HIPOWER®

SafeGuard[™] DIESEL GENERATOR SET

HFSG-60

60Hz STANDBY UL2200 & CSA



| VOLTAGE VAC | 120/240V | 120/208V | 139/240V | 277/480V | 347/600V** |
|----------------------------|----------|----------|----------|----------|------------|
| RATING | Standby | Standby | Standby | Standby | Standby |
| PHASE | 1 | 3 | 3 | 3 | 3 |
| PF | 1.0 | 0.8 | 0.8 | 0.8 | 0.8 |
| HZ | 60 | 60 | 60 | 60 | 60 |
| KW | 59.5 | 60 | 60 | 60 | 60 |
| KVA | 59.5 | 75 | 75 | 75 | 75 |
| AMPS | 247 | 208 | 180 | 90 | 72 |
| SKVA@30% VOLTAGE DIP | N/A | N/A | N/A | N/A | N/A |

** 600 Volt configuration not available as UL2200 certified generator

Description

HIPOWER[®] SafeGuard[™] generators are an efficient, reliable and versatile source of mobile electrical power. Designed to operate in the most extreme working conditions. All HIPOWER® SafeGuard[™] Generators combine an innovative design and the use of high quality materials that provide the user with the most dependable power that you can rely on for non-stop power with easy to operate controls. Powered by a radiator-cooled, industrial FPT Diesel engine, which meets current Environmental Protection Agency (EPA) TIER 3 exhaust emission regulations, driving a single bearing, four-pole, three-phase alternator, with IP23 protection. The Prime Power kVA rating for generator set is given with a 125 °C alternator winding temperature rise.

HIPOWER® Features and Benefits

FPT Diesel Engine: Long-life, heavy-duty, 4-cycle, direct injection engine for economy of operation and maximum reliability and durability. Capable of full rated load acceptance in one step.

Cooling: Radiator with belt driven pusher fan.

Air Filter: Heavy-duty replaceable element air-cleaner.

Alternator: Single bearing, rotating field, self-excited, self-ventilated, 12-wire re-connectable, and 4-wire dedicated for single phase version, 60Hz brushless alternator, Class H insulation. Automatic voltage regulator (AVR) providing close voltage regulation and skVA starting capability for electric motor loads. Certification: ISO 8528-5.

HIPOWER[®] Features and Benefits

Enclosure: Fabricated in 11-gauge steel, powder coated with finish that exceeds 1000-hr salt spray test, minimum outside fasteners and four points lift. Vertical air discharge for quiet operation. Wide steel lockable access doors with seals, easy access for maintenance and service activities, lift off stainless steel hinges, corrosion resistant hardware and fasteners.

Exhaust: Low noise, steel residential-type exhaust silencer.

Fuel Filtration: Standard and secondary water separator with visible level on fuel filters.

Controls: Digital control panel with manual and automatic start and stop features. Many programmable automatic functions for local and remote controls with LED lights, tamper proof engine hour recorder. Load Connections: Covered distribution panel for easy access to cable power outlets, receptacles, lugs and Camloks.

