

Generator set data sheet



Model: DSHAD
Frequency: 60 Hz
Fuel type: Diesel
kW rating: 230 Standby
 209 Prime
Emissions level: EPA NSPS Stationary Emergency Tier 3

Exhaust emission data sheet:	EDS-1075
Exhaust emission compliance sheet:	EPA-1102
Sound performance data sheet:	MSP-1049
Cooling performance data sheet:	MCP-165
Prototype test summary data sheet:	PTS-162
Standard set-mounted radiator cooling outline:	0500-4303
Optional set-mounted radiator cooling outline:	
Optional heat exchanger cooling outline:	
Optional remote radiator cooling outline:	

Fuel consumption	Standby				Prime				Continuous
	kW (kVA)				kW (kVA)				kW (kVA)
Ratings	230 (288)				209 (261)				
Load	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full	Full
US gph	6.2	10.8	14.7	18.2	5.8	10.1	13.8	17.0	
L/hr	23	41	57	69	22	38	52	64	

Engine	Standby rating	Prime rating	Continuous rating
Engine manufacturer	Cummins Inc.		
Engine model	QSL9-G2 NR3		
Configuration	Cast iron, with replaceable wet cylinder liners, in-line 6 cylinder		
Aspiration	Turbocharged and CAC		
Gross engine power output, kW _m (bhp)	271.5 (364.0)	238.7 (320.0)	
BMEP at set rated load, kPa (psi)	1979 (287)	1816 (263)	
Bore, mm (in.)	114.0 (4.49)		
Stroke, mm (in.)	145 (5.69)		
Rated speed, rpm	1800		
Piston speed, m/s (ft/min)	8.7 (1707.0)		
Compression ratio	16.8:1		
Lube oil capacity, L (qt)	26.5 (28.0)		
Overspeed limit, rpm	2100 ± 50		
Regenerative power, kW	35.00		

Fuel flow	Standby rating	Prime rating	Continuous rating
Fuel flow at rated load, L/hr (US gph)	162.8 (43.0)		
Maximum inlet restriction, mm Hg (in Hg)	152.4 (6.0)		
Maximum return restriction, mm Hg (in Hg)	254.0 (10.0)		

Air

Combustion air, m ³ /min (scfm)	20.9 (739.0)	20.8 (733.0)	
Maximum air cleaner restriction with clean filter, kPa (in H ₂ O)	3.7 (15)		
Alternator cooling air, m ³ /min (cfm)	41.3 (1460.0)		

Exhaust

Exhaust flow at set rated load, m ³ /min (cfm)	33.3 (1176)	31.0 (1157)	
Exhaust temperature, °C (°F)	600 (1110.0)	572 (1063.0)	
Maximum back pressure, kPa (in H ₂ O)	10.2 (41.0)		

Standard set-mounted radiator cooling (non-seismic)

Ambient design, °C (°F)	52 (126)	48 (118)	
Fan load, kW _m (HP)	16.4 (22)		
Coolant capacity (with radiator), L (US gal)	29.5 (7.8)		
Cooling system air flow, m ³ /min (scfm)	248 (8769)		
Total heat rejection, MJ/min (Btu/min)	7.8 (7374)	7.6 (7222)	
Maximum cooling air flow static restriction, kPa (in H ₂ O)	0.12 (0.5)		

Optional set-mounted radiator cooling

Ambient design, °C (°F)			
Fan load, kW _m (HP)			
Coolant capacity (with radiator), L (US gal)			
Cooling system air flow, m ³ /min (scfm)			
Total heat rejection, MJ/min (Btu/min)			
Maximum cooling air flow static restriction, kPa (in H ₂ O)			

