

C1000D6ED C900D6E C800D6E

C750D6E C600D6E

DIESEL GENERATOR SET SPECIFICATION SHEET

S17 ENGINE, 600-1000 kW_e, 60 Hz, EPA TIER 2 NSPS CERTIFIED (STATIONARY EMERGENCY)

DESCRIPTION

Cummins commercial generator sets are fully integrated power generation systems for stationary standby power and data center applications.

The Centum™ Series meets the demand for efficient and sustainable power with performance, flexibility, and commitment – for the next generation of power.

FEATURES

Cummins Heavy-Duty Engine: Rugged, four-cycle industrial diesel delivers reliable power, low emissions and fast response to load changes.

Alternator: Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads, fault clearing short-circuit capability and class H insulation.

ISO 8528-5 G3 Capable: Consult factory for site and configuration specific transient performance information.

HVO Fuel Compatible: Approved for use with paraffinic fuels (EN15940), including Hydrotreated Vegetable Oil (HVO), which has a very low life cycle carbon emission.

Permanent Magnet Generator (PMG): Offers enhanced motor starting and fault clearing short circuit capability.

Control System: The PowerCommand® digital control is standard equipment and provides total genset system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, AmpSentry™ protective relay, output metering, auto-shutdown at fault detection and NFPA 110 Type 10 Level 1 compliance.



Cooling System: enhanced high ambient (50 °C), integral set-mounted radiator systems, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat.

Enclosures: Optional weather protective and sound attenuated enclosures are available.

Fuel tanks: Dual wall sub-base fuel tanks are also available.

NFPA: Capable of meeting NFPA 110 Type 10 for Level 1 Emergency or Standby Power Supply Systems (EPSSs) when installed and operated per Cummins and NFPA guidelines.

Warranty and Service: Backed by a standard three-year warranty and worldwide distributor network.

MODELS

	Emergency Standby Power (ESP) Rating ¹ kW _e (kVA)	Data Sheet
C1000D6ED	1000 (1250)	D-6787
C900D6E	900 (1125)	D-6809
C800D6E	800 (1000)	D-6788
C750D6E	750 (938)	D-6810
C600D6E	600 (750)	D-6789

¹ All ratings include radiator fan losses



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GENERATOR SET SPECIFICATIONS

Performance class	Genset models have been tested in accordance with ISO 8528-5. Consult factory for transient performance information
Voltage regulation, no load to full load	± 1.0%
Random voltage variation	± 1.0%
Frequency regulation	Isochronous
Random frequency variation	± 0.5%
Electromagnetic compatibility performance	Emissions to EN 61000-6-2:2005 Immunity to EN 61000-6-4:2007+A1:2011 Complies with FCC PART 15 subpart B and ICES-002

ENGINE SPECIFICATIONS

Bore	148 mm (5.83 in)
Stroke	163 mm (6.42 in)
Displacement	16.8 L (1025 in ³)
Configuration	Four-cycle; in-line; 6-cylinder
Battery capacity	1700 A minimum at ambient temperature of -18 °C (0 °F) to 0 °C (32 °F)
Battery charging alternator	105 A
Starting voltage	24 V, negative ground
Fuel system	XPI
Fuel filter	One-stage, spin-on fuel filter and water separator system. Generator set mounted, 5 µm nanonet element filter
Air cleaner	One unhusd, dry replaceable elements standard; heavy-duty optional
Lube oil filter	Two spin-on, combination full flow filter and bypass filters
Standard cooling system	High ambient (40 °C) cooling system; Enhanced high ambient (50 °C) Optional

ALTERNATOR SPECIFICATIONS

Design	Brushless, 4-pole, drip proof, revolving field
Stator	2/3 pitch
Rotor	One bearing, Close coupled flex plate
Insulation system	Class H
Standard temperature rise	150 °C standby at 40 °C ambient
Exciter type	Permanent Magnet Generator (PMG)
Phase rotation	A (U), B (V), C (W)

