Diesel Generator set
QSX15 series engine

500kVA - 550kVA 50Hz
450kW - 500kW 60Hz

> Specification sheet

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Description

This generator set is designed in facilities certified to ISO9001 and manufactured in facilities certified to ISO9001 or ISO9002.

This Cummins® Power Generation commercial generator set is a fully integrated power generation system, providing optimum performance, reliability, and versatility for stationary standby, prime power, and continuous duty applications.

Generator Set Performance

Voltage Regulation

Maintains voltage output to within ±0.5%.
At any power factor between 0.8 and 1.0
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
when electronic governor is fitted.

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 1.8%. Three-phase balanced load in the order of 5.0%.

Telephone Influence Factor (TIF)

TIF better than 50.
THF to BS 4999 Part 40 better than 2%.

Alternator Temperature Rise

Class H insulation.

Radio Interference

In compliance with BS 800 and VDE levels G and N.

Features

Cummins® Heavy-Duty Engine - Rugged 4-cycle industrial diesel delivers reliable power, low emissions and fast response to load changes.

Permanent Magnet Generator (PMG) - Offers enhanced motor starting and fault clearing short circuit capability.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings; low waveform distortion with non-linear loads, fault clearing short-circuits capability, and class H insulation.

Control System - Standard PowerCommand® electronic control provides total system integration including remote start/stop, precise frequency and voltage regulation, alarm and status message display, AmpSentry protection, output metering, auto-shutdown.

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

Enclosures - Optional weather-protective and sound-attenuated enclosures are available.

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

	Standby Rating		Prime Rating	
Model	**50Hz kVA (kW)**	**60Hz kW (kVA)**	**50Hz kVA (kW)**	**60Hz kW (kVA)**
C500 D5e	500 (400)	N/A	450 (360)	N/A
C550 D5e	550 (440)	N/A	500 (400)	N/A
C450 D6e	N/A	450 (562)	N/A	410 (512.5)
C500 D6e	N/A	500 (625)	N/A	455 (568.75)

Generator Set Specifications

Governor Regulation Class	ISO8528
Voltage Regulation, No Load to Full Load	± 0.5%
Random Voltage Variation	± 0.5%
Frequency Regulation	Isochronous
Random Frequency Variation	± 0.25%
Radio Frequency Emissions Compliance	In compliance with BS 800 and VDE levels G and N.

Engine Specifications

Design	4 cycle, in-line, Turbo Charged, Air-cooled
Bore	137 mm (5.39 in.)
Stroke	169 mm (6.65 in.)
Displacement	15 liter (912 $in.^3$)
Cylinder Block	Cast iron, 6 cylinder
Battery Capacity	100 A/hr
Battery Charging Alternator	35 amps
Starting Voltage	24 volt, 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
Rotor	Single bearing, flexible disc
Insulation System	Class H
Standard Temperature Rise	163°C - 125°C Standby/Prime
Exciter Type	Self Excited
Phase Rotation	A (U), B (V), C (W)
Alternator Cooling	Direct drive centrifugal blower fan
AC Waveform Total Harmonic Distortion	No load < 1.5%. Non distorting balanced linear load < 5%
Telephone Influence Factor (TIF)	<50 per NEMA MG1-22.43
Telephone Harmonic Factor (THF)	<2%

Available Voltages

50Hz Line – Neutral / Line - Line	**60Hz** Line – Neutral / Line - Line
• 240/416	• 277/480
• 230/400	• 220/380
• 220/380	• 139/240

Generator Set Options

Engine
- Heavy Duty air filter
- Water jacket heater 220/240 v

Cooling
- Antifreeze 50/50 (Ethylene glycol)

Enclosure
- Sound attentuated enclosure

Alternator
- Alternator heater
- Exciter voltage regulator (PMG)

Control Panel
- 4 pole Main Circuit Breaker
- PowerCommand 3.3

Silencer
- Critical silencer
- Residential silencer

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Control system

PowerCommand 2.2 control - An integrated microprocessor-based generator set control system providing voltage regulation, engine protection, alternator protection, operator interface and isochronous governing. Refer to document S-1568 for more detailed control information.

