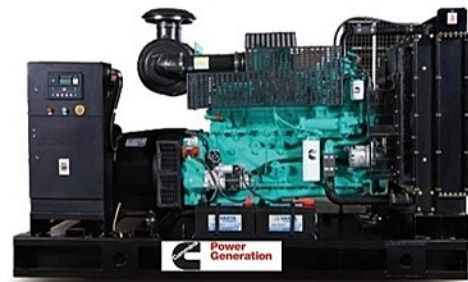


Model: ZMC500

Powered by CUMMINS



Generator Specification

Service	PRP ⁽¹⁾	ESP ⁽²⁾
Power (kVA)	500	513
Power (kW)	400	410
Rated speed (r.p.m)	1500	
Standard voltage (V)	400/230V	
Rated at power factor(cos phi)	0.8	

Power gensets are compliant with ISO 9001 and CE standard, which include the following directives:

- 2006/42/EC Machinery safety.
- 2006/95/EC Low voltage
- EN 60204-1: 2006+A1: 2009, EN ISO 12100: 2010, EN ISO 13849-1: 2008, EN 12601 : 2010

(1) PRP (Prime Power):

According to ISO8528-1, prime power is the maximum power available during a variable power sequence, which may be run for an unlimited number of hours per year, between stated maintenance intervals. The permissible average power output during at 24 hours period shall not exceed 80% of the prime power. 10% overload available for governing purposes only.

(2) ESP (Standby Power):

According to ISO 8528-1, it is defined as the maximum power available, under the agreed operating conditions, for which the generating set is capable of delivering for up to 500 hours of operation per year (of which no more than 300 hours for continuative use) with the maintenance intervals and procedures being carried out as prescribed by the manufacturers. No overload capability is available.

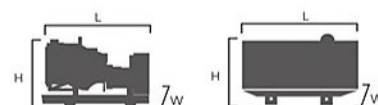
Powers	ESP		PRP		Standby
Voltage (V)	KVA	KW	KVA	KW	Amps
415/240	513	410	500	400	713.7
400/230	513	410	500	400	740.5
380/220	513	410	500	400	779.4

Performance Data

Model	ZMC500	
Engine brand	Cummins	
Engine model	QSZ13G3	
Speed control type	ECM	
Phase	3	
Control system	Digital	
Starter motor voltage	24V	
Frequency	50HZ	
Engine speed (RPM)	1500	
Fuel Consumption (L/H)	100% standby power	105.5
	100% prime power	101
	75% prime power	74.2
	50% prime power	48.9

Standard reference Conditions

Note: Standard reference condition 25 °C (77°F) air inlet temp, 100m(328ft) A.S.L 30% relative humidity. Fuel consumption dat with diesel fuel with specific gravity of 0.85 and conforming to BS 2869: 1998 , Class A2



Dimension and Weight

Dimension	Open	Silent
Length (L)	3305mm	4365mm
Width (W)	1380mm	1600mm
Height (H)	2185mm	2465mm
Net Weight	4439KG	4415KG
Fuel Tank (L)	978	900



■ Engine Specification: QSZ13G3

Basic technical data

No. of cylinders	6
Cylinder arrangement	In-line
Cycle	4 stroke
Aspiration	Turbocharged Charge Air Cooled
Compression ratio	17:1
Bore	130mm
Stroke	163mm
Displacement	13.0L
Low idle speed	700 r/min
Approximate engine weight	1245kg

Cooling system

Coolant capacity-engine	23.1L
Maximum coolant friction head external to engine	75KPA
Minimum fill rate(low level alarm required for most engines)	19L/min
Engine coolant circuit thermostat opening temperature	82 °C
Engine coolant circuit thermostat fully open temperature	94 °C
Maximum deaeration time	25min
Minimum pressure cap rating at sea level	103KPA

Fuel system

Maximum design fuel flow	204kg/h
Maximum fuel inlet temperature	71 °C
Maximum heat rejection to return fuel	5.36kW
Minimum fuel tank venting requirement	0.2L/s
Maximum allowable restriction @ OEM point with maximum fuel flow	13.5KPA

Air intake system

Maximum intake air restriction
(heavy duty air cleaner)

-Dirty filter	6.2KPA
-Clean filter	3.2KPA

Lubrication system

Oil pressure @ idle - minimum	82.7 KPA
Typical oil pressure range	
-warm engine	207-276 KPA
Total system capacity (standard pan)	45.42L
Maximum lube oil flow to all accessories	7.57L/min

Electrical system

System voltage	24V
Minimum battery capacity-cold soak at - 18 °C (0 °F) or above	
-Engine only cold cranking amperes	900 CCA
-Engine only reserve capacity	270min

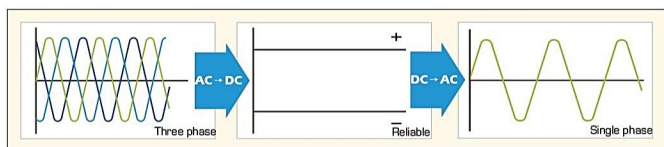
Exhaust system

Max.back pressure imposed by complete exhaust system	13KPA
Maximum allowable static bending moment at exhaust outlet flange	27N.m
Exhaust pipe size normally acceptable	130mm

