Specification sheet

Diesel generator set
6BT5.9 series engine
85 kW - 100 kW Standby

Description
Cummins® commercial generator sets are fully integrated power generation systems providing optimum performance, reliability and versatility for stationary Standby and Prime Power applications.

Features
Cummins heavy-duty engine - Rugged 4-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 and fault clearing short-circuit capability.

Control system - The PowerCommand® electronic 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™ protection, output metering, auto-shutdown at fault detection and NFPA 110 Level 1 compliance.

Cooling system - Standard and enhanced integral set-mounted radiator systems, designed and tested for rated ambient temperatures to simplify the facility design requirements for rejected heat.

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

Fuel tanks - Dual wall sub-base fuel tanks and in-skid day tanks are also offered.

NFPA - The genset accepts full rated load in a single step in accordance with NFPA 110 for Level 1 systems.

Warranty and service - Backed by a comprehensive warranty and worldwide distributor network.

<table>
<thead>
<tr>
<th>Model</th>
<th>Standby rating</th>
<th>Prime rating</th>
<th>Continuous rating</th>
<th>Data sheets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60 Hz kW (kVA)</td>
<td>50 Hz kW (kVA)</td>
<td>60 Hz kW (kVA)</td>
<td>50 Hz kW (kVA)</td>
</tr>
<tr>
<td>DGDB</td>
<td>100 (125)</td>
<td>85 (106)</td>
<td>90 (113)</td>
<td>80 (100)</td>
</tr>
</tbody>
</table>
### Generator set specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governor regulation class</td>
<td>ISO8528 Part 1 Class G3</td>
</tr>
<tr>
<td>Voltage regulation, no load to full load</td>
<td>± 1.0%</td>
</tr>
<tr>
<td>Random voltage variation</td>
<td>± 1.0%</td>
</tr>
<tr>
<td>Frequency regulation</td>
<td>5%</td>
</tr>
<tr>
<td>Random frequency variation</td>
<td>± 0.5% (isochronous optional ± 0.25%)</td>
</tr>
<tr>
<td>Radio frequency emissions compliance</td>
<td>Meets requirements of most industrial and commerce applications.</td>
</tr>
</tbody>
</table>

### Engine specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bore</td>
<td>102.1 mm (4.02 in)</td>
</tr>
<tr>
<td>Stroke</td>
<td>119.9 mm (4.72 in)</td>
</tr>
<tr>
<td>Displacement</td>
<td>5.9 L (359.0 in³)</td>
</tr>
<tr>
<td>Configuration</td>
<td>Cast iron, in-line, 6 cylinder</td>
</tr>
<tr>
<td>Battery capacity</td>
<td>460 amps minimum at ambient temperature of 0 °C (32 °F)</td>
</tr>
<tr>
<td>Battery charging alternator</td>
<td>65 amps</td>
</tr>
<tr>
<td>Starting voltage</td>
<td>12 volt, negative ground</td>
</tr>
<tr>
<td>Fuel system</td>
<td>Direct injection: number 2 diesel fuel, fuel filter, automatic electric fuel shutoff</td>
</tr>
<tr>
<td>Fuel filter</td>
<td>Single element, 10 micron filtration, spin-on fuel filter with water separator</td>
</tr>
<tr>
<td>Air cleaner type</td>
<td>Dry replaceable element</td>
</tr>
<tr>
<td>Lube oil filter type(s)</td>
<td>Spin-on, full flow</td>
</tr>
<tr>
<td>Standard cooling system</td>
<td>40 °C (104 °F) ambient radiator</td>
</tr>
</tbody>
</table>

### Alternator specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>Brushless, 4 pole, drip proof, revolving field</td>
</tr>
<tr>
<td>Stator</td>
<td>2/3 pitch</td>
</tr>
<tr>
<td>Rotor</td>
<td>Single bearing, flexible discs</td>
</tr>
<tr>
<td>Insulation system</td>
<td>Class H</td>
</tr>
<tr>
<td>Standard temperature rise</td>
<td>150 °C Standby at 40 °C ambient</td>
</tr>
<tr>
<td>Exciter type</td>
<td>Torque match (shunt)</td>
</tr>
<tr>
<td>Phase rotation</td>
<td>A (U), B (V), C (W)</td>
</tr>
<tr>
<td>Alternator cooling</td>
<td>Direct drive centrifugal blower</td>
</tr>
<tr>
<td>AC waveform Total Harmonic Distortion (THDV)</td>
<td>&lt; 5% no load to full linear load, &lt; 3% for any single harmonic</td>
</tr>
<tr>
<td>Telephone Influence Factor (TIF)</td>
<td>&lt; 50 per NEMA MG1-22,43</td>
</tr>
<tr>
<td>Telephone Harmonic Factor (THF)</td>
<td>&lt; 3%</td>
</tr>
</tbody>
</table>

### Available voltages

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Phase</th>
<th>Connectable</th>
<th>Non-Connectable</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 Hz</td>
<td>3-phase</td>
<td>120/208</td>
<td>120/240</td>
</tr>
<tr>
<td>50 Hz</td>
<td>3-phase</td>
<td>110/190</td>
<td>110/220</td>
</tr>
<tr>
<td></td>
<td>1-phase</td>
<td>120/240</td>
<td>230/400</td>
</tr>
<tr>
<td></td>
<td>3-phase</td>
<td>115/230</td>
<td>120/240</td>
</tr>
</tbody>
</table>

