

SENTRY-PRO POWER SYSTEMS

By Gillette Generators, Inc.

FPT IVECO DIESEL ENGINE GENERATOR SET

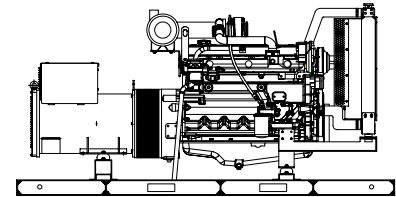
MODEL
SPID-2500
60 HERTZ

KW POWER RATINGS RANGE FOR 60 HZ

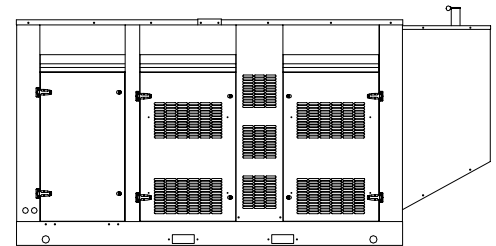
Model	HZ	STANDBY 130°C RISE
SPID-2500-60 HERTZ	60	240-250

STANDARD FEATURES

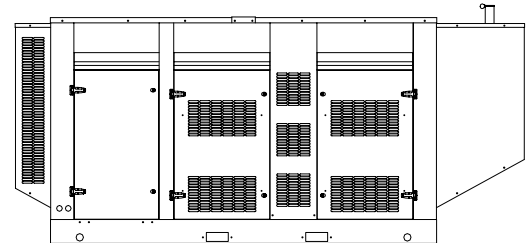
- All generator sets are USA prototype built and thoroughly tested. Production models are USA factory built and 100% load tested.
- All generator sets meet NFPA-110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- All generators are UL-1446 and UL-2200 ready certified.
- Solid state, frequency compensated voltage regulation is standard on all gen-sets.
- Electronic engine governor for precise isochronous frequency regulation.
- SENTINEL "COMMAND" digital controller allows programming to basic engine functions in the field. Controller has stop-manual-auto mode and engine shutdowns, signaled by full text LCD indicators.
- Heavy Duty 100%-125% rated Circuit Breakers is standard on all gen-sets.
- All generator set control systems components and accessories provide a 1-year limited warranty at time of initial start-up. Generators and engines are governed by separate warranties.
- "OPEN" Generator Sets: There is no enclosure, so gen-set must be placed within a weather protected area, un-inhabited by humans or animals, with proper ventilation. Muffler and flexible exhaust hose are not supplied, as installation requirements are not known. However, these two items are available as optional equipment.
- "STANDARD" Aluminum Housing: Full weather protection and above average sound attenuation for normal applications. Residential grade muffler is standard.
- "SUPER-SILENT" Aluminum Housing: Full weather protection and superior sound attenuation for specific low noise applications. Critical grade muffler is standard.



"OPEN" GEN-SET



"STANDARD" HOUSED GEN-SET



"SUPER-SILENT" HOUSED GEN-SET

GENERATOR RATINGS

GENERATOR MODEL	VOLTAGE		PH	HZ	130°C RISE STANDBY RATING		POWER LEAD CONNECTIONS
	L-N	L-L			KW/KVA	AMP	
SPID-2500-1-1	120	240	1	60	240/240	1000	4 LEAD DEDICATED 1 PH
SPID-2500-3-2	120	208	3	60	250/312.5	868	12 LEAD LOW WYE
SPID-2500-3-3	120	240	3	60	250/312.5	753	12 LEAD HIGH DELTA
SPID-2500-3-4	277	480	3	60	250/312.5	376	12 LEAD HIGH WYE
SPID-2500-3-5	127	220	3	60	250/312.5	821	12 LEAD LOW WYE

RATINGS: All single phase gen-sets are dedicated 4 lead windings, rated at unity (1.0) power factor. All three phase gen-sets are 12 lead windings, rated at .8 power factor. 130° C "STANDBY RATINGS" are strictly for gen-sets that are used for back-up emergency power to a failed normal utility power source. This standby rating allows varying loads, with no overload capability, for the entire duration of utility power outage. All gen-set power ratings are based on temperature rise measured by resistance method as defined by MIL-STD 705C and IEEE STD 115, METHOD 6.4.4. All generators have class H (180°C) insulation system on both rotor and stator windings. All factory tests and KW/KVA charts shown above are based 130°C (standby) R/R winding temperature, within a maximum 40°C ambient condition. Generators operated at standby power ratings must not exceed the temperature rise limitation for class H insulation system, as specified in NEMA MG1-22.40. Specifications & ratings are subject to change without prior notice.

