

# Diesel generator set QSL9 series engine

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



## Description

This Cummins® Power Generation 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.

Genset Model	Engine Model	Standby rating		Prime rating		Emissions compliance	Data sheets	
		50 Hz kVA (kWe)	60 Hz kWe (kVA)	50 Hz kVA (kWe)	60 Hz kWe (kVA)		50 Hz	60 Hz
C275 D5	QSL9-G5	275 (220)		250 (200)		4g TA Luft	DS22-CPGK	
C300 D5	QSL9-G5	300 (240)		275 (220)		4g TA Luft	DS23-CPGK	
C330 D5	QSL9-G5	330 (264)		300 (240)		4g TA Luft	DS24-CPGK	
C250 D6	QSL9-G5		250 (313)		225 (282)			DS69-CPGK
C275 D6	QSL9-G5		275 (344)		250 (313)			DS70-CPGK
C300 D6	QSL9-G5		300 (375)		275 (344)			DS71-CPGK
C250 D5e	QSL9-G7	250 (200)		230 (184)		EU SIII A	EMERD-6136	
C275 D5e	QSL9-G7	275 (220)		250 (200)		EU SIII A	EMERD-6137	
C300 D5e	QSL9-G7	300 (240)		275 (220)		EU SIII A	EMERD-6138	
C330 D5e	QSL9-G7	330 (264)		300 (240)		EU SIII A	EMERD-6139	
C230 D6e	QSL9-G7		230 (288)		207 (259)	EPA T3		EMERD-6140
C250 D6e	QSL9-G7		250 (313)		225 (282)	EPA T3		EMERD-6141
C275 D6e	QSL9-G7		275 (344)		250 (313)	EPA T3		EMERD-6142
C300 D6e	QSL9-G7		300 (375)		275 (344)	EPA T3		EMERD-6143

## Generator set specifications

Governor regulation class	ISO 8528 G3 for C300/330 D5/e, C275/300 D6/e ISO 8528 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 EN 61000-6-4 / BS EN 61000-6-2

## Engine specifications

Design	4 cycle, in-line, turbo charged, charge air cooled
Bore	114 mm (4.5 in)
Stroke	145 mm (5.7 in)
Displacement	8.8 liter (543 in <sup>3</sup> )
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

50 Hz line - neutral / line - line		60 Hz line - neutral / line - line	
• 255/440	• 115/200	• 277/480	• 139/240
• 240/416	• 110/190	• 255/440	• 127/220
• 230/400	• 127/220	• 220/380*	• 120/208
• 220/380		• 240/416	• 115/200

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

## Generator set options

<b>Engine</b> .. Water jacket heater 120 or 240 V <b>Enclosure</b> .. Sound attenuated canopy <b>Alternator</b> .. Alternator heater .. Exciter voltage regulator (PMG) .. High alternator temp shutdown .. Low temp rise alternator	<b>Circuit breaker</b> .. 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 <b>Fuel tank</b> .. Low fuel level warning or shutdown .. High fuel level warning .. Extended fuel tank capacity: 691 / 1200 liters	<b>Control panel</b> .. PowerCommand® 3.3 - MLD .. Ac output bargraph .. Shutdown audible alarm .. Earth fault shutdown <b>Warranty</b> .. 10 years for major components .. 5 years for standby application .. 2 years for prime application	<b>Silencer</b> .. 25 dB(A) residential silencer for open sets .. 30/35 dB(A) critical silencer for open sets <b>Battery charger</b> .. Set mounted .. Standalone
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\*Note: Some options may not be available on all models - consult factory for availability.

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## 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
- Lube oil pressure
- Coolant temperature

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).

### Standard control functions

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

### 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 (baseload/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.

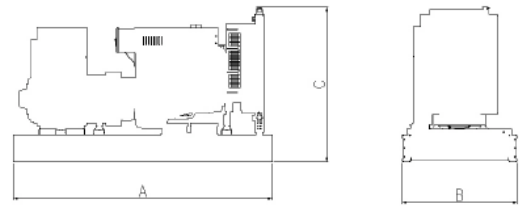
Prime power (PRP):

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.

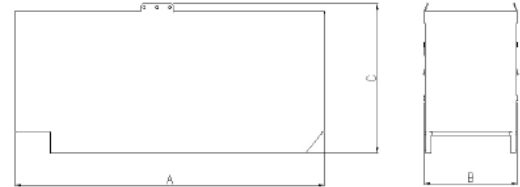
Base load (continuous) power (COP):

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.

**Open Set**



**Enclosed Set**



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

**Open narrow skid**



Models	Alternator Frame	Length (mm) Dim "A"	Width (mm) Dim "B"	Height (mm) Dim "C"	Weight* (kg) dry	Weight* (kg) wet
C250 D5e, C230 D6e, C275 D5/e, C250 D6/e	UCD274K	3135	1100	2018	2129	2181
C300 D5/e, C330 D5/e, C275 D6/e, C300 D6/e	HC4D	3135	1100	2018	2352	2404

**Enclosed wide skid**

Models	Alternator Frame	Length (mm) Dim "A"	Width (mm) Dim "B"	Height (mm) Dim "C"	Weight* (kg) dry	Weight* (kg) wet
C250 D5e, C230 D6e, C275 D5/e, C250 D6/e	UCD274K	4259	1424	2349	4125	4177
C300 D5/e, C330 D5/e, C275 D6/e, C300 D6/e	HC4D	4259	1424	2349	4348	4400

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

**Codes and standards**

	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.
	This generator set is available with CE certification.	ISO 8528	This generator set has been designed to comply with ISO 8528 regulation.

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