- Includes integral AmpSentry protection, which provides a full range of alternator protection functions that are matched to the alternator provided.
- Control function provides battery monitoring and testing features, and smart starting control system.
- Three phase sensing, full wave rectified voltage regulation, with a PWM output for stable operation with all load types.
- Standard PCCNet interface
- Standard Modbus interface
- Control boards - Potted for environmental protection.
- Core control is suitable for operation in ambient temperatures from -40 ℃ to +70 ℃ and altitudes to 13,000 feet (5000 meters).
- Prototype tested: UL, CSA and CE compliant.
- **InPower™ PC-based service tool available for detailed diagnostics, setup, data logging and fault simulation.**
- **Easily Upgradeable** – PowerCommand controls are designed with common control interfaces and control architectures to allow easy upgrading as generator set control demands change.

Operator panel features

Operator/display functions

- Large Backlit Display

- Auto, manual, start, stop, fault reset and lamp test/panel lamp switches
- Alpha-numeric display with pushbutton access for viewing engine and alternator data and providing setup, controls and adjustments (English and other languages, consult factory for details)
- LED lamps indicating genset running, remote start, not in auto, common shutdown, common warning, manual run mode, auto mode, and stop
- Display is suitable for operation in ambient temperatures from -20 ℃ to +70 ℃

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 and temperature
- Coolant temperature
- Comprehensive FAE data (where applicable)

Other data

- Genset model data
- Start attempts, starts, running hours, kW hours
- Load profile (operating hours at % rated kW in 5% increments)
- Fault history
- Data logging and fault simulation (requires InPower)

Standard control functions

Digital governing (optional)

- Digital electronic isochronous governor
- Temperature dynamic governing
- Glow plug control (some models)

Digital voltage regulation

- Integrated digital electronic voltage regulator
- 3-phase, 4-Wire line-to-line sensing
- Configurable torque matching
- PMG (optional)

AmpSentry AC protection

- AmpSentry Protective Relay – UL-listed
- 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
- Overspeed 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 (overcrank) shutdown
- Fail to crank shutdown
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown
- Fuel-in-rupture-basin warning or shutdown
- Full authority electronic engine protection

Control functions

- Time delay start and cooldown
- Glow plug control (some models)
- Cycle cranking
- Load shed
- (4) Configurable inputs
- (4) Configurable outputs
- Remote emergency stop

Options

- ☐ Auxiliary output relays (2)
- ☐ PCCNet Remote annunciator with (3) configurable inputs and (4) configurable outputs (loose)
- ☐ AC output analog meters
- ☐ Remote HMI220 operator panel (loose)
- ☐ PowerCommand iWatch remote monitoring systems
- ☐ InPower PC-based software service tool

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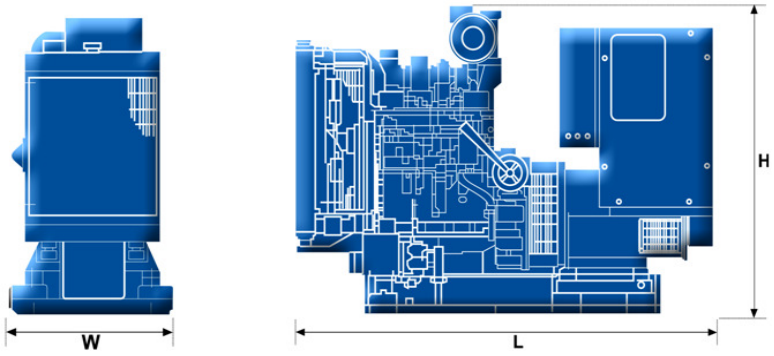
Ratings Definitions

Standby:	Limited Time Running:	Prime (Unlimited Running Time):	Base Load (Continuous):
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.	Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power is in accordance with ISO 8528.	Applicable for supplying power to varying electrical load for unlimited hours. Prime Power is in accordance with ISO 8528.Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous power in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.



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	Length (mm)	Width (mm)	Height (mm)	Set weight dry kg	Set weight wet kg
C500 D5e	3403	1500	2059	4072	4824
C550 D5e	3403	1500	2059	4202	4954
C450 D6e	3403	1500	2059	4072	4824
C500 D6e	3403	1500	2059	4202	4954

Cummins Power Generation

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