



Diesel generator set QSK78 series engine

2500 kVA - 2750 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 - Standard PowerCommand® electronic control provides total system integration including remote start/stop, precise frequency and voltage regulation, alarm and status message display, AmpSentry™ protection, output metering, auto-shutdown.

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

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

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

| Model | 50 Hz kVA (kW) | Emissions Compliance TA LUFT and EPA | Controller | Data sheets |
|----------|-------------------|---|------------|---------------|
| C2750 D5 | 2500 (2000) | 4g TA LUFT | 3.3 | DS352-CPGK-DC |
| C3000 D5 | 2750 (2200) | 4g TA LUFT | 3.3 | DS335-CPGK-DC |

Generator set specifications

| | |
|---|--|
| Transient performance | ISO 8528-5 compliant |
| 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 ³) |
| Cylinder block | Cast iron, 18 cylinder |
| Battery capacity | 2200 amps |
| Battery charging alternator | 55 amps |
| Starting voltage | 24 volt, 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) | Six 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

- | | |
|-----------|--------------|
| • 220/380 | • 1905/3300 |
| • 230/400 | • 3810/6600 |
| • 240/416 | • 6350/11000 |
| • 255/440 | |

Generator set options and accessories

Engine

- 208/240/480 V coolant heater for ambient above 4.5 °C (40 °F) - 10,000W max.
- 208/240/480 V coolant heater for ambient below 4.5 °C (40 °F) - 12,840 W max.

Cooling system

- Remote radiator
- High ambient air temperature (ship loose)
- Enhanced high ambient air temperature (ship loose)

Exhaust system

- Residential grade exhaust silencer
- Critical grade exhaust 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

Generator set

- Battery
- Battery rack with hold-down - floor standing
- PowerCommand Network
- Remote annunciator panel
- Vibration isolators
- 2 year warranty
- 5 year warranty
- 10 year major components warranty

Data Center Options

- Automatic oil make up system
- Closed crank ventilation system
- Oil sampling valve
- Triplex fuel filters
- Customized testing

Alternator

- 80 °C rise
- 105 °C rise
- 125 °C rise
- 150 °C rise
- 120/240 V 300 W anti-condensation heater
- Temperature sensor - RTDs, 2/phase
- Temperature sensor - alternator bearing RTD
- Differential current transformers

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

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

Engine protection

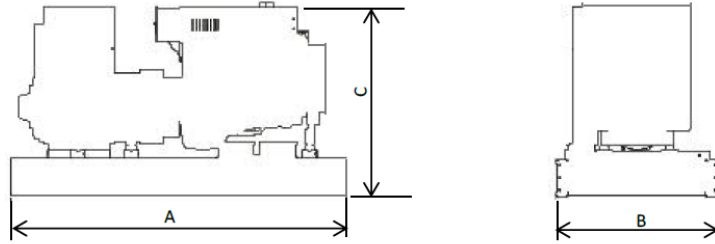
- Battery voltage monitoring, protection and testing
- Over speed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- Fail to start (over crank) shutdown
- Fail to crank shutdown
-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

Open set

| 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.

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. |  | 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

Our energy working for you.™

