

**G3512 Generator Set**  
**Electric Power**  
**Standby 750 ekW (937 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)	750 ekW (937 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	9.7	
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 <sup>3</sup>	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•S<sup>SM</sup> 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 B Continuous (80° C) or Class A Standby (85° 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
- 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	EM1508	
Compression Ratio	9.7	
Emissions Level	EPA Certified	
Aftercooler Temperature	54 °C	130 °F

Package Performance		
Power Rating @ 0.8 pf	938 kVA	750 ekW
Power Rating @ 1.0 pf	764 kVA	764 ekW
Mechanical Power	831 bkW	

Fuel Consumption*		
100% load with fan (ISO 3046/1)	10.87 MJ/ekw-hr	10312 Btu/ekW-hr
75% load with fan (ISO 3046/1)	11.56 MJ/ekw-hr	10948 Btu/ekW-hr
50% load with fan (ISO 3046/1)	13.12 MJ/ekw-hr	12422 Btu/ekW-hr

Altitude Capability		
At 25°C (77°F) ambient, above sea level	2647m	9055 ft

Cooling System		
Auxiliary Circuit Temperature (Maximum Inlet)	54 °C	130 °F
Jacket water temperature (Maximum outlet)	99 °C	210 °F

Exhaust System		
Air flow (0° C, 101.3 kPa) / (77° F, 14.7 psia)	4.49 Nm3/bkW-hr	2398 ft³/min
Exhaust temperature – engine outlet	536 °C	997 °F
Exhaust gas flow (0° C, 101.3 kPa) / (77° F, 14.7 psia)	4.78 Nm3/bkW-hr	7016 ft³/min

Heat Rejection		
Heat rejection to jacket water (JW)	370 kW	21063 Btu/min
Heat rejection to Auxiliary Circuit	68 kW	3870 Btu/min
Heat rejection to atmosphere from engine	89 kW	5038 Btu/min
Heat rejection to atmosphere from generator (typical)	29 kW	1675 Btu/min
Heat rejection to exhaust (LHV to 120°C / 248°F)	654 kW	37210 Btu/min

Generator		
Voltage	440-4160	
Typical temperature rise	80-105 °C	
Typical motor starting capability @ 30% voltage dip	2734 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, kVA, kVA (Average, Phase, %)  
Power Factor (Average, Phase)  
Hour meters (kW-hour, kVA-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 (kVA)  
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 EM1508

### 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.

<http://www.cat.com/powergeneration>

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Feature Code: G3512  
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Source Country: U.S.

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

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