100% LED COMPATIBLE

STACO ENERGY® PRODUCTS CO.

FIRSTLINE® PL 924

Three-Phase Central Inverter for Emergency Lighting Applications

FirstLine® PL 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® PL 924 helps to ensure personnel safety, during an outage condition.

The FirstLine® PL 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® PL 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.

Compact & Reliable

- 10-40kVA provides for a smaller footprint
- Cooler operation extends internal component life

AC Input Performance

- High input power factor of 0.99
- Low input current distortion of <1 % (THDi) @ full load
- Soft Start 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

Dual Input

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

Adaptive Feed Cancellation

- Advanced control with AFC forward cancellation technology for low harmonic distortion.

Menu Select Display

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

Parallel up to 4 Units

- Provides redundancy for mission critical applications with no additional hardware
- Parallel Kit, Communication through CANBUS Parallel Card

Installation Savings

- System arrives with batteries pre-mounted and wired saving additional labor cost

Full Two Year Warranty

FIRSTLINE® PL 924

Three-Phase Central Inverter for Emergency Lighting Applications

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

Applications

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

In addition to meeting life safety requirements, the FirstLine® PL 924 Emergency Lighting System can also increase the life expectancy of the protected lighting system and reduce long-term cost of ownership.

Technical Specifications

General

- On-line double-conversion topology
- True sine wave output
- Continuous, no-break operation
- Three-phase system will support single or three-phase loads
- LCD front panel monitoring and control
- Automatic system bypass
- Circuit breaker protection integral with battery cabinet, molded-case type
- Available with standard UL924 listing with 90 Minute battery and listed for Auxiliary Lighting and Power Equipment

Input

- Input Voltage 208Y/120VAC and 480/277VAC, 4-wire and 3-wire Delta connection available with optional Transformer Cabinet
- Input Voltage Range: +15%/-20% from nominal
- Input frequency: 60Hz +/-5%
- Full load walk-in from 25% to 100% of rated load in <5 seconds
- Harmonic current distortion <1% at full load
- Surge Withstand: Meets IEEE C62.41

Output

- IGBT: true sine wave PWM inverter
- Inverter output distortion: <5% THD (100% non-linear)
- Inverter output distortion: <2% THD (linear loads)
- Voltage regulation: +/-2% of nominal at full load
- Frequency: 60/50 Hz

Battery

- Designed for easy maintenance
- Standard backup time of 90 minutes at full load
- Valve-Regulated Lead-Acid (VRLA) battery
- 10 year design life at 77°F (25°C)

Housing

- Freestanding, NEMA 1 steel enclosure
- Service access—Front and Left Side
- Bottom access for conduit entries

Environmental

- Agency Compliance: UL 924 listed as "Emergency Lighting Equipment" and "Auxiliary Lighting and Power Equipment". Complies with NFPA 101 Life Safety Code.
- Operating temperature range 18°F (-8°C) to 104°F (40°C)
- Acoustical Noise: 67 dbA Max. at 3 feet
- Relative Humidity: 0-95% non-condensing
- Seismic certified

Monitoring/Communications

- Front Panel LCD Display
  - 3.5" x 4.58"H character display
  - System status and alarms
- Communications Port
  - RS-232
  - Dry Contacts
  - Remote monitoring
  - SNMP and MOD-BUS standard

What is an Emergency Lighting System?

The National Fire Protection Association (NFPA) has written Life Safety Code® (NFPA 101®*) that defines the requirements for emergency lighting for means of egress. The standard requires that emergency illumination shall be provided for not less than 1 1/2 hours (90 minutes) in the event of failure of normal lighting. The FirstLine® PL 924 Centralized Emergency Lighting inverter is UL 924 listed as "Emergency Lighting Equipment" and "Auxiliary Lighting and Power Equipment", as well as NFPA compliant as "Life Safety Equipment".

Central lighting inverter system provides for a single point for power connection, monitoring and management of emergency lighting; plus eliminates the high cost of maintenance and testing of each individual emergency light, while security and peace-of-mind is improved. Additionally, other critical loads can be protected such as data security and fire.

