## Diesel generator set

**QSK60 series engine**

1760 kVA – 2500 kVA 50 Hz  
1825 kW – 2250 kW 60 Hz

### Description

This Cummins® commercial generator set is a fully integrated power generation system, providing optimum performance, reliability, and versatility for stationary Standby, Prime Power, and Continuous duty applications.

### Features

**Cummins heavy-duty engine** - Rugged 4-cycle industrial diesel delivers reliable power, low emissions and fast response to load changes.

**Permanent Magnet Generator (PMG)** - Offers enhanced motor starting and fault clearing short circuit capability.

**Alternator** - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings; low waveform distortion with non-linear loads, fault clearing short-circuits capability, and class F or H insulation.

### Control system

The PowerCommand® electronic control is standard equipment and provides total genset system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, AmpSentry™ protection, output metering, auto-shutdown at fault detection and NFPA 110 Level 1 compliance.

### Cooling system

Standard integral set-mounted radiator system, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat.

### NFPA

The genset accepts full rated load in a single step in accordance with NFPA 110 for Level 1 systems.

### Warranty and service

Backed by a comprehensive warranty and worldwide distributor network.

### Specification sheet

<table>
<thead>
<tr>
<th>Model</th>
<th>Standby rating</th>
<th>Prime rating</th>
<th>Emissions compliance</th>
<th>Data sheets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50 Hz kVA (kW)</td>
<td>60 Hz kW (kVA)</td>
<td>50 Hz kVA (kW)</td>
<td>60 Hz kW (kVA)</td>
</tr>
<tr>
<td>C1760 D5e</td>
<td>1760 (1408)</td>
<td>1600 (1280)</td>
<td>2g TA Luft</td>
<td>DS49-CPGK</td>
</tr>
<tr>
<td>C2000 D5</td>
<td>2063 (1650)</td>
<td>1875 (1500)</td>
<td>DS48-CPGK</td>
<td></td>
</tr>
<tr>
<td>C2000 D5e</td>
<td>2000 (1600)</td>
<td>1825 (1460)</td>
<td>2g TA Luft</td>
<td>DS50-CPGK</td>
</tr>
<tr>
<td>C2250 D5</td>
<td>2250 (1800)</td>
<td>2000 (1600)</td>
<td>DS52-CPGK</td>
<td></td>
</tr>
<tr>
<td>C2500 D5A</td>
<td>2500 (2000)</td>
<td>2250 (1800)</td>
<td>4g TA Luft</td>
<td>DS53-CPGK</td>
</tr>
<tr>
<td>C2000 D6</td>
<td>2000 (2500)</td>
<td>1825 (2281)</td>
<td>DS86-CPGK</td>
<td></td>
</tr>
<tr>
<td>C2250 D6A</td>
<td>2250 (2813)</td>
<td>DS87-CPGK</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Generator set specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transient Performance</td>
<td>ISO 8528-5 compliant</td>
</tr>
<tr>
<td>Voltage regulation, No load to full load</td>
<td>± 0.5%</td>
</tr>
<tr>
<td>Random voltage variation</td>
<td>± 0.5%</td>
</tr>
<tr>
<td>Frequency regulation</td>
<td>Isochronous</td>
</tr>
<tr>
<td>Random frequency variation</td>
<td>± 0.25%</td>
</tr>
<tr>
<td>EMS compatibility</td>
<td>BS EN61000-6-4/BS EN61000-6-2</td>
</tr>
</tbody>
</table>

Engine specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>4 cycle, V-black, turbocharged and low temperature after-cooled</td>
</tr>
<tr>
<td>Bore</td>
<td>158.8 mm (6.25 in)</td>
</tr>
<tr>
<td>Stroke</td>
<td>190.0 mm (7.48 in)</td>
</tr>
<tr>
<td>Displacement</td>
<td>60.2 L (3673 in³)</td>
</tr>
<tr>
<td>Cylinder block</td>
<td>Cast iron, 60° V 16 cylinder</td>
</tr>
<tr>
<td>Battery capacity</td>
<td>2200 amps at ambient temperature 0 °F to 32 °F (0 °C)</td>
</tr>
<tr>
<td>Battery charging alternator</td>
<td>40 amps</td>
</tr>
<tr>
<td>Starting voltage</td>
<td>24 volts, negative ground</td>
</tr>
<tr>
<td>Fuel system</td>
<td>Direct injection</td>
</tr>
<tr>
<td>Fuel filter</td>
<td>Triple element, spin on fuel filters with water separator</td>
</tr>
<tr>
<td>Air cleaner type</td>
<td>Dry replaceable element</td>
</tr>
<tr>
<td>Lube oil filter type(s)</td>
<td>Four spin-on, combination full flow and bypass filters</td>
</tr>
<tr>
<td>Standard cooling system</td>
<td>104 °F (40 °C) ambient radiator</td>
</tr>
</tbody>
</table>

