

XQC1200 Power Module



IPP Rated 1150 kW
IPP Overload 1205 kW

POWER MODULE

50/60Hz Switchable Rating

Frequency	Voltage	IPP Rated kW (kVA)	IPP Overload kW (kVA)
50 Hz	400V	1150 (1438)	1205 (1506)
60 Hz	480V	1260 (1575)	1330 (1662)

FEATURES

SINGLE SOURCE SUPPLIER

- Generator set manufactured in ISO 9001:2000 compliant facility
- Package factory designed and production tested
- Generator set and components meet or exceed the following specifications: AS1359, AS2789, BS4999, DIN6271, DIN6280, EGSA101P, JEM1359, IEC 34/1, ISO3046/1, ISO8528, NEMA MG1-22

WORLDWIDE PRODUCT SUPPORT

- Cat® dealers provide extensive post sale support including maintenance and repair agreements
- Supported 100% by your Cat dealer with warranty on parts and labor
- Extended Service Coverage (ESC) options available for coverage beyond the Standard Warranty period

RELIABLE, FUEL EFFICIENT DIESEL ENGINE

- The compact, four-cycle Cat 3512C-HD turbocharged-aftercooled (SCAC) diesel engine provides proven durability and dependability
- Best-in-class fuel economy
- Fuel system operates on a variety of fuels
- 50/60 Hz switchable with neither software re-flashing, nor iron changes required
- Other engine features include: electric fuel priming, individual cylinder temperature monitoring, and extended filter change intervals

CAT HIGH EFFICIENCY GENERATOR

- Double bearing, wye-connected, brushless, permanent magnet excited, random wound design
- Stator winding and bearing temperature monitoring
- Coastal insulation protection and anti-condensation space heaters
- Generator inlet air filters

REDUCED ENVIRONMENTAL IMPACT

- 110% spill containment of onboard engine fluids
- Positive crankcase fumes ventilation
- Low BSFC and Low Emissions* ratings, switchable via Cat Electronic Technician (ET)
- * Does not conform to EPA/EU emissions standards

SOUND-ATTENUATED ENCLOSURE

- Provides 9-high stackable CSC enclosure for ease of transportation and protection
- Personnel doors (2 total) on both sides of the engine for service access
- Container doors on each end for ease of service
- Externally-accessible controls behind hinged door
- Service door for access to primary fuel filters
- Foldable, stowable awnings on engine room air inlets also serve as shipping covers
- Radiator louvers and louvered container end door are hinged for ease of cleaning and maintenance
- Externally-accessible, 100kAIC, 3-pole, motorized breaker (Optional 4-pole breaker)

CAT COOLING SYSTEM

- Vertical, non-stacked radiator cores and dimpled fins to minimize clogging
- Ambient capability at 750m (2,460ft) above sea level: 50 Hz – 40°C (104F); 60 Hz – 42°C (108F) Energy efficient fans (2) and VFD fan drive

ON-PACKAGE PARALLELING CONTROLS

- Auto paralleling using package mounted controls
- EMCP 4.3 offers engine and generator monitoring and protection
- AGC-4 provides paralleling, load sharing, VFD control, and additional generator protection

OTHER FEATURES

- 378-L (100gal) fuel tank with solenoid fill valve
- 113-L (30gal) engine lube oil make-up system
- Oil evacuation system for faster, cleaner oil changes
- 1.8m (6ft) stainless steel exhaust stack; stows inside container for transport
- Triple primary fuel filters with water separators, service valves, and differential pressure monitoring

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FACTORY INSTALLED STANDARD EQUIPMENT

