Power Generation

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 cumbustion 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
- 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

- Seperately 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

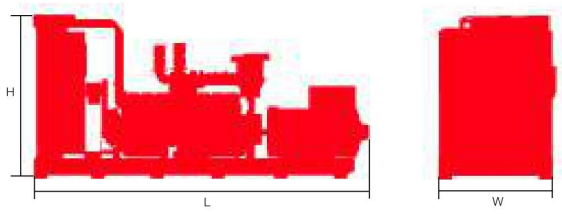
Rating definitions

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



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