Codes and Standards Compliances used where applicable



60kW/60Hz/STANDBY/1800RPM

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APPLICATION DATA

| ENGINE SPECIFICATION | |
|---|-------------------------------------|
| Manufacturer | FPT |
| Model | NEF45SM2X |
| EPA certified | Tier 3 |
| Crankshaft speed | 1,800 rpm |
| Туре | Diesel, 4-stroke |
| Injection | Direct |
| Aspiration | Turbocharged |
| Number of Cylinders | 4 |
| Cylinder arrangement | In-line |
| Displacement CID (liters) | 275 (4.5) |
| Bore and Stroke ins (mm) | 4.1x5.2 (104 X 132) |
| Nominal power | 89.8 hp |
| Cooling | Liquid |
| Governor | Mechanical |
| Governor Regulation Class | ISO 8528 Part 1 Class G3 |
| Frequency Regulation | Isochronous |
| Starting motor & alternator | 12 volt |
| Compression ratio | 17.5:1 |
| Air cleaner type | Dry - light duty, single stage |
| Exhaust gas flow cu. ft./minute (cu.m. /minute) | 487 (13.8) |
| Max. Exhaust temp at full load degrees °F (°C) | 820 (438) |
| Max. permissible back pressure - ins H2O (kPA) | 200 (50) |
| COOLING SYSTEM | |
| Engine cooling air flow - cu. ft./min (cu. m/min) | 119.1 (3.37) |
| Alternator cooling flow - cu. ft./min (cu. m/min) | 9.9 (0.281) |
| Total cooling air flow (engine + alternator + combustion) - cu. ft./min (cu. m/min) | 133.64 (3.78) |
| Total cooling capacity - US gallons (liters) | 4.88 (18.5) |
| Max. Operating Temperature °F (°C) | 110 (43) |
| LUBRICATION SYSTEM | |
| Oil pan capacity - US gallons (liters) | 2.59 (9.8) |
| Oil pan capacity with filter - US gallons (liters) | 3.37 (12.8) |
| Oil cooler | Water - cooled |
| Recommended lubricating oil grade | ACEA E3-E5 - refer to owners manual |
| Oil consumption at full load | < 0.1% of fuel consumption |
| Oil pressure – psi (kPA) | 46 (320) |
| ENGINE ELECTRICAL SYSTEM | |
| Starting motor voltage | 12 volt |
| Cold Cranking Amps - minimum | 92 Amp |
| Battery charging Alternantor | 92 Amp 14V - 90 Amps |
| | |
| Battery capacity | 640 Amps |

HIMOINSA POWER SYSTEMS, INC.

