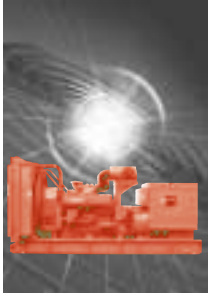


Power Generation

Diesel Powered Generating Sets 472 kW - 520 kW 50 Hz KTA19 Series Engine

Typical model with options fitted

Standard Genset Features

Single Source Responsibility
- Design, manufacture and test of all components and accessories are made by Cummins Power Generation and Cummins companies

International Integrity
- Assurance and strength of a worldwide, world class corporation

Global Backing
- 24 hour spares and service support – in 72 countries

Single Source Warranty
- Complete genset covered by Cummins Power Generation comprehensive warranty

Packaged Self-Contained Units
- Units with built in antivibration systems, control panels, starting systems with provision for base fuel tank and other accessories

Cummins Engine
- Heavy duty 4 cycle water cooled engine
- Electronic governor control

Cooling System
- 40°C cooling package (50°C option)

Alternator
- Brushless Group made machine
- Close voltage regulation
- Rotor and exciter impregnated with oil and acid resisting resin
- 12 lead reconnectable
- Exceptional short circuit capability
- Low waveform distortion with non linear loads

Ratings
All kW Power ratings based on a 27°C ambient temperature reference. No derating necessary up to 40°C (Refer to genset data sheet for details).

Chassis
Built-in anti-vibration system
Bonded rubber units fitted as standard eliminates need for rubber mats or spring mountings

Standard PowerCommand® PCC2100 Control System
- Microprocessor control
- Integrates governor and voltage regulation systems
- Superior alternator and genset protection system
- Accurate battery monitoring system
- Totally reliable and proven system

Optional PowerCommand® PCC1300 & PowerCommand® PCC3100 Control System

Quality Assurance
Registered Firm Certificate Number FM509 in accordance with: BS EN ISO 9001

Quality Assurance Schedule 3420/1

One Source — Alternator — Controls — Generating Set — Engine — One Name

Cummins Power Generation, Cummins Engines and Newage Alternators are all part of the same group

50 Hz Ratings			
Genset Model	**Prime kW** (kVA)	**Standby kW** (kVA)	**Engine Model**
C650 D5A	**472** (590)	**520** (650)	**KTA19G8**

A Single Source for *all* Power System Solutions

Specifications

Generator Set Performance

Voltage Regulation
Maintains voltage output to within ±1.0%.
At any power factor between 0.8 lagging and unity.
At any variations from No load to Full load.
At any variations from Cold to Hot.
At speed droop variations up to 4.5%.

Frequency Regulation
Isochronous under varying loads from no load to 100% full load.

Random Frequency Variation
Will not exceed ±0.25% of its mean value for constant loads – no load to full load.

Waveform
Total harmonic distortion open circuit voltage waveform in the order of 1.5%. Three-phase balanced load in the order of 5.0%.

Telephone Influence Factor (TIF)
TIF better than 50.
THF to BS4999 Part 40 better than 2%.

Alternator Temperature Rise
Class H insulation. Temperature rise up to 125°C permitted.

Radio Interference
In compliance with BS800 and VDE levels G and N.

Engine

Cummins KTA19G8, direct injection engines. Six cylinder, in-line.

Type
Water cooled, turbocharged and aftercooled.

Construction
Four valves per cylinder, forged steel crankshaft and connecting rods, cast iron block with replaceable wet liners.

Starting
24 volt negative earth. Battery charging 35 amp alternator. Cranking current 610 amps at 0°C on K engines.

Fuel System
24 volt fail safe fuel actuator. Dual spin-on paper element fuel filters, Cummins PT fuel injection system with integral electronic governor. Dual flexible fuel lines and connectors.

Filters
Dry element air filters with restriction indicator and spin-on full flow paper element and by pass lube oil filters fitted. Spin on corrosion resistor filter. Standard fuel water separator.

Cooling
40°C radiator as standard.
Oil cooler.

Alternator

Type
Brushless, single bearing, revolving field, 4-pole, drip proof, screen protected.
Class H insulation.
Enclosed to IP22 (NEMA 1) standard.
IC 01 cooling system.
Fully interconnected damper winding.
AC exciter and rotating rectifier unit.
Epoxy coated stator winding.
Rotor and exciter impregnated with tropical grade insulating oil and acid resisting polyester resin. Dynamically balanced rotor to BS5625 grade 2.5.
Sealed for life bearings.
Layer wound mechanically wedged rotor.

Exciter
Triple dipped in moisture, oil and acid resisting polyester varnish and coated with anti-tracking varnish.
Sealed solid state automatic voltage regulator – self-exciting, self-regulating.
Output windings with 2/3 pitch for improved harmonics and parallelling ability.
Close coupled engine/alternator for perfect alignment.