APPLICATION AND ENGINEERING DATA FOR MODEL SPID-2500-60 HZ

GENERATOR SPECIFICATIONS

Manufacturer..... Marathon Electric Generators
 Model & Type.....572RSL4025 4 Pole, 12 Lead, Single Phase
 432CSL6210 4 Pole, 12 Lead re-connectable, Three Phase
 Exciter.....Brushless, shunt excited
 Voltage Regulator.....Solid State, HZ/Volts
 Voltage Regulation.....½%, No load to full load
 Frequency.....Field convertible, 60 HZ to 50 HZ
 Frequency Regulation.....± ½% (1/2 cycle, no load to full load)
 Unbalanced Load Capability..... 100% of standby amps
 One Step Load Acceptance..... 100% of nameplate rating
 Total Stator and Load Insulation.....Class H, 180°C
 Temperature Rise..... 130°C R/R, standby rating @ 40°C amb.
 1 Ø Motor Starting @ 30% Voltage Dip (240V).....440 kVA
 3 Ø Motor Starting @ 30% Voltage Dip (208-240V).....520 kVA
 3 Ø Motor Starting @ 30% Voltage Dip (480V).....700 kVA
 Bearing..... 1, Pre-lubed and sealed
 Coupling.....Direct flexible disc
 Total Harmonic Distortion..... Max 3½% (MIL-STD705B)
 Telephone Interference Factor..... Max 50 (NEMA MG1-22)
 Deviation Factor..... Max 5% (MIL-STD 405B)
 Alternator.....Self ventilating and drip-proof
 Ltd. Warranty Period..... 24 Months from start-up date or
 1000 hours use, first to occur.

GENERATOR FEATURES

- World Renown Marathon Electric Generator having UL-1446 certification.
- Full generator protection with **SENTINEL “COMMAND”** controller, having UL-508 certification.
- Automatic voltage regulator with over-excitation, under-frequency compensation, under-speed protection, and EMI filtering. Entire solid-state board is encapsulated for moisture protection.
- Generator power ratings are based on temperature rise, measured by resistance method, as defined in MIL-STD 705C and IEEE STD 115, Method 6.4.4.
- Power ratings will not exceed temperature rise limitation for class H insulation as per NEMA MG1-22.40.
- Insulation resistance to ground, exceeds 1.5 meg-ohm.
- Stator receives 2000 V. hi-potential test on main windings, and rotor windings receive a 1500 V. hi-potential test, as per MIL-STD 705B.
- Full amortisseur windings with UL-1446 certification.
- Complete engine-generator torsional acceptance, confirmed during initial prototype testing.
- Full load testing on all engine-generator sets, before shipping.
- Single phase generators are equipped with permanent magnet generators (PMG). All 3 phase generators require PMG feature to be purchased as an option.

ENGINE SPECIFICATIONS AND APPLICATIONS DATA

ENGINE

Manufacturer.....FPT IVECO MOTORS
 Model and Type..... CURSOR C87-TEID, 4 cycle, liquid Cooled
 Aspiration..... Turbo After Cooler, Air to Air
 Charged Air Cooled System Air to Air
 Cylinder Arrangement..... 6 Cylinders, In-Line
 Displacement Cu. In. (Liters).....529(8.7)
 Bore & Stroke in (Cm).....4.61 x 5.31 (11.7 x 13.5)
 Compression Ratio..... 16.5:1
 Main Bearings..... Tin Overlay with Babbit Backing
 Cylinder Head.....Cast Iron with overhead Cam
 Pistons.....Aluminum Alloy with Graphite Coating
 Crankshaft.....Induction Hardened, Heat Treated Forged
 Valves..... 2/ Cylinder, Heat Treated and Hardened Ex. Valves
 Governor..... Electronic, EDCT Bosh EC31
 Frequency Regulation.....± 1/4%
 Air Cleaner.....Dry, Replaceable Cartridge
 Engine Speed..... 1800 rpm
 Max Power, bhp (kwm) Standby 369 (276)
 BMEP: psi (BAR) Standby..... 326.4 (22.2)
 Ltd. Warranty Period.....5 Years or 2000 hrs, first to occur
 With max. usage of 400 HRS./ YR

FUEL SYSTEM

Type..... Diesel Fuel Oil (ASTM No. 2-D)
 Combustion System..... Direct Injection
 Fuel Injection Pump..... Electronic, Bosh EDC7 UC31
 12 VDC air intake heaters.....Standard Equipment
 Fuel Filter with Water Separator.....Yes

FUEL CONSUMPTION

GAL/HR (LITER/HR)	STANDBY
100% LOAD	17.7 (67.0)
75% LOAD	13.3 (50.3)
50% LOAD	8.9 (33.5)

