

# 200kVA Generator Datasheet PDF - Complete Technical Specifications and Download Guide

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# 200kVA Generator Datasheet PDF - Complete Technical Specifications and Download Guide

## Introduction

The 200kVA generator occupies a critical position in the industrial power generation landscape, serving as the backbone for medium to large-scale commercial operations, manufacturing facilities, healthcare institutions, and infrastructure projects. This comprehensive datasheet delivers complete technical specifications, operational parameters, and application guidance for 200kVA diesel generator sets, providing engineers, facility managers, and procurement specialists with the authoritative information needed for specification, installation, and maintenance decisions.

Delivering 160kW of prime power at 0.8 power factor, the 200kVA generator represents a significant step up in capacity from smaller units, enabling support for larger load centers and more demanding applications. These units are commonly deployed in environments requiring reliable backup power for critical operations, prime power for remote installations, and continuous power for industrial processes. The 200kVA capacity offers an excellent balance of power density, fuel efficiency, and operational flexibility that makes it a preferred choice across multiple industries.

Modern 200kVA generators feature advanced emissions-compliant engines, sophisticated digital control systems, and comprehensive protection mechanisms. The integration of electronic fuel management, variable speed governing, and intelligent load management enables these units to meet stringent environmental regulations while delivering exceptional performance and reliability. This datasheet encompasses all essential technical parameters necessary for comprehensive system design and implementation.

## Technical Specifications

### *Engine Specifications*

Parameter	Specification
Prime Power Output	200 kVA / 160 kW
Standby Power Output	220 kVA / 176 kW
Rated Voltage	400V / 230V (3-phase)
Rated Frequency	50 Hz
Rated Current (Prime)	288.7 A
Power Factor	0.8 (lagging)
Engine Type	4-cycle, Turbocharged Intercooled Diesel
Number of Cylinders	6
Displacement	7.0L - 8.9L
Bore x Stroke	Varies by manufacturer
Compression Ratio	16.0:1 - 17.5:1
Aspiration	Turbocharged with charge air cooler
Governor Type	Electronic

