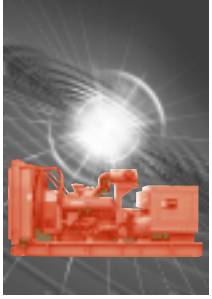


Power Generation

Diesel Powered Generating Sets 580 kW - 888 kW 50 Hz QST30 Series Engines

Typical model with options fitted

Standard Genset Features

Single Source Responsibility
- Design, manufacturer and test of all components and accessories are made by Cummins Power Generation and Cummins companies

International Integrity
- Assurance and strength of a worldwide, world class corporation

Global Backing
- 24-hour spares and service support – in 72 countries

Single Source Warranty
- Complete genset covered by Cummins Power Generation comprehensive warranty

Packaged Self-Contained Units
- Units with built in antivibration systems, control panels, starting systems with provision for base fuel tank and other accessories

Cummins Engine
- Heavy duty 4 cycle water cooled engine
- Electronic governor control

Cooling System
- 40°C cooling package (50°C option)

Ready Filled
- Every set comes filled with lube oil and anti-freeze

Alternator
- Brushless Group made machine
- Close voltage regulation
- Rotor and exciter impregnated with oil and acid resisting resin
- 12 lead reconnectable
- Exceptional short circuit capability
- Low waveform distortion with non linear loads
- Permanent magnet exciter with MX321 AVR fitted as standard

Ratings
All kW Power ratings based on a 40°C ambient temperature reference. No derating necessary up to 40°C

Chassis
Built-in anti-vibration system
Bonded rubber units fitted as standard eliminates need for rubber mats or spring mountings

PCL 'Power Control' System
- CE compliant
- Full AC instrumentation
- Emergency stop button
- Safety shutdowns
- Key or Remote starting

Alternative PCC PowerCommand Control System
- Microprocessor control
- Integrates governor and voltage regulation systems
- Superior alternator and genset protection system
- Accurate battery monitoring system
- Totally reliable and proven system

Quality Assurance
Registered Firm Certificate Number FM509 in accordance with: BS EN ISO 9001

Quality Assurance Schedule 3420/1

One Source — Engine — Alternator — Controls — Generating Set — One Name

Cummins Power Generation, Cummins Engines and Newage Alternators are all part of the same group

50 Hz Ratings				
Model Prime	**Prime kW** (kVA)	**Model Standby**	**Standby kW** (kVA)	**Engine Model**
580 DFHA	**580** (725)	**640 DFHA**	**640** (800)	**QST30G1**
640 DFHB	**640** (800)	**713 DFHB**	**713** (891)	**QST30G2**
751 DFHC	**751** (939)	**833 DFHC**	**833** (1041)	**QST30G3**
800 DFHD	**800** (1000)	**888 DFHD**	**888** (1110)	**QST30G4**

A Single Source for *all* Power System Solutions

Specifications

Generator Set Performance

Voltage Regulation
Maintains voltage output to within ±0.5%.
At any power factor between 0.8 lagging and unity.
At any variations from No load to Full load.
At any variations from Cold to Hot.
At speed droop variations up to 4.5%.

Frequency Regulation
Isochronous under varying loads from no load to 100% full load.

Random Frequency Variation
Will not exceed ±0.25% of its mean value for constant loads – no load to full load.

Waveform
Total harmonic distortion open circuit voltage waveform in the order of 1.5%. Three-phase balanced load in the order of 5.0%.

Telephone Influence Factor
TIF better than 50.
THF to BS4999 Part 40 better than 2%.

Alternator Insulation
Class H insulation.

Radio Interference
In compliance with BS800 and VDE levels G and N.

Engine

Cummins QST30G1, G2, G3 and G4, twelve-cylinder vee formation, direct injection, four-cycle diesel engines.

Type
Water cooled, turbocharged and aftercooled.

Construction
Four valves per cylinder, forged steel crankshaft and connecting rods, cast iron pistons and block, with hardened liners.

Starting
24 volt negative earth, battery charging 35 amp alternator. Cranking current 1280 amps at 0°C.

