Specification Sheet

Natural Gas Generator Set QSK60 Series Engine

1000 kW – 1400 kW
60 Hz Continuous & Standby
EPA NSPS Stationary
EPA Non-Road Mobile

Description

This Cummins® gas generator set is a fully integrated power generation system utilizing state of the art technology that results in optimum performance and efficient use of fuel for Continuous, CHP, Peaking, and Standby applications.

Features

Exhaust Emissions - Lean burn technology provides exhaust emissions levels as low as 0.7 g/hp-hr NO_x. EPA NSPS Stationary and EPA Non-Road Mobile certified at 1.0 g/hp-hr NO_x.

Cummins Heavy-duty Engine - Rugged 4-cycle lean burn gas combustion engine utilizing full authority electronic engine management and monitoring.

Alternator - Several alternator sizes offer selectable voltage and temperature rise with low reactance 2/3 pitch windings; low waveform distortion with non-linear loads, fault clearing short circuit capability, bearing and stator RTDs, anti-condensation heater, class F or H insulation (see alternator datasheet for details). Mechanically strengthened for use on utility paralleling with unreliable grid.

Permanent Magnet Generator (PMG) - Excitation system offers enhanced motor starting and fault clearing short circuit capability.

Control System - The PowerCommand 3.3® generator set control is standard equipment and provides total genset system integration including full paralleling capability in grid or load share mode, precise frequency and voltage regulation, alarm and status message display, AmpSentry™ protection, output metering, auto-shutdown at fault detection and a user interface panel installed onto the genset. Optional remote operator panels are also available.

Cooling System - The generator set is equipped with the capability to interface with a remote radiator or heat exchanger.

Warranty and Service - Backed by a comprehensive warranty and worldwide distributor network that can provide all levels of service from replacement parts to performance guarantee programs.

Model*	Standby Rating, kW (kVA)**	Continuous Rating, kW (kVA)	Configuration	NOx Emissions, g/hp-hr	Emissions Compliance
C1000N6	1000 (1250)		4 pole direct drive	1.0	EPA NSPS Stationary EPA Non-Road Mobile
C1250N6	1250 (1563)		4 pole direct drive	1.0	EPA NSPS Stationary EPA Non-Road Mobile
C1350N6	1350 (1688)		4 pole direct drive	1.0	EPA NSPS Stationary EPA Non-Road Mobile
C1400N6C		1400 (1750)	4 pole direct drive	0.7	
				1.0	EPA NSPS Stationary EPA Non-Road Mobile

*Genset is capable of operating between 0.8 lagging and 1.0 power factor. All fuel consumption and heat balance data is at 1.0 power factor.
**Ratings indicate available power for standby loads including electric fan parasitics.

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Generator Set Specifications

Governor regulation class	ISO 8528 Part 5, Class G1 with exceptions - see PTS (Prototype Test Support) Data Sheet
Voltage regulation, no load to full load	± 0.5%
Random voltage variation	± 0.5%
Frequency regulation	Isochronous
Random frequency variation	± 0.25%
Radio frequency emissions compliance	EN61000-6-2; EN61000-6-4; FCC Part 15 Subpart B; ICES-002; AS/NZS 2557
Single step load pickup	Generator set configuration dependent – consult factory for details

Engine Specifications

Design	4 cycle, V-block, turbo charged low temperature and after-cooled
Bore	159 mm (6.25 in.)
Stroke	190 mm (7.48 in.)
Displacement	60.3 L (3685 $in.^3$)
Cylinder block	Cast iron, V16
Battery charging alternator	None
Starting voltage	24 volts, negative ground
Fuel system	Lean burn
Ignition system	Individual coil on plug
Air cleaner type	Dry replaceable element
Lube oil filter type(s)	Full flow and bypass filters
Breather	Breather filter

