



Image shown may not reflect actual package

NATURAL GAS CONTINUOUS 2022 kW 2528 kVA 50 HZ 1500 RPM 10.5-11 kV

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

FEATURES

EMISSIONS

- Meets most worldwide emission Levels down to 250 mg/Nm³ Nox level without after treatment

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

- Cat[®] dealers provide extensive post sales 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 conditions, even the presence of unwanted fluids and combustion by-products

Cat G3520E 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.
- 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

CAT SR4B GENERATOR

- Designed to match performance and output characteristics of Cat 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 relayin
- Remote control and monitor capability options

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FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

	Standard	Optional
Gas Engine Control Module (GECM)	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 Island Mode Feature	
Air Inlet		Single element air cleaner Two element air cleaner with enclosure, precleaner and service indicator
Control Panel		EMCP II+ Kilowatt transducer (ship loose) Local alarm module Remote annunciator Communication Module (PL1000T, PL1000E) Synchronizing module Engine failure relay
Cooling	Jacket water and SCAC thermostats ANSI/DN customer flange connections for JW inlet and outlet Cat flanges on SCAC circuit	Coolant level drain line with valves, fan with guard Inlet/Outlet connections Engine driven water pumps for jacket water and aftercooler
Exhaust	Dry exhaust manifolds, insulated and shielded Center section cooled turbocharger with Cat flanged outlet Individual exhaust port and turbocharged outlet wired to Integrated Sensing Module (ITSM) with GECM providing alarms and shutdowns	Flange Exhaust expander Elbow Flexible fitting Muffler and spark-arresting muffler w/companion flanges
Fuel	Electronic fuel metering valve Water cooled throttle, 24V DC actuator, controlled by GECM Fuel system is sized for 31.5 to 47.2 MJ/Nm ³ (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) Corrosion resistant aftercooler
Generator	SR4B generator, includes: Cat Digital Voltage Regulator (Cat DVR) with 3-phase sensing and kVAR / PF control Reactive droop Bus bar connections Bearing temperature detectors	Low voltage generators and attachments Low voltage extension box European bus bar Cable access box Air filter for generator Manual voltage control European bus bar
Governing	Electronic speed governor as part of GECM Electronically-controlled 24V DC actuator connected to throttle shaft	Woodward load sharing module
Ignition	Electronic Ignition System controlled by GECM Individual cylinder Detonation Sensitive Timing (DST)	
Lubrication	Gear type lube oil pump Oil filter, filler and dip stick Integral lube oil cooler Oil drain valve Crankcase breather	Oil level regulator Prelube pump Positive crankcase ventilation system Lubricating oil
Mounting	330 mm structural steel base	Spring-type anti-vibration mounts (shipped loose)
Starting / Charging	24V starting motors Battery disconnect switch	Battery (24V), rack and cables Battery charger Oversized battery Jacket water heater
General	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

GAS ENGINE

G3520E 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 (5248)
Compression Ratio	21:36
Aspiration	Turbocharged Separate Circuit Aftercooled
Cooling Type	JW, Oil Cooler and Stage 1 of SCAC Combine
Fuel System	Low Pressure
Governor Type	Electronic (ADEM III)

SR4B GENERATOR

Frame size	2650
Excitation	Permanent Magnet
Pitch	0.6667
Number of poles	4
Number of bearings	2
Number of leads	6
Insulation	Class F
IP rating	Drip proof IP22
Alignment	Pilot shaft
Overspeed capability -- % of rated	125%
Waveform deviation line to line, no load	less than 2.0%
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 Cat 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

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TECHNICAL DATA

G3520E Gas Generator Set	Ref.	Feature Code 520GE63			
		DM8918	DM8922	DM8916	DM8920
Emission level (NO _x)	mg/Nm ³	250		500	
Aftercooler SCAC (Stage 2)	Deg C	54	43	54	43
Package Performance ⁽¹⁾					
Power Rating @ 0.8 pf (w/o water pumps and w/o fan)	ekW Continuous	2029			
Power Rating @ 1.0 pf (w/o water pumps and w/o fan)	ekW Continuous	2043			
Mechanical Power (w/ 2 water pumps and w/o fan)	bkW Continuous	2100			
Electric Efficiency @ 1.0 pf (ISO 3046/1) ⁽²⁾	%	41.2%	40.9%	42.6%	42.3%
Fuel Consumption ⁽³⁾					
100% load w/o fan	Nm ³ /hr	501	505	485	489
75% load w/o fan	Nm ³ /hr	387	505	376	377
50% load w/o fan	Nm ³ /hr	270	271	265	265
Altitude Capability ⁽⁴⁾					
At 25 Deg C (77 Deg F) ambient, above sea level	m	500	500	750	950
Cooling System					
Ambient air temperature	Deg C	25	25	25	25
Jacket water temperature (Maximum outlet)	Deg C	99	94	99	94
Exhaust System					
Combustion air inlet flow rate	Nm ³ /min	143.9	143.9	137.2	137.2
Exhaust stack gas temperature	Deg C	441	443	440	443
Exhaust gas flow rate	Nm ³ /min	146.9	145.6	140.2	138.8
Heat Rejection ⁽⁵⁾					
Heat rejection to Jacket Water+Oil Cooler+AC-Stage 1	kW	1151	1171	1068	1078
Heat rejection to AC-Stage 2	kW	177	189	162	179
Heat rejection to exhaust (LHV to 120 Deg C)	kW	1148	1147	1096	1094
Heat rejection to atmosphere from engine	kW	138	131	138	131
Heat rejection to atmosphere from generator	kW	70	70	70	70
Generator					
Frame		2650	2650	2650	2650
Temperature rise	Deg C	105	105	105	105
Motor starting capability @ 30% voltage dip ⁽⁶⁾	skVA	4113	4113	4113	4113
Lubrication System					
Standard sump refill with filter change	L	541	541	541	541
Emissions ⁽⁷⁾					
NO _x @ 5% O ₂ (dry)	mg/Nm ³	250	250	500	500
CO @ 5% O ₂ (dry)	mg/Nm ³	1101	1060	1074	1051
THC @ 5% O ₂ (dry)	mg/Nm ³	3555	3429	3032	2945
NMHC @ 5% O ₂ (dry)	mg/Nm ³	533	514	455	442
Exhaust O ₂ (dry)	%	9.8%	9.6%	9.6%	9.3%

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RATING 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 35.6 MJ/Nm³ (905 Btu/ft³) and 80 Cat Methane Number. For values in excess of altitude, ambient temperature, inlet / exhaust restriction, or different from the conditions listed, contact your local Cat dealer.

(2) **Efficiency** of standard generator is used. For higher efficiency generators, contact your local Cat 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) Assumed **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, NO_x.

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 35.6

MJ/Nm³ (905 Btu/ft³) and 80 Cat 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.

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DIMENSIONS

Package Dimensions		
Length	6274 mm	247 in
Width	1829 mm	72 in
Height	2362 mm	93 in
Approx. Shipping Weight	19,686 kg	42,000 lb

Note: Do not use for installation design.
See general dimension drawings
for details
(Drawing #366-9962)

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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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Performance Number : DM8918, DM8916, DM8922, DM8920

Feature Codes: 520GE63

Generator Arr:: 276-0476

Source: US Sourced

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