



XQ1250G SOUND ATTENUATED GAS POWER MODULE 60 Hz — 1250 eKW CONTINUOUS

Caterpillar is leading the power generation marketplace with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

FEATURES



EMISSIONS

- 1.0 gram/bhp-hr NOx standard or an optional 0.5 gram/bhp-hr NOx nominal with adjusted ambient capability.

TRANSIENT RESPONSE

- Meets ISO8528 Class 1 criteria with 25% block loads and unloads at 1.0 gram/bhp-hr NOx. Consult factory for block load capability at 0.5 gram/bhp-hr NOx.

CAT® GAS GENERATOR SETS

- Factory designed, certified prototype tested with torsional analysis. Production tested and delivered to you in a package that is ready to be connected to your fuel and power lines. Supported 100% by your Caterpillar dealer with warranty on parts and labor. Extended warranty available in some areas. The generator set was designed in an ISO9001 compliant facility. Generator set and components meet or exceed the following specifications: AS1359, AS2789, ABGSM TM3, BS4999, DIN6271, DIN6280, EGSA101P, JEM1359, IEC34/1, ISO3046/1, ISO8528, NEMA MG1-22.



CATERPILLAR® SR4B GENERATOR

- Single bearing, wye connected, static regulated, brushless permanent magnet excited generator designed to match the performance and output characteristics of the Caterpillar gas engine that drives it.

RELIABLE, FUEL EFFICIENT GAS

- The compact, four-stroke-cycle gas engine combines durability with minimum weight while providing exceptional dependability, economy and power density. The fuel system is designed for maximum performance on low pressure (2 – 5 psi) pipeline natural gas.

CATERPILLAR SWITCHGEAR

- Full utility grade relays for maximum safety and reliability. Circuit breakers, bus bars, and connection panel ready to connect.

EXCLUSIVE CATERPILLAR DIGITAL VOLTAGE REGULATOR

- Three-phase sensing and adjustable Volts-per-Hertz regulation give precise control, excellent block loading, and constant voltage in the normal operating range.

SOUND ATTENUATED ISO CONTAINER WITH SPILL CONTAINMENT

- For ease of transportation and protection.
- 74 dB(A) or lower at 50 ft per SAE J1074 measurement procedure. Container is designed with 110% Spill Containment of all engine fluids with level sensors and warning light.

CONTAINER AND EXHAUST SYSTEMS COMPATIBLE WITH AFTERTREATMENT SYSTEMS

- Container has access panel on roof of container for ability to bypass muffler and easily connect external aftertreatment systems.

XQ1250G RENTAL POWER MODULE

- Includes: gas knockdown regulator, positive crankcase ventilation, lube oil make-up system, a 40 ft, 3 axle air ride undercarriage and rental power decals as standard features.

LEHE2487-01

FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Engine	1.0 gram/bhp-hr nominal emission level NOx Air cleaner, with service indicator Batteries, 2 sets Dual, 6 kW, jacket water heaters Lubricating oil Insulated muffler Radiator Service meter Sump pump Gas Engine Control Module (ADEM III based)	0.5 gram/bhp-hr nominal emission level NOx
Generator	SR4B brushless, 480 volt, PM excited three-phase Digital voltage regulator Space heater	4160 volt
Containerized Module	2 micron dry gas filter Air intake louvers Bus bar access door Sound attenuated (74 dB(A) @ 50 ft) 110% spill containment of all fluids with level sensors and warning light (option to remove) ISO hi-cube container Lockable doors Stainless steel hardware and hinges Vertical radiator and exhaust discharge plenum 24V service light Water ingress prevention system (option to remove)	120 VAC lighting Duplex receptacles Battery heater pads Motorized intake louvers Interior space heater Remote emergency stop Positive crankcase ventilation system (standard on rental) Lube oil make-up (standard on rental) Gas knockdown regulator (standard on rental)
Cooling	Standard cooling provides 104° ambient, for 1.0 gram/bhp-hr NOx, continuous rating	100° F ambient, for 0.5 gram/bhp-hr NOx, continuous rating
Switchgear	Floorstanding utility grade switchgear, 480V EMCP II+ components PLC based with alarm and control via touch screen display Manual operation and paralleling with or without PLC and touch screen Automatic start/stop with cool down timer Battery charger, heavy duty 20A Lock-out protective relaying: ANSI device 86 Utility grade relaying: ANSI device 27,47,51G, 59, 81O, 81U Generator circuit breaker, electrically operated Connection terminals, 3-phase and neutral Automatic paralleling Auxiliary power connections for jacket water heater, battery charger, space heaters	Floorstanding utility grade switchgear, 4160V Protective relaying: 50N, 50P, 51P, 59 Customer Interface Module Customer Communication Module Analog metering: W/WHIM, PFM, VARM, synchroscope