Fuel System
24 volt fail safe solenoid, dual spin-on paper element fuel filters, Cummins electronic fuel injection system with integral electronic governor. Dual flexible fuel lines with connectors. Standard fuel water separator.

Filters
Dry element air filters with restriction indicator and four spin-on paper element full flow and two by pass lube oil filters. Spin on corrosion resistor filter.

Cooling
High ambient 40°C radiator as standard with 50°C ambient as option. Oil cooler.

Alternator

Type
Brushless, single bearing, revolving field, 4-pole, drip proof, screen protected.
Class H insulation.
Enclosed to IP22 (NEMA 1) standard.
IC 01 cooling system.
Fully interconnected damper winding.
AC exciter and rotating rectifier unit.
Epoxy coated stator winding.
Rotor and exciter impregnated with tropical grade insulating oil and acid resisting polyester resin. Dynamically balanced rotor to BS5625 grade 2.5.
Sealed for life bearings.
Layer wound mechanically wedged rotor.

Exciter
Permanent magnet exciter.
Triple dipped in moisture, oil and acid resisting polyester varnish and coated with anti-tracking varnish.
Sealed solid state automatic voltage regulator – self-exciting, self-regulating.
Output windings with 2/3 pitch for improved harmonics and parallelling ability.
Close coupled engine/alternator for perfect alignment.

Compliance Standards

To BS4999/5000 pt 99,
VDE 0530, UTE5100,
NEMA MG1-22, CEMA,
IEC 34, CSA A22.2,
AS1359, BS5514,
ISO 3046 and ISO 8528

Skid Base

Fabricated and welded steel chassis
Built-in anti-vibration mountings
Integral lifting points
Optional sub-base fuel tank with eight hour capacity, dual flexible fuel lines, dial type fuel gauge and drain bung

Finish
Etch undercoated and finished in high gloss durable musell jade green

General
Complete set of operating and instruction manuals

Generator Set Options

Engine
- o Heavy duty air cleaner with safety element
- o 120 volt coolant heater (thermostatically controlled)
- o 240 volt coolant heater (thermostatically controlled)
- o Low coolant level – warning or shutdown
- o Sump evacuation pump
- o Exhaust gas temperature monitoring (PCC only)
- o Tool kit
- o Compliance to TA Luft

Alternator
- o Anti-condensation heater
- o 105°C rise alternator

Control Panel
- o Refer to literature option list on Control Panel pages

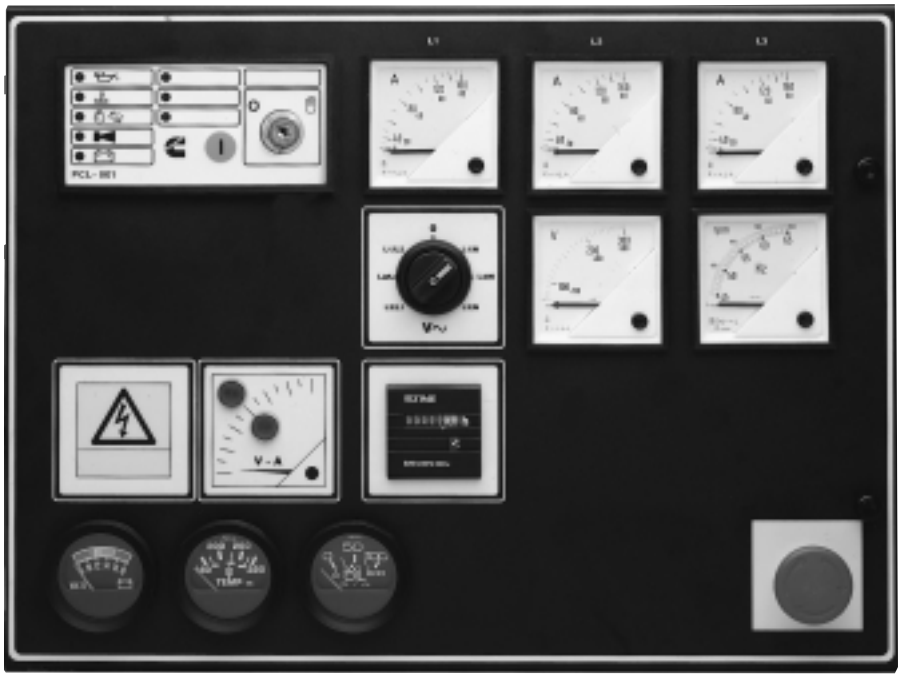
Exhaust System
- o Industrial-grade exhaust silencer
- o Residential-grade exhaust silencer
- o Length of flexible exhaust pipe
- o Bellows