AVAILABLE VOLTAGES (60 Hz LINE-TO-NEUTRAL / LINE-TO-LINE)⁵

- 120/208
- 127/220
- 220/380
- 240/416
- 255/440
- 277/480
- 347/600

⁵ Additional voltages may be available; contact your Cummins distributor

GENERATOR SET OPTIONS AND ACCESSORIES⁶

Engine

- 208 V and 240V, 1 Phase, 5 kW thermosiphon coolant heater
- Heavy-duty air cleaners

Cooling System

- Enhanced high ambient (50 °C)

Exhaust System

- Residential grade silencer
- Critical grade silencer

Control Panel

- Masterless load demand
- Multiple language support
- Front, left, and right mounting
- Warning high bearing temperature
- Alternator temp. monitoring
- Exhaust gas temp. monitoring
- 4-6x user-configurable relays
- 120 / 240 V heater control cabinet
- Mechanical hour meter
- 2x digital input/output

Alternator

- 80, 105, 125, & 150 °C rise
- 120 or 240 V, 285/255 W anti-condensation heater

Alternator (cont.)

- Temp. sensor - RTDs, 2 / phase
- Temp. sensor - alternator bearing RTD
- Differential current transformers

Generator Set

- Battery
- PowerCommand[®] network
- Remote annunciator panel
- Standby 3-, 4- and 5-year limited hour warranties

⁶ Some options may not be available on all models; contact your Cummins distributor.



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PowerCommand® 3.3

CONTROL SYSTEM DESCRIPTION

The PowerCommand® 3.3 is an integrated, microprocessor-based, generator set control system providing voltage regulation, engine protection, alternator protection, operator interface and isochronous governing. Refer to document S-1570 for more detailed information on the control.

AmpSentry™: Includes integral AmpSentry™ protection, which provides a full range of alternator protection functions that are matched to the alternator provided.

Power Management: Control function provides battery monitoring and testing features and smart starting control system.

Advanced Control Methodology: Three phase sensing, full wave rectified voltage regulation, with a PWM output for stable operation with all load types.

Communications Interface: Control comes standard with PCCNet and Modbus interface.

Service: InPower™ PC-based service tool available for detailed diagnostics, setup, data logging and fault simulation.

Easily Upgradeable: PowerCommand® controls are designed with common control interfaces.

Reliable Design: The control system is designed for reliable operation in harsh environment.

Multi-Language Support

OPERATOR PANEL FEATURES

Operating/Display Functions

- Displays paralleling breaker status
- Provides direct control of the paralleling breaker
- 320 x 240 pixels graphic LED backlight LCD
- Auto, manual, start, stop, fault reset and lamp test/panel lamp switches
- Alpha-numeric display with pushbuttons
- LED lamps indicating genset running, remote start, not in auto, common shutdown, common warning, manual run mode, auto mode and stop

Paralleling Control Functions

- First Start Sensor™ system selects first genset to close to bus
- Phase lock loop synchronizer with voltage matching
- Sync check relay
- Isochronous kW and kVAR load sharing
- Load govern control for utility paralleling
- Extended paralleling (base load/peak shave) mode
- Digital power transfer control, for use with a breaker pair to provide open transition, closed transition, ramping closed transition, peaking and base load functions

Alternator Data

- Line-to-Neutral and Line-to-Line AC volts
- 3-phase AC current
- Frequency
- kW, kVAR, power factor kVA (three-phase and total)

Engine Data

- DC voltage
- Engine speed
- Lube oil pressure and temperature

Engine Data Cont'd

- Coolant temperature



- Comprehensive FAE data (where applicable)

OPERATOR PANEL FEATURES (CONT.)

