FERRUPS Shipboard SEACOTS UPCS

Product snapshot

Product rating:	18 kVA
Input voltage:	208/240V
Output voltage:	120/208/240V
Frequency:	60 Hz
Configuration:	Cabinet

These products are TAA Compliant

Features

- Meets stringent performance standards for installation in naval combatants
- Tested to MIL-S-901 and MIL-S-167-1
- Delivers bulletproof protection with ferroresonant technology
- Converts power from almost any AC source into computer-grade power
- Prolongs backup time with external battery cabinets
- Conditions incoming power without depleting the battery to preserve battery power for power outages
- Monitors internal logic board, batteries, and other critical components at scheduled intervals for reliable performance
- Saves money on installation costs by minimizing input breaker and wire size with low input THD and high power factor
- Ensures data integrity with complete offering of power management software

FERRUPS SEACOTS rackmount model

Product snapshot

Rating: 3.1 kVA–5 kVA
Input voltage: 120V
Output voltage: 120V
Frequency: 60 Hz
Configuration: Rackmount

The FERRUPS® Shipboard Uninterruptible Power Conditioning System (UPCS) is uniquely designed to support nautical applications. After extensive development and testing, the FERRUPS performs reliably in the severe electrical and physical environment of naval combatants. Consisting of Shipboard Environmentally Adapted Commercial Off-the shelf (SEACOTS) components, the FERRUPS also meets TAA Compliant standards and is available on our GSA contract.

The FERRUPS essentially performs two main functions. First, it regulates incoming power, conditioning it so that the protected equipment connected to the UPCS always receives computer-grade power. This output power is consistently free from power disturbances that can cripple electronic warfare equipment. Both a sudden incident such as a violent surge and a long-term diet of poor quality power can damage electrical equipment on a naval vessel. Second, the FERRUPS contains batteries to provide power during a power outage. Should a power failure occur, the FERRUPS seamlessly switches to battery power without interruption. The FERRUPS can be fitted with multiple battery cabinets for extended battery backup time.

Backed by many years of reliable implementations and an unwavering commitment from Eaton to support Navy shipboard applications, the FERRUPS is a proven power protection system. The FERRUPS provides the highest level of design and performance to keep your critical applications running without interruption.

EATON
Powering Business Worldwide

Computer-grade Power Conditioning and Regulation

The FERRUPS combines true, no-break regulated and conditioned computer-grade power with galvanic isolation. As a result, the effects of spikes, sages, surges, switching transients, and noise are eliminated without the addition of a separate power conditioner or isolation transformer. The FERRRUPS converts power from almost any AC source, while its bi-directional filtering protects the ship's electrical power from electrical noise and harmonics generated by the protected equipment.

Electrically Performance-Tested

The FERRUPS has been electrically performance-tested by the Naval Ship Systems Engineering Station on an ungrounded ship's power system in the land-based test site (LBTS). The FERRUPS meets the criteria for shipboard installation. The rugged FERRUPS has been medium weight shock-tested to MIL-S-901 (three "hits" each on all three axis) for Grade A unrestricted shipboard installation, and tested to MIL-S-167-1 through 50 Hz vibrations for unrestricted shipboard installation. The FERRUPS maintained all operational capabilities throughout the entire test evolution.

Condition-based Maintenance, Self-diagnostics and Monitoring

The FERRUPS incorporates self-diagnostics that test and monitor its inverter, battery charger, logic, and operating limits. Should a system fail or exceed the operating limits, it alerts the user by sounding an audible alarm.

Reliability

Since 1983, the FERRUPS with its patented ferroresonant technology continues to set the standard for reliable single-phase power protection. Now in its sixth generation, this state-of-the-art technology is at the core of each FERRUPS.

Free Software

FERRUPS models include the free Software Suite CD with power management software and a connectivity cable. Free software upgrades and downloads are available on the Eaton Web site (**Eaton.com/powerquality**). The UPCS is equipped with an RS-232 communications port and status contact closures.