Fuel System
- o 8hr sub-base fuel tank and gauge
- o Free-standing 450, 900 or 1350 litre fuel tanks
- o High/low/shutdowns and warnings
- o Electric fuel transfer
- o Manual transfer pump

Generator Set
- o Main line circuit breaker
- o Auxiliary contacts
- o Shunt trip
- o Disconnect switch
- o Cable entrance box
- o Battery charger, 5 amp and 10 amp
- o Batteries lead acid or ni-cad
- o Audible DC alarm (loose)
- o Export box packaging
- o CE compliance

Enclosures
- o Silenced and Supersilenced
- o Weather protective enclosure with mounted silencer

Power Control System (PCL)



PCL/Power Control – standard configuration PCL-001

PCL – Power Control System

- Choice of manual/key start or remote/automatic system
- Set mounted control panel on anti-vibration mounts
- Integrated circuit breaker (optional)

Standard Specification

- Three ammeters 72 mm scale
- Voltmeter and selector switch
- Frequency (Hz) and RPM meter
- Hours run meter
- Oil pressure gauge
- Engine temperature gauge
- Battery condition meter
- Emergency stop shutdown pushbutton
- Dual scale indication
- Starting module (Manual or Remote)
- High engine temperature protection shutdown
- Low oil pressure protection shutdown
- Loss of coolant alarm and shutdown
- Overspeed/over frequency alarm and shutdown
- Underspeed/under frequency alarm and shutdown
- Status and fault conditions display by LED illumination
- Remote emergency stop connections

Manual System PCL-001

- Key switch off/manual start positions
- Manual start pushbutton

Remote/Auto Start System PCL-002 (option)

- Key switch off/auto and manual position
- Manual start pushbutton
- Fail to start LED indication
- Run on timer
- 3 attempts to start (adjustable) in auto mode
- Set will automatically start in event of receiving an external signal

Circuit Breaker

- Either 3 or 4 pole optional moulded case circuit breakers can be fitted. Located* adjacent to the control panel the breaker is complete with magnetic and thermal trips for plant protection against overload and short circuit conditions. Removable gland plate covers provide top or bottom cable entry and a removable door over the circuit breaker provides accessibility to load terminals. Extended load connections off the circuit breaker can be provided either as pads for lugged cables or cable connectors for bare (unlugged) cables up to 1250 ampere capacity

Optional Features to either Manual or Remote PCL System

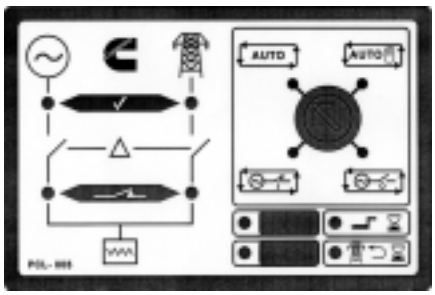
- 5 or 10 Amp wall mounted battery chargers
- Audible alarm - fitted or loose
- Volts adjustment control
- Low fuel level alarm and/or shutdown
- Overload current protection
- Common fault contact
- Annunciator units - 5 or 10 warnings
- Under/Over volts shutdown
- CE compliance
- Low battery volts alarm
- Earth fault
- kW meter
- PF meter
- Oil temperature gauge
- 2 stage low oil pressure warning
- 2 stage high temperature warning
- High oil temperature warning or shutdown

