

G3512 Generator Set
Electric Power
Standby 1000 ekW (1250 kVA) 60Hz 1800RPM



Natural Gas Standby

Caterpillar is leading the power generation marketplace with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

Image shown may not reflect actual configuration.

Specifications

Generator Set Specifications	
Maximum Rating (w/ fan)	1000 ekW (1250 kVA)
Voltage	440V - 4160V
Frequency	60 Hz
Speed	1800 RPM
Duty Cycle	Standby
Fuel	Natural Gas

Generator Set Configurations	
Emissions/Fuel Strategy	U.S. EPA Stationary Emergency Certified

Engine Specifications		
Engine Model	G3512	
Compression Ratio	9.8	
Aspiration	Turbocharged	
Governor Type	ADEM™ A4	
Fuel System	Electronic Fuel Control Valve	
Cooling Type	JW/SCAC	
Ignition	Spark Ignited	
Bore	6.7 in	170 mm
Displacement	3173 in ³	52 L
Stroke	7.5 in	190 mm

Package Dimensions*		
Length	205.7 in	5224 mm
Width	90.0 in	2286 mm
Height	99.4 in	2525 mm
Weight/Mass†	27500 lbs	12500 kg

* Note: For reference only – do not use for installation design. Please contact your local Cat dealer for exact weight and dimensions.

†Weight includes: Engine, Low Voltage Generator, Baseframe, Radiator, and base generator terminal box.

Benefits & Features

Cat® Engine

Robust high speed block design provides prolonged life and lower owning and operating costs
Designed for maximum performance on low pressure gaseous fuel supply
Simple open chamber combustion system for reliability and fuel flexibility

Generator

Matched to the performance and output characteristics of engine
Industry-leading mechanical and electrical design
Industry-leading motor starting capabilities

Cat EMCP Control Panel

The EMCP controller features the reliability and durability you have come to expect from your Cat equipment. EMCP 4 is a scalable control platform designed to ensure reliable generator set operation, providing extensive information about power output and engine operation. EMCP 4 systems can be further customized to meet your needs through programming and expansion modules.

Design Criteria

Per NFPA 110 Level 1 Type 10 the generator set is able to start and be ready to accept load within 10 seconds
The generator set is capable of accepting 100% rated load in a single step
The generator set meets Class G2 ISO 8528-5 transient response for a 30% load step
Cooling system designed to operate in 45°C/113°F ambient temperatures with an air flow restriction of 0.5 in. water without derate

Certifications

EPA - S.I. Stationary Emergency
UL 2200 Listed
CSA Certified
Certain restrictions may apply
Consult with your Cat dealer

Full range of attachments

Wide range of bolt-on system expansion attachments, factory designed and tested
Flexible packaging options for easy and cost effective installation

Proven System

Fully prototype tested
Field proven in a wide range of applications worldwide
Certified torsional vibration analysis available

World Wide Product Support

Cat dealers provide extensive post sale support including maintenance and repair agreements.
Cat dealers have over 1,800 dealer branch stores operating in 200 countries. The Cat S•O•SSM program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products.

Standard Equipment

Air Inlet

- Dual air cleaners, 1 per side, with service indicator

Cooling System

- Engine driven pumps for jacket water and separate circuit aftercooler

Exhaust

- Inboard Exhaust manifolds

Fuel

- Gas Train: NFPA37 and CSA B149.3
- 0.5 to 5 psi engine fuel inlet pressure
- Pipeline Natural Gas: 800-1000 BTU/scf and 70-100 Methane Number
- NOx sensor based air-fuel-ratio control
- Fuel Safeties, "Energize to Run" (ETR) Gas Shutoff Valve (GSOV)

Generator

- Matched to the performance and output characteristics of Cat engines
- SR5 Generators include:
 - Permanent Magnet Excitation
 - Selectable Class H insulation, Class F Continuous (105° C) or Class F Standby (130° C) temperature rise
 - 6 Lead
 - CDVR Voltage Regulator, 3-phase sensing with reactive droop
 - Terminal Box with segregated low voltage (AC/DC) wiring panel
 - Rear Mounted EMCP 4.3 control panel

Lubrication

- Gear type lube oil pump
- Cartridge style oil filter
- Integral lube oil cooler

