

Diesel generator set QSK23 series engine



> **Specification sheet**
545 kW - 800 kW 60Hz
500 kW - 720 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 and prime power applications.



This generator set is designed in facilities certified to ISO9001 and manufactured in facilities certified to ISO9001 or ISO9002.



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. 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.

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.

Enclosures - Optional weather protective and sound attenuated enclosures are available.

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
DQCA	600 (750)	545 (681)	545 (681)	500 (625)			D-3316	D-3319
DQCB	750 (938)	660 (825)	680 (850)	600 (750)			D-3317	D-3320
DQCC	800 (1000)	720 (900)	725 (906)	656 (820)			D-3318	D-3321

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

Design	4 cycle, in line, turbocharged and aftercooled
Bore	169.9 mm (6.69 in)
Stroke	169.9 mm (6.69 in)
Displacement	23.15 litres (1413 in ³)
Cylinder block	Cast iron, 6 cylinder
Battery capacity	1400 amps minimum at ambient temperature of 0 °C to 10 °C (32 °F to 50 °F)
Battery charging alternator	35 amps
Starting voltage	24 volt, negative ground
Fuel system	Direct injection: number 2 diesel fuel
Fuel filter	Spin-on fuel filters with water separator
Air cleaner type	Dry replaceable element with restriction indicator
Lube oil filter type(s)	Fleetguard dual venturi spin-on, combination full flow and bypass filters
Standard cooling system	High ambient radiator

Alternator specifications

Design	Brushless, 4 pole, revolving field
Stator	2/3 pitch
Rotor	Single bearing, flexible disc
Insulation system	Class H
Standard temperature rise	125 °C standby
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
<ul style="list-style-type: none"> <li style="width: 25%;">• 110/190 <li style="width: 25%;">• 127/220 <li style="width: 25%;">• 230/380 <li style="width: 25%;">• 277/480 <li style="width: 25%;">• 115/200 <li style="width: 25%;">• 139/240 <li style="width: 25%;">• 240/416 <li style="width: 25%;">• 347/600 <li style="width: 25%;">• 120/208 <li style="width: 25%;">• 220/380 <li style="width: 25%;">• 255/440 	<ul style="list-style-type: none"> <li style="width: 25%;">• 110/190 <li style="width: 25%;">• 120/208 <li style="width: 25%;">• 220/380 <li style="width: 25%;">• 240/416 <li style="width: 25%;">• 115/200 <li style="width: 25%;">• 127/220 <li style="width: 25%;">• 230/400 <li style="width: 25%;">• 255/440

* Note: Consult factory for other voltages.

Generator set options and accessories

<p>Engine</p> <p><input type="checkbox"/> 208/240/480 V coolant heater for ambient above 4.5 °C (40 °F)</p> <p><input type="checkbox"/> Fuel/water separator</p> <p><input type="checkbox"/> Heavy duty air cleaner</p> <p>Control panel</p> <p><input type="checkbox"/> 120/240 V, 100 W control anti-condensation space heater</p> <p><input type="checkbox"/> Paralleling configurations</p>	<p><input type="checkbox"/> Remote fault signal package</p> <p><input type="checkbox"/> Run relay package</p> <p>Alternator</p> <p><input type="checkbox"/> 80 °C rise alternator</p> <p><input type="checkbox"/> 105 °C rise alternator</p> <p><input type="checkbox"/> 125 °C rise alternator</p> <p><input type="checkbox"/> 120/240 V, anti-condensation heater</p> <p><input type="checkbox"/> Temperature sensor – alternator bearing RTD</p>	<p>Exhaust system</p> <p><input type="checkbox"/> Industrial grade exhaust silencer</p> <p><input type="checkbox"/> Residential grade exhaust silencer</p> <p><input type="checkbox"/> Critical grade exhaust silencer</p> <p>Cooling system</p> <p><input type="checkbox"/> Radiator, 50 °C ambient</p> <p>Generator set</p> <p><input type="checkbox"/> AC entrance box</p> <p><input type="checkbox"/> Batteries</p>	<p><input type="checkbox"/> Battery rack w/hold-down - floor standing</p> <p><input type="checkbox"/> Circuit breaker - set mounted</p> <p><input type="checkbox"/> Disconnect switch - set mounted</p> <p><input type="checkbox"/> PowerCommand Network</p> <p><input type="checkbox"/> Remote annunciator panel</p> <p><input type="checkbox"/> Spring isolators</p> <p><input type="checkbox"/> 2 year warranty</p> <p><input type="checkbox"/> 5 year warranty</p> <p><input type="checkbox"/> 10 year major components</p>
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* Note: Some options may not be available on all models - consult factory for availability.

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Control system

Operator panel features

Analog AC metering panel - Provides color-coded display of generator set output voltage, current, frequency, power factor and kW. All phases of voltage and current are simultaneously displayed. Easy to see output status from a distance.

Graphical data display - Allows operator to view all engine and alternator data; perform operator adjustments for speed, voltage and time delays; view fault history; and set up and adjust the generator set (set up requires password access). A portion of the display is allocated to display system status including alarm and shutdown conditions. Display is controlled by sealed membrane switches. Up to 9 lines of data can be displayed with approximately 26 characters per line.

