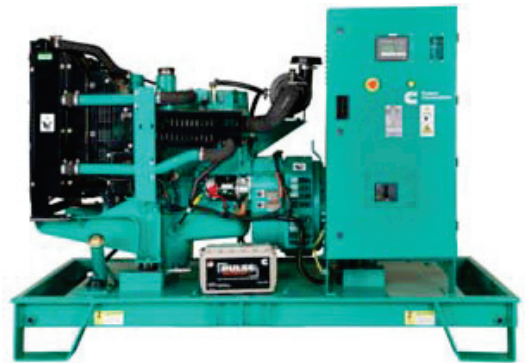


# Diesel generator set S3.8 series engine

44 kVA - 66 kVA 50 Hz  
40 kW - 60 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 and prime power duty applications.

## Features

**Cummins® medium-duty engine -** Rugged 4-cycle industrial diesel delivers reliable power and fast response to load changes.

**Alternator -** Low reactance 2/3 pitch windings; low waveform distortion with non-linear loads, fault clearing short-circuits capability, and class H insulation.

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

**Control system -** The PowerCommand® electronic control is standard equipment and provides total genset system integration, including auto remote start/stop, precise frequency and voltage regulation, alarm and status message display.

**Enclosures -** Optional sound attenuated enclosures are available.

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

## 3-Phase Ratings

| Model         | Standby rating |          | Prime rating |          |
|---------------|----------------|----------|--------------|----------|
|               | 50 Hz          | 60 Hz    | 50 Hz        | 60 Hz    |
|               | kVA (kW)       | kW (kVA) | kVA (kW)     | kW (kVA) |
| <b>C44 D5</b> | 44 (35)        |          | 40 (32)      |          |
| <b>C55 D5</b> | 55 (44)        |          | 50 (40)      |          |
| <b>C66 D5</b> | 66 (53)        |          | 60 (48)      |          |
| <b>C40 D6</b> |                | 40 (50)  |              | 36 (45)  |
| <b>C50 D6</b> |                | 50 (63)  |              | 45 (56)  |
| <b>C60 D6</b> |                | 60 (75)  |              | 54 (68)  |

## 1-Phase Ratings @ 1.0 P.F

| Model         | Dedicated Winding |             | Reconnectable Winding |             |          |         | Data Sheet |
|---------------|-------------------|-------------|-----------------------|-------------|----------|---------|------------|
|               | Standby           | Prime       | Standby               | Prime       | Standby  | Prime   |            |
|               | 60 Hz             |             | 50 Hz                 |             | 60 Hz    |         |            |
|               | kW (kVA)          |             | kVA (kW)              |             | kW (kVA) |         |            |
| <b>C44 D5</b> |                   |             | 35 (35)               | 31.8 (31.8) |          |         | DS346-CPGK |
| <b>C55 D5</b> |                   |             | 44 (44)               | 40 (40)     |          |         | DS347-CPGK |
| <b>C66 D5</b> |                   |             | 53 (53)               | 48 (48)     |          |         | DS348-CPGK |
| <b>C40 D6</b> | 40 (40)           | 36 (36)     |                       |             | 40 (40)  | 36 (36) | DS349-CPGK |
| <b>C50 D6</b> | 50 (50)           | 45 (45)     |                       |             | 49 (49)  | 45 (45) | DS350-CPGK |
| <b>C60 D6</b> | 60 (60)           | 54.5 (54.5) |                       |             | 58 (58)  | 54 (54) | DS351-CPGK |

## Generator set specifications

|  |                                   |
|--|-----------------------------------|
| Governor regulation class                | ISO 8528 G2                       |
| Voltage regulation, no load to full load | ± 1%                              |
| Random voltage variation                 | ± 1%                              |
| Frequency regulation                     | Droop                             |
| Random frequency variation               | ± 0.25%                           |
| Radio frequency emissions compliance     | BA EN 61000-6-4 / BS EN 61000-6-2 |

## Engine specifications

|                             |   |
|-----------------------------|---|
| Design                      | 4 cycle, in-line, turbo charged – C44/55 D5, C40/50 D6<br>4 cycle, in-line, turbo charged after cooled – C66 D5, C60 D6 |
| Bore                        | 97 mm (3.82 in.)  |
| Stroke                      | 128 mm (5 in.)  |
| Displacement                | 3.8 L (232 in <sup>3</sup> )  |
| Cylinder block              | Cast iron, 4 cylinder   |
| Battery capacity            | 65 AH   |
| Battery charging alternator | 36 AH   |
| Starting voltage            | 12-volt, 40 amp 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)     | Spin on full flow filter  |
| Standard cooling system     | 122 °F (50 °C) ambient radiator   |

