



Standby 500 kW  
 Prime 455 kW  
 60 Hz 1800 rpm 480V

Image shown may not reflect actual configuration

## Specifications

Frequency	Voltage	Standby kW (kVA)	Prime kW (kVA)	Speed rpm
<b>480V 60 Hz Rating</b>				
60 Hz	480/277V	500 (625)	455 (568)	1800
60 Hz	240/139V	500 (625)	455 (568)	1800
60 Hz	208/120V	500 (625)	455 (568)	1800
<b>600V 60 Hz Rating</b>				
60 Hz	600V	500 (625)	455 (568)	1800
60 Hz	480V	400 (500)	365 (456)	1800

Cat® C18 ACERT™ Diesel Engine	Metric	Imperial (English)
Configuration	I-6, 4-Stroke-Cycle Water Cooled Diesel	
Bore	145 mm	5.71 in
Stroke	183 mm	7.2 in
Displacement	18.13 L	1106.363 in <sup>3</sup>
Aspiration	Turbocharged-Aftercooled	
Compression Ratio	14.5:1	
Engine rpm	1800	
Fuel System	MEUI™	
Governor Type	ADEM™ A4	
Fuel	Requires ULSD	

## Benefits & Features

### Fuel/Emissions Strategy

- Meets U.S. EPA Tier 4 Final emission standards and CARB certified for non-road mobile applications at all 60 Hz ratings

### Design Criteria

- Meets ISO 8528-5 transient response
- Canadian Standards Authority (CSA) approved

### Single-source Supplier

- Factory designed and fully prototype tested with certified torsional vibration analysis available
- ISO 9001:2000 compliant facility

### Cat C18 ACERT Diesel Engine

- Uses ACERT Technology
- Reliable, rugged, durable design
- Four-stroke diesel engine combines consistent performance and excellent fuel economy with minimum weight
- Electronic engine control

### Cat Clean Emissions Module (CEM)

- Aftertreatment module consists of Caterpillar Regeneration System (CRS), Diesel Oxidation Catalyst (DOC), Diesel Particulate Filter (DPF), and Selective Catalytic Reduction (SCR)

### Diesel Exhaust Fluid (DEF) Tank

- 25 gallon DEF tank with on-tank fill and integrated pump, level sensor and heating elements
- Electrically heated DEF lines from DEF tank to CEM

### Cat Generator

- Matched to the performance and output characteristics of Cat engines
- Single point access to accessory connections
- UL 1446 recognized Class H insulation

### Cat EMCP 4.4 Control Panel

- Fully featured power metering, protective relaying engine/generator control and monitoring
- Simple user-friendly interface and navigation
- Automatic set-point adjustment integrated with voltage and frequency selection

### Cat Integrated Voltage Regulator (Cat IVR)

- Three-phase sensing
- Adjustable volts-per-hertz regulation
- Provides precise control, excellent block loading, and constant voltage in the normal operating range

### Sound Attenuated Container

- Provides ease of transportation and protection
- Sound levels are 72 dB(A) or less at 7 meters per SAE J1074 measurement procedure at 110% prime load

### Reduced Environmental Impact

- 110% spill containment of onboard engine fluids

## Factory-installed Standard Equipment

- Cat C18 ACERT heavy-duty diesel engine meets Tier 4 Final emission standards
- Heavy-duty air cleaner with service indicator
- 100-amp charging alternator
- Fuel filters – duplex primary with integral water separator and changeover valve allowing filters to be changed while engine is running, and engine-mounted secondary
- Fuel cooler and electric priming pump
- Lubricating oil system including pump, integral oil cooler, lube oil, filter, crankcase breather system
- Oil drain line with internal valve routed to connection point accessible from exterior
- 500-hour oil change intervals
- Jacket water heater
- Electronic ADEM A4 for engine and A5 for aftertreatment control
- 24V electric starting motors with battery rack and cables

### Air Inlet

- Heavy-duty air cleaner w/precleaner, two-stage cyclonic/paper with dust cup and service indicator
- Turbocharger and air-to-air aftercooler

### Cat CEM

- CEM comes with integrated CRS, DOC, DPF & SCR and is located in separate compartment

### DEF System

- 25 gal plastic DEF tank provides 24 hours runtime @ 75% prime + 10% rating similar to fuel system
- DEF tank is equipped with integrated pump, level sensor to display the DEF level in EMCP panel, and electrically heated lines from DEF tank to CEM
- Equipped with low and critically low level alarms with a critically low shutdown

### Fuel System

- 700 gal (2650 L) double-wall fuel tank, UL142, ULC, and Transport Canada certified, 27-hour runtime @ 75% prime +10% rating, internal fuel fill
- Fuel cooler, pressure gauge, primary fuel filter with integral water separator, and engine-mounted secondary
- Switch operated, electric priming pump
- Auxiliary connections for customer-supplied fuel transfer system with 2-way fuel transfer valve