** Copies of summaries of these NFPA Codes are available upon request.*

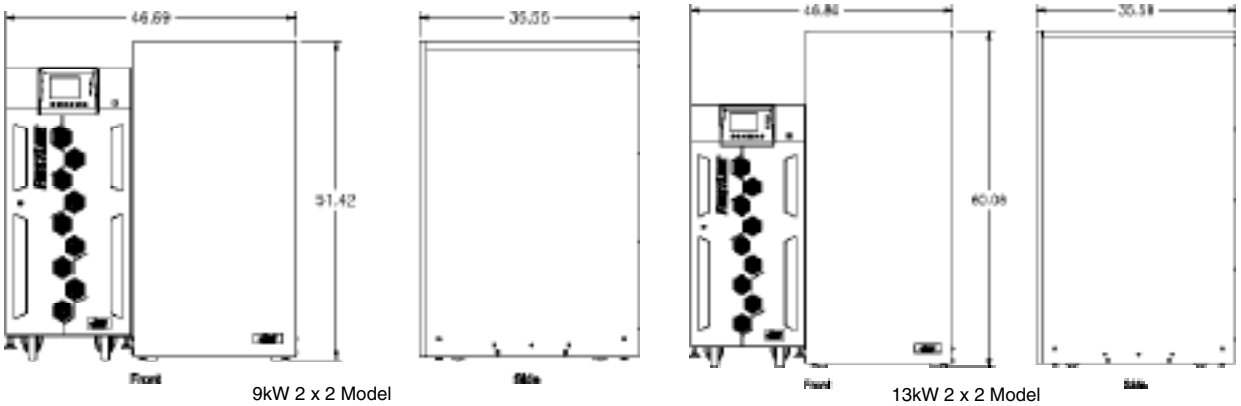
Staco FirstLine PL 924 ELS Technical Specifications

UPS Rating kVA/kW	10/9	15/13.5	20/18	30/27	40/36
Input					
Topology	On-Line Double Conversion				
Voltage	208Y/120 VAC, Three Phase, 4 wire plus ground or 220Y/127 VAC configurable from the Front Panel				
Range	+15% / -20% Battery Discharge@-15% with full load				
Frequency	60/50Hz +/- 5.0 Hz				
Power Factor	0.99 at 100% load, 0.98 minimum at 50% load				
Current Distortion (THD)	<1% @100% Load, <2% @ 50% Load, <5% @ 10% Load				
Input Current (A)	Nominal: 28 Maximum: 33	Nominal: 42 Maximum: 49	Nominal: 55 Maximum: 65	Nominal: 83 Maximum: 97	Nominal: 111 Maximum: 130
Input Current Inrush	Walk-In from 25% maximum to 100% full load rating in 5 seconds				
Output					
Voltage	208Y/120 VAC, Three Phase, 4 wire plus ground or 220Y/127 VAC configurable from the Front Panel				
Static Voltage Regulation	+/- 2%				
Voltage Transient Response	Voltage transient response shall not exceed the following, and shall recover to 95% within 10 milliseconds: a) < 5% RMS for 100% step load b) +/- 1% (loss or return of AC input)				
Frequency (inverter synchronous)	60/50Hz (tracks frequency of static bypass source) +/- 0.5, 1.0, 2.0, 5.0 Hz (user settable)				
Frequency Slew Rate (inverter synchronized to static bypass)	± 10 Hz per second				
Free Running Frequency (on battery or asynchronous)	60/50Hz +/- 0.01Hz				
Voltage Distortion THD	Less than 1% (Linear load), less than 2% with crest factor				
Inverter Overload	125% for 10 minutes, 150% for 60 seconds				
Bypass Overload	400% for 10 seconds, 1000% for half line cycle				
Bypass Input – Range Synchronization Voltage	+12% / -15%				
Bypass Input Frequency Tracking Range	+/- 5Hz				
Overall Efficiency	Up to 94%				
Output Current (A)	28	42	55	83	111
Heat Rejection (BTU/Hr)	3,412	5,118	6,824	10,237	13,649
Battery Run Time (minutes)					
Required Battery Time	90 Minutes @ Full Load				
Environmental					
Altitude	De-rate load capability above 1000 meters, 1% per 100 meters				
Operating Temperature	40 °C Maximum				
Audible Noise @ 3 feet "A" weighted scale	61dBA			67dBA	
Standard Communications					
SNMP/WEB	SNMP Card & UPS PowerView Pro Shutdown and Monitoring Software for Windows/Novell				
Modbus	Monitoring & Control via RS-485/RTU Protocol/Read Holding and Write Registersl				
Options					
Input/Output	480/480V (D or Y), 480V/208V (D or Y) with Transformer option				
Standards					
208V Model	UL 924 listed as "Emergency Lighting Equipment" and "Auxiliary Lighting and Power Equipment". Complies with NFPA 101 Life Safety Code.				

