

Model: DFEK
Frequency: 50
Fuel type: Diesel
KW rating: 440 standby
400 prime

➤ **Generator set data sheet**



**Power
Generation**

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Exhaust emission data sheet:	EDS-273
Exhaust emission compliance sheet:	
Sound performance data sheet:	MSP-277
Cooling performance data sheet:	MCP-105
Prototype test summary data sheet:	PTS-245
Standard set-mounted radiator cooling outline:	0500-3326
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	440 (550)				400 (500)				
Load	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full	
US gph	9.4	16.1	22.6	30.5	8.8	14.9	20.8	26.9	
L/hr	36	61	86	115	33	56	79	102	

Engine	Standby rating	Prime rating	Continuous rating
Engine manufacturer	Cummins Inc.		
Engine model	QSX15-G8		
Configuration	Cast iron with replaceable wet cylinder liners, in-line 6 cylinder		
Aspiration	Turbocharged with air-to-air charge air cooling		
Gross engine power output, kWm (bhp)	499.8 (670.0)	443.9 (595.0)	
BMEP at set rated load, kPa (psi)	2571.7 (373.0)	2344.2 (340.0)	
Bore, mm (in)	136.9 (5.39)		
Stroke, mm (in)	168.9 (6.65)		
Rated speed, rpm	1500		
Piston speed, m/s (ft/min)	8.4 (1663.0)		
Compression ratio	17.0:1		
Lube oil capacity, L (qt)	83.3 (88.0)		
Overspeed limit, rpm	2150 ± 50		
Regenerative power, kW	37.00		

Fuel flow		
Fuel flow at rated load, L/hr (US gph)	378.5 (100.0)	
Maximum inlet restriction, mm Hg (in Hg)	127.0 (5.0)	
Maximum return restriction, mm Hg (in Hg)	165.1 (6.5)	

Air	Standby rating	Prime rating	Continuous rating
Combustion air, m ³ /min (scfm)	34.5 (1220.0)	31.7 (1120.0)	
Maximum air cleaner restriction, kPa (in H ₂ O)	6.2 (25.0)		
Alternator cooling air, m ³ /min (scfm)	51.5 (1820.0)		

Exhaust

Exhaust flow at set rated load, m ³ /min (cfm)	88.6 (3130.0)	83.1 (2935.0)	
Exhaust temperature, °C (°F)	496.1 (925.0)	471.1 (880.0)	
Maximum back pressure, kPa (in H ₂ O)	10.2 (41.0)		

Standard set-mounted radiator cooling

Ambient design, °C (°F)	40 (104)		
Fan load, kW _m (HP)			
Coolant capacity (with radiator), L (US gal)	57.9 (15.3)		
Cooling system air flow, m ³ /min (scfm)	679.2 (24000.0)		
Total heat rejection, MJ/min (Btu/min)	20.3 (19208.0)	18.0 (16982.0)	
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

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)			

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Optional remote radiator cooling¹

	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)			

Weights²

Unit dry weight kgs (lbs)	4309 (9500)
Unit wet weight kgs (lbs)	4445 (9800)

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	Genset may be operated up to 835 m (2735 ft) and 40 °C (104 °F) without power deration. For sustained operation above these conditions up to 1125 m (3690 ft), derate by 2.6% per 305 m (1000 ft), and 3.7% per 10 °C (2.1% per 10 °F). Above 1125 m (3690 ft) up to 1690 m (5545 ft), derate 2.5% total for 1125 m (3690 ft) plus 1.7% per 305 m (1000 ft) over 1125 m (5545 ft) , and 6.7% per 10 °C (3.7% per 10 °F). Above 1690 m (5545 ft) up to 3000 m (9840 ft), derate 5.7% total for 1690 m (5545 ft) plus 4.0% per 305 m (1000 ft) and 6.7% per 10 °C (3.7% per 10 °F). Above 3000 m (9840 ft) derate 23.2% 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).
Prime	Genset may be operated up to 835 m (2735 ft) and 40 °C (104 °F) without power deration. For sustained operation above these conditions up to 1125 m (3690 ft), derate by 2.6% per 305 m (1000 ft), and 3.7% per 10 °C (2.1% per 10 °F). Above 1125 m (3690 ft) up to 1690 m (5545 ft), derate 2.5% total for 1125 m (3690 ft) plus 1.7% per 305 m (1000 ft) over 1125 m (5545 ft) , and 6.7% per 10 °C (3.7% per 10 °F). Above 1690 m (5545 ft) up to 3000 m (9840 ft), derate 5.7% total for 1690 m (5545 ft) plus 4.0% per 305 m (1000 ft) and 6.7% per 10 °C (3.7% per 10 °F). Above 3000 m (9840 ft) derate 23.2% 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).
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.

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Alternator data

Three phase table ¹		105 °C	105 °C	125 °C	125 °C	150 °C						
Feature code		B325	B328	B324	B392	B420						
Alternator data sheet number		308	308	307	307	307						
Voltage ranges		110/190 thru 127/220 220/380 thru 254/440	110/190 thru 127/220 220/380 thru 254/440	110/190 thru 127/220 220/380 thru 254/440	240/415	110/190 thru 127/220 220/380 thru 254/440						
Surge kW		458	458	456	459	456						
Motor starting kVA (at 90% sustained voltage)	Shunt											
	PMG	1769	1769	1633	1633	1633						

Full load current amps at standby rating	110/190	115/200	120/208	127/220	139/240	220/380	230/400	240/415	254/440
	1673	1590	1528	1445	1325	837	795	766	723

¹: Single phase power can be taken from a three phase generator set at up to 40% of the generator set nameplate kW rating at unity 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

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

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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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