**Model:** C38 D5 (X Series)
**Frequency:** 50
**Fuel Type:** Diesel

» Generator set data sheet

Our energy working for you.™

| | |
|---|---|
| **Spec sheet:** | **SS19-CPGK** |
| **Noise data sheet (Open/enclosed):** | **ND50-OS550 / ND50-CS550** |
| **Airflow data sheet:** | **AF50-550** |
| **Derate data sheet (Open/enclosed):** | **DD50-OS550 / DD50-CS550** |
| **Transient data sheet:** | **TD50-550** |

| **Fuel consumption** | **Standby** | | | | **Prime** | | | |
|---|---|---|---|---|---|---|---|---|
| | **kVA (kW)** | | | | **kVA (kW)** | | | |
| 3-Phase Ratings | 38 (30.4) | | | | 35 (28) | | | |
| 1-Phase Ratings | 30 (30) | | | | 27 (27) | | | |
| Load | **1/4** | **1/2** | **3/4** | **Full** | **1/4** | **1/2** | **3/4** | **Full** |
| gph | 0.8 | 1.1 | 1.6 | 2.3 | 0.6 | 0.9 | 1.3 | 1.9 |
| L/hr | 4 | 5 | 7 | 10 | 3 | 4 | 6 | 9 |

| **Engine** | **Standby rating** | **Prime rating** |
|---|---|---|
| Engine manufacturer | Cummins | |
| Engine model | X 3.3 G1 | |
| Configuration | 4 Cycle; In-line; 4 Cylinder Diesel | |
| Aspiration | Naturally Aspirated | |
| Gross engine power output, kWm | 36 | 32 |
| BMEP at set rated load, kPa | 804 | 757 |
| Bore, mm | 91.4 | |
| Stroke, mm | 127 | |
| Rated speed, rpm | 1500 | |
| Piston speed, m/s | 6.35 | |
| Compression ratio | 18.5:1 | |
| Lube oil capacity, L | 6.5 | |
| Overspeed limit, rpm | 1725 ±25 | |
| Regenerative power, kW | 2.8 | |
| Governor type | Mechanical | |
| Starting voltage | 12 Volts DC | |

| **Fuel flow** | |
|---|---|
| Maximum fuel flow, L/hr | 40 |
| Maximum fuel inlet restriction, mm Hg | 73 |
| Maximum fuel inlet temperature (°C) | 60 |

| **Air** | | |
|---|---|---|
| Combustion air, $m^3$/min | 1.90 | 1.90 |
| Maximum air cleaner restriction, kPa | 2.5 | |

| Exhaust | Standby rating | Prime rating |
|---|---|---|
| Exhaust gas flow at set rated load, $m^3$/min | 2.3 | 2.3 |
| Exhaust gas temperature, °C | 600 | 550 |
| Maximum exhaust back pressure, kPa | 4.75 | |

| Standard set-mounted radiator cooling | | |
|---|---|---|
| Ambient design, °C | 50 | |
| Fan load, $KW_m$ | 0.9 | |
| Coolant capacity (with radiator), L | 9.6 | |
| Cooling system air flow, m3/sec @ 12.7mmH2O | 106 | |
| Total heat rejection, BTU/min | 1653 | 1539 |
| Maximum cooling air flow static restriction mmH2O | 0.3 | |

## Open set derating factors kVA (kW)

Note: Standard open genset options running at 400V, 150m above sea level. For enclosed product derates, please refer to datasheet - DD50-CS550.

| | 27°C | 40°C | 45°C | 50°C | 55°C |
|---|---|---|---|---|---|
| **Standby** | 38 (30.4) | 37.3 (29.8) | 36.5 (29.2) | 34.3 (27.4) | 33.5 (26.8) |
| **Prime** | 33.9 (27.1) | 33.1 (26.5) | 32.5 (26) | 31.8 (25.4) | 31.1 (24.9) |