Alternator Specifications

Design	Brushless, 4 pole, revolving field
Stator	2/3 pitch
Rotor	Two bearing
Insulation system	Class F and H see ADS (Alternator Data Sheet) for details
Standard temperature rise	105 °C (221 °F) Continuous @ 40 °C (104 °F) ambient
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, < 3% for any single harmonic
Telephone Influence Factor (TIF)	< 50% per NEMA MG1-22.43
Telephone Harmonic Factor (THF)	< 3%

Available Voltages

60 Hz Three phase Line – Neutral/Line – Line

- 240/416
- 254/440
- 277/480
- 347/600
- 2400/4160
- 7200/12470
- 7620/13200
- 7970/13800

Generator Set Options and Accessories

Engine

- NO_x 1.0 g/hp-hr
- NO_x 0.7 g/hp-hr
- Natural gas fuel methane index as low as 55 for some models

Accessories

- Exhaust silencers
- Gas train
- Radiators
- Bladder expansion tank
- Heat exchanger
- Exhaust heat recovery

Control Panel

Remote operator panel with HMI320

Warranty

- Prime 1yr Unlimited Hours Comprehensive Base Warranty
- Standby 2yrs 1000 Hours Comprehensive Base Warranty
- Standby 3, 4, or 5yrs Extended Warranty
- Prime/Peaking 2, 3, 5, or 10yrs Extended Warranty

Alternator

- 80 °C (176 °F) temperature rise
- 105 °C (221 °F) temperature rise
- 125 °C (257 °F) temperature rise

Note: Some voltages and options may not be available on all models - consult factory for availability.

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PowerCommand 3.3 Control System

The PowerCommand control system is a microprocessor based genset monitoring, metering and control system designed to meet the demands of today's engine driven gensets. The integration of all control functions into a single control system provides enhanced reliability and performance, compared to conventional genset control systems. These control systems have been designed and tested to meet the harsh environment in which gensets are typically applied. Major features include:

- AmpSentry protection providing a full range of alternator protection functions matched to the alternator provided.
- Extended paralleling (peak shave/base load) regulates the genset real and reactive power output while paralleled to the utility. Power can be regulated at either the genset or utility bus monitoring point.
- Digital frequency synchronization and voltage matching.
- Isochronous load share.
- Droop kW and kVAr control.
- Real time clock for fault and event time stamping.
- Real time clock for start/stop to initiate a test with or without load, or a Base load or Peak shave session.
- Digital voltage regulation. Three phase full wave FET type regulator.
- Genset/Engine monitoring and protection.
- Utility/AC bus metering and protection.
- Modbus® interface for interconnecting to customer equipment.

Operator/Display Panel

- Auto/Manual/Run/Stop mode selectors.
- Alpha-numeric display with pushbutton access for viewing engine and alternator data and providing setup, controls and adjustment.
- Circuit breaker position indication and manual control.
- 320 x 240 pixels graphic LED backlight LCD.
- Multiple language support.

Engine Protection

- Engine vitals - oil temperature and pressure, coolant temperature and levels.
- Derate.
- Configurable alarm and status inputs.
- Emergency stop.
- Low and high battery voltage warning.
- Weak battery warning.
- Dead battery shutdown.
- Fail to start (overcrank) shutdown.
- Fail to crank shutdown.
- Cranking lockout.

Engine Data

- Oil temperature and pressure.
- Coolant temperature and pressure, HT and LT.
- Intake manifold pressure and temperature.
- Exhaust temperature and pressure.
- Engine electronics temperature and DC voltage.
- Gas inlet and downstream pressures, mass flow rate, and control valve position.
- Spark advance and knock level/count, per cylinder.
- Lube oil status, priming status.
- Oil and engine heater status.
- Start system status.
- Compressor and compressor bypass status.
- Auxiliary power supply status.

AmpSentry Alternator Protection

- Overcurrent and short circuit shutdown.
- Single and three phase fault current regulation.
- Over and under voltage shutdown.
- Over and under frequency shutdown.
- Overload warning and load shed alarm output.
- Reverse power and Var shutdown.
- Excitation fault.