Alternator specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>Brushless, 4 pole, drip-proof revolving field</td>
</tr>
<tr>
<td>Stator</td>
<td>2/3 pitch</td>
</tr>
<tr>
<td>Rotor</td>
<td>Direct coupled by flexible disc</td>
</tr>
<tr>
<td>Insulation system</td>
<td>Class H</td>
</tr>
<tr>
<td>Standard temperature rise</td>
<td>150 °C Standby</td>
</tr>
<tr>
<td>Exciter type</td>
<td>Permanent Magnet Generator (PMG)</td>
</tr>
<tr>
<td>Phase rotation</td>
<td>A (U), B (V), C (W)</td>
</tr>
<tr>
<td>Alternator cooling</td>
<td>Direct drive centrifugal blower fan</td>
</tr>
<tr>
<td>AC waveform Total Harmonic Distortion (THDV)</td>
<td>No load &lt; 1.5%. Non distorting balanced linear load &lt; 5%</td>
</tr>
<tr>
<td>Telephone Influence Factor (TIF)</td>
<td>&lt; 50 Per NEMA MG1-22.43</td>
</tr>
<tr>
<td>Telephone Harmonic Factor (THF)</td>
<td>&lt; 3</td>
</tr>
</tbody>
</table>

Available voltages

<table>
<thead>
<tr>
<th>50 Hz Line – Neutral/Line – Line</th>
<th>60 Hz Line – Neutral/Line – Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>220/380</td>
<td>1905/3300</td>
</tr>
<tr>
<td>230/400</td>
<td>3640/6300</td>
</tr>
<tr>
<td>240/415</td>
<td>3810/6600</td>
</tr>
<tr>
<td>254/440</td>
<td>6350/11000</td>
</tr>
</tbody>
</table>

Note: Consult factory for other voltages.

Generator set options

**Engine**
- 208/240/480 V thermo-statically controlled coolant heater for ambient above and below 4.5 °C (40 °F)
- Oil drain pump – manual
- Engine toolkit
- Heavy duty air filter
- Oil Level regulator (REN Valve)
- Remote duplex filter

**Exhaust system (continued)**
- Residential grade exhaust silencer – shipped loose
- Side entry silencer

**Control panel**
- Multiple language support
- Right or left facing mounting
- Floor mounted
- 3 phase differential CTs (3x or 6x CTs)

**Control panel (continued)**
- Masterless load demand
- Warning high bearing temperature
- Alternator temperature monitoring
- Exhaust gas temperature monitoring
- 6x user-configurable relays
- 120/240 V Heater control cabinet
- Mechanical hour meter
- 2x digital input/output
Generator set options (continued)

**Generator set**
- 5 A or 10 A batteries
- Standalone or wall mountable battery charger
- Manual available in multiple languages
- Standard spring mounts
- Oil sampling valve
- Fuel transfer pump hand or electric
- Free standing, single wall fuel tank 1350 L/356 US Gal
- Oil make up system

Note: Some options may not be available on all models - consult factory for availability

**Cooling system**
- Remote radiator
- 50 °C (122 °F) radiator
- Slip fit connection
- Flanged (ASA) connection
- Enhanced environmental protection for C2500 DSA

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**PowerCommand 3.3 – control system**

**Control system**
The PowerCommand control system is an integrated microprocessor based generator set control system providing voltage regulation, engine protection, alternator protection, operator interface and isochronous governing.

**AmpSentry** – Includes integral AmpSentry protection, which provides a full range of alternator protection functions that are matched to the alternator provided.

**Power management** – Control function provides battery monitoring and testing features and smart starting control system.

**Advanced control methodology** – Three phase sensing, full wave rectified voltage regulation, with a PWM output for stable operation with all load types.

**Communications interface** – Control comes standard with PCCNet and Modbus interface.

**Regulation compliant** – Prototype tested: UL, CSA and CE compliant.

**Service** - InPower™ PC-based service tool available for detailed diagnostics, setup, data logging and fault simulation.