### Generator

- Three-phase, random wound, coastal insulation protection, 0.6667 pitch, permanent magnet excited, Class H insulation with Class F temperature rise
- Includes anti-condensation heaters (120/240V 1.2 kW)
- 12-lead design, with voltage changeover link board (480V)
- 6-lead design, (600V)
- Cat IVR with VAR/PF control

### Charging System

- UL/CSA listed 120V, 20 amp battery charger, shock-mounted and enclosed in dust-proof housing
- Charging alternator; 24V-100A, heavy duty with integral regulator and belt guards

### Lube System

- Pump, integral oil cooler, lube oil, filter, filler and dipstick, and oil sampling valve
- Open crankcase breather with 75% filter
- Oil drain line with internal brass ball valve routed to connection point accessible from exterior
- 500-hour oil change intervals

### Mounting System

- Generator set soft mounted to the heavy duty, fabricated steel base frame
- Skiddable steel base frame with tie-down eyes contains integral fuel tank
- Provides 110% spill containment of all engine fluids

### Starting System

- Single electric starting motor, 24V
- Dual 12V (1400 CCA) maintenance-free batteries with disconnect switch, battery rack, and cables
- UL listed, 120 volt single phase jacket water heater with thermostat and shut-off valves

### General

- CSA approved
- Factory testing of standard generator set
- Full manufacturer's warranty, O&M manuals

## Factory-installed Standard Equipment (continued)

### Containerized Module

- 20' ISO standard cube container
- 2-axle, 20' ISO container chassis
- Sound attenuated air intake louvers and two lockable personnel doors with panic release
- Sound attenuated 72 dB(A) @ 7m
- Interior walls and ceilings insulated with 100 mm of acoustic paneling
- Floor of container insulated with acoustic glass and covered with galvanized steel
- Side bus bar access door, external access load connection bus bars
- Shore power connection via distribution block connections for jacket water heater, battery charger, space heaters, generator condensate heaters, and internal duplex service receptacle
- Customer convenience panel with multiple receptacles
- Lighting two DC, one single duplex service receptacle, two external emergency stop pushbuttons
- Internal connections for fuel fill
- Spill containment 110% of all engine fluids
- Auxiliary connections for customer-supplied fuel transfer systems
- Two oversized maintenance-free batteries, battery rack, 20-amp battery charger, and battery maintainer
- Vibration isolators, corrosion resistant hardware and hinges
- External drain access to standard fluids
- Standard Cat rental decals and painted standard Cat power module white

### Cooling

- Standard cooling provides 43°C ambient capability (60 Hz) at prime +10% rating
- Vertically mounted radiator, with vertical air discharge from the container
- Coolant drain line with internal valve
- Coolant sight gauge, level switch, and shutdown
- 50/50 ethylene extended life glycol

### Generator Set Controls and Protection

- EMCP 4.4 generator set mounted controller
- Automatic start/stop with cooldown timer
- Generator protection features: 32, 32RV, 46, 50/51, 27/59, 81 O/U
- Utility Multi-function Relay (UMR) protection features: 24, 25, 27, 27G, 32, 40, 43, 46, 47, 50, 51, 51N, 59, 59G, 60FL, 67, 79, 81O/U with 4 programmable relay inputs and 5 programmable relay outputs (optional)
- Reverse compatible for interface to legacy power modules
- 2000A electrically operated generator circuit breaker
- Multi-mode operation (island, multi-island and utility parallel (with optional UMR), load sharing (multi-unit only)
- Manual and automatic paralleling capability
- Metering display: voltage, current, frequency, power factor, kW, WHM, kVAR, and synchroscope

### Quality

- Factory testing of standard generator set and complete power module
- UL, NEMA, ISO, and IEEE standards
- O&M manuals



## Technical Data

Cat Generator	
Frame Size	LC6134G
Pitch	0.6667
No. of poles	4
Excitation	Static regulated brushless PM excited
Number of bearings	Single bearing, close coupled
Insulation	Class H
Enclosure	Drip proof IP23
Alignment	Pilot shaft
Overspeed capability – % of rated	125% of rated
Voltage regulator	3-phase sensing with volts-per-hertz
Voltage regulation (adjustable to compensate for engine speed droop and line loss)	Less than ± 1/2% voltage gain
Wave form deviation	3%
Telephone Influence Factor (TIF)	Less than 50
Harmonic Distortion (THD)	Less than 5%

