Diesel generator set
QSL9 series engine

230 kVA - 330 kVA 50 Hz
207 kWe - 300 kWe 60 Hz

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

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

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

Alternator - Low reactance 2/3 pitch windings; low waveform distortion with non-linear loads, fault clearing short-circuits capability, and class H insulation.

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

Control system - The PowerCommand® electronic control is standard equipment and provides total system integration, including auto remote start/stop, alarm and status message display.

Enclosures - Optional sound attenuated enclosures.

Warranty - Backed by a comprehensive warranty and worldwide distributor network.

<table>
<thead>
<tr>
<th>Genset model</th>
<th>Engine 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></td>
<td>50 Hz kVA (kWe)</td>
<td>60 Hz kVA (kWe)</td>
<td>50 Hz kWe (kWe)</td>
<td>TA Luft/ EU Stage/EPA</td>
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<tr>
<td>C275 D5</td>
<td>QSL9-G5</td>
<td>275 (220)</td>
<td>250 (200)</td>
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<td>4g TA Luft</td>
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<tr>
<td>C300 D5</td>
<td>QSL9-G5</td>
<td>300 (240)</td>
<td>275 (220)</td>
<td></td>
<td>4g TA Luft</td>
</tr>
<tr>
<td>C330 D5</td>
<td>QSL9-G5</td>
<td>330 (264)</td>
<td>300 (240)</td>
<td></td>
<td>4g TA Luft</td>
</tr>
<tr>
<td>C250 D6</td>
<td>QSL9-G5</td>
<td>250 (313)</td>
<td>225 (282)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C275 D6</td>
<td>QSL9-G5</td>
<td>275 (344)</td>
<td>250 (313)</td>
<td></td>
<td></td>
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<tr>
<td>C300 D6</td>
<td>QSL9-G5</td>
<td>300 (375)</td>
<td>275 (344)</td>
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<td></td>
</tr>
<tr>
<td>C250 D5e</td>
<td>QSL9-G7</td>
<td>250 (200)</td>
<td>230 (184)</td>
<td>EU SIII A</td>
<td>EMERD-6136</td>
</tr>
<tr>
<td>C275 D5e</td>
<td>QSL9-G7</td>
<td>275 (220)</td>
<td>250 (200)</td>
<td>EU SIII A</td>
<td>EMERD-6137</td>
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<tr>
<td>C300 D5e</td>
<td>QSL9-G7</td>
<td>300 (240)</td>
<td>275 (220)</td>
<td>EU SIII A</td>
<td>EMERD-6138</td>
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<tr>
<td>C330 D5e</td>
<td>QSL9-G7</td>
<td>330 (264)</td>
<td>300 (240)</td>
<td>EU SIII A</td>
<td>EMERD-6139</td>
</tr>
<tr>
<td>C230 D6e</td>
<td>QSL9-G7</td>
<td>230 (288)</td>
<td>207 (259)</td>
<td>EPA T3</td>
<td>EMERD-6140</td>
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<tr>
<td>C250 D6e</td>
<td>QSL9-G7</td>
<td>250 (313)</td>
<td>225 (282)</td>
<td>EPA T3</td>
<td>EMERD-6141</td>
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<tr>
<td>C275 D6e</td>
<td>QSL9-G7</td>
<td>275 (344)</td>
<td>250 (313)</td>
<td>EPA T3</td>
<td>EMERD-6142</td>
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<tr>
<td>C300 D6e</td>
<td>QSL9-G7</td>
<td>300 (375)</td>
<td>275 (344)</td>
<td>EPA T3</td>
<td>EMERD-6143</td>
</tr>
</tbody>
</table>
Generator set specifications

| Governor regulation class | ISO8528 G3 for C300/330 D5/e, C275/300 D6/e
| ISO8528 G2 for C250/275 D5/e, C230/250 D6/e
| Voltage regulation, no load to full load | ± 1% |
| Random voltage variation | ± 1% |
| Frequency regulation | Isochronous |
| Random frequency variation | ± 0.5% |
| EMC compatibility | BS EN61000-6-4 / BS EN61000-6-2 |

