Image shown may not reflect actual configuration

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

Specifications

Generator Set Specifications	
Rating	1600 ekW (2000 KVA) / 1710 bkW (2293 bhp)
Voltage	400 Volts
Frequency	50 Hz
Speed	1500 rpm

Generator Set Configurations	
Emissions	Non-certified

Engine Specifications		
Engine Model	3516B, V-16, 4-Stroke Diesel	
Bore	170 mm	6.69 in
Stroke	190 mm	7.48 in
Displacement	69 L	4211 in³
Aspiration	Turbocharged-Aftercooled	
Fuel System	EUI™	
Engine Control and Protection	ADEM™ A4	
Generator Frame	1647	
Generator Set Control	EMCP 4.4	

Benefits & Features

Dynamic Gas Blending™ System

- Achieves up to 70% substitution while maintaining diesel performance and safe engine operation.
- Closed loop control system enables maximum substitution over the widest load range in the industry.
- Maintains traditional diesel generator set power and transient response performance.
- Accepts a wide range of gas quality and automatically adjusts to fuel quality changes, eliminating the need for field calibration.
- EMCP 4.4 control panel features simplified rig integration, remote monitoring capabilities, and single-point interface for the engine, generator, and DGB™ functions.
- Leverages current hardware from G3516 product line while minimizing change to core diesel engine.
- Maintains existing diesel maintenance and overhaul intervals proven in oilfield applications.

Engine Design

- Market-leading power density.
- Proven reliability and durability.
- Robust design prolongs life and lowers owning and operating costs.
- Long overhaul life proven in oilfield applications.
- Core engine components designed for reconditioning and reuse at overhaul.

Cat® Generator

- Matched to the performance and output characteristics of Cat engines.
- Industry-leading mechanical and electrical design.
- Industry-leading motor starting capabilities.
- High efficiency.

Safety

- E-stop pushbutton on instrument panel.
- Air shut-off and explosion relief valves.
- Configurable alarm and shutdown features.
- Extra alarm switches available for customer-supplied inputs.
- Flame arrestors.

Ease of Installation and Packaging

- EMCP 4.4 control panel uses standard communication protocols to integrate easily with other monitoring equipment to track engine health and substitution performance.
- Paralleling and load sharing capability.
- Fully integrated diesel and gas controls into single engine control unit.
- Single-point operation for generator set and DGB system.
- DGB system automatically activates when gas supply is detected.

Benefits & Features (continued)

Custom Packaging

For any electric power application, trust Caterpillar to meet your project needs with custom factory generator sets and mechanical packages. Cat engines, generators, controls, UPS, cooling systems, exhaust systems and sound attenuating enclosures can be custom designed and matched in collaboration with our local dealers to create unique solutions. Custom packages are globally supported and are covered by a one-year warranty after start-up.

Testing

Every unit is full-load tested to ensure proper performance.

Product Support Offered Through Global Cat Dealer Network

- More than 1800 dealer outlets operating in 200 countries.
- Cat factory-trained dealer technicians to service every aspect of your Cat product.
- Worldwide parts availability, service, and warranty.
- Preventive maintenance agreements available for repair-before-failure options.
- S•O•S℠ program matches your oil and coolant samples against Caterpillar set standards to determine:
  - Internal engine component condition.
  - Presence of unwanted fluids and combustion by-products.
  - Site-specific oil change interval.

Over 80 Years of Engine Manufacturing Experience

The Caterpillar Production System enables manufacturing of products with the highest quality standards for long and dependable operation.

Web Site

For all your electric power requirements, visit www.catelectricpowerinfo.com

Standard Equipment

Air Inlet System

- Aftercooler core — corrosion resistant
- Air cleaner — regular duty with soot filter
- Service indicators
- Flame arrestors

Control System

- ADEM A4 ECU
- Integrated Sensor Module (ISM) for combustion feedback sensors
- Exhaust gas temperature sensors

Cooling System

- Package-mounted radiator, with belt-driven cooling fan
- Outlet controlled thermostat and housing
- Jacket water pump — gear-driven
- Aftercooler cooling pump (SCAC) — gear-driven centrifugal

Diesel Fuel System

- Primary fuel filter with integral water separator
- Secondary fuel filters
- Fuel priming pump
- Electronically controlled unit injectors
- Fuel cooler (not included on packages without a radiator)