Remote Monitoring

The FERRUPS can be directly interfaced to the ship's data network for remote monitoring with the optional BestLink Web/SNMP adapter, which provides SNMP, HTTP, SMTP, WAP, and Telnet compatibility as well as advanced RS-232 communications. The BestLink Web/SNMP adapter allows easy monitoring, management, and if necessary, safe shut down or reboot of equipment connected to the FERRUPS. The adapter expands your ability to control, track, and monitor power conditions throughout the network.

BestLink Web/SNMP Adapter

Compact Solution

All FERRUPS components fit through standard 26-inch x 66-inch ship hatches. Configured system packages include an external bypass, step-down transformer, and battery packs along with the UPCS itself.

Service

The FERRUPS is backed by a 24/365 help desk and available on-site service. In addition, replacement parts can be shipped throughout the world, and operation and maintenance training are also available.

Additional Battery Cabinets

The FERRUPS has multiple MIL-S-901 tested battery cabinets available for extended battery backup times.

BATTERY BACKUP TIMES

	With Battery Pack 23FE-1295	With Battery Pack 5FE-901-R (rackmount model)	
	FE18kVA	**FER 3.1**	**FER 7.0**
Half Load	1 hr. 46 min.	NA	NA
Full Load	37 min.	90 min	30 min

Note: Battery times are approximate and may vary with equipment, configuration, battery age, temperature, etc.

TECHNICAL SPECIFICATIONS - TOWER MODEL[1]

GENERAL	
Part Number	FE18kVA: FE18KINHAAAKL
Power Rating	18 kVA / 15 kW
Input Connection	Hardwired
Input Connection RatingA	FE18kVA: 208V / 105A, 240V / 100A
Output Connection	Hardwired standard

PHYSICAL	
Dimensions (H x W x D)	36.5 x 19.0 x 32.0 in. / 930 x 485 x 815 mm
Weight	FE18kVA: 1362 lb. / 618 kg
Shock Mounts	6 shock mounts per UPS and 12 shock mounts per battery cabinet are required for Mil Spec 901

OPERATION	
Nominal Input Voltage	208/240V
Input Voltage Range	+15%, -20%
Operating Frequency	60 Hz
Nominal Output Voltage	120/208/240V
Output Voltage Regulation	±3% for input voltages of +15% to -20%
Output Voltage Waveform	Sine wave
Output Voltage THD	5% or less at rated kW load
Overload Capacity	150% surge and 125% for 10 minutes online, 150% surge and 110% for 10 minutes on inverter
Transfer Time	0 ms
Nominal Battery Voltage	120 Vdc
Lightning, Surge & Noise Protection	2000:1 spike attenuation using ANSI/IEEE C62.41 and C62.45 Category A and B tests. Common mode: >120 dB. Normal mode: >60 dB.
Efficiency	FE18kVA: 92%
Safety Certification	UL, CSA (cUL)
EMI Compliance	FCC Class A
Testing Standards	MIL-S901, MIL-167-1, ANSI/IEEE C62.41 (1980); ANSI/IEEE 62.45 (1987); IEC 801-2, 801-4, 801-5
Communication	RS-232 serial port (DB-25), plus contact closures

ENVIRONMENTAL	
Operating Temperature	0 to 40°C (32 to 104°F)
Storage Temperature	-20 to 60°C (-4 to 140°F)
Relative Humidity	0 to 95% without condensation
Audible Noise @ 1 meter	FE18kVA: 57 dB
Altitude	3,050 m (10,000 ft.) maximum
Front Panel Indicators	AC Line: Status of AC input source Ready: Availability of battery backup power Charging: Status of battery charging Battery Power: Illuminates when UPS is providing battery power Alarm: General alarm status
Control Panel	Keypad operation to change UPS modes and to display and change parameters
Control Panel Connection	Attached to front of UPS with 6-ft. (1.8m) cable for hand-held operation

BATTERY CHARGERS	
Dimensions	Included within UPS enclosure
Charger Rating	20A
Recharge Time	Four times faster than standard, internal charger rated for 5A

OPTIONAL STEP-DOWN TRANSFORMERS	
Part Number	FE18kVA: T2535183SNAVY
Voltage	480/240V in, 240V out; bulk head mounted
Qualification	Mil Spec 901 qualified