SPECIFICATIONS



CAT SR4B GENERATOR

Type.....	Static regulated brushless PM excited
Construction.....	Single bearing, close coupled
Three-phase.....	Wye connected — 6 lead
Insulation.....	Class H — 2 extra dips and bakes on random wound units
Enclosure.....	Drip proof
Alignment.....	Pilot shaft
Overspeed capability.....	130%
Voltage regulator.....	3-phase sensing with Volts-per-Hertz
Voltage regulation.....	Less than ± 5%
Voltage gain.....	Adjustable to compensate for engine speed droop and line loss
Wave form.....	Less than 5% deviation
TIF.....	Less than 50
THD.....	Less than 3%



CAT ENGINE

V-16, SCAC, 4-cycle watercooled gas	
Bore — mm (in).....	170 (6.7)
Stroke — mm (in).....	190 (7.5)
Displacement — L (cu in).....	69.0 (4210)
Compression ratio.....	11.1:1
Aspiration.....	Turbocharged-Separate Circuit Aftercooled
Fuel system.....	Electronic Ignition System
Governor type.....	Electronic Engine Control Module

SWITCHGEAR

480V/60 HZ

Floorstanding switchgear includes the following functions and features:

ELECTRONIC MODULAR CONTROL PANEL (EMCP II+) COMPONENTS

GENERATOR SET CONTROL (GSC)

Monitoring:

Sequentially rotating, backlit LCD display of engine hours, engine rpm, DC battery voltage, oil pressure, and water temperature. Includes pushbutton to hold display on any single parameter.

Protection:

Shutdowns — Overspeed, overcrank, high water temperature, low oil pressure, and emergency stop with LED indicator for each condition.

Alarms — Low coolant level

AC Metering:

Three-phase volts (L-L), amperes and frequency with phase select pushbutton, on backlit LCD. Metering accuracy is 0.5%.

Power Metering:

Real power, reactive power, percent rated power, power factor and energy output

Control:

Automatic starting with field adjustable cycle crank, failure to start (overcrank), and cooldown timer.

Programming and Diagnostics:

Includes field programmable set-points for engine control and monitoring variables and self diagnosis of EMCP II system component and wiring failures.

ALARM MODULE

Flashing LED warnings for: low coolant temperature, high coolant temperature (pre-alarm), low oil pressure (pre-alarm), engine control switch not in automatic, and low DC voltage. Includes alarm horn and acknowledge pushbutton.

ENGINE CONTROL SWITCH

Snap action rotary switch, four-position (off/reset, automatic, manual, stop/cooldown). Off/reset for engine shutdown and resetting faults, automatic for remote starting by customer contact closure, manual for local starting and manual paralleling, stop/cooldown for manual operation cooldown.

ALARM ACKNOWLEDGE/LAMP TEST SWITCH

Three-position, spring return to center switch for alarm acknowledge and lamp test of all discrete indicating lamps. Lamp test shall also sound the alarm horn.

TOUCH SCREEN DISPLAY

Display consists of multiple screens for monitoring and configuring switchgear alarms and setpoints.

The MAIN screen provides generator and utility volts, amps, frequency, kVA, kVAR, kW and Power Factor Metering data, generator breaker status, paralleling status, protective relaying status, and provides for start/load and stop/unload functions.

The SETUP screen provides user the ability to configure switchgear for load ramp value and time, local/remote control, configuring protective relaying for cooldown or shutdown on trip, and viewing of other factory configured setpoints.

The ANNUNCIATE screen provides real-time monitoring of switchgear alarms.

The ALARM screen provides alarm history and acknowledge to reset capability. (In addition to the mechanical Acknowledge Control/Lamp Test Switch also provided on the switchgear.)

The METERING screen provides individual phase metering, watt-hour metering and base load history.

SWITCHGEAR (continued)

EMERGENCY STOP PUSHBUTTON

Mushroom head, twist to reset, causes engine shutdown and tripping of the generator circuit breaker. Prevents engine starting when depressed.

AUTOMATIC PARALLELING

Automatically synchronizes and parallels generator with utility source. Also provides for manual paralleling.

MANUAL PARALLELING

Controls consist of generator and utility relaying, manual loading, potentiometer, synchronizing lights and switch. Protective relaying for manual paralleling provides for the same cooldown and shutdown alarm sequences as programmed for automatic paralleling.