Remote Only:

- Ready to accept load indicator
- System energised indicator
- Selector switch not-in-auto position indicator

Automatic – Mains Failure System PCL-005

- Module supplied loose or fitted in wall mounting cubicle
- Works in conjunction with System PCL-002
- Adjustable voltage sensing on all three phases
- Provides signal to generator to start
- Provides signal to changeover switchgear
- Key control switch. Auto ON (2) RUN (2)
- Test positions permit RUN ON or off load
- LED indication for mains/power status
- Timers for mains fail, return time, warming time



System PCL-005

*Floor mounted cubicle provided with air circuit breaker on ratings over 2000 amps.

Alternative PowerCommand Control System (PCC)

PCC PowerCommand Control –
standard configuration with optional contactor buttons shown

PowerCommand® Control with AmpSentry™ Protection

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

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
- Reset switch
- Run-Off-Auto switch
- Sealed front panel, gasketed door
- Self diagnostics
- Separate customer interconnection box
- Voltmeter/Ammeter phase selector switch

Standard Performance Data

AC Alternator Data

- 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
- RPM
- Oil Temperature

EMC Compliance

The PCC control system meets EMC Shield Regulations.

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
- Temperature Sender Fault
- Overload Load Shed Contacts
- Temperature Sender Fault
- Up to Four Customer Fault Inputs
- Weak Battery

Shutdowns

- Emergency Stop
- Fail to Crank
- Low Coolant Level (option for alarm only)
- Low Oil Pressure
- Magnetic Pickup Failure
- Overcrank
- Overcurrent
- Overspeed
- Short Circuit
- Underfrequency
- High/Low AC Voltage
- Shut down – low fuel level
- Earth fault. Shutdown
- High alternator temperature alarm/shutdown
- PowerCommand Digital Paralleling

Cummins Optional Network Communications

- Echelon LonWorks multidrop communication. Communication network up to 5000 feet (1523 m) in length
- Allows for local and remote communications with PowerCommand network products
- Power system monitoring and control using PowerCommand software
- Flexible for interface with other manufacturers' control and monitoring systems

Other PowerCommand Control options are available

*Floor mounted cubicle provided with air circuit breaker on ratings over 2000 amps.

Disconnector Switch*

The addition of a circuit breaker is considered unnecessary when PowerCommand with Amp Sentry protection is fitted. For isolation purposes a switch disconnector can be supplied and mounted in the normal circuit breaker position on either side of the control panel.

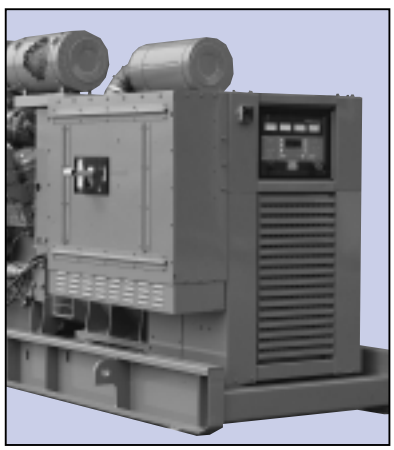
Voltage Regulation

±0.5% with PowerCommand fitted.

Options

Control panel PowerCommand options

- Audible alarm and shutdown
- Key switch-operating mode
- Shutdown alarm-relay
- Running relays 4 pole D.T.
- Warning low fuel/high fuel



Circuit breaker can be fitted either side of generator set.

