



The 3516 generator set has been developed for a wide range of applications, from emergency standby installations such as healthcare and datacenters to continuously powering remote installations. The packages can be optimized for performance that matters to you with either low emissions or low fuel consumption versions available. Backed by the worldwide network of Cat dealers ready to support your operation with technical support, service, parts, and warranty, Cat generator sets will provide the reliability and durability you expect.

Specifications

Generator Set Specifications		
Height - Maximum	2367 mm	93.2 in
Length - Maximum	5919 mm	232.9 in
Width - Maximum	2286 mm	90 in
Minimum Rating	1600 kVA	
Maximum Rating	2000 kVA	
Voltage	400 to 415 Volts	
Frequency	50 Hz	
Speed	1500 rpm	
Duty Cycle	Continuous, Prime, Standby, Mission Critical	

Generator Set Configurations	
Emissions/Fuel Strategy	Low Fuel Consumption, Low Emissions

Engine Specifications		
Engine Model	3516 TA, V-16, 4-Stroke Water-Cooled Diesel	
Compression Ratio	13.0:1	
Aspiration	TA	
Governor Type	Woodward	
Fuel System	Mechanical unit injection	
Bore	170 mm	6.69 in
Displacement	69 l	4210.64 in ³
Stroke	190 mm	7.48 in
Air Inlet	Single element canister style with service indicator	
Exhaust Flange Size	203.2 mm (8.0 in)	

Benefits and Features

Cat Generator Set Package

Cat generator set packages have been fully prototype tested, and certified torsional vibration analysis reports are available. The packages are designed to accept 100% load in one step, meet the NFPA 110 requirement for loading, and conform to the ISO 8528-5 steady state and transient response requirements

Cat Diesel Engine

The four cycle Cat diesel engine combines consistent performance with excellent fuel economy and transient response that meets or exceeds ISO 8528-5. The engines have been designed and built for a wide range of applications and can be optimized for low fuel consumption or low emissions. The engines feature a reliable, rugged, and durable design that has been field proven in thousands of applications worldwide from emergency standby installations to continuously operating power plants.

Generators

The generators used on Cat packages have been designed and tested to work with the Cat engine. The generators are built with robust Class H insulation and provide industry leading motor starting capability. Random wound generators provide good generator performance in a majority of applications and form wound is available for harsh mechanical and electrical environments.

Cat EMCP Control Panel

The EMCP controller features the reliability and durability you have come to expect from your Cat equipment. EMCP4 is a scalable control platform designed to ensure reliable generator set operation, providing extensive information about power output and engine operation. EMCP4 systems can be further customized to meet your needs through programming and expansion modules.

Cooling System

The cooling system has been designed to operate in standard ambient temperatures up to 50°C (122°F), with optional high ambient radiators available. The factory installed cooling system has been designed and tested to ensure proper generator set cooling, and includes the radiator, fan, belts, and all guarding installed as standard. Contact your Cat Dealer for specific ambient and altitude capabilities.

Single-Source Supplier

Fully prototype tested with certified torsional vibration analysis available

World Wide Product Support

Cat Dealers provide extensive post sale support including maintenance and repair agreements. Cat dealers have over 1,800 dealer branch stores operating in 200 countries. The Caterpillar S•O•SSM program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products.

Standard Equipment

Air Inlet System

- Air Cleaner; single element canister type

Control System

- EMCP 4.2
- Emergency stop pushbutton
- 24 Volt DC operation
- Environmental sealed front face
- Text alarm/event descriptions