SYSTEM	STANDARD EQUIPMENT
Engine	<p>Cat 3512C-HD heavy duty diesel engine Heavy duty, dual element, PowerCore air cleaners with service indicators Secondary fuel filters Full flow oil filters with water-cooled oil cooler. Requires API CI-4 or higher lube oil. Lubricating oil system includes make-up system (113-L tank), oil drain lines routed to the engine rail, and quick evacuation system for faster, cleaner oil changes Jacket water heater (9 kW, 3-phase 480VAC) with electric pump Fuel cooler and electric priming pump Electronic differential pressure monitoring of all filters Electronic ADEM™ A4 engine controls 24V electric starting motor</p>
Generator	<p>Double-bearing, SR-5 generator with anti-condensation space heaters (1.2 kW, 480VAC) Brushless, random-wound, permanent magnet excited, three-phase, 4-lead design Class H insulation operating at Class F temperature for extended life Cat Integrated Voltage Regulator (Cat IVR) Stator winding and bearing temperature sensors and RTD module Metallic mesh generator air inlet filters (washable) with differential pressure monitoring Coastal Insulation Protection</p>
Containerized Module	<p>20-ft ISO high-cube container, 9-High stackable, CSC certified Hinged, radiator air intake louvers Sound-attenuated engine room air intake louvers with foldable awnings that double as shipping covers Two (2) lockable personnel doors with panic releases Interior walls and ceilings insulated with 50 mm of acoustic paneling Side bus bar access door with external access load cable connections Shore power via distribution block connections for jacket water heater, battery charger, and generator anti-condensation heaters Four (4) DC lights with 60-min timer Single-wall, 378-L (100gal) fuel tank; certified to BS799-5 Solenoid fuel-fill control valve for automated tank filling Triple, primary fuel filters with integral water separators and service valves for on-the-fly changes Sound attenuated to 83 dBA (50 Hz) / 85 dBA (60 Hz) at 7m (23 ft) Two (2) 1400-CCA, Group 4D, maintenance-free batteries and 50-Amp battery charger Insulated exhaust silencer with 1.8m (6ft) stainless steel exhaust stack for increased site power density Engine vibration isolators Easy drain access to standard fluids Standard Cat decals and painted Cat Power Module White</p>
Cooling	<p>Cooling package provides 40°C (104F) ambient capability at 50 Hz, or 42°C (108F) capability at 60 Hz at the IPP Rating at 750m (2,460 ft) above sea level Vertical, non-stacked radiator cores with dimpled fins and vertical air discharge Variable frequency fan drive with smart fan control Cat Extended Life Coolant (ELC)</p>
Generator Controls and Protection	<p>EMCP 4.3 generator set mounted controller Automatic start/stop with cool down timer Generator Protection features: 25, 32, 40, 50/51, 27/59, 81 O/U AGC-4 provides voltage and frequency adjust, base load / PF / load sharing / synchronizer, auto start / stop control & generator CB control, SCADA Interface (Ethernet), fuel level Indications & alarms, and fuel tank fuel transfer control Reverse compatibility for interface to legacy power modules 100 kAIC, 4000A-frame generator circuit breaker with LSIG trip unit Multi-mode operation: Island (kW/kVAR sharing), Base load power, Power management with multiple units Manual and automatic paralleling capability Metering display: voltage, current, frequency, power factor, kW, WHM, kVAR, and synchroscope</p>
Quality	<p>Factory testing of complete power module NEMA, ISO and IEEE standards O&M manuals</p>

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SPECIFICATIONS

GENERATOR Frame Size 743 Pitch 0.6667 No. of poles 4 Excitation Static regulated, brushless, PM excited Construction Double bearing, close coupled Insulation Class H Enclosure Drip proof IP23 Overspeed capability – % of rated 125% of rated Voltage regulator -3 phase sensing with Volts-per-Hertz Voltage regulation Less than ± 0.5% voltage gain Adjustable to compensate for engine speed droop and line loss Wave form deviation Less than 5% deviation Telephone Influence Factor (TIF) Less than 50 Harmonic Distortion (THD) Less than 5%	CAT 3512C-HD DIESEL ENGINE 3512C-HD, 4-Stroke Diesel Bore – mm (in) 170 (6.7) Stroke – mm (in) 215 (8.5) Displacement – L (cu in) 58.5 (3,570) Compression ratio 14.7:1 Aspiration TA Fuel system EUI Governor type Cat ADEM A4 Control System
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TECHNICAL DATA*

*Materials and specifications are subject to change without notice
 **Data represented is at standard conditions

