

Diesel generator set B series

with user friendly PS0500 genset controller



Specification sheet

66-112 kWe, 82.5-140 kVA Prime

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Latest technology product: Value for money

The **Cummins® 'B series'** engine powered diesel generating sets offer the best fuel economy, best warranty terms and lowest cost of maintenance thereby proving to be the most economical power solution. With the superior designed engine and world class Cummins Generator Technologies (Stamford) make alternator, the gensets come equipped with Cummins corporate genset controller for ease of use and monitoring generator performance.

Silent, compact and light weight

The **Cummins® 'B series'** DG sets are smaller and lighter than any other DG set in its class, thus giving you the advantage of optimising your valuable space.

Environment friendly power

The **Cummins® 'B series'** base DG sets are available with the lowest noise levels in its range and are CPCB certified for emissions and noise compliance, thus offering you environment friendly power.



The genset powered by the reliable **Cummins® 'B series'** diesel engine meets stringent exhaust emission tests as per MOEF norms without sacrificing fuel efficiency at normal operating loads.

Unmatched warranty

The **Cummins® 'B series'** DG sets are backed by the industry acknowledged best-in-class comprehensive warranty on the entire package including rubber components.

Lowest operating costs

All elements of the **Cummins® 'B series'** DG sets are designed from the start to work together to maximize efficiency, even at part loads, thus offering you the advantage of lowest operating costs.

Single source power assurance

The rugged and reliable **Cummins® 'B series'** DG sets are unique, because all the major components - the engine, alternator, control system and canopy are manufactured by Cummins India. This integral approach means each element of a generating set is designed to work in harmony from the start. A high quality product, complemented by the largest customer support network in India, providing round-the-clock service and spares support, offers you **SINGLE SOURCE POWER ASSURANCE** from the world leaders in power generation.

Standard scope

Engine: **Cummins® 'B series'** diesel generating sets, powered by Cummins® 'B series' engines, are rated at 1500 RPM and conform to ISO 8528 specifications. The engines are radiator cooled, four stroke and multi-cylinder, conforming to BS 5514 / ISO 3046.

The scope of supply includes:

- Electrical starter motor 12V DC
- Battery charging alternator
- MICO fuel system with mechanical governor
- Dual spin-on fuel filter
- Turbocharger
- Residential silencer
- Dry type air cleaner
- Shut-off coil with safeties for LLOP/HWT
- Flywheel and flywheel housing
- First fill of lube oil and coolant
- Electronic governor for 140 kVA

Alternator: Stamford alternator from Cummins Generator Technologies, suitable for operation at 1500 RPM, 415 Volts, 0.8 pf (lag) suitable for 50 Hz, 3 phase, 4 wire system, conforming to BS 5000 / IS 4722. The Alternator is brushless type, screen protected, revolving field, self excited, self regulated through an AVR. The alternator has the following features:

- ± 1.0 % Voltage regulation (max) in static conditions
- IP: 23 protection with insulation class H
- Permissible overload of 10% for one hour in 12 hours of operation

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Mounting arrangement: Engine and alternator are mounted on a common MS fabricated base frame with AVM pads.

Control Panel: The control panel is manufactured with 14/16 gauge CRCA sheet and is powder coated for weather-proof and long lasting finish.

The control panel consists of the following parts:

- PS0500 Controller
- Aluminum bus bars with suitable capacity with in/outgoing terminals
- Indicating lamps for 'Load On' and 'Set Running'
- Instrument fuses duly wired and ferruled
- MCCB of suitable rating with overload and short circuit protections

PS0500 Genset controller

Cummins PowerStart™ PS0500 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, shutdown fault indication, and an LCD hour counter. The integration of all functions into a single control system provides enhanced reliability and performance compared to conventional generator set control systems. This control has been designed and tested to meet harsh environment in which gensets are typically applied.



