



Image shown may not reflect actual package

LOW ENERGY GAS CONTINUOUS 1966 ekW 2458 kVA 50 Hz 1500 rpm 400 Volts

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

BENEFITS

EMISSIONS

- Meets most worldwide emissions requirements down to 250 mg/Nm³ NO_x level without after treatment

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

WORLDWIDE PRODUCT SUPPORT

- Caterpillar dealers have over 1,600 dealer branch stores operating in 200 countries
- Comprehensive post-sales support including maintenance and repair agreements that are re-tailored to your specific equipment application
- High skilled technicians are trained to service every aspect of your electric power generation system
- The Cat® S-O-SSM Service monitors and tracks internal engine component condition providing the capability to maximize product performance and minimizing owning and operating costs

CAT® G3520C GAS ENGINE

- Robust high speed block design provides prolonged life and lower owning and operating costs
- Designed for maximum performance on low pressure pipeline natural gas
- Simple open chamber combustion system for reliability and fuel flexibility
- Leading edge technology in ignition system and air/fuel ratio control for lower emission and engine efficiency
- One electronic control module handles all engine functions: ignition, governing, air/fuel ratio control and engine protection
- 110° C Jacket water temperature
- Corrosion resistant components for durability
- Crankcase breather with air cleaners for mitigating harmful effects from low energy gaseous fuel

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
- Remote control and monitor capability options

FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Gas Engine Control Module (GECM)	<ul style="list-style-type: none"> 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 	
Air Inlet	<ul style="list-style-type: none"> Two element, single-stage air cleaner with enclosure and service indicator 	<ul style="list-style-type: none"> Air cleaner with precleaner Mounting stand
Control Panel	<ul style="list-style-type: none"> EMCP II+ 	<ul style="list-style-type: none"> Local alarm module Remote annunciator Communications Module (PL1000T, PL1000E) Synchronizing module Engine failure relay
Cooling	<ul style="list-style-type: none"> Engine driven water pumps for jacket water and aftercooler Jacket water and SCAC thermostats ANSI/DN customer flange connections for JW inlet and outlet Cat flanges on SCAC circuit 	<ul style="list-style-type: none"> Remote radiator for JW and SCAC circuits Level switch included but not wired Coolant level drain line with valves, fan with guard Inlet/Outlet connections
Exhaust	<ul style="list-style-type: none"> Dry exhaust manifolds, insulated and shielded Center section cooled turbocharger with Cat flanged outlet Individual exhaust port and turbocharger outlet wired to Integrated Temperature Sensing Module (ITSM) with GECM providing alarms and shutdowns 	<ul style="list-style-type: none"> Flange Exhaust expander Elbow Flexible fitting Muffler and spark-arresting muffler with companion flanges
Fuel	<ul style="list-style-type: none"> Electronic fuel metering valve Throttle plate, 24V DC actuator, controlled by GECM Fuel system is sized for 10.8 to 25.6 MJ/Nm³ (275 to 650 btu/scf) dry gas with pressure of 10.2 to 34.5 kPa to the engine fuel control valve 	<ul style="list-style-type: none"> Fuel filter Gas pressure regulator Gas shutoff valve, 24V, ETR (Energized-To-Run)
Generator	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Medium and high voltage generators and attachments Low voltage extension box Cable access box Air filter for generator Bearing temperature detectors Manual voltage control European bus bar
Governing	<ul style="list-style-type: none"> Electronic speed governor as part of GECM Electronically-controlled 24V DC actuator connected to throttle shaft 	<ul style="list-style-type: none"> Woodward load sharing module
Ignition	<ul style="list-style-type: none"> Electronic Ignition System controlled by GECM Individual cylinder Detonation Sensitive Timing (DST) 	
Lubrication	<ul style="list-style-type: none"> Lubricating oil Gear type lube oil pump Oil filter, filler and dipstick Integral lube oil cooler Oil drain valve Crankcase air cleaners 	<ul style="list-style-type: none"> Oil level regulator Prelube pump Positive crankcase ventilation system
Mounting	<ul style="list-style-type: none"> 330 mm structural steel base (for low and medium voltage units) Spring-type anti-vibration mounts (shipped loose) 	
Starting/Charging	<ul style="list-style-type: none"> 24V starting motors Battery with cables and rack (shipped loose) Battery disconnect switch 	<ul style="list-style-type: none"> Charging alternator Battery charger Oversized battery Jacket water heater
General	<ul style="list-style-type: none"> Paint — Caterpillar Yellow except rails & radiators Damper guard Operation and Maintenance Manuals Parts Book 	<ul style="list-style-type: none"> Crankcase explosion relief valve Engine barring group EEC D.O.I and other certifications

SPECIFICATIONS

CAT GAS ENGINE

G3520C SCAC 4-stroke-cycle watercooled gas engine
Number of Cylinders V20
Bore — mm (in) 170 (6.7)
Stroke — mm (in)..... 190 (7.5)
Displacement — L (cu in)..... 86.3 (5,266)
Compression Ratio 11.3:1
Aspiration .. Turbocharged Separate Circuit Aftercooled
Cooling Type Two-stage aftercooler,
JW + O/C + A/C 1 combined
Fuel System..... Low pressure
Governor Type..... Electronic (ADEM™ III)