FirstLine PL 924 ELS: 9kW, 13.5kW & 18kW Models

Part Number	kW	Input/ Output	Description	Dimensions H x W x D (inches)	Wt. (lbs.)	# of Cabs.
208 X 208	**9**					
FLP-924-09	9	208Y/120 208Y/120	10kVA/9kW Electronics Module with (1) internal string of batteries and (1) external string in (1) Cabinet.	Electronics: 47.07 x 20.29 x 32.95 Battery: 51.42 x 26.12 x 35.55	2,600	2
FLP-924-09M	9	208Y/120 208Y/120	10kVA/9kW Electronics Module with (1) internal string of batteries, (1) external string in (1) Cabinet and (1) Wall Mount Bypass	Electronics: 47.07 x 20.29 x 32.95 Battery: 51.42 x 26.12 x 35.55 Ext. Wall Mt. Bypass: 22.2 x 18.25 x 12.7	2,615	2
480 X 480						
FLP-924-09-44	9	480Y/277 480Y/277	10kVA/9kW Electronics Module with (1) internal string of batteries, (1) external string in (1) Cabinet and (1) 4 x 4 Transformer Cabinet	Electronics: 47.07 x 20.29 x 32.95 Battery: 51.42 x 26.12 x 35.55 Transformer: 43 x 27 x 34	2,900	3
FLP-924-09-44M	9	480Y/277 480Y/277	10kVA/9kW Electronics Module with (1) internal string of batteries, (1) external string in (1) Cabinet and (1) 4 x 4 Transformer Cabinet with Bypass	Electronics: 47.07 x 20.29 x 32.95 Battery: 51.42 x 26.12 x 35.55 Transformer w/ Bypass: 43 x 27 x 34	2,915	3
480 X 208						
FLP-924-09-42	9	480Y/277 208Y/120	10kVA/9kW Electronics Module with (1) internal string of batteries, (1) external string in (1) Cabinet and (1) 4 x 2 Transformer Cabinet	Electronics: 47.07 x 20.29 x 32.95 Battery: 51.42 x 26.12 x 35.55 Transformer: 43 x 27 x 34	2,750	3
FLP-924-09-42M	9	480Y/277 208Y/120	10kVA/9kW Electronics Module with (1) internal string of batteries, (1) external string in (1) Cabinet and (1) 4 x 2 Transformer Cabinet with Bypass	Electronics: 47.07 x 20.29 x 32.95 Battery: 51.42 x 26.12 x 35.55 Transformer w/ Bypass: 43 x 27 x 34	2,765	3
208 X 208	**13.5**					
FLP-924-13	13.5	208Y/120 208Y/120	15kVA/13.5kW Electronics Module with (1) internal string of batteries and (1) external string in (1) Cabinet	Electronics: 47.07 x 20.29 x 32.95 Battery: 60.16 x 26.3 x 35.58	2,850	2
FLP-924-13M	13.5	208Y/120 208Y/120	15kVA/13.5kW Electronics Module with (1) internal string of batteries, (1) external string in (1) Cabinet and (1) Wall Mount Bypass	Electronics: 47.07 x 20.29 x 32.95 Battery: 51.42 x 26.12 x 33.55 Ext. Wall Mt. Bypass: 22.2 x 18.25 x 12.7	2,865	2
480 X 480						
FLP-924-13-44	13.5	480Y/277 480Y/277	15kVA/13.5kW Electronics Module with (1) internal string of batteries, (1) external string in (1) Cabinet and (1) 4 x 4 Transformer Cabinet	Electronics: 47.07 x 20.29 x 32.95 Battery: : 60.16 x 26.3 x 35.58 Transformer: 43 x 27 x 34	3,150	3
FLP-924-13-44M	13.5	480Y/277 480Y/277	15kVA/13.5kW Electronics Module with (1) internal string of batteries, (1) external string in (1) Cabinet and (1) 4 x 4 Transformer Cabinet with Bypass	Electronics: 47.07 x 20.29 x 32.95 Battery: 51.42 x 26.12 x 33.55 Transformer w/ Bypass: 43 x 27 x 34	3,165	3
480 X 208						
FLP-924-13-42	13.5	480Y/277 208Y/120	15kVA/13.5kW Electronics Module with (1) internal string of batteries, (1) external string in (1) Cabinet and (1) 4 x 2 Transformer Cabinet	Electronics: 47.07 x 20.29 x 32.95 Battery: : 60.16 x 26.3 x 35.58 Transformer: 43 x 27 x 34	3,300	3
FLP-924-13-42M	13.5	480Y/277 208Y/120	15kVA/13.5kW Electronics Module with (1) internal string of batteries, (1) external string in (1) Cabinet and (1) 4 x 2 Transformer Cabinet with Bypass	Electronics: 47.07 x 20.29 x 32.95 Battery: 51.42 x 26.12 x 33.55 Transformer w/ Bypass: 43 x 27 x 34	3,315	3
208 X 208	**18**					
FLP-924-18	18	208Y/120 208Y/120	20kVA/18kW Electronics Module, no internal batteries, (2) external strings in (1) Cabinet	Electronics: 47.07 x 20.29 x 32.95 Battery: 71.58 x 37.75 x 37.86	4,050	2
FLP-924-18M	18	208Y/120 208Y/120	20kVA/18kW Electronics Module, no internal batteries, (2) external strings in (1) Cabinet and (1) Wall Mount Bypass	Electronics: 47.07 x 20.29 x 32.95 Battery: 51.42 x 26.12 x 33.55 Ext. Wall Mt. Bypass: 22.2 x 18.25 x 12.7	4,065	2
480 X 480						
FLP-924-18-44	18	480Y/277 480Y/277	20kVA/18kW Electronics Module, no internal batteries, (2) external strings in (1) Cabinet and (1) 4 x 4 Transformer Cabinet	Electronics: 47.07 x 20.29 x 32.95 Battery: 71.58 x 37.75 x 37.86 Transformer: 43 x 27 x 34	4,400	3
FLP-924-18-44M	18	480Y/277 480Y/277	20kVA/18kW Electronics Module, no internal batteries, (2) external strings in (1) Cabinet and (1) 4 x 4 Transformer Cabinet with Bypass	Electronics: 47.07 x 20.29 x 32.95 Battery: 71.58 x 37.75 x 37.86 Transformer w/ Bypass: 43 x 27 x 34	4,200	3
480 X 208						
FLP-924-18-42	18	480Y/277 208Y/120	20kVA/18kW Electronics Module, no internal batteries, (2) external strings in (1) cabinet and (1) 4 x 2 Transformer Cabinet	Electronics: 47.07 x 20.29 x 32.95 Battery: 71.58 x 37.75 x 37.86 Transformer: 43 x 27 x 34	4,400	3
FLP-924-18-42M	18	480Y/277 208Y/120	20kVA/18kW Electronics Module, no internal batteries, (2) external strings in (1) cabinet and (1) 4 x 2 Transformer Cabinet with Bypass	Electronics: 47.07 x 20.29 x 32.95 Battery: 71.58 x 37.75 x 37.86 Transformer: 43 x 27 x 34	4,200	3