- Generator mounted - rear facing
- Generator set packages include Caterpillar's Voltage Regulator
- IVR includes reactive droop capability, 3-phase voltage sensing, KVAR / PF modes, RFI suppression, min / max exciter. Limiter and exciter diode monitor
- Controls:
 - Speed adjust
 - Auto / start / stop control
 - Engine cool-down timer
 - Engine cycle crank
 - Alarm acknowledge
 - Lamp test
 - Load histogram feature
 - PLC functionality
 - Customizable screens - 0 True RMS AC metering, 3-phase, +/-2% accuracy
 - Digital indication for:
 - RPM
 - Operating hours
 - Oil pressure (psi, kPa or bar) - Coolant temperature - Volts (L-L & L-N) - Frequency (Hz) - Amps (per phase & average) - Power Factor (per phase & average) - kW (per phase, average & percent) - kVA (per phase, average & percent) - kVAr (per phase, average & percent) - kW-hr (total) - kVAr-hr (total)
 - Coolant temperature
 - Volts (L-L & L-N)
 - Frequency (Hz)
 - Amps (per phase & average)
 - Power Factor (per phase & average)
 - kW (per phase, average & percent)
 - kVA (per phase, average & percent)
 - kVAr (per phase, average & percent)
 - kW-hr (total)
 - kVAr-hr (total)
 - Warning/shutdown with common LED indication of shutdowns for:
 - Low oil pressure
 - High coolant temperature
 - Overspeed
 - Emergency stop
 - Failure to start (overcrank)
 - Low coolant temperature
 - Low coolant level
 - Programmable protective relaying functions

- Generator phase sequence
- Over / Under voltage (27/59)
- Over / Under frequency (81 o/u)
- Reverse Power (kW) (32)
- Reverse Reactive Power (kVAr) (32RV)
- Overcurrent (50/51)
- Communications:
- Customer data link (Modbus RTU)
- Accessory module data link
- Serial annunciator module data link
- Cat Connect
- 3 Analog inputs
- 6 Customer programmable digital inputs
- Number of I/O varies on options selected:
- 4 programmable relay outputs (Form A)
- 1 programmable relay outputs (Form C)
- 1 programmable digital outputs
- Certified standard PGS provided
- ATAAC - 3516E Package Radiators shipped installed

Exhaust System

- Dry exhaust manifold
- Flanged faced outlet(s)

Fuel System

- Secondary fuel filters
- Fuel cooler; not included with packages without radiator
- Flexible fuel lines - shipped loose
- Fuel priming pump

General

- Caterpillar yellow with high gloss black rails and radiator
- Right hand servicing
- Flywheel and flywheel housing - SAE No. 00
- SAE standard rotation

Generator and Attachments

- 3 Phase brushless, salient pole
- Six lead
- Low Voltage:
- Random wound
- Internal Excitation

- Winding temperature detectorsle pattern
- NEMA Class H insulation, Class H temperature rise at 40C ambient (125C prime/150C standby)
- Busbar connections, top center mounted, top cable entry
- Busbar connections, top center mounted, top cable entry
- NEMA standard hole pattern
- Medium Voltage:
- Form wound
- Permanent magnet
- Winding temperature detectors
- NEMA Class H insulation, Class H temperature rise at 40C ambient (125C prime/150C standby)
- Bus bar connections, right side extension box, bottom cable entry
- NEMA standard hole pattern
- High Voltage:
- Form wound
- Permanent magnet
- Winding temperature detectors
- Anti Condensation Space Heater
- Class H insulation, Class F temperature rise at 40C ambient (105C prime/130C standby)

Governing System

- ADEM A3

Literature

- English

Lubrication System

- Lubricating oil
- Gear type lube oil pump
- Integral lube oil cool
- Oil filter, filler and dipstick
- Oil drain lines and valve
- Fumes disposal

Mounting System

- Rails - engine / generator / radiator mounting
- Anti-vibration mounts (shipped loose)
- Rubber anti-vibration mounts (shipped loose)

Starting System

- 24 Volt electric starting motor
- 45 Amp charging alternator
- Battery and battery rack w/cables
- Battery disconnect switch

Optional Equipment

Control System

- EMCP 4.3, EMCB 4.4

Air Inlet System

- Single element filter
- Dual element air cleaner

Cooling System

- Standard ambient radiators
- Standard ambient ATAAC radiators
- Optional installed radiators
- Optional installed ATAAC radiators
- Water level switch gauges
- Coolant

Crankcase System

- No explosion relief valves
- Explosion relief valves
- Ventilation system

Exhaust System

- Elbows
- Flange and exhaust expanders
- Flanges
- Flexible fittings
- Y-Adapters
- Mufflers
- Exhaust offset
- Tier 4 clean emissions module
- Tier 4 dosing cabinet
- Tier 4 clean emission MOD Kits
- Clean emission parts

