

# Diesel generator set QST30 series engine



939 kVA - 1110 kVA 50 Hz  
835 kWe - 1012 kWe 60 Hz

## Description

This Cummins® Power Generation commercial generator set is a fully integrated power generation system, providing optimum performance, reliability, and versatility for stationary standby, prime power, and continuous duty applications.

Cooling system – Standard integral set-mounted radiator system, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat.

## Features

Cummins® heavy-duty engine - Rugged 4-cycle industrial diesel delivers reliable power, low emissions and fast response to load changes.

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.

Permanent magnet generator (PMG) - **Offers enhanced motor starting and fault clearing short circuit capability.**

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

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 H insulation.

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

Motorized circuit breaker - Optional 3 or 4 pole motorized circuit breaker available.

| Model    | Standby rating    |                   | Prime rating      |                   | Data sheets |            |
|----------|-------------------|-------------------|-------------------|-------------------|-------------|------------|
|          | 50 Hz<br>kVA (kW) | 60 Hz<br>kW (kVA) | 50 Hz<br>kVA (kW) | 60 Hz<br>kW (kVA) | 50 Hz       | 60 Hz      |
| C1000 D5 | 1041 (833)        |                   | 939 (751)         |                   | DS42-CPGK   |            |
| C1100 D5 | 1110 (888)        |                   | 1000 (800)        |                   | DS36-CPGK   |            |
| C900 D6  |                   | 925 (1156)        |                   | 835 (1044)        |             | DS367-CPGK |
| C1000 D6 |                   | 1012 (1256)       |                   | 920 (1150)        |             | DS82-CPGK  |

## Generator set specifications

|  |                          |
|--|--------------------------|
| Governor regulation class                | ISO 8528 G1              |
| Voltage regulation, no load to full load | ± 0.5%                   |
| Random voltage variation                 | ± 0.5%                   |
| Frequency regulation                     | Isochronous              |
| Random frequency variation               | ± 0.25%                  |
| EMS compatibility                        | EN61000-6-4/EN 61000-6-2 |

## Engine specifications

|                             |  |
|-----------------------------|--|
| Design                      | 4 cycle, in-line, turbo charged and charge air cooled – C1100 D5/C1000 D6<br>4 cycle, in-line, turbo charged and after cooled – C1000 D5/C900 D6 |
| Bore                        | 140 mm (5.51 in.)  |
| Stroke                      | 165.1 mm (6.5 in.)   |
| Displacement                | 30.5 L (1860 in <sup>3</sup> )   |
| Cylinder block              | Cast iron, 50° V 12 cylinder   |
| Battery capacity            | 1280 amps at ambient temperature 32 °F (0 °C)  |
| Battery charging alternator | 35 amps  |
| Starting voltage            | 24 volt, negative ground   |
| Fuel system                 | Direct injection   |
| Fuel filter                 | Spin on fuel filters with water separator  |
| Air cleaner type            | Dry replaceable element with restriction indicator   |
| Lube oil filter type(s)     | Four spin-on full flow, two bypass oil 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  | Direct coupled by flexible disc                        |
| Insulation system                            | Class H  |
| 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 (THDV) | No load <1.5%. Non distorting balanced linear load <5% |
| Telephone influence factor (TIF)             | < 50%  |
| Telephone harmonic factor (THF)              | < 2%   |

## Available voltages

| 50 Hz line – neutral / line - line  | 60 Hz line – neutral / line - line  |
|---|---|
| <ul style="list-style-type: none"> <li>• 127/220</li> <li>• 220/380</li> <li>• 230/400</li> </ul> | <ul style="list-style-type: none"> <li>• 120/208</li> <li>• 127/220</li> <li>• 220/380</li> <li>• 230/400</li> <li>• 240/416</li> <li>• 255/440</li> <li>• 277/480</li> </ul> |

## Generator set options

### Engine

- .. Heavy duty air filter
- .. Water jacket heater 220/240 V

### Alternator

- .. Alternator heater
- .. Exciter voltage regulator (PMG)

### Cooling

- .. Antifreeze 50/50 (Ethylene glycol)
- .. Optional 50 °C cooling radiator

### Circuit breaker

- .. 3 or 4 pole manual circuit breaker
- .. 3 or 4 pole motorized circuit breaker
- .. Aux contacts and trip alarm

### Control panel

- .. PowerCommand 3.3
- .. PowerCommand 3.3 MLD
- .. Shutdown audible alarm
- .. Shunt trip – 24 VDC

### Enclosure

20 ft container (C1000 D5/C900 D6)

### Warranty

- .. 2 years for prime application
- .. 5 years for standby application
- .. 10 years for major components

### Silencer

- .. 9 dB attenuation industrial silencer
- .. 25 dB residential delivered loose

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

## PowerCommand 3.3 (MLD)

The PowerCommand® 3.3 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)

### Masterless Load Demand (MLD)

- Load dependent start/stop of multi-generator system
- Predictive load input
- Run hour equalization



PowerCommand® 3.3 control operator/display panel

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):

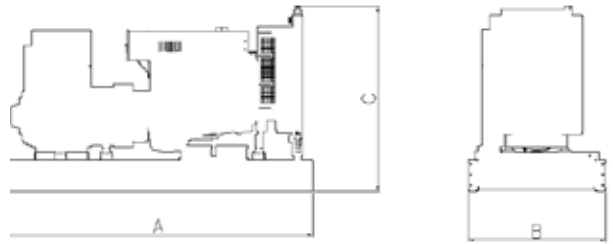
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

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 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

| Model    | Dim "A"<br>mm | Dim "B"<br>mm | Dim "C"<br>mm | Set Weight*<br>dry kg | Set Weight*<br>wet kg |
|----------|---------------|---------------|---------------|-----------------------|-----------------------|
| C1000 D5 | 4302          | 1702          | 2139          | 6246                  | 6426                  |
| C1100 D5 | 4417          | 2000          | 2387          | 7416                  | 7621                  |
| C900 D6  | 4302          | 1702          | 2139          | 6246                  | 6426                  |
| C1000 D6 | 4417          | 2000          | 2387          | 7416                  | 7621                  |

\* 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.                   |
| 2000/14/EC  | All enclosed products are designed to meet or exceed EU noise legislation 2000/14/EC step 2006.                                      | ISO 8528   | This generator set has been designed to comply with ISO 8528 regulation. |

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