Other Data

- Genset model data
- Start attempts, starts, running hours, kWh
- Load profile (operating hours at #load in 5% increments)
- Fault history
- Data logging and fault simulation (requires InPower™)

STANDARD CONTROL FEATURES

Digital Governing

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

Digital Voltage Regulation

- Integrated digital electronic voltage regulator
- 3-phase, 4-wire Line-to-Line sensing
- Configurable torque matching

AmpSentry™ AC Protection

- AmpSentry™ protective relay
- Over current and short circuit shutdown
- Over current warning
- Single and three phase fault regulation
- Over and under voltage shutdown
- Over and under frequency shutdown
- Overload warning with alarm contact
- Reverse power and reverse Var shutdown
- Field overload shutdown

Engine Protection

- Battery voltage monitoring, protection, and testing
- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Cranking lockout
- Sensor failure indication
- Full authority electronic engine protection

Control Functions

- Time delay start and cool down
- Real time clock for fault and event time stamping
- Exerciser clock and time of day start/stop
- Data logging
- Cycle cranking
- 2Load shed
- Configurable inputs and outputs (4)
- Remote emergency stop

Options

- Auxiliary output relays (2)



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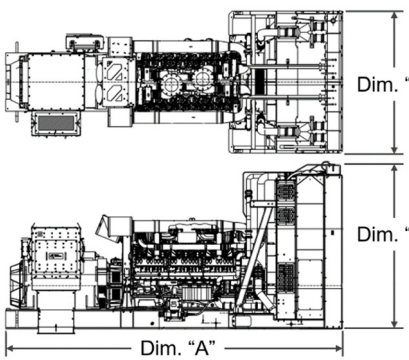
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RATING DEFINITIONS

Emergency Standby Power (ESP)

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.

GENERATOR SET DIMENSIONS AND WEIGHTS⁷

	Model Name	Dim. "A" mm (in)	Dim. "B" mm (in)	Dim. "C" mm (in)
	C1000D6ED	4028 (159)	1890 (74)	2099 (83)
	C900D6E			
	C800D6E			
	C750D6E			
	C600D6E	3908 (154)	1890 (74)	2099 (83)
	Model Name	Generator Set Weight (Dry) kg (lb)	Generator Set Weight (Wet) kg (lb)	
	C1000D6ED	6143 (13543)	6246 (13770)	
	C900D6E			
	C800D6E			
	C750D6E			
	C600D6E	5780 (12743)	5883 (12970)	

⁷ Do not use for installation design. Longest alternator (F-core) used for dimension "A". All weights are approximate and represent a generator set with standard features and heaviest alternator (low voltage F-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.

CODES AND STANDARDS⁸

	This product was manufactured in a facility whose quality management system is certified to ISO 9001 and its Health Safety Environmental Management Systems certified to ISO 14001 and ISO 45001.		UL Listing to UL 2200, "Stationary Engine Generator Assemblies" is available for this genset model. The PowerCommand® control is listed to UL 508 – Category NITW7 for U.S. and Canadian usage.
	The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins products bearing the PTS symbol meet the prototype test requirements of NFPA 110 Type 10 Level 1 compliance.		Engine certified to Stationary Emergency U.S. EPA New Source Performance Standards (NSPS), 40 CFR 60 subpart IIII Tier 2 exhaust emission levels. U.S. applications must be applied per this EPA regulation.
	All genset models are available as CSA certified to CSA C22.2 No. 100.		The generator set package is available certified for seismic application in accordance with International Building Code and California building code for healthcare application (OSP).

⁸ Codes or standards compliance may not be available with all model configurations; contact your Cummins distributor



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C800D6E

DIESEL GENERATOR SET DATA SHEET

MODEL:	C800D6E
FREQUENCY:	60 Hz
FUEL TYPE:	DIESEL
RATING:	800 kWe (1000kVA) EMERGENCY STANDBY POWER (ESP)¹
EMISSIONS CERTIFICATION:	EPA TIER 2 NSPS (STATIONARY EMERGENCY)

GENERATOR SET PUBLICATIONS

Exhaust emission data sheet	EDS-3160
Exhaust emission compliance statement	EPA-2112
Sound data sheet	MSP-4197
Cooling system data sheet	MCP-2303
Seismic certificate of compliance	VMA-50957-01C
Prototype test support data sheet	PTS-832
Genset outline drawing	A074S111
Genset wiring schematic diagram	A073D300