## Alternator specifications

|  |  |
|--|--|
| Design                                       | Brushless, single bearing, revolving field             |
| Stator                                       | 2/3 pitch winding                                      |
| Rotor  | Single bearing, flexible disc coupling                 |
| Insulation system                            | Class H  |
| Standard temperature rise                    | Standby 50/60 Hz – 163 °C/27 °C ambient                |
| Exciter type                                 | Self excited   |
| Phase rotation                               | A (U), B (V), C (W)                                    |
| Alternator cooling                           | Direct drive centrifugal fan                           |
| AC waveform total harmonic distortion (THDV) | No load <1.8%. Non distorting balanced linear load <5% |
| Telephone influence factor (TIF)             | < 50% per NEMA MG1-22.43                               |
| Telephone harmonic factor (THF)              | < 2%   |

## Available voltages

| 50 Hz line – line / line - neutral   |  | 60 Hz line – line / line - neutral  |   | 1 phase dedicated/reconnectable  |
|--|--|---|---|--|
| <b>3 phase</b>   | <b>1 phase reconnectable</b>   | <b>3 phase</b>  |   |  |
| <ul style="list-style-type: none"> <li>• 380/220</li> <li>• 400/230</li> <li>• 416/240</li> <li>• 440/255</li> </ul> | <ul style="list-style-type: none"> <li>• 208/115</li> <li>• 208/120</li> <li>• 220/127</li> <li>• 190/110</li> </ul> | <ul style="list-style-type: none"> <li>• 220</li> <li>• 230</li> <li>• 240</li> </ul> | <ul style="list-style-type: none"> <li>• 380/220</li> <li>• 400/230</li> <li>• 416/240</li> <li>• 440/255</li> <li>• 480/277</li> </ul> | <ul style="list-style-type: none"> <li>• 200/115</li> <li>• 208/120</li> <li>• 220/127</li> <li>• 230/132</li> <li>• 240/138</li> <li>• 190/110</li> </ul> |

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

## Generator set options

- |   |  |  |   |
|---|--|--|---|
| <input type="checkbox"/> Sound attenuated housing       | <input type="checkbox"/> 4P MCCB           | <input type="checkbox"/> 500 liter fuel tank                   | <input type="checkbox"/> 1-ph reconnectable alternator for 50/60 Hz |
| <input type="checkbox"/> Engine coolant heater          | <input type="checkbox"/> Aux contact       | <input type="checkbox"/> Dual wall, with secondary containment | <input type="checkbox"/> 1-ph dedicated winding for 60 Hz           |
| <input type="checkbox"/> Heavy duty air cleaner         | <input type="checkbox"/> Shunt trip        | <input type="checkbox"/> Remote fuel filling                   | <input type="checkbox"/> Alternator heater                          |
| <input type="checkbox"/> Electronic governing           | <input type="checkbox"/> Earth fault relay | <input type="checkbox"/> PC 1.1                                | <input type="checkbox"/> Lower temp rise alt frame                  |
| <input type="checkbox"/> Mains operated battery charger |  | <input type="checkbox"/> Aux 101                               | <input type="checkbox"/> Permanent magnet generator (PMG)           |
| <input type="checkbox"/> Residential silencer           |  | <input type="checkbox"/> Extended warranty                     |   |
| <input type="checkbox"/> Critical silencer              |  |  |   |

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

## Generator set control PowerStart 500



### Control system

- The PowerStart control is a microprocessor-based generator set monitoring and control system. The control provides a simple operator interface to the generator set, manual and remote start/stop control and shutdown fault indication. The integration of all control functions into a single control provides enhanced reliability and performance compared to conventional generator set control systems. This control has been designed and tested to meet the harsh environment in which gensets are typically applied.
- The PowerStart generator set control is suitable for use on a wide range of generator sets in non-paralleling applications. It is suitable for use with reconnectable or non-reconnectable generators, can be configured for either 50 Hz or 60 Hz and voltage and power connection from 190-600 VAC line-to-line.
- This control includes an intuitive operator interface that allows for complete genset control as well as system metering, fault annunciation, configuration and diagnostics. The interface includes seven generator set status LED lamps with both internationally accepted symbols and English text to comply with customer needs. The interface also includes an LED backlit LCD display with tactile-feel soft-switches for easy operation and screen navigation. The manual/auto/stop switch function is integrated into the interface panel.
- All data on the control can be viewed by scrolling through screens with the navigation keys. The control displays the current active fault and a time-ordered history of the five previous faults.
- Power for this control is derived from the generator set starting batteries and functions over a voltage range from 8 VDC to 16 VDC.

### Major features

- LCD display - 16 characters x 2 line alphanumeric LED backlight LCD.
- Generator set monitoring and protection.
- 12 VDC battery operation.
- Engine Starting - Includes solid state output to operate external relays start the engine, fuel shut FSO), and glow plugs. Start disconnect is achieved by monitoring main alternator frequency.
- Remote Start Capability – Interface to transfer switch.
- Environmental protection – The control is designed for reliable operations in harsh environments.
- Warranty and service - Backed by a comprehensive warranty and worldwide distributor service network.
- Certification - Suitable for use on generator sets are designed, manufactured, tested and certified to relevant ISO, EC Mil Std. and CE standards.

