

# Diesel generator set

QSB5 series engine

50-125 kW @ 60Hz  
EPA Tier 3 emissions



## Description

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

## Features

**Heavy Duty Engine** - Rugged 4-cycle industrial diesel delivers reliable power 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.

**Control system** - The PowerCommand® 2.3 electronic control is standard equipment and provides total generator set system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, output metering, auto-shutdown at fault detection and NFPA 110 Level 1 compliance.

**Cooling system** - Standard cooling package provides reliable running at up to 50 °C (122 °F) ambient temperature.

**Enclosures** - The aesthetically appealing enclosure incorporates special designs that deliver one of the quietest generators of its kind. Aluminum material plus durable powder coat paint provides the best anti-corrosion performance. The generator set enclosure has been designed to withstand 180 MPH wind loads in accordance with ASCE7-10. The design has hinged doors to provide easy access for service and maintenance.

**Fuel tanks** - Dual wall sub-base fuel tanks are offered as optional features, providing economical and flexible solutions to meet extensive code requirements on diesel fuel tanks.

**NFPA** - The generator set 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 and dealer network.

Model	Standby 60 Hz		Prime 60 Hz		Data sheets
	kW	kVA	kW	kVA	
C50D6C	50	63	45	56	NAD-6212-EN
C60D6C	60	75	54	68	NAD-6213-EN
C80D6C	80	100	72	90	NAD-6214-EN
C100D6C	100	125	90	113	NAD-6215-EN
C125D6C	125	156	112.5	141	NAD-6216-EN

## Generator set specifications

Governor regulation class	ISO 8528 Part 1 Class G3
Voltage regulation, no load to full load	± 1.0%
Random voltage variation	± 1.0%
Frequency regulation	Isochronous
Random frequency variation	± 0.50%
Radio frequency emissions compliance	FCC code title 47 part 15 class A and B

## Engine specifications

Design	Turbocharged and charge air cooled
Bore	107 mm (4.21 in)
Stroke	124 mm (4.88 in)
Displacement	4.5 liters (272 in <sup>3</sup> )
Cylinder block	Cast iron, in-line 4 cylinder
Battery capacity	850 amps per battery at ambient temperature of 0 °C (32 °F)
Battery charging alternator	100 amps
Starting voltage	2x12 volt in parallel, negative ground
Lube oil filter type(s)	Spin-on with relief valve
Standard cooling system	High ambient radiator
Rated speed	1800 rpm

## Alternator specifications

Design	Brushless, 4 pole, drip proof, revolving field
Stator	2/3 pitch
Rotor	Direct coupled, flexible disc
Insulation system	Class H per NEMA MG1-1.65
Standard temperature rise	120 °C (248 °F) standby
Exciter type	Torque match (shunt) with PMG as option
Alternator cooling	Direct drive centrifugal blower
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

1-phase	3-phase
• 120/240	• 120/208 • 120/240 • 277/480 • 347/600 • 127/220

## Generator set options

- |   |  |   |  |
|---|--|---|--|
| <ul style="list-style-type: none"> <li>Fuel tanks           <ul style="list-style-type: none"> <li><input type="checkbox"/> Basic fuel tanks</li> <li><input type="checkbox"/> Regional fuel tanks</li> </ul> </li> <li>Engine           <ul style="list-style-type: none"> <li><input type="checkbox"/> Engine air cleaner – normal or heavy duty</li> <li><input type="checkbox"/> Shut down – low oil pressure</li> <li><input type="checkbox"/> Extension – oil drain</li> <li><input type="checkbox"/> Engine oil heater</li> </ul> </li> <li>Alternator           <ul style="list-style-type: none"> <li><input type="checkbox"/> 120 °C temperature rise alternator</li> <li><input type="checkbox"/> 105 °C temperature rise alternator</li> <li><input type="checkbox"/> PMG excitation</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Alternator heater, 120V</li> <li><input type="checkbox"/> Reconnectable full 1 phase output alternator</li> <li>Control           <ul style="list-style-type: none"> <li><input type="checkbox"/> AC output analog meters</li> <li><input type="checkbox"/> Stop switch – emergency</li> <li><input type="checkbox"/> Auxiliary output relays (2)</li> <li><input type="checkbox"/> Auxiliary configurable signal inputs (8) and relay outputs (8)</li> </ul> </li> <li>Electrical           <ul style="list-style-type: none"> <li><input type="checkbox"/> One, two or three circuit breaker configurations</li> <li><input type="checkbox"/> 80% rated circuit breakers</li> <li><input type="checkbox"/> 80% or 100% rated LSI circuit breakers</li> <li><input type="checkbox"/> Battery charger</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>Enclosure           <ul style="list-style-type: none"> <li><input type="checkbox"/> Aluminum enclosure Sound Level 1 or Level 2, sandstone or green color</li> <li><input type="checkbox"/> Aluminum weather protective enclosure with muffler installed, green color</li> </ul> </li> <li>Cooling system           <ul style="list-style-type: none"> <li><input type="checkbox"/> Shutdown – low coolant level</li> <li><input type="checkbox"/> Warning – low coolant level</li> <li><input type="checkbox"/> Extension – coolant drain</li> <li><input type="checkbox"/> Coolant heater options:               <ul style="list-style-type: none"> <li>o &lt;4 °C (40 °F) – cold weather</li> <li>o &lt;-18 °C (0 °F) – extreme cold</li> </ul> </li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>Exhaust system           <ul style="list-style-type: none"> <li><input type="checkbox"/> Exhaust connector NPT</li> <li><input type="checkbox"/> Exhaust muffler mounted</li> </ul> </li> <li>Generator set application           <ul style="list-style-type: none"> <li><input type="checkbox"/> Base barrier – elevated genset</li> <li><input type="checkbox"/> Radiator outlet duct adapter</li> </ul> </li> <li>Warranty           <ul style="list-style-type: none"> <li><input type="checkbox"/> Base warranty – 2 year/400 hours, standby</li> <li><input type="checkbox"/> Base warranty – 1 year/ unlimited hours, prime</li> <li><input type="checkbox"/> 3 year standby warranty options</li> <li><input type="checkbox"/> 5 year standby warranty options</li> </ul> </li> </ul> |
|---|--|---|--|

