Natural gas generator set QSV91 series engine

> Specification sheet
1250 kW - 2000 kW

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Power Generation

Description

This Cummins Power Generation 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 duty, CHP and low BTU applications.

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.

Features

Exhaust emissions – Lean burn technology provides exhaust emissions levels as low as 250 mg/Nm^3 (0.5 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.

Permanent magnet generator (PMG) – Offers enhanced motor starting and fault clearing short circuit capability.

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, class F or H insulation (see Alternator Data Sheet for details), bearing and stator RTDs and anti-condensation heater. Mechanically strengthened for use on utility paralleling with unreliable grid.

Control system – The Generator Control Panel (GCP) with PowerCommand® genset control 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, an integrated PLC, and a touchscreen user interface in a remotely installable cabinet.

Cooling system – The generator set is equipped with the capability of interfacing 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 replacements parts to performance guarantee programs.

50 Hz				60 Hz			
Model	**kW (kVA)**	**Engine rpm**	**Configuration**	**Model**	**kW (kVA)**	**Engine rpm**	**Configuration**
GQNA	1540 (1540)	1500	4 pole direct drive	**GQNA**	1250 (1250)	1200	6 pole direct drive
GQNB	1750 (1750)	1500	4 pole direct drive	**GQPB**	1750 (1750)	1514	4 pole alternator through gearbox
GQNC	2000 (2500)	1500	4 pole direct drive	**GQPC**	2000 (2500)	1514	4 pole alternator through gearbox

*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.

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Generator set specifications

Governor regulation class	ISO 8528 Part 1, 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	IEC 801.2 through IEC 801.5; MIL STD 461C, Part 9
Single step load pickup	See PTS data sheet for details

Engine specifications

Design	4 cycle, V-block, turbocharged low temperature aftercooled
Bore	180 mm (7.09 in)
Stroke	200 mm (7.87 in)
Displacement	91.6 liters (5590 in3)
Cylinder block	Cast iron, V18
Battery charging alternator	None
Starting voltage	24 volt 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 or H see ADS (Alternator Data Sheet) for details
Standard temperature rise	105 °C (221 °F) Continuous @ 40 °C (104 °F) ambient
Exciter type	PMG (Permanent Magnet Generator)
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform total harmonic distortion	< 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

50 Hz Three phase line–neutral/line-line			
• 220/380	• 230/400	• 240/415	• 254/440
• 1905/3300	• 3640/6300	• 3810/6600	• 5775/10000
• 6060/10500	• 6350/11000		

Note: Some voltages may not be available on all models. Consult factory for availability.

Generator set options and accessories

Engine
- ☐ NO_x 250 mg/Nm^3 (0.5 g/hp-hr)
- ☐ NO_x 350 mg/Nm^3 (0.9 g/hp-hr)
- ☐ NO_x 500 mg/Nm^3 (1.2 g/hp-hr)
- ☐ Natural gas fuel methane index as low as 52 for some models
- ☐ High temperature cooling circuit outlet up to 110 °C (230 °F)
- ☐ Air starter
- ☐ Low BTU Gas

Alternator
- ☐ 80 °C (176 °F) rise alternator
- ☐ 105 °C (221 °F) rise alternator

Control panel
- ☐ Paralleling bus PTs (69 V, 120 V, 240 V, 346 V)

Generator set
- ☐ CE Certification

Accessories
- ☐ Exhaust silencers
- ☐ Gas Train
- ☐ Radiators
- ☐ Bladder Expansion Tank
- ☐ Heat Exchanger
- ☐ Exhaust Heat Recovery

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

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Generator control panel

Stand alone remote mounted cabinet

PC based HMI

- Micro-processor based graphic interface (touchscreen)
- Layered menus for ease of operation

PLC based auxiliary control

- Communication handling procedures
- Protocol interfaces
- Control of plant auxiliaries

Stand alone or parallel operation

- Single or multi-set isolated bus operations
- Single set base load utility paralleling
- Base load utility paralleling control

PowerCommand Supervisor (PCS)

Features

- Integrated automatic voltage regulator
- Speed/load bias to engine governor control
- AmpSentry protection guards the electrical integrity of the alternator and power system from the effects of over current, over/under voltage, under frequency and overload conditions.
- Control components are designed to withstand the vibration levels typical in generator sets

Standard control description

- Analog % of current meter (amps)
- Analog % of load meter (kW)
- Analog AC frequency meter
- Analog AC voltage meter
- Cycle cranking control
- Digital display panel
- Emergency stop switch
- Idle mode control
- Menu switch
- Panel backlighting
- Remote starting, 12 V, 2 wire
- Reset switch
- Run-off-auto switch
- Sealed front panel, gasketed door
- Self diagnostics
- Separate customer interconnection box
- Voltmeter/ammeter phase selection