Features, Functions, protections

- I 16 character x 2 line alphanumeric LCD display with LED backlight
- I Operator interface
- I Provide a record of most recent fault conditions. Fault history stored in the control non volatile memory
- I Provide Alternator Data
 - Voltage (1 ph or 3 ph line to line and line to neutral voltage)
 - Current (1 ph or 3 ph)
 - kVA (3 ph and total)
 - Frequency
- I Provide Engine Data
 - Starting battery voltage
 - Engine running hours
 - Engine Temp.
 - Engine oil pressure
- I Control includes provision for Service adjustment and calibration of DG control functions
 - Voltage, frequency selection
 - Configurable input and output set up
 - Meter calibration
- I Engine controls
 - PowerStart operates on 12 VDC batteries
 - Auto start mode accepts a ground signal from remote devices to automatically start the DG set. The remote start will also wake up the control system from sleep mode.
 - Engine Starting – The control system supports automatic engine starting, Primary and back up start disconnects are achieved by battery charging alternator feedback or main alternator output frequency.
 - Controller provide configurable time delay of 0-300 secs to start

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- after remote start signal and time delay of 0-600 secs prior to shutdown after stop signal.
- Sleep mode increase battery life. Configurable current settings from low to minimize current draw when genset is not working.
- I Engine Protective functions includes
 - Configurable alarm output
 - Emergency stop: Annunciated whenever an emergency stop signal is received by the control.
 - Low lube oil pressure warning and Shutdown
 - High engine water temp warning / Shutdown
 - Low coolant temp warning
 - Sensor failure indication
 - Low and high battery voltage warning
 - Weak battery warning
 - Fail to start shut down
 - Cracking lockout: Control will not allow the starter to engage or to crank the running engine.
 - Cyclic cranking: Configurable for the number of starting cycle (1 to 7) and duration of crank and rest periods.
- I Alternator Protective functions includes
 - High and Low AC voltage shut down
 - Under and Over frequency shutdown / warning
 - Loss of sensing voltage input shut down

Genset controller: (For 140 KVA)

Cummins **PowerCommand**® **PCC 1301** is a microprocessor based integrated generator set monitoring, metering, protection and control system with built-in torque matched Volts/Hz overload control.

Single control for all genset functions:

- Digital governing
- Digital voltage control
- Engine control
- Operator interface
- Protection
- Advanced control functions



Standard features of genset controller:

| Engine | | |
|---------------------------------|-------------------------|------------------|
| Metering | Protection | |
| - RPM | - Low lube oil pressure | - Fail to crank |
| - Battery voltage | - High water temp. | - Fail to start |
| - Lube oil pressure | - High /low DC voltage | - Sensor failure |
| - Coolant temp. | - Weak battery | |
| - Running hours | - Overspeed | |
| Alternator | | |
| Metering | Protection | |
| - 3 phase voltage (L-L and L-N) | - Under voltage | - Field overload |
| - 3 phase current | - Over voltage | |
| - Frequency | - Over current | |
| - kVA | - Under/ over-frequency | |
| | - Loss of sensing | |
| Others | | |
| - Battle switch function | | |
| - Delay start/ stop | | |
| - Configurable cranking cycle | | |
| - Sleep mode time | | |



Acoustic enclosure:

The acoustic enclosure is made of 1.6/ 2 mm thick CRCA sheets in Munsel green shade and a structural/ sheet metal base frame painted in black. The walls of the enclosure are insulated with fire retardant foam so as to comply with the 75 dBA at mtr sound levels specified by Ministry of Environment & Forest.