OPTIONAL BYPASS SWITCH	
Part Number	BPE05MBBAS1ALNVY
Style	Make-before-break switch
Qualification	Mil Spec 901 qualified

OPTIONAL BATTERY PACK	
Part Number	23FE-1295
Battery Description	2 strings of 100 Ah batteries, 10 batteries per string
Dimensions (H x W x D)	50 x 29 x 32 in. / 1270 x 737 x 813 mm
Weight	1910 lb. / 866 kg

1. Due to continuing product improvement programs, specifications are subject to change without notice.

TECHNICAL SPECIFICATIONS - RACKMOUNT MODELS[1]

GENERAL

Part Numbers	FER3.1KDDAAAAAR* FER3.1KDDEAAAAR FER7KDDFAAAFL
Power Ratings	FER3.1: 3.1kVA/2.2kW FER7: 5.0kVA/5.0kW
Input Connection	Hardwired
Input Connection RatingA	FER3.1: 120V/35A FER7: 120V/65A
Output Connection	Hardwired standard

*Internal battery

PHYSICAL

Dimensions (H x W x D)	FER3.1: 9.75x16x26.25 (inches)/ 248x406x667(mm) FER7.0: 19x16x26.25 (inches)/ 483x406x667 (mm)
Weight	FER3.1*: 238 lb/108 kg FER3.1: 138 lb/63 kg FER7.0: 330 lb/150 kg

*Internal battery model

OPERATION

Nominal Input Voltage	120V
Input Voltage Range	+15%, -20%
Operating Frequency	60 Hz
Nominal Output Voltage	120V
Output Voltage Regulation	±3% for input voltages of +15% to -20%
Output Voltage Waveform	Sine wave
Output Voltage THD	5% or less at rated kW load
Overload Capacity	150% surge and 125% for 10 minutes online, 150% surge and 110% for 10 minutes on inverter
Transfer Time	0 ms
Nominal Battery Voltage	48 Vdc
Lightning, Surge & Noise Protection	2000:1 spike attenuation using ANSI/IEEE C62.41 and C62.45 Category A and B tests. Common mode: >120 dB. Normal mode: >60 dB.
Efficiency	FER3.1: 91% FER7: 90%
Safety Certification	UL, CSA (cUL)
EMI Compliance	FCC Class A
Testing Standards	MIL-S901, MIL-167-1, ANSI/IEEE C62.41 (1980); ANSI/IEEE 62.45 (1987); IEC 801-2, 801-4, 801-5
Communication	RS-232 serial port (DB-25), plus contact closures

ENVIRONMENTAL

Operating Temperature	0 to 40°C (32 to 104°F)
Storage Temperature	-20 to 60°C (-4 to 140°F)
Relative Humidity	0 to 95% without condensation
Audible Noise @ 1 meter	FER3.1: 52dB FER7: 52 dB
Altitude	3,050 m (10,000 ft.) maximum
Front Panel Indicators	AC Line: Status of AC input source Ready: Availability of battery backup power Charging: Status of battery charging Battery Power: Illuminates when UPS is providing battery power Alarm: General alarm status

OPTIONAL BYPASS SWITCH

Part Number	BPE04MBBAS1ARML
Style	Make-before-break switch
Qualification	Mil Spec 901 qualified

OPTIONAL BATTERY PACK

Part Number	5FE-901-R
Battery Description	1 string of 75 Ah batteries, 4 batteries per string
Dimensions (H x W x D)	10.5 x 19 x 26.5 in. / 268 x 482 x 673 mm
Weight	353 lb. / 160 kg

1. Due to continuing product improvement programs, specifications are subject to change without notice.

Formore information, please visit
MarineUSG

Eaton Corporation
Electrical Sector
1111 Superior Avenue
Cleveland, OH 44114 USA
Eaton.com

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REPUBLIC POWER SYSTEMS
601 Quail Valley Drive
Georgetown, TX 78626
(512) 686-1876 Office
sales@republicpowersystems.com
www.republicpowersystems.com