ENGINE SPECIFICATIONS

Manufacturer		Cummins Inc.
Model		S17-G1
Configuration		Four-cycle; inline; 6-cylinder
Aspiration		Turbocharged and charge-air cooled
Gross engine power output	kWm (bhp)	1099 (1474)
Brake mean effective pressure at set rated load	kPa (psi)	3510 (509)
Bore	mm (in)	148 (5.83)
Stroke	mm (in)	163 (6.42)
Displacement	L (in ³)	16.8 (1031)
Rated speed	rpm	1800
Piston speed at rated speed	m/s (ft/min)	9.78 (1925)
Compression ratio		14.5:1
Lube oil capacity	L (US gal)	79 (21)
Overspeed limit	rpm	2100
Regenerative power	kWm (hp)	100 (134)

FUEL CONSUMPTION

Rating	kWe (kVA)	800 (1000)			
Load		25%	50%	75%	100%
Fuel Consumption	US gph	16.9	30.6	43.7	57.4
Fuel Consumption	L/h	64	116	165	217

¹Generator set ratings include radiator fan losses



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FUEL SYSTEM

Maximum fuel flow	L/h (US gph)	398 (105)
Maximum fuel inlet restriction, clean/dirty	kPa (inHg)	17 (5) / 34 (10)
Maximum fuel inlet temperature	°C (°F)	70 (158)
Maximum fuel return restriction	kPa (inHg)	35 (10)

AIR SYSTEM

Combustion air flow (at set rated load)	m ³ /min (scfm)	70.4 (2487)
Maximum air cleaner restriction (dirty filter)	kPa (inH ₂ O)	5.4 (22)
Alternator cooling air flow	m ³ /min (cfm)	97.8 (3454)

EXHAUST SYSTEM

Exhaust flow (at set rated load)	m ³ /min (cfm)	167 (5895)
Exhaust temperature (at set rated load)	°C (°F)	446 (834)
Maximum back pressure	kPa (inH ₂ O)	6.8 (27.3)

COOLING SYSTEM (SET MOUNTED) – ENHANCED HIGH AMBIENT

Ambient design (limiting ambient temp.)	°C (°F)	50.0 (122.0)
Maximum air flow static restriction	kPa (inH ₂ O)	0.25 (1.0)
Cooling system air flow (at max. restriction)	m ³ /min (acfm)	1512 (53400)
Fan load	kWm (hp)	39 (52)
Coolant capacity (engine + radiator)	L (US gal)	141 (37.2)

GENERATOR SET WEIGHTS⁶

		As Shipped Set Weight (Dry)	Installed Set Weight (Wet)
C800D6E	kg (lb)	6143 (13543)	6246 (13770)

⁶ All weights are approximate and represent a generator set with standard features and heaviest alternator (F-core). “As Shipped Set Weight (Dry)” does not include 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.

GENERATOR SET DERATING FACTORS⁷

Emergency Standby Power (ESP)

High Ambient Cooling System: Full genset power available up to 3377 m (11079 ft) at ambient temperatures up to 40 °C (104 °F). Above these conditions, derate at 2% per 305 m (1000 ft) and 9.1% per 10 °C (18 °F).

Enhanced High Ambient Cooling System: Full genset power available up to 2429 m (7970 ft) at ambient temperatures up to 50 °C (122 °F). Above these conditions, derate at 2.8% per 305 m (1000 ft) and 11.3% per 10 °C (18 °F).

⁷ Ambient operating temperature is defined as the air temperature measured at the turbocharger compressor inlet. Derate statements assume a cooling system with 0.25 kPa (1.0 inH₂O) backpressure and 50% relative humidity. Please contact Sales Application Engineering for operation above 3500 m (11480 ft) of altitude or outside of the temperature range in the derate statement.

RATING DEFINITIONS

Emergency Standby Power (ESP):

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.

