,969
FLU-P-924-90-42	90kW	4Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Trans: 75 x 33.5 x 33.35	3	16,284
FLU-P-924-90-42M	90kW	4Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Trans/Bypass: 75 x 33.5 x 33.35	3	16,299
FLU-P-924-112	112.5kW	4Y x 4Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5	4	19,622
FLU-P-924-112M	112.5kW	4Y x 4Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35	4	19,872
FLU-P-924-112-22	112.5kW	2Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Trans: 75 x 33.5 x 33.35	4	21,477
FLU-P-924-112-22M	112.5kW	2Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Trans/Bypass: 75 x 33.5 x 33.35	4	21,492
FLU-P-924-112-42	112.5kW	4Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Trans: 75 x 33.5 x 33.35	4	20,847
FLU-P-924-112-42M	112.5kW	4Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Trans/Bypass: 75 x 33.5 x 33.35	4	20,862
FLU-P-T-924-144	144kW	4Y x 4Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5	5	24,676
FLU-P-T-924-144M	144kW	4Y x 4Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35	5	25,166
FLU-P-T-924-144-22	144kW	2Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 I/P Trans: 75 x35 x 33.36 O/P Trans: 75 x 35 x 33.36	5	26,936
FLU-P-T-924-144-22M	144kW	2Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35 I/P Trans: 75 x35 x 33.36 O/P Trans: 75 x 35 x 33.36	5	27,426
FLU-P-T-924-144-42	144kW	4Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 O/P Trans: 75 x 35 x 33.36	5	25,806
FLU-P-T-924-144-42M	144kW	4Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35 O/P Trans: 75 x 35 x 33.36	5	26,296
FLU-P-T-924-180	180kW	4Y x 4Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5	6	29,366
FLU-P-T-924-180M	180kW	4Y x 4Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35	6	29,856
FLU-P-T-924-180-22	180kW	2Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 I/P Trans: 75 x35 x 33.36 O/P Trans: 75 x 35 x 33.36	6	33,566
FLU-P-T-924-180-22M	180kW	2Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35 I/P Trans: 75 x35 x 33.36 O/P Trans: 75 x 35 x 33.36	6	34,056
FLU-P-T-924-180-42	180kW	4Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 O/P Trans: 75 x 35 x 33.36	6	31,466
FLU-P-T-924-180-42M	180kW	4Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35 O/P Trans: 75 x 35 x 33.36	6	31,956
FLU-P-T-924-210	189kW	4Y x 4Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5	7	34,057
FLU-P-T-924-210M	189kW	4Y x 4Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35	7	34,547
FLU-P-T-924-210-22	189kW	2Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 I/P Trans: 75 x35 x 33.36 O/P Trans: 75 x 35 x 33.36	7	38,757
FLU-P-T-924-210-22M	189kW	2Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35 I/P Trans: 75 x35 x 33.36 O/P Trans: 75 x 35 x 33.36	7	39,247
FLU-P-T-924-210-42	189kW	4Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 O/P Trans: 75 x 35 x 33.36	7	36,357
FLU-P-T-924-210-42M	189kW	4Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35 O/P Trans: 75 x 35 x 33.36	7	36,847
FLU-P-T-924-225	225kW	4Y x 4Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5	8	38,527
FLU-P-T-924-225M	225kW	4Y x 4Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35	8	39,017
FLU-P-T-924-225-22	225kW	2Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 I/P Trans: 75 x35 x 33.36 O/P Trans: 75 x 35 x 33.36	8	43,227
FLU-P-T-924-225-22M	225kW	2Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35 I/P Trans: 75 x35 x 33.36 O/P Trans: 75 x 35 x 33.36	8	43,717
FLU-P-T-924-225-42	225kW	4Y x 2Y	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 O/P Trans: 75 x 35 x 33.36	8	40,827
FLU-P-T-924-225-42M	225kW	4Y x 2Y w/ External Bypass	Electronics: 75.02 x 31.43 x 33.47 Battery: 78.74 x 36 x 29.5 Bypass: 75 x 15.75 x 33.35 O/P Trans: 75 x 35 x 33.36	8	41,317

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 | Power Factor & Harmonics

STACO ENERGY® PRODUCTS CO.

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