C1750D6E

DIESEL GENERATOR SET DATA SHEET

MODEL: C1750D6E
FREQUENCY: 60 Hz
FUEL TYPE: DIESEL
RATING: 1750 kWe (2188 kVA) EMERGENCY STANDBY POWER (ESP)[1]
1600 kWe (2000 kVA) DATA CENTER CONTINUOUS (DCC)[1,2]
EMISSIONS CERTIFICATION: EPA NSPS STATIONARY EMERGENCY TIER 2

GENERATOR SET PUBLICATIONS

Exhaust emission data sheet	EDS-3134
Exhaust emission compliance statement	EPA-2099
Sound data sheet	MSP-4177
Cooling system data sheet	MCP-2256
Seismic certificate of compliance	VMA-53914-01C (Revision 1)
Prototype test support data sheet	PTS-785
Genset outline drawing	A060C089
Genset wiring schematic diagram	A073F079

ENGINE SPECIFICATIONS

		Emergency Standby Power (ESP)	Data Center Continuous (DCC)
Manufacturer		Cummins Inc.	
Model		QSK50 - G24	
Configuration		Four Cycle; Vee; 16 Cylinder	
Aspiration		Turbocharged and Charge Air Cooled	
Gross engine power output	kWm (bhp)	1947 (2611)	1746 (2341)
Brake mean effective pressure at set rated load	kPa (psi)	2606 (378)	2372 (344)
Bore	mm (in)	159 (6.26)	
Stroke	mm (in)	159 (6.26)	
Displacement	L (in^3)	49.8 (3039)	
Rated speed	rpm	1800	
Piston speed at rated speed	m/s (ft/min)	19.1 (3756)	
Compression ratio		14.2:1	
Lube oil capacity	L (US gal)	121 (32.0)	
Overspeed limit	rpm	2070	
Regenerative power	kWm (hp)	166 (223)	

FUEL CONSUMPTION

Rating	kWe (kVA)	1750 (2188)				1600 (2000)			
Load		25%	50%	75%	100%	25%	50%	75%	100%
Fuel Consumption	US gph	38	67	96.2	125.4	34.7	61	87.1	113.3
Fuel Consumption	L/h	143.8	253.6	364.1	474.6	131.3	230.9	329.7	428.8

[1] Generator set ratings include radiator fan losses
[2] DCC at standby power available subject to Cummins' site-specific assessment; contact your Cummins distributor

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FUEL SYSTEM

		Emergency Standby Power (ESP)	Data Center Continuous (DCC)
Maximum fuel flow	L/h (US gph)	959 (253)	
Maximum fuel inlet restriction	kPa (inHg)	28 (8.3)	
Maximum fuel return line restriction	kPa (inHg)	35.1 (10.4)	
Maximum fuel inlet temperature	°C (°F)	70 (158)	
Maximum fuel return temperature	°C (°F)	129 (264)	

AIR SYSTEM

Combustion air flow (at set rated load)	m^3/min (scfm)	151.8 (5361)	149.4 (5275)
Maximum air cleaner restriction (dirty filter)	kPa (inH2O)	3.7 (15)	
Alternator cooling air flow	m^3/min (scfm)	222 (7850)	

EXHAUST SYSTEM

Exhaust flow (at set rated load)	m^3/min (cfm)	410 (14482)	384 (13555)
Exhaust temperature (at set rated load)	°C (°F)	502 (935)	476 (889)
Maximum back pressure	kPa (inH_2O)	6.7 (26.9)	

COOLING SYSTEM (SET MOUNTED) – HIGH AMBIENT

Ambient design (limiting ambient temp.)	°C (°F)	40 (104)	
Fan load	kWm (hp)	89.5 (120)	
Coolant capacity (engine + radiator)	L (US gal)	140 (37)	
Cooling system air flow (at max. restriction)	m^3/min (acfm)	2073 (73210)	
Total heat rejection to radiator	MJ/min (Btu/min)	76 (71633)	69 (65311)
Total heat radiated to room	MJ/min (Btu/min)	7.1 (6730)	5.5 (5237)
Nominal air flow static restriction	kPa (inH_2O)	0.12 (0.5)	
Maximum fuel return line restriction	kPa (in Hg)	34.9 (10.3)	

