



Image shown may not reflect actual package

## NATURAL GAS CONTINUOUS

725 ekW 906 kVA

745 ekW 931 kVA

770 ekW 963 kVA

50 HZ 1500 RPM 400 VOLTS

Caterpillar® is leading the power generation market place with power solutions engineered to deliver unmatched flexibility, expandability, reliability and cost-effectiveness.

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## FEATURES

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### FULL RANGE OF ATTACHMENT

- 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.

### WORLDWIDE PRODUCT SUPPORT

- Caterpillar dealers provide extensive post sales support including maintenance and repair agreements
- Caterpillar dealers have over 1,600 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

### CAT® G3512 LEAN BURN GAS ENGINE

- Robust high speed diesel 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.

### CAT SR4B GENERATOR

- Designed to match performance and output characteristics of Caterpillar gas engines
- Industry leading mechanical and electrical design
- High efficiency

### CAT EMCP II+ CONTROL PANEL

- Simple user friendly interface and navigation
- Digital monitoring, metering and protection setting
- Fully-featured power metering and protective relaying
- UL 508A Listed.
- Remote control and monitor capability options

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## FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
<b>Air Inlet</b>	Air cleaner; intermediate duty with service indicator	Ship-loose air cleaner Air inlet adapter
<b>Control</b>	EMCP II+ Instrument panel on engine	Communications Module (PL1000T, PL1000E) Alarm module Customer interface module Synchronizing module
<b>Cooling</b>	Combined jacket water and oil cooler circuit Engine driven JW pump; Thermostats and housing Separate aftercooler circuit Single-stage for wet manifold; Two-stage for dry manifold Engine driven AC pump; Second-stage thermostat and housing	Corrosion resistant aftercooler Raw water aftercooler Temperature regulator for high temperature cooling (option for a cogeneration system) Inlet/Outlet connections. Expansion and overflow tank Water level switch gauge
<b>Exhaust</b>	Wet exhaust manifold for standard emission Dry exhaust manifold for low emission	Flexible fitting; Elbow; Flange and Expander Muffler and spark-arresting muffler with companion flanges.
<b>Fuel</b>	Gas pressure regulator Requires 10.3 to 34.5 kPa (1.5 to 5 psi) supplied gas pressure Natural gas carburetor for standard emission Dual rear inlet connections Deltec natural gas carburetor for low emission (31.5 to 47.2 MJ/Nm <sup>3</sup> venturi standard) RH inlet connection Fuel system is sized for 31.5 to 47.2 MJ/Nm <sup>3</sup> (800 to 1200 Btu/s)	High Btu carburetor mixer Gas filter Gas shutoff valve
<b>Generator</b>	SR4B generator, includes: PM excited, form wound with Class H insulation Stator RTDs Caterpillar's Digital Voltage Regulator (CDVR) including KVAR/PF control Space heater	Set mounted circuit breakers Medium voltage generator Bearing temperature detectors (RTD) Low voltage extension box Cable access box Air filter for generator European bus bar
<b>Governing</b>	Woodward 2301A Speed Control for standard emission Woodward ProAct Speed Control for low emission	Ship-loose 2301A Speed Controller 2301A load sharing governor 2301D dual gain governor 8290 load sharing module
<b>Ignition</b>	Caterpillar Electronic Ignition System (E.I.S.) including detonation sensing timing	
<b>Lubrication</b>	Crankcase breather; top mounted Oil cooler Oil filter Shallow oil pan	Oil level regulator Oil pan drain valve Sump pump Pre-lube pump Lubricating oil
<b>Mounting</b>	330 mm, industrial type rail, engine-generator mounting	Spring type vibration Isolators Rubber type isolator pad
<b>Protection</b>	Shutoff solenoid; 24VDC, ETR Detonation shutdown	
<b>Starting / Charging</b>	Dual 24 VDC starting motors	Battery charger; Charging alternator Battery set, cable and rack Oversized battery; Jacket water heater;
<b>General</b>	Paint -- Caterpillar Yellow (engine and generator) Crankshaft vibration damper and guard Lifting eyes Operation and Maintenance Manuals; Parts Book.	EEC D.O.I certification Crankcase explosion relief valve Engine barring group

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## SPECIFICATIONS

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### CAT LEAN BURN GAS ENGINE

G3512 LE SCAC 4-stroke-cycle, spark-ignited engine	
Number of Cylinders	V12
Bore --- mm (in)	170 (6.7)
Stroke --- mm (in)	190 (7.5)
Displacement --- L (cu in)	51.8 (3158)
Compression Ratio (512GEX1 & 512GEX5) ---	11:01
Compression Ratio (512GEX3)	12:01
Aspiration	Turbocharged Separate Circuit Aftercooled
Cooling Type (511GEX1)	JW & O/C combined, SCAC
Cooling Type (512GEX3)	JW & O/C combined, two stage SCAC
Cooling Type (512GEX5)	JW & O/C combined, two stage SCAC
Fuel System	Low Pressure
Governor Type (512GEX1)	Woodward 2301A Woodward ProAct II