⁸ Alternator data is configured for a set with ratings including engine cooling fan losses and standard features at 40 °C ambient temperature. For non-standard configurations check appropriate alternator data sheets or contact your Cummins distributor. N/A: Not Applicable

⁹ ESP: Emergency Standby Power

¹⁰ Maximum surge: maximum rated starting kVA that results in a minimum of 90% of rated sustained voltage during starting



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ALTERNATOR DATA⁸ (ESP: 800 kW_e)

Voltage	Connection	Winding Number	Ambient Temp. (°C)	Temp. Rise (°C)	Duty Rating ⁹	Model	Max. Surge ¹⁰ (kVA)	Alternator Data Sheet	Feature Code
208	Wye;3-phase	311	40	80	ESP	S6L1D-F4	4725	ADS-633	B734
208	Wye;3-phase	311	40	105	ESP	S6L1D-E4	4200	ADS-632	B873
208	Wye;3-phase	311	40	125	ESP	S6L1D-D4	3657	ADS-631	B732
208	Wye;3-phase	311	40	150	ESP	S6L1D-D4	3657	ADS-631	BE82
220	Wye;3-phase	311	40	80	ESP	S6L1D-F4	4725	ADS-633	BE85
220	Wye;3-phase	311	40	105	ESP	S6L1D-E4	4200	ADS-632	BC41
220	Wye;3-phase	311	40	125	ESP	S6L1D-D4	3657	ADS-631	B975
220	Wye;3-phase	311	40	150	ESP	S6L1D-C4	3264	ADS-630	BE82
380	Wye;3-phase	13	40	80	ESP	S6L1D-F4	4725	ADS-633	B870
380	Wye;3-phase	14	40	105	ESP	S6L1D-E4	3975	ADS-632	BC43
380	Wye;3-phase	14	40	125	ESP	S6L1D-D4	3657	ADS-631	B872
380	Wye;3-phase	14	40	150	ESP	S6L1D-D4	3657	ADS-631	B769
400	Wye;3-phase	13	40	80	ESP	S6L1D-F4	4725	ADS-633	B977
400	Wye;3-phase	311	40	105	ESP	S6L1D-E4	4200	ADS-632	BC42
400	Wye;3-phase	14	40	125	ESP	S6L1D-D4	3657	ADS-631	BC40
400	Wye;3-phase	311	40	150	ESP	S6L1D-D4	3657	ADS-631	BE13
416	Wye;3-phase	311	40	80	ESP	S6L1D-F4	4725	ADS-633	B734
416	Wye;3-phase	311	40	105	ESP	S6L1D-E4	4200	ADS-632	B873
416	Wye;3-phase	311	40	125	ESP	S6L1D-D4	3657	ADS-631	B732
416	Wye;3-phase	311	40	150	ESP	S6L1D-D4	3657	ADS-631	B682
440	Wye;3-phase	311	40	80	ESP	S6L1D-F4	4725	ADS-633	B688
440	Wye;3-phase	311	40	105	ESP	S6L1D-E4	4200	ADS-632	BC41
440	Wye;3-phase	311	40	125	ESP	S6L1D-D4	3657	ADS-631	B975
440	Wye;3-phase	311	40	150	ESP	S6L1D-D4	3657	ADS-631	B701
480	Wye;3-phase	311	40	80	ESP	S6L1D-E4	4200	ADS-632	B878
480	Wye;3-phase	311	40	105	ESP	S6L1D-D4	3657	ADS-631	B876
480	Wye;3-phase	311	40	125	ESP	S6L1D-C4	3264	ADS-630	B884
480	Wye;3-phase	311	40	150	ESP	S6L1D-C4	3264	ADS-630	B769
600	Wye;3-phase	7	40	80	ESP	S6L1D-E4	4200	ADS-632	B604
600	Wye;3-phase	7	40	105	ESP	S6L1D-E4	4200	ADS-632	B839
600	Wye;3-phase	7	40	125	ESP	S6L1D-C4	3264	ADS-630	B739
600	Wye;3-phase	7	40	150	ESP	S6L1D-C4	3264	ADS-630	BD50

FORMULAS

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