Exhaust System

- Exhaust flexible fitting, adapter and flanges
- Dual turbochargers

Flywheels and Flywheel Housings

- SAE No. 21 flywheel
- SAE No. 00 flywheel housing
- SAE standard rotation

Generator and Generator Attachments

- 3-phase brushless, salient pole
- 6 leads
- Cat Digital Voltage Regulator (Cat DVR), includes:
  - Reactive droop capability
  - 3-phase voltage sensing
  - KVAR/PF modes
  - RFI suppression
  - Min/max exciter

Standard Equipment (continued)

- Limiter and exciter diode monitor
- Low Voltage:
  - Random wound
  - Internal excitation
  - NEMA Class H insulation
  - Class H temperature rise at 40°C ambient (125°C prime/150°C standby)
  - Winding temperature detectors
  - Bus bar connections, top center mounted, top cable entry
  - IEC standard hole pattern
  - IP23 protection

Gaseous Fuel System

- Manual isolation and purge point
- Double solenoid shut-off valves to DIN EN 161 Class A Group 2
- Valve proving system to EN 1643
- Independent high and low gas pressure switches
- Electronically actuated fuel control valve
- Pressure regulating installation, mounted on a separate skid, comprised of:
  - Manual shut-off valve
  - 1 micron gaseous fuel filter
  - Combined overpressure shut-off valve and regulator
  - Relief valve
- CE, Rostechnadzor, GOST, CSA, and AGA approved components

Instrumentation

- EMCP 4.4 control panel – See full specifications on page 10.
- Analog gauges with digital display data for:
  - Engine oil pressure gauge
  - Engine water temperature gauge
  - Fuel pressure gauge
  - System DC voltage gauge
  - Air inlet restriction gauge
  - Exhaust temperature (prior to turbochargers) gauge
  - Fuel filter differential pressure gauge,
  - Oil filter differential pressure gauge
  - Service meter (digital display only)
  - Tachometer (digital display only)
  - Instantaneous fuel consumption (digital display only)
  - Total fuel consumed (digital display only)
  - Engine start/stop (off, auto start, manual start, cooldown timer)

Standard Equipment (continued)

Lube System

- Gear-type lube oil pump
- Integral oil cooler
- Oil filter, filler, and dipstick
- Crankcase breather

Mounting System

- Heavy-duty skid base, engine/generator/radiator mounting
- Rubber anti-vibration mounts (shipped loose)

Protection System

ADEM A4 ECU monitoring system provides engine protection strategies to protect against adverse operating conditions. Selected parameters are customer programmable

Starting System

- 24V electric starting motor
- Battery and battery rack with cables
- Battery disconnect switch

General

- Paint – Caterpillar yellow with high gloss black skid base and radiator

Optional Equipment and Services

Air Inlet System

- Heavy-duty air cleaners and precleaners

Control System

- Additional control systems for mains paralleling
- Digital I/O module
- Remote monitoring software

Exhaust System

- Exhaust mufflers

Generator and Generator Attachments

- Oversize and premium generators
- Permanent magnet excitation (PMG)
- Anti-condensation space heaters
- Circuit breakers, UL listed/IEC compliant

Starting System

- Oversize batteries
- Battery charger
- Charging alternator
- Jacket water heaters
- Heavy-duty starting system
- Air starting motor with control and silencer

General

(Subject to regional configurations)

- CE certification
- UL 2200 package
- CSA certification
- Enclosures – sound attenuated, weather protected, classified to Hazardous Area Zone 2NE, with diesel fuel storage and transfer options, gas detection and fire-fighting systems, and upgrades for arctic or tropical conditions
- Integral and sub-base diesel fuel tank
- Integral and sub-base UL-listed dual-wall diesel fuel tank
- Switchgear for customized projects
- Factory witness test

Rating Type: PRIME

Emissions: Non-certified

Image shown may not reflect actual configuration

3516B Generator Set with DGB
1600 ekW/ 2000 kVA
50 Hz/ 1500 rpm/ 400V

Generator Set Specifications – 1500 rpm/50 Hz/400V	
Model	Cat 3516B with DGB
Electrical Power Output	2000 kVA
Rated Power (with Fan)	1600 ekW