Compliance Standards

To BS4999/5000 pt 99,
VDE 0530, UTE5100,
NEMA MG1-22, CEMA,
IEC 34, CSA A22.2,
AS1359, BSS5514,
ISO 3046 and ISO 8528

Chassis

Fabricated and welded steel chassis
Built-in anti-vibration mountings
Optional sub-base fuel tank with eight hour capacity, dual flexible fuel lines, dial type fuel gauge and drain bung

Finish
Etch undercoated and finished in high gloss durable green

General
Complete set of operating and instruction manuals

Generator Set Options

Engine
- ☐ Heavy duty air cleaner
- ☐ Coolant heater and thermostat
- ☐ Lead acid batteries, cable and fitted tray
- ☐ NiCad batteries
- ☐ Sump drain pump
- ☐ Oil and water drain taps
- ☐ CE Compliance (guarding)
- ☐ Exhaust temperature monitoring (PCC only)
- ☐ Tool kit

Cooling
- ☐ 50°C ambient radiator
- ☐ Remote radiator cooling (built to order)
- ☐ Oil temperature indication

Alternator
- ☐ Anti-Condensation heater
- ☐ Thermistors
- ☐ PMG Exciter and MX321 AVR

Exhaust System
- ☐ Industrial type silencer
- ☐ Residential type silencer
- ☐ Length of flexible exhaust and bellows

Fuel System
- ☐ Sub-base tanks
- ☐ Hand fuel transfer pump
- ☐ Automatic fuel transfer pump
- ☐ Free-standing 450, 900 and 1350 litre fuel tanks with stand
- ☐ Fuel tank level switch
- ☐ High fuel level warning
- ☐ Low fuel level warning
- ☐ Low fuel level shutdown

Generator Set
- ☐ Weather protective enclosures
- ☐ Silenced enclosures

Control Panel
- ☐ See separate list on Control Panel page
- ☐ 3 or 4 pole circuit breaker
- ☐ Battery charger 10 amp
- ☐ CE Compliance and PCC systems
- ☐ Cable entrance box

PowerCommand
Digital Generator Set Control

Description

The PowerCommand™ (1300) Control is a microprocessor-based generator set monitoring, metering, and control system. The control provides a simple operator interface to the generator set, digital voltage regulation, digital engine speed governing, start / stop control and generator set protective functions.
The integration of all functions into a single control system provides enhanced reliability and performance compared to conventional generator set control systems.

The PowerCommand 1300 generator set control is suitable for use on a wide range of generator sets in non-paralleling applications. The PowerCommand Control is compatible with reconnectable alternators up to 480VAC line to line, and can be configured for any frequency, voltage, and power connection configuration from 120-480VAC line to line.

The PowerCommand 1300 is designed for mounting on the generator set.

Power for the control is derived from the generator set starting batteries. The control functions over a voltage range from 8VDC to 16VDC.

The control offers a wide range of standard control and optional display panel features so custom control configurations are not needed to meet application specifications.

Features

- **Digital Voltage Regulation.**
- **Digital Engine Speed Governing** (optional) to provide isochronous frequency regulation
- **Single or 3 Phase Voltage and Current Sensing.** Wye and delta voltage sensing. Current sensing with external 5 Amp current transformers.
- **Engine Starting** includes relay drivers for start, fuel shut off (FSO), and glow plug. Start disconnect is achieved by monitoring thebattery charging alternator.
- **Generator Set Monitoring.** Monitors status of all critical engine and alternator conditions functions.
- **Generator Set Protection.** Engine and alternator.
- **Operator Display Panel** (optional). Provides easy to use symbolic operator display of critical generator set parameters and operating history.
- **Advanced Serviceability** using InPower™, a PC-based software service tool.
- **Environmental Protection.** The control system is designed for reliable operation in harsh environments. The core control board is an encapsulated module that is fully protected from the elements.
- **Configurable Inputs and Outputs.** Two discrete inputs and two dry contact relay outputs.
- **Certifications.** Suitable for use on generator sets that are designed, manufactured, tested, and certified to relevant UL, NFPA, ISO, IEC, and CE standards.
- **Warranty and Service** – Backed by a comprehensive warranty and worldwide distributor service network.

Description

The PowerCommand™ Control (2100) is a microprocessor-based generator set monitoring, metering, and control system. The control provides an operator interface to the genset, digital voltage regulation, digital governing, and generator set protective functions. The integration of all the functions into a single control system provides enhanced reliability and performance compared to conventional control systems.

PowerCommand generator set controls are suitable for use on a wide range of generator sets in non-paralleling applications. The PowerCommand Control will directly read AC voltages up to 600VAC, and can be configured for any frequency, voltage, and power connection configuration from 120-600VAC.