### CAT SR4B GENERATOR

Frame size	695
Excitation	Permanent Magnet
Pitch	0.7333
Number of poles	4
Number of bearings	1
Number of leads	6
Insulation	Class H
IP rating	Drip proof IP22
Alignment	Pilot shaft
Overspeed capability -- % of rated	125%
Waveform deviation line to line, no load	less than 3.0%
Voltage regulator	CDVR
Voltage level adjustment	+/- 5.0%
Voltage regulation, steady state	+/- 0.5%
Voltage regulation with 3% speed change	+/- 0.5%
Telephone Influence Factor (TIF)	less than 50

Consult your Caterpillar dealer for available voltage

### CAT EMCPII+ CONTROL PANEL

- Power by 24 volts DC
- NEMA 12, IP44 dust-proof enclosure
- Lockable hinged door
- Single-location customer connection
- Auto start/stop control switch
- Voltage adjustment potentiometer
- True RMS AC metering, 3 phase
- Pruge cycle and staged shutdown logic
- Digital indication for:
  - RPM
  - Operating hours
  - Oil pressure
  - Coolant temperature
  - DC voltage
  - L-L volts, L-N volts, phase amps, Hz, kW, kVA, kVAR, kWhr, %kW, pf
  - System diagnostic codes
- Shutdown with indicating lights:
  - Low oil pressure
  - High coolant temperature
  - High oil temperature
  - Overspeed
  - Overcrank
  - Emergency stop
  - High inlet air temperature (for TA engine only)
  - Detonation sensitive timing (for LE engine only)
- Programmable protective relaying functions:
  - Under / Over voltage
  - Under / Over frequency
  - Overcurrent
  - Reverse power
- Spare indicator LEDs
- Spare alarm/shutdown inputs

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

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## TECHNICAL DATA

G3512 Gas Generator Set		Feature Code 512GEX1		
		DM 5210	DM 8669	DM 5158
Emission level (NO <sub>x</sub> )	mg/Nm <sup>3</sup>	Standard Emission	Standard Emission	Standard Emission
Aftercooler SCAC	Deg C	32	43	54
<b>Package Performance (1)</b>				
Power Rating @ 0.8 pf (w/ water pumps and w/o fan)	ekW Continuous	770	745	725
Power Rating @ 0.8 pf (w/ water pumps and w/o fan)	kVA Continuous	963	931	906
Power Rating @ 1.0 pf (w/ water pumps and w/o fan)	ekW Continuous	776	754	732
Electric Efficiency @ 1.0 pf (ISO 3046/1) (2)	%	34.4	34	33.5
Mechanical Power (w/ water pumps and w/o fan)	bkW	803	781	758
<b>Fuel Consumption (3)</b>				
100% load w/o fan	Nm <sup>3</sup> /hr	228	225	221
75% load w/o fan	Nm <sup>3</sup> /hr	181	177	173
50% load w/o fan	Nm <sup>3</sup> /hr	127	125	123
<b>Altitude Capability</b>				
At 25 Deg C (77 Deg F) ambient, above sea level	M	1006	1006	1006
<b>Cooling System</b>				
Ambient air temperature	Deg C	25	25	25
Jacket water temperature ( Maximum outlet )	Deg C	99	99	99
<b>Exhaust System</b>				
Combustion air inlet flow rate	Nm <sup>3</sup> /min	54.7	53.4	51.9
Exhaust stack gas temperature	Deg C	456	462	467
Exhaust gas flow rate	Nm <sup>3</sup> /min	58.8	57.3	55.7
<b>Heat Rejection</b>				
Heat rejection to jacket water and oil cooler	kW	626	642	656
Heat rejection to AC	kW	154	136	119
Heat rejection to exhaust (LHV to 25 Deg C)	kW	617	607	598
Heat rejection to exhaust (LHV to 120 Deg C)	kW	467	463	458
Heat rejection to atmosphere from engine	kW	80	80	80
Heat rejection to atmosphere from generator	kW	34.6	33.5	32.6
<b>Generator</b>				
Frame		695	697	697
Temperature rise	Deg C	105	80	80
Motor starting capability @ 30% voltage dip (4)	skVA	2521	2521	2521
<b>Emissions (5)</b>				
NO <sub>x</sub> @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup>	839	825	795
CO @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup>	881	878	875
THC @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup>	1639	1589	1539
NMHC @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup>	246	239	231
Exhaust O <sub>2</sub> (dry)	%	7.6	7.6	7.5