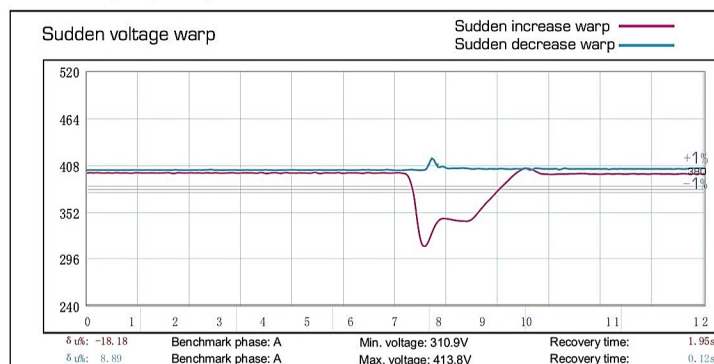


■ Alternator Specification

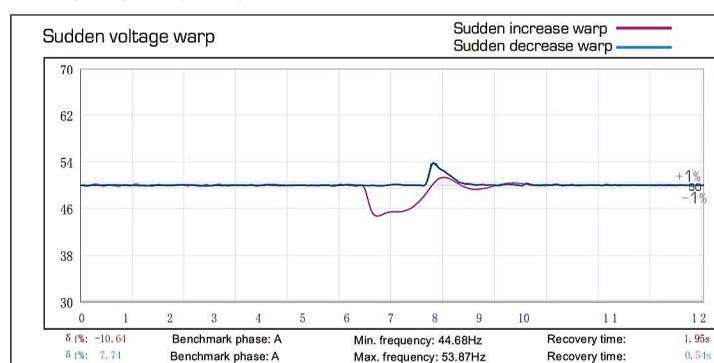
Alternator	
Number of phase	3
Power factor (Cos Phi)	0.8
Poles	4
Winding Connections (standard)	Star-serie
Terminals	12
Insulation type	H class
Winding Pitch	2/3
IP rating	IP23
Excitation system	Self-excited
Bearing	Single bearing
Coating	Vacuum impregnation
Voltage regulator	A.V.R
Coupling	Flexible disc



Emergency voltage curve



Emergency frequency curve



■ Options

Engine	Alternator	Generator Sets	Fuel System
<ul style="list-style-type: none"> Water Jacket Pre-heater Fuel heater 	<ul style="list-style-type: none"> Winding Temp measuring Instrument Alternator Pre-heater PMG Anti-damp and anti-corrosion treatment Anti-condensation heater Winding and bearing RTD 	<ul style="list-style-type: none"> Tools with the machine Extended range fuel tank Bunded fuel tank 	<ul style="list-style-type: none"> Low fuel level alarm Automatic fuel feeding system Fuel T-valves
Canopy	Lub oil system	Cooling System	Control Panel
<ul style="list-style-type: none"> Rental type Canopy Trailer 	<ul style="list-style-type: none"> Oil Pre-heater Oil temp sensor 	<ul style="list-style-type: none"> Front heat protection 	<ul style="list-style-type: none"> Remote control panel ATS Synchronizing controller Adjustable earth leakage relay



■ Control Panel

Configuration

- Emergency stop button
- Protection MCB
- Battery charger
- Integrated aviation plug
- ATS connection
- Digital control module

Features

- 3 phase generator set monitoring
- Support of engines equipped with electronic control unit
- Comprehensive diagnostic message
- Automatic or manual start/stop of the gensets
- Push buttons for simple control, lamp test
- Graphic back-lit LCD display
- Parameters adjustable via keyboard or PC
- Mains measurements (50HZ/60HZ)
- Generator measurements (50HZ/60HZ)
- Comprehensive shutdown or warning on fault condition
- 3 phase Generator protections
 - Over-/under voltage
 - Over-/under frequency
 - Current/voltage asymmetry
 - Over current/overload
- 3 phase AMF function
 - Over-/under frequency
 - Over-/under voltage
 - Voltage asymmetry
- Configurable analog inputs
- Battery voltage, engine speed (pick-up) measurement
- Configurable programmable binary inputs and outputs
- Warm-up and cooling functions
- Generator C.B. and Mains C.B. control with feedback and return timer
- RS232 interface
- Modem communication support
- Hours counter
- Sealed to Ip65
- Event log

Benefits

- Less wiring and components
- Integrated solution
- Less engineering and programming
- User friendly set-up and button layout
- Module can be configured to suit individual applications
- PC software for simplified configuration
- Wide range of communication capabilities

Operation conditions

- Operation temp: -20 °C to + 70 °C
- Storage temp: -30 °C to + 80 °C
- Operating humidity: 95% w/o condensation
- Vibration : 5-25Hz, ± 1.6 mm
5-100Hz, $a=4g$
- Shocks: $a= 500m/s^2$

Options

- Ethernet interface (Remote monitoring and control)
- GSM modem/wireless internet (Remote monitoring and control)
- RS232-RS485 Dual port interface
- Synchronizing control panel
- Distribution board with sockets kit and power busbar
- Battery trickle charge ammeter
- Earth leakage protection
- Earth fault protection
- Low fuel level alarm
- Low fuel level shutdown
- High fuel level alarm
- Fuel transfer system control
- Low coolant level shutdown
- High lube oil temp shutdown
- Overload via alarm switch on breaker
- Engine coolant heater controls
- Control panel heater
- Speed adjust switch
- Oil temp displayed on LCD screen
- Additional 8 inputs and outputs