Diesel generator set
QSK60 series engine

Description
Cummins Power Generation commercial generator sets are fully integrated power generation systems providing optimum performance, reliability and versatility for stationary standby, prime power and continuous duty power applications. Codes or standards compliance may not be available with all model configurations – consult factory for availability.

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.

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, 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.

International Building Code
The generator set package is available certified for seismic application in accordance with the following International Building Code: IBC2000, IBC2003, IBC2006 and IBC2009.

<table>
<thead>
<tr>
<th>Model</th>
<th>Standby rating</th>
<th>Prime rating</th>
<th>Continuous rating</th>
<th>Data sheets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60 Hz kW (kVA)</td>
<td>50 Hz kW (kVA)</td>
<td>50 Hz kW (kVA)</td>
<td>60 Hz kW (kVA)</td>
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<tr>
<td>DQKB</td>
<td>1750 (2188)</td>
<td>1500 (1875)</td>
<td>1600 (2000)</td>
<td>1350 (1688)</td>
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<td>DQKC</td>
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<td>1650 (2063)</td>
<td>1825 (2281)</td>
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<td>DQKD</td>
<td>1800 (2250)</td>
<td>1600 (2000)</td>
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<td>1320 (1650)</td>
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<tr>
<td>DQKH</td>
<td>2250 (2813)</td>
<td>2000 (2500)</td>
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</table>

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S-1383s (6/11)
Generator set specifications

Governor regulation class: ISO8528 Part 1 Class G3
Voltage regulation, no load to full load: ± 0.5%
Random voltage variation: ± 0.5%
Frequency regulation: Isochronous
Random frequency variation: ± 0.25%
Radio frequency emissions compliance: IEC 801.2 through IEC 801.5; MIL STD 461C, Part 9

Engine specifications

Bore: 158.8 mm (6.25 in)
Stroke: 190.0 mm (7.48 in)
Displacement: 60.2 litres (3673 in³)
Configuration: Cast iron, V, 16 cylinder
Battery capacity: 2200 amps minimum at ambient temperature of -18 °C to 0 °C (0 °F to 32 °F)
Battery charging alternator: 40 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 filters with water separator
Air cleaner type: Dry replaceable element
Lube oil filter type(s): Four spin-on, combination full flow filter 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: Single bearing, flexible discs
Insulation system: Class H on low and medium voltage, Class F on high voltage
Standard temperature rise: 150 °C standby at 40 °C ambient
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: < 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 line-neutral/line-line:
- 219/380
- 254/440
- 277/480
- 347/600
- 720/12470
- 7620/13200

50 Hz line-neutral/line-line:
- 220/380
- 230/400
- 240/415
- 254/440
- 3640/6300
- 3810/6600
- 3810/6600

* Note: Consult factory for other voltages.

Generator set options and accessories

Engine:
- Low exhaust emission configuration DQKB 60 Hz, 5.5 g/hp-hr NOx, data sheet D-3224
- DQKC 60 Hz, 5.5 g/hp-hr NOx, data sheet D-3225
- 208/240/480 V coolant heater for ambient above 4.5 °C (40 °F)
- 208/240/480 V coolant heater for ambient below 4.5 °C (40 °F)
- High capacity oil pan

Control panel:
- 120/240 V 100 W control anti-condensation heater
- Paralleling configuration
- Remote fault signal package
- Run relay package

Exhaust system:
- Industrial grade exhaust silencer
- Residential grade exhaust silencer
- Critical grade exhaust silencer

Cooling system:
- 50 °C ambient
- Heat exchanger
- Remote radiator

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

Generator set:
- Battery
- Battery Rack with hold-down - floor standing
- Circuit breaker - set mounted
- Disconnect switch - set mounted
- PowerCommand Network
- Remote annunciator panel
- Spring isolators
- 2 year warranty
- 5 year warranty
- 10 year major components warranty

