Generator set data sheet

Model: DQGAS
Frequency: 60 Hz
Fuel type: Ultra-low sulphur diesel (15 ppm sulphur)
kW rating: 1500 Standby
1365 Prime
1100 Continuous
Emissions level: EPA Stationary non-emergency Tier 4

Exhaust emission data sheet Tier 4F:	EDS-1135
Exhaust emission compliance sheet Tier 4F:	EPA-1197
Sound performance data sheet:	MSP-1121
Cooling performance data sheet:	MCP-219
Prototype test summary data sheet:	PTS-305
Standard set-mounted radiator cooling outline:	A029J185
Optional set-mounted radiator cooling outline:	A029P243
Optional remote radiator cooling outline:	A029P245
After-treatment outline drawing Tier 4F:	A040X345

Fuel consumption

	Standby				Prime				Continuous			
	kW (kVA)				kW (kVA)				kW (kVA)			
Ratings	1500 (1875)				1365 (1706)				1100 (1375)			
Load	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full
US gph	36.1	60.2	83.1	104.9	33.9	55.9	77.0	97.2	29.5	47.5	64.8	81.6
L/hr	136.8	227.8	341.5	397.0	128.4	211.7	291.5	367.8	111.8	179.8	245.5	308.9

DEF consumption

	Standby				Prime				Continuous			
	kW (kVA)				kW (kVA)				kW (kVA)			
Ratings	1500 (1875)				1365 (1706)				1100 (1375)			
Load	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full
US gph	0.77	1.65	3.50	5.78	0.72	1.49	3.00	4.96	0.85	1.39	3.05	3.61
L/hr	2.91	6.24	13.23	21.85	2.72	5.63	11.34	18.75	3.21	5.25	11.53	13.65

Engine	Standby rating	Prime rating	Continuous rating
Engine manufacturer	Cummins Inc.		
Engine model	QSK50-G8		
Configuration	Cast iron, V 16 cylinder		
Aspiration	Turbocharged and low temperature after-cooled		
Gross engine power output, kWm (bhp)	1656 (2220)	1470 (1971)	1323 (1774)
BMEP at set rated load, kPa (psi)	2192 (318)	1951 (283)	1744 (253)
Bore, mm (in.)	159 (6.25)		
Stroke, mm (in.)	159 (6.25)		
Rated speed, rpm	1800		
Piston speed, m/s (ft/min)	9.5 (1875)		
Compression ratio	15:1		
Lube oil capacity, L (qt)	235 (248)		205 (216)
Overspeed limit, rpm	2100 ±50		
Regenerative power, kW	168		

Fuel flow	Standby rating	Prime rating	Continuous rating
Maximum fuel flow, L/hr (US gph)	912 (241)		
Maximum fuel inlet restriction, kPa (in Hg)	16.9 (5)		
Maximum fuel inlet temperature, °C (°F)	70 (160)		

Air			
Combustion air, m^3/min (scfm)	134 (4715)	129 (4550)	123 (4345)
Maximum air cleaner restriction, kPa (in H_2O)	3.7 (15)		
Alternator cooling air, m^3/min (cfm)	207 (7300)		

Exhaust			
Exhaust flow at set rated load, m^3/min (cfm)	343 (12105)	318 (11230)	292 (10297)
Exhaust temperature, °C (°F)	518 (965)	485 (905)	451 (844)
Maximum back pressure, kPa (in H_2O)	6.78 (27)		

Standard set-mounted radiator cooling			
Ambient design, °C (°F)	41.2 (106.2)		
Fan load, kW_m (HP)	53.7 (72)		
Coolant capacity (with radiator), L (US gal)	401 (106)		
Cooling system air flow, m^3/min (scfm)	1783 (62983)		
Total heat rejection, MJ/min (Btu/min)	82.7 (78390)	74.4 (70535)	57.5 (54794)
Maximum cooling air flow static restriction, kPa (in H_2O)	0.12 (0.5)		
Heat radiated to room from after-treatment (Btu/min)	150960		