Generator Set Technical Data	Units	50 Hz (60 Hz)	
		Low BSFC	Low Emissions
Power Rating	kW	1150 (1260)	1205 (1330)
	kVA	1438 (1575)	1506 (1662)
Lubricating System	L	333	
Total oil pan capacity	US gal	88	
Fuel System			
Generator set fuel consumption**			
100% Load	L/hr	285.2 (319.6)	294.5 (323.7)
	gal/hr	75.3 (84.4)	77.8 (85.5)
75% Load	L/hr	218.1 (242.3)	225.2 (246.7)
	gal/hr	57.6 (64.0)	59.5 (65.2)
50% Load	L/hr	152.4 (172.4)	155.0 (173.9)
	gal/hr	40.3 (45.6)	40.9 (45.9)
Fuel Tank Capacity	L	378	
	gal	(100)	
Max Rated Running Time	hours	1.32 (1.18)	1.28 (1.16)
Cooling System			
Radiator Capacity	L	TBD	
	U.S. gal	TBD	
Package Noise Rating at 7m (23 ft)	dBA	83 (85)	

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TECHNICAL DATA* (CONT.)

Model	Length in (mm)	Width in (mm)	Height in (mm)	Weight without fuel lube oil & Coolant Lb (kg)	Weight with fuel, lube oil and coolant Lb (kg)
XQC1200 w/o chassis	240 (6,100)	97.5 (2,438)	114 (2,896)	TBD (TBD)	47,440 (21,518)
Center of gravity	x = + TBD +/- 300 mm (from rear of container); y = + TBD mm +/- 300 mm (from container floor); z = 0 +/- 150 mm (centerline)				

RATING DEFINITIONS

International Power Projects (IPP) – Output available without varying load for an unlimited time. Average power output is 70 – 100% of the continuous power Rating. Typical peak demand is 105% of continuous rated kW for a maximum of 1 hour in 12 hours, not to exceed 500 hours per year. Typical applications are IPP power plants. Continuous power is in accordance with ISO8528. Fuel stop power is in accordance with ISO3036.

STANDARD FEATURES

EMCP 4.3 LOCAL CONTROL PANEL

- Package-mounted EMCP 4.3 provides power metering, protective relaying, and engine and generator control and monitoring.
- Convenient service access for Cat service tools (not included).
- Integration with the Cat Integrated Voltage Regulator (IVR) provides enhanced system monitoring.
- Ability to view and reset diagnostics of all controls networked on J1939 data link eliminates need for separate service tools for troubleshooting.
- Real-time clock allows for date and time-stamping of diagnostics and events.
- True RMS AC metering, 3 phase: L-L volts, L-N volts, Phase, Amps, Hz, ekW, kVA, kVAR, kWhr, % kW, PF

EMCP 4.3 ENGINE OPERATOR INTERFACE

- Graphical display with positive image, transfective LCD, adjustable white backlight/contrast.
- Digital indication for
 - RPM
 - DC Volts
 - Operating hours
 - Oil pressure
 - Coolant Temperature
 - Oil Temperature
- Two LED status indicators (1 red, 1 amber)
- Engine cool-down timer
- Engine cycle crank
- Three engine control keys and status indicators (Run/Auto/Stop).
- Lamp test and Alarm acknowledgement keys
- Warnings/shutdowns with indicating text for:
 - Low oil pressure
 - Overspeed
 - High Oil Temperature
 - Overcrank
 - Emergency stop
 - AGC-4
- Emergency stop pushbutton
- Display navigation keys including two shortcut keys for Engine Parameters or Generator Parameters

GENERATOR PROTECTIVE RELAYING

- Generator protective features
 - Phase over/under voltage (Device 27/59)
 - Over/Under frequency (Device 81 O/U)
 - Reverse Power (Device 32)
 - Overcurrent (Device 50/51) (GCB trip unit)

AGC-4/EMCP 4.3 PROTECTIVE RELAYING

- Generator protective features
 - 25 sync-check (AGC-4)
 - 32 rev. power (EMCP 4.3 and AGC-4)
 - 40 loss of excitation (AGC-4 impedance based)
 - 50/51 Inst. and time overcurrent (GCB trip unit and AGC-4)
 - 47 Negative Voltage Sequence (AGC-4)
 - 46 Negative Sequence Current (AGC-4)
 - 27/59 phase under/over voltage (EMCP 4.3 and AGC-4)
 - 81O/U under/over frequency (EMCP 4.3 and AGC-4)
- Package mounted AGC-4 controls provides auto paralleling, CAN-bus, Ethernet communications, PWM and Analog outputs, and legacy analog load sharing (real and reactive)
- AGC-4 main display and Additional Operator Panel (AOP) secondary display

