



Image shown may not reflect actual package.

## PRIME 280 ekW 350 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

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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 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

## 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:<br><input type="checkbox"/> Single element<br><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<br><input type="checkbox"/> Stone Guard<br><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<br><input type="checkbox"/> Manifold and turbocharger guards<br><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<br><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<br><input type="checkbox"/> Permanent magnet excitation (PMG)<br><input type="checkbox"/> Internal excited (IE)<br><input type="checkbox"/> Cat digital voltage regulator (Cat DVR) with kVAR/PF<br><input type="checkbox"/> Anti-condensation space heaters<br><input type="checkbox"/> Coastal Insulation Protection (CIP)<br><input type="checkbox"/> Reactive droop<br><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<br><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<br><input type="checkbox"/> Local annunciator module (NFPA 99/110)<br><input type="checkbox"/> Remote annunciator module (NFPA 99/110)<br><input type="checkbox"/> Digital I/O module<br><input type="checkbox"/> Speed adjustment<br><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<br><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<br><input type="checkbox"/> Integral Dual Wall 8hr tank base*<br>*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<br><input type="checkbox"/> Battery disconnect switch<br><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<br><input type="checkbox"/> Sound attenuated protective enclosure with integral lifting frame<br><input type="checkbox"/> High Ambient enclosure with integral lifting frame                                                                                                                                                                                                                                  |

## SPECIFICATIONS

| STANDARD CAT GENERATOR                                 |                                                        |
|--------------------------------------------------------|--------------------------------------------------------|
| 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 (%)                               | 150                                                    |
| Wave form deviation (%)                                | 2                                                      |
| Voltage regulator                                      | Single phase sensing<br>(Optional three phase sensing) |
| Voltage regulation                                     | +/- 0.5% (steady state)                                |
| – Consult your Cat dealer for other available voltages |                                                        |
|                                                        |                                                        |
| CAT DIESEL ENGINE                                      |                                                        |
| 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

# PRIME 280 ekW 350 kVA

50 Hz 1500 rpm 400 Volts



## TECHNICAL DATA

| Open Generator Set – 1500 rpm/50 Hz/400 Volts                                                                                                                                                            |  | EM0431                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------|
| Low BSFC                                                                                                                                                                                                 |  |                                                                                                                                        |
| <b>Generator Set Package Performance</b><br>Genset power rating @ 0.8 pf<br>Genset power rating with fan                                                                                                 |  | 400 kVA<br>320 ekW                                                                                                                     |
| <b>Fuel Consumption</b><br>100% load with fan<br>75% load with fan<br>50% load with fan                                                                                                                  |  | 72.3 L/hr<br>54.8 L/hr<br>39.0 L/hr<br>19.1 gal/hr<br>14.5 gal/hr<br>10.3 gal/hr                                                       |
| <b>Cooling System<sup>1</sup></b><br>Air Flow Restriction<br>Air Flow (max @ rated speed for radiator arrangement)<br>Engine Coolant Capacity<br>Radiator Capacity<br>Engine Coolant Capacity w/ Rad     |  | 0.12 kPa<br>398 m³/min<br>14.2 L<br>31 L<br>45.2 L<br>0.48 in. water<br>14055 cfm<br>3.8 gal<br>8.2 gal<br>11.9 gal                    |
| <b>Inlet Air</b><br>Combustion air inlet flow rate                                                                                                                                                       |  | 20.3 m³/min<br>716.9 cfm                                                                                                               |
| <b>Exhaust System</b><br>Exhaust stack gas temperature<br>Exhaust gas flow rate<br>Exhaust flange size<br>Exhaust system back pressure                                                                   |  | 629°C<br>54.8 m³/min<br>127 mm<br>10 kPa<br>1164°F<br>1935.2 cfm<br>5 in<br>40 in. water                                               |
| <b>Heat Rejection</b><br>Heat rejection to coolant<br>Heat rejection to exhaust<br>Heat rejection from aftercooler<br>Heat rejection to atmosphere from engine<br>Heat rejection to atmosphere generator |  | 113 kW<br>248 kW<br>42.5 kW<br>47.3 kW<br>19.8 kW<br>6426 Btu/min<br>14104 Btu/min<br>2417 Btu/min<br>2689.9 Btu/min<br>1126.0 Btu/min |
| <b>Alternator<sup>2</sup></b><br>Motor starting capability @ 30% voltage dip<br>Frame<br>Temperature rise                                                                                                |  | 745 skVA<br>LC6114B<br>125°C<br>225°F                                                                                                  |
| <b>Lubrication System</b><br>Sump refill with filter                                                                                                                                                     |  | 36.0 L<br>9.5 gal                                                                                                                      |
| <b>Emissions (Nominal)<sup>3</sup></b><br>NO <sub>x</sub><br>CO<br>HC<br>Part matter                                                                                                                     |  | 2876.9 mg/nm³<br>760.6 mg/nm³<br>7.2 mg/nm³<br>0.0 mg/nm³                                                                              |

<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.

**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

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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.: EM0431

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

Feature Code: C13DE02

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Source: European Sourced

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