# Diesel generator set
## QST30 series engine

> Specification sheet
620 kW - 1000 kW standby

Our energy working for you.™

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

This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.

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.

All low voltage models are CSA certified to product class 4215-01.

The generator set is available Listed to UL 2200, Stationary Engine Generator Assemblies. The PowerCommand control is Listed to UL 508 - Category NITW7 for U.S. and Canadian usage. Circuit breaker assemblies are UL 489 Listed for 100% continuous operation and also UL 869A Listed Service Equipment.

## 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.

### Enclosures
- Optional weather protective and sound attenuated enclosures are available.

### Structural steel skid base
- Robust skid base supports the engine, alternator and radiator.

### 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.

## Specifications

<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>60 Hz kW (kVA)</td>
<td>50 Hz kW (kVA)</td>
</tr>
<tr>
<td>DFHA</td>
<td>750 (938)</td>
<td>620 (775)</td>
<td>680 (850)</td>
<td>560 (700)</td>
</tr>
<tr>
<td>DFHB</td>
<td>800 (1000)</td>
<td>700 (875)</td>
<td>725 (906)</td>
<td>640 (800)</td>
</tr>
<tr>
<td>DFHC</td>
<td>900 (1125)</td>
<td>800 (1000)</td>
<td>818 (1023)</td>
<td>725 (906)</td>
</tr>
<tr>
<td>DFHD</td>
<td>1000 (1250)</td>
<td>880 (1100)</td>
<td>900 (1125)</td>
<td>800 (1000)</td>
</tr>
</tbody>
</table>

620 kW - 1000 kW standby
Generator set specifications

Governor regulation class
ISO 8528 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 Radiated Emissions (EMI)

Engine specifications

Bore
140.0 mm (5.51 in)

Stroke
165.1 mm (6.50 in)

Displacement
30.5 L (1860.0 in³)

Configuration
Cast iron, V 12 cylinder

Battery capacity
1280 amps minimum at ambient temperature of 0 °C (32 °F)

Battery charging alternator
35 amps

Starting voltage
24 volt, negative ground

Fuel system
Direct injection: number 2 diesel fuel, fuel filter; automatic electric fuel shutoff

Fuel filter

Air cleaner type

Lube oil filter type(s)
Four spin-on, full flow; two bypass filters

Standard cooling system
High ambient radiator

Alternator specifications

Design
Brushless, 4 pole, drip proof revolving field

Stator
2/3 pitch

Rotor
Direct coupled, flexible disc

Insulation system
Class H on low voltage, Class F on medium and high voltage

Standard temperature rise
125 °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

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 3-phase

Non-Reconnectable

50 Hz 3-phase

Reconnectable

Reconnectable

• 120/208
• 139/240
• 220/380
• 230/400
• 240/416
• 277/480
• 347/600

Note: Consult factory for other voltages.

Generator set options and accessories

Engine
☐ 208/240/480 V thermostatically controlled coolant heater for ambient above 4.5 °C (40 °F)
☐ 208/240/480 V thermostatically controlled coolant heater for ambient below 4.5 °C (40 °F)
☐ Fuel/water separator
☐ Heavy duty air cleaner with service indicator

Control panel
☐ 120/240 V 100 W control anti-condensation heater
☐ Exhaust pyrometer
☐ Ground fault indication
☐ Paralleling configuration
☐ Exchanger pyrometer
☐ Remote fault signal package
☐ Run relay package

Exhaust system
☐ Critical grade exhaust silencer
☐ Industrial grade exhaust silencer
☐ Residential grade exhaust silencer

Cooling system
☐ Heat exchanger
☐ High ambient 50 °C radiator
☐ Remote radiator

Alternator
☐ 80 °C rise
☐ 105 °C rise

Generator set
☐ AC entrance box
☐ Battery

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

Our energy working for you.™

www.cumminspower.com

©2008 | Cummins Power Generation Inc. | All rights reserved | Specifications subject to change without notice | Cummins Power Generation and Cummins are registered trademarks of Cummins Inc. PowerCommand, AmpSentry, InPower and “Our energy working for you.” are trademarks of Cummins Power Generation. Other company, product or service names may be trademarks or service marks of others. S-1583a (9/08)
Control system PCC 3100

PowerCommand control is an integrated generator set control system providing governing, voltage regulation, engine protection and operator interface functions. Major features include:
- Integral AmpSentry™ protection 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.
- Optional Echelon® LONWORKS® network interface.
- 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.

Operator/display panel
- Run/off/auto mode switch
- Panel lamp test switch
- Emergency stop switch
- Alpha-numeric display with pushbutton access for viewing engine and alternator data and providing setup, controls and adjustments
- LED lamps indicating genset not in auto, common warning, common shutdown
- Configurable for local language
- Analog AC ammeter, volt meter, frequency motor, kW motor

Engine protection
- Overspeed shut down
- Low oil pressure warning and shut down
- High coolant temperature warning and shut down
- High oil temperature warning (some models)
- 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 (some models)
- Engine speed

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
- Excitation fault

Alternator data
- Line-to-line and line-to-neutral AC volts
- Three phase AC current
- Frequency
- Total power factor, kW and kVA

Other data
- Genset model data
- Starts, running hours
- kW hours (total)
- Fault history
- Load profile (accessible with InPower)

Governing
- Digital electronic isochronous governor
- Temperature dynamic governing
- Smart idle speed mode
- Glow plug control (some models)

Voltage regulation
- Digital PWM electronic voltage regulation
- Three phase line-to-neutral sensing
- Suitable for PMG excitation
- 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 inputs (4)
- 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
- Key-type mode switch
- Ground fault module
- Auxiliary relays (3)
- Echelon LONWORKS interface
- Paralleling
- 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)

For further detail see document S-1025.
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>
</tr>
</thead>
<tbody>
<tr>
<td>DFHA</td>
<td>4260 (167.7)</td>
<td>1743 (68.6)</td>
<td>2328 (91.7)</td>
<td>7676 (16922)</td>
<td>7973 (17578)</td>
</tr>
<tr>
<td>DFHB</td>
<td>4260 (167.7)</td>
<td>1743 (68.6)</td>
<td>2328 (91.7)</td>
<td>7676 (16922)</td>
<td>7973 (17578)</td>
</tr>
<tr>
<td>DFHC</td>
<td>4260 (167.7)</td>
<td>1743 (68.6)</td>
<td>2328 (91.7)</td>
<td>7540 (16622)</td>
<td>7837 (17278)</td>
</tr>
<tr>
<td>DFHD</td>
<td>4361 (171.7)</td>
<td>2000 (78.7)</td>
<td>2353 (92.6)</td>
<td>7676 (16922)</td>
<td>7973 (17578)</td>
</tr>
</tbody>
</table>

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

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.

Our energy working for you.™

www.cummins.com