



Image shown may not reflect actual package.

## **STANDBY 400 kW 500 kVA 60 Hz 1800 rpm 480 Volts**

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

### **FEATURES**

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#### **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<sup>®</sup> 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 C13 ATAAC DIESEL ENGINE**

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

#### **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

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## FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Air Inlet	<ul style="list-style-type: none"> <li>• Disposable Air filter</li> <li>• Service indicator</li> </ul>	Canister type Air Filter: <input type="checkbox"/> Single element <input type="checkbox"/> Dual element
Cooling	<ul style="list-style-type: none"> <li>• Radiator package mounted</li> <li>• Coolant level sight gauge</li> <li>• Low coolant level sensor</li> <li>• Coolant drain line with valve</li> <li>• Fan and belt guards</li> <li>• Cat Extended Life Coolant</li> </ul>	<input type="checkbox"/> Radiator duct flange <input type="checkbox"/> Stone Guard <input type="checkbox"/> Low coolant temperature alarm
Exhaust	<ul style="list-style-type: none"> <li>• Dry exhaust manifold</li> <li>• Stainless steel flex fittings</li> <li>• Exhaust flange outlet</li> </ul>	<input type="checkbox"/> Industrial <input type="checkbox"/> Residential <input type="checkbox"/> Critical Mufflers <input type="checkbox"/> Manifold and turbocharger guards <input type="checkbox"/> Elbows and flange kits
Fuel	<ul style="list-style-type: none"> <li>• Integral narrow single wall fuel tank base</li> <li>• Primary fuel filter with integral water separator</li> <li>• Secondary fuel filters</li> <li>• Fuel priming pump</li> <li>• Engine fuel transfer pump</li> <li>• Fuel cooler integral with cooling system</li> <li>• Flexible fuel lines</li> </ul>	<input type="checkbox"/> Fuel level switch <input type="checkbox"/> Manual fuel transfer pump
Generator	<ul style="list-style-type: none"> <li>• Class H insulation</li> <li>• Self excited (SE)</li> <li>• Class H temperature rise</li> <li>• IP23 protection</li> <li>• R450 voltage regulator with single phase sensing and load adjustment module</li> </ul>	<input type="checkbox"/> Oversize generators <input type="checkbox"/> Permanent magnet excitation (PMG) <input type="checkbox"/> Internal excited (IE) <input type="checkbox"/> Cat digital voltage regulator (Cat DVR) with kVAR/PF <input type="checkbox"/> Anti-condensation space heaters <input type="checkbox"/> Coastal Insulation Protection (CIP) <input type="checkbox"/> Reactive droop <input type="checkbox"/> Three phase sensing
Power Termination	<ul style="list-style-type: none"> <li>• Power Center houses EMCP controller and power/control terminations (rear mounted)</li> <li>• Circuit breaker, IEC compliant, 3-4 pole (100% Rated)</li> <li>• Segregated low voltage wiring termination panel</li> <li>• IP22 protection</li> <li>• Bottom cable entry</li> </ul>	<input type="checkbox"/> C.B. Shunt trips <input type="checkbox"/> C.B. Auxiliary contacts
Governor	<ul style="list-style-type: none"> <li>• ADEM™ A4</li> </ul>	
Control Panel	<ul style="list-style-type: none"> <li>• EMCP 4.1 (Rear-mounted in Power Center)</li> <li>• Emergency stop pushbutton</li> <li>• AC Voltmeter, Ammeter &amp; Frequency</li> <li>• Engine Speed (rev/min)</li> <li>• Lube Oil pressure</li> </ul>	<input type="checkbox"/> EMCP 4.2 <input type="checkbox"/> Local annunciator module (NFPA 99/110) <input type="checkbox"/> Remote annunciator module (NFPA 99/110) <input type="checkbox"/> Digital I/O module <input type="checkbox"/> Speed adjustment <input type="checkbox"/> Voltage adjustment
Lube	<ul style="list-style-type: none"> <li>• Lubricating oil</li> <li>• Oil drain line with valves</li> <li>• Oil filter and dipstick</li> <li>• Fumes disposal</li> <li>• Oil cooler</li> </ul>	<input type="checkbox"/> Oil temperature sensor <input type="checkbox"/> Manual sump pump
Mounting	<ul style="list-style-type: none"> <li>• Integral Narrow 8hr tank base</li> <li>• Linear vibration isolation</li> </ul>	<input type="checkbox"/> Narrow skid base <input type="checkbox"/> Integral Dual Wall 8hr tank base* *Available only with enclosed units
Starting/Charging	<ul style="list-style-type: none"> <li>• 24 volt starting motor</li> <li>• 24 volt, 45 amp charging alternator</li> <li>• Batteries with rack and cables</li> </ul>	<input type="checkbox"/> Jacket water heater <input type="checkbox"/> Battery disconnect switch <input type="checkbox"/> Battery charger – 5 amp
General	<ul style="list-style-type: none"> <li>• Paint – Caterpillar Yellow except rails and radiators gloss black (Powder Coated)</li> <li>• Flywheel housing – SAE No. 1/2</li> </ul>	<input type="checkbox"/> EU Certificate of Conformance <input type="checkbox"/> Sound attenuated protective enclosure with integral lifting frame <input type="checkbox"/> High Ambient enclosure with integral lifting frame