The enclosure has the following features:

- Specially designed to meet stringent MOEF/ CPCB norms of 75 dBA @ 1mtr at 75% load under free field conditions
- Single point lifting for easy handling at customer site
- Designed to have optimum serviceability
- Air inlet louvers specially designed to operate at rated load - Made on special purpose CNC machines for consistency in quality and workmanship
- Powder coated for long lasting service life and superior finish
- With UV resistant powder coating, can withstand extreme environments

- Use of special hardware for longer life
- Insulation material meets exacting IS 8183 specifications for better sound attenuation
- Flush styling - no projections
- Fluid drains for lube oil and fuel
- Fuel filling point

Others:

- Fuel tank suitable for 8 hours of operation

Optionals

- Heavy duty air cleaner
- Microprocessor / relay based AMF control panel
- Trolley mounted mobile sets
- Cold starting kit
- Electronic governor
- Lube oil heater

Technical data

Generator set specifications

| Model | C 75 D5 P / C 82.5 D5 P | C 100 D5 P | C 125 D5 P | C 140 D5 P |
|-----------------------------|----------------------------------|----------------|-----------------|-----------------|
| Prime Power Rating kVA / kW | 75 kVA /60 kW / 82.5 kVA / 66 kW | 100 kVA /80 kW | 125 kVA /100 kW | 140 kVA /112 kW |
| Current (Amps) | 104 / 115 | 139 | 174 | 195 |
| No. of Phases | 3 Phase | 3 Phase | 3 Phase | 3 Phase |
| Power Factor | 0.8 (lag) | 0.8 (lag) | 0.8 (lag) | 0.8 (lag) |

Engine specifications

| Make | Cummins | Cummins | Cummins | Cummins |
|--|-----------------|--------------------------|--------------------------|---------------------------------|
| Model | 6BT5.9G1 | 6BTA5.9G1-I | 6BTA5.9G2-I | 6BTAA 5.9G1-I |
| BHP | 105 | 124 | 154 | 170 |
| Cooling | Water Cooled | Water Cooled | Water Cooled | Water Cooled |
| Aspiration | Turbocharged | Turbocharged Aftercooled | Turbocharged Aftercooled | Turbocharged Charged Air Cooled |
| No. of Cylinders | 6 | 6 | 6 | 6 |
| RPM | 1500 | 1500 | 1500 | 1500 |
| Bore (mm) x Stroke (mm) | 102 x 120 | 102 x 120 | 102 x 120 | 102 x 120 |
| Compression Ratio | 17.6:1 | 17.6:1 | 17.6:1 | 17.6:1 |
| Displacement (Ltrs.) | 5.88 | 5.88 | 5.88 | 5.88 |
| Fuel | HSD | HSD | HSD | HSD |
| Fuel Consumption (Ltr/hr) @ 75% Load with Radiator & Fan | 14.3 | 16.9 | 20.8 | 22.9 |
| Governor | Mechanical | Mechanical | Mechanical | Electronic |
| Starting System | 12 V Electrical | 12 V Electrical | 12 V Electrical | 12 V Electrical |
| Lube oil Specification | CF4 15W40 | CF4 15W40 | CF4 15W40 | CF4 15W40 |
| Lube oil Sump Capacity (Ltrs.) | 14.3 | 14.3 | 14.3 | 14.3 |
| Lube oil consumption (LPH) | 0.04 / 0.047 | 0.026 | 0.03 | 0.04 |
| Total Coolant Capacity (Ltrs.) | 22 | 24.5 | 24.5 | 24.5 |
| Exhaust Pipe Size (mm) | 100 | 100 | 100 | 100 |
| Battery Capacity / Rating | 150 AH 12 V | 150 AH 12 V | 150 AH 12 V | 150 AH 12 V |

Alternator specifications

| Voltage | 380 / 415 | 380 / 415 | 380 / 415 | 380 / 415 |
|--|--------------|--------------|-------------------|--------------------|
| RPM / Frequency | 1500 / 50 Hz | 1500 / 50 Hz | 1500 / 50 Hz | 1500 / 50 Hz |
| Enclosure | IP 23 | IP 23 | IP 23 | IP 23 |
| Voltage Regulation (max) | +/- 1% | +/- 1% | +/- 1% | +/- 1% |
| Class of Insulation | H Class | H Class | H Class | H Class |
| Recommended Cable size x Runs (Al Armoured 3 1/2 core) | 95 x 1 | 120 x 1 | 185 x 1 or 95 x 2 | 240 x 1 or 120 x 2 |
| Alternator Frame | UCI224G | UCI274C | UCI274V | UCI274E |

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Conformance standards

IS 4722, BS 5000, IS 1460, ISO 8528, BS 5514, ISO 3046

Rating definitions

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.