| Governor Class | ISO 8528-5 Class G3 |

### ***Fuel System Specifications***

| Parameter | Specification |

|-----|-----|

| Fuel Consumption (100% Load) | 42-50 L/hr |

| Fuel Consumption (75% Load) | 32-38 L/hr |

| Fuel Consumption (50% Load) | 24-28 L/hr |

| Fuel Type | ASTM D975 No. 2-D Diesel |

| Fuel Tank Capacity (Base) | 300-400 L |

| Fuel Tank Capacity (Optional) | Up to 1000 L |

| Fuel Injection System | Common rail direct injection |

| Fuel Filter Type | Dual-stage with water separator and priming pump |

### ***Electrical Specifications***

| Parameter | Specification |

|-----|-----|

| Alternator Type | Brushless, self-excited, self-regulated |

| Insulation Class | H |

| Protection Class | IP23 (standard) / IP44 (optional) |

| Voltage Regulation |  $\pm 1.0\%$  (steady state) |

| Frequency Regulation |  $\pm 0.5\%$  (isochronous) |

| THD (Total Harmonic Distortion) |  $< 5\%$  |

| Transient Response (Load Step) | Recovers to  $\pm 10\%$  within 3 seconds |

| Starting Capability | 60% of rated kVA in one step |

| Alternator Cooling | Self-ventilated with external fan |

### ***Physical Specifications***

| Parameter | Specification |

|-----|-----|

| Length (Canopy) | 2800-3200 mm |

| Width (Canopy) | 1100-1300 mm |

| Height (Canopy) | 1500-1700 mm |

| Dry Weight (Canopy) | 2200-2800 kg |

| Operating Weight | 2500-3200 kg |

| Sound Level at 1m (Canopy) | 68-76 dB(A) |

| Sound Level at 7m (Canopy) | 58-66 dB(A) |

| Cooling System | Radiator with belt-driven fan |

| Coolant Capacity | 25-35 L |

### ***Environmental Specifications***

| Parameter | Specification |

|-----|-----|

| Operating Temperature Range | -15°C to +50°C |

| Storage Temperature Range | -40°C to +60°C |

| Altitude Capability | Up to 1000m (standard), derate above |

| Humidity | Up to 95% non-condensing |

| Emissions Compliance | EU Stage V / EPA Tier 4 Final |

## **Performance Curves Description**

### ***Load-Fuel Consumption Curve***

The fuel consumption characteristics of a 200kVA generator demonstrate the relationship between electrical load and fuel consumption across the operating range. At 25% load (50 kVA output), fuel consumption typically ranges from 15-18 liters per hour, representing approximately 35-38% of full-load consumption. As load increases to the 50% point, consumption rises to approximately 24-28 L/hr, indicating improved brake specific fuel consumption at moderate loads.

The optimal efficiency region for a 200kVA generator lies between 60-85% load, where the engine operates most efficiently in terms of fuel consumed per kilowatt-hour generated. At 75% load (150 kVA), consumption reaches 32-38 L/hr. Full-load operation at 200 kVA requires 42-50 L/hr depending on engine efficiency and ambient conditions. Operating below 30% load for extended periods should be avoided to prevent wet stacking and reduced engine life.

### ***Temperature Derating Curve***

Ambient temperature significantly impacts generator output capacity. The standard rating applies at reference temperatures of 25°C or 40°C depending on the applicable standard. Above 40°C ambient, derating factors of approximately 1-2% per 5°C increment apply. At 50°C ambient, the generator may deliver only 92-96% of rated capacity. Cooling system performance, charge air cooler efficiency, and alternator cooling all contribute to temperature-related derating.

### ***Altitude Derating Curve***

High altitude operation reduces air density, affecting both engine combustion and cooling system performance. Standard ratings apply up to 1000 meters above sea level. Above this elevation, derating of 3-4% per 500 meters typically applies. At 2000m, expect 88-92% of rated capacity. At 3000m, output may drop to 80-85% of the sea-level rating. Turbocharged and intercooled engines show better altitude tolerance than naturally aspirated units, but derating remains necessary.

### ***Load Step Response Curve***

The load step response curve illustrates the generator's ability to accept sudden load applications while maintaining voltage and frequency within acceptable limits. A 200kVA generator with electronic governor can typically accept 60% of rated load (120 kVA) in a single step while maintaining voltage deviation within  $\pm 15\%$  and frequency deviation within  $\pm 10\%$ . Recovery to steady-state occurs within 2-4 seconds for voltage and 3-5 seconds for frequency. Sequential load application provides smoother operation and reduced stress.

## **Compatible Applications**

### ***Large Commercial Buildings***

200kVA generators serve as primary backup power for large office buildings, shopping malls, hotels, and mixed-use developments. They can support complete building operations including HVAC, elevators, lighting, security systems, and IT infrastructure. For buildings with total loads between 120-180 kW, a 200kVA unit provides adequate capacity with reserve margin.

### ***Healthcare Facilities***

Hospitals, medical centers, and diagnostic facilities require reliable backup power for life-safety systems, surgical suites, diagnostic imaging equipment, refrigeration for pharmaceuticals, and critical patient care areas. Healthcare installations must comply with regulatory requirements for automatic transfer, fuel storage, and testing protocols.

### ***Manufacturing Plants***

Medium-sized manufacturing operations utilize 200kVA generators for production equipment, process controls, compressed air systems, material handling, and environmental controls. The robust construction withstands industrial environments while providing reliable power for continuous or intermittent operations.

### ***Data Centers and IT Facilities***

Server rooms, telecommunications facilities, and data centers depend on 200kVA generators for uninterrupted power supply. These applications require generators with fast response times, clean power output, and automatic transfer capabilities. Parallel operation with UPS systems provides seamless power transitions.

### ***Educational Institutions***

Universities, colleges, and large school campuses install 200kVA generators to power academic buildings, laboratories, dormitories, dining facilities, and safety systems. Multiple generators may be paralleled to serve campus-wide power requirements with redundancy.

