

Diesel generator set QST30 series engine



> **Specification sheet**
620 kW - 1000 kW standby

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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.

Model	Standby rating		Prime rating		Continuous rating		Data sheets	
	60 Hz kW (kVA)	50 Hz kW (kVA)	60 Hz kW (kVA)	50 Hz kW (kVA)	60 Hz kW (kVA)	50 Hz kW (kVA)	60 Hz	50 Hz
DFHA	750 (938)	620 (775)	680 (850)	560 (700)			D-3408	D-3412
DFHB	800 (1000)	700 (875)	725 (906)	640 (800)			D-3409	D-3413
DFHC	900 (1125)	800 (1000)	818 (1023)	725 (906)			D-3410	D-3414
DFHD	1000 (1250)	880 (1100)	900 (1125)	800 (1000)			D-3411	D-3415

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

Design	Turbocharged and aftercooled
Bore	140.0 mm (5.51 in)
Stroke	165.1 mm (6.50 in)
Displacement	30.5 L (1860.0 in ³)
Cylinder block	Cast iron, 50°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 oil 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	DFHA/B/C/D-50 Hz: Class H per NEMA MG1-1.65 DFHD-60Hz: Class H (LV), Class F (MV) per NEMA MG1-1.65
Standard temperature rise	125 °C (257 °F) standby
Exciter type	Permanent magnet generator (PMG)
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		50 Hz 3-phase		
Reconnectable	Non-Reconnectable	Reconnectable		
• 120/208	• 139/240	• 220/380	• 230/400	• 120/208 • 220/380 • 230/400
• 220/380	• 230/400	• 240/416	• 277/480	• 240/416
• 240/416	• 277/480	• 347/600		

Note: Consult factory for other voltages.

Generator set options and accessories

<p>Engine</p> <ul style="list-style-type: none"> <input type="checkbox"/> 208/240/480 V, thermostatically controlled coolant heater for ambient above 4.5 °C (40 °F) <input type="checkbox"/> 208/240/480 V, thermostatically controlled coolant heater for ambient below 4.5 °C (40 °F) <input type="checkbox"/> Fuel/water separator <input type="checkbox"/> Heavy duty air cleaner with service indicator 	<p>Control panel</p> <ul style="list-style-type: none"> <input type="checkbox"/> 120/240 V, 100 W control anti-condensation space heater <input type="checkbox"/> Exhaust pyrometer <input type="checkbox"/> Ground fault indication <input type="checkbox"/> Paralleling configuration <input type="checkbox"/> Paralleling upgrade configuration <input type="checkbox"/> Remote fault signal package <input type="checkbox"/> Run relay package <p>Alternator</p> <ul style="list-style-type: none"> <input type="checkbox"/> 80 °C (176 °F) rise alternator <input type="checkbox"/> 105 °C (221 °F) rise alternator 	<ul style="list-style-type: none"> <input type="checkbox"/> 120/240 V, 300 W anti-condensation heater <p>Exhaust system</p> <ul style="list-style-type: none"> <input type="checkbox"/> Critical grade exhaust silencer <input type="checkbox"/> Industrial grade exhaust silencer <input type="checkbox"/> Residential grade exhaust silencer <p>Cooling system</p> <ul style="list-style-type: none"> <input type="checkbox"/> Heat exchanger cooling <input type="checkbox"/> High ambient 50 °C (122 °F) radiator <input type="checkbox"/> Remote radiator cooling <p>Generator set</p> <ul style="list-style-type: none"> <input type="checkbox"/> AC entrance box <input type="checkbox"/> Batteries 	<ul style="list-style-type: none"> <input type="checkbox"/> Battery charger <input type="checkbox"/> Export box packaging <input type="checkbox"/> Main line circuit breaker <input type="checkbox"/> PowerCommand network <input type="checkbox"/> Remote annunciator panel <input type="checkbox"/> Spring isolators <input type="checkbox"/> 2 year prime power warranty <input type="checkbox"/> 2 year standby power warranty <input type="checkbox"/> 5 year basic power warranty <input type="checkbox"/> 10 year major components warranty
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Note: Some options may not be available on all models - consult factory for availability.

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Control system

PowerCommand control with AmpSentry protection

- Guards the electrical integrity of the alternator and power system from the effects of over current, over/under voltage, under frequency and overload conditions.
- Control components are designed to withstand the vibration levels typical in generator sets.
- Integrated automatic voltage regulator and engine speed governor.

Standard control description

- Analog % of current meter (amps)
- Analog AC frequency meter
- Analog AC voltage meter
- Analog % of load meter (kW)
- Cycle cranking control
- Digital display panel
- Emergency stop switch
- Idle mode control
- Menu switch
- Panel backlighting
- Remote starting, 24 V, 2 wire
- Reset switch
- Run-off-auto switch
- Sealed front panel, gasketed door
- Self diagnostics
- Separate customer interconnection box
- Voltmeter/ammeter phase selector switch

Standard protection functions

Warnings

- High coolant temperature
- High DC voltage
- Low coolant temperature
- Low DC voltage
- Low fuel-day tank
- Low oil pressure
- Over current
- Oil pressure sender fault
- Overload load shed contacts
- Temperature sender fault
- Up to four customer fault inputs
- Weak battery

Shutdowns

- Emergency stop
- Fail to crank
- High AC voltage
- High coolant temperature
- Low coolant level (option for alarm only)
- Low AC voltage
- Low oil pressure
- Magnetic pickup failure
- Overcrank
- Over current
- Overspeed
- Short circuit
- Under frequency

AC alternator

- Current by phase
- Kilowatts
- Kilowatt hours
- Power factor
- Voltage line-to-line
- Voltage line-to-neutral

Engine data

- Battery voltage
- Coolant temperature
- Engine running hours
- Engine starts counter
- Oil pressure
- Oil temperature
- RPM



PowerCommand 3100 control operator/display panel with optional features shown

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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):

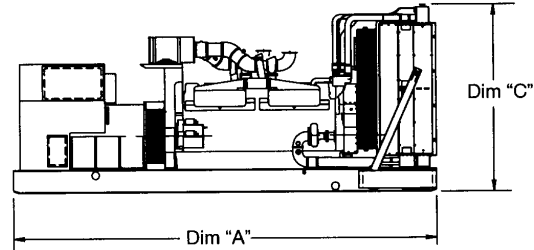
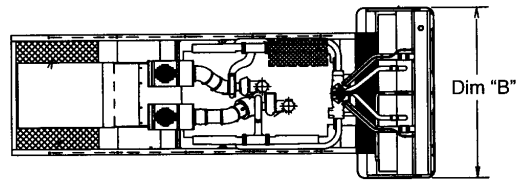
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

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

Model	Dim "A" mm (in.)	Dim "B" mm (in.)	Dim "C" mm (in.)	Set Weight* dry kg (lbs)	Set Weight* wet kg (lbs)
DFHA	4260 (167.7)	1743 (68.6)	2328 (91.7)	7676 (16922)	7973 (17578)
DFHB	4260 (167.7)	1743 (68.6)	2328 (91.7)	7676 (16922)	7973 (17578)
DFHC	4260 (167.7)	1743 (68.6)	2328 (91.7)	7540 (16622)	7837 (17278)
DFHD	4361 (171.7)	2000 (78.7)	2353 (92.6)	7676 (16922)	7973 (17578)

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

Cummins Power Generation

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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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