Gaseous Fuel Generator Set
PSI 8.8 Engine Series

➢ Specification Sheet
Model GFPA EPA SI NSPS Certified

KW(KVA) @ 0.8 P.F.	
Compression Ratio	60 HZ-1800 RPM Standby
10:1 (note 1)	150 (188)
10:1 (note 2)	140 (175)

Notes:
(1) Natural Gas Rating
(2) LP Rating

NOTE: This engine is EPA certified and must be operated as outlined in the supplied O&M manual

Fuel Application Guide	
Compression Ratio	10:1
Dry Processed Natural Gas	Yes
Propane (HD-5)	Yes
All gases such as field gas, digester and sewage gas will require an analysis of the specified gas and pre-approval from PSI. Consult your Cummins Distributor for details.	

Description

The Cummins NPower GF-series commercial generator set is a fully integrated power generation system providing optimum performance, reliability, and versatility for stationary standby applications.

A primary feature of the GF GenSet is strong motor-starting capability and fast recovery from transient load changes. The torque-matched system includes a heavy-duty PSI 4-cycle spark ignited engine, an AC alternator with high motor-starting kVA capacity, and an electronic voltage regulator with three phase sensing for precise regulation under steady-state or transient loads. The GF GenSet accepts 100% of the nameplate standby rating in one step. *

The standard PowerCommand® digital electronic control is an integrated system that combines engine and alternator controls for high reliability and optimum GenSet performance.

Optional weather-protective housings and coolant heaters shield the generator set from extreme operating conditions. Environmental concerns are addressed by low exhaust emission engines, sound-attenuated housings, and exhaust silencers. A wide range of options, accessories, and services are available, allowing configuration to your specific power generation needs.

Every production unit is factory tested at rated load and power factor. This testing includes demonstration of rated power and single-step rated load pickup. Cummins NPower manufacturing facilities include quality standards, emphasizing our commitment to high quality in the design, manufacture, and support of our products. The generator is CSA certified. The PowerCommand control is UL508 Listed.

All Cummins NPower generator sets are backed by a comprehensive warranty program and supported by a worldwide network of 170 distributors and service branches to assist with warranty, service, parts, and planned maintenance support.

Features

PSI Heavy-Duty Engine - Rugged 4-cycle industrial spark ignited engine delivers reliable power, low emissions, and fast response to load changes.

Alternator - Several alternator sizes offer selectable motor-starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads, fault-clearing short-circuit capability, and class H insulation. The alternator electrical insulation system is UL1446 Recognized.

Control Systems - The PowerCommand electronic control is standard equipment and provides total genset system integration, including automatic remote starting/stopping, precise voltage regulation, alarm and status message display, AmpSentry™ protection, output metering, auto-shutdown at fault detection, and NFPA 110 compliance. PowerCommand control is Listed to UL508.

Cooling System - Standard cooling package provides reliable running at the rated power level, at up to 104°F ambient temperature.

Housings - Optional weather-protective housings are available.

Certifications - Generators are designed, manufactured, tested, and certified to relevant UL, NFPA, ISO, IEC, and CSA standards.

Warranty and Service - Backed by a comprehensive warranty and worldwide distributor service network.

*Adequate fuel pressure and volume must be provided. Engines must be equipped with a functioning jacket water heater.

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Generator Set

The general specifications provide representative configuration details. Consult the outline drawing for installation design.

Specifications – General

See outline drawing for installation design specifications.

Unit Width, in (mm)	40.00” (Open Set)
Unit Height, in (mm)	60.30” (Open Set)
Unit Length, in (mm)	94.30” (Open Set)
Unit Dry Weight, lb (kg)	
Rated Speed, rpm	1800
Voltage Regulation, No Load to Full Load	±1.0%
Random Voltage Variation	±1.0%
Frequency Regulation	Isochronous
Random Frequency Variation	±0.5%
Radio Frequency Interference	Optional PMG excitation operates in compliance with BS800 and VDE level G and N. Addition of RFI protection kit allows operation per MIL-STD-461 and VDE level K.