Engine Data	
Engine Model	3516B TA, V-16, 4-Stroke Water-cooled Diesel with DGB
Engine Power	1710 bkW (2293 bhp)
Engine Speed	1500 rpm
Max. Altitude Without Derate (@ 25°C)	1250 m (4101 ft)
BMEP	1982 kPa (287 psi)
Gas Fuel Pressure (Before Pressure Regulating)	0.83 – 2.0 bar (12 – 30 psig) Other Pressures Available on Request
Gas Fuel Flow, Maximum (@ 32 MN)*	5114 MJ/hr (80840 Btu/min)
Gas Fuel Flow, Maximum (@ 45 MN)*	6408 MJ/hr (101295 Btu/min)
Gas Fuel Flow, Maximum (@ 65 MN)*	7042 MJ/hr (111317 Btu/min)
Gas Fuel Flow, Maximum (@ 85 MN)*	10186 MJ/hr (161015 Btu/min)
Max BSFC (diesel mode @ 100% load)	195 g/bkW-hr (0.32 lb/bhp-hr)
Air Flow Rate	122 m^3/min (4323 ft^3/min)
Inlet Manifold Pressure	213 kPa (31 psi)
Inlet Manifold Temperature	72°C (161°F)
Aftercooler Water Temperature	60°C (140°F)
Jacket Water Temperature	99°C (210°F)
Exhaust Stack Temperature**	528°C (982°F)
Exhaust Mass Flow Rate**	9448 kg/hr (20829 lb/hr)
Engine Coolant Capacity (with Radiator)	382 L (101 gal)
Lube Oil System Capacity	405 L (107 gal)
Oil change interval (Subject to S•O•S services)	500 hours
*At Rated Load and Maximum Substitution.	**Maximum 32 MN – 85 MN Gas at Rated Power.

Rating Type: PRIME **Emissions: Non-certified**

Generator Data	
Frame Size	1647
Excitation	Internal Excitation
Pitch	0.6667
Number of Poles	4
Number of Bearings	Single Bearing
Number of Leads	6
Insulation	Class H (UL 1446 Recognized) with Tropicalization and Antiabrasion
IP Rating	IP23
Alignment	Pilot Shaft
Overspeed Capability (%)	150
Wave Form Deviation (Line to Line)	002.00
Voltage Regulator	3-phase Sensing with Selectable Volts/Hz
Voltage Regulation	Less Than +/- 0.5% (Steady State) Less Than +/- 1% (No Load to Full Load)

Altitude and Ambient Capability

	0°C	10°C	20°C	30°C	40°C	50°C	60°C
0 m	1.00	1.00	1.00	1.00	1.00	1.00	0.95
500 m	1.00	1.00	1.00	1.00	1.00	1.00	0.93
1000 m	1.00	1.00	1.00	1.00	1.00	0.96	0.89
1500 m	1.00	1.00	1.00	0.97	0.94	0.91	0.80
2000 m	0.95	0.95	0.94	0.91	0.88	0.85	0.68
2500 m	0.90	0.90	0.89	0.86	0.83	0.80	0.57
3000 m	0.85	0.85	0.83	0.80	0.78	0.75	0.48
3500 m	0.81	0.81	0.73	0.64	0.57	0.50	0.41
4000 m	0.77	0.70	0.62	0.54	0.48	0.42	0.36
4500 m	0.67	0.59	0.52	0.46	0.41	0.37	0.31

Rating Type: PRIME **Emissions: Non-certified**

Engine Heat Rejection (32 MN – 85 MN Gas)

Percent Load	Engine Power		Jacket Water		Aftercooler		Exhaust		Atmosphere	
	bkW	bhp	kW	Btu/ min	kW	Btu/ min	kW	Btu/min	kW	Btu/ min
100	1709	2292	692	39,353	395	22,463	1851	105,265	149	8473
75	1294	1735	542	30,823	246	13,990	1443	82,062	113	6426
50	881	1181	423	24,056	133	7564	1029	58,518	79	4493
25	472	633	317	18,027	14	796	633	35,998	46	2616

EMCP 4.4 Features

140 mm (5.5 in) Graphic Display

- Generator AC voltage
  - 3-phase (L-L & L-N)
  - ± 0.25% accuracy
- rpm and battery voltage
- Gen. AC current (per phase and average)
- Generator frequency
- Power metering (kW, kVA, kVAr, pf)
- Hour meters (kW-Hour, kVAr-Hour)
- Engine oil pressure (psi, kPa, or bar)
- Engine oil temperature (°C or °F)
- Engine coolant temperature (°C or °F)
- Multiple language support
- Engine start and crank attempt counter
- Real-time clock

Communication

- Accessory CAN data link
- RS-485 annunciator data link
- RS-485 SCADA (Modbus RTU)
- Ethernet SCADA (Modbus TCP)

Controls

- Auto/start/stop
- Engine cool-down timer
- Emergency stop
- Engine cycle crank
- Programmable cycle timer
- Paralleling up to eight units