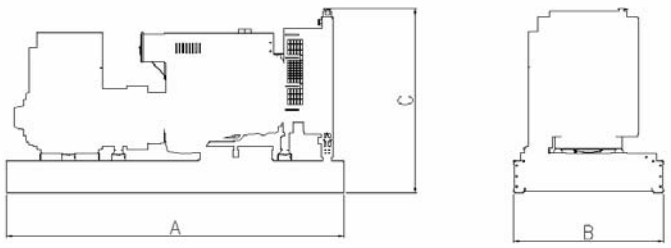
| Weights* | Open | Enclosed |
|---|---|---|
| Unit dry weight kgs | 745 | 1105 |
| Unit wet weight kgs | 910 | 1270 |

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

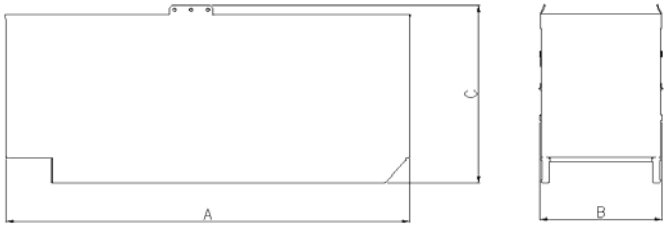
| Dimensions | Length | Width | Height |
|---|---|---|---|
| Standard open set dimensions | 1753 | 930 | 1250 |
| Enclosed set standard dimensions | 2242 | 967 | 1513 |

## Genset outline

**Open set**




**Enclosed set**




Outlines are for illustrative purposes only. Please refer to the genset outline drawing for an exact representation of this model.

## Alternator data

| Feature code | Connection[1] | Temp rise degrees C | Duty[2] | Alternator | Voltage |
|---|---|---|---|---|---|
| TBC | Wye, 3 Phase | 163/125 | S/P | PI144H | 380-440V |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

## Ratings definitions

| Emergency Standby Power (ESP) | Limited-Time running Power | Prime Power (PRP): | Base Load (Continuous) Power |
|---|---|---|---|
| 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. | Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528. | 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. | 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. |

## Formulas for calculating full load currents:

**Three phase output**

$$\frac{\text{kWx1000}}{\text{Voltagex1. 73x0.8}}$$

**Single phase output**

$$\frac{\text{kWxSingleP haseFactor x1000}}{\text{Voltage}}$$

**See your distributor for more information.**

Cummins Power Generation
Manston Park, Columbus Avenue
Manston, Ramsgate
Kent CT12 5BF, UK
Telephone: +44 (0) 1843 255000
Fax: +44 (0) 1843 255902
E-Mail: cpg.uk@cummins.com
Web: www.cumminspower.com

Specification sheet

# Diesel generator set X3.3 series engine

25 kVA - 38 kVA 50 Hz
27 kW - 35 kW 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.

## Features

**Cummins® engine** - Rugged 4-cycle delivers reliable power, 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-circuits capability.

**Control system** – The PowerCommand® 1.1 electronic control is standard equipment and provides total Genset system integration, including automatic remote starting/stopping, alarm and status message display.

**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 enclosure is available.

**Fuel tank** - In-skid, fuel tank of 175 litre capacity and provided with 110% Fluid Retention capability.

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

| | 3-Phase ratings | | | | 1-Phase ratings* | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Standby rating | | Prime rating | | Standby rating | | Prime rating | | Data sheet |
| Model | 50 Hz kVA (kW) | 60 Hz kW (kVA) | 50 Hz kVA (kW) | 60 Hz kW (kVA) | 50 Hz kVA (kW) | 60 Hz kW (kVA) | 50 Hz kVA (kW) | 60 Hz kW (kVA) | |
| C33 D5 | 33 (26.4) | | 30 (24) | | 28.3 (28.3) | | 25.7 (25.7) | | DS93-CPGK |
| C38 D5 | 38 (30.4) | | 35 (28) | | 30 (30) | | 27 (27) | | DS94-CPGK |
| C30 D6 | | 30 (37.5) | | 27 (33.8) | | 30 (30) | | 27 (27) | DS95-CPGK |
| C35 D6 | | 35 (43.8) | | 32 (40) | | 33 (33) | | 30 (30) | DS96-CPGK |

*1.0 PF

**Our energy working for you.™**

cumminspower.com


SS23b-CPGK (1/15)