OIL SYSTEM

Type..... Full Pressure
 Oil Pan Capacity qt. (L).....24.3 (23)
 Oil Pan Cap. W/ filter qt. (L).....29.6 (28.0)
 Oil Filter..... 1, Replaceable Spin-On

ELECTRICAL SYSTEM

Ignition System.....Electronic
 Eng. Alternator/Starter: 24 VDC, negative ground, 90 amp/hr.
 Recommended battery to -18°C (0° F):(2) 12 VDC, BCI# 27,
 Max. Dimensions: 12”lg x 6 3/4” wi x 9” hi, with standard round
 posts. Min output 700 CCA. Battery tray (max. dim. at 12”lg x
 7”wi). This model has (2) battery trays, (2) hold down straps,
 (2) sets of battery cables, and (1) battery charger. Installation of
 (2) 12VDC starting batteries connected in series for 24VDC
 output is required, with possible higher AMP/HR rating, as
 described above, if the normal environment temperature
 averages -13° F (-25°C) or cooler.

CERTIFICATIONS

All engines are CARB and EPA emissions certified. All stationary diesel engines are Tier III compliant.

APPLICATION AND ENGINEERING DATA FOR MODEL SPID-2500-60 HZ

SOUND LEVELS

COOLING SYSTEM

Type of System	Air to Air, Charged Air Cooler
Coolant Pump	Pre-lubricated, self-sealing
Cooling Fan Type (no. of blades)	Pusher (8)
Fan Diameter inches (cm).....	27.5 (70)
Ambient Capacity of Radiator °F (°C).....	125 (51.6)
Engine Jacket Coolant Capacity Qt. (L)	16 (15)
Radiator Coolant Capacity Qt. (L).....	51 (48)
Water Pump Capacity gpm (L/min).....	76 (287.5)
Heat Reject Coolant: Btu/min	6809
Air to Air Heat Reject, BTU/min.	3625
Low Radiator Coolant Level Shutdown.....	Standard
Note: Coolant temp. shut-down switch setting at 212°F (100°C) with 50/50 (water/antifreeze) mix.	

COOLING AIR REQUIREMENTS

Combustion Air cfm (m ³ /min)	734 (20.5)
Max Air Intake Restrictions:	
Clean Air Cleaner, KPA (MBAR).....	2 (20)
Max. Temp. out of Charger Air Cooler	
@ 77° F (25°C), Amb. Air °F (°C).....	180 (82)
Radiator Cooling Air, SCFM (m ³ /min).....	15,295 (435)

EXHAUST SYSTEM

Exhaust Outlet Size.....	4"
Max. Back Pressure in KPA (MBAR)	5 (50)
Exhaust Flow, at rated KW, Kg/HR.....	1557
Exhaust Temp, PRP (77 °F) °F (°C)	932 (500)

	Open Set	Std. Encl.	Super-Silent Encl.
dB(A), Residential Muffler, no load	96	93	n/a
dB(A), Residential Muffler, full load.....	97	94	n/a
dB(A), Critical Muffler, no load	93	88	87
dB(A), Critical Muffler, full load.....	94	90	88

Note: Open sets (no enclosure) has no furnished muffler system due to unknown job-site applications. Standard enclosure has installed residential muffler. Super-Silent enclosure has installed critical muffler. Standard enclosure sets can be upgraded from residential to critical muffler. Sound tests are averaged from several test points and taken at 23 ft. (7 m) from source of noise

DERATE GENERATOR FOR ALTITUDE

3% per 1000 ft.(305 meters) above 3000 ft. (914 meters) from sea level.

DERATE GENERATOR FOR TEMPERATURE

2% per 10°F (12°C) above 85°F (30°C)

DIMENSIONS AND WEIGHTS

	Open Set	Standard Enclosure	Super-Silent Enclosure
Length in (cm).....	132 (335)	162 (412)	174 (442)
Width in (cm).....	52 (132)	52 (132)	52 (132)
Height in (cm).....	65 (165)	76 (193)	76 (193)
1 Ø Net Weight lbs (kg).....	5715(2592)	6615 (3001)	6875 (3118)
1 Ø Ship Weight lbs (kg).....	5990 (2714)	6920 (3139)	7220 (3275)
3 Ø Net Weight lbs (kg).....	5165(2342)	6056 (2747)	6385 (2896)
3 Ø Ship Weight lbs (kg).....	5440 (2467)	6370 (2889)	6730 (3053)

SENTINEL COMMAND DIGITAL MICROPROCESSOR CONTROLLER



SENTINEL COMMAND

The “**Command**” controller is an auto start control module and the upgrade “**Command Elite**” controller is an auto mains (utility) failure, module, for single gen-set applications.