Rating Definitions

Standby Rating based on: Applicable for supplying emergency power for the duration of normal power interruption. No sustained overload capability is available for this rating. (Equivalent to Fuel Stop Power in accordance with ISO3046, AS2789, DIN6271 and BS5514). Nominally rated.

Site Derating Factors

Engine power available up to 1,200’ at ambient temperatures up to 77°F. Above 1,200’ derate at 2.5% per 1000 ft, and 1.5% per 10°F above 77°F.

1) Data represents gross engine performance capabilities obtained and corrected in accordance with SAEJ1349 conditions of 29.61 in. Hg.(100KPa) barometric pressure [300 ft. (91m) altitude], 77ºF (25ºC) inlet air temperature, and 0.30 in Hg.(100KPa) water vapor pressure using dry processed natural gas fuel with 905 BTU per standard cubic foot (33.72 ki/l) lower heating value. Deration may be required due to altitude, temperature or type of fuel. Consult your local Cummins Distributor for details.

2) FUEL SYSTEM

Standard Carburetor – IMPCO Make
Low Pressure Dry Processed Natural Gas – (905 BTU/ft.^{2} L.H.V.)
Running Pressure to Carburetor (After Regulation) – in. H_20 (mm H_20) ..... 7-11” WC
Running Pressure to Optional Engine Mounted Regulator ~ in. H_20 (mm H_20) .....10”-20” WC
Minimum Gas Supply Pipe Size @ Engine – in. (mm).....1.25” NPT

The preceding pipe sizes are only suggestions and piping may vary with temperatures, distance from fuel supply and application of local codes. Gas must be available at adequate volume and pressure for engine at the regulator.

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Engine

PSI heavy-duty spark ignited engines use advanced combustion technology for reliable and stable power, low emissions, and fast response to sudden load changes.

Electronic governing is standard for applications requiring constant (isochronous) frequency regulation such as Uninterruptible Power Supply (UPS) systems, non-linear loads, or sensitive electronic loads. Optional coolant heaters are recommended for all emergency standby installations or for any application requiring fast load acceptance after start-up.

Specifications – Engine

Base Engine	PSI
Displacement in^3 (L)	537 (8.8L)
Overspeed Limit, rpm	2100
Regenerative Power, kW	-
Cylinder Block Configuration	Cast iron
Cranking Current	550 amps at ambient temperature of 32°F (0°C)
Battery Charging Alternator	75 amps
Starting Voltage	12-volt, negative ground
Lube Oil Filter Types	Single spin-on canister-combination full flow with bypass
Standard Cooling System	104°F ambient radiator

Fuel		**STANDBY**		
Fuel Consumption	Load	1/2	3/4	Full
(Approximate)	kW	75	112	150
	CFH	1083	1539	1950
Cooling				
Heat Rejection to Coolant*		5021 BTU/min	88.3 kW	
Heat Rejection to Room		1400 BTU/min	24.6 kW	
Coolant Capacity (with radiator)*		13 Gallon		
Coolant Flow Rate*		33 GPM	2.08L/sec	
Maximum Coolant Friction Head		TBD psi	TBD kPa	
Maximum Coolant Static Head		TBD ft	TBD m	
Radiator Fan Load		17 hp	13 kW	
Air				
Combustion Air		478 cfm	225 L/sec	
Maximum Air Cleaner Restriction		13 In H2O	330 mm H2O	
Alternator Cooling Air		1090 cfm	.514 cu m/min	
Radiator Cooling Air		19,500 cfm	9,203 L/sec	
Maximum Restriction at Radiator Discharge (static)		1.0 in H2O	1.87 mm Hg	
Exhaust				
Gas Flow (Full Load)		852 cfm		
Gas Temperature		1250 ° F	677 ° C	
Maximum Back Pressure		2.0 In Hg	50.8 mm Hg	
Engine				
Gross Engine Power Output		243 bhp	181 kWm	
BMEP		201 psi	1,384 kPa	
Piston Speed		1,350 fpm	6.58 m/sec	

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Alternator

Several alternators are available for application flexibility based on the required motor-starting kVA and other requirements. Larger alternator sizes have lower temperature rise for longer life of the alternator insulation system. In addition, larger alternator sizes can provide a cost-effective use of engine power in across-the-line motor-starting applications and can be used to minimize voltage waveform distortion caused by non-linear loads.

