#### DIESEL GENERATOR SET





# **PRIME** 508 ekW 635 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.

#### **FEATURES**

#### **FUEL/EMISSIONS STRATEGY**

Low Fuel consumption

#### **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

#### SINGLE-SOURCE SUPPLIER

• Fully prototype tested with certified torsional vibration analysis available

#### WORLDWIDE 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 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 ® C18 ATAAC DIESEL ENGINE**

- Utilizes ACERT™ Technology
- Reliable, rugged, durable design
- Field-proven in thousands of applications worldwide
- Four-stroke-cycle diesel engine combines consistent performance and excellent fuel economy with minimum weight
- · Electronic controlled governor

#### **CAT GENERATOR**

- · Matched to the performance and output characteristics of Cat engines
- · Load adjustment module provides engine relief upon load impact and improves load acceptance and recovery time
- UL 1446 Recognized Class H insulation

#### **CAT EMCP 4 CONTROL PANELS**

- Simple user friendly interface and navigation
- · Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway

50 Hz 1500 rpm 400 Volts



## FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Air Inlet	Air cleaner	
Cooling	Package mounted radiator	
Exhaust	Exhaust flange outlet	[] Industrial [] Residential [] Critical Mufflers
Fuel	Primary fuel filter with integral water separator     Secondary fuel filters     Fuel priming pump	
Generator	Matched to the performance and output characteristics of Cat engines     Load adjustment module provides engine relief upon load impact and improves laod acceptance and recovery time     IP23 protection	[] Oversize and premium generators [] Permanent magnet excitation (PMG) [] Internal excited (IE) [] Anti-condensation space heaters
Power Termination	Bus bar	[ ] Circuit breakers, UL listed [ ] Circuit breakers, IEC compliant
Control Panel	EMCP 4 Genset Controller	[] EMCP 4.2 [] EMCP 4.3 [] EMCP 4.4 [] Local and remote annuniciator modules [] Load share module [] Digital I/O module [] Remote monitoring software
Mounting	Rubber vibration isolators	
Starting/Charging	24 volt starting motor     Batteries	[] Battery chargers [] Oversize batteries [] Jacket water heater [] Heavy duty starting system [] Charging alternator
General	Paint - Caterpillar Yellow except rails and radiators gloss black	The following options are based on regional and product configuration:  [] Seismic Certification per Applicable Building Codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, CBC 2007  [] UL 2200 package  [] EU Certificate of Conformance (CE)  [] CSA Certification  [] EEC Declaration of Conformity  [] Narrow, wide or skid base  [] Sound attenuated, weather protective or high ambient weather protective enclosures  [] Single or dual wall integral fuel tanks  [] Single or dual wall sub-base fuel tanks  [] Integral & sub-base UL listed dual wall fuel tanks  [] Automatic transfer switches (ATS)

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### **SPECIFICATIONS**

#### **CAT GENERATOR**

Frame size	LC7024H
Excitation	Internal Excitation
Pitch	0.6667
Number of poles	4
Number of bearings	Single bearing
Number of Leads	006
Insulation UL 1446 Re	ecognized Class H with
tropicalization and antiabrasion - Consult your Caterpillar dealer fo	r available voltages
IP Rating	Drip Proof IP23
Alignment	Pilot Shaft
Overspeed capability	150
Wave form Deviation (Line to Line)	2%
Voltage Regulator	Single Phase Sensing
Voltage regulationLess than	n +/- 1/2% (steady state)
Less than +/- ½% (w/ 3% speed cha	nge)

#### **CAT DIESEL ENGINE**

C18 ATAAC, I-6, 4-Stroke Water-cooled Diesel			
Bore	145.00 mm (5.71 in)		
Stroke	183.00 mm (7.2 in)		
Displacement	18.13 L (1106.36 in³)		
Compression Ratio	14.5:1		
Aspiration	Air-to-Air Aftercooled		
Fuel System	Electronic unit injection		
Governor Type	. Caterpillar ADEM control system		

#### **CAT EMCP 4 SERIES CONTROLS**

#### EMCP 4 controls including:

- Run / Auto / Stop Control
- Speed and Voltage Adjust
- Engine Cycle Crank
- 24-volt DC operation
- Environmental sealed front face
- Text alarm/event descriptions

