Generator set data sheet

Power Generation

Model: DGHDA
Frequency: 60
Fuel type: Diesel
KW rating: 50 standby
45 prime
Emissions level: EPA NSPS Stationary Emergency Tier 3

Exhaust emission data sheet:	
Exhaust emission compliance sheet:	**EPA-1214**
Sound performance data sheet:	**MSP-1138**
Cooling performance data sheet:	**MCP-234**
Prototype test summary data sheet:	**PTS-311**
Standard set-mounted radiator cooling outline:	**A041E759**
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	50 (63)				45 (56.25)				
Load	**1/4**	**1/2**	**3/4**	**Full**	**1/4**	**1/2**	**3/4**	**Full**	**Full**
US gph	1.1	2.1	3.2	4.2	0.94	1.88	2.81	3.75	
L/hr	4.2	8.0	12.1	15.9	3.55	7.10	10.65	14.20	

Engine

	Standby rating	**Prime rating**	**Continuous rating**
Engine manufacturer	Cummins Inc.		
Engine model	4BT3.3-G7, NR3		
Configuration	Cast iron, in-line 4 cylinder		
Aspiration	Turbocharged		
Gross engine power output, kWm (bhp)	74 (99)	67 (90)	
BMEP at set rated load, kPa (psi)	1510 (219)	1373 (199)	
Bore, mm (in)	95.0 (3.74)		
Stroke, mm (in)	115.1 (4.53)		
Rated speed, rpm	1800		
Piston speed, m/s (ft/min)	22.7 (4459)		
Compression ratio	17.3:1		
Lube oil capacity, L (qt)	7.0 (7.9)		
Overspeed limit, rpm	2100 ± 50		
Regenerative power, kW	7		

Fuel flow

Fuel flow at rated load, L/hr (US gph)	38 (10.0)
Maximum inlet restriction, mm Hg (in Hg)	58.42 (2.3)
Maximum return restriction, mm Hg (in Hg)	381.0 (15)

Air

	Standby rating	Prime rating	Continuous rating
Combustion air, m3/min (scfm)	5.3 (187)	5.13 (181)	
Maximum air cleaner restriction with clean filter, kPa (in H2O)	3.0 (12.0)		
Alternator cooling air, m3/min (cfm)	16.9 (595)		

Exhaust

Exhaust flow at set rated load, m^3/min (cfm)	12.9 (458)	12.3 (436)	
Exhaust temperature, ° C (° F)	448 (839)	435 (815)	
Maximum back pressure, kPa (in H_2O)	10 (40.14)		

Standard set-mounted radiator cooling

Ambient design, ° C (° F)	50 (122)	
Fan load, kW_m (HP)	6.8 HP	
Coolant capacity (with radiator), L (US Gal)	4.6 (1.2)	
Cooling system air flow, m^3/min (scfm)	153 (5400)	
Total heat rejection, MJ/min (Btu/min)	3.07 (2908)	2.81 (2662)
Maximum cooling air flow static restriction, kPa (in H_2O)	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_2O)		

Optional heat exchanger cooling

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 cooling[1]	Standby rating	Prime rating	Continuous rating
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)			

Weights[2]

Unit dry weight kgs (lbs)	
Unit wet weight kgs (lbs)	791 (1744)

Notes:
[1] For non-standard remote installations contact your local Cummins Power Generation 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 1966 m (6450 ft) at 50 °C (122 °F). Derate by an additional 6% per 300 m (984 ft), and 10% per 18 °F (10 °C).
Prime	Engine power available up to 1676 m (5500 ft). Derate by an additional 6% per 300 m (984 ft), and 11% per 18 delta °F (10 °C).
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.		

Alternator data

Three Phase Table[1]		125 °C	105 °C	150 °C	125 °C	105 °C	150 °C	125 °C	105 °C	150 °C			
Feature Code		B303-2	B304-2	B413-2	B414-2	B415-2	B416-2	B417-2	B418-2	B419-2			
Alternator Data Sheet Number		203	203	203	204	204	203	203	204	203			
Voltage Ranges		347/600	347/600	120/208 thru 139/240 or 240/416 thru 277/480	120/208 thru 139/240 or 240/416 thru 277/480	120/208 thru 139/240 or 240/416 thru 277/480	110/190 thru 120/240 or 220/380 thru 240/416	110/190 thru 120/240 or 220/380 thru 240/416	110/190 thru 120/240 or 220/380 thru 240/416	347/600			
Surge kW		59.3	60	58.5	59.5	59.3	59	59	59.7	59.3			
Motor Starting kVA (at 90% sustained voltage)	Shunt	188	188	188	231	231	188	188	231	188			
	PMG	221	221	221	272	272	221	221	272	221			

Full Load Current Amps at Standby Rating	120/208	127/220	139/240	220/380	240/416	277/480	347/600
	173.5	164.0	150.4	95	86.7	75.2	60.1

Single Phase Table1		125 °C	105 °C	125 °C	105 °C								
Feature Code		B267	B268	B273	B274								
Alternator Data Sheet Number		205	205	204	204								
Voltage Ranges		110/220 thru 120/240 VAC single phase	110/220 thru 120/240 VAC single phase	110/220 thru 120/240 VAC single phase	110/220 thru 120/240 VAC single phase								
Surge kW		55.6	55.6	55.2	55.2								
Motor Starting kVA (at 90% sustained voltage)	Shunt	260	260	231	231								
	PMG	306	306	272	272								

Full Load Current Amps at Standby Rating	120/240[2]	120/240[3]	110/220	115/230
	139	208.3	227	217.4

[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.
[3] The extended stack (full single phase output) and 4 lead alternators can supply single phase output up to full set rated 3-phase kW at 1.0 power factor.

Formulas for calculating full load currents:

Three phase output

$$\frac{\text{kW} \times 1000}{\text{Voltage} \times 1.73 \times 0.8}$$

Single phase output

$$\frac{\text{kW} \times \text{SinglePhaseFactor} \times 1000}{\text{Voltage}}$$

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.

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D-3525c (6/13)

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