

Specification sheet

Diesel Generator Set K50 Series

1000-1200 kWe, 1250-1500 kVA Prime



Reliable and durable

Cummins® 'K50 series' diesel engine with strong regrindable crankshaft, high strength connecting rod, low pressure fuel lines, STC (Step Timing Controls) injectors and high volume coolant system make 'K50 series' generating sets, more reliable and durable. Engines have clocked millions of hours operating in some of the world's most demanding conditions. Current engines are regularly upgraded with new technologies for better performance and economy. The ultimate proof of superior performance and reliability is the fact that Cummins® entities worldwide source these engines from Cummins India for their markets.

Unmatched warranty

- Cummins® 'K50 series' diesel engine generating sets are a truly cost effective solution to long term power need backed by industry best, 2 years / 5000 hrs warranty, for the entire generating set.

- With superior experience in technology, design capability and commitment reliability and quality we offer an unmatched 5 years or 5000 hours (including above 2 years) warranty coverage on 5 critical components (5C) of the engine – Cylinder Head, Camshaft, Crankshaft, Cylinder Block, Connecting Rod against manufacturing defect



Cummins advantage

Special features of Cummins® 'K50 series' engines like STC (Step Timing Controls) injectors, low temperature aftercooler, square combustion chamber, optimised turbocharging and precision heavy duty camshaft make these engines the ultimate in exceptional fuel efficiency all across the operating range.

Single source power assurance

Design, manufacture and testing of engine, alternator and other accessories is done by Cummins Group of companies for optimum performance and is backed by a countrywide product support network with a single source responsibility for the entire package.

Standard scope

Engine: Cummins® 'K50 series' direct injection, water cooled engine, 16 cylinder, 4 stroke, rated at 1500 RPM, conforming to ISO 3046 / IS 13018 has the following specifications:

- Cummins PT fuel pump
- Cummins heavy duty ESTC injectors
- Holset turbocharger, pulse tuned exhaust manifold, stainless steel exhaust flexible connections
- Radiator or heat exchanger, coolant inhibitor
- Plate type lube oil cooler
- Outboard aftercoolers
- Full flow paper element filters - fuel, lube oil and by-pass
- Dry type replaceable paper element air cleaner with restriction indicator
- Flywheel housing & flywheel to suit single/ double bearing alternator
- Holset flexible coupling for double bearing alternator
- Starting motor – Electric, battery charging alternator
- Cummins PowerCommand® microprocessor based genset controller
- First fill lube oil and coolant

Alternator: Stamford brushless alternator

- Separately excited, self-regulated - Class 'H' insulation
- Salient pole revolving field
- Single bearing
- PMG standard
- Space heater & RTD & BTD's only sensor - (without scanner)

Accessories:

- Silencer suitably optimized to reduce noise
- Sturdy base rail
- 990 ltrs. free standing fuel tank
- 4 x 12 V dry, uncharged batteries with connecting leads and terminals

Optionals

Engine: Heavy duty air cleaner, Lube oil / Coolant heater with thermostatic switch

Alternator: Double bearing

Control Panel: AMF control panel, Battery charger, Remote/Auto start panel, Auto/Manual synchronizing panel, Audio/Visual annunciation for faults

Control panel: PowerCommand® PC 3.3



The PowerCommand® 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 function which are matched to the alternator provided.

Power management – Control function provides battery monitoring, testing and a smart starting control system.

Advanced control methodology – Three phase sensing, FET based full wave rectified voltage regulation and 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 – For reliable operations in harsh environment.

Multi-language support

Independent of PC/ laptop for setting up

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 with bar graph for displaying electrical parameters
- 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
- Coolant temperature/ low level
- 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

- 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

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/ dump as per configurable priority
- Configurable inputs and outputs (4)
- Remote emergency stop

Options

- Auxiliary output relays and remote annunciators

Technical data

Generator set specifications

| | | |
|------------------------------|------------------|------------------|
| Model | C1250 D5 P | C1500 D5 P |
| Prime Power Rating kVA | 1250 | 1500 |
| Output Voltage and Frequency | 415 Volts, 50 Hz | 415 Volts, 50 Hz |
| Power Factor | 0.8 (lag) | 0.8 (lag) |
| No. of phases | 3 phase | 3 phase |

