

# C1750D6E C2000D6E

## DIESEL GENERATOR SET SPECIFICATION SHEET

QSK50 ENGINE, 1750-2000 kWe, 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.

**Data Center Continuous (DCC):** Applicable for supplying power continuously to a constant or varying electrical load for unlimited hours in a data center application.

**Uptime compliant:** Meets the requirement of a Tier III and IV data center site by being rated to run for unlimited hours of operation when loaded to 'N' demand for the engine generator set.



**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 Level 1 compliance.

**Cooling System:** High ambient (40 °C) and enhanced high ambient (50 °C), integral set-mounted radiator systems, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat.

**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<br>(ESP) Rating <sup>1</sup><br>kWe (kVA) | Prime Power (PRP)<br>Rating <sup>1,2</sup><br>kWe (kVA) | Data Center Continuous<br>(DCC) Rating <sup>1,2</sup><br>kWe (kVA) | Data Sheet |
|----------|-------------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------|------------|
| C1750D6E | 1750 (2188)                                                       | 1600 (2000)                                             | 1600 (2000)                                                        | NAD-6744   |
| C2000D6E | 2000 (2500)                                                       | 1825 (2281)                                             | 1825 (2281)                                                        | NAD-6745   |

<sup>1</sup> All ratings include radiator fan losses.

<sup>2</sup> Prime rating and DCC at standby power rating available subject to Cummins' site-specific assessment; contact your Cummins distributor.



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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  | ± 0.5%                                                                                                                      |
| Random voltage variation                  | ± 1.0%                                                                                                                      |
| Frequency regulation                      | Isochronous                                                                                                                 |
| Random frequency variation                | ± 0.25%                                                                                                                     |
| Electromagnetic compatibility performance | Emissions to EN 61000-6-2:2005<br>Immunity to EN 61000-6-4:2007+A1:2011<br>Complies with FCC PART 15 subpart B and ICES-002 |

## ENGINE SPECIFICATIONS

|                             |                                                                                                                                                                                    |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bore                        | 159 mm (6.26 in.)                                                                                                                                                                  |
| Stroke                      | 159 mm (6.26 in.)                                                                                                                                                                  |
| Displacement                | 49.8 liters (3039 in3)                                                                                                                                                             |
| Configuration               | Four Cycle; Vee; 16 Cylinder                                                                                                                                                       |
| Battery capacity            | 1800 amps minimum at ambient temperature of -18 °C (0 °F)                                                                                                                          |
| Battery charging alternator | 100A                                                                                                                                                                               |
| Starting voltage            | 24 volts, negative ground                                                                                                                                                          |
| Fuel system                 | Cummins YZ Modular Common Rail System (MCRS)                                                                                                                                       |
| Fuel filter                 | Two-stage, spin-on fuel filter and water separator system. Stage 1: remote mounted, 5 µm duplex filter with two priming pumps. Stage 2: engine mounted, 3 µm triple element filter |
| Air cleaner                 | Dry replaceable element                                                                                                                                                            |
| Lube oil filter             | Four spin-on, combination full flow filter and bypass filters                                                                                                                      |
| Standard cooling system     | High ambient cooling system                                                                                                                                                        |

## ALTERNATOR SPECIFICATIONS

|                                              |                                                |
|----------------------------------------------|------------------------------------------------|
| Design                                       | Brushless, 4-pole, drip proof, revolving field |
| Stator                                       | 2/3 pitch                                      |
| Rotor                                        | Single bearing, flexible disc                  |
| Insulation system                            | Class H                                        |
| Standard temperature rise                    | 125 °C standby                                 |
| Exciter type                                 | Permanent Magnet Generator (PMG)               |
| Phase rotation                               | A (U), B (V), C (W)                            |
| Alternator cooling                           | Direct drive centrifugal blower fan            |
| AC waveform total harmonic distortion (THDV) | < 5% no load to full linear load               |

## AVAILABLE VOLTAGES (60 Hz LINE-TO-NEUTRAL / LINE-TO-LINE)<sup>3</sup>

|            |           |           |           |            |            |
|------------|-----------|-----------|-----------|------------|------------|
| 277/480    | 254/440   | 220/380   | 2400/4160 | 347/600    | 7976/13800 |
| 7620/13200 | 3810/6600 | 3640/6300 | 3985/6900 | 6350/11000 | 7200/12470 |

