



شرکت مهندسی کاراسهند
Engineering KARA SAHAND
■ ■ ■

Diesel generator set QSK60 series engine



> **Specification sheet**
1450 kW - 2250 kW 60 Hz
1200 kW - 2000 kW 50 Hz


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

 This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.

 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.

 All low voltage models are CSA certified to product class 4215-01.

 The generator set is available listed to UL 2200, Stationary Engine Generator Assemblies for all 60 Hz low voltage models. The PowerCommand control is Listed to UL 508 - Category NITW7 for U.S. and Canadian usage. Circuit breaker assemblies are UL 489 Listed for 100% continuous operation and also UL 869A Listed Service Equipment.

International Building Code
The generator set package is available certified for seismic application in accordance with the following International Building Code: IBC2000, IBC2003, IBC2006 and IBC2009.

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 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.

Model	Standby rating		Prime rating		Continuous rating		Data sheets	
	60 Hz kW (kVA)	50 Hz kW (kVA)	60 Hz kW (kVA)	50 Hz kW (kVA)	60 Hz kW (kVA)	50 Hz kW (kVA)	60 Hz	50 Hz
DQKB	1750 (2188)	1500 (1875)	1600 (2000)	1350 (1688)	1450 (1813)	1200 (1500)	D-3220/3224	D-3221
DQKC	2000 (2500)	1650 (2063)	1825 (2281)	1500 (1875)	1600 (2000)	1200 (1500)	D-3222/3225	D-3223
DQKD		1800 (2250)		1600 (2000)		1320 (1650)		D-3250
DQKH	2250 (2813)	2000 (2500)					D-3235	D-3236

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S-1383s (6/11)

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تلفن: ۴۱-۲۶۲۱۲۴۳۹ (۰۲۱)

برج مشکی، طبقه ۶، واحد ۵

فکس: ۴۱-۲۶۲۱۲۵۱۴ (۰۲۱)

تلفن: ۰۸-۳۵۹۰۸ (۰۲۱)

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Generator set specifications

Governor regulation class	ISO8528 Part 1 Class G3
Voltage regulation, no load to full load	± 0.5%
Random voltage variation	± 0.5%
Frequency regulation	Isochronous
Random frequency variation	± 0.25%
Radio frequency emissions compliance	IEC 801.2 through IEC 801.5; MIL STD 461C, Part 9

Engine specifications

Bore	158.8 mm (6.25 in)
Stroke	190.0 mm (7.48 in)
Displacement	60.2 litres (3673 in ³)
Configuration	Cast iron, V, 16 cylinder
Battery capacity	2200 amps minimum at ambient temperature of -18 °C to 0 °C (0 °F to 32 °F)
Battery charging alternator	40 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 filters with water separator
Air cleaner type	Dry replaceable element
Lube oil filter type(s)	Four spin-on, combination full flow filter and bypass filters
Standard cooling system	104 °F (40 °C) ambient radiator

Alternator specifications

Design	Brushless, 4 pole, drip proof revolving field
Stator	2/3 pitch
Rotor	Single bearing, flexible discs
Insulation system	Class H on low and medium voltage, Class F on high voltage
Standard temperature rise	150 °C 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				50 Hz line-neutral/line-line			
• 219/380	• 277/480	• 2400/4160	• 7620/13200	• 220/380	• 240/415	• 1905/3300	• 3810/6600
• 254/440	• 347/600	• 7200/12470	• 7970/13800	• 230/400	• 254/440	• 3640/6300	• 6350/11000

* Note: Consult factory for other voltages.

Generator set options and accessories

Engine <input type="checkbox"/> Low exhaust emission configuration DQKB 60 Hz, 5.5 g/hp-hr NO _x , data sheet D-3224 <input type="checkbox"/> DQKC 60 Hz, 5.5 g/hp-hr NO _x , data sheet D-3225 <input type="checkbox"/> 208/240/480 V coolant heater for ambient above 4.5 °C (40 °F) <input type="checkbox"/> 208/240/480 V coolant heater for ambient below 4.5 °C (40 °F) <input type="checkbox"/> High capacity oil pan Cooling system <input type="checkbox"/> 50 °C ambient <input type="checkbox"/> Heat exchanger <input type="checkbox"/> Remote radiator	Control panel <input type="checkbox"/> 120/240 V 100 W control anti-condensation heater <input type="checkbox"/> Paralleling configuration <input type="checkbox"/> Remote fault signal package <input type="checkbox"/> Run relay package Exhaust system <input type="checkbox"/> Industrial grade exhaust silencer <input type="checkbox"/> Residential grade exhaust silencer <input type="checkbox"/> Critical grade exhaust silencer	Alternator <input type="checkbox"/> 80 °C rise <input type="checkbox"/> 105 °C rise <input type="checkbox"/> 125 °C rise <input type="checkbox"/> 120/240 V 300 W anti-condensation heater <input type="checkbox"/> Temperature sensor - RTDs, 2/phase <input type="checkbox"/> Temperature sensor - alternator bearing RTD <input type="checkbox"/> Differential current transformers	Generator set <input type="checkbox"/> Battery <input type="checkbox"/> Battery Rack with hold-down - floor standing <input type="checkbox"/> Circuit breaker - set mounted <input type="checkbox"/> Disconnect switch - set mounted <input type="checkbox"/> PowerCommand Network <input type="checkbox"/> Remote annunciator panel <input type="checkbox"/> Spring isolators <input type="checkbox"/> 2 year warranty <input type="checkbox"/> 5 year warranty <input type="checkbox"/> 10 year major components warranty
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* Note: Some options may not be available on all models - consult factory for availability.

