



# Diesel generator set QSK78 series engine

2750kVA - 3000kVA 50 Hz



## Description

This Cummins® commercial generator set is a fully integrated power generation system, providing optimum performance, reliability, and versatility for stationary Standby, Prime Power, and Continuous duty applications.

## Features

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

**Permanent Magnet Generator (PMG)** - Offers enhanced motor starting and fault clearing short circuit capability.

**Alternator** - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings; low waveform distortion with non-linear loads, fault clearing short-circuits capability, and class F or H insulation.

**Cooling system** - Optional remote mounted cooling system, designed and tested for rated ambient temperatures, offers maximum flexibility for facility design requirements.

**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.

**NFPA** - The genset accepts full rated load in a single step in accordance with NFPA 110 for Level 1 systems.

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

**ISO8528-5 G3 Capable** - refer to factory for site and configuration specific transient performance classification

Model	Standby rating	Prime rating	Continuous rating	Emissions compliance	Controller	Data sheets
	50 Hz kVA (kW)	50 Hz kVA (kW)	50 Hz kVA (kW)	EPA and TA LUFT		
<b>C2750 D5</b>	2750 (2200)	2500 (2000)	2250 (1800)	4g TA LUFT	3.3	DS352-CPGK
<b>C3000 D5</b>	3000 (2400)*	2750 (2200)	2475 (1980)	4g TA LUFT	3.3	DS335-CPGK

\*Note: Rating is with a remote cooled configuration

## Generator set specifications

Governor Regulation	ISO 8528-5 part 1
Steady state voltage regulation, no load to full load	± 0.25%
Steady state frequency variation	± 0.25%
Frequency regulation	Isochronous
EMC compatibility	Radiated emissions to BS EN61000-6.3 Conducted immunity to BS EN61000-6.2

## Engine specifications

Design	4 cycle, V, turbocharged and low temperature after-cooled
Bore	170
Stroke	190
Displacement	77.6 L (4735 in <sup>3</sup> )
Cylinder block	Cast iron, 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 volts, 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
Lube oil filter type(s)	Four spin-on, combination full flow and bypass filters
Cooling system	104 °F (40 °C) ambient

## Alternator specifications

Design	Brushless, 4 pole, drip proof, revolving field
Stator	2/3 pitch
Rotor	2 bearing, flexible coupling
Insulation system	Class H on low and medium voltage, Class F on high voltage
Standard temperature rise	150 °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	No load < 1.5%. Non distorting balanced linear load < 3%
Telephone influence factor (TIF)	< 50 per NEMA MG1-22.43
Telephone harmonic factor (THF)	< 2%

## Available voltages

### 50 Hz Line-Neutral/Line-Line

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• 220/380</li> <li>• 230/400</li> <li>• 240/416</li> <li>• 255/440</li> </ul> | <ul style="list-style-type: none"> <li>• 1905/3300</li> <li>• 3810/6600</li> <li>• 6350/11000</li> </ul> |
|--|--|

## Generator set options and accessories

### Engine

- 208/240/480 V thermo-statically controlled coolant heater for ambient above and below 4.5 °C (40 °F)
- Oil drain pump – manual
- Engine toolkit
- Heavy duty air cleaner
- Engine starter 24VDC motor redundant

### Exhaust system

- None supplied
- Residential grade exhaust silencer – shipped loose
- Side entry silencer

### 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

## Generator set options and accessories (continued)

### Control panel

- Exhaust gas temperature monitoring
- 6x user-configurable relays
- 120/240 V Heater control cabinet
- Mechanical hour meter
- 2x digital input/output

### Alternator

- 120, 240 or 110/240 V control anti-condensation heater
- Stator winding temp sensor 2 RTDs/phase
- Bearing temp sensor RTDs
- 1 or 2 hole lug output terminal
- Cable entrance box set mounted top or bottom entry
- Cable entrance box left or right mounting

### Generator set

- 5 A or 10 A Batteries
- Standalone or wall mountable battery charger
- Manual available in multiple languages
- Standard spring mounts
- Oil sampling valve
- Fuel transfer pump hand or electric
- Free standing, single wall fuel tank 1350 L/356 US Gal

### Cooling system

- Cooling System Environmental Finish (Matrix Core)
- 50 °C (122 °F) radiator
- Remote radiator
- Slip fit connection
- Flanged (ASA) connection

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, CE, and UKCA 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):**

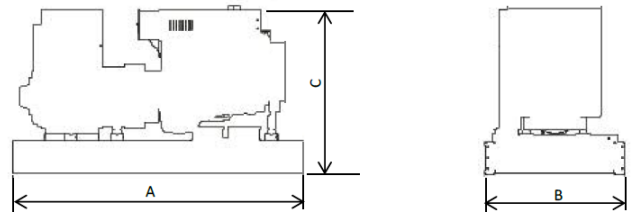
Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528.

**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. See respective model data sheet for specific model outline drawing number.





**Do not use for installation design**

**Weight and dimensions**

Model	Dim "A" mm	Dim "B" mm	Dim "C" mm	Set weight* dry kg	Set weight* wet kg
C2750 D5	5691	2305	2798	18549	19145
C3000 D5	5691	2305	2798	18964	19560

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

**Certifications**

	This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.		The CE marking is only valid when equipment is used in a fixed installation application. Material compliance declaration is available upon request.
			The UKCA marking is only valid when equipment is used in a fixed installation application. Material compliance declaration is available upon request.
			This generator set has been designed to comply with ISO 8528 standards.

For more information contact your local Cummins distributor or visit [power.cummins.com](http://power.cummins.com)

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