CAT SR4B GENERATOR

Frame size 828
Excitation Permanent Magnet
Pitch..... 0.7778
Number of poles 4
Number of bearings 2
Number of leads 6
Insulation Class H
IP rating Drip proof IP22
Alignment Pilot shaft
Overspeed capability — % of synchronous speed .. 125%
Waveform deviation line to line, no load .. less than 3.0%
Paralleling kit droop transformer Standard
Voltage regulator..... CDVR
Voltage regulation with 3% speed change..... ± 0.5%
Telephone Influence Factor (TIF)..... less than 50

Consult your Caterpillar dealer for available voltages.

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

TECHNICAL DATA

Generator Set — 1500 rpm/50 Hz/400 Volts		DM 8647	DM 8648
G3520C Gas Generator Set			
Emission level (NOx)	mg/Nm ³	500	250
Aftercooler SCAC (Stage 2)	Deg C	54	54
Package Performance (1)			
Power Rating @ 0.8 pf (with 2 water pumps and without fan)	kVA Continuous	2458	2458
Power Rating @ 0.8 pf (with 2 water pumps and without fan)	ekW Continuous	1966	1966
Power Rating @ 1.0 pf (with 2 water pumps and without fan)	ekW Continuous	1986	1986
Electric Efficiency @ 1.0 pf (ISO 3046/1) (2)	%	39.3	38.4
Mechanical Power (with 2 water pumps and without fan)	bkW	2035	2035
Fuel Consumption (3)			
100% load without fan	Nm ³ /hr	841	864
75% load without fan	Nm ³ /hr	656	674
50% load without fan	Nm ³ /hr	462	475
Altitude Capability (4)			
At 25° C (77° F) ambient	M	1700	1300
Cooling System			
Ambient air temperature	Deg C	25	25
Jacket water temperature (Maximum outlet)	Deg C	110	110
Exhaust System			
Combustion air inlet flow rate	Nm ³ /min	137	144
Exhaust stack gas temperature	Deg C	504	500
Exhaust gas flow rate	Nm ³ /min	145	154
Exhaust flange size (internal diameter)	mm	360	360
Heat Rejection (5)			
Heat rejection to jacket water and oil cooler and AC — Stage 1	kW	1132	1158
Heat rejection to oil cooler and AC — Stage 2	kW	207	216
Heat rejection to exhaust (LHV to 120° C)	kW	1399	1461
Heat rejection to atmosphere from engine	kW	154	154
Heat rejection to atmosphere from generator	kW	69	69
Generator			
Frame		828	828
Temperature rise	Deg C	105	105
Motor starting capability @ 30% voltage dip (6)	skVA	4557	4557
Lubrication System			
Standard sump refill with filter change	L	541	541
Emissions (7)			
NOx @ 5% O ₂ (dry)	mg/Nm ³	500	250
CO @ 5% O ₂ (dry)	mg/Nm ³	2220	1914
THC @ 5% O ₂ (dry)	mg/Nm ³	2230	2833
NMHC @ 5% O ₂ (dry)	mg/Nm ³	335	425
Exhaust O ₂ (dry)	%	8.6	9

DEFINITIONS AND CONDITIONS

(1) Continuous — Maximum output available for an unlimited time.

Ratings are based on pipeline natural gas having a Low Heat Value (LHV) of 21.6 MJ/Nm³ (548 Btu/cu ft) and 140 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° C (77° F) of ambient temperature and 100 kPa (29.61 in Hg) of total barometric pressure, 30% relative humidity with 0, +5% fuel tolerance.

(4) Altitude capability is based on 2.5 kPa air filter and 5.0 kPa exhaust stack restrictions.

(5) Heat Rejection — Values based on nominal data with fuel tolerance of ±2.5% and 2.5 kPa inlet and 5.0 kPa exhaust restrictions.

(6) Assume synchronous driver

(7) 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, NOx.

Data shown is based on steady state engine operating conditions of 25° C (77° F), 96.28 kPa (28.43 in Hg) and fuel having a LHV of 21.6 MJ/NM³ (548 Btu/cu ft) and 140 Caterpillar Methane Number at 101.60 kPa (30.00 in Hg) absolute and 0° C (32° F). Emission data shown is subject to instrumentation, measurement, facility, and engine fuel system adjustment.

DIMENSIONS

Package Dimensions		
Length	6316.0 mm	248.66 in
Width	1827.5 mm	71.95 in
Height	2564.8 mm	100.98 in
Est. Shipping Weight	18 350 kg	40,437 lb

Note: Do not use for installation design.
See general dimension drawings
for detail (Drawing # 322-1827).

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Performance Number: DM8647
DM8648

Feature Code: 520GE37

Generator Arrangement: 144-1830

Source: U.S. Sourced

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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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