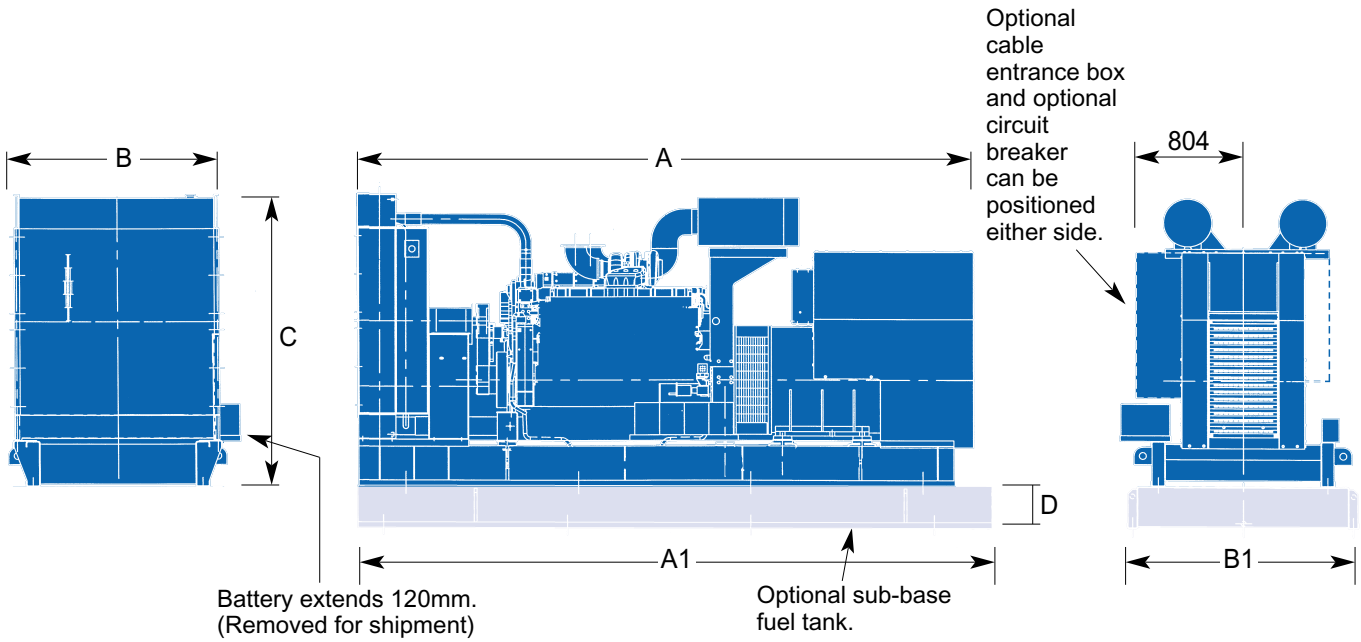
Technical Data

Generating Sets – 50 Hz

Set output	380-440 V 50 Hz	380-440 V 50 Hz	380-440 V 50 Hz	380-440 V 50 Hz
Prime at 40°C ambient	580 kWe 725 kVA	640 kWe 800 kVA	751 kWe 939 kVA	800 kWe 1000 kVA
Model (Prime)	580 DFHA	640 DFHB	751 DFHC	800 DFHD
Standby at 40°C ambient	640 kWe 800 kVA	713 kWe 891 kVA	833 kWe 1041 kVA	888 kWe 1110 kVA
Model (Standby)	640 DFHA	713 DFHB	833 DFHC	888 DFHD
Engine Make	Cummins	Cummins	Cummins	Cummins
Model	QST30G1	QST30G2	QST30G3	QST30G4
Cylinders	Twelve	Twelve	Twelve	Twelve
Engine build	Vee	Vee	Vee	Vee
Governor/Class	Electronic/A1	Electronic/A1	Electronic/A1	Electronic/A1
Aspiration and cooling	Turbo Aftercooled	Turbo Aftercooled	Turbo Aftercooled	Turbo Aftercooled
Bore and stroke	140 mm x 165 mm	140 mm x 165 mm	140 mm x 165 mm	140 mm x 165 mm
Compression ratio	14:1	14:1	14:1	14:1
Cubic capacity	30.48 Litres	30.48 Litres	30.48 Litres	30.48 Litres
Starting/Min °C	Unaided/1°C	Unaided/1°C	Unaided/7°C	Unaided/7°C
Battery capacity	254 A/hr	254 A/hr	254 A/hr	254 A/hr
Engine output – Prime	634 kWm	697 kWm	806 kWm	880 kWm
Engine output – Standby	701 kWm	768 kWm	895 kWm	970 kWm
Maximum load acceptance – single step	570 kWe	570 kWe	583 kWe	622 kWe
Speed	1500 rpm	1500 rpm	1500 rpm	1500 rpm
Alternator voltage regulation	±0.5%	±0.5%	±0.5%	±0.5%
Alternator insulation class	H	H	H	H
Single load step to NFPAII0	100%	100%	100%	100%
Fuel consumption (Prime) 100% load	153 l/hr	168 l/hr	184 l/hr	202 l/hr
Fuel consumption (Standby) 100% load	169 l/hr	187 l/hr	204 l/hr	224 l/hr
Lubrication oil capacity	154 Litres	154 Litres	154 Litres	154 Litres
Base fuel tank capacity – open set	1700 Litres	1700 Litres	1700 Litres	1700 Litres
Coolant capacity – radiator and engine (40°C)	169 Litres	169 Litres	169 Litres	302 Litres
Coolant capacity – radiator and engine (50°C)	175 Litres	175 Litres	175 Litres	342 Litres
Exhaust temp – full load prime	527°C	538°C	541°C	565°C
Exhaust gas flow – full load prime	7182 m^3/hr	7977 m^3/hr	8748 m^3/hr	10728 m^3/hr
Exhaust gas back pressure max	76 mm Hg	76 mm Hg	76 mm Hg	51 mm Hg