*Note: Consult factory for other voltages.*
Generator set options and accessories

**Engine**
- 120/240 V 1500 W coolant heater
- 120/240 V 150 W lube oil heater
- Electronic governor
- Engine oil temperature

**Fuel system**
- 12 hour sub-base tank (dual tank)
- 24 hour sub-base tank (dual wall)
- 473 L (125 gal) sub-base tank (single wall)

**Alternator**
- 105 °C rise
- 125 °C rise
- 120/240 V 100 W anti-condensation heater
- PMG excitation
- Single phase

**Exhaust system**
- Genset mounted muffler
- Heavy duty exhaust elbow
- Slip on exhaust connection

**Cooling system**
- 50 °C ambient
- Remote radiator

**Generator set**
- AC entrance box
- Battery
- Battery charger
- Enclosure: aluminum, steel, weather protective or sound attenuated
- Export box packaging

- UL 2200 Listed
- Main line circuit breaker
- Power Command Network Communications Module (NCM)
- Remote annunciator panel
- Spring isolators
- 2 year Standby power warranty
- 2 year Prime power warranty
- 5 year basic power warranty

- Note: Some options may not be available on all models - consult factory for availability.
Control system PCC 2100

PowerCommand control is an integrated generator set control system providing governing, voltage regulation, engine protection and operator interface functions. Major features include:

- Integral AmpSentry™ Protective Relay providing a full range of alternator protection functions that are matched to the alternator provided.
- Battery monitoring and testing features and smart starting control system.
- Three phase sensing, full wave rectified voltage regulation system, with a PWM output for stable operation with all load types.
- Standard PCCNet™ and optional Echelon® LONWORKS® network interface.
- Control suitable for operation in ambient temperatures from -40 °C to +70 °C (-40 °F to +158 °F) and altitudes to 5000 meters (13,000 feet).
- Prototype tested; UL, CSA, and CE compliant.
- InPower™ PC-based service tool available for detailed diagnostics.

Operator/display panel

- Off/manual/auto mode switch
- Manual run/stop switch
- Panel lamp test switch
- Emergency stop switch
- Alpha-numeric display with pushbutton access for viewing engine and alternator data and providing setup, controls and adjustments
- LED lamps indicating genset running, not in auto, common warning, common shutdown
- Configurable LED lamps (5)
- Configurable for local language

Engine protection

- Overspeed shut down
- Low oil pressure warning and shut down
- High coolant temperature warning and shut down
- High oil temperature warning (some models)
- Low coolant level warning or shut down
- Low coolant temperature warning
- High and low battery voltage warning
- Weak battery warning
- Dead battery shut down
- Fail to start (overcrank) shut down
- Fail to crank shut down
- Redundant start disconnect
- Cranking lockout
- Sensor failure indication

Engine data

- DC voltage
- Lube oil pressure
- Coolant temperature
- Lube oil temperature (some models)
- Engine speed

AmpSentry AC protection

- Over current and short-circuit shut down
- Over current warning
- Single and three phase fault regulation
- Over and under voltage shut down
- Over and under frequency shut down
- Overload warning with alarm contact
- Reverse power and reverse Var shut down
- Excitation fault

Alternator data

- Line-to-Line and Line-to-Neutral AC volts
- Three phase AC current
- Frequency
- Total and individual phase power factor, kW and kVA

Other data

- Genset model data
- Start attempts, starts, running hours
- kW hours (total and since reset)
- Fault history
- Load profile (hours less than 30% and hours more than 90% load)
- System data display (optional with network and other PowerCommand gensets or transfer switches)

Governing

- Digital electronic isochronous governor
- Temperature dynamic governing
- Smart idle speed mode
- Glow plug control (some models)

Voltage regulation

- Digital PWM electronic voltage regulation
- Three phase Line-to-Neutral sensing
- Suitable for PMG or shunt excitation
- Single and three phase fault regulation
- Configurable torque matching

Control functions

- Data logging on faults
- Fault simulation (requires InPower)
- Time delay start and cooldown
- Cycle cranking
- PCCNet interface
- Configurable customer inputs (4)
- Configurable customer outputs (4)
- Configurable network inputs (8) and outputs (16) (with optional network)
- Remote emergency stop

Options

- LED bargraph AC data display
- Thermostatically controlled space heater
- Key-type mode switch
- Ground fault module
- Auxiliary relays (3)
- Echelon LONWORKS interface
- Modion Gateway to convert to Modbus (loose)
- PowerCommand iWatch web server for remote monitoring and alarm notification (loose)
- Digital input and output module(s) (loose)
- Remote annunciator (loose)

For further detail see document S-1409.
Ratings 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 8526. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-Time Running Power (LTP):
Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528.

Prime Power (PRP):
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, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP):
Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.

This outline drawing is for reference only. See respective model data sheet for specific model outline drawing number.

Do not use for installation design

Codes and standards

This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.

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.

U.S. EPA

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