Cat Generator Set			
	Units	60 Hz — Standby	60 Hz — Prime
<b>Power Rating</b>	<b>kW (kVA)</b>	<b>500 (625)</b>	<b>455 (568)</b>
<b>Performance Specification</b>			
<b>Lubricating System</b>			
Oil pan capacity	L (gal)	74 (19.5)	74 (19.5)
<b>Fuel System</b>			
Fuel Consumption — 100% Load	L/hr (gal/hr)	136 (35.9)	126 (33.2)
75% Load	L/hr (gal/hr)	107 (28.3)	99 (26.2)
50% Load	L/hr (gal/hr)	78 (20.5)	72 (19)
Fuel Tank Capacity	L (gal)	2650 (700)	2650 (700)
Running time @ 75% rating	Hr	24	24
<b>Cooling System</b>			
Ambient capability	°C (°F)	43 (109)	43 (109)
Engine & radiator coolant capacity	L (gal)	100.7 (26.6)	100.7 (26.6)
Engine coolant capacity	L (gal)	26.9 (7.1)	26.9 (7.1)
<b>Air Requirements</b>			
Combustion air flow	m³/min (cfm)	35.2 (1243)	34.6 (1223)
Max dirty air cleaner restriction	kPa (in H <sub>2</sub> O)	6.2 (24.9)	6.2 (24.9)
<b>Exhaust System</b>			
Exhaust flow at rated	m³/min (cfm)	90.2 (3185)	86.7 (3063)
Exhaust temp at rated kW – dry exhaust	°C (°F)	490 (914)	472 (882)
<b>Noise Rating (with enclosure)*</b> @ 7 meters (23 feet)	dB(A)	72	72



## Technical Data (continued)

XQ570 — Dimensions			
	Length mm (in)	Width mm (in)	Height mm (in)
Without chassis	6096 (240)	2438 (96)	2591 (102)
With chassis	7182 (282)	2438 (96)	3810 (150)

XQ570 — Weight	
	Weight— kg (lb)
Lube Oil & Coolant – Empty Fuel DEF Tank	14,400 (31,900)
Chassis Weight Addition	3,379 (7,450)

## Standard Features

### EMCP 4.4 Local Control Panel

- Generator-mounted EMCP 4.4 provides power metering, protective relaying, and engine and generator control and monitoring.
- NEMA 12, IP44 dust-proof enclosure
- UL508A listed
- Convenient service access for Cat service tools (service tools not included)
- Integration with the Cat IVR provides enhanced system monitoring
- Ability to view and reset diagnostics of all controls networked on primary CAN data link eliminates need for separate service tools for troubleshooting.
- True RMS AC metering, 3 phase

### EMCP 4.4 Engine Operator Interface

- Controls
  - Run/auto/stop
  - Speed adjust
  - Voltage adjust
  - Emergency stop
  - Cycle crank
  - Cool-down timer
- Engine monitoring
  - rpm
  - Operating hours
  - Coolant temperature
  - DC volts
  - Oil pressure
  - Oil temperature
- Generator monitoring
  - L-L volts, L-N volts, phase amps
  - Average volts, amps, frequency
  - ekW, kVA, kVAR, kW-hr, %kW
  - Power factor (average, phase)
  - kW-hr, kVA-hr (total)

- Shutdowns with common indicating light for
  - Low oil pressure
  - High coolant temp
  - Failure to start (overcrank)
  - Low coolant level
  - Overspeed
  - High oil temp
  - Emergency stop
- Emergency stop pushbutton
- Panel illuminating lights
- Display navigation keys including two shortcut keys for engine parameters or generator parameters
- Fuel level monitoring and control

### EMCP 4.4 Generator Protective Relaying

- Generator protective features provided by EMCP 4.4
  - Phase over/under voltage (device 27/59)
  - Over/under frequency (device 81 O/U)
  - Reverse power (device 32/32RV)
  - Current balance (46)
  - Overcurrent (device 50/51) (GCB trip unit)
  - Loss of excitation (device 40) (Cat DVR)
  - Generator phase sequence

### Container

- 20' ISO standard cube container
- Painted standard Cat power module white
- Sound attenuated air intake louvers
- Floor insulated with acoustic glass and covered by galvanized steel
- Two lockable personnel doors with panic release
- External drain access to standard fluids

## Standard Features (continued)

### Shore Power

- One 110V shore power connection for jacket water heater
- One 110V for generator space heater, battery charger, and single duplex service receptacle

### Internal Lighting

- Two internal DC lights with one timer
- One single-duplex service receptacle connected to shore and generator power with automatic switchover

### Battery Charger and Batteries

- 24 VDC/20A battery charger with float/equalize modes and charging ammeter
- Two oversized maintenance-free batteries