Codes and Standards Compliances used where applicable

16600 S. Theden Street, Olathe, KS 66062 Tel: 913 495 5557 | Fax: 913 495 5575 **www. hipowersystems.com**



APPLICATION DATA

| FUE.SYSTEM Recommende fuel 2 - ULSD Recommende fuel, m, min. D mmin.) 0.19 (9) Fuel supply file, min. D mmin.) 0.19 (9) Max. Iff, fuel pump. type, m (ft) 185 (6) Fuel filter Replaceable Element FUEL COMPSUITION Standby Power Fasting 10% load - US gallons/hour 4.57 75% load - US gallons/hour 3.42 50% load - US gallons/hour 2.28 75% load - US gallons/hour 2.28 76% load - US gallons/hour 3.412 76% load - US gallons/hour 2.28 76% load - US gallons/hour 2.28 76% load - US gallons/hour 3.412 76% load - US gallons/hour 2.28 76% load - US gallons/hour 7.417 76% load - US gallons/hour 7.417 < | | |
|---|--|--|
| Fuel supply line, min. ID mm(in.) 0.19 (9) Fuel return line, min. ID, mm (in.) 0.19 (9) Max. lift, fuel pump, type, m (ft) 185 (6) Fuel filter Replaceable Element FUEL COMPSUNTION Standary Power Rating 100% load - US gailons/hour 4.57 75% load - US gailons/hour 3.42 50% load - US gailons/hour 2.28 20% load - US gailons/hour (liters) - ALTERNATOR SPECIFICATION Marufacturer Marufacturer STAMFORD Marufacturer STAMFORD Model UC1224F - UC1224F - UC1224F - UC1224F Voltages 120/208V - 277/480 - 120/2140V - 347/600V Alternator Type Four pole, rotating field Excitation System Bushless. Power factor 0.8 / 10 Number of leads 12/240V - 347/600V Stator Fitch 0.8 / 10 Stator Fitch 0.8 / 10 Stator Fitch 12/21 Stator Fitch 12/21 Stator Fitch 12/21 Stator Fitch 12/240V - 6 | FUEL SYSTEM | |
| Fuel return line,min. ID, mm (in.) 0.19 (9) Max. Lift, fuel pump, type, m (tt) 186 (6) Fuel filter Replaceable Element FUEL COMPSUITION Standby Power Rating 100% load - US gallons/hour 4.57 75% load - US gallons/hour 2.42 50% load - US gallons/hour (liters) 2.28 25% load - US gallons/hour (liters) - ALTERNATOR SPECIFICATION TOP (Litze + UC1224 | Recommended fuel | # 2 - ULSD |
| Max. lift, fue jump, type, m (th) 185 (6) Fuel filter Replaceable Element FUEL COMPSUNTION Standby Power Rating 100% load - US gallons/hour 4.57 57% load - US gallons/hour 3.42 50% load - US gallons/hour (iters) - ALTERNATOR SPECIFICATION 2.28 Manufacturer STAMFORD Model UC1224F - UC1224E - UC1224F - UC1224E Voltage 120/208V - 277/480 - 120/240V - 347/600V Atternator Type Four pole, rotating field Power factor 88 / 10 Number of leads 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Stator Pitch 2/8 Insulation Class H Vindings - Temperature Rise 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Stator Pitch 2/8 Insulation Class H Vindings - Temperature Rise 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Enclosure (IEC-34-S) Ignel, sealed Coupling Feable disc Anortisseur windings Full V | Fuel supply line, min. ID mm(in.) | |
| Fuel filter Replaceable Element FUEL COMPSUNTION Standby Power Rating 100% load - US gallons/hour 4.57 5% load - US gallons/hour 3.42 50% load - US gallons/hour 2.28 50% load - US gallons/hour (liters) - ALTERNATOR SPECIFICATION - Manufacturer STAMFORD Model UC1224F - UC1224F - UC1224F Votages 120/208V - 277/480 - 120/240V - 347/600V Alternator Type Four pole, rotating field Excitation System Brushless. Power factor 0.8 / 1.0 Number of leads 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Stator Pitch 2/3 Insulation Class H Windings - Temperature Rise 12540° C Enclosure (EC-34-S) IP23 Bearing Single, seald Coupling Full Autiseur windings Full Votage regulation - no load to full load with AS480 AVR 1% TIF <50 | Fuel return line,min. ID, mm (in.) | 0.19(9) |
| FUELCOMPSUNTION Standay Power Pating 100% load - US gallons/hour 4.57 75% load - US gallons/hour 3.42 50% load - US gallons/hour 2.28 50% load - US gallons/hour (liters) 2.28 25% load - US gallons/hour (liters) 3.42 Atternator SPECIFICATION 50% load - UC1224F - UC12 | Max. lift, fuel pump, type, m (ft) | 1.85 (6) |
| 0% load - US gallons/hour 9.42 75% load - US gallons/hour 9.42 50% load - US gallons/hour 2.28 50% load - US gallons/hour (liters) - ALTERNATOR SPECIFICATION Model UC1224F - UC1224E - UC1224F - UC1224E Voltages 120/208V - 277/480 - 120/240V - 347/600V Alternator Type Four pole, rotating field Excitator Type 818/10 Number of leads 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Stator Pitch 2/3 Insulation Class H Windings - Temperature Rise 129/240° C Excitation System 129/240° C Bearing Single, sealed Coupling Fear partice Rise Anore of leads Full Voltage requirements of most industrial and commercial applications TiF 5/0 Rackor Frequency Emissions compliance Keats requirements of most industrial and commercial applications Tine harmonics 5% maximum | Fuel filter | Replaceable Element |
