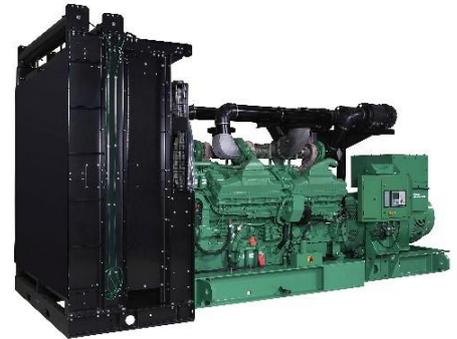




Diesel generator set QSK60 series engine

1600 kVA – 2500 kVA 50 Hz
Data Center Continuous



Description

Cummins® commercial generator sets are fully integrated power generation systems providing optimum performance, reliability and versatility for data center applications.

Features

Data Center Continuous (DCC) - Applicable for supplying power continuously to a constant or varying electrical load for unlimited hours in a data center application.

Uptime Compliant - Meets the requirement of a Tier III and IV data center site by being rated to run for unlimited hours of operation when loaded to 'N' demand for the engine generator set.

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.

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	50 Hz kVA (kW)	Emissions compliance TA Luft – EU stage	Data sheets
C1760 D5e	1600 (1280)	2g TA Luft	DS49-CPGK-DC
C2000 D5	1875 (1500)		DS48-CPGK-DC
C2000 D5e	1825 (1460)	2g TA Luft	DS50-CPGK-DC
C2250 D5	2000 (1600)		DS52-CPGK-DC
C2500 D5A	2250 (1800)	4g TA Luft	DS53-CPGK-DC

Generator set specifications

Transient Performance	ISO 8528-5 compliant
Voltage regulation, No load to full load	± 0.5%
Random voltage variation	± 0.5%
Frequency regulation	Isochronous
Random frequency variation	± 0.25%
EMS compatibility	BS EN61000-6-4/BS EN61000-6-2

Engine specifications

Design	4 cycle, V-black, turbocharged and low temperature after-cooled
Bore	158.8 mm (6.25 in)
Stroke	190.0 mm (7.48 in)
Displacement	60.2 L (3673 in ³)
Cylinder block	Cast iron, 60° V 16 cylinder
Battery capacity	2200 amps at ambient temperature 0 °F to 32 °F (-18 °C to 0 °C)
Battery charging alternator	40 amps
Starting voltage	24 volts, negative ground
Fuel system	Direct injection
Fuel filter	Triple element, spin on fuel filters with water separator
Air cleaner type	Dry replaceable element
Lube oil filter type(s)	Four spin-on, combination full flow 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	Direct coupled by flexible disc
Insulation system	Class H
Standard temperature rise	150 °C Standby
Exciter type	Permanent Magnet Generator (PMG)
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform Total Harmonic Distortion (THDV)	No load < 1.5%. Non distorting balanced linear load < 5%
Telephone Influence Factor (TIF)	< 50% Per NEMA MG1-22.43
Telephone Harmonic Factor (THF)	< 3%

Available voltages

50 Hz Line – Neutral/Line – Line

• 220/380	• 1905/3300
• 230/400	• 3640/6300
• 240/415	• 3810/6600
• 254/440	• 6350/11000

Note: Consult factory for other voltages.

Generator set options

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 filter
- Oil Level regulator (REN Valve)
- Remote duplex filter

Exhaust system

- None supplied

Exhaust system (continued)

- 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)

Control panel (continued)

- Masterless load demand
- Warning high bearing temperature
- Alternator temperature monitoring
- Exhaust gas temperature monitoring
- 6x user-configurable relays
- 120/240 V heater control cabinet
- Mechanical hour meter
- 2x digital input/output

Generator set options (continued)

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

Data center options

- Automatic oil make up system
- Closed crank ventilation system

- Triplex fuel filters
- Customized testing

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
- Oil make up system

Cooling system

- Remote radiator
- 50 °C (122 °F) radiator
- Slip fit connection
- Flanged (ASA) connection
- Enhanced environmental protection

Note: Some options may not be available on all models - consult factory for availability. Data center options are available through RFQ with the Engineering to Order group and could result in additional leadtimes.

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 and CE 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

Standard control functions (continued)

Engine protection

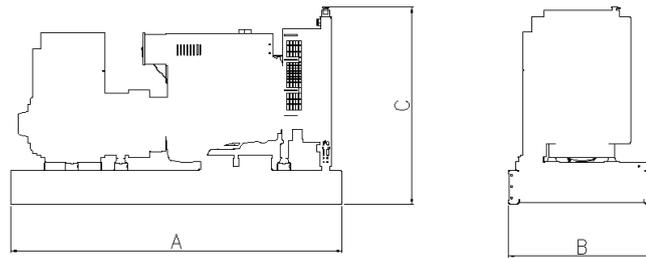
- Battery voltage monitoring, protection and testing
- Over speed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- Fail to start (over crank) shutdown
- Fail to crank shutdown
- 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)



This outline drawing is to provide representative configuration details for model series only.

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

Do not use for installation design

Model	Dim 'A' (mm)	Dim 'B' (mm)	Dim 'C' (mm)	Set weight dry* (kg)	Set weight wet* (kg)
C1760 D5e	6175	2494	3422	14825	16040
C2000 D5	6175	2286	2537	14880	15945
C2000 D5e	6175	2494	3422	15345	16560
C2250 D5	6175	2286	2537	15095	16160
C2500 D5A	6175	2494	3201	16840	17990

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

Codes and standards

	This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.	2000/14/EC	All enclosed products are designed to meet or exceed EU noise legislation 2000/14/EC step 2006.
	This generator set is available with CE certification.	ISO 8528	This generator set has been designed to comply with ISO 8528 regulation

For more information contact your local Cummins distributor or visit power.cummins.com

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