## SPECIFICATIONS

<b>STANDARD CAT GENERATOR</b>	
Frame size	LC6114B
Excitation	Self excitation
Pitch	0.6667
Number of poles	4
Number of bearings	Single bearing
Number of leads	12
Insulation	Class H
IP Rating	IP23
Alignment	Pilot Shaft
Overspeed capability (%)	125
Wave form deviation (%)	2
Voltage regulator	Single phase sensing (Optional three phase sensing)
Voltage regulation	+/- 0.5% (steady state)
- Consult your Cat dealer for other available voltages	
<b>CAT DIESEL ENGINE</b>	
C13 ATAAC, I-6 4-stroke water-cooled diesel	
Bore	130.00 mm (5.12 in)
Stroke	157.00 mm (6.18 in)
Displacement	12.50 L (762.80 in <sup>3</sup> )
Compression ratio	16.3:1
Aspiration	Air-to-air aftercooled
Fuel system	MEUI
Governor type	ADEM A4 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

<b>Open Generator Set – 1800 rpm/60 Hz/480 Volts</b>	<b>EM0423</b>	
<b>Low BSFC</b>		
<b>Generator Set Package Performance</b> Genset power rating @ 0.8 pf Genset power rating with fan	500 kVA 400 ekW	
<b>Fuel Consumption</b> 100% load with fan 75% load with fan 50% load with fan	107.6 L/hr 80.8 L/hr 56.5 L/hr	28.4 gal/hr 21.3 gal/hr 14.9 gal/hr
<b>Cooling System<sup>1</sup></b> Air Flow Restriction Air Flow (max @ rated speed for radiator arrangement) Engine Coolant Capacity Radiator Capacity Engine Coolant Capacity w/ Rad	0.12 kPa 538 m <sup>3</sup> /min 14.2 L 31 L 45.2 L	0.48 in. water 18999 cfm 3.8 gal 8.2 gal 11.9 gal
<b>Inlet Air</b> Combustion air inlet flow rate	27.2 m <sup>3</sup> /min	960.6 cfm
<b>Exhaust System</b> Exhaust stack gas temperature Exhaust gas flow rate Exhaust flance size Exhaust system back pressure	708.2°C 82.4 m <sup>3</sup> /min 127 mm 10 kPa	1307°F 2909.9 cfm 5 in 40 in. water
<b>Heat Rejection</b> Heat rejection to coolant Heat rejection to exhaust Heat rejection from aftercooler Heat rejection to atmosphere from engine Heat rejection to atmosphere generator	158 kW 386 kW 70.2 kW 72.4 kW 29.2 kW	8985 Btu/min 21951 Btu/min 3992 Btu/min 4117.3 Btu/min 1660.6 Btu/min
<b>Alternator<sup>2</sup></b> Motor starting capability @ 30% voltage dip Frame Temperature rise	880 skVA LC6114B 150°C	270°F
<b>Lubrication System</b> Sump refill with filter	36.0 L	9.5 gal
<b>Emissions (Nominal)<sup>3</sup></b> NO <sub>x</sub> CO HC Part matter	2398.2 mg/nm <sup>3</sup> 631.1 mg/nm <sup>3</sup> 5.7 mg/nm <sup>3</sup> 0.0 mg/nm <sup>3</sup>	

<sup>1</sup>For ambient and altitude capabilities consult your Cat dealer. Airflow 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>3</sup>Emissions data measurement procedures are consistent with those described in EPA CF40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NO<sub>x</sub>. 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

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### Applicable Codes and Standards:

IEC60034-1, IEC60034-22, ISO3046, ISO8528, NEMA MG 1-32, NEMA MG 1-33, 2004/108/EC, 2006/42/EC, 2006/95/EC.

**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 or 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. Consult your Cat representative for details.

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## DIMENSIONS

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Package Dimensions		
Length	3800.0 mm	149.61 in
Width	1130.6 mm	44.51 in
Height	2156.0 mm	84.88 in

**NOTE:** For reference only – do not use for installation design. Please contact your local dealer for exact weight and dimensions. (General Dimension Drawing #4242079).

Performance No.: EM0423

Source: European Sourced  
Feature Code: C13DE12

Source: China Sourced  
Feature Code: C13DE28

Gen. Arr. Number: 3969606

LEHE0441-01 (11/13)

[www.Cat-ElectricPower.com](http://www.Cat-ElectricPower.com)

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