Single-bearing alternators couple directly to the engine flywheel with flexible discs for drivetrain reliability and durability. No gear reducers or speed changers are used. Two-thirds pitch windings eliminate third-order harmonic content of the AC voltage waveform and provide the standardization desired for paralleling of generator sets. The standard excitation system is a self (shunt) excited system with the voltage regulator powered directly from the generator set output.

Alternator Application Notes

Separately Excited Permanent Magnet Generator (PMG) System - This option uses an integral PMG to supply power to the voltage regulator. A PMG system generally has better motor-starting performance, lower voltage dip upon load application, and better immunity from problems with harmonics in the main alternator output induced by non-linear loads. This option is recommended for use in applications that have large transient loads, sensitive electronic loads (especially UPS applications), harmonic content, or that require sustained short-circuit current (sustained 3-phase short circuit current at approximately 3 times rated for 10 seconds).

Alternator Sizes - On any given model, various alternator sizes are available to meet individual application needs. Alternator sizes are differentiated by maximum winding temperature rise, at the generator set standby or prime rating, when operated in a 40°C ambient environment. Available temperature rises range from 80°C to 150°C. Not all temperature rise selections are available on all models. Lower temperature rise is accomplished using larger alternators at lower current density. Lower temperature rise alternators have higher motor-starting kVA, lower voltage dip upon load application, and they are generally recommended to limit voltage distortion and heating due to harmonics induced by non-linear loads.

Alternator Space Heater - is recommended to inhibit condensation.

Available Output Voltages

Three Phase Reconnectable

[ ] 120/208
[ ] 127/220
[ ] 139/240
[ ] 120/240
[ ] 240/416
[ ] 254/440
[ ] 277/480

Single Phase Non-Reconnectable

[ ] 120/240

Three Phase Non-Reconnectable

[ ] 220/380
[ ] 347/600

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Specifications – Alternator

Design	Brushless, 4-pole, drip-proof revolving field
Stator	2/3 pitch
Rotor	Direct-coupled by flexible disc
Insulation System	Class H per NEMA MG1-1.65
Standard Temperature Rise	125°C standby
Exciter Type	PMG
Phase Rotation	A (U), B (V), C (W)
Alternator Cooling	Direct-drive centrifugal blower
AC Waveform Total Harmonic Distortion	<5% total no load to full linear load <3% for any single harmonic
Telephone Influence Factor (TIF)	<50 per NEMA MG1-22.43.
Telephone Harmonic Factor (THF)	<3

	80° C Alternator			105° C Alternator			125° C Alternator		
Voltage Ranges	120/208 Thru 139/240 240/416 Thru 277/480	277/480	347/600	120/208 Thru 139/240 240/416 Thru 277/480	277/480	347/600	120/208 Thru 139/240 240/416 Thru 277/480	277/480	347/600
Motor Starting Maximum KVA (90% Sustained Voltage)	Broad Range	480	600	Broad Range 563 663	480 564 663	600 516 607	Broad Range 516 607	480 516 607	600 516 607
Alternator Data Sheet Numbers				ADS210	ADS209	ADS209	ADS209	ADS209	ADS209
Full Load Current (Amps @ Standby Rating)	120/240,1Ph 625	120/208V 520	127/220 492	139/240 451	220/380 284	240/416 260	254/440 246	277/480 225	347/600 180

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Control System

PowerCommand Control

- The PowerCommand Control is an integrated generator set control system providing voltage regulation, engine protection, operator interface and isochronous governing (optional). Major features include:
  - Battery monitoring and testing features and smart starting control system.
  - Standard PCCNet interface to devices such as remote annunciator for NFPA 110 applications.
  - Control boards potted for environmental protection.
  - Control suitable for operation in ambient temperatures from -40 °C to +70 °C (-40 °F to +158 °F) and altitudes to 5000 meters (13,000 feet).
  - Prototype tested; UL, CSA, and CE compliant.
  - InPower™ PC-based service tool available for detailed diagnostics.

