

# Diesel generator set QSB5 series engine EPA emissions



> **Specification sheet**  
35 kW - 80 kW 60 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 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 UL2200, Stationary Engine Generator Assemblies.

## U.S. EPA

Engine certified to U.S. EPA Nonroad Source Emissions Standards, 40 CFR 89, Tier 3.

## 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. Optional features include alarm and status message display, 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.

**Fuel tanks** - Dual wall sub-base fuel tanks are also offered.

**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
<b>DSFAA</b>	35 (44)		32 (40)				D-3366	
<b>DSFAB</b>	40 (50)		35 (44)				D-3367	
<b>DSFAC</b>	50 (63)		45 (56)				D-3368	
<b>DSFAD</b>	60 (75)		55 (69)				D-3369	
<b>DSFAE</b>	80 (100)		72 (90)				D-3370	

## Generator set specifications

Governor regulation class	
Voltage regulation, no load to full load	± 1%
Random voltage variation	± 0.5%
Frequency regulation	Isochronous
Random frequency variation	± 0.25%
Radio frequency emissions compliance	

## Engine specifications

Design	4 cycle, turbocharged and charge air aftercooled
Bore	107 mm (4.21 in)
Stroke	124.0 mm (4.88 in)
Displacement	4.5 litres (272 in <sup>3</sup> )
Cylinder block	Cast iron, in-line, 4 cylinder
Battery capacity	1000 amps minimum at ambient temperature of -18 °C to 0 °C (0 °F to 32 °F)
Battery charging alternator	100 amps
Starting voltage	12 volt, negative ground
Fuel system	Direct injection: number 2 diesel fuel
Fuel filter	Single element, 10 micron filtration, spin-on fuel filter with water separator
Air cleaner type	Dry replaceable element
Lube oil filter type(s)	One spin-on, full flow filter
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	150 °C standby @ 40 °C ambient
Exciter type	Torque match (shunt) standard, PMG optional
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 Three phase line-neutral/line-line	60 Hz Single phase line-neutral/line-line
<ul style="list-style-type: none"> <li>• 120/208      • 139/240      • 240/416      • 277/480</li> <li>• 120/240 Delta   • 220/380      • 255/440      • 347/600</li> <li>• 127/220</li> </ul>	<ul style="list-style-type: none"> <li>• 120/240</li> </ul>

\* Note: Consult factory for other voltages.

## Generator set options and accessories

### Engine

- 120 V, 150 W lube oil heater
- 120/240 V, 1000 W coolant heater

### Fuel System

- 24 hour dual wall sub-base tank
- 12 hour dual wall sub-base tank

### Alternator

- 105 °C rise alternator
- 125 °C rise alternator
- 120 V, 100 W anti-condensation heater
- PMG excitation
- Single phase

### Exhaust system

- Genset-mounted muffler
- Heavy duty exhaust elbow
- Slip on exhaust connection

### Generator set

- AC entrance box
- Battery
- Battery charger
- Enclosure: aluminum, steel, weather protective or sound attenuated
- Export box packaging
- Main line circuit breaker

- PowerCommand Network Communications Module (NCM)
- Remote annunciator panel
- Spring isolators
- UL 2200 Listed
- 2 year prime power warranty
- 2 year standby power warranty
- 5 year basic power warranty

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

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## Control system (PCC2100 CAN)

### 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. NEMA3R/IP53.

### 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

- 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).



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## Ratings definitions

### Standby:

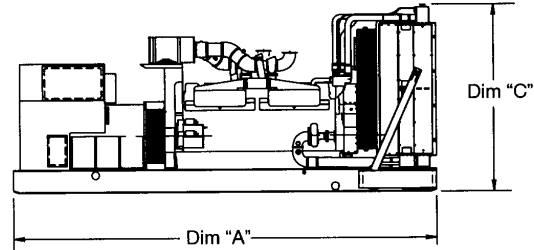
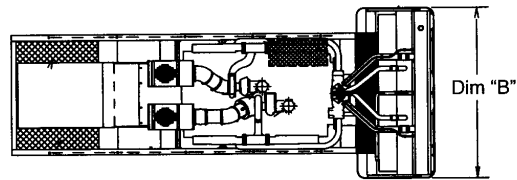
Applicable for supplying emergency power for the duration of normal power interruption. No sustained overload capability is available for this rating (equivalent to fuel stop power in accordance with ISO3046, AS2789, DIN6271 and BS5514). Nominally rated.

### 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.

### 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.



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)
<b>DSFAA</b>	2104 (82.8)	1016 (40.0)	1255 (49.4)		1080 (2380)
<b>DSFAB</b>	2104 (82.8)	1016 (40.0)	1255 (49.4)		1080 (2380)
<b>DSFAC</b>	2104 (82.8)	1016 (40.0)	1255 (49.4)		1120 (2470)
<b>DSFAD</b>	2104 (82.8)	1016 (40.0)	1255 (49.4)		1140 (2520)
<b>DSFAE</b>	2104 (82.8)	1016 (40.0)	1255 (49.4)		1220 (2690)

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

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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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