#### Digital indication for:

- RPM
- DC volts
- Operating hours
- Oil pressure (psi, kPa or bar)
- Coolant temperature
- Volts (L-L & L-N), frequency (Hz)
- Amps (per phase & average)
- ekW, kVA, kVAR, kW-hr, %kW, PF (4.2 only)

#### Warning/shutdown with common LED indication of:

- 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) (4.2 only)
- Reverse reactive power (kVAr) (32RV)
- Overcurrent (50/51)

#### Communications:

- Four digital inputs (4.1)
- Six digital inputs (4.2 only)
- Four relay outputs (Form A)
- Two relay outputs (Form C)
- Two digital outputs
- Customer data link (Modbus RTU) (4.2 only)
- Accessory module data link (4.2 only)
- Serial annunciator module data link (4.2 only)
- Emergency stop pushbutton

#### Compatible with the following:

- Digital I/O module
- Local Annunciator
- Remote CAN annunciator
- Remote serial annunciator

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### **TECHNICAL DATA**

Open Generator Set 1500 rpm/50 Hz/400 Volts		DM9823	
Low Fuel Consumption			
Generator Set Package Performance			
Genset Power rating @ 0.8 pf	635 kVA		
Genset Power rating with fan	508 ekW		
Fuel Consumption			
100% load with fan	130.6 L/hr	34.5 Gal/hr	
75% load with fan	96.9 L/hr	25.6 Gal/hr	
50% load with fan	67.0 L/hr	17.7 Gal/hr	
Cooling System <sup>1</sup>			
Air flow restriction (system)	0.12 kPa	0.48 in. water	
Air flow (max @ rated speed for radiator arrangement)	373 m³/min	13172 cfm	
Engine Coolant capacity with radiator/exp. tank	54.8 L	14.5 gal	
Engine coolant capacity	20.8 L	5.5 gal	
Radiator coolant capacity	34.0 L	9.0 gal	
Inlet Air			
Combustion air inlet flow rate	35.3 m³/min	1246.6 cfm	
Exhaust System			
Exhaust stack gas temperature	550.5 ° C	1022.9 ° F	
Exhaust gas flow rate	101.2 m³/min	3573.8 cfm	
Exhaust flange size (internal diameter)	203 mm	8 in	
Exhaust system backpressure (maximum allowable)	10.0 kPa	40.2 in. water	
Heat Rejection			
Heat rejection to coolant (total)	165 kW	9384 Btu/min	
Heat rejection to exhaust (total)	487 kW	27696 Btu/min	
Heat rejection to aftercooler	91 kW	5175 Btu/min	
Heat rejection to atmosphere from engine	83 kW	4720 Btu/min	
Heat rejection to atmosphere from generator	31.9 kW	1814.1 Btu/min	
Alternator <sup>2</sup>			
Motor starting capability @ 30% voltage dip	1580 skVA		
Frame	LC7024H		
Temperature Rise	125 ° C	225 ° F	
Lube System			
Sump refill with filter	38.0 L	10.0 gal	
Emissions (Nominal) <sup>3</sup>			
NOx mg/nm3	3135.1 mg/nm <sup>3</sup>		
CO mg/nm3	411.8 mg/nm <sup>3</sup>		
HC mg/nm3	7.2 mg/nm³		
PM mg/nm3	14.2 mg/nm <sup>3</sup>		

<sup>&</sup>lt;sup>1</sup> For ambient and altitude capabilities consult your Cat dealer. Air flow restriction (system) is added to existing restriction from factory. <sup>2</sup> Generator temperature rise is based on a 40° C (104° F) ambient per NEMA MG1-32. Some packages may have oversized generators with a different temperature rise and motor starting characteristics.

<sup>&</sup>lt;sup>3</sup> 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.

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### **RATING DEFINITIONS AND CONDITIONS**

Meets or Exceeds International Specifications: AS1359, CSA, IEC60034-1, ISO3046, ISO8528, NEMA MG 1-22, NEMA MG 1-33, UL508A, 72/23/EEC, 98/37/EC, 2004/108/EC

**Prime** - Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of prime rated ekW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

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

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#### **DIMENSIONS**

Package Dimensions			
Length	Information not		
Width	available at this time.		
Height			

NOTE: For reference only - do not use for installation design. Please contact your local dealer for exact weight and dimensions. (General Dimension Drawing #3930335).

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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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Gen. Arr. Number: 3921384

Source: European Sourced

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