Standard protection functions

Warnings

- High coolant temperature
- High DC voltage
- Low coolant temperature
- Low DC voltage
- Low fuel-day tank
- Low oil pressure
- Oil pressure sender fault
- Over current
- Overload load shed contacts
- Temperature sender fault
- Up to four customer fault inputs
- Weak battery

Shutdowns

- Emergency stop
- Fail to crank
- High AC voltage
- High coolant temperature
- Low AC voltage
- Low coolant level (option for alarm only)
- Low oil pressure
- Magnetic pickup failure
- Overcrank
- Over current
- Overspeed
- Short circuit
- Underfrequency

Standard performance data

AC alternator

- Current by phase
- Kilowatts
- Kilowatt hours
- Power factor
- Voltage line to line
- Voltage line to neutral

Engine data

- Battery voltage
- Coolant temperature
- Engine running hours
- Engine starts counter
- Oil pressure
- Oil temperature
- RPM

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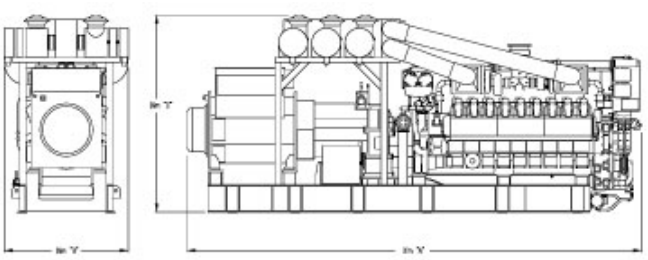
Power Generation

Base load (continuous) rating definition

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, DIN6271, and BS5514).



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 low BTU

Model	Data sheet	CR*	Emissions g/hp-hr	LT (°C)	HT (°C)
1750 GQPB	D-3364	11.4:1	500	50	103
1750 GQPB	D-3365	12:1	500	50	103

50 Hz low BTU

Model	Data sheet	CR*	Emissions mg/NM³	LT (°C)	HT (°C)
1750 GQNB	D-3362	11.4:1	500	50	103
1750 GQNB	D-3363	12:1	500	50	103

60 Hz pipeline gas

Model	Data sheet	MN**	Emissions g/hp-hr	LT (°C)	HT (°C)
1250 GQNA	D-3282	60	500	50	95
1250 GQNA	D-3283	56	350	50	95
1250 GQNA	D-3284	63	500	50	110
1250 GQNA	D-3285	59	350	50	110
1250 GQNA	D-3286	70	500	50	95
1250 GQNA	D-3287	66	350	50	95
1250 GQNA	D-3288	73	500	50	110
1250 GQNA	D-3289	69	350	50	110
1750 GQPB	D-3307	67	500	50	95
1750 GQPB	D-3308	63	350	50	95
1750 GQPB	D-3311	77	500	50	95
1750 GQPB	D-3312	73	350	50	95
1750 GQPB	D-3313	80	500	50	110
1750 GQPB	D-3314	76	350	50	110
2000 GQPC	D-3325	78	1.2	45	92
2000 GQPC	D-3339	76	0.5	50	92

* CR = Compression ratio **MN = Methane

50 Hz pipeline gas

Model	Data sheet	MN**	Emissions mg/NM³	LT (°C)	HT (°C)
1540 GQNA	D-3290	52	500	50	95
1540 GQNA	D-3291	60	500	50	95
1540 GQNA	D-3292	56	350	50	95
1540 GQNA	D-3293	63	500	50	110
1540 GQNA	D-3294	59	350	50	110
1540 GQNA	D-3295	70	500	50	95
1540 GQNA	D-3296	66	350	50	95
1540 GQNA	D-3297	73	500	50	110
1540 GQNA	D-3298	69	350	50	110
1750 GQNB	D-3299	67	500	50	95
1750 GQNB	D-3300	63	350	50	95
1750 GQNB	D-3303	77	500	50	95
1750 GQNB	D-3304	73	350	50	95
1750 GQNB	D-3305	80	500	50	110
1750 GQNB	D-3306	76	300	50	110
2000 GQNC	D-3322	73	500	40	92
2000 GQNC	D-3323	70	350	40	92
2000 GQNC	D-3338	75	250	50	92
2000 GQNC	D-3359	80	500	50	92

Dimensions and weights

Model	Dim "A" mm (in)	Dim "B" mm (in)	Dim "C" mm (in)	Weight♦ wet kg (lbs)
1250 GQNA	5971 (235.1)	1720 (67.7)	3136 (123.5)	17595 (38709)
1750 GQPB	7302 (287.5)	1720 (67.7)	3136 (123.5)	22100 (48620)
1540 GQNA	5603 (220.6)	1720 (67.7)	3136 (123.5)	17057 (38515)
1750 GQNB	5921 (233.1)	1720 (67.7)	3136 (123.5)	19633 (43192)

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

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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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