CIRCUIT BREAKER

Fixed mounted, three-pole, manually operated, molded case circuit breaker with solid state trip unit for overload (time overcurrent) and fault (instantaneous) protection. Includes DC shunt trip coil activated on any generator set monitored fault. Circuit breaker is sized for full load capacity of the generator set at 0.8 power factor.

LOAD SHARE GOVERNOR

Electronic load sharing governor with speed adjust potentiometer, idle/rated switch, and isochronous/droop switch.

VOLTAGE REGULATOR

Standard Caterpillar generator-mounted digital voltage regulator with voltage adjust rheostat mounted in the floor standing switchgear.

CURRENT TRANSFORMERS (3)

Five-ampere secondary with shorting terminal strips

POTENTIAL TRANSFORMERS (3)

120 VAC secondary with primary and secondary fuse protection. Two connected to the generator side of the circuit breaker. One connected to the load side of the circuit breaker.

BUS BARS

Three-phase plus fully rated neutral bus bars with NEMA standard hole pattern for connection of customer load cables and generator cables. Bus bars are sized for full load capacity of the generator set at 0.8 power factor. Also includes ground bus, connected to the generator frame ground and container frame with holes for connection of field ground cable. Bus bars are accessible from outside of the power module via hinged, lockable cable access door.

ACCESSORY POWER

Three 240/120 VAC, 4-wire with ground, Edison Style shore power connections for jacket water heaters, generator space heater, and battery charger.

BATTERY CHARGER

24 VDC/20A battery charger with float/equalize modes and charging ammeter

TECHNICAL DATA

XQ1250G — 1800 rpm/60 Hz/480 Volts					
Emissions (NOx)		g/bhp-hr		1.0	
Aftercooler — SCAC temperature	Deg C	Deg F	54	130	54
Fuel pressure range	kPa	psi	14-34.5	2-5	14-34.5
Min. methane number			80		80
Package Performance Spec		DM5477		DM5478	
Power rating @ 0.8 pf (4)	ekW		1250		1250
Noise — package @ 15 m (50 ft)	dB(A)		74		74
Rating and Efficiency (100% Load)					
LHV of fuel	Btu/scf*****		925		925
Engine power	bhp		1818		1818
Engine efficiency (1)	%		37.1		36.1
Engine efficiency (2)	%		36.0		35.0
Electrical efficiency	%		34.2		33.3
Thermal efficiency	%		44.3		44.6
Total efficiency	%		80.3		79.6
Fuel Consumption (Heat Rate)					
100% load with fan (1)	Btu/bhp-hr	Btu/kW-hr	6863	9984	7055
Flow requirement @ 100% load	MMBtu/hr		12.4769		12.8260
100% load with fan (2)	Btu/bhp-hr	Btu/kW-hr	7078	10,297	7274
Flow requirement @ 100% load	MMBtu/hr		12.8678		13.2241
Ambient Capability (3)					
Altitude***	m	ft	740	2427	520
Ambient	Deg C	Deg F	40	104	38
Jacket water temperature (max. outlet)	Deg C	Deg F	92.2	198	92.2
Exhaust System					
Combustion air inlet flow rate	scfm	lb/hr	3931	17,435	4125
Exhaust stack gas temperature	Deg C	Deg F	530.0	986	523.3
Exhaust gas flow rate	cfm		11,484		11,939
Exhaust flange size (internal diameter)	mm	in	203.2	8.0	203.2
Alternator					
Motor starting capability @ 30% voltage dip*	kVA		3272		3272
Frame			824		824
Temperature rise	Deg C		105		105
Lube System					
Lube oil refill volume w/filter change for std. sump	L	Gal	401	106	401
Emissions (100% Load) (**)(****)					
NOx	g/bhp-hr	ppm	1.0	75	0.5
CO	g/bhp-hr	ppm	2.6	332	2.5
HC (total)	g/bhp-hr	ppm	4.4	995	5.4
HC (non-methane)	g/bhp-hr	ppm	0.66	76	0.81
Exhaust O ₂ (dry)	%		9.2		9.2

* Assumes synchronous driver.

** Emission data measurements are consistent with those described in EPA CFR 40 Part 89 Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state engine operating conditions of 25° C (77° F), 96.28 kPa (28.43 inches Hg) and fuel having an LHV of 35.6 MJ/N·m³ (905 Btu/cu ft) at 101.6 kPa (30 inches Hg) absolute and 0° C (32° F). Not to exceed emission data shown is subject to instrumentation, measurement, facility and engine fuel system adjustments.