Fuel System

- Primary Fuel Filter
- Fuel Priming Pumps (Tier 4) - Manual or electric

General

- US aid emblem
- Special paint (Colors other than Caterpillar yellow or high performance paints)

Generators and Attachments

- Low / medium voltage: 380, 440, 480, 600 volts, 3 phase 1800 rpm. RW, IE, No. of Leads = 6, Pitch = .6667: 1600 Frame
- Low / medium voltage: 380, 416, 440, 480, 600, 2400, 4160 Volts, 3 Phase 1800 RPM, FW, PM, No. of Leads = 6, Pitch = .6667: 1600, 1800 Frame
- High voltage: 6300, 6600, 6900 volts, 3 phase 1800 rpm, FW, PM, No. of Leads = 6, Pitch = .6667: 2700, 3000 Frame
- High voltage: 12470, 13200, 13800 volts, 3 phase 1800 rpm, FW, PM, No. of Leads = 6, Pitch = .6667: 2700, 3000 Frame
- Low / medium voltage: 380/400/415 volts, 3 phase 1500 rpm. RW, IE, No. of Leads = 6, Pitch = .6667: 1600 Frame
- Low / medium voltage: 380/400/415 volts, 3 phase 1500 rpm. RW, PM, No. of Leads = 6, Pitch = .6667: 1600 and 1800 Frames
- Space heater
- Generator conversion
- Thermostate for space heater
- Alternator air cleaner
- Differential current transformers (DCT)
- Differential current transformers (DCT) 8.7 kV and 15 kV classes

Instrumentation

- Pyrometer and thermocouples

Lubrication System

- Lube oil in standard sump
- Oil level regulator
- Prelube pumps

Mounting System

- Puck style low efficiency isolators
- Spring type vibration isolators
- IBC vibration isolators

Power Connections

- Ground cables between generator and terminal box
- Neutral ground connections
- Center post busbar
- Right side power connections
- Left side power connections
- Rear power connections
- 2700 Frame, four lead, four terminal
- Low voltage circuit breakers

Special Tests / Reports

- Canadian Standards Association certification
- IBC certification

- OSHPD certification
- PGS test report @ 1.0 power factor
- PGS test report @ 0.8 power factor
- Standard engine test charge
- generator test report
- Fuel consumption test
- Generator set fuel consumption test
- Torsional vibration analysis reports

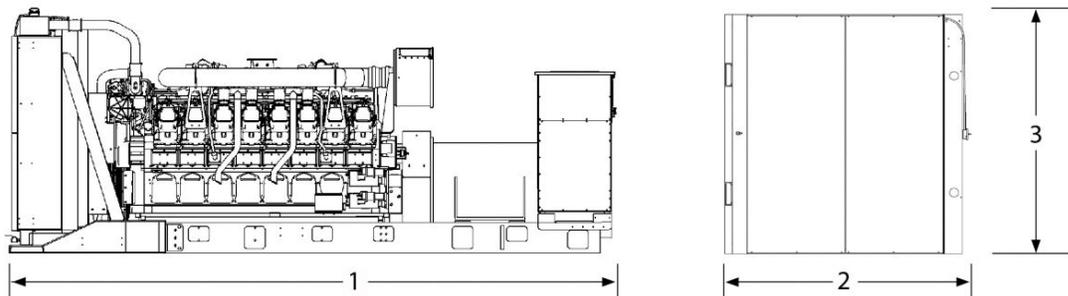
Starting and Charging

- Engine barring device
- 24 Volt battery set - Dry
- 10, 20, 35 and 50 amp battery chargers
- Electric starting motors
- Air starting motors
- Starter cover
- Air pressure regulator
- Jacket water heaters

Extended Service Coverage

- Platinum, Gold and Silver coverage

Dimensional Art



Dimensions	Dimension 1	Dimension 2	Dimension 3
Genset dimensions	5919 mm (232.9 in)	2286 mm (90.0 in)	2367 mm (93.2 in)