| 3.42 3.42 5% lead - US gallons/hour 2.28 5% lead - US gallons/hour (itters) - ALTERNATOR SPECIFICATION STAMFORD Manufacturer STAMFORD Model UCI224F - UCI224F - UCI224F - UCI224F Voltages 120/208V - 277/480 - 120/240V - 347/600V Atternator Type Four pole, rotating field Excitation System Bushless. Power factor 0.8/1.0 Number of leads 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Stator Pitch 2/3 Insulation Leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Vindings - Temperature Rise 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Stator Pitch 2/3 Undings - Temperature Rise Isolation Enclosure (IEC-34-S) Ip23 Bearing Single, sealed Coupling Full Anortseour windings Full Voltage requirements of most industrial and commercial applications Ratio Frequency Emissions compliance Keats requirements of most industrial and commercial app | FUEL COMPSUNTION | Standby Power Rating |
| 50% load - US gallons/hour 2.28 50% load - US gallons/hour (liters) - ALTERNATOR SPECIFICATION STAMFORD Manufacturer STAMFORD Model UCI224F - UCI224F - UCI224F - UCI224F Voltages 120/208V - 277/480 - 120/240V - 347/600V Alternator Type Four pole, rotating field Excitation System Brushless. Power factor 0.8 / 10 Number of leads 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Stator Pitch 2/3 Insulation Cleas H Windings – Temperature Rise 12/240° C Enclosure (IEC-34-S) IP23 Bearing Single, sealed Coupling Feixble disc Amortisseur windings Full Voltage regulation – no load to full load with AS480 AVR 1% TiF <50 | 100% load – US gallons/hour | 4.57 |
| ATEENATOR SPECIFICATION - ALTERNATOR SPECIFICATION STAMFORD Mondacturer STAMFORD Model UCI224F - UCI224E - UCI224F - UCI224F Voltages 120/208V - 277/490 - 120/240V - 347/600V Alternator Type Four pole, rotating field Excitation System Brushless. Power factor 0.8/ 1.0 Number of leads 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Stator Pitch 0.8/ 1.0 Number of leads 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Stator Pitch 0.8/ 1.0 Number of leads 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Stator Pitch 0.8/ 1.0 Insulation Class H Vindings – Temperature Rise 125/40° C Enclosure (IEC-34-S) IP23 Bearing Single, sealed Coupling Full Voltage regulation – no load to full load with AS480 AVR 1% TIF <50 | 75% load - US gallons/hour | 3.42 |
| Atternation Manufacturer STAMFORD Model UC1224F - UC1224F - UC1224F Voltages 120/2089 - 277/480 - 120/240Y - 347/600V Atternator Type Four pole, rotating field Excitation System Brushless. Power factor 0.8 / 1.0 Number of leads 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Stator Pitch 2/3 Insulation Class H Windings – Temperature Rise 12/40° C Enclosure (IEC-34-S) IP23 Bearing Single, sealed Coupling Full Voltage regulation – no load to full load with AS480 AVR 1 % TIF <50 | 50% load - US gallons/hour | 2.28 |
| MandracturerSTAMFORDModelUCl224F - UCl224E - UCl224E - UCl224EVoltages120/208V - 277/480 - 120/240V - 347/600VAlternator TypeFour pole, rotating fieldExcitation System08/10Power factor08/10Number of leads12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase)Stor Pitch2/3InsulationCless HVindings - Temperature Rise12/40° CEnclosure (IEC-34-S)12/91BearingSingle, sealedCouplingFullVoltage regulation - no lead to full leads vith AS480 AVR1%TIF<50 | 25% load - US gallons/hour (liters) | - |
| Model VCI224F - UCI224F - UCI224F - UCI224E VCI224F - UCI224F - UCI224F - UCI224F VCI224F - UCI224F - UCI224F - UCI224F VCI224F - UCI224F - UCI224F - UCI224F - UCI224F VCI224F - UCI224F - UCI224F - UCI224F - UCI224F - UCI224F VCI224F - UCI224F - UCI224F - UCI224F - UCI224F - UCI224F - UCI224F VCI224F - UCI224F - UCI24F | ALTERNATOR SPECIFICATION | |
| Voltages 120/208V - 277/480 - 120/240V - 347/600V Alternator Type Four pole, rotating field Excitation System Brushless. Power factor 0.8 / 1.0 Number of leads 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Stator Pitch 2/3 Insulation Class H Vindings - Temperature Rise 125/40° C Ectosure (IEC-34-S) IP23 Bearing Single, sealed Coupling Full Anortisseur windings Full Voltage regulation - no load to full load with AS480 AVR ± 1% TF <50 | Manufacturer | STAMFORD |