### ***Water and Wastewater Treatment***

Municipal water treatment plants and wastewater facilities use 200kVA generators to power pumps, blowers, chemical dosing systems, and control systems. Reliable backup power ensures continuous operation essential for public health and environmental protection.

### ***Event Venues and Sports Facilities***

Stadiums, convention centers, and entertainment venues require substantial backup power for lighting, HVAC, broadcasting equipment, safety systems, and concession operations. 200kVA generators provide reliable power for these high-profile applications.

## Download PDF Section

### *Official Datasheet Downloads*

Comprehensive technical datasheets for 200kVA generators are available for download from authorized manufacturer websites and distributor portals. These PDF documents contain detailed specifications, performance curves, dimensional drawings, wiring diagrams, and installation instructions. Select the appropriate model variant, emissions level, and control system configuration when requesting documentation.

### *Documentation Package Components*

A complete 200kVA generator documentation set includes:

- Technical specification sheet with performance data
- Dimensional drawings (plan, elevation, isometric, and foundation)
- Electrical schematics and connection diagrams
- Control panel layout and wiring diagrams
- Installation manual with foundation requirements
- Fuel system design guidelines
- Ventilation and exhaust requirements
- Operation and maintenance manual
- Parts catalog with component specifications
- Warranty documentation and registration forms

### *Technical Support Resources*

Manufacturer technical support teams provide assistance with:

- Application engineering and sizing calculations
- Installation and commissioning guidance
- Troubleshooting and diagnostic support
- Spare parts identification and ordering
- Service scheduling and maintenance planning
- Training programs for operators and technicians

## Frequently Asked Questions

1. What is the fuel consumption of a 200kVA generator at full load?

At full rated load (200 kVA / 160 kW), a modern 200kVA diesel generator typically consumes between 42-50 liters per hour, depending on engine efficiency, fuel quality, and ambient conditions. Consumption varies by manufacturer and engine technology, with common rail injection systems generally offering better fuel economy.

## 2. How many houses can a 200kVA generator power?

A 200kVA generator delivering 160 kW can theoretically power approximately 50-80 average homes, assuming 2-3 kW per household demand factor. However, actual capacity depends on load diversity, starting currents, and power factor. For residential subdivisions, careful load analysis is essential.

## 3. What is the recommended foundation for a 200kVA generator?

A 200kVA generator requires a reinforced concrete foundation with minimum dimensions of 150% of the generator footprint, thickness of 200-300mm, and mass equal to or greater than the generator weight. The foundation should be isolated from building structures to prevent vibration transmission.

## 4. How often should the oil be changed in a 200kVA generator?

Oil change intervals for 200kVA generators are typically 250-500 operating hours or annually, whichever occurs first. Severe duty applications (dusty environments, frequent starting, low-load operation) may require more frequent changes. Follow manufacturer recommendations for specific oil types and capacities.

## 5. What size automatic transfer switch (ATS) do I need for a 200kVA generator?

For a 200kVA generator with rated current of 288.7A, a 320A or 400A automatic transfer switch is typically recommended. The ATS should be rated for the full load current and suitable for the application class (emergency, legally required, or optional standby).

## 6. Can a 200kVA generator run on biodiesel?

Many modern 200kVA generators can operate on biodiesel blends up to B20 (20% biodiesel, 80% petroleum diesel) with manufacturer approval. Higher blends may require modifications and can affect warranty coverage. Fuel system components must be compatible with biodiesel properties.

## 7. What is the starting current requirement for a 200kVA generator?

Starting current for the engine typically requires 24V DC system with battery capacity of 150-200 Ah. The starter motor draws 800-1200A during cranking. Adequate battery capacity and proper cable sizing ensure reliable starting, especially in cold weather conditions.

## 8. How long can a 200kVA generator run continuously?

Prime-rated 200kVA generators can run continuously at varying loads with only periodic maintenance shutdowns. Standby-rated units are designed for limited hours (typically less than 200 hours per year) during utility outages. Continuous operation requires proper ventilation, cooling, and maintenance.