The PowerCommand control is designed for mounting on the generator set.

Control power for PowerCommand is usually derived from the generator set starting batteries. The control functions over a voltage range from 8VDC to 35VDC.

The control offers a wide range of standard control and digital display features so custom control configurations are not needed to meet application specifications. System reliability is not compromised by use of untested special components.

Features

Major Control Features Include:

- **Digital Engine Speed Governing Controls** to provide isochronous frequency regulation. (optional on some genset models)
- **Digital Voltage Regulation**, 3-phase sensing
- **AmpSentry™ Protection** for true alternator overcurrent protection.
- **Analog and Digital AC Output Metering.**
- **Battery Monitoring System** to sense and warn against a weakbattery condition.
- **Digital Alarm and Status Message Display.**
- **Generator set Monitoring:** Displays status of all critical engine and alternator generator set functions.
- **Smart Starting Control System:** Integrated fuel ramping to limit black smoke and frequency overshoot, in addition to optimized cold weather starting
- **Advanced Serviceability** using InPower™, a PC-based software service tool.
- **PowerCommand Network** (optional) Provides LonMark interface to external devices through a twisted pair wire.
- **Integrated Power Transfer Control** (optional) Provides automatic power transfer control functions integrated into genset control
- **Certifications** – Suitable for use on generator sets that are designed, manufactured, tested, and certified to relevant UL, NFPA, ISO, IEC, and CSA standards.
- **Warranty and Service** – Backed by a comprehensive warranty and worldwide distributor service network.

PowerCommand System PCC3100 – Optional

Optional PowerCommand® Control with AmpSentry™ Protection

- Integrated automatic voltage regulator and engine speed governor
- AmpSentry Protection guards the electrical integrity of the alternator and power system from the effects of overcurrent, over/under voltage, under frequency and overload conditions
- Control components designed to withstand the vibration levels typical in generator sets

Standard Control Description

- Analog % of current meter (amps)
- Analog AC frequency meter
- Analog AC voltage meter
- Analog % of load meter (kW)
- Cycle cranking control
- Digital display panel
- Emergency stop switch
- Idle mode control
- Menu switch
- Panel backlighting
- Remote starting
- Reset switch
- Run-Off-Auto switch
- Sealed front panel, gasketed door
- Self diagnostics
- Separate customer interconnection box
- Voltmeter/Ammeter phase selector switch

Standard Performance Data

AC Alternator Data

- Current by Phase
- Kilowatts
- Kilowatt Hours
- Power Factor
- Voltage Line to Line
- Voltage Line to Neutral

Engine Data

- Battery Voltage
- Coolant Temperature
- Engine Running Hours
- Engine Starts counter
- Oil Pressure
- RPM

PCC PowerCommand® Control –
standard configuration with optional contactor buttons shown

Standard Protection Functions

Warnings

- High Coolant Temperature
- High DC Voltage
- Low Coolant Temperature
- Low DC Voltage
- Low Fuel – Day Tank
- Low Oil Pressure
- Over Current
- Oil Pressure Sender Fault
- Temperature Sender Fault
- Overload Load Shed Contacts
- Temperature Sender Fault
- Up to Four Customer Fault Inputs
- Weak Battery

Shutdowns

- Emergency Stop
- Fail to Crank
- High AC Voltage
- Low Coolant Level (option for alarm only)
- Low Oil Pressure
- Magnetic Pickup Failure
- Overcrank
- Overcurrent
- Overspeed
- Short Circuit
- Underfrequency

Optional PowerCommand® Digital Paralleling

Cummins PowerCommand® Digital Paralleling Systems are available for isolated prime power, emergency standby, or interruptible applications including utility (main) paralleling applications. PowerCommand® Digital Paralleling Systems are unique in that they use fully integrated microprocessor-based controls for all system control functions.

These systems include an extensive array of standard control and digital display features that eliminate the need for discrete component devices such as voltage regulator, governor, and protective relays. The PowerCommand® Digital Paralleling Control also eliminates the need for separate paralleling control devices such as synchronizers and load sharing controls.

Circuit breaker can be fitted either side of generator set.