AC Protection

- Over current warning and shutdown
- Over and under voltage shutdown
- Over and under frequency shutdown
- Over excitation (loss of sensing) fault
- Field overload

Engine Protection

- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- High, low and weak battery voltage warning
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Redundant start disconnect
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown
- Fuel-in-rupture-basin warning or shutdown

Operator / Display Panel

- Manual off switch
- Alpha-numeric display with pushbutton access for viewing engine and alternator data and providing setup, controls and adjustments (English or international symbols)
- LED lamps indicating genset running, not in auto, common warning, common shutdown, manual run mode and remote start
- Suitable for operation in ambient temperatures from -20 °C to +70 °C
- Bargraph display (optional)

Alternator Data

- Line-to-line and line-to-neutral AC volts
- 3-phase AC current
- Frequency
- Total kVa

Engine Data

- DC voltage
- Lube oil pressure
- Coolant temperature
- Engine speed

Other Data

- Genset model data
- Start attempts, starts, running hours
- Fault history
- RS485 Modbus® interface
- Data logging and fault simulation (requires InPower service tool)

Digital Voltage Regulation

- Integrated digital electronic voltage regulator
- 2-phase line-to-line sensing
- Configurable torque matching

Control Functions

- Time delay start and cooldown
- Cycle cranking
- PCCNet interface
- (2) Configurable inputs
- (2) Configurable outputs
- Remote emergency stop
- Glow plug control (some models)

Options

☐ Auxiliary output relays (2)
☐ 120/240 V, 100 W anti-condensation heater
☐ Remote annunciator with (3) configurable inputs and (4) configurable outputs
☐ Remote operator panel

☐ PMG alternator excitation
☐ PowerCommand iWatch web server for remote monitoring and alarm notification (loose)
☐ Auxiliary, configurable signal inputs (8) and configurable relay outputs (8)
☐ Digital governing

☐ AC output analog meters (bargraph)
- Color-coded graphical display of:
  - 3-phase AC voltage
  - 3-phase current
  - Frequency
  - kVa

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CNP-GFPA Cert (10/12)

Cummins NPower

Generator Set Options

Engine
[ ] 120/240 V, W coolant heaters
[ ] 120/240 V, W lube oil heater

Cooling System
[ ] Heat exchanger cooling

Fuel System
[ ] Flexible fuel connector
[ ] Fuel strainer

Alternator
[ ] 105°C rise alternator
[ ] 125°C rise alternator
[ ] 120/240 V, 100 W anti-condensation heater
[ ] Single phase

Exhaust System
[ ] GenSet mounted muffler
[ ] Heavy duty exhaust elbow
[ ] Slip on exhaust connection

Generator Set
[ ] AC entrance box
[ ] Batteries
[ ] Battery charger
[ ] Export box packaging
[ ] Main line circuit breaker
[ ] PowerCommand Network Communication Module (NCM)
[ ] Stage 1 housing w/silencer
[ ] Stage II housing w/silencer
[ ] Remote annunciator panel
[ ] Spring isolators
[ ] Weather protective enclosure with silencer
[ ] 2 year standby warranty
[ ] 5 year standby warranty

Available Products and Services

A wide range of products and services is available to match your power generation system requirements. Cummins Power Generation products and services include:

- Diesel and Spark-Ignited Generator Sets
- Transfer Switches
- Bypass Switches
- Parallel Load Transfer Equipment
- Digital Paralleling Switchgear
- PowerCommand Network and Software
- Distributor Application Support
- Planned Maintenance Agreements

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Warranty

All components and subsystems are covered by an express limited one-year warranty. Other optional and extended factory warranties and local distributor maintenance agreements are available. Contact your distributor/dealer for more information.

Certifications

CSA - This generator is CSA certified to product class 4215-01.

PTS - The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Products bearing the PTS symbol have been subjected to demanding tests in accordance to NFPA 110 to verify the design integrity and performance under both normal and abnormal operating conditions including short circuit, endurance, temperature rise, torsional vibration, and transient response, including full load pickup.

See your distributor for more information

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Important: Backfeed to a utility system can cause electrocution and/or property damage. Do not connect generator sets to any building electrical system except through an approved device or after building main switch is open.

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