*** For additional information on altitude capability contact factory.

**** PPM values corrected to 15% O₂.

$$***** \text{scf/hr} = \frac{(\text{Btu/bhp-hr})(\text{bhp})}{\text{Btu/scf}}$$

RATING DEFINITIONS AND CONDITIONS

Continuous — Output available without varying load for an unlimited time.

(1) **Rating and Fuel Consumption** are based on ISO3046/1 standard reference conditions of 25° C (77° F) and 100 kPa (29.61 inches hg). Fuel consumption tolerance is 0, +5% of full load data.

(2) **Rating and Fuel Consumption Tolerance** is ± 3% of full load data.

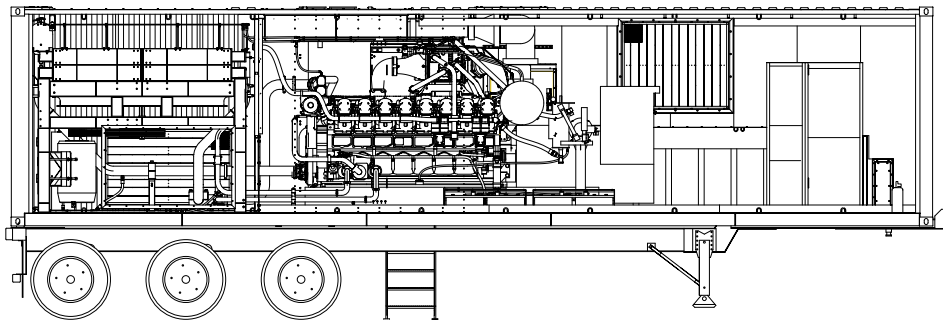
(3) **Rating and Fuel Consumption** based on ISO3046/1 conditions with nominal 2.5 kPa inlet restriction and 5 kPa exhaust restriction. All performance numbers listed on this page are at these conditions except fuel input (1).

(4) **Ratings** are based on pipeline natural gas having an LHV (low heat value) of 35.6 MJ/N·m³ (905 Btu/cu ft) and 80 MN. For values in excess of the altitude, temperature, inlet/exhaust restrictions, or for natural gas compositions different from the conditions listed, contact your local Caterpillar dealer.

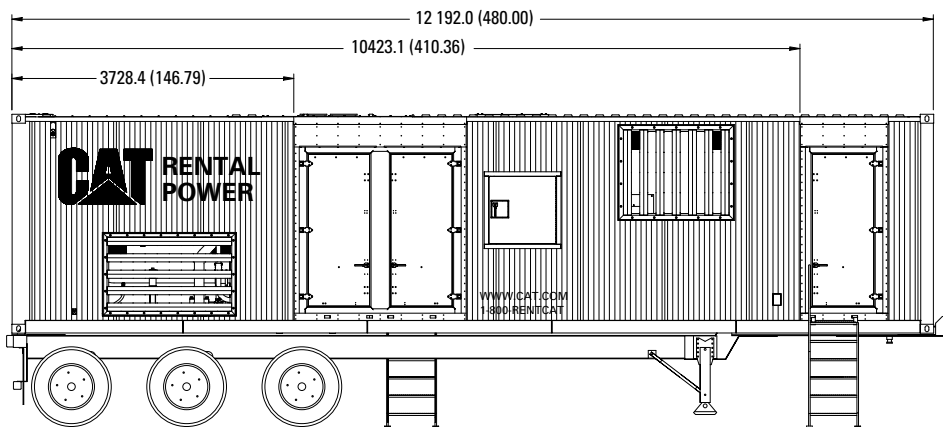
TECHNICAL DATA

Power Rating 60 Hz	ekW		Continuous 1250	
Engine and Container Information Engine model Container size Container dimensions	m	ft	12	G3516B 40 see below
Approximate Weight (Dry) — Container with Generator Set and Switchgear				
Including container	kg	lb	27 250	60,060
With undercarriage	kg	lb	32 241	71,060

CURBSIDE VIEW (Curbside wall removed to show roadside wall and interior components)



CURBSIDE VIEW



Container Dimensions		
Length	12 192.0 mm	480.00 in
Width	2438.4 mm	96.00 in
Height	4114.8 mm	162.00 in

Note: General configuration not to be used for installation. See general dimension drawings for detail.

www.CAT-ElectricPower.com

TMI Reference No.: DM5477 (1.0 g/bhp-hr), DM5478 (0.5 g/bhp-hr)

© 2003 Caterpillar
All rights reserved.
Printed in U.S.A.

LEHE2487-01 (7-03)

Materials and specifications are subject to change without notice.
The International System of Units (SI) is used in this publication.