Technical Data

Generating Sets – 50 Hz

Set output	380-440 V 50 Hz
Prime at 40°C ambient	472 kWe / 590 kVA
Standby at 40°C ambient	520 kWe / 650 kVA
Genset Model	C650D5
Engine Make	Cummins
Model	KTA19G8
Cylinders	Six
Engine build	In-Line
Governor / Class	Electronic / A1
Aspiration and cooling	Turbo Aftercooled
Bore and stroke	159 mm x 159 mm
Compression ratio	13.9:1
Starting / Min °C	Unaided / 7°C
Battery capacity	190 A/hr
Nett at flywheel – Standby	575 kWm
Maximum load acceptance single step (cold)	tba
Speed	1500 rpm
Alternator voltage regulation	±1.0%
Alternator insulation class	H
Single load step to NFPAII0	100%
Fuel consumption (standby) 100%	139 l/hr
Lubrication oil capacity	50 Litres
Base fuel tank capacity – open set	1700 Litres
Coolant capacity – radiator and engine	132 Litres
Exhaust temp – full load	579°C
Exhaust gas flow – full load	3756 CFM
Exhaust gas back pressure max	76 mm Hg
Air flow – radiator (40°C ambient)	23513 CFM
Pusher fan head (duct allowance) 40°C	12 mm Wg
Air intake – engine	1345 CFM
Total heat radiated to ambient	83 kW
Engine derating – altitude	4% per 300 m above 1525 m
Engine derating – temperature	2% per 11°C above 40°C
Weight wet with tank	4350 kg

In accordance with ISO 8528, BS5514.

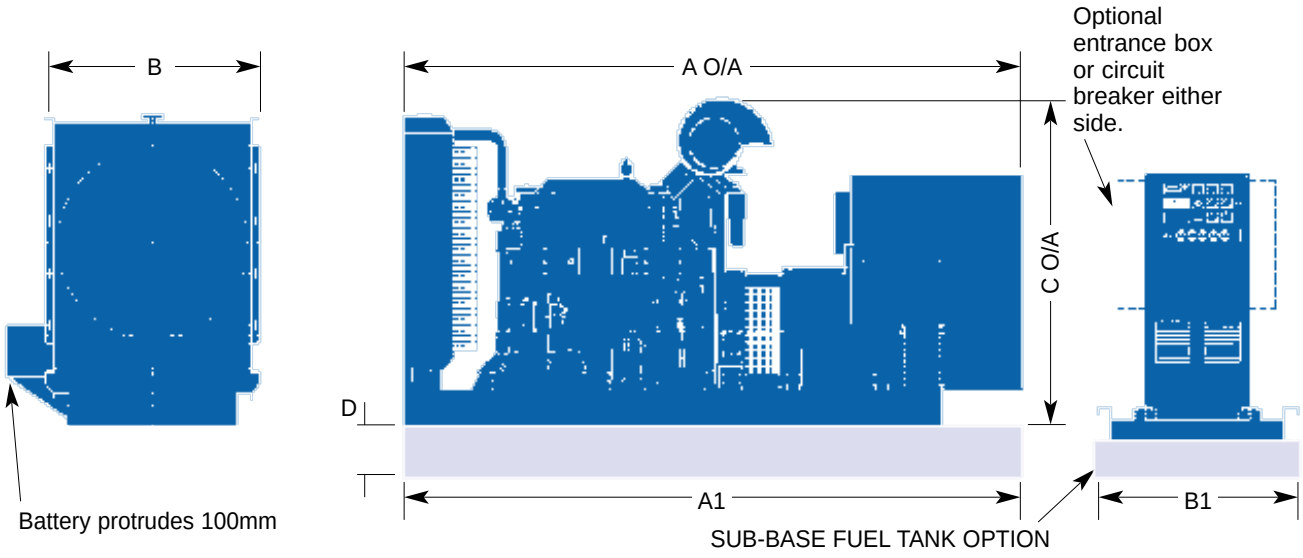
RATINGS DEFINITION

Standby Rating based on: Applicable for supplying power for the durtion of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the standby power rating. This rating should be applied only where reliable utility power is available.

A standby rated engine should be sized for a maximum of a 70% average load factor and 200 hrs of operation per year. This includes a maximum of 1 hour in a 12 hour period at the standby power rating. Standby rating should never be applied except in true power outages.

Prime Rating based on: Prime power is available continuously during the period of power outage in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any 24 hour period. A 10% over load capability is available for a period of 1 hour within a 12 hour period of operation.

Dimensions and Weights – 50 Hz



Model	Engine	Dimensions and Weights (mm/kg)						Set Weight kg Dry	Set Weight kg Wet
		A	A1	B	B1	C	D		
C650 D5A	KTA19G8	3419	3100	1285	1350	1906	300	4225	4350

Set weights are **without** sub-base tank.
Dimensions and weights are for **guidance** only. Do not use for installation design. Ask for certified drawings on your specific application.
Specifications may change without notice.

See your dealer for more information.

Cummins Power Generation
8 Tanjong Penjuru
Singapore 609019
Tel: (65) 6265 0155
Fax: (65) 6266 0432
Email: mktg.sing@cummins.com
www.cumminspower.com

BITRONIX Kft.
H-1116 Budapest, Fehérvári út 108 112.
Értékesítés: (06-1) 769-21-39
Fax: (06-1) 208-09-67
www.bitronix.hu
bitronix@bitronix.hu

Standard and custom made generating sets from 30 kVA to 2500 kVA