

Rental Power 500 kW



Description

This Cummins Power Generation rental package is a fully integrated mobile power generation system, providing optimum performance, reliability, and versatility for standby and prime power applications.

The package utilizes custom designed switchgear to meet robust customer requirements. This switchgear provides reconnectable voltage via a link board design, automatic start/stop control and easy connection to existing installations.

Features

Cummins diesel engines

- Rugged 4-cycle industrial diesel delivers reliable power and fast response to load changes.
- Lightweight, compact, and excellent fuel economy.
- Equipped with heavy duty air cleaners, bypass-type oil filters, and dual-element fuel/water separation filtration system with 4-way valve.
- Includes jacket water heaters for more reliable operation in emergency standby applications.

Control system

- The most advanced, reliable, and capable generator set control system available with parallel and Masterless Load Demand (MLD) capabilities
- Integrated generator set governing, voltage regulation, protection, in one easy-to-operate customer interface.
- Integrated ground fault indication.

Stamford alternators

- Designed and built by Cummins Generator Technologies.
- Voltage reconnectable - 480/277 VAC high Wye to 208/120 VAC low Wye standard, 600 VAC optional.
- Alternators designed for improved motor starting.
- Permanent magnet excitation for improved performance in cyclic and non-linear load applications.

Rental package enclosure

- Designed for serviceability access.
- Optimized fuel capacity.
- Fluid containment design for greater environmental protection.
- Sound attenuated to minimize impact on local environment.
- Vertical cooling air and engine exhaust path to minimize sound level adjacent to the container.
- Equipped with 24 VDC lighting.
- Utility grade breaker.
- Shore power 100 amp service breaker panel – single phase 120/240 VAC: (2) 30 amp breakers (one for each coolant heater) – 240 VAC: (26.75 amp = 6420 watts for the heater). (1) 15 amp breaker – 120 VAC (GFIs), (1) 15 amp breaker – 120 VAC (battery charger).

Options

Cold weather package (includes):

- Additional diesel fired block heater
- Battery heating pad
- Floor insulation
- Actuated louver control
- Transport Canada UN31A certified fuel tank

Model	Voltages (V)	Standby Rating		Prime Rating		Engine model	Alternator model	Generator* Specification Sheet (Ref)
		60 Hz kW (kVA)	50 Hz kW (kVA)	60 Hz kW (kVA)	50 Hz kW (kVA)			
C500D6RG	208/480	500 (625)		455 (569)		QSX15-G9	HC5F	S-1582
	600	500 (625)		455 (569)		QSX15-G9	HC5D	S-1582

* Not all reference data is applicable.

Generator set specifications

Rated speed, rpm	1800- 60 Hz
Voltage regulation, no load to full load	±0.5%
Random voltage variation	±0.25%
Frequency regulation	Isochronous
Random frequency variation	±0.25%
Radio frequency interference	IEC 801.2, level 4 electrostatic discharge IEC 801.3, level 3 radiated susceptibility

Engine specifications

Engine model	QSX15-G9 NR
Engine data sheet	DS-10349
Tier rating	TPEM (Tier 2)
Design	Turbocharged with air-to-air charge air cooling, diesel fueled
Bore	136.9 mm (5.39 in.)
Stroke	168.9 mm (6.65 in.)
Displacement	14.9 liters (912 in ³)
Cylinder block	Cast iron, In-Line 6 cylinder with replaceable wet liners.
Battery capacity	2 x 12V 1235 CCA (Wired in series for 24V)
Battery charging alternator	35 amps
Starting voltage	24 volt, negative ground
Fuel system	Direct injection: number 2-D per ASTM D975 diesel fuel
Fuel filter	Spin on fuel filter with water separator
Air cleaner type	2-stage dry replaceable element with dust ejectors (qty: 2)
Lube oil filter type(s)	Single spin-on combination element with full flow and bypass filtration
Oil capacity	83.3 L (88 qt)
Standard cooling system	122 °F (50 °C) ambient radiator

Alternator specifications

Alternator data sheet	ADS-306 (600 VAC optional) ADS-308 (208/480 VAC)
Design	Brushless, 4-pole, drip-proof revolving field
Stator	2/3 pitch
Rotor	Direct-coupled by flexible disc
Insulation system	Class H per NEMA MG1-1.65
Standard temperature rise	105/40 °C standby (208/480 VAC), 125/40 °C standby (600 VAC optional)
Exciter type	Permanent magnet generator (PMG)
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct-drive centrifugal blower
AC waveform total harmonic distortion	<5% total no load to full linear load <3% for any single harmonic
Telephone influence factor (TIF)	<50 per NEMA MG1-22.43
Telephone harmonic factor (THF)	<3

Power capability specifications

	Standby rating			
	240 V, 1 phase Amps	208 V, 3 phase Amps	480 V, 3 phase Amps	600 V, 3 phase Amps
C500D6RG		1737	753	602

Electrical power panel specifications

Model voltage	120 V duplex receptacles	240 V twist	Load lug connection (stud diameter)	Load lug circuit breakers
208/480 V	2 - 15 Amp		1/2 inch	1800 Amp
600 V	2 - 15 Amp		1/2 inch	800 Amp

Site derating factors

Genset may be operated up to 640 m (2100 ft) and 50°C (122°F) without power deration. For sustained operation above these conditions up to 1150 m (3770 ft), derate by 3.8% per 305 m (1000 ft), and 6.1% per 10°C (3.4% per 10°F). Above 1150 m (3770 ft) up to 1680 m (5510 ft), derate 6.3% total for 1150 m (3770 ft) plus 1.6% per 305 m (1000 ft) over 1150 m (3770 ft) and 3.8% per 10°C (2.2% per 10°F). Above 1680 m (5510 ft) up to 3000 m (9840 ft), derate 9% total for 1680 m (5510 ft) plus 3.7% per 305 m (1000 ft) and 5.7% per 10°C (3.2% per 10°F). Above 3000 m (9840 ft), derate 24.8% total for 3000 m (9840 ft) plus 1.8% per 305 m (1000 ft) above 3000 m (9840 ft) and 10% per 10°C (5.6% per 10°F).

PowerCommand 3.3 Control System



An integrated microprocessor based generator set control system providing voltage regulation, engine protection, alternator protection, operator interface and isochronous governing. Refer to document S-1570 for more detailed information on the control.

Masterless Load Demand (MLD) - enables generator sets to smartly manage power from paralleled generators to match varying load patterns, enabling units to start/stop automatically based on load demand.

AmpSentry – Includes integral AmpSentry protection, which provides a full range of alternator protection functions that are matched to the alternator provided.

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.

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.

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

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

Multi-language support

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
- 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
- Load govern control for utility paralleling
- Extended Paralleling (baseload/peak shave) Mode
- Digital power transfer control, for use with a breaker pair to provide open transition, closed transition, ramping closed transition, peaking and base load functions,

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 % 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 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
- Low fuel level warning or shutdown
- Full authority electronic engine protection

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
- Configurable inputs and outputs (4)
- Remote emergency stop

Options

- Auxiliary output relays (2)