Alternator Data

- AC voltage, Line-to-Line and Line-to-Neutral.
- Three phase AC current.
- Frequency.
- Total and individual phase power factor, kW and kVA.
- Alternator heater status.
- Winding and bearing temperatures.

Other Data

- Genset hardware data.
- Data logs - operational data.
- Fault history - up to 32 events.
- Start attempts, starts, running hours, kW hours.
- Engine data - operational data, monitored status functions, auxiliary system inputs, etc.
- Service adjustments - operational, customer configurable set up, calibration, etc.

Paralleling Data, Functions and Protection

- Genset and utility/AC bus source AC metering.
- First start sensor™ system.
- Active digital phase lock loop synchronizer.
- Sync check.
- Isochronous kW and kVAr load share controls.
- kW import/export and kVAr/PF control for extended utility (mains) paralleling.
- Multiple genset load demand control.
- Power transfer control.
- Breaker control and status monitoring/warning.
- Inputs for remote kW and kVAr control.

For further detail on PowerCommand 3.3 see document S-1570.

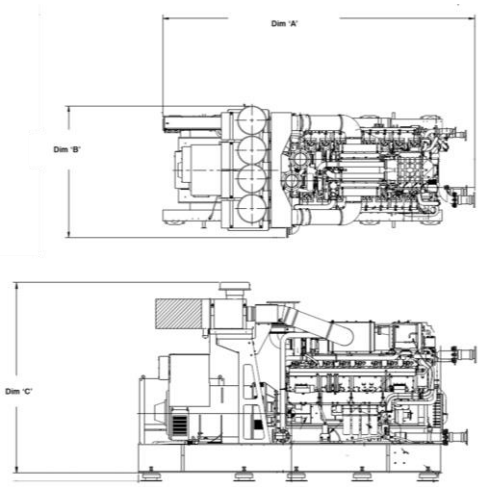
Base Load (continuous) Definitions

Applicable for supplying power continuously to a constant load up to the full output rating for unlimited hours. No sustained overload capability is available for this rating.

Consult authorized distributor for rating (equivalent to continuous power in accordance with ISO 8528, ISO 3046, AS2789, DIN 6271, and BS 5514). This rating is not applicable to all generator set models.

Emergency Standby Power (ESP) Definition

Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528.



This outline drawing is to provide representative configuration details for model series only.

See respective model data sheet for specific model outline drawing number.

Do not use for installation design

Generator Set Data Sheets

60 Hz

Model	Data sheet	MN*	Emissions g/hp-hr	LT (°C)	HT (°C)
C1000N6	D-6455	55	1.0	50	90
C1250N6	D-6454	72	1.0	50	90
C1350N6	D-6453	78	1.0	50	90
C1400N6C	D-3246	75	0.7	50	90
C1400N6C	D-6452	78	1.0	50	90

* MN = Methane

Dimensions and Weights

Model	Dim 'A' mm (in.)	Dim 'B' mm (in.)	Dim 'C' mm (in.)	Set weight* wet kg (lbs)
C1000N6	5261 (207.1)	2231 (87.84)	2972 (116.99)	12877 (28388)
C1250N6	5261 (207.1)	2231 (87.84)	2972 (116.99)	12877 (28388)
C1350N6	5261 (207.1)	2231 (87.84)	2972 (116.99)	12877 (28388)
C1400N6C	5261 (207.1)	2231 (87.84)	2972 (116.99)	12877 (28388)

*Weights represent a set with standard features. See outline drawings for weights of other configurations.

Codes and Standards

ISO 9001	This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.	PTS	The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design.
U.S. EPA	The engine used in this generator set meets U.S. EPA emission limits under 40 CFR Part 60 and 1048 (Stationary and Mobile).	CE	This generator set is available with CE certification subject to EU RoHS exclusion per EU 2011/65

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

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S-6475 PD00000187 (10/19)