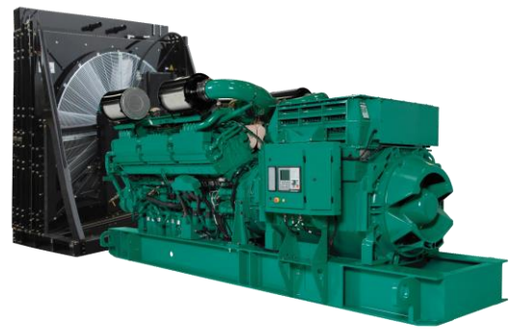
Specification sheet

Diesel generator set QSK78 series engine



EPA emissions

2000 kW - 2750 kW 60 Hz

Description

Cummins Power Generation commercial generator sets are fully integrated power generation systems providing optimum performance, reliability and versatility for stationary standby, prime power and continuous duty power applications.

Features

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

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

Permanent magnet generator (PMG) - Offers enhanced motor starting and fault clearing short-circuit capability.

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 and enhanced integral set-mounted radiator systems, designed and tested for rated ambient temperatures to simplify the facility design requirements for rejected heat.

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

NFPA - The generator set accepts full rated load in a single step in accordance with NFPA 110 Level 1 systems.

	Standby rating	Prime rating	Continuous rating	Data sheets
Model	60 Hz kW (kVA)	60 Hz kW (kVA)	60 Hz kW (kVA)	60 Hz
DQLE	2500 (3125)	2275 (2844)	2000 (2500)	D-3507
DQLF	2750 (3438)	2500 (3125)	2100 (2625)	D-3518

Generator set specifications

Transient Performance	ISO 8528-5 compliant
Steady state voltage regulation, no load to full load	+/- 1.0%
Random voltage variation	+/- 1.0%
Frequency regulation	Isochronous
Steady state frequency band	+/- 0.5%
Radio frequency emissions compliance	BS EN 61000-6-4:2001 emissions-industrial
Immunity frequency emissions compliance	BS EN 61000-6-2:2001 immunity-industrial IEC 801.2 through IEC 801.5; MIL STD 461C, Part 9

Engine specifications

Bore	170.0 mm (6.69 in)
Stroke	190.0 mm (7.48 in)
Displacement	77.6 litres (4735 in^3)
Configuration	Cast iron, V 18 cylinder
Battery capacity	2200 amps minimum at ambient temperature of -18 °C to 0 °C (0 °F to 32 °F)
Battery charging alternator	55 amps
Starting voltage	24 volt, negative ground
Fuel system	Direct injection: number 2 diesel fuel, fuel filter, automatic electric fuel shutoff
Fuel filter	Triple element, 10 micron filtration, spin-on fuel filter with water separator
Air cleaner type	Dry replaceable element standard; heavy duty optional
Lube oil filter type(s)	Six spin-on, combination full flow filter and bypass filters; Eliminator™ option available
Standard cooling system	High ambient cooling system

Alternator specifications

Design	Brushless, 4 pole, drip proof, revolving field
Stator	2/3 pitch
Rotor	Two bearing, flexible coupling
Insulation system	Class H on low voltage and medium, Class F on high voltage
Standard temperature rise	125 ºC standby at 40 °C ambient
Exciter type	PMG (permanent magnet generator)
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform total harmonic distortion	< 5% no load to full linear load, < 3% for any single harmonic
Telephone influence factor (TIF)	< 50 per NEMA MG1-22.43
Telephone harmonic factor (THF)	< 3

Available voltages

60 Hz line-neutral/line-line

- 380
- 480
- 4160
- 13200
- 440
- 600
- 12470
- 13800

Note: Consult factory for other voltages.

Generator set options and accessories

Engine

- ☐ 208/240/480 V coolant heater for ambient above 4.5 °C (40 °F)-10,000W max.
- ☐ 208/240/480 V coolant heater for ambient below 4.5 °C (40 °F) - 12,840 W max.

Cooling system

- ☐ Remote radiator
- ☐ High ambient air temperature (ship loose)
- ☐ Enhanced high ambient air temperature (ship loose)

Control Panel

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

Exhaust system

- ☐ Residential grade exhaust silencer
- ☐ Critical grade exhaust silencer

Generator set

- ☐ Battery
- ☐ Battery rack with hold-down - floor standing
- ☐ PowerCommand Network
- ☐ Remote annunciator panel
- ☐ Vibration isolators
- ☐ 2 year warranty
- ☐ 5 year warranty
- ☐ 10 year major components warranty

Alternator

- ☐ 80 °C rise
- ☐ 105 °C rise
- ☐ 125 °C rise
- ☐ 150 °C rise
- ☐ 120/240 V 300 W anti-condensation heater
- ☐ Temperature sensor - RTDs, 2/phase
- ☐ Temperature sensor - alternator bearing RTD

Differential current transformers

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

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
- 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)

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):

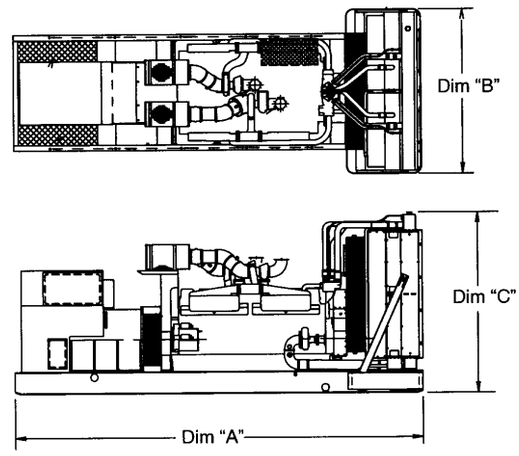
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

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 for reference only. See respective model data sheet for specific model outline drawing number.

Do not use for installation design

Model	Dim "A" mm (in.)	Dim "B" mm (in.)	Dim "C" mm (in.)	Set Weight* dry kg (lbs)	Set Weight* wet kg (lbs)
DQLE*	7138 (281)	2750 (108.3)	3387 (133.3)	22824 (50318)	23603 (52036)
DQLF*	7138 (281)	2750 (108.3)	3387 (133.3)	22824 (50318)	23603 (52036)

Notes: * With standard features and P80X alternator. See outline drawings for other configurations.

Codes and standards

Codes may not be available with all model configurations – consult factory for availability.

ISO 9001	This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.	**U.S. EPA**	Engine certified to Stationary Emergency U.S. EPA New Source Performance Standards, 40 CFR 60 subpart IIII Tier 2 exhaust emission levels. U.S. applications must be applied per this EPA regulation.
CSA	All models are CSA certified to product class 4215-01.	**International Building Code**	The genset package is certified for seismic application in accordance with the following International Building Code: IBC2012.
UL	The generator set is available listed to UL 2200 for all 60 Hz low voltage models, Stationary Engine Generator Assemblies. The PowerCommand control is Listed to UL 508 - Category NITW7 for U.S. and Canadian usage.	PTS	The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins Power Generation products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems.

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.

Cummins Power Generation

North America
1400 73rd Avenue N.E.
Minneapolis, MN 55432
USA

Phone 763 574 5000
Fax 763 574 5298

power.cummins.com

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