Specification sheet

Diesel generator set
QSK60 series engine
1825 kW – 2000 kW 60 Hz
Data Center Continuous

Description
Cummins® commercial generator sets are fully integrated power generation systems providing optimum performance, reliability and versatility for data center applications.

Features
Data Center Continuous (DCC) - Applicable for supplying power continuously to a constant or varying electrical load for unlimited hours in a data center application.

Uptime Compliant - Meets the requirement of a Tier III and IV data center site by being rated to run for unlimited hours of operation when loaded to ‘N’ demand for the engine generator set.

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.

ISO8528-5 G3 Compliant – Refer to factory for site and configuration specific transient performance classification.

<table>
<thead>
<tr>
<th>Model</th>
<th>60 Hz kW (kVA)</th>
<th>Data sheets 60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2000 D6</td>
<td>1825 (2281)</td>
<td>DS86-CPGK-DC</td>
</tr>
<tr>
<td>C2250 D6A</td>
<td>2000 (2500)</td>
<td>DS87-CPGK-DC</td>
</tr>
</tbody>
</table>
Generator set specifications

Governor Regulation | ISO 8528-5 part 1
Voltage regulation, No load to full load | ± 0.5%
Random voltage variation | ± 0.5%
Frequency regulation | Isochronous
Random frequency variation | ± 0.25%
EMS compatibility | BS EN61000-6-4/BS EN61000-6-2

Engine specifications

<table>
<thead>
<tr>
<th>Design</th>
<th>4 cycle, V-black, turbocharged and low temperature after-cooled</th>
</tr>
</thead>
<tbody>
<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>Design</th>
<th>Brushless, 4 pole, drip-proof revolving field</th>
</tr>
</thead>
<tbody>
<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

60 Hz Line – Neutral/Line – Line

- 219/380
- 254/440
- 277/480
- 347/600
- 2400/4160
- 7200/12470
- 7620/13200
- 7970/13800

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 tool kit
- Heavy duty air filter
- Oil level regulator (REN Valve)
- Remote duplex filter
- Multiple language support
- Right or left facing mounting
- Floor mounted
- 3 phase differential CTs (3x or 6x CTs)
- 3x or 6x CTs

Exhaust system
- None supplied

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)
- 2x digital input/output

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

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Generator set options (continued)

**Alternator**
- 120, 240 or 110/240 V control anti-condensation heater
- Stator winding temp sensor 2 RTDs/phase
- Bearing temp sensor RTDs
- 1 or 2 hole lug output terminal
- Cable entrance box set mounted top or bottom entry
- Cable entrance box left or right mounting

**Data center options**
- Automatic oil make up system
- Closed crank ventilation system

**Generator set**
- 5 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

**Cooling system**
- Remote radiator
- 50 °C (122 °F) radiator
- Slip fit connection
- Flanged (ASA) connection
- Enhanced Environmental connection

Note: Some options may not be available on all models - consult factory for availability. Data center options are available through FQ with the Engineering to Order group and could result in additional leadtimes.

**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

**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

**Standard control functions**

**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)

**Cooling system**
- Remote radiator
- 50 °C (122 °F) radiator
- Slip fit connection
- Flanged (ASA) connection
- Enhanced Environmental connection
Standard control functions (continued)

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
- 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
- Exerciser clock and time of day start/stop
- Data logging
- Cycle cranking
- Load shed
- Configurable inputs and outputs (4)
- Remote emergency stop

Options
- Auxiliary output relays (2)

This outline drawing is to provide representative configuration details for model series only. See respective model data sheet for specific model outline drawing number.

Do not use for installation design

<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>
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</thead>
<tbody>
<tr>
<td>C1760 D5e</td>
<td>6175</td>
<td>2494</td>
<td>3422</td>
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<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>
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<tr>
<td>C2250 D5</td>
<td>6175</td>
<td>2286</td>
<td>2537</td>
<td>15095</td>
<td>16160</td>
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<tr>
<td>C2500 D5A</td>
<td>6175</td>
<td>2494</td>
<td>3201</td>
<td>16840</td>
<td>17990</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

ISO 8528
- This generator set is available with CE certification subject to EU RoHS exclusion per EU 2011/65.
- ISO 8528

All enclosed products are designed to meet or exceed EU noise legislation 2000/14/EC step 2006.

For more information contact your local Cummins distributor or visit power.cummins.com

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