Rating Type: PRIME **Emissions: Non-certified**

EMCP 4.4 Features

Generator Set Protection

- Over/under voltage
- Over/under frequency
- Generator phase sequence
- Overcurrent (timed and inverse)
- Reverse kW, kVA
- Current balance
- Bus phase sequence
- Low oil pressure
- High coolant temp
- Low coolant level
- Fail-to-start
- Overspeed

Outputs

- 17 programmable digital outputs
- 3 programmable (4-20mA or ±10V)
- 2 programmable (PWM)

Inputs

- Emergency stop
- Remote start
- 12 programmable digital inputs
- Oil pressure and water temperature
- 4 programmable inputs (±10V, PWM, current, or resistive)
- Oil temperature, fuel level

Other Features

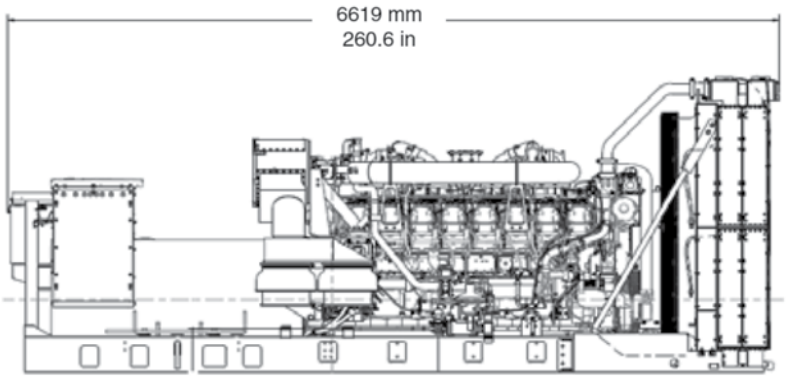
- 16 languages supported: Arabic, Chinese, Danish, Dutch, English, Finnish, French, German, Greek, Italian, Japanese, Portuguese, Russian, Spanish, Swedish, and Turkish
- Programmable security levels
- Reduced power mode
- Programmable kW relay
- Cat switchgear integration
- Status event log

ELECTRIC POWER – Marketing Spec Sheet
STANDARD

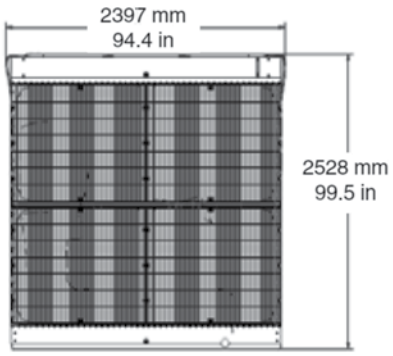
3516B Generator Set with Dynamic Gas Blending™ (DGB™)
1600 ekW/ 2000 kVA/ 50 Hz/ 1500 rpm/ 400V

Rating Type: PRIME **Emissions: Non-certified**

Generator Set Dimensions



Right Side View



Front View

Generator Set Dimensions*		
Length	6619 mm	260.6 in
Width	2397 mm	94.4 in
Height	2528 mm	99.5 in
Weight	19 000 kg	41,888 lb

*Note: For reference only – do not use for installation design.
Generator set weight is dry and includes engine, generator and base.
Please contact your local dealer for exact weight and dimensions.

DEFINITIONS AND CONDITIONS

PRIME Rating – Output available with varying load for an unlimited time. Prime power in accordance with ISO8528. Typical load factor 60-70%.

Conditions – Performance is obtained and corrected in accordance with ISO 3046/1. Reference atmospheric inlet air: 100 kPa (29.61 in Hg), 25°C (77°F), 30% relative humidity at stated aftercooler temperature. Performance is also in accordance with SAE J1995, BS5514/1, and DIN6271/1 standard reference conditions.

Diesel Fuel – Reference fuel is #2 distillate diesel with a 35 degree API gravity, lower heating value is 42 780 kJ/kg (18,390 BTU/lb) when used at 29°C (84.2°F), where the density is 838.9 g/L (7.001 lb/gal).

Gaseous Fuel – Reference natural gas has a lower heating value of 33.74 MJ/m^3 (905 Btu/cu.ft.). Low energy ratings are based on 18.64 MJ/m^3 (500 Btu/cu. ft.) lower heating value gas. High energy gas ratings are based on 87.56 MJ/m^3 (2350 Btu/cu.ft.) lower heating value gas.

Performance No. 0K7462
Feature Code: 516DE9G
Generator Arrangement: 2523862
Date: 11/15/2015

LEHE0835-00