HIPOWER®

SafeGuard[™] DIESEL GENERATOR SET

HYSG-20

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	20	20	20	20	20
KVA	20	25	25	25	25
AMPS	125	69	60	30	24
SKVA@30% VOLTAGE DIP	N/A	N/A	N/A	N/A	N/A

20kW/60Hz/STANDBY/1800RPM

** 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 YANMAR Diesel engine, which meets current Environmental Protection Agency (EPA) TIER 4 Interim 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

YANMAR 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.





APPLICATION DATA

ENGINE SPECIFICATION	
Manufacturer	YANMAR
Model	4TNV84T BGGEH
EPA certified	Tier 4 i
Crankshaft speed	1,800 rpm
Туре	Diesel, 4-stroke
Injection	Direct
Aspiration	Natural
Number of Cylinders	4
Cylinder arrangement	In-line
Displacement CID (liters)	121.7 (1.995)
Bore and Stroke ins (mm)	3.3 X 3.54 (84 X 90)
Nominal power	35.9 hp
Cooling	Liquid
Governor	Electronic
Governor Regulation Class	ISO 8528 Part 1 Class G3
Frequency Regulation	Isochronous
Starting motor & alternator	12 volt
Compression ratio	19.0:1
Air cleaner type	Dry - light duty, single stage
Exhaust gas flow cu. ft./minute (cu.m. /minute)	265.5 (7.52)
Max. Exhaust temp at full load degrees °F (°C)	1040 (560)
Max. permissible back pressure - ins H2O (kPA)	47.24 (11.75)
COOLING SYSTEM	
Engine cooling air flow - cu. ft./min (cu. m/min)	34.8 (1.0)
Alternator cooling flow - cu. ft./min (cu. m/min)	4.18 (0.122)
Total cooling air flow (engine + alternator + combustion) - cu. ft./min (cu. m/min)	41.86 (1.203)
Total cooling capacity - US gallons (liters)	1.5 (5.8)
Max. Operating Temperature °F (°C)	131 (55)
LUBRICATION SYSTEM	
Oil pan capacity - US gallons (liters)	1.9 (7.2)
Oil pan capacity with filter - US gallons (liters)	1.95 (7.4)
Oil cooler	Water - cooled
Recommended lubricating oil grade	SAE 10W30 - API (CF, CF-4, CI-4) - refer to owners manual
Oil consumption at full load	0.14% of fuel
Oil pressure – psi (kPA)	49.74 (342.9)
ENGINE ELECTRICAL SYSTEM	
Starting motor voltage	12 volt
Cold Cranking Amps - minimum	66 Amp
	oo Amp
Battery charging Alternantor	740 Amon
Battery capacity	740 Amps

HIMOINSA POWER SYSTEMS, INC.

16600 S. Theden Street, Olathe, KS 66062 Tel: 913 495 5557 | Fax: 913 495 5575 **www. hipowersystems.com** Codes and Standards Compliances used where applicable



