Specification sheet

Diesel generator set
QSL9 series engine
250 kVA - 330 kVA 50 Hz
225 kW - 300 kW 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.

<table>
<thead>
<tr>
<th>Model</th>
<th>Standby rating</th>
<th>Prime rating</th>
<th>Emissions compliance</th>
<th>Data sheets</th>
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<td>50 Hz</td>
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<td>kVA (kW)</td>
<td>kVA (kW)</td>
<td>TA Luft – EU Stage</td>
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<td>250 (200)</td>
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<td>DS22-CPGK</td>
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<td>4g TA Luft</td>
<td>DS22-CPGK</td>
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<td>4g TA Luft</td>
<td>DS22-CPGK</td>
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<tr>
<td>C250 D5</td>
<td>250 (313)</td>
<td>225 (282)</td>
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</table>
Generator set specifications

Governor regulation class
ISO 8528 G3 for C300 D5, C275 D6, and C300 D6
ISO 8528 G2 for C275 D5 and C250 D6

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 literL (543 in

3)

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

Air cleaner type
Dry replaceable element

Lube oil filter type(s)
Spin on full flow filter

Standard cooling system
122ºF (50ºC) ambient radiator

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 ºC temp rise @ 40 ºC ambient
Standby 163 ºC temp rise @ 27 ºC 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
• 255/440
• 240/416
• 230/400
• 220/380

60 Hz line – neutral / line - line
• 115/200
• 110/190
• 127/220

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

Generator set options

Engine
□ Heavy duty air cleaner
□ Water jacket heater 120 or 240 V

Enclosure
□ Sound attenuated canopy

Alternator
□ Alternator heater
□ Exciter voltage regulator (PMG)
□ High alternator temp shutdown

Circuit breaker
□ 3 or 4 pole main circuit breaker
□ 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
□ High fuel level warning
□ Electric fuel transfer pump

Control panel
□ PowerCommand 3.3
□ 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
□ 9 dB attenuation critical silencer
□ 25 dB attenuation residential silencer

Battery charger
□ Set mounted
□ Standalone

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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
- Failed to start (overcrank) shutdown
- Failed 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 Shaving 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 narrow skid

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<th>Dim “C” mm</th>
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Enclosed wide skid

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

Codes and standards

<table>
<thead>
<tr>
<th>ISO 9001</th>
<th>2000/14/EC</th>
<th>All enclosed products are designed to meet or exceed EU noise legislation 2000/14/EC step 2006.</th>
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<tr>
<td>CE</td>
<td>ISO 8528</td>
<td>This generator set has been designed to comply with ISO 8528 regulation.</td>
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</table>

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