## 9. What emissions controls are on a 200kVA generator?

Modern 200kVA generators incorporate multiple emissions control technologies including electronic fuel injection, exhaust gas recirculation (EGR), diesel oxidation catalysts (DOC), diesel particulate filters (DPF), and selective catalytic reduction (SCR) with DEF injection to meet Stage V and Tier 4 Final standards.

## 10. How do I size a generator for motor starting?

Motor starting requires consideration of starting method (direct online, star-delta, VFD) and inrush current. Direct online starting typically requires generator capacity 3-4 times the motor rating. Star-delta starting reduces

requirement to approximately 2 times motor rating. Consult manufacturer sizing software for accurate calculations.

#### 11. What maintenance does a 200kVA generator require?

Routine maintenance includes daily inspections (fluid levels, visual checks), weekly test runs, monthly battery and transfer switch tests, quarterly filter inspections, and annual comprehensive service including oil, filters, coolant, and component inspection. Follow manufacturer maintenance schedules for specific requirements.

#### 12. Can I parallel two 200kVA generators?

Yes, two 200kVA generators can be paralleled to provide 400 kVA total capacity when equipped with appropriate synchronizing controls and switchgear. Paralleling requires matching voltage, frequency, phase rotation, and governor characteristics. Both manual and automatic synchronizing systems are available.

#### 13. What is the expected life of a 200kVA generator?

With proper maintenance and operation, a 200kVA diesel generator can achieve 20,000-30,000 operating hours before major overhaul. In standby applications with limited running hours, service life can exceed 25-30 years. Operating practices and maintenance quality significantly impact longevity.

#### 14. How much ventilation does a 200kVA generator need?

A 200kVA generator requires adequate ventilation for combustion air, cooling air, and radiator heat rejection. Minimum room ventilation rates typically range from 1.5-2.5 m<sup>3</sup>/s depending on ambient temperature and installation configuration. Proper airflow design prevents overheating and ensures reliable operation.

#### 15. What is the difference between 50Hz and 60Hz generators?

The frequency difference (50Hz vs 60Hz) affects engine speed (1500 vs 1800 RPM for 4-pole alternators), output power, and compatibility with regional electrical systems. 200kVA generators are designed for specific frequencies and cannot be converted between 50Hz and 60Hz without significant modifications.

## Related Downloads

### *Engine Technical Documentation*

- Cummins 6BTAA-G5 Engine Specifications
- Perkins 1106C-70TAG2 Technical Manual
- Volvo Penta TAD941GE Engine Datasheet
- Deutz BF6M1013FC Engine Workshop Manual
- FPT NEF67 Engine Technical Specifications

### *Alternator Documentation*

- Stamford S5L1S Alternator Datasheet
- Leroy Somer LSA46.3 Technical Manual
- Mecc Alte ECO46-1S/4 Specifications
- Marathon Electric 364 Datasheet

- Siemens 1FC6 Alternator Technical Data

### ***Control System Manuals***

- Deep Sea Electronics DSE8610 Auto Mains Failure Controller
- ComAp IntelliGen-NT-CB Parallel Controller Manual
- Woodward EasyGen-3000 Series Operation Manual
- Deif AGC-4 Automatic Genset Controller
- Smartgen HGM6120N Controller Manual

### ***Installation Standards and Guidelines***

- ISO 8528-9:2017 Reciprocating Internal Combustion Engine Driven Alternating Current Generating Sets - Part 9: Measurement and Evaluation of Mechanical Vibration
- BS 7671 Wiring Regulations for Generator Connections
- NFPA 110 Standard for Emergency and Standby Power Systems
- IEC 60204-1 Safety of Machinery - Electrical Equipment
- Building Regulations Approved Document B - Fire Safety

### ***Application Guides***

- Generator Sizing Guide for HVAC Loads
- Motor Starting Application Note
- Paralleling Switchgear Design Guide
- Fuel System Installation Best Practices
- Sound Attenuation and Noise Control Guide
- Seismic and Wind Restraint Guidelines

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