Both controllers include a backlit LCD display which continuously displays the status of engine and generator at all times. Both will also monitor speed, frequency, voltage, current, oil pressure, coolant temp., and fuel levels. These modules have been designed to display warning and shut down status. They also include: (6) digital inputs • (3) analog inputs • (6) outputs • voltage monitoring (utility mains included on “Command Elite”) • (10) event logs • configurable timers • automatic shutdown or warning during fault detection via red LED indicators • remote start (on or off load) • engine preheat • advanced metering capability • hour meter • text LCD displays • protected solid state outputs • test buttons for: stop/reset • manual mode • auto mode • lamp test • start button

This controller (installed on all generator models as standard equipment) can be accessed via PC laptop using any standard USB cable and downloadable software.

COMMAND ELITE CONTROLLER UPGRADE



SENTINEL COMMAND ELITE CONTROLLERS :

The “**Command Elite**” controller is an auto-mains (utility) failure control module that has almost all the Sentinel “**Command**” controller features, plus the additional capability of being able to monitor a mains (utility) power supply. It is also used where remote annunciation is required.

All controllers are simple to operate and feature a user friendly menu layout for improved clarity. Enhanced features include a real time clock, better event, and performance monitoring, plus Ethernet communications for lower cost monitoring.

STANDARD AND OPTIONAL FEATURES FOR MODEL SPID-2500-60 HZ

STANDARD FEATURES

CONTROL PANEL:

- SENTINEL "COMMAND" digital microprocessor with logic allows programming in the field. Controller has:
- STOP-MANUAL-AUTO modes and automatic engine shutdowns, signaled by full text LCD indicators:
 - Low oil pressure
 - High engine temp
 - Low Radiator Level
 - Three auxiliary alarms
 - Battery fail alarm
 - Engine fail to start
 - Engine over speed
 - Engine under speed
 - Over & under voltage
- Also included is tamper-proof engine hour meter

ENGINE:

- Fuel filter and water separator
- Full flow Oil filter
- Air filter
- Fuel pump
- Oil pump
- Solenoid type starter motor
- Hi-temp radiator
- Jacket water pump
- Thermostat
- Pusher fan and guard
- Exhaust manifold
- Residential Silencer
- Electronic Governor
- 12 VDC battery charging alternator
- Flexible fuel and exhaust connectors
- Vibration isolators
- Open coolant recovery system with 50/50 water to anti-freeze mixture
- flexible oil & radiator hose
- Shut-down sensors for low oil pressure, high coolant temp., low coolant level, high ambient temp.

AC GENERATOR SYSTEM:

- AC generator
- Shunt excited
- Brushless design
- Circuit Breaker installed and wired to gen-set
- Direct connection to engine with flex disc
- Class H, 180°C insulation
- Self ventilated
- Drip proof construction
- UL Certified

VOLTAGE REGULATOR:

- 1% Voltage regulation
- EMI filter
- Under-speed protection
- Over-excitation protection
- Total encapsulation

DC ELECTRICAL SYSTEM:

- Battery tray
- Battery cables
- Battery hold down straps
- 3-stage battery charger with float, absorption, & bulk automatic charge stages

WEATHER/SOUND PROOF ALUMINUM HOUSING

CORROSION RESISTANT PROTECTION CONSISTING OF:

- 9 Heated And Agitated Wash Stages.
- Zinc Phosphate Etching-coating Stage
- Final Baked On Enamel Powder Coat

ACCESSORY ITEMS

- Engine Coolant Heater with automatic 60°F on, 80°F off, thermostat
- Starting Battery Heater Blanket with automatic 60°F on, 80°F off, thermostat
- Battery Charger Upgrade, heavy duty float type, 12 VDC at max. charge, with ammeter on charger.
- Radiator for dirty environment
- External Permanent Magnet Generator (PMG) for increased induction motor starting capacity, on 1Ø or 3Ø sets, and to meet NFPA-110 requirements.
- Exhaust Silencer Critical Grade or Hospital Grade (Replacing standard Residential Grade).
- Double-wall Diesel Fuel Tanks with UL-142 rating.
- Single or Three Phase Windings, 50 or 60 Hertz.
- All stainless steel weather and sound deadening housing for coastal areas.
- SENTINEL COMMAND ELITE Controller with all features of Sentinel COMMAND, plus allowing full telemetry remote control annunciation, and utility power monitoring.
- Remote Annunciator for up to (10) reporting functions. An additional relay expansion module, plus a second Annunciator adds another (10) reporting functions. Note: SENTINEL COMMAND ELITE must be selected, to achieve remote annunciation.