Engine specifications

| | | |
|---|--------------------------|--------------------------|
| Make | Cummins | Cummins |
| Model | KTA 50 G3 | KTA 50 G8-I |
| No. of cylinders | 16 'Vee' | 16 'Vee' |
| Aspiration | Turbocharged-Aftercooled | Turbocharged-Aftercooled |
| Bore x Stroke | 159 mm x 159 mm | 159 mm x 159 mm |
| Displacement | 50.3 ltrs | 50.3 ltrs |
| Output - Prime | 1470 bhp (1097 kWm) | 1735 bhp (1294 kWm) |
| Fuel consumption @ 75% load with Radiator & Fan | 190.8 ltr/hr | 231 ltr/hr |
| Fuel consumption @ 100% load | 251.8 ltr/hr | 301.7 ltr/hr |
| Typical oil consumption @ 100% load | 0.3 ltr/hr | 0.35 ltr/hr |
| Total wet weight (engine + radiator) | 6824 kg | 7205 kg |
| Length x Width x Height (engine) | 2978 x 2080 x 1780 mm | 2978 x 2080 x 1780 mm |
| Compression Ratio | 13.9 : 1 | 14.9:1 |
| Piston Speed | 7.95 m/s | 7.95 m/s |
| Governor / Class | Electronic / A1 | Electronic / A1 |
| Lubricating oil sytem capacity | 177 ltrs | 177 ltrs |
| Coolant capacity (engine + radiator) | 440 ltrs | 510 ltrs |
| Combustion air intake @ 100% load (+/- 5%) | 81.6 m ³ /min | 95.5 m ³ /min |
| Fan air flow across radiator | 27357 ltrs/sec | 28400 ltrs/sec |
| Exhaust Temperature | 529 °C | 481 °C |

Alternator specifications

| | | |
|-------------------------------|---|---|
| Make | Stamford | Stamford |
| Frame size / Model No. | HCK6Z | PI734C |
| Voltage Regulation | ± 0.5% | ± 0.5% |
| Insulation | Class H | Class H |
| Standard Enclosure | IP 23 | IP 23 |
| Winding Pitch | 2 / 3 Pitch | 2 / 3 Pitch |
| Stator Winding | Double layer lap | Double layer lap |
| Rotor | Dynamically balanced | Dynamically balanced |
| Wave form distortion | No load < 1.8 %, non distorting balanced linear load < 5 % | No load < 1.8 %, non distorting balanced linear load < 5 % |
| Telephone Interference Factor | Better than 50 | Better than 50 |
| Total Harmonic Factor | Better than 2% | Better than 2% |

Conformance standards

IS/IEC 60034-1, IS 1460, ISO 8528, ISO 3046, IS 13018, ISO 9001

Rating definitions

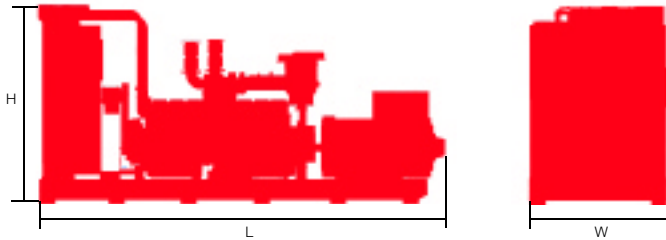
Prime Power (PRP):

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, IS 13018

- 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 CH4 API categories
- Fuel consumption tolerance is +5%

Typical diesel genset dimensions*

| Genset Model | Rating (kVA) | Length (mm) | Width (mm) | Height (mm) | Weight (kgs.) (Dry) | Std. Fuel Tank Capacity (Ltrs - External) |
|--------------|--------------|-------------|------------|-------------|---------------------|---|
| C1250 D5 P | 1250 kVA | 6165 | 2235 | 2877 | 10800 | 990 |
| C1500 D5 P | 1500 kVA | 6090 | 2075 | 2850 | 12250 | 990 |



Authorised Representative

Cummins Power Generation Offices

Bengaluru: Tel.: (080) 2325 9161 / 63, 2325 9165 / 67
 Fax: (080) 2325 9164

Chandigarh: Tel.: (0172) 224 0371-73
 Fax: (0172) 224 0372

Chennai: Tel.: (044) 2446 8110 / 2446 8113
 Fax: (044) 2491 1120

Gurgaon: Tel.: (0124) 391 0900-01
 Fax : (0124) 391 0916

Hyderabad: Tel.: (040) 2340 9970 / 2340 9980
 Fax. (040) 2340 9990

Jaipur: Tel.: (0141) 236 4944
 Fax: (0141) 403 8794

Kolkata: Tel.: (033) 2287 8065 / 2287 2481
 Fax: (033) 2290 3839

Lucknow: Tel.: (0522) 230 5049 / 230 5059
 Fax: (0522) 230 5035

Mohali: Tel.: (0172) 224 0371 / 72 / 73
 Fax: (0172) 224 0371 / 72 / 73

Vadodara: Tel.: (0265) 233 0627 / 3053627
 Fax: (0265) 234 0623



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Cummins India Limited Power Generation Business Unit

Cummins India Office Campus
 Tower-A, 6th Floor, S. No. 21,
 Balewadi, Pune – 411 045 (India)

Email: cpgindia@cummins.com
 www.cumminsindia.com