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## TECHNICAL DATA

G3512 Gas Generator Set		512GEX5	512GEX3	
		DM 1976	DM 1957	DM 1954
Emission level (NO <sub>x</sub> )	mg/Nm <sup>3</sup>	250	500	250
Aftercooler SCAC, Stage 1	Deg C	70	70	70
Aftercooler SCAC, Stage 2	Deg C	32	32	32
<b>Package Performance (1)</b>				
Power Rating @ 0.8 pf (w/ water pumps and w/o fan)	ekW Continuous	770	770	770
Power Rating @ 0.8 pf (w/ water pumps and w/o fan)	kVA Continuous	963	963	963
Power Rating @ 1.0 pf (w/ water pumps and w/o fan)	ekW Continuous	776	776	776
Electric Efficiency @ 1.0 pf (ISO 3046/1) (2)	%	35.5	37.5	36.6
Mechanical Power (w/ water pumps and w/o fan)	bkW	803	803	803
<b>Fuel Consumption (3)</b>				
100% load w/o fan	Nm <sup>3</sup> /hr	221	209	215
75% load w/o fan	Nm <sup>3</sup> /hr	172	163	169
50% load w/o fan	Nm <sup>3</sup> /hr	122	117	121
<b>Altitude Capability</b>				
At 25 Deg C (77 Deg F) ambient, above sea level	M	200	350	200
<b>Cooling System</b>				
Ambient air temperature	Deg C	25	25	25
Jacket water temperature ( Maximum outlet )	Deg C	99	99	99
<b>Exhaust System</b>				
Combustion air inlet flow rate	Nm <sup>3</sup> /min	60	55.5	58.4
Exhaust stack gas temperature	Deg C	516	496	493
Exhaust gas flow rate	Nm <sup>3</sup> /min	63.3	59.6	62.5
<b>Heat Rejection</b>				
Heat rejection to jacket water and oil cooler	kW	377	443	441
Heat rejection to AC - Stage 1	kW	Consult ASC	65	80
Heat rejection to AC - Stage 2	kW	Consult ASC	58	62
Heat rejection to exhaust (LHV to 25 Deg C)	kW	787	700	738
Heat rejection to exhaust (LHV to 120 Deg C)	kW	594	525	546
Heat rejection to atmosphere from engine	kW	92	80	80
Heat rejection to atmosphere from generator	kW	34.6	34.6	34.6
<b>Generator</b>				
Frame		695	695	695
Temperature rise	Deg C	105	105	105
Motor starting capability @ 30% voltage dip (4)	skVA	2521	2521	2521
<b>Emissions (5)</b>				
NO <sub>x</sub> @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup>	250	500	250
CO @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup>	1004	983	963
THC @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup>	2459	2171	2565
NMHC @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup>	369	326	385
Exhaust O <sub>2</sub> (dry)	%	9.7	9.3	9.7

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## RATING DEFINITIONS AND CONDITIONS

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(1) **Continuous** --- Maximum output available for an unlimited time

**Ratings** are based on pipeline natural gas having a Low Heat Value (LHV) of 35.6 MJ/Nm<sup>3</sup> (905 Btu/ft<sup>3</sup>) and 80 Caterpillar Methane Number. For values in excess of altitude, ambient temperature, inlet/exhaust restriction, or different from the conditions listed, contact your local Caterpillar dealer.

(2) **Efficiency** of standard generator is used. For higher efficiency generators, contact your local Caterpillar dealer.

(3) **Ratings and fuel consumption** are based on ISO3046/1 standard reference conditions of 25 deg C (77 deg F) of ambient temperature and 100 kPa (29.61 in Hg) of total barometric pressure, 30% relative humidity with 0, +5% fuel tolerance.

(4) Assume synchronous driver

(5) **Emissions data** measurements are consistent with those described in EPA CFR 40 Part 89 Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NO<sub>x</sub>. Data shown is based on steady state engine operating conditions of 25 deg C (77 deg F), 96.28 kPa (28.43 in Hg) and fuel having a LHV of 35.6 MJ/Nm<sup>3</sup> (905 Btu/cu ft) and 80 Caterpillar Methane Number at 101.60 kPa (30.00 in Hg) absolute and 0 deg C (32 deg F). Emission data shown is subject to instrumentation, measurement, facility, and engine fuel system adjustment.

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## DIMENSIONS

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Package Dimensions		
Length	4374.0 mm	171.20 in
Width	2204.8 mm	86.80 in
Height	2075.7 mm	81.72 in
Approx. Shipping Weight	9166 kg	20190 lb

Note: Do not use for installation design.  
See general dimension drawings  
for detail ( Drawing # 201-9598 )

Performance Numbers : DM1954, DM1957  
DM1976, DM5158  
DM5210, DM8669  
Feature Codes: 512GEX1  
512GEX3  
512GEX5  
Generator Arr: 144-1846  
Source: US Sourced  
LEHE0051-00 (07/09)

[www.cat-electricpower.com](http://www.cat-electricpower.com)

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