### Emergency Stop Pushbutton (ESP)

- One internal ESP
- Two external ESP

### Trailer

- Two-axle with anti-lock brake system
- Goodyear G314 295/75R225 Load Range G

### Voltage Regulation and Power Factor

#### Control Circuitry

- 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

- 2000A fixed type, 3 poles, generator set mounted, electrically operated, insulated case CB
- Solid state trip unit for overload (time overcurrent) and fault (instantaneous) overcurrent protection
- Includes DC shunt trip coil activated on any monitored engine or electrical fault, 100 KA-interrupting capacity at 480 VAC
- Undervoltage release

### Transformers

- CTs rated 2000:5 with 200:5 secondaries wired to shorting terminal strips
- Potential transformers 4:1 ratio with primary and secondary fuse protection (with optional UMR)

### Distribution

- Three-phase, plus full rated neutral, bus bars are tin-plated copper 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
- Includes ground bus, tin-plated copper, for connection to the generator frame ground and field ground cable
- Customer convenience panel with multiple output receptacles
  - 1 – 240V, 50A twist lock
  - 1 – 240V, 20A twist lock
  - 2 – 120V, 20A twist lock
  - 2 – 120V, 20A ground fault interrupters
  - 2 – 120V, 15A duplex receptacles with GFI

### Link Board Assembly (480V Only)

- 2000A link board for 208/240/400/480 wye operation
- Reconnection via movable link board
- Includes switch to determine operation mode

### AC Distribution

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

### UMR (Optional)

Basler UMR IPS-100 provides the following utility/intertie protection features:

- Synch check (device 25)
- Phase undervoltage, 2-stage (device 27)
- Reverse power (device 32)
- Negative sequence overvoltage (device 47)
- Phase time overcurrent (device 51)
- Neutral overcurrent (device 51N)
- Phase overvoltage, 2-stage (device 59)
- Under frequency, 2-stage (device 81U)
- Over frequency (device 81O)

## Modes of Operation

- Provides for single unit standalone 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:
  - Lead unit select control allows single unit to connect to a dead bus or Hard Wired Dead Bus Arbitration (HWDBA) to allow first unit up to voltage and speed to be first unit to connect to a dead bus
  - Auto synchronization (voltage and phase matching)
  - Load sharing (kW) analog signal (like units and legacy compatible)
  - Load sharing (kVAR) analog signal (like units only)
- Utility mode paralleling features:
  - Auto synchronization (voltage and phase matching)
  - Base-load control (programmable set-point or potentiometer adjust)
  - Soft load/unload (programmable, shared set-point)
  - Power factor control (programmable set-point)

### Single Unit Standalone and Multi-unit Island Operation

- Utility standby mode (normal)
  - The utility is providing power for the plant loads
  - The PM generator breaker is open
  - The PM is in automatic standby mode to respond to a utility failure
- Emergency mode (emergency)
  - Utility failure
    - a. The customer protective relaying senses a utility abnormal condition

- b. A run request is sent to the PM generator plant
- c. The first PM generator to reach rated to voltage and frequency is closed to the bus
- d. In multi-unit island mode, the remaining PM generators are paralleled to the bus as they reach rated voltage and frequency. This function is performed via the lead unit select jumper and interconnect wiring connected between the power modules.
- e. Plant load is transferred to the power modules, which share load equally via load share lines.

### Single Unit Base Load Operation

- Utility mode (normal)
  - The utility is providing power for the plant loads
  - The PM is in auto mode and the generator breaker is open
  - The PM is interconnected to the utility breaker aux contact, lead unit jumper is not installed and load share lines are not connected
  - The paralleling controls automatically detect utility parallel mode when the utility aux contact is closed
- Base load mode
  - Unit receives remote run request and starts
  - Unit reaches rated voltage and frequency
  - UMR performs sync-check to permit generator breaker to close
  - Unit ramps to base-load set point at programmed ramp time
  - Unit continues to run until remote run request is removed or unit is stopped at control panel

## Ratings Definitions and Conditions

### Meets or Exceeds International Specifications:

AS1359, CSA, IEC60034-1, ISO3046, ISO8528, NEMA MG 1-22, NEMA MG 1-33, UL508A, 72/23/EEC, 98/37/EC, 2004/108/EC.

**Prime** — Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of prime rated kW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year. Prime power in accordance with ISO3046. Prime ambients shown indicate ambient temperature at 100% load which results in a coolant top tank temperature just below the alarm temperature.

**Standby** — Output available with varying load for the duration of the interruption of the normal source

power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

**Ratings** are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions.

**Fuel rates** are based on fuel oil of 35° API [16°C (60°F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29°C (85°F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal).

Additional ratings may be available for specific customer requirements, contact your Cat representative for details. For information regarding low sulfur fuel and biodiesel capability, please consult your Cat dealer.

[www.Cat.com/rentalpower](http://www.Cat.com/rentalpower)

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