3-Wire Delta Input available: Consult Factory.
M = External Maintenance Bypass. Wall Mount on 09M Model, Transformer Cabinet with Bypass on 42M and 44M Models.



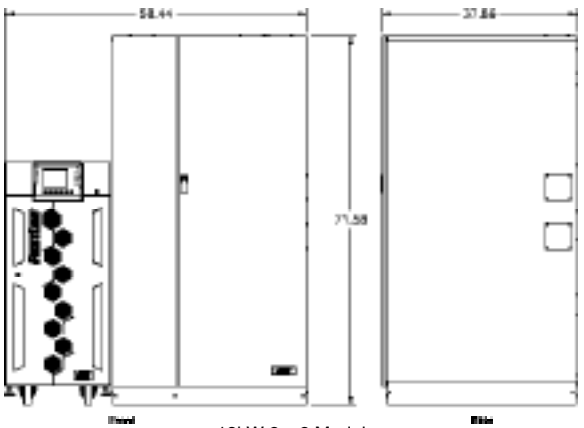
9kW 2 x 2 Model

13kW 2 x 2 Model

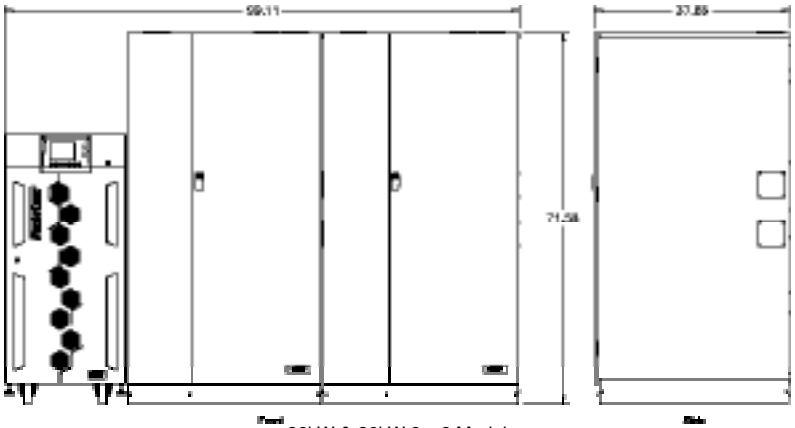
FirstLine PL 924 ELS: 27kW & 36kW Models

Part Number	kW	Input/ Output	Description	Dimensions H x W x D (inches)	Wt. (lbs.)	# of Cabs.
208 X 208	**27**					
FLP-924-27	27	208Y/120 208Y/120	30kVA/27kW Electronics Module, no internal batteries, (3) external strings in (2) Cabinets	Electronics: 52 x 23.15 x 32.95 Battery #1: 71.58 x 37.75 x 37.86 Battery #2: 71.58 x 37.75 x 37.86	6,120	3
FLP-924-27M	27	208Y/120 208Y/120	30kVA/27kW Electronics Module, no internal batteries, (3) external strings in (2) Cabinets and (1) Wall Mount Bypass	Electronics: 52 x 23.15 x 32.95 Battery #1: 71.58 x 37.75 x 37.86 Battery #2: 71.58 x 37.75 x 37.86 Wall Mt. Bypass: 22.2 x 22.25 x 12.7	6,135	3
480 X 480						
FLP-924-27-44	27	480Y/277 480Y/277	30kVA/27kW Electronics Module, no internal batteries, (3) external strings in (2) Cabinets and (1) 4 x 4 Transformer Cabinet	Electronics: 52 x 23.15 x 32.95 Battery #1: 71.58 x 37.75 x 37.86 Battery #2: 71.58 x 37.75 x 37.86 Transformer: 51.4 x 27 x 34	6,520	4
FLP-924-27-44M	27	480Y/277 480Y/277	30kVA/27kW Electronics Module, no internal batteries, (3) external strings in (2) Cabinets and (1) 4 x 4 Transformer Cabinet with Bypass	Electronics: 52 x 23.15 x 32.95 Battery #1: 71.58 x 37.75 x 37.86 Battery #2: 71.58 x 37.75 x 37.86 Transformer: 51.4 x 27 x 34	6,536	4
480 X 208						
FLP-924-27-42	27	480Y/277 208Y/120	30kVA/27kW Electronics Module, no internal batteries, (3) external strings in (2) Cabinets and (1) 4 x 2 Transformer Cabinet	Electronics: 52 x 23.15 x 32.95 Battery #1: 71.58 x 37.75 x 37.86 Battery #2: 71.58 x 37.75 x 37.86 Transformer: 51.4 x 27 x 34	6,270	4