Optional set-mounted radiator cooling			
Ambient design, °C (°F)	50 (122)		
Fan load, kW_m (HP)	45.5 (61)		
Coolant capacity (with radiator), L (US gal)	496 (131)		
Cooling system air flow, m^3/min (scfm)	2094 (73937)		
Total heat rejection, MJ/min (Btu/min)	82.7 (78390)	74.4 (70535)	57.5 (54794)
Maximum cooling air flow static restriction, kPa (in H_2O)	0.12 (0.5)		
Heat radiated to room from aftertreatment (Btu/min)	150960		

Optional remote radiator cooling[1]

Max flow rate at max friction head, jacket water circuit, L/min (US gal/min)	1893 (500)		
Max flow rate at max friction head, after-cooler circuit, L/min (US gal/min)	538 (142)		
Heat rejected, jacket water circuit, MJ/min (Btu/min)	43.04 (40790)	38.83 (36800)	30.28 (28842)
Heat rejected, after-cooler circuit, MJ/min (Btu/min)	26.01 (24655)	23.33 (22110)	18.75 (17858)
Total heat radiated to room, MJ/min (Btu/min)	13.3 (12584.2)	12.2 (11546.2)	10 (9508.7)
Maximum friction head, jacket water circuit, kPa (psi)	69 (10)		
Maximum friction head, after-cooler circuit, kPa (psi)	48 (7)		
Maximum static head, jacket water circuit, m (ft)	18.3 (60)		
Maximum static head, after-cooler circuit, m (ft)	18.3 (60)		
Maximum jacket water outlet temp, °C (°F)	104 (220)	100 (212)	100 (212)
Maximum after-cooler inlet temp at 25 °C (77 °F) ambient, °C (°F)	49 (120)		
Maximum after-cooler inlet temp, °C (°F)	71 (160)	66 (150)	66 (150)
Heat radiated to room from after-treatment (Btu/min)	150960		

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

After-treatment system	T4F (SCR)	T4F (SCR + DPF)
Pressure drop across after-treatment, kPa (in H_2O)	3 (12)	4 (16)
Available back pressure for exhaust system piping, kPa (in H_2O)	3.7 (15)	2 (11)
Exhaust heater rating (kW)	-	500
Exhaust heater input requirements (Amps at 480 V)	-	600
Minimum unaided ambient operating temperature °C (°F)	2 (35)	2 (35)
Maximum ambient operating temperature (warning) °C (°F)	52 (125)	52 (125)
DEF tank capacity (usable) L (gal)	765 (202)	765 (202)
Heat radiated to room from after-treatment (Btu/min)	150960	150960

DEF flow

Maximum supply flow, L/hr (US gph)	211 (56)
Maximum return flow, L/hr (US gph)	189 (50)
Maximum static head (from pump to injector), m (ft)	6.4 (21)

Weights[1]

Unit dry weight kgs (lbs)	12733 (28071)
Unit wet weight kgs (lbs)	13366 (29467)
After-treatment weight kgs (lbs)	3962 (8734)

Derating factors[2]

Standby	Standard cooling system: Full rated power available up to 1321.6m (4334.9 ft) elevation at ambient temperatures up to 40 °C (104 °F). Above these conditions derate by 3.6% per 305m (1000 ft), and derate by an additional 8.0% per 10 °C (18 °F). Enhanced cooling system: Full rated power available up to 1512.8m (4962.0 ft) elevation at ambient temperatures up to 40 °C (104 °F). Above these conditions derate by 4.6% per 305m (1000 ft). Full rated power available up to 1017.1m (3338.1 ft) elevation at ambient temperatures up to 50 °C (122 °F). Above these conditions derate by 3.6% per 305m (1000 ft). At higher ambient temperatures, derate by additional 8% per 10 °C (18 °F).
Prime	Full rated power available up to 1218.4m (3996 ft) elevation at ambient temperature up to 40 °C (104 °F). Above these elevations, at 40 °C (104 °F), derate by 5.5% per 305m (1000 ft). Full rated power available up to 438.7m (1439 ft) at ambient temperatures up to 50 °C (122 °F). Above these elevations, at 50 °C (122 °F), derate by an additional 5.5% per 305m (1000 ft). At higher ambient temperatures, derate by an additional 14% per 10 °C (18 °F).
Continuous	Full rated power available up to 1393m (4569 ft) elevation at ambient temperature up to 40 °C (104 °F). Above these elevations, at 40 °C (104 °F), derate by 5.3% per 305m (1000 ft). Full rated power available up to 841.3m (2759 ft) at ambient temperatures up to 50 °C (122 °F). Above these elevations, at 50 °C (122 °F), derate by an additional 5.3% per 305m (1000 ft). At higher ambient temperatures, derate by an additional 10% per 10 °C (18 °F).