APPLICATION DATA

FUE.SYSTM # 2 - U.SD Recommende fuel # 2 - U.SD Ready provide mention 0.191.9) Fuel stupp (type, type, ntfn 1851.6) Fuel filter Replaceable Ferment EVEL COMPSUTION Standard Power Fating 100% load - US gallons/hour 1.87 10% load - US gallons/hour 1.87 10% load - US gallons/hour 1.02 25% load - US gallons/hour 1.02 25% load - US gallons/hour 0.08 a 4UERMORS PECIFICATION 0.83 Manufacturer STAMFORD Manufacturer STAMFORD Model SU2-M1 - PI144D(600V) Vitages 20208V - 277/480 - 120/240V - 347/600V Alternator Type Four pole, rotangi field Excitation System Bushless Power fector 08/10 Number of leads 12/240V - 347/600V Stator Pitch 2/3 Insulton Cass H Number of leads 12/240 - 120/240V - 347/600V Stator Pitch 2/3 Stator Pitch 12/240<		
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 (th) 186 (6) Fuel filter Replaceable Element FUEL COMPSUNTION Standay Power Rating 100% load - US galons/hour 1.97 5% load - US galons/hour 1.02 25% load - US galons/hour (liters) 0.83 ALTERNATOR SPECIFICATION 0.83 Manufacturer STAMFORD Model S012-M1 - P1144D(600V) Votages 1.02/1.02/1.02/1.02/1.02/1.02/1.02/1.02/	FUEL SYSTEM	
Fuel return line, min. ID, mm (in.) 0.919 9 Max. lift, Liel pump, type, m (it) 18616 0 Fuel filter Replaceable Element FUEL COMPSUITION Standay Access Raing 100% load - US galons/hour 197 75% load - US galons/hour 1.02 25% load - US galons/hour (liters) 0.83 ALTENATOR SPECIFICATION 0.83 Autardacturer 0.83 Manufacturer 0.82/M1 · P1144D(600') Model S02/M1 · P1144D(600') Vitages 102/Vitage - 207/H80 · 120/ZdVV · 347/R00V Alternator Type Four pole, rotating field Excitation System 0.8/10 Number of leads 1/2 Stator Phtch 2/3 Insulation 1/2 Marings - Temperature Rise 1/2 Enclosure IIEC-34-S) 1/2 Berling Single, sealed Coupling Fuel decide Marings - Temperature Rise 1/2 Enclosure IIEC-34-S) 1/2 Berling Single, sealed Vitage regulation - no load to		
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25% load-US gallons/hour (liters) 0.83 ALTERNATOR SPECIFICATION STAMFORD Mondfacturer STAMFORD Model S0.2-M1 - P1144D/600V) 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 Class H Vindings – Temperature Rise 129/40° C Enclosure (IEC-34-S) IP23 Bearing Single, sealed Coupling Fuel leads Voltage regulation – no load to full load with AS480 AVR 1 % TIF <50	75% load - US gallons/hour	1.47
ATERNATOR SPECIFICATIONManufacturerSTAMFORDModelS0L2-M1 - P1144D(600V)Voltages120/208V - 277/480 - 120/240V - 347/600VAlternator TypeFour pole, rotating fieldExcitation SystemBrushlessPower factor0.8 / 1.0Number of leads12 leads, reconnectable (three phase) - 4 leads dedicated (Single phase)Stator Pitch2/3InsulationClass HVindings – Temperature Rise12/40° CEacingSingle, sealedCouplingFlexible discAmortisseur windingsFullVitage regulation – no load to full load with AS480 AVR1 %Tif<50	50% load - US gallons/hour	1.02
ManufacturerSTAMFORDModelS0L2-M1-PI144D(600V)VoltagesS0/208V-277/480-120/240V-347/600VAlternator TypeFour pole, rotating fieldExcitation SystemRushlessPower factor0.8/1.0Number of leads2/3Stator Pitch2/3InsulationCleas HVindings – Temperature Rise126/0° CEarlingSingle, sealedCouplingFile discAnortisseur windingsFileVitage regulation – no lead to full load with AS480 AVR41%TF<50	25% load - US gallons/hour (liters)	0.83
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Voltages20/208V - 277/480 - 120/240V - 347/600VAlternator TypeFour pole, rotating fieldExcitation SystemBrushlessPower factor0.8 / 1.0Number of leads12 leads, reconnectable (three phase) - 4 leads dedicated (Single phase)Stator Pitch2/3InsulationClass HVindings - Temperature Rise12/2/0° CEnclosure (IEC-34-S)IP23BearingSingle, sealedCouplingFullAnortisseur windingsFullVitage regulation - no load to full load with AS480 AVR4 1%TIF<50	Manufacturer	STAMFORD
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Excitation SystemBrushlessPower 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, sealedCouplingFexible discAmortisseur windingsFullVoltage 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 HVindings – Temperature Rise125/40° CEnclosure (IEC-34-S)IP23BearingSingle, sealedCouplingFlexible discAmortisseur windingsFullVoltage regulation – no load to full load with AS480 AVR± 1%TIF<50	Alternator Type	Four pole, rotating field
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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			





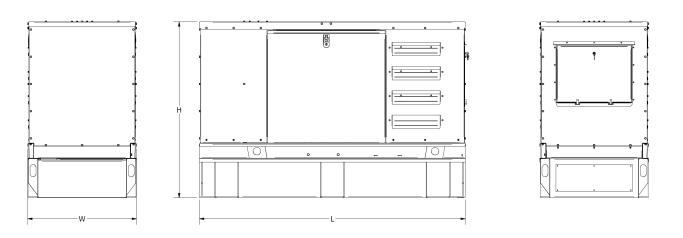
CONTROL SYSTEMS STANDARD FEATURES - Generator Digital Control Panel

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.

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*	50*	78″	30″	37" - (49"*)	1510 - (2110*)	66

* Optional 24h ULC142 fuel tank



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





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