FLP-924-27-42M	27	480Y/277 208Y/120	30kVA/27kW Electronics Module, no internal batteries, (3) external strings in (2) Cabinets and (1) 4 x 2 Transformer Cabinet with Bypass	Electronics: 52 x 23.15 x 32.95 Battery #1: 71.58 x 37.75 x 37.86 Battery #2: 71.58 x 37.75 x 37.86 Transformer: 51.4 x 27 x 34	6,285	4
208 X 208	**36**					
FLP-924-36	36	208Y/120 208Y/120	40kVA/36kW Electronics Module, no internal batteries, (4) external strings in (2) Cabinets	Electronics: 52 x 23.15 x 32.95 Battery #1: 71.58 x 37.75 x 37.86 Battery #2: 71.58 x 37.75 x 37.86	7,850	3
FLP-924-36M	36	208Y/120 208Y/120	40kVA/36kW Electronics Module, no internal batteries, (4) external strings in (2)Cabinets and (1) Floor Mount Bypass	Electronics: 52 x 23.15 x 32.95 Battery #1: 71.58 x 37.75 x 37.86 Battery #2: 71.58 x 37.75 x 37.86 Floor Mt. Bypass: 61.6 x 16 x 33.6	7,865	4
480 X 480						
FLP-924-36-44	36	480Y/277 480Y/277	40kVA/36kW Electronics Module, no internal batteries, (4) external strings in (2) Cabinets and (1) 4 x 4 Transformer Cabinet	Electronics: 52 x 23.15 x 32.95 Battery #1: 71.58 x 37.75 x 37.86 Battery #2: 71.58 x 37.75 x 37.86 Transformer: 51.4 x 27 x 34	8,250	4
FLP-924-36-44M	36	480Y/277 480Y/277	40kVA/36kW Electronics Module, no internal batteries, (4) external strings in (2) Cabinets and (1) 4 x 4 Transformer Cabinet with Bypass	Electronics: 52 x 23.15 x 32.95 Battery #1: 71.58 x 37.75 x 37.86 Battery #2: 71.58 x 37.75 x 37.86 Transformer w/ Bypass: 51.4 x 27 x 34	8,400	4
480 X 208						
FLP-924-36-42	36	480Y/277 208Y/120	40kVA/36kW Electronics Module, no internal batteries, (4) external strings in (2) Cabinets and (1) 4 x 2 Transformer Cabinet	Electronics: 52 x 23.15 x 32.95 Battery #1: 71.58 x 37.75 x 37.86 Battery #2: 71.58 x 37.75 x 37.86 Transformer: 51.4 x 27 x 34	8,050	4
FLP-924-36-42M	36	480Y/277 208Y/120	40kVA/36kW Electronics Module, no internal batteries, (4) external strings in (2) Cabinets and (1) 4 x 2 Transformer Cabinet with Bypass	Electronics: 52 x 23.15 x 32.95 Battery #1: 71.58 x 37.75 x 37.86 Battery #2: 71.58 x 37.75 x 37.86 Transformer w/ Bypass: 51.4 x 27 x 34	8,065	4