### Base control functions

**LCD display** - 16 character x 2 line alphanumeric LED backlight LCD.

**Operation interface** - Six tactile-feel membrane switches for LCD navigation, genset operation and control setup. These switches are indicated by internationally accepted symbols and English text.

**Data logs** - Includes engine run time and controller on time.

**Fault history** - Provides a record of the most recent fault conditions with control hour's time stamp. Up to 5 events are stored in the control non-volatile memory.

### Alternator data

- Voltage (single or three phase line-to-line and line-to-neutral)
- Current (single or three phase)
- KVA (three phase and total)
- Frequency

### Engine data

- Starting battery voltage
- Engine running hours
- Engine temperature
- Engine oil pressure

**Service adjustments** - The control includes provisions for adjustment and calibration of generator set control functions. Functions include:

- Voltage selection
- Frequency selection
- Configurable input set up
- Configurable output set up
- Meter calibration
- Units of measurement

### Protective functions

On operation of a protective function the control will indicate a fault by illuminating the appropriate status LED, as well as display the fault code and fault description on the LCD. The nature of the fault and time of occurrence are logged in the control. The service manual and InPower Service Tool provide service keys and procedures based on the service codes provided.

### Field control interface

#### Input signals to the base control include

- Remote start
- Local and emergency stop
- Configurable inputs: Control includes (4) input signals from customer

#### Output signals from the control include

- Configurable output: Control includes (1) solid state driver rated at 1 A. This output can be configured to activate on ready to load, or common warning and common shutdown condition.

#### Communications connections include

- PC tool interface: This RS-485 communication port allows the control to communicate with a personal computer running InPower software.

Note – An RS-232 or USB to RS-485 converter is required for communication between PC and control.

## Ratings definitions

### Standby:

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.

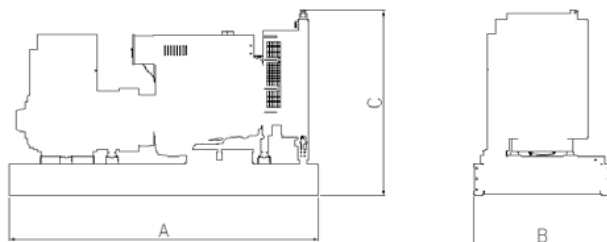
### Prime (Unlimited Running Time):

Applicable for supplying power in lieu of commercially purchased power. Prime power is the maximum power available at a variable load for an unlimited number of hours. A 10% overload capability is available for limited time. (Equivalent to Prime Power in accordance with ISO8528 and Overload Power in accordance with ISO3046, AS2789, DIN6271, and BS5514). This rating is not applicable to all generator set models.

### Base Load (Continuous):

Applicable for supplying power continuously to a constant load up to the full output rating for unlimited hours. No sustained overload capability is available for this rating. Consult authorized distributor for rating. (Equivalent to Continuous Power in accordance with ISO8528, ISO3046, AS2789, DIN6271, and BS5514). This rating is not applicable to all generator set models.

### 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**

| Model  | Open      |           |           | Dry Wt.     | Enclosed   |           |           | Dry Wt.     |
|--------|-----------|-----------|-----------|-------------|------------|-----------|-----------|-------------|
|        | A         | B         | C         |             | A          | B         | C         |             |
|        | mm (in)   | mm (in)   | mm (in)   | kg (lbs)    | mm (in)    | mm (in)   | mm (in)   | kg (lbs)    |
| C44 D5 | 2115 (84) | 1044 (42) | 1516 (60) | 945 (2079)  | 2600 (103) | 1115 (44) | 1795 (71) | 1395 (3069) |
| C55 D5 | 2115 (84) | 1044 (42) | 1516 (60) | 955 (2101)  | 2600 (103) | 1115 (44) | 1795 (71) | 1410 (3102) |
| C66 D5 | 2115 (84) | 1044 (42) | 1516 (60) | 1005 (2211) | 2600 (103) | 1115 (44) | 1795 (71) | 1585 (3487) |
| C40 D6 | 2115 (84) | 1044 (42) | 1516 (60) | 945 (2079)  | 2600 (103) | 1115 (44) | 1795 (71) | 1395 (3069) |
| C50 D6 | 2115 (84) | 1044 (42) | 1516 (60) | 955 (2101)  | 2600 (103) | 1115 (44) | 1795 (71) | 1410 (3102) |
| C60 D6 | 2115 (84) | 1044 (42) | 1516 (60) | 985 (2167)  | 2600 (103) | 1115 (44) | 1795 (71) | 1435 (3157) |

\* **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.                   |
| <b>2000/14/EC</b>   | All enclosed products are designed to meet or exceed EU noise legislation 2000/14/EC step 2006.                                      | <b>ISO 8528</b>  | This generator set has been designed to comply with ISO 8528 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 73<sup>rd</sup> 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.™

©2012 Cummins Power Generation Inc. All rights reserved.

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. Specifications are subject to change without notice.

SS29-CPGK-Rev B (9/12)



[cumminspower.com](http://cumminspower.com)