COOLING SYSTEM (SET MOUNTED) – ENHANCED HIGH AMBIENT

Ambient design (limiting ambient temp.)	°C (°F)	50.0 (122)	
Fan load	kWm (hp)	105.9 (142)	
Coolant capacity (engine + radiator)	L (US gal)	140 (37)	
Cooling system air flow (at max. restriction)	m^3/min (acfm)	2421 (85483)	
Total heat rejection to radiator	MJ/min (Btu/min)	88 (83282)	80 (76207)
Total heat radiated to room	MJ/min (Btu/min)	7.1 (6730)	5.5 (5237)
Nominal air flow static restriction	kPa (inH_2O)	0.12 (0.5)	
Maximum fuel return line restriction	kPa (in Hg)	34.9 (10.3)	

GENERATOR SET WEIGHTS[3]

		As Shipped Cooling System Weight (Dry)	Installed Set Weight (Wet)
C1750D6E	kg (lb)	14135 (31169)	14512 (32001)

[3] All weights are approximate and represent a generator set with standard features and heaviest alternator (low voltage G-core). “As Shipped Set Weight (No Cooling System)” includes weight from engine oil. “Installed Set Weight (Wet)” includes weight from engine oil and coolant. See respective model data sheet for specific model outline drawing number that contains weights of other configurations.

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GENERATOR SET DERATING FACTORS[4]

Emergency Standby Power (ESP)	**High Ambient Cooling System:** Full engine power available up to 1400 m (4592 ft) at ambient temperature up to 40°C (104°F). From 1400 m (4592 ft) to 2000 m (6562 ft) derates at 5.7% per 305 m (1000 ft). For temperature above 40°C engine derates at 11% per 10°C (18°F). **Enhanced High Ambient Cooling System:** Full engine power available up to 950 m (3117 ft) at ambient temperature up to 50°C (122°F). From 950 m (3117 ft) to 2000 m (6562 ft) derates at 5.7% per 305 m (1000 ft). For temperature above 50°C engine derates at 11% per 10°C (18°F).
Data Center Continuous (DCC)	**High Ambient Cooling System:** Full engine power available up to 1400 m (4592 ft) at ambient temperature up to 40°C (104°F). From 1400 m (4592 ft) to 2000 m (6562 ft) derates at 5.8% per 305 m (1000 ft). For temperature above 40°C engine derates at 11% per 10°C (18°F). **Enhanced High Ambient Cooling System:** Full engine power available up to 950 m (3117 ft) at ambient temperature up to 50°C (122°F). From 950 m (3117 ft) to 2000 m (6562 ft) derates at 5.8% per 305 m (1000 ft). For temperature above 50°C engine derates at 11% per 10°C (18°F).

[4] Note: Ambient operating temperature is defined as the air temperature measured at the room (or enclosure) inlet, assuming a temperature rise of 3 °C to the turbocharger compressor inlet.

RATING DEFINITIONS

Emergency Standby Power (ESP)	Data Center Continuous (DCC)
Applicable for supplying power to varying electrical loads for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Data shown above represents gross engine performance and capabilities as per ISO 3046-1, obtained and corrected in accordance with ISO 15550.	Applicable for supplying power continuously to a constant or varying electrical load for unlimited hours in a data center application. Designed to comply with Tier III and IV data center site requirements by being rated to run for unlimited hours of operation when loaded to 'N' demand for the engine generator set.

FORMULAS

Calculating Power Factor	Calculating Full Load Current (Three Phase AC Output)	Calculating Full Load Current (Single Phase AC Output)
$\cos\theta = \frac{Active\ (True, Real)\ Power}{Apparent\ Power} = \frac{P_{(kW)}}{\lvert S\rvert_{(kVA)}}$ Power Factor = 0.8 (industry standard)	$I = \frac{\lvert S\rvert_{(kVA)}}{\sqrt{3} \times V} = \frac{1000 \times P_{(kW)}}{\sqrt{3} \times V \times \cos\theta}$	$I = \frac{\lvert S\rvert_{(kVA)}}{V} = \frac{1000 \times P_{(kW)}}{V \times \cos\theta}$