



Rental Power 2000 kW QSK60 engine



Description

This Cummins® 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 and cooling system 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.
- Equipped with normal duty air cleaners, bypass-type oil filters and dual-element fuel/water separator 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 providing precise frequency and voltage regulation, alarm and status message display in one easy-to-operate customer interface
- Auto shutdown at fault detection.

Stamford alternators

- Designed and built by Cummins Generator Technologies.
- Voltage - 480 VAC 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.
- Engine compartment 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.
- Shore Power 100 Amp service breaker panel - single phase 120/240 VAC: (2) 30 Amp breakers (1 for each coolant heater) - 240 VAC 26.75 Amp = 6420 watts for each heater). (1) 15 Amp breaker – 120 VAC (GFIs), (1) 15 Amp breaker – 120 VAC (battery charger).

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)			
C2000D6RG	480	2000 (2500)		1825 (2281)		QSK60-G6	P734F	S-1514
	600	2000 (2500)		1825 (2281)		QSK60-G6	P7G-7	S-1570

* Not all reference data is applicable.

Generator set specifications

Governor regulation class	ISO8528 Part 1 class G3
Voltage regulation, no load to full load	± 0.5%
Random voltage variation	± 0.5%
Frequency regulation	Isochronous
Random frequency variation	± 0.25%
Radio frequency interference	IEC 801.2, through IEC 801.5, MIL STD 461C, Part 9

Engine specifications

Engine model	QSK60-G6
Engine data sheet	EDS-1065
EPA Nonroad	TPEM (Tier 2)
Bore	159 mm (6.25 in.)
Stroke	190 mm (7.48 in.)
Displacement	60.2 L (3673 in ³)
Cylinder block	Cast iron, 60V, 16 cylinder
Battery capacity	2200 Amps minimum at ambient temperature of -18 °C to 0 °C (0 °F to 32 °F)
Battery charging alternator	40 Amps
Starting voltage	24 volt, negative ground
Fuel system	Cummins' modular common rail
Fuel filter	Dual element, 10 micron filtration, spin-on fuel filters with 15 micron water separator
Air cleaner type	Dry replaceable element
Lube oil filter type(s)	Four spin-on combination full-flow and bypass filters
Standard cooling system	111 °F (44 °C)

Alternator specifications

Alternator data sheet	ADS-334 (480 VAC), ADS-335 (600 VAC)
Design	Brushless, 4 pole, drip-proof revolving field
Stator	2/3 pitch
Rotor	Single bearing, flexible discs
Insulation system	Class H per NEMA MG1-1.65
Standard temperature rise	150 °C Standby at 40 °C ambient
Exciter type	PMG (Permanent Magnet Generator)
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform Total Harmonic Distortion (THDV)	< 5% 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	240 V, 3 phase Amps
C2000D6RG			3010	2408

Electrical power panel specifications

Model voltage	120 V duplex receptacles	240 V twist	Load lug connection (stud diameter)	Load lug circuit breakers
480 V	2 (15 Amps)		1/2	3000 Amp
600 V	2 (15 Amps)		1/2	3000 Amp

Site derating factors

Standby application:

Engine power available up to 447 m (1466 ft) at ambient temperatures up to 44 °C (111 °F).

From 447 m (1466 ft) up to 2001 m (6562 ft) engine derates at 5.1% per 305 m (1000 ft) for 44 °C (111 °F).

Above these elevations, derate an additional 5.8% per 305 m (1000 ft)

Prime application:

Engine power available up to 447 m (1466 ft) at ambient temperatures up to 44 °C (111 °F).

From 447 m (1466 ft) up to 2001 m (6562 ft) engine derates at 5.1% per 305 m (1000 ft) for 44 °C (111 °F).

Above these elevations, derate an additional 5.8% per 305 m (1000 ft)

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 (Base Load/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 (optional)

- 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

Standard control functions (continued)

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
- Fuel-in-rupture-basin 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)

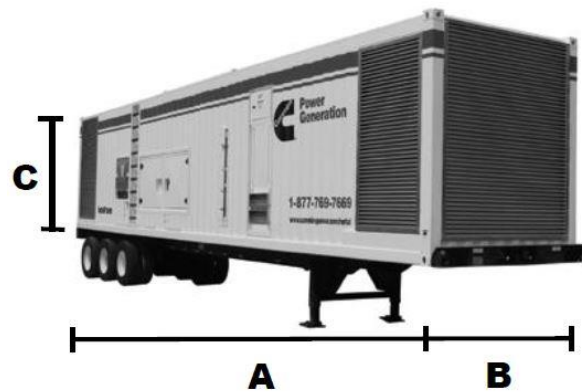
Ratings definitions

Standby:

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.

Prime (unlimited running power):

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.



Dimensions

Model	Dim 'A' mm (in.)	Dim 'B' mm (in.)	Dim 'C' mm (in.)	Weight w/o fuel kg (lbs)	Weight with fuel kg (lbs)	Fuel capacity liters (gal)
C2000D6RG	14630 (576)	2438 (96)	2896 (114)	29158 (64148)	34459 (75810)	6174 (1631)
With chassis	14630 (576)	2438 (96)	4064 (160)	33330 (73328)	38631 (84990)	6174 (1631)

Fuel consumption

60 Hz Ratings, kW (kVA)	Standby				Prime				
	Load	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full
US Gal/hr	46.5	82	107.3	141.3	43.4	75.1	100.6	124.1	
L/hr	176	311	407	535	164	285	381	470	

Specifications

Model	kW rating		Sound level at full load	Sound level at no load	Tier rating	Hours of operation (75% load)	
	Standby	Prime	dB(A) @ 7 M	dB(A) @ 7 M		Standby	Prime
C2000D6RG	2000	1825	78	72	TPEM (Tier II)	15	16





Accessories

Name	Part number
48 ft. Air ride chassis	0410-1380
Fueling ladder	0410-1372
Access ladder*	0410-1371
Folding ladder	0410-1362

* One access ladder provided with purchase of unit

Codes and standards

Below certifications are for generator set only.

	<p>This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.</p>		<p>The generator set is available Listed to UL 2200, Stationary Engine Generator Assemblies.</p>
	<p>The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems.</p>	<p>U.S. EPA</p>	<p>Engine previously certified to U.S. EPA Nonroad Source Emissions Standards, 40 CFR 89, Tier 2. The engine used in this generator set may be used in mobile applications in accordance with the EPA Transition Program for Equipment Manufacturers (TPEM); this provision has specific limitations (see 40 CFR, 1039.625).</p>
	<p>All low voltage models are CSA certified to product class 4215.</p>		

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

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