



Image shown may not reflect actual package

## NATURAL GAS CONTINUOUS 1000 ekW 1250 kVA 50 HZ 1500 RPM 400 Volts

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

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## FEATURES

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### EMISSIONS

- Meets TA Luft and 1/2 TA Luft Emission Levels

### 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® G3512E 1MW 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 protection setting
- UL 508A Listed
- Remote control and monitor capability options

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## FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
<b>Gas Engine Control Module (GECM)</b>	Fuel / air ratio control Start/stop logic: gas purge cycle, staged shutdown Engine Protection System: detonation sensitive timing, high exhaust temperature shutdown Governor: Transient richening and turbo bypass control Ignition	
<b>Air Inlet</b>		Two element, single-stage air cleaner with enclosure and service indicator Air cleaner with precleaner
<b>Control Panel</b>	Kilowatt transducer (ship loose)	EMCP II+ Local alarm module Remote annunciator Communication Module (PL1000T, PL1000E)
<b>Cooling</b>	Jacket water thermostats ANSI/DN customer flange connections for JW inlet and outlet CAT flanges on SCAC circuit	Inlet/Outlet connections Engine driven water pumps for jacket water and aftercooler SCAC thermostats
<b>Exhaust</b>	Dry exhaust manifolds, insulated and shielded Center section cooled turbocharger with CAT flanged outlet Individual exhaust port and turbocharged outlet wired to Intergrated Sensing Module (ITSM) with GECM providing alarms and shutdowns	Flange Exhaust expander Elbow Flexible fitting
<b>Fuel</b>	Electronic fuel metering valve Throttle plate, 24V DC actuator, controlled by GECM Fuel system is sized for 31.5 to 47.2 MJ/Nm <sup>3</sup> (800 to 1200 Btu/cu ft) dry pipeline natural gas with pressure of 10.2 to 34.5 kPa (1.5 to 5 psi) to the engine fuel control valve	Fuel Filter Gas pressure regulator Gas shutoff valve, 24V, ETR (Energize-To-Run)
<b>Generator</b>	SR4B generator, includes: Caterpillar's Digital Voltage Regulator (CDVR) with 3-phase sensing and KVAR / PF control Reactive droop Bus bar connections Winding temperature detectors Anti-condensation space heater Bearing temperature detectors	Low voltage extension box Cable access box European bus bar
<b>Governing</b>	Electronic speed governor as part of GECM Electronically-controlled 24V DC actuator connected to throttle shaft	Woodward load sharing module
<b>Ignition</b>	Electronic Ignition System controlled by GECM Individual cylinder Detonation Sensitive Timing (DST)	
<b>Lubrication</b>	Gear type lube oil pump Oil filter, filler and dip stick Integral lube oil cooler Oil drain valve Crankcase breather	Lubricating oil Oil level regulator Prelube pump Positive crankcase ventilation system
<b>Mounting</b>	330 mm structural steel base	Spring-type anti-vibration mounts (shipped loose)
<b>Starting / Charging</b>	24V starting motors Battery disconnect switch	Battery with cable and rack (shipped loose) Battery charger Oversized battery Jacket water heater
<b>General</b>	Paint - Caterpillar Yellow except rails Damper guard Operation & Maintenance Manuals Parts book	Crankcase explosion relief valve Engine barring group EEC D.O.I and other certifications

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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	11.9:1
Aspiration	Turbocharged Separate Circuit Aftercooled
Cooling Type	JW, Oil Cooler and Stage 1 of SCAC Combined
Fuel System	Low Pressure
Governor Type	Electronic (ADEM III)

### CAT SR4B GENERATOR

Frame size	697
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
- Purge 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, ekW, 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

G3512E Gas Generator Set		Feature Code 512GE17	
		DM 8801	DM 8802
Emission level (NO <sub>x</sub> )	mg/Nm <sup>3</sup>	500	250
<b>Package Performance (1)</b>			
Power Rating @ 0.8 pf (w/o water pumps and w/o fan)	ekW Continuous	1000	1000
Power Rating @ 0.8 pf (w/o water pumps and w/o fan)	kVA Continuous	1250	1250
Power Rating @ 1.0 pf (w/o water pumps and w/o fan)	ekW Continuous	1015	1015
Electric Efficiency @ 1.0 pf (ISO 3046/1) (2)	%	41.7	40.8
Mechanical Power (w/o water pumps and w/o fan)	bkW	1048	1048
<b>Fuel Consumption (3)</b>			
100% load w/o water pumps and w/o fan	Nm <sup>3</sup> /hr	246	251
75% load w/o water pumps and w/o fan	Nm <sup>3</sup> /hr	190	194
50% load w/o water pumps and w/o fan	Nm <sup>3</sup> /hr	135	137
<b>Altitude Capability</b>			
At 25 Deg C (77 Deg F) ambient, above sea level	m	1500	1500
<b>Cooling System</b>			
Aftercooler SCAC (Stage 2 inlet)	Deg C	54	54
Jacket water temperature ( Maximum outlet )	Deg C	99	99
<b>Exhaust System</b>			
Combustion air inlet flow rate (wet)	Nm <sup>3</sup> /min	69.0	70.4
Exhaust stack gas temperature	Deg C	413	408
Exhaust gas flow rate (wet)	Nm <sup>3</sup> /min	73.4	74.9
<b>Heat Rejection</b>			
Heat rejection to jacket water and oil cooler	kW	403	402
Heat rejection to AC - Stage 1	kW	153	165
Heat rejection to AC - Stage 2	kW	77	79
Heat rejection to exhaust (LHV to 25 Deg C)	kW	719	762
Heat rejection to exhaust (LHV to 120 Deg C)	kW	503	505
Heat rejection to atmosphere from engine	kW	92	92
Heat rejection to atmosphere from generator	kW	46	46
<b>Generator</b>			
Frame		697	697
Temperature rise	Deg C	105	105
Motor starting capability @ 30% voltage dip (4)	skVA	Not Applicable	Not Applicable
<b>Emissions (4)</b>			
NO <sub>x</sub> @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup>	500	250
CO @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup>	1086	1018
THC @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup>	3158	3670
NMHC @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup>	474	550
Exhaust O <sub>2</sub> (dry)	%	9.2	9.4

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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  $35.6 \text{ MJ/Nm}^3$  ( $905 \text{ Btu/ft}^3$ ) 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.

(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

$\text{MJ/Nm}^3$  ( $905 \text{ Btu/ft}^3$ ) and 80 Caterpillar Methane Number at 101.60 kPa (30.00 in Hg) absolute and 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	4625.0 mm	182.09 in
Width	1827.5 mm	71.95 in
Height	2254.6 mm	88.76 in
Approx. Shipping Weight	10,886 kg	24,000 lb

Note: Do not use for installation design.  
See general dimension drawings  
for detail (Drawing #352-9238)

[www.Cat-ElectricPower.com](http://www.Cat-ElectricPower.com)

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Performance Number : DM8801, DM8802

Feature Codes: 512GE17

Generator Arr:: 348-2182

Source: US Sourced

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