**Engine specifications**

| Design | 4 cycle, in-line, turbocharged, charge air-cooled |
| Bore | 114 mm (4.5 in.) |
| Stroke | 145 mm (5.7 in.) |
| Displacement | 8.8 liter (543 in³) |
| Cylinder block | Cast iron, 6 cylinder |
| Battery capacity | 100 AH |
| Battery charging alternator | 70 amps |
| Starting voltage | 24 volt, negative ground |
| Fuel system | Direct injection |
| Fuel filter | Spin on fuel filters with water separator, StrataPore™ technology, extended life |
| Air cleaner type | Heavy duty, dry replaceable element, OptiAir™ technology, 2-stage air filters |
| Lube oil filter type(s) | Spin on full flow filter, StrataPore technology, extended life |
| Standard cooling system | 122 °F (50 °C) ambient radiator for QSL9-G5 powered sets
105 °F (40 °C) ambient radiator for QSL9-G7 powered sets |

**Alternator specifications**

| Design | Brushless, single bearing, revolving field |
| Stator | 2/3 pitch |
| Rotor | Single bearing, flexible disc |
| Insulation system | Class H |
| Standard temperature rise | Prime 125 °C temp rise @ 40 °C ambient
Standby 163 °C temp rise @ 27 °C ambient |
| Exciter type | Self excited or separately excited by PMG |
| Phase rotation | A (U), B (V), C (W) |
| Alternator cooling | Direct drive centrifugal blower fan |
| AC waveform Total Harmonic Distortion (THDV) | No load <1.5%. Non distorting balanced linear load <5% |
| Telephone Influence Factor (TIF) | <50% per NEMA MG1-122.43 |
| Telephone Harmonic Factor (THF) | <2% |

**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>255/440</td>
<td>115/200</td>
</tr>
<tr>
<td>240/416</td>
<td>110/190</td>
</tr>
<tr>
<td>230/400</td>
<td>127/220</td>
</tr>
<tr>
<td>220/380</td>
<td></td>
</tr>
</tbody>
</table>

* Derate may be applicable at this voltage. Please consult the factory for details.

**Generator set options**

**Engine**
- Water jacket heater 120 or 240 V

**Enclosure**
- Sound attenuated canopy

**Alternator**
- Alternator heater
- Exciter voltage regulator (PMG)

**Circuit breaker**
- 3 pole main circuit breaker std. scope, 4 pole as an option
- Motorised 3 or 4 pole circuit breaker
- Aux contacts and trip alarm
- Shunt trip – 24 V dc

**Fuel tank**
- Low fuel level warning or shutdown
- Extended fuel tank capacity: 691 / 1200 liters

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Generator set options (continued)

Control panel
- PowerCommand 3.3 – MLD
- AC output bargraph
- Shutdown audible alarm
- Earth fault shutdown

Warranty
- 10 years for major components
- 5 years for Standby application
- 2 years for Prime application

Silencer
- 25 dB(A) residential silencer for open sets
- 30/35 dB(A) critical silencer for open sets

Battery charger
- Set mounted
- Standalone

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

PowerCommand 1.2 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. Refer to document S-1567 for more detailed information on the control.

Major features include
- Power management – Control function provides battery monitoring and testing features and smart starting control system.
- Digital voltage regulation – Single phase full wave SCR type regulator.
- Communications interface – Control comes standard with PCCNet and Modbus interface.
- Regulation compliant – Prototype tested: CE, UL, and CSA compliant.
- Service - InPower™ PC-based service tool available for detailed diagnostics, setup, data logging and fault simulation.
- Easily upgradeable – PowerCommand controls are designed with common control interfaces.
- Reliable design – The control system is designed for reliable operation in harsh environment.

Operator panel features
- 128 x 128 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 mode.
- Multiple language support.

Alternator data
- Line-to-Neutral and Line-to-Line AC volts
- 3-phase AC current
- Frequency
- kVA (three phase and total)

Engine data
- DC voltage
- Engine speed

Digital governing
- Integrated digital electronic isochronous governor
- Temperature dynamic governing
- Configurable inputs: Control includes (4) input signals from customer

Digital voltage regulation
- Integrated digital electronic voltage regulator
- Line to Line voltage sensing
- Configurable torque matching

Engine protection
- Battery voltage monitoring and protection
- Overspeed shutdown
- Low oil pressure warning and shutdown
- High/low coolant temperature warning or shutdown
- Low coolant level warning or shutdown
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown (optional)
- Fuel-in-rupture-basin warning or shutdown (optional)
- Full authority electronic engine protection
- Battle short to allow some shutdown faults to be bypassed

