# HIPOWER® SafeGuard™ DIESEL GENERATOR SET

MODEL

# HYSG-20

60Hz STANDBY **UL2200 & CSA**

20kW/60Hz/STANDBY/1800RPM


| 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 |

** 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.

**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

| ENGINE SPECIFICATION | |
|---|---|
| Manufacturer | YANMAR |
| Model | 4TNV84T BGGEH |
| EPA certified | Tier 4 i |
| Crankshaft speed | 1,800 rpm |
| Type | 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 |
| Battery charging Alternantor | |
| Battery capacity | 740 Amps |

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| FUEL SYSTEM | | |
|---|---|---|
| Recommended fuel | # 2 - ULSD | |
| 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) | 1.85 ( 6 ) | |
| Fuel filter | Replaceable Element | |
| FUEL COMPSUNTION | Standby Power Rating | |
| 100% load – US gallons/hour | 1.97 | |
| 75% load - US gallons/hour | 1.47 | |
| 50% load - US gallons/hour | 1.02 | |
| 25% load - US gallons/hour (liters) | 0.83 | |
| **ALTERNATOR SPECIFICATION** | | |
| Manufacturer | STAMFORD | |
| Model | S0L2-M1 - PI144D(600V) | |
| 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 | |
| Windings – 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 | |
| Radio Frequency Emissions compliance | Meets requirements of most industrial and commercial applications | |
| Line harmonics | 5% maximum | |
| **STANDARD ACCESSORIES** | | |
| • 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 | |

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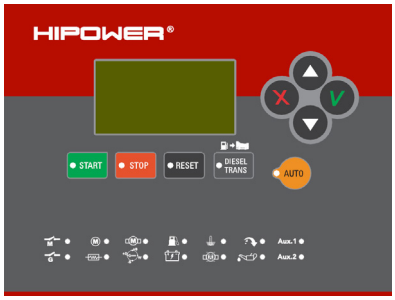
## CONTROL SYSTEMS STANDARD FEATURES - Generator Digital Control Panel

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.

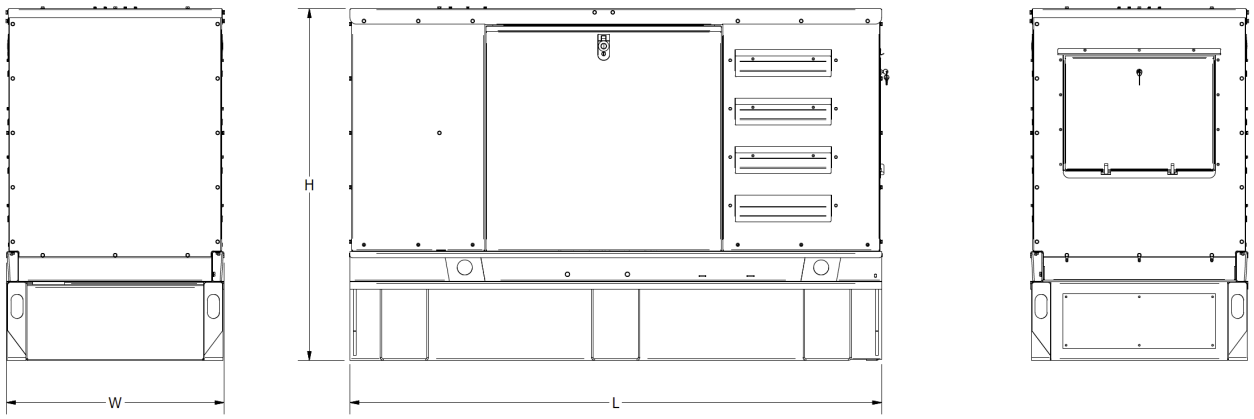
Engine alarms included: High coolant temperature, low oil pressure, low coolant level, unexpected shutdown, low fuel level, stop failure, low battery voltage, battery charging alternator failure, over-speed, under-speed, start failure and emergency stop. Support of engines with ECU (J1939, Modbus and 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 lbs | dBA |
| Enclosed Set | 24* | 50* | 78″ | 30″ | 37″ - (49″*) | 1510 - (2110*) | 66 |

* 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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