VOLTAGE REGULATION AND POWER FACTOR CONTROL CIRCUITRY

- Generator-mounted automatic voltage regulator
- Manual raise/lower voltage adjust capability and VAR/power factor control circuitry for maintaining constant generator power factor while paralleled with the utility. Voltage and power factor adjustments are performed on the Generator Paralleling Control
- Includes RFI suppression, exciter limiter, and exciter diode monitoring.

CIRCUIT BREAKER

- 4000A-frame (set to 2500A), 3 pole, package mounted, electrically operated, insulated IEC Circuit Breaker (Factory Option 4-pole breaker available)
- Solid state trip unit for overload (time overcurrent) and fault (instantaneous) overcurrent protection. LSIG is standard.
- Includes DC shunt trip coil activated on any monitored engine or electrical fault, 100 KA-interrupting capacity at 480 VAC.
- Ground fault sensing/trip (Requires Optional ground CT)

CONTAINER

- 20-ft ISO high-cube container, 9-High Stack CSC Certified
- Painted standard Cat Power Module White, per Caterpillar Specifications
- Sound-attenuated air intake louvers with foldable awnings on engine room inlets
- Hinged radiator intake louvers (3) for ease of cleaning and maintenance
- Two (2) lockable personnel doors with panic releases

INTERNAL LIGHTING

- Four (4) internal DC lights with 60-min timer located at one personnel door
- One (1) International-style convenience receptacle

BATTERY CHARGER AND BATTERIES

- 24 VDC/50A battery charger with float/equalize modes and charging ammeter
- Two (2) 1400CCA, maintenance-free batteries

EMERGENCY STOP PUSHBUTTON

- Single emergency stop pushbuttons (ESP) located on package-mounted controls area
- ESP located on each side of the container (2)

EXHAUST SILENCER

- Internally mounted, insulated, puck-style exhaust silencer suspended from container roof
- 1.8m (6ft) vertical discharge exhaust stack, stows for shipping inside container

FUEL TANK

- 378-L (100gal) single-wall fuel tank
- BS799-5 certified
- Solenoid fuel fill control valve
- Triple, primary fuel filters with water separators and service valves mounted to fuel tank; externally accessible via filter service door

SHORE POWER

- One (1) shore power connection for generator anti-condensation heaters, battery charger, jacket water heater, and convenience receptacle

LUBE OIL MAKE-UP SYSTEM

- Includes engine-mounted oil level regulator and 114-L (30gal) oil tank for maintaining oil pan levels in extended run applications.
- Oil tank can be remotely filled without shutting down the engine.

CURRENT TRANSFORMERS

- CT's rated 3000:5 with secondaries wired to shorting terminal strips

POTENTIAL TRANSFORMERS

- 4:1 ratio with primary and secondary fuse protection

BUS BARS

- Three phase, plus full rated neutral bus bars are tin-plated copper with IEC standard 2-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.
- Includes ground bus, tin-plated copper, for connection to the generator frame ground and field ground cable.

AC DISTRIBUTION

- Provides 120 and 240 VAC for module accessories.
- Includes controls to de-energize jacket water heaters and generator space heater when the engine is running.

MODES OF OPERATION

- Provides for single unit stand-alone operation, island mode paralleling and load sharing with other power modules, and single unit-to-utility mode paralleling for base load control (with open transition between paralleling modes)*
- Island mode paralleling features:
 - AGC-4 control allows single unit to connect to a dead bus
 - Auto synchronization (voltage & phase matching)
 - Load sharing (kW) analog signal (like units & legacy compatible)
 - Load sharing (kVAR) analog signal (like units only)
- Utility mode paralleling features:
 - Auto synchronization (voltage & phase matching)
 - Base-load control (selectable: programmable set-point or potentiometer adjust)
 - Soft load/unload (programmable, shared set-point)
 - Power Factor control (programmable set-point)

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