Optional heat exchanger cooling	Standby rating	Prime rating	Continuous rating
Set coolant capacity, L (US gal)			
Heat rejected, jacket water circuit, MJ/min (Btu/min)			
Heat rejected, aftercooler circuit, MJ/min (Btu/min)			
Heat rejected, fuel circuit, MJ/min (Btu/min)			
Total heat radiated to room, MJ/min (Btu/min)			
Maximum raw water pressure, jacket water circuit, kPa (psi)			
Maximum raw water pressure, aftercooler circuit, kPa (psi)			
Maximum raw water pressure, fuel circuit, kPa (psi)			
Maximum raw water flow, jacket water circuit, L/min (US gal/min)			
Maximum raw water flow, aftercooler circuit, L/min (US gal/min)			
Maximum raw water flow, fuel circuit, L/min (US gal/min)			
Minimum raw water flow at 27 °C (80 °F) inlet temp, jacket water circuit, L/min (US gal/min)			
Minimum raw water flow at 27 °C (80 °F) inlet temp, aftercooler circuit, L/min (US gal/min)			
Minimum raw water flow at 27 °C (80 °F) inlet temp, fuel circuit, L/min (US gal/min)			
Raw water delta P at min flow, jacket water circuit, kPa (psi)			
Raw water delta P at min flow, aftercooler circuit, kPa (psi)			
Raw water delta P at min flow, fuel circuit, kPa (psi)			
Maximum jacket water outlet temp, °C (°F)			
Maximum aftercooler inlet temp, °C (°F)			
Maximum aftercooler inlet temp at 25 °C (77 °F) ambient, °C (°F)			

Optional remote radiator cooling¹

Set coolant capacity, L (US gal)			
Max flow rate at max friction head, jacket water circuit, L/min (US gal/min)			
Max flow rate at max friction head, aftercooler circuit, L/min (US gal/min)			
Heat rejected, jacket water circuit, MJ/min (Btu/min)			
Heat rejected, aftercooler circuit, MJ/min (Btu/min)			
Heat rejected, fuel circuit, MJ/min (Btu/min)			
Total heat radiated to room, MJ/min (Btu/min)			
Maximum friction head, jacket water circuit, kPa (psi)			
Maximum friction head, aftercooler circuit, kPa (psi)			
Maximum static head, jacket water circuit, m (ft)			
Maximum static head, aftercooler circuit, m (ft)			
Maximum jacket water outlet temp, °C (°F)			
Maximum aftercooler inlet temp at 25 °C (77 °F) ambient, °C (°F)			
Maximum aftercooler inlet temp, °C (°F)			
Maximum fuel flow, L/hr (US gph)			
Maximum fuel return line restriction, kPa (in Hg)			

Weights²

Unit dry weight kgs (lbs)	
Unit wet weight kgs (lbs)	1561 (3442)

Notes:

¹ For non-standard remote installations contact your local Cummins representative.

² Weights represent a set with standard features. See outline drawing for weights of other configurations.

Derating factors

Standby	Engine power available up to 1100 m (3600 ft) at ambient temperature up to 40 °C (104 °F). Consult your Cummins distributor for temperature and ambient requirements outside these parameters.
Prime	Engine power available up to 850 m (2800 ft) at ambient temperature up to 40 °C (104 °F). Consult your Cummins distributor for temperature and ambient requirements outside these parameters.
Continuous	

Ratings definitions

Emergency Standby Power (ESP):	Limited-Time Running Power (LTP):	Prime Power (PRP):	Base Load (Continuous) Power (COP):
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 (LTP) is in accordance with ISO 8528.	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.	Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) is in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514. No sustained overload capability is available at this rating.

Alternator data

Three phase table ¹		125 °C	125 °C	150 °C	150 °C						
Feature code		B414	B415	B268	B419						
Alternator data sheet number		213	212	212	212						
Voltage ranges		120/208 thru 139/240 240/416 thru 277/480	277/480	120/208 thru 139/240 240/416 thru 277/480	347/600						
Surge kW		233	233	233	233						
Motor Starting kVA (at 90% sustained voltage)	Shunt	770	212	770	770						
	PMG	920	920	920	920						

Full load current - amps at Standby rating	<u>120/208</u> 799	<u>120/240</u> 629	<u>139/240</u> 629	<u>220/380</u> 399	<u>277/480</u> 346	<u>347/600</u> 277
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Alternator data (continued)

Single phase table¹		125 °C									
Feature code		B414									
Alternator data sheet number		213									
Voltage ranges		120/240 ²									
Surge kW		233									
Motor Starting kVA (at 90% sustained voltage)	Shunt	420									
	PMG	500									
Full load current - amps at Standby rating		$\frac{120/240^2}{639}$									

Notes:

¹ Single phase power can be taken from a three phase generator set at up to 2/3 set rated 3-phase kW at 1.0 power factor.

² The broad range alternators can supply single phase output up to 2/3 set rated 3-phase kW at 1.0 power factor.

Formulas for calculating full load currents:

Three phase output	Single phase output
$\frac{\text{kW} \times 1000}{\text{Voltage} \times 1.73 \times 0.8}$	$\frac{\text{kW} \times \text{SinglePhaseFactor} \times 1000}{\text{Voltage}}$

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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