**Reliable design** – The control system is designed for reliable operation in harsh environment.

**Multi-language support**

**Operator panel features**

**Operator panel features** – The operator panel, in addition to the alternator, displays the Utility/AC Bus data.

**Operator/display functions**
- 320 x 240 pixels graphic LED backlight LCD
- Auto, manual, start, stop, fault reset and lamp test/panel lamp switches
- Alpha-numeric display with pushbuttons
- LED lamps indicating genset running, remote start, not in auto, common shutdown, common warning, manual run mode, auto mode and stop

**Paralleling control functions**
- Digital frequency synchronization and voltage matching
- Isochronous kW and kVar load sharing controls
- Droop kW and kVar control
- Sync check
- Extended paralleling (Peak Shave/Base Load)

**Digital power transfer control (AMF) provides load transfer operation in open or closed transition or soft (ramping) transfer mode**

**Alternator data**
- Line-to-Neutral and Line-to-Line AC volts
- 3-phase AC current
- Frequency
- kW, kVar, power factor kVA (three phase and total)

**Engine data**
- DC voltage
- Engine speed
- Lube oil pressure and temperature
- Coolant temperature
- Comprehensive FAE data (where applicable)

**Other data**
- Genset model data
- Start attempts, starts, running hours, kW hours
- Load profile (operating hours at % load in 5% increments)
- Fault history
- Data logging and fault simulation (requires InPower)

**Standard control functions**

**Digital governing (optional)**
- Integrated digital electronic isochronous governor
- Temperature dynamic governing

**Digital voltage regulation**
- Integrated digital electronic voltage regulator
- 3-phase, 4-wire Line-to-Line sensing
- Configurable torque matching

**AmpSentry AC protection**
- AmpSentry protective relay
- Over current and short circuit shutdown
- Over current warning
- Single and three phase fault regulation
- Over and under voltage shutdown
- Over and under frequency shutdown
- Overload warning with alarm contact
- Reverse power and reverse Var shutdown
- Field overload

**Engine protection**
- Battery voltage monitoring, protection and testing
- Over speed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- Fail to start (over crank) shutdown
- Fail to crank shutdown
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown
Standard control functions (continued)

Engine protection
- Fuel-in-rupture-basin warning or shutdown
- Full authority electronic engine protection

Control functions
- Time delay start and cool down
- Real time clock for fault and event time stamping

Ratings definitions

Emergency Standby Power (ESP): Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-Time Running Power (LTP): Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

Prime Power (PRP): Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP): Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.

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<table>
<thead>
<tr>
<th>Model</th>
<th>Dim ‘A’ (mm)</th>
<th>Dim ‘B’ (mm)</th>
<th>Dim ‘C’ (mm)</th>
<th>Set weight dry* (kg)</th>
<th>Set weight wet* (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1760 D5e</td>
<td>6175</td>
<td>2494</td>
<td>3422</td>
<td>14825</td>
<td>16040</td>
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<tr>
<td>C2000 D5</td>
<td>6175</td>
<td>2286</td>
<td>2537</td>
<td>14880</td>
<td>15945</td>
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<tr>
<td>C2000 D5e</td>
<td>6175</td>
<td>2494</td>
<td>3422</td>
<td>15345</td>
<td>16560</td>
</tr>
<tr>
<td>C2250 D5</td>
<td>6175</td>
<td>2286</td>
<td>2537</td>
<td>15095</td>
<td>16160</td>
</tr>
<tr>
<td>C2500 D5A</td>
<td>6175</td>
<td>2494</td>
<td>3201</td>
<td>16840</td>
<td>17990</td>
</tr>
<tr>
<td>C2000 D6</td>
<td>6175</td>
<td>2286</td>
<td>2537</td>
<td>14880</td>
<td>15945</td>
</tr>
<tr>
<td>C2250D6A</td>
<td>6175</td>
<td>2494</td>
<td>3201</td>
<td>15345</td>
<td>16560</td>
</tr>
</tbody>
</table>

* Note: Weights represent a set with standard features. See outline drawings for weights of other configurations.

Codes and standards

- ISO 9001: This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.
- 2000/14/EC: All enclosed products are designed to meet or exceed EU noise legislation 2000/14/EC step 2006.
- CE: This generator set is available with CE certification.
- ISO 8528: This generator set has been designed to comply with ISO 8528 regulation.