Control functions
- Time delay start and cool down
- Cycle cranking
- Configurable inputs (4) and outputs (2)
- Remote emergency stop

Other data
- Genset model data
- Start attempts, starts, running hours, kVA hours
- Fault history and control hours time stamp for up to 10 events
- Data logging and fault simulation (requires InPower).
Optional PowerCommand 3.3 control system

The PowerCommand 3.3 has the following additional features and benefits over the PowerCommand 1.2. Refer to document S-1570 for more detailed information on the control.

- **AmpSentry**™ – Includes integral AmpSentry protection, which provides a full range of alternator protection functions that are matched to the alternator provided.
- **Advanced voltage regulation** – Three phase full wave FET type regulator for stable operation with all load types.
- **Paralleling control function with isolated bus or utility.**
- **Digital power transfer control** – Provides load transfer operation in open transition, closed transition, or soft ramping transfer modes.

**Operator panel features**

- 320 x 240 pixels graphic LED backlight LCD
- In addition to the 1.2 functions, the operator panel displays paralleling breaker status and provides for direct control of the paralleling breaker.
- **Data logs** – Includes engine run time, controller on time, number of start attempts, total kilowatt hours, and load profile
- **Fault history** – Provides a record of the most recent fault conditions with control date and time stamp for up to 32 events
- **Real time clock** for fault and event time stamping
- **Exerciser clock and time of day start/stop** initiate a test with or without load, or a Base Load or Peak Shave session
- **Alternator data includes kW, kVar, power factor kVA** (three phase and total)

**Paralleling control functions**

- **First Start Sensor System** selects first genset to close to bus
- **Phase Lock Loop Synchronizer with voltage matching**
- **Sync check relay**
- **Isochronous kW and kVar load sharing**
- **Load govern control for utility paralleling**
- **Extended Paralleling (Base Load/Peak Shave) Mode**

Digital power transfer control, for use with a breaker pair to provide open transition, closed transition, ramping closed transition, peaking and base load functions.
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.

This outline drawing is to provide representative configuration details for Model series only.

Open narrow skid

<table>
<thead>
<tr>
<th>Models</th>
<th>Alternator frame</th>
<th>Length (mm) Dim “A”</th>
<th>Width (mm) Dim “B”</th>
<th>Height (mm) Dim “C”</th>
<th>Weight* (kg) dry</th>
<th>Weight* (kg) wet</th>
</tr>
</thead>
<tbody>
<tr>
<td>C250 D5e, C230 D6e, C275 D5/e, C250 D6/e</td>
<td>UCD274K</td>
<td>3135</td>
<td>1100</td>
<td>2018</td>
<td>2129</td>
<td>2181</td>
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<tr>
<td>C300 D5/e, C330 D5/e, C275 D5/e, C300 D6/e</td>
<td>HC4D</td>
<td>3135</td>
<td>1100</td>
<td>2018</td>
<td>2352</td>
<td>2404</td>
</tr>
</tbody>
</table>

Enclosed wide skid

<table>
<thead>
<tr>
<th>Models</th>
<th>Alternator frame</th>
<th>Length (mm) Dim “A”</th>
<th>Width (mm) Dim “B”</th>
<th>Height (mm) Dim “C”</th>
<th>Weight* (kg) dry</th>
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</tr>
</thead>
<tbody>
<tr>
<td>C250 D5e, C230 D6e, C275 D5/e, C250 D6/e</td>
<td>UCD274K</td>
<td>4259</td>
<td>1424</td>
<td>2349</td>
<td>4125</td>
<td>4177</td>
</tr>
<tr>
<td>C300 D5/e, C330 D5/e, C275 D5/e, C300 D6/e</td>
<td>HC4D</td>
<td>4259</td>
<td>1424</td>
<td>2349</td>
<td>4348</td>
<td>4400</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.
- **CE**: This generator set is available with CE certification.
- **2000/14/EC**: All enclosed products are designed to meet or exceed EU noise legislation 2000/14/EC step 2006.
- **ISO 8528**: This generator set has been designed to comply with ISO 8528 regulation.

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building’s electrical system except through an approved device or after building main switch is open.

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

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