<sup>3</sup> Additional voltages may be available; contact your Cummins distributor

## GENERATOR SET OPTIONS AND ACCESSORIES<sup>4</sup>

### Generator Set

- Oil sampling valve
- 10A battery charger
- Set mounted circuit breakers up to 3200 Amps
- Circuit breaker aux and trip contacts
- Anti-vibration mounts
- Battery temperature sensor
- IBC Certification
- HCAI Certification

### Engine

- 240V thermo-statically controlled coolant heater
- 120/240V 500W lube oil heaters
- Heavy duty air cleaner
- Remote duplex fuel filter
- Engine oil filters - full flow with bypass
- Automatic oil make up system and monitoring
- Engine toolkit

### Control Panel

- Masterless load demand
- Multiple language support
- 120/240V 100W control anti- condensation heater

- Exhaust pyrometer
- Ground fault indication
- Paralleling relay package
- Shutdown alarm relay package
- Mechanical hour meter
- 6x user-configurable relays
- 8 additional I/O relays

### Alternator

- 80°C/105°C /125°C/150°C rise
- Stator winding temp sensor 2 RTDs/phase
- Bearing temp sensor RTDs
- 1-hole or 2-hole lug output terminal
- Cable entrance box set mounted top or bottom entry
- 120/240V 225W anti- condensation heater
- Generator Louvers

### Exhaust System

- Industrial grade silencer
- Residential grade silencer
- Critical grade silencer

### Cooling System

- Enhanced high ambient temperature (50 °C)
- Low coolant level warning

- Coolant heater

### Data Center options

- Automatic oil make up system
- Closed crank ventilation system
- Oil sampling valve
- Propylene glycol coolant
- Customized testing

### Miscellaneous

- Multilingual manuals
- 3-year extended warranty
- 5-year extended warranty
- 10-year extended warranty
- Witness testing
- Virtual witness test
- Tier 4 compliant aftertreatment kits shipped loose

<sup>4</sup> Some options may not be available on all models; contact your Cummins distributor.

Data Center options are available through RFQ with the Custom Applications Group and could result in additional lead-times. Please consult with the Custom Applications Group to understand feasibility



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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
- 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
- Load shed
- Configurable inputs and outputs (4)
- Remote emergency stop

### Options

- Auxiliary output relays (2)



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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.

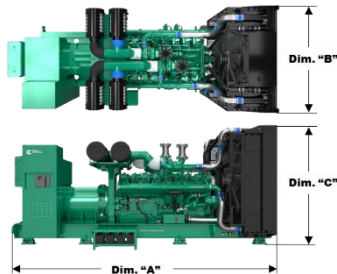
### Prime Power (PRP)

Prime Power for Stationary Emergency ratings apply to installations served by a reliable utility source. Applicable for supplying power to varying electrical loads for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046-1. Data shown above represents gross engine performance and capabilities as per ISO 3046-1, obtained and corrected in accordance with ISO 15550.

### Data Center Continuous (DCC)

Applicable for supplying power continuously to a constant or varying electrical load for unlimited hours in a data center application. Designed to comply with Uptime Institute® 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.

## GENERATOR SET DIMENSIONS AND WEIGHTS<sup>5</sup>



| Model Name | Dim. "A"<br>mm (in)                               | Dim. "B"<br>mm (in)                   | Dim. "C"<br>mm (in) |
|------------|---------------------------------------------------|---------------------------------------|---------------------|
| C1750D6E   | 5708 (224.7)                                      | 2470 (97.2)                           | 2441 (96.1)         |
| C2000D6E   |                                                   |                                       |                     |
| Model Name | As Shipped Cooling System Weight<br>(Dry) kg (lb) | Installed Set Weight<br>(Wet) kg (lb) |                     |
| C1750D6E   | 14135 (31169)                                     | 14512 (32001)                         |                     |
| C2000D6E   |                                                   |                                       |                     |

<sup>5</sup> Do not use for installation design. Longest alternator (G-core) used for dimension "A". 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.

## CODES AND STANDARDS<sup>6</sup>

|                                                                                     |                                                                                                                                                                                                                        |                                                                                     |                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO 9001<br>ISO 14001<br>ISO 45001                                                  | 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 for Level 1 systems. |  | 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.                                                                                     |

<sup>6</sup> Codes or standards compliance may not be available with all model configurations; contact your Cummins distributor.



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