LED status lamps - The status lamps indicate remote start command (green), not in auto (red-flashing), warning (amber) and shutdown (red).

Mode selector switch - Off/manual/auto and run/stop switches allow remote automatic starting or manual starting from the operator panel. Panel includes an LED lamp to indicate manual mode operation.

Exerciser switch - Automated exercise function in the control allows an operator to initiate an exercise period and have it automatically completed by the control.

Fault reset switch - Allows the operator to reset the control after a warning or shutdown condition. LED lamp with switch indicates that a fault is present on the system.

Panel lamps and switch - Operator panel can be illuminated by a series of high-intensity LED lamps controlled by a membrane switch on the panel. Panel lamps include a time delay to automatically switch off after a preset time period.

Emergency stop switch - Provides positive and immediate shutdown of the generator set on operation.

Construction - Operator panel is a sealed design with membrane switches for most functions. Mechanical switches are oil-tight design. Plug interfaces are provided to the generator set control system. Display panel labeling is configurable for language.

Standard control functions

- Integrated Isochronous governing and fuel control system.
- Integrated 3-phase sensing voltage regulation system with automatic single and three phase fault regulation.
- Integrated AC protective functions include over/under voltage, short-circuit, overcurrent (warning and shutdown) and overload.
- Integrated engine management system including configurable cycle-cranking functions and configurable start sequence.
- Comprehensive warning and shutdown protection including customer configurable warning and shutdown conditions.
- Comprehensive data displays including 3-phase AC voltage, current, power factor, kW and kVA; engine oil pressure, coolant temperature, DC volts and other service functions; operating history (load and fault conditions) and system setup information.

Options

- Integrated digital paralleling controls.
- LonWorks® or Modbus® network interface.
- Control anti-condensation heater.
- Key-type mode select switch.
- Relay outputs for genset running, common warning and common shutdown.
- Exhaust temperature alarm.
- Alternator temperature alarm(s).
- Centinel™ lube oil burn system.
- Power transfer control function to allow generator set to control remote power circuit breakers for open, fast closed or soft (ramping) power transfer from a utility source to the genset (2 minute maximum fail-to-disconnect timer).



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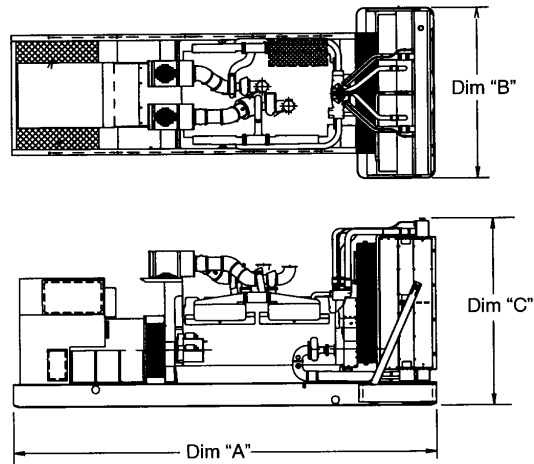
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Ratings definitions

Standby:

Applicable for supplying emergency power for the duration of normal power interruption. No sustained overload capability is available for this rating. This rating is applicable to installations served by a reliable normal utility source. This rating is only applicable to variable loads with an average load factor of 80 percent of the standby rating for a maximum of 200 hours of operation per year and a maximum of 25 hours per year at 100% of its standby rating. The standby rating is only applicable to emergency and standby applications where the generator set serves as the back up to the normal utility source. No sustained utility parallel operation is permitted with this rating (equivalent to fuel stop power in accordance with ISO3046, AS2789, DIN6271 and BS5514). Nominally rated.



Prime (unlimited running time):

Applicable for supplying power in lieu of commercially purchased power. Prime power is the maximum power available at a variable load for an unlimited number of hours. A 10% overload capability is available for limited time (equivalent to prime power in accordance with ISO8528 and overload power in accordance with ISO3046, AS2789, DIN6271 and BS5514). This rating is not applicable to all generator set models.

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

Do not use for installation design

Base load (continuous):

Applicable for supplying power continuously to a constant load up to the full output rating for unlimited hours. No sustained overload capability is available for this rating. Consult authorized distributor for rating (equivalent to continuous power in accordance with ISO8528, ISO3046, AS2789, DIN6271 and BS5514). This rating is not applicable to all generator set models.

Model	Dim "A" mm (in.)	Dim "B" mm (in.)	Dim "C" mm (in.)	Set Weight* dry kg (lbs)	Set Weight* wet kg (lbs)	Set weight* w/tank dry kg (lbs)	Set weight* w/tank wet kg (lbs)
DQCA	4394.5 (173)	2060.1 (81.1)	1715 (68)	6377 (14061)	6518 (14372)		
DQCB	4394.5 (173)	2060.1 (81.1)	1715 (68)	6377 (14061)	6518 (14372)		
DQCC	4394.5 (173)	2060.1 (81.1)	1715 (68)	6377 (14061)	6518 (14372)		

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

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