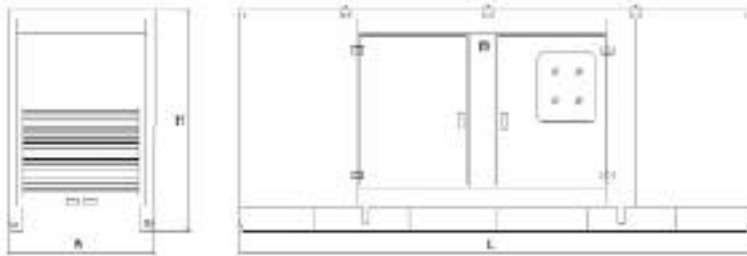
Emergency Standby Power (ESP):

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.

- Fuel consumption data is based on diesel having specific gravity of 0.85 and conforming to IS:1460
- Oil consumption data is based on oil having specific gravity of 0.89 and meeting CF4 API categories
- Fuel consumption tolerance is +5%

Typical enclosed genset dimensions*

| Genset Model | Rating (kVA) | Length (mm) | Width (mm) | Height (mm) |
|--------------------------------|-------------------|-------------|------------|-------------|
| C 75 D5 P / C 82.5 D5 P | 75 kVA / 82.5 kVA | 3850 | 1150 | 1700 |
| C 100 D5 P | 100 kVA | 4000 | 1150 | 1700 |
| C 125 D5 P | 125 kVA | 4000 | 1150 | 1700 |
| C 140 D5 P | 140 kVA | 4000 | 1150 | 1700 |



Typical diesel genset dimensions

| Genset Model | Rating (kVA) | Length (mm) | Width (mm) | Height (mm) | Weight (kgs.) (Dry) |
|--------------------------------|-------------------|-------------|------------|-------------|---------------------|
| C 75 D5 P / C 82.5 D5 P | 75 kVA / 82.5 kVA | 2100 | 950 | 1420 | 1250 |
| C 100 D5 P | 100 kVA | 2230 | 950 | 1430 | 1350 |
| C 125 D5 P | 125 kVA | 2230 | 950 | 1430 | 1350 |
| C 140 D5 P | 140 kVA | 2350 | 950 | 1450 | 1400 |

Cummins Power Generation Offices:

| Location: | Tel: | Fax: | Location: | Tel: | Fax: |
|-------------|------------------------------|---------------------|-----------|-----------------------------|---------------------|
| Bangalore: | (080) 2361 3831/ 2361 1958 | (080) 2361 4552 | Jaipur: | (0141) 236 4944 | (0141) 403 8794 |
| Chandigarh: | (0172) 2240373 | (0172) 224 0371 | Kolkata: | (033) 2287 8065/ 2247 2481 | (033) 2290 3839 |
| Chennai: | (044) 2446 8110/ 2446 8113 | (044) 2491 1120 | Lucknow: | (0522) 278 6718/ 278 8959 | (0522) 278 7880 |
| Delhi: | (011) 4161 8357/ 61 | (011) 4161 8357/ 61 | Mohali: | (0172) 224 0373 | (0172) 224 0371/ 72 |
| Hyderabad: | (040) 2766 3017 | (040) 2767 8892 | Mumbai: | (022) 2756 6351/ 52/ 53/ 54 | (022) 2756 6355 |
| Indore: | (0731) 645 1042/ 09826 42717 | | Vadodara: | (0265) 232 4207/ 654 0390/ | (0265) 308 3010 |

Cummins India Limited

Power Generation Business Unit
35A/1/2, Erandawana,
Pune 411 038. India
Tel.: (91) 020-6602 7525/ 3024 8600
Fax: (91) 020-6602 8090

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