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Control system PCC 3201



PowerCommand control is an integrated generator set control system providing governing, voltage regulation, engine protection and operator interface functions. Major features include:

- Integral AmpSentry™ Protective Relay providing a full range of alternator protection functions that are matched to the alternator provided.
- Battery monitoring and testing features and smart starting control system.
- Three phase sensing, full wave rectified voltage regulation system, with a PWM output for stable operation with all load types.
- Control suitable for operation in ambient temperatures from -40 °C to +70 °C (-40 °F to +158 °F) and altitudes to 5000 meters (13,000 feet).
- Prototype tested; UL, CSA, and CE compliant.
- InPower™ PC-based service tool available for detailed diagnostics.
- Optional Echelon® LONWORKS® network interface.

Operator/display panel

- Off/manual/auto mode switch
- Manual run/stop switch
- Panel lamp test switch
- Emergency stop switch
- Exercise switch
- Alpha-numeric display with pushbutton access for viewing engine and alternator data and providing setup, controls and adjustments
- LED lamps indicating not in auto, common warning, common shutdown, remote start
- Configurable for local language

Engine protection

- Overspeed shut down
- Low oil pressure warning and shut down
- High coolant temperature warning and shut down
- High oil temperature warning
- Low coolant level warning or shut down
- Low coolant temperature warning
- High and low battery voltage warning
- Weak battery warning
- Dead battery shut down
- Fail to start (overcrank) shut down
- Fail to crank shut down
- Redundant start disconnect
- Cranking lockout
- Sensor failure indication

Engine data

- DC voltage
- Lube oil pressure
- Coolant temperature
- Lube oil temperature
- Engine speed
- Engine ECM data

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AmpSentry AC protection

- Over current and short-circuit shut down
- Over current warning
- Single and three phase fault regulation
- Over and under voltage shut down
- Over and under frequency shut down
- Overload warning with alarm contact
- Reverse power and reverse Var shut down

Alternator data

- Line-to-line and line-to-neutral AC volts
- Three phase AC current
- Frequency
- Total and individual phase power factor, kW and kVA
- Bus voltage and frequency (with paralleling options)

Other data

- Genset model data
- Start attempts, starts, running hours
- kW hours (total and since reset)
- Fault history
- Load profile (accessible with InPower)

Governing

- Digital electronic isochronous governor
- Temperature dynamic governing
- Smart idle speed mode

Voltage regulation

- Digital PWM electronic voltage regulation
- Three phase line-to-neutral sensing
- Single and three phase fault regulation
- Configurable torque matching

Control functions

- Data logging on faults
- Fault simulation (requires InPower)
- Time delay start and cooldown
- Cycle cranking
- Configurable customer outputs (4)
- Configurable network inputs (8) and outputs (16) (with optional network)
- Remote emergency stop

Paralleling (Option)

- Active digital phase lock loop synchronizer
- Isochronous kW and kVar load sharing controls
- kW import/export and kVar/PF control for utility (mains) paralleling

Options

- Thermostatically controlled space heater
- Key-type mode switch
- Ground fault module
- Auxiliary relays (3)
- Echelon LONWORKS interface
- Modion Gateway to convert to Modbus (loose)
- PowerCommand iWatch web server for remote monitoring and alarm notification (loose)
- Digital input and output module(s) (loose)
- Remote annunciator (loose)
- Paralleling
- Power transfer control

For further detail see document S-1444.



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Ratings definitions

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):

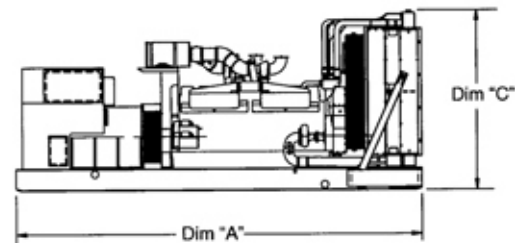
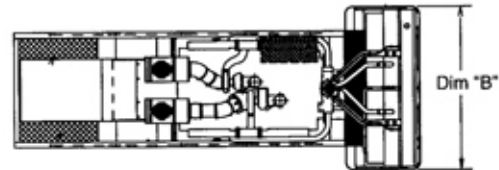
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

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)
DQKB	6175 (243)	2286 (90)	2537 (100)	14365 (31669)	14868 (32779)
DQKC	6175 (243)	2286 (90)	2537 (100)	14649 (32296)	15152 (33405)
DQKD	6175 (243)	2286 (90)	2537 (100)	14863 (32767)	15366 (33876)
DQKH	6175 (243)	2494 (98)	3116 (123)	15254 (33629)	15781 (34790)

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

Cummins Power Generation

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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.

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