| Alternator Type Four pole, rotating field Excitation System Brushless. Power factor 0.8 / 1.0 Number of leads 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Stator Pitch 2/3 Insulation Class H Windings - Temperature Rise 125/40° C Enclosure (IEC-34-S) IP23 Bearing Single, sealed Coupling Feukible disc Anortisseur windings Full Vitage regulation – no load to full load with AS480 AVR ± 1% TIF <50 | Model | UCI224F - UCI224E - UCI224F - UCI224E |
| Excitation SystemBrushless.Power factor0.8 / 1.0Number of leads12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase)Stator Pitch2/3InsulationClass HWindings - Temperature Rise125/40° CEnclosure (IEC-34-S)IP23BearingSingle, sealedCouplingFlexible discAmortisseur windingsFullVitage regulation - no load to full load with AS480 AVR± 1%TIF<50 | Voltages | 120/208V - 277/480 - 120/240V - 347/600V |
| Power factor0.8/10Number of leads12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase)Stator Pitch2/3InsulationClass HWindings - Temperature Rise125/40° CEnclosure (IEC-34-S)IP23BearingSingle, sealedCouplingFlexible discAmortisseur windingsFullVotage regulation - no load to full load with AS480 AVR± 1%TIF<50 | Alternator Type | Four pole, rotating field |
| Number of leads 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) Stator Pitch 2/3 Insulation Class H Windings – Temperature Rise 12 /40° C Enclosure (IEC-34-S) IP23 Bearing Single, sealed Coupling Flexible disc Amortisseur windings Full Voltage regulation – no load to full load with AS480 AVR ± 1% TIF <50 | Excitation System | Brushless. |
| Stator Pitch2/3InsulationClass HWindings –Temperature Rise125/40° CEnclosure (IEC-34-S)IP23BearingSingle, sealedCouplingFlexible discAmortisseur windingsFullVoltage regulation – no load to full load with AS480 AVR± 1%TIF<50 | Power factor | 0.8 / 1.0 |
| Insulation Class H Nindings – Temperature Rise 125/40° C Enclosure (IEC-34-S) IP23 Bearing Single, sealed Coupling Flexible disc Amortisseur windings Full Voltage regulation – no load to full load with AS480 AVR ± 1% TIF <50 | Number of leads | 12 leads, reconnectable (Three phase) - 4 leads dedicated (Single phase) |
| NotationEncloseWindings – Temperature Rise125/40° CEnclosure (IEC-34-S)IP23BearingSingle, sealedCouplingFlexible discAmortisseur windingsFullVoltage regulation – no load to full load with AS480 AVR± 1%TIF<50 | Stator Pitch | 2/3 |
| Enclosure (IEC-34-S)IP23BearingSingle, sealedCouplingFlexible discAmortisseur windingsFullVoltage regulation – no load to full load with AS480 AVR± 1%TIF<50 | Insulation | Class H |
| Bearing Single, sealed Coupling Flexible disc Amortisseur windings Full Voltage regulation – no load to full load with AS480 AVR ± 1% TIF <50 | Windings – Temperature Rise | 125/40° C |
| Coupling Flexible disc Amortisseur windings Full Voltage regulation – no load to full load with AS480 AVR ± 1% TIF <50 | Enclosure (IEC-34-S) | IP23 |
| Amortisseur windings Full Voltage regulation – no load to full load with AS480 AVR ± 1% TIF <50 | Bearing | Single, sealed |
| Voltage regulation – no load to full load with AS480 AVR ± 1% TIF <50 | Coupling | Flexible disc |
| TIF <50 | Amortisseur windings | Full |
| Radio Frequency Emissions compliance Meets requirements of most industrial and commercial applications Line harmonics 5% maximum STANDARD ACCESSORIES • Main line ABB UL listed circuit breaker for overload protection | Voltage regulation - no load to full load with AS480 AVR | ± 1% |
| Line harmonics 5% maximum STANDARD ACCESSORIES • Main line ABB UL listed circuit breaker for overload protection | TIF | <50 |
| STANDARD ACCESSORIES • Radiator with pusher fan • Main line ABB UL listed circuit breaker for overload protection | Radio Frequency Emissions compliance | Meets requirements of most industrial and commercial applications |
| Radiator with pusher fan Main line ABB UL listed circuit breaker for overload protection | Line harmonics | 5% maximum |
| | STANDARD ACCESSORIES | |
| Control Panel CEM7 (See over for details) Heated Control Panel | Radiator with pusher fan | Main line ABB UL listed circuit breaker for overload protection |
| | Control Panel CEM7 (See over for details) | Heated Control Panel |