3-Wire Delta Input available: Consult Factory.
M = External Maintenance Bypass. Wall Mount on 09M Model, Transformer Cabinet with Bypass on 42M and 44M Models.



18kW 2 x 2 Model



26kW & 36kW 2 x 2 Model

Two Year Warranty

Electronics:

A full **2 Year On-site Warranty** comes standard, and covers both parts and labor within the continental United States. Factory Authorized Start-up (included) is required for warranty coverage.

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.*

Lighting Types Supported:

(Consult factory for specific application)

- Light Emitting Diode (LED) Lighting
- Incandescent
- Magnetic and electronic fluorescent ballasts
- High power factor compact fluorescent
- High Intensity Discharge (HID)
- High Pressure Sodium (HPS)
- Metal Halide (MH)

Central Inverter System Advantages:

- Single point operations for simplified testing and recordkeeping
- Simplified service for reduced cost of ownership
- Industry standard battery pack for easy maintenance

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***
- ***ServiStar: Providing security beyond our standard warranty***

Why Staco Energy Products?

Because we are your tailored 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 tailored solutions provider, to solve a wide range of electrical power problems. Headquartered in Dayton, Ohio, Staco Energy Products is a wholly owned subsidiary of Components Corporation of America, located in Dallas, Texas.

STACO ENERGY® PRODUCTS CO.

Your Tailored Power Solutions Provider™

Contact Us:
US Toll Free: 866-261-1191
Phone: 937-253-1191
E-mail: sales@stacoenergy.com

For more information about the FirstLine PL 924
www.stacoenergy.com

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