## Generator set specifications

| | |
|---|---|
| Governor regulation class | ISO 8528 Part 1 Class G2 |
| Voltage regulation, no load to full load | ± 1% |
| Random voltage variation | ± 1% |
| Frequency regulation | Droop |
| Random frequency variation | ± 0.25% |

## Engine specifications

| | |
|---|---|
| Design | 4 cycle, in-line, naturally aspirated |
| Bore | 91.4 mm (3.6 in.) |
| Stroke | 127 mm (5.3 in.) |
| Displacement | 3.3 liter (201 in) |
| Cylinder block | Alloy cast iron, in-line, 4 cylinder |
| Battery capacity | 88 ampere-hour |
| Battery charger alternator | 36 amps. |
| Starting voltage | 12 volt, negative ground |
| Fuel system | Direct injection: Number 2 diesel fuel |
| Fuel filter | Single element, Spin-on fuel cum Water Separator, Filtration efficiency<br>25 micron 99% (min), Water separation efficiency 90% (min) |
| Air cleaner type | Dry replaceable element |
| Lube oil filter type(s) | Spin on full flow filter, filtration efficiency 25 micron 99% (min) |
| Standard cooling system | 122 °F (50 °C) ambient radiator with coolant recovery system |

## Alternator specifications

| | |
|---|---|
| Design | Brushless, 4 pole, revolving field |
| Stator | 2/3 pitch |
| Rotor | Single bearing, flexible disc |
| Insulation system | Class H |
| Standard temperature rise | 163 °C standby @ 27 °C ambient |
| Exciter type | Torque match (shunt) standard, EBS optional EBS (Excitation Boost System) |
| 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

| **50 Hz** | | | **60 Hz** | | |
|---|---|---|---|---|---|
| **3-phase line-line/line-neutral** | | **Single phase** | **3-phase line-line/line-neutral** | | **Single phase** |
| • 400/230 | • 416/240 | • 240 | • 480/277 | • 220/127 | • 240 |
| • 380/220 | • 220/127 | • 230 | • 440/255 | • 230/115 | • 230 |
| • 208/120 | • 440/255 | • 220 | • 416/240 | • 220/110 | • 220 |
| • 190/110 | • 200/115 | | • 240/120 | | |

Note: Consult factory for other voltages.

## Generator set options and accessories

- ☐ Coolant heater
- ☐ Residential grade silencer
- ☐ Alternator heater
- ☐ Electronic governing
- ☐ Excite boost system
- ☐ 4 pole main circuit breaker
- ☐ Literature language
- ☐ Sound attenuated enclosure
- ☐ Dual wall fuel tank
- ☐ Optional warranty
- ☐ Battery charger
- ☐ Maintenance kit

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

**Our energy working for you.™**

cumminspower.com



SS23b-CPGK (1/15)

Power Generation

# The PowerCommand® 1.1 - Generator Set Control

- The PowerCommand® 1.1 control is a microprocessorbased generator set monitoring control system. The control provides a simple operator interface to the generator set, digital voltage regulation, digital engine speed governing, start / stop control, and protectivefunctions.
- The PowerCommand® 1.1 generator set control is suitable for use on a wide range of generator sets in non-paralleling applications.
- The PowerCommand Control can be configured for any frequency, voltage and power configuration from 120 to 600 VAC for 50 Hz or 60 Hz operation.
- Power for the control is derived from the generator set starting batteries. The control functions over a voltage range from 8 VDC to 35 VDC.

## Major Features

- 12 or 24 VDC Battery Operation
- Digital Engine Speed Governing (optional) to provide isochronous frequency regulation.
- Digital Voltage Regulation full wave rectified single phase (line to line) sensing.
- Generator Set Monitoring. Monitors status of all critical engine and alternator conditions functions.
- Engine Starting includes relay drivers for start, fuel shut off (FSO), and glow plug.
- Configurable Inputs and Outputs. Two discrete inputs and two dry contact relay outputs.
- Generator Set Monitoring: Displays status of all critical engine & alternator generator set functions.
- Smart Starting Control System: Integrated fuel ramping to limit black smoke & frequency overshoot.
- Advanced Serviceability using INPOWER.

## Control System

Includes all functions to locally or remotely start and stop, and protect the generator set.

