



Diesel generator set QSX15 series engine

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



Description

This Cummins® commercial generator set is a fully integrated power generation system, providing optimum performance, reliability and versatility for stationary Standby and Prime Power applications.

Features

Cummins heavy-duty engine - Rugged 4-cycle industrial diesel delivers reliable power, low emissions and fast response to load changes.

Optional 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 and fault clearing short-circuit capability.

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

Control system - The PowerCommand® electronic control is standard equipment and provides total system integration, including auto remote start/stop, alarm and status message display.

Enclosures - Optional sound attenuated enclosures.

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

Genset model	Engine model	Standby rating		Prime rating		Emissions compliance TA Luft/ EU Stage/EPA	Data sheets	
		50 Hz kVA (kWe)	60 Hz kWe (kVA)	50 Hz kVA (kWe)	60 Hz kWe (kVA)		50 Hz	60 Hz
C500 D5	QSX15-G8	500 (400)		455 (364)		Tier 2	D-6404	
C550 D5	QSX15-G8	550 (440)		500 (400)		Tier 2	D-6405	
C450 D6	QSX15-G9		450 (563)		410 (513)	Tier 2		D-6406
C500 D6	QSX15-G9		500 (625)		455 (569)	Tier 2		D-6407

Generator set specifications

Voltage regulation, no load to full load	± 1%
Random voltage variation	± 1%
Frequency regulation	Isochronous
Random frequency variation	± 0.25%

Engine specifications

Design	4 cycle, in-line, turbocharged, charge air cooled
Bore	137 mm (5.39 in.)
Stroke	169 mm (6.65 in.)
Displacement	15 liters (912 in ³)
Cylinder block	Cast iron, 6 cylinder
Battery capacity	152 AH
Battery charging alternator	35 amps
Starting voltage	24 volts, negative ground
Fuel system	Cummins HPI-TP
Fuel filter	Fuel separator spin-on/ Water separator with drain
Air cleaner type	Air Filter Primary Magnum RS, OptiAir™ technology
Lube oil filter type(s)	One combo spin-on element
Standard cooling system	Cooling system for high ambient temperature

Alternator specifications

Design	Brushless, revolving field
Stator	2/3 pitch
Rotor	Single bearing, flexible disc
Insulation system	Class H
Level of protection	IP23
Exciter type	Self-excited or separately excited by PMG
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform Total Harmonic Distortion (THDV)	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

50 Hz Line-Neutral/Line-Line	60 Hz Line-Neutral/Line-Line
<ul style="list-style-type: none"> • 255/440 • 230/400 • 220/380 • 127/220 	<ul style="list-style-type: none"> • 277/480 • 255/440 • 220/380 • 127/220

Note: Consult factory for other voltages.

Generator set options and accessories¹

Engine

- 220 ~ 240V thermo-statically controlled coolant heater
- Heavy duty air cleaner

Alternator

- 105 °C rise²
- 125 °C rise²
- 150 °C rise²
- 220 V 125 W anti-condensation heater

Control panel

- PowerCommand 2.3 with/ without bargraf
- PowerCommand 3.3 with bargraf/ bargraf + MLD

Switch Gear

- ATS Outside of generator(Gtec)

Exhaust system

- Residential grade exhaust silencer (9 dB)
- Critical grade exhaust silencer (29 dB)

Generator set

- Battery
- Battery charger
- Circuit breaker
- In-skid AVM
- Manual / Labels language – English, Portuguese and Spanish

Sound Attenuation

- Enclosure for 85dB
- Inlet / outlet room attenuator for:
 - 65dB
 - 75dB
 - 85dB
- Acoustic door

Remote Monitoring System

- PC500/550 remote monitoring system

Notes:

¹ Some options may not be available on all models - consult factory for availability.

² Consult the factory to see available temperature raise for each genset model.

PowerCommand 3.3 control system



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. Refer to document S-1567 and S-1570 for more detailed information on the control.

Masterless Load Demand (MLD) - The controller is capable of smartly managing power from paralleled generators to match varying load patterns.

Power management - Control function provides battery monitoring and testing features and smart starting control system.

Advanced control methodology - Three phase sensing, full wave rectified voltage regulation, with a PWM output for stable operation with all load types.

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.

Easily upgradeable - PowerCommand controls are designed with common control interfaces.

Reliable design - The control system is designed for reliable operation in harsh environment.

Operator panel features

Operator/display functions

- Displays paralleling breaker status
- Provides direct control of the paralleling breaker
- 320 x 240 pixels graphic LED backlight LCD
- Auto, manual, start, stop, fault reset and lamp test/panel lamp switches
- Alpha-numeric display with pushbuttons
- Heated HMI
- LED lamps indicating genset running, remote start, not in auto, common shutdown, common warning, manual run mode, auto mode and stop

Paralleling control functions

- First Start Sensor™ system selects first genset to close to bus
- Phase lock loop synchronizer with voltage matching
- Sync check relay
- Isochronous kW and kVar load sharing
- Enhanced safety features for paralleling generators

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
- Lube oil pressure
- Coolant temperature
- Comprehensive FAE data (where applicable)

Other data

- 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 shutdown

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
- Full authority electronic engine protection

Control functions

- Time delay start and cool down
- Real time clock for fault and event time stamping
- Cycle cranking
- Load shed
- Remote emergency stop

Ratings definitions

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 is in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-Time Running Power (LTP):

Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

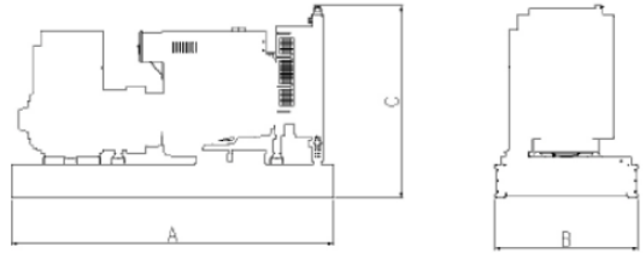
Prime Power (PRP):

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.

Base Load (Continuous) Power (COP):

Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.

Open Set



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	Dim "A" mm (in.)	Dim "B" mm (in.)	Dim "C" mm (in.)	Set weight* dry kg (lbs)	Set weight* wet kg (lbs)
C500D5	3500 (137,8)	1500 (59)	2017 (79,5)	3758 (8285)	3821 (8424)
C550D5	3500 (137,8)	1500 (59)	2017 (79,5)	3895 (8587)	3958 (8726)
C450D6	3500 (137,8)	1500 (59)	2017 (79,5)	3895 (8587)	3958 (8726)
C500D6	3500 (137,8)	1500 (59)	2017 (79,5)	3895 (8587)	3958 (8726)

*Note: Weights represent a set with standard features. See outline drawings for weights of other configurations.

Codes and standards

Codes or standards compliance may not be available with all model configurations – consult factory for availability.

	This product designed and manufactured in facilities certified to ISO 9001 and ISO 14001	ISO 8528	Reciprocating internal combustion engine driven generating sets
		NR12	Safety at Work in Machinery and Equipment
	Colombia's Certification	ISO 3046	Reciprocating Internal Combustion Engines
	Chile's Certification	IEC 60034	Rotating electrical machines

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor or visit power.cummins.com

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