## Generator set accessories

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> Coolant heater</li> <li><input type="checkbox"/> Battery heater kit</li> <li><input type="checkbox"/> Engine oil heater</li> <li><input type="checkbox"/> Remote control displays</li> <li><input type="checkbox"/> Auxiliary output relays (2)</li> <li><input type="checkbox"/> Auxiliary configurable signal inputs (8) and relay outputs (8)</li> <li><input type="checkbox"/> Annunciator – RS485</li> <li><input type="checkbox"/> Audible alarm</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Remote monitoring device – PowerCommand® 500/550</li> <li><input type="checkbox"/> Battery charger – stand-alone, 12V</li> <li><input type="checkbox"/> Circuit breakers</li> <li><input type="checkbox"/> Enclosure Sound Level 1 to Sound Level 2 upgrade kit</li> <li><input type="checkbox"/> Base barrier – elevated generator set</li> <li><input type="checkbox"/> Mufflers – industrial, residential or critical</li> <li><input type="checkbox"/> Alternator PMG excitation</li> <li><input type="checkbox"/> Alternator heater</li> </ul> |
|---|---|

## Control system PowerCommand 2.3

**PowerCommand® 2.3 control** - An integrated generator set control system providing voltage regulation, engine protection and operator interface.

**Control** - Provides battery monitoring and testing features and smart-starting control system.

**InPower™** – PC-based service tool available for detailed diagnostics.

**PCCNet RS485** - Network interface (standard) to devices such as remote annunciator for NFPA 110 applications.

**Control boards** - Potted for environmental protection.

**Ambient operation** - Suitable for operation in ambient temperatures from -40°C to +70°C and altitudes to 13,000 feet (5,000 meters).

### AC Protection

- AmpSentry protective relay
- Over current warning and shutdown
- Over and under voltage shutdown
- Over and under frequency shutdown
- Over excitation (loss of sensing) fault
- Field overload
- Overload warning
- Reverse kW shutdown
- Reverse VAR shutdown
- Short circuit protection

### Engine protection

- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- High, low and weak battery voltage warning
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Redundant start disconnect
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown
- Emergency stop
- Fuel-in-rupture-basin warning or shutdown

### Operator/display panel

- Manual off switch
- 320 x 240 Pixels graphic LED backlight LCD with push button access for viewing engine and alternator data and providing setup, controls, and adjustments (English, Spanish, or French).
- LED lamps indicating genset running, not in auto, common warning, common shutdown, manual run mode and remote start
- Suitable for operation in ambient temperatures from -20°C to +70°C

### Alternator data

- Line-to-line and Line-to-neutral AC volts
- 3-phase AC current
- Frequency
- kVa, kW, power factor

### Engine data

- DC voltage
- Lube oil pressure
- Coolant temperature

### Other data

- Generator set model data
- Start attempts, starts, running hours
- Fault history
- RS485 Modbus® interface
- Data logging and fault simulation (requires InPower™ service tool)