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3516

1600 ekW/ 2000 kVA/ 50 Hz/ 1500 rpm/ 400 V/ 0.8 Power Factor

Rating Type: STANDBY

Fuel Strategy: LOW FUEL CONSUMPTION



Image shown may not reflect actual configuration

3516
1600 ekW/ 2000 kVA
50 Hz/ 1500 rpm/ 400 V

Metric English

Package Performance

Genset Power Rating with Fan @ 0.8 Power Factor	1600 ekW	
Genset Power Rating	2000 kVA	
Aftercooler (Separate Circuit)	82.0 ° C	179.6 ° F

Fuel Consumption

100% Load with Fan	420.9 L/hr	111.2 gal/hr
75% Load with Fan	317.5 L/hr	83.9 gal/hr
50% Load with Fan	226.0 L/hr	59.7 gal/hr
25% Load with Fan	132.1 L/hr	34.9 gal/hr

Cooling System¹

Engine Coolant Capacity	233.0 L	61.6 gal
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Inlet Air

Combustion Air Inlet Flow Rate	127.7 m ³ /min	4509.4 cfm
Max. Allowable Combustion Air Inlet Temp	103 ° C	218 ° F

Exhaust System

Exhaust Stack Gas Temperature	498.5 ° C	929.2 ° F
Exhaust Gas Flow Rate	334.0 m ³ /min	11795.4 cfm
Exhaust System Backpressure (Maximum Allowable)	6.7 kPa	27.0 in. water



3516

1600 ekW/ 2000 kVA/ 50 Hz/ 1500 rpm/ 400 V/ 0.8 Power Factor

Rating Type: STANDBY

Fuel Strategy: LOW FUEL CONSUMPTION

Heat Rejection		
Heat Rejection to Jacket Water	1055 kW	59999 Btu/min
Heat Rejection to Exhaust (Total)	1532 kW	87130 Btu/min
Heat Rejection to Aftercooler	232 kW	13191 Btu/min
Heat Rejection to Atmosphere from Engine	166 kW	9448 Btu/min
Heat Rejection to Atmosphere from Generator	77 kW	4385 Btu/min

Alternator ²	
Motor Starting Capability @ 30% Voltage Dip	4978 skVA
Current	2887 amps
Frame Size	1625
Excitation	PM
Temperature Rise	125 ° C

Emissions (Nominal) ³		
NOx	7207.2 mg/Nm ³	13.6 g/hp-hr
CO	350.6 mg/Nm ³	0.7 g/hp-hr
HC	89.3 mg/Nm ³	0.2 g/hp-hr
PM	N/A	N/A

DEFINITIONS AND CONDITIONS

1. For ambient and altitude capabilities consult your Cat dealer. Air flow restriction (system) is added to existing restriction from factory.
2. UL 2200 Listed packages may have oversized generators with a different temperature rise and motor starting characteristics. Generator temperature rise is based on a 40° C ambient per NEMA MG1-32.
3. Emissions data measurement procedures 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 operating conditions of 77° F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

3516

1600 ekW/ 2000 kVA/ 50 Hz/ 1500 rpm/ 400 V/ 0.8 Power Factor

Rating Type: STANDBY

Fuel Strategy: LOW FUEL CONSUMPTION

Applicable Codes and Standards:

AS1359, CSA C22.2 No100-04, UL142,UL489, UL869, UL2200,
NFPA37, NFPA70, NFPA99, NFPA110, IBC, IEC60034-1, ISO3046, ISO8528,
NEMA MG1-22,NEMA MG1-33, 2006/95/EC, 2006/42/EC, 2004/108/EC.

Note: Codes may not be available in all model configurations. Please consult your local Cat Dealer representative for availability.

STANDBY:Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

Ratings are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions

Fuel Rates are based on fuel oil of 35° API [16° C (60° F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29° C (85° F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.). Additional ratings may be available for specific customer requirements, contact your Cat representative for details. For information regarding Low Sulfur fuel and Biodiesel capability, please consult your Cat dealer.

www.Cat-ElectricPower.com

Performance No.: DM8366-03

Feature Code: 516DE9F

Generator Arrangement: 2523850

Date: 08/02/2017

Source Country: U.K.

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