### Control Switch – RUN/OFF/AUTO

OFF Mode – the generator set is shut down & cannot be started; as well as resets faults.

RUN Mode – the generator set will execute its start sequence.

AUTO Mode – the generator set can be started with a start signal from a remote device.

## Status Indications

The control has a lamp driver for external fault/status indication. Functions include:

- The lamp flashes during preheat (when used) and while the generator set is starting.
- READY TO LOAD - flashing until the set is at rated voltage and frequency, then on continuously.
- Fault conditions are displayed by flashing a two-digit fault code number.

**LED Indicating Lamps** - includes LED indicating lamps for the following functions;

Not in Auto
Remote Start
Warning
Shutdown
Auto
Run

Remote Emergency Stop Switch Input. Immediate shut down of the generator set on operation.

**Base Engine Protection** -

Low Oil Pressure Shutdown
High Engine Temperature Shutdown
Underspeed/Sensor Fail Shutdown
Fail to Start
Battery Charging Alternator Fail Warning

## Options

Digital Engine Speed Governing to provide isochronous frequency regulation.

**Our energy working for you.™**

cumminspower.com



SS23b-CPGK (1/15)

Power Generation

## 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 and DIN 6271.

**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.

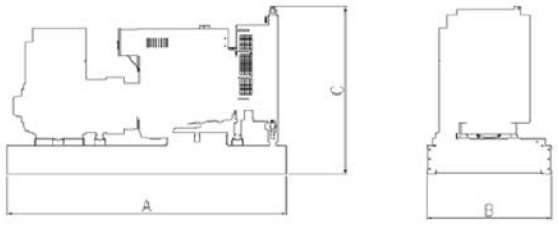
**Prime power (PRP)**:

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 and DIN 6271.

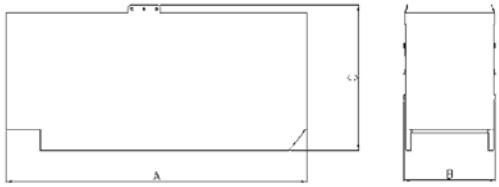
**Base load (continuous) power (COP)**:

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 and DIN 6271.

**OPEN**



**ENCLOSED**



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**

| | Open set | | | | | Enclosed set | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Dimensions (mm) | | | Weight (Kg) | | Dimensions (mm) | | | Weight (Kg) | |
| Model | Length (A) | Width (B) | Height (C) | Dry | Wet | Length (A) | Width (B) | Height (C) | Dry | Wet |
| **C33 D5** | 1753 | 930 | 1238 | 685 | 860 | 2253 | 969 | 1616 | 1045 | 1219 |
| **C38 D5** | 1753 | 930 | 1238 | 697 | 872 | 2253 | 969 | 1616 | 1057 | 1232 |
| **C30 D6** | 1753 | 930 | 1238 | 685 | 860 | 2253 | 969 | 1616 | 1045 | 1220 |
| **C35 D6** | 1753 | 930 | 1238 | 697 | 872 | 2253 | 969 | 1616 | 1057 | 1232 |

* **Note:** Weights represent a set with standard features.

## Codes and standards

| | | | |
|---|---|---|---|
| Registered To ISO 9001 | This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002. | **2000/14/EC** | All enclosed products are designed to meet or exceed EU noise legislation 2000/14/EC step 2006. |
| CE | This generator set is available with CE certification. | **ISO8528** | This generator set has been designed to meet or exceed ISO8528 regulation. |


**Cummins Power Generation**

**Europe, CIS, Middle East and Africa**
Manston Park Columbus Ave.
Manston, Ramsgate
Kent CT12 5BF United Kingdom
Phone 44 1843 255000
Fax 44 1843 255902

**Americas**
1400 73rd Avenue N.E.
Minneapolis, MN 55432 USA
Phone 763 574 5000
Fax 763 574 5298

**Asia Pacific**
10 Toh Guan Road #07-01
TT International Tradepark
Singapore 608838
Phone 65 6417 2388
Fax 65 6417 2399


**Our energy working for you.™**

cumminspower.com




SS23b-CPGK (1/15)


Cummins Power Generation