Mounting

- Steel base- engine/generator/radiator mounting
- Anti-vibration mounts available for isolation efficiencies above 95%

Starting/Charging

- 24V DC starting motors
- Batteries with rack and cables
- Battery disconnect switch
- Jacket Water Coolant Heaters: 208/240/480V, 60Hz, 9/12 kw, UL Listed

Governing

- ADEM A4 speed governor with 4 to 20ma (0V to 5V) speed input

Control Panel

- EMCP 4.3 Genset Controller

Ignition

- Electronic Ignition System (controlled by ADEM A4)

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- Individual cylinder Detonation Sensitive Timing

General

- Paint -- Caterpillar Yellow except rails & radiators;
- Crankshaft vibration damper
- Lifting eyes
- Operation and Maintenance Manuals; Parts Book

Optional Equipment

Exhaust

- Exhaust Mufflers
 - Industrial Grade, 15 dBA attenuation
 - Residential Grade, 18 dBA attenuation
 - Critical Grade, 25 dBA attenuation
 - Spark Arresting
- Elbows, flanges, and flexible fittings

Generator

- Voltages Available: 440/480/600/2400/4160
- Random and Form wound available
- Oversizing available to Class B Continuous (80° C)
- Space Heater – 240V
- Stator and bearing temperature monitoring and protection

Power Terminations

- LH/RH/Rear Busbar connections
- Top/Bottom Cable Entry
- Circuit Breakers
 - LH/RH/Rear Mounting
 - 1600 AMP, 3 Pole, UL-100% Rated, manually operated
 - 2000 AMP, 3 Pole, UL-100% Rated, manually operated
 - 2000 AMP, 3 Pole, UL-100% Rated, rear only, electrically operated

Lube System

- Lubricating oil
- Oil Level Regulator
- Sump Pump

Control System

- Generator temperature monitoring & protection
- Load share module
- Annunciators
 - Remote and Local
 - Pre-programmed and Custom

Starting/Charging

- Starters: Either 2 or 3 electric starters available
- Battery Chargers: 20, 35, or 50 AMP
- Charging alternator, 45 AMP
- Batteries (w/ rack and cables)

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- 4 x 12V batteries, for 2 starter option
 - 6 x 12V batteries, for 3 starter option
- Electric Prelube Pump (AC)

Mounting

- Low efficiency (90%), rubber puck isolators
- High efficiency (95%), spring isolators
- Seismic isolators, rated to 1.5G

Cooling System

- Package Mounted Radiator, sized for 45C/113F ambient to 300m/660ft
- Low coolant level sensors (w/ radiator)
- Jacket Water out: LH/RH, flanged or hose

General

- The following options are based on regional and product configuration:
- UL 2200 package
- CSA Certification
- Extended Service Contract (ESC)
- Barring Device
- Positive Crankcase ventilation system
- Crankcase explosion relief valves

Technical Data

Metric

English

Engine		
Datasheet	EM1506	
Compression Ratio	9.7	
Emissions Level	Certified	
Aftercooler Temperature	54 °C	130 °F

Package Performance		
Power Rating @ 0.8 pf	1250 kVA	1000 ekW
Power Rating @ 1.0 pf	1250 kVA	1000 ekW
Mechanical Power	1095 bkW	

Fuel Consumption*		
100% load with fan (ISO 3046/1)	10.39 MJ/ekw-hr	9849 Btu/ekW-hr
75% load with fan (ISO 3046/1)	10.86 MJ/ekw-hr	10296 Btu/ekW-hr
50% load with fan (ISO 3046/1)	11.9 MJ/ekw-hr	11281 Btu/ekW-hr

Altitude Capability		
At 25°C (77°F) ambient, above sea level	1499 m	4918 ft

Cooling System		
Ambient air temperature	25 °C	77 °F
Jacket water temperature (Maximum outlet)	99 °C	210 °F

Exhaust System		
Air flow (0° C, 101.3 kPa) / (77° F, 14.7 psia)	4.42 Nm3/bkW-hr	3108 ft³/min
Exhaust temperature – engine outlet	529 °C	984 °F
Exhaust gas flow (0° C, 101.3 kPa) / (77° F, 14.7 psia)	4.7 Nm3/bkW-hr	9003 ft³/min