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.

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.

Alternator data

Voltage	Connection[1]	Temp rise degrees C	Duty[2]	Single phase factor[3]	Max surge kVA[4]	Winding No.	Alternator data sheet	Feature code
380	Wye, 3-phase	150/125	S/P		6716	312	ADS-333	B799-2
380	Wye, 3-phase	125/80	S/P/C		7361	312	ADS-334	B598-2
380	Wye, 3-phase	105/80	S/P		7361	312	ADS-334	B599-2
380	Wye, 3-phase	80	S		7695	312	ADS-335	B660-2
416	Wye, 3-phase	105/80	S/P		6716	312	ADS-333	B715-2
440	Wye, 3-phase	150/125	S/P		5521	312	ADS-331	B691-2
440	Wye, 3-phase	125/80	S/P/C		5743	312	ADS-332	B663-2
440	Wye, 3-phase	105/80	S/P		6716	312	ADS-333	B664-2
440	Wye, 3-phase	80	S		6716	312	ADS-333	B688-2
440	Wye, 3-phase	150/125	S/P		7267	12	ADS-515	B691-2
480	Wye, 3-phase	150	S		5521	312	ADS-331	B816-2
480	Wye, 3-phase	125/105	S/P		5521	312	ADS-331	B276-2
480	Wye, 3-phase	105/80	S/P		5743	312	ADS-332	B600-2
480	Wye, 3-phase	80	S		6716	312	ADS-333	B601-2
480	Wye, 3-phase	80	S/P		7361	312	ADS-334	B903-2
600	Wye, 3-phase	150	S		5521	07	ADS-331	B817-2
600	Wye, 3-phase	125/105/80	S/P/C		5521	07	ADS-331	B602-2
600	Wye, 3-phase	105/80	S/P		5743	07	ADS-332	B603-2
600	Wye, 3-phase	80	S		6716	07	ADS-333	B604-2
600	Wye, 3-phase	80	S/P		7361	07	ADS-334	B904-2
4160	Wye, 3-phase	105	S/P		7005	51	ADS-323	B920-2
4160	Wye, 3-phase	80	S/P		7926	51	ADS-324	B919-2
12470	Wye, 3-phase	80	S		5948	91	ADS-521	B607-2
12470	Wye, 3-phase	80	P		5948	91	ADS-521	B812-2
13200	Wye, 3-phase	80	S		5948	91	ADS-521	B807-2
13200	Wye, 3-phase	80	P		5948	91	ADS-521	B566-2
13800	Wye, 3-phase	80	S		5948	91	ADS-521	B610-2
13800	Wye, 3-phase	80	P		5948	91	ADS-521	B809-2

Notes:

[1] Limited single phase capability is available from some three phase rated configurations. To obtain single phase rating, multiply the three phase kW rating by the Single Phase Factor3. All single phase ratings are at unity power factor.

[2] Standby (S), Prime (P) and Continuous ratings (C).

[3] Factor for the *Single phase output from three phase alternator* formula listed below.

[4] Maximum rated starting kVA that results in a minimum of 90% of rated sustained voltage during starting.

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.

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

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