### Digital voltage regulation

- Integrated digital electronic voltage regulator
- 3-phase line-to-line sensing
- Configurable torque matching
- Fault current regulation under single or three phase fault conditions

### Control functions

- Time delay start and cooldown
- Cycle cranking
- PCCNet interface
- (2) Configurable inputs
- (2) Configurable outputs
- Remote emergency stop
- Automatic transfer switch (ATS) control
- Generator set exercise, field adjustable

### Options

- Auxiliary output relays (2)
- Remote annunciator with (3) configurable inputs and (4) configurable outputs
- PMG alternator excitation
- PowerCommand 500/550 for remote monitoring and alarm notification (accessory)
- Auxiliary, configurable signal inputs (8) and configurable relay outputs (8)
- AC output analog meters (bargraph)
  - Color-coded graphical display of:
    - 3-phase AC voltage
    - 3-phase current
    - Frequency
    - kVa
- Remote operator panel

## 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):

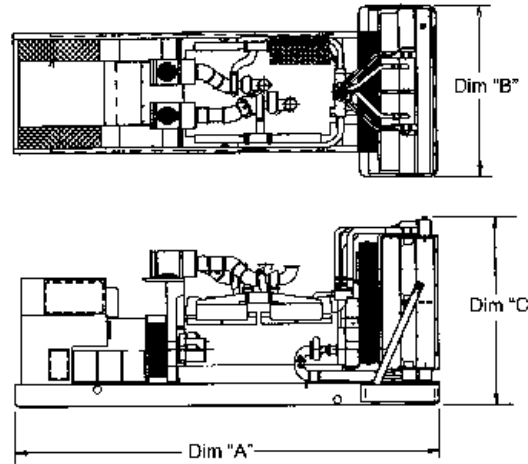
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

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* kg (lbs)
<b>Open Set</b>				
<b>C50D6C</b>	2482 (98)	965 (38)	1321 (52)	958 (2113)
<b>C60D6C</b>	2482 (98)	965 (38)	1321 (52)	1006 (2217)
<b>C80D6C</b>	2482 (98)	965 (38)	1321 (52)	1054 (2324)
<b>C100D6C</b>	2482 (98)	965 (38)	1321 (52)	1106 (2439)
<b>C125D6C</b>	2482 (98)	965 (38)	1321 (52)	1173 (2586)
<b>Weather Protective Enclosure</b>				
<b>C50D6C</b>	2482 (98)	1016 (40)	1473 (58)	1039 (2290)
<b>C60D6C</b>	2482 (98)	1016 (40)	1473 (58)	1087 (2396)
<b>C80D6C</b>	2482 (98)	1016 (40)	1473 (58)	1135 (2503)
<b>C100D6C</b>	2482 (98)	1016 (40)	1473 (58)	1187 (2618)
<b>C125D6C</b>	2482 (98)	1016 (40)	1473 (58)	1254 (2765)
<b>Sound Attenuated Enclosure Level 1</b>				
<b>C50D6C</b>	3016 (119)	1016 (40)	1473 (58)	1221 (2693)
<b>C60D6C</b>	3016 (119)	1016 (40)	1473 (58)	1137 (2507)
<b>C80D6C</b>	3016 (119)	1016 (40)	1473 (58)	1185 (2614)
<b>C100D6C</b>	3016 (119)	1016 (40)	1473 (58)	1237 (2729)
<b>C125D6C</b>	3016 (119)	1016 (40)	1473 (58)	1304 (2876)
<b>Sound Attenuated Enclosure Level 2</b>				
<b>C50D6C</b>	3456 (136)	1016 (40)	1473 (58)	1228 (2708)
<b>C60D6C</b>	3456 (136)	1016 (40)	1473 (58)	1144 (2522)
<b>C80D6C</b>	3456 (136)	1016 (40)	1473 (58)	1192 (2629)
<b>C100D6C</b>	3456 (136)	1016 (40)	1473 (58)	1244 (2744)
<b>C125D6C</b>	3456 (136)	1016 (40)	1473 (58)	1311 (2891)

\* Weights above are average. Actual weight varies with product configuration.

## Codes and standards

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

	<p>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.</p>	 <p>This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.</p>
<p>International Building Code</p>	<p>The generator set is certified to International Building Code (IBC) 2012.</p>	 <p>The generator set is available Listed to UL 2200, Stationary Engine Generator Assemblies.</p>
		 <p>All low voltage models are CSA certified to product class 4215-01.</p>
		<p>U.S. EPA</p> <p>Engine certified to U.S. EPA SI Stationary Emission Regulation 40 CFR, Part 60.</p>

**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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