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

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Control system PCC 3201

PowerCommand control is an integrated generator set control system providing governing, voltage regulation, engine protection and operator interface functions. Major features include:
- Integral AmpSentry™ Protective Relay providing a full range of alternator protection functions that are matched to the alternator provided.
- Battery monitoring and testing features and smart starting control system.
- Three phase sensing, full wave rectified voltage regulation system, with a PWM output for stable operation with all load types.
- Control suitable for operation in ambient temperatures from -40 °C to +70 °C (-40 °F to +158 °F) and altitudes to 5000 meters (13,000 feet).
- Prototype tested; UL, CSA, and CE compliant.
- InPower® PC-based service tool available for detailed diagnostics.
- Optional Echelon® LONWORKS® network interface.

Operator/display panel
- Off/manual/auto mode switch
- Manual run/stop switch
- Panel lamp test switch
- Emergency stop switch
- Exercise switch
- Alpha-numeric display with pushbutton access for viewing engine and alternator data and providing setup, controls and adjustments
- LED lamps indicating not in auto, common warning, common shutdown, remote start
- Configurable for local language

Engine protection
- Overspeed shut down
- Low oil pressure warning and shut down
- High coolant temperature warning and shut down
- High oil temperature warning
- Low coolant level warning or shut down
- Low coolant temperature warning
- High and low battery voltage warning
- Weak battery warning
- Dead battery shut down
- Fail to start (overcrank) shut down
- Fail to crank shut down
- Redundant start disconnect
- Cranking lockout
- Sensor failure indication

Engine data
- DC voltage
- Lube oil pressure
- Coolant temperature
- Lube oil temperature
- Engine speed
- Engine ECM data

AmpSentry AC protection
- Over current and short-circuit shut down
- Over current warning
- Single and three phase fault regulation
- Over and under voltage shut down
- Over and under frequency shut down
- Overload warning with alarm contact
- Reverse power and reverse Var shut down

Alternator data
- Line-to-line and line-to-neutral AC volts
- Three phase AC current
- Frequency
- Total and individual phase power factor, kW and kVA
- Bus voltage and frequency (with paralleling options)

Other data
- Genset model data
- Start attempts, starts, running hours
- kW hours (total and since reset)
- Fault history
- Load profile (accessible with InPower)

Governing
- Digital electronic isochronous governor
- Temperature dynamic governing
- Smart idle speed mode

Voltage regulation
- Digital PWM electronic voltage regulation
- Three phase line-to-neutral sensing
- Single and three phase fault regulation
- Configurable torque matching

Control functions
- Data logging on faults
- Fault simulation (requires InPower)
- Time delay start and cooldown
- Cycle cranking
- Configurable customer outputs (4)
- Configurable network inputs (8) and outputs (16) (with optional network)
- Remote emergency stop

Paralleling (Option)
- Active digital phase lock loop synchronizer
- Isochronous kW and kVar load sharing controls
- kW import/export and kVar/PF control for utility (mains) paralleling

Options
- Thermostatically controlled space heater
- Key-type mode switch
- Ground fault module
- Auxiliary relays (3)
- Echelon LONWORKS® interface
- Modion Gateway to convert to Modbus (loose)
- PowerCommand iWatch web server for remote monitoring and alarm notification (loose)
- Digital input and output module(s) (loose)
- Remote annunciator (loose)
- Paralleling
- Power transfer control

For further detail see document S-1444.
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

<table>
<thead>
<tr>
<th>Model</th>
<th>Dim “A” mm (in.)</th>
<th>Dim “B” mm (in.)</th>
<th>Dim “C” mm (in.)</th>
<th>Set Weight* dry kg (lbs)</th>
<th>Set Weight* wet kg (lbs)</th>
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<tbody>
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<td>2494 (98)</td>
<td>3116 (123)</td>
<td>15254 (33629)</td>
<td>15781 (34790)</td>
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</tbody>
</table>

* 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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