| OPTIONAL ACCESSORIES | | | |
|--------------------------------|--------------------------|--|--|
| Battery with Cables | Anti-Condensation Heater | | |
| Battery Blanket | Water Jacket heater | | |
| • 6 Amp Battery charger, 12VDC | • 24h - ULC142 fuel tank | | |
| • Fuel Tank raiser | | | |





CONTROL SYSTEMS STANDARD FEATURES - Generator Digital Control Panel

HIPOWER[®] Control Panel: Hipower digital controller with auto and manual start capability. Digital readout for: volts between each phase & neutral, volts between phases, amps per phase, frequency, kW and kVA power, power factor, KW hour with accumulation by day, month and year, fuel reserve, oil pressure, coolant temperature, battery volts and charging alternator volts, engine speed, hours running. Engine alarms for high coolant temperature, low oil pressure, emergency stop activated, battery charging failure, low coolant level, low fuel level, over-speed, under-speed and low battery volts.

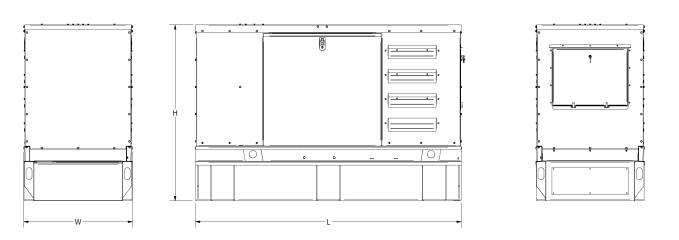
Engine alarms included: High coolant temperature, low oil pressure, low coolant level, unexpected shutdown, low fuel level, stop failure, low battery voltage, battery charging alternator failure, over-speed, under-speed, start failure and emergency stop. Support of engines with ECU (J1939, Modbus and other proprietary interfaces); alarm codes displayed in text form.



Alternator alarms included: Overload, unbalanced voltage, over voltage, under voltage, over frequency, under frequency, short circuit and reverse power.

DIMENSIONS, WEIGHTS & SOUND LEVELS

ENCLOSED SET



| CONFIGURATION | Fuel Tank Data (Standard) | | Generator Data * | | | | |
|---------------|---------------------------|-----------------|------------------|-----------|--------------|----------------|-----|
| | Run Time Hours | Capacity (Gals) | L = Length | W = Width | H = Height | Weight Ibs | dBA |
| Enclosed Set | 24* | 110* | 100″ | 36″ | 47" - (62"*) | 2635 - (3535*) | 73 |

* Optional 24h ULC142 fuel tank



Intertek Conforms to UL STD 2200 Certified to CSA STD C22.2#100 Certified to CSA STD C22.2#14

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Codes and Standards Compliances used where applicable