Heat Rejection		
Heat rejection to jacket water (JW)	596 kW	33893 Btu/min
Heat rejection to Auxiliary Circuit	91 kW	5789 Btu/min
Heat rejection to atmosphere from engine	99 kW	5655 Btu/min
Heat rejection to atmosphere from generator (typical)	49 kW	2806 Btu/min
Heat rejection to exhaust (LHV to 120°C / 248°F)	831 kW	47269 Btu/min

Generator		
Voltage	440-4160	
Typical temperature rise	80-150 °C	
Typical motor starting capability @ 30% voltage dip	3430 sKVA	

Lubrication System		
Standard sump refill with filter change	291 L	77 Gal

Regulatory Information	
EPA - S.I. Stationary Emergency	U.S. (excl California) 2011

EMCP 4.3 Features

140 mm (5.5 in) Graphical Display **Generator Monitoring**

Voltage (L-L, L-N)
Current (Phase)
Average Volt, Amp, Frequency
kW, kVAr, kVA (Average, Phase, %)
Power Factor (Average, Phase)
Hour meters (kW-hour, kVAr-hour)
Excitation voltage and current (with CDVR)
Generator stator and bearing temp (with optional module)

Generator Protection

Generator phase sequence
Over/under voltage
Over/under frequency
Reverse Power (kW)
Reverse Reactive Power (kVAr)
Overcurrent
Current balance

Engine Monitoring

Engine coolant temperature (°C or °F)
Engine oil pressure (psi, kPa or bar)
Engine speed (RPM)
Battery voltage
Run hours
Crank attempt and successful start counter
Enhanced engine monitoring (with electronic engines)

Engine Protection

Control switch not in auto (alarm)
High coolant temp (alarm and shutdown)
Low coolant temp (alarm)
Low coolant level (alarm)

High engine oil temp (alarm and shutdown)
Low, high, and weak battery voltage
Overspeed
Overcrank

Controls

Run / Auto / Stop control
Speed and voltage adjust
Local and remote emergency stop
Remote start/stop
Cycle crank

Communications

Primary and accessory CAN data links
RS-485 annunciator data link
Modbus TCP (10BT Ethernet)
Modbus RTU (RS-485 Half duplex)

Environmental

Control module operating temperature: -40°C to 70°C
Display operating temperature: -20°C to 70°C
Humidity: 100% condensing 30°C to 60°C
Storage temperature: -40°C to 85°C
Vibration: Random profile, 24-1000 Hz, 6.0G rms

Inputs & Outputs

Two dedicated digital inputs
Twelve programmable digital inputs
Sixteen programmable digital outputs

Other Features 28 languages supported:

Arabic, Bulgarian, Chinese, Czech, Danish, Dutch
English, Estonian, Finnish, French, German, Greek, Hungarian, Icelandic, Italian
Latvian, Lithuanian, Japanese
Norwegian, Polish, Portuguese, Romanian, Russian, Slovak, Slovene, Spanish, Swedish, Turkish
Programmable security levels
Reduced power mode
Cat switchgear integration
Status event log
Integration with the Cat Digital Voltage Regulator (CDVR) provides enhanced system performance.

Definitions and Conditions

1. For transient response, ambient and altitude capabilities consult your local Cat dealer.
2. Fuel pressure range specified is to the engine fuel control valve. Additional fuel train components may be required and should be considered in pressure and flow calculations.
3. For a complete reference of definitions and conditions see datasheet EM1506.

Applicable Codes and Standards*:

UL2200, NFPA 37, NFPA 70, NFPA 99, NFPA 110, CSA Class 4215 01, CSA 22.2 No. 14, CSA 22.2 No. 100, CSA B149.1, CSA B149.3, ISO 8528-1, ISO 8528-2, ISO 8528-3, ISO 8528-5, ISO 3046, NEMA MG1, UL1446, IEC 60034, MIL 461-C

*Note: List of applicable codes and standards may not be all inclusive and all codes may not be available in all model configurations. Please consult your local Cat Dealer representative for availability.

STANDBY: Output available with varying load for the duration of the interruption of the normal source power. Average power output is 100% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

www.CatGasPower.com

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Materials and specifications are subject to change without notice.
The International System of Units (SI) is used in this publication.

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