Air flow – radiator (40°C ambient)*	15.5 m^3/s	15.5 m^3/s	15.5 m^3/s	18 m^3/s
Pusher fan head (duct allowance) 40°C*	13 mm Wg	13 mm Wg	*13 mm Wg	*13 mm Wg
Air intake – engine	2544 m^3/hr	2794 m^3/hr	3114 m^3/hr	3402 m^3/hr
Air flow – radiator (50°C ambient)*	17.6 m^3/s	17.6 m^3/s	18.1 m^3/s	24.8 m^3/s
Pusher fan head (duct allowance) 50°C*	13 mm Wg	13 mm Wg	13 mm Wg	13 mm Wg
Total heat radiated to ambient	126 kW	137 kW	137 kW	152 kW
Engine derating – altitude	4% per 300 m above 1524 m	4% per 300 m above 1524 m	4% per 300 m above 1000 m	5% per 300 m above 1000 m
Engine derating – temperature	2% per 11°C above 40°C (52°C below 305 m)	2% per 11°C above 40°C (52°C below 305 m)	2% per 11°C above 40°C	4% per 5°C above 50°C†

In accordance with ISO 8528, BS5514.
Prime: Continuous running at variable load for unlimited periods with 10% overload available for 1 hour in any 12 hour period.
Standby: Continuous running at variable load for duration of an emergency.
Prime and standby ratings are outputs at 40°C (104°F) ambient temperature.
*Subject to factory verification.
†No temperature derating is applicable to any of these generator sets with a Class H alternator up to 50°C. For Class F alternators refer to factory.

Dimensions and Weights – 50 Hz



Model	Engine	Dimensions and Weights (mm/kg)						Set Weight kg Dry	Set Weight kg Wet	Tank Weight kg (dry)	Tank Weight kg (wet)
		A	A1	B	B1	C	D				
580 DFHA	CP700-5	4297	4460	1442	1640	2092	300	6552	6850	850	2210
640 DFHB	CP800-5	4297	4460	1442	1640	2092	300	6702	7000	850	2210
751 DFHC	CP900-5	4297	4460	1442	1640	2092	300	7152	7450	850	2210
800 DFHD	CP1000-5	4547	4460	1722	1640	2332	300	7712	8000	850	2210

Set weights are **without** sub-base tank.
Dimensions and weights are for **guidance** only. Do not use for installation design. Ask for certified drawings on your specific application.
Specifications may change without notice.

Power Generation

See your distributor for more information.

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Standard and custom made generating sets from 30 kVA to 2500 kVA