



# GAS GENERATORS



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## FEATURES AND BENEFITS

- Diesel Engines with Advanced Technology and Quality
  - Alternators with Advanced Technology and Quality
    - Low Exhaust Emission
- Control Panel Suitable for Flexible Application
- Patented Compact Designed and Sound proof Canopy
  - Low Operating Cost
  - Suitable for Heavy-Duty
    - Durability
    - Low Noise Level

- Tropical 50 °C Radiator
- Fuel Filter with Water and Particle Separator
  - Low Fuel Consumption
  - First Class Product Support
- Global Technical Service and Maintenance Support
  - Wide Range of Affordable Spare Parts
    - High Quality and Reliable Technology
  - Half Century Experience in Generator Manufacturing
    - Low Oil Consumption

### GENSET MODEL

### OUTPUT POWER - KW

### OUTPUT POWER - KVA

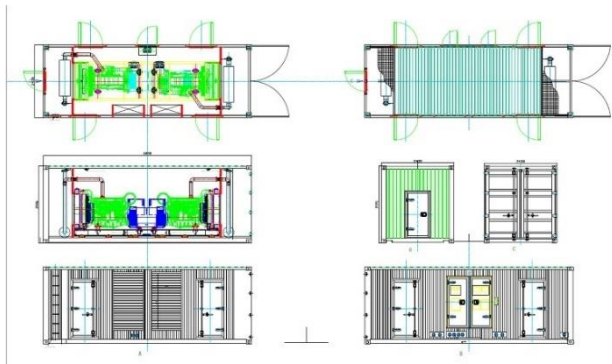
	Standby	Prime	Continuous	Standby	Prime	Continuous
JNG 250 (JNG 410)	328	298	208	410	373	260
JNG 315 (JNG 515)	412	374	262	515	468	327

**WARRANTY**


**8000 Hours**


**OVERHAUL**

**65000 Hours**



## GENERATOR GENERAL INFORMATION

GENERATOR	FREQUENCY	VOLTAGE	POWER FACTOR	SPEED	DIESEL ENGINE			ALTERNATOR		
MODEL	HZ	V	Cos Q	rpm	BRAND	MODEL	SERIES	BRAND	MODEL	SERIES
JNG 410NG	50	231/400	0.8	1500	JCB	JC58G	GII		JCB	315S
JNG 410NG	60	277/480	0.8	1800						270LXA

GENERATOR	FREQUENCY	VOLTAGE	POWER FACTOR	SPEED	DIESEL ENGINE			ALTERNATOR		
MODEL	HZ	V	Cos Q	rpm	BRAND	MODEL	SERIES	BRAND	MODEL	SERIES
JNG 515NG	50	231/400	0.8	1500	JCB	JC68G	GII		JCB	315MXA
JNG 515NG	60	277/480	0.8	1800						315 S

## GENERATOR OUTPUT

	OPERATION	JNG 410NG			JNG 515NG		
		kVA	kW	A	kVA	kW	A
50 HZ	STAND BY	410,0	328,0	592,5	515,0	412,0	744,2
	PRIME	372,7	298,2	538,6	468,2	374,5	676,6
	CONTINUOUS	260,9	208,7	377,0	327,7	262,2	473,6
60 HZ	STAND BY	410,0	328,0	592,5	515,0	412,0	744,2
	PRIME	372,7	298,2	538,6	468,2	374,5	676,6
	CONTINUOUS	260,9	208,7	377,0	327,7	262,2	473,6



### **Stand By Power Rating – (Esp):**

ESP is applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Stand by Power rating. This rating should be applied where reliable utility power is available. A Stand By rated engine should be sized for a maximum of an 70% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Stand by Power rating. Stand By ratings should never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency.

### **Prime Power Rating – (Prp):**

Applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories:

#### **Unlimited Time Running Prime Power (Uitp):**

PRP (Prime Power) is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours. The total operating time at 100% Prime Power shall not exceed 500 hours per year. A 10% overload capability is available for a period of 1 hour within a 12-hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year.

#### **Limited Time Running Prime Power (Ltp):**

LTP (Limited Time Prime Power) is available for a limited number of hours in a no variable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation

### **Continuous Power Rating (COP):**

COP is the power that the engine can continue to use under the prescribed speed and the specified environment condition in the normal maintenance period stipulated in the manufacturing plant. And Continuous Power is applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.

### **Pay Attention To The Points Below In Picking And Using The Generator**

- \* Generators can work on Continuous Power at 70% of Prime power value if only all maintenances are done on time with original spare parts and high-quality oils that manufacturer advice.
- \* Generators should not operate below 50% of Prime Power value. In such a case, the engine will burn excessive oil and eventually have irreparable damage.
- \* If your need is 1000 kVA or above, you should prefer Synchronic Systems with 2-3 generators with failure back up and simultaneous aging.
- \* These points will provide advantage for you with purchasing and operating the generator.

# Technical Documentation

## JC58G – GAS ENGINE

Prime Power : 280 Kw @ 1500 rpm

Stand by Power : 308 kw @1500 rpm



## RATINGS DEFINITION

The power ratings of Emergency Standby and Prime are in accordance with the standard of ISO8528. Fuel Stop power in accordance with the standard of ISO3046.

Electric power (kW) should be estimated by considering generator efficiency, cooling fan power loss and power derating due to altitude and temperature.

**STANDBY POWER RATING** is applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. A standby rated engine should be sized for a maximum of a 70% average load factor and 200 hours of operation per year, this includes less than 25 hours per year at the Standby Power rating.

**PRIME POWER RATING** is available for an unlimited of hours per year in variable load application. Variable load should not exceed a 70% average the Prime Power rating during any operating period hours., The Total operating time at 100% Prime Power shall not exceed 500 hours per year.

10% overload capability is available for a period of 1 hour within a 12 hours period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year,

**CONTINUOUS POWER RATING** is the power that the engine can continue to use under the prescribed speed and the specific environment condition in the normal maintenance period stipulated in the manufacturing plant. And continuous power applicable for supplying utility power at a constant 100% for an unlimited number of hours per year. No overload capability is available

Engine Speed	Application	Engine Power			
		Total Power		Net Power	
JC58G					
r/min		kW	Ps	kW	Ps
1500	Prime	280	380,8	280	380,8
	Standby	308	419	308	419

## General Engine Data

Engine Model	JC58G
Engine Type	6 cylinder, Inline- type, four-stroke
Speed	1500 rpm
Bore x stroke	128mm x 153mm
Number of valve per cylinder	4
Displacement	11.81 L
Compression ratio	12:1
Rotation {Looking at flywheel}	Anti-clockwise (facing the power delivery end)
Firing order	1-5-3-6-2-4
Cylinder distance	162 mm
Combustion Type	W
Controller system	Woodward PG+
Outstanding dimistation	1360 X 898 X 1138 mm
Engine Dry Weight	1065kg
Rotational Inertia	2.9 kgm <sup>2</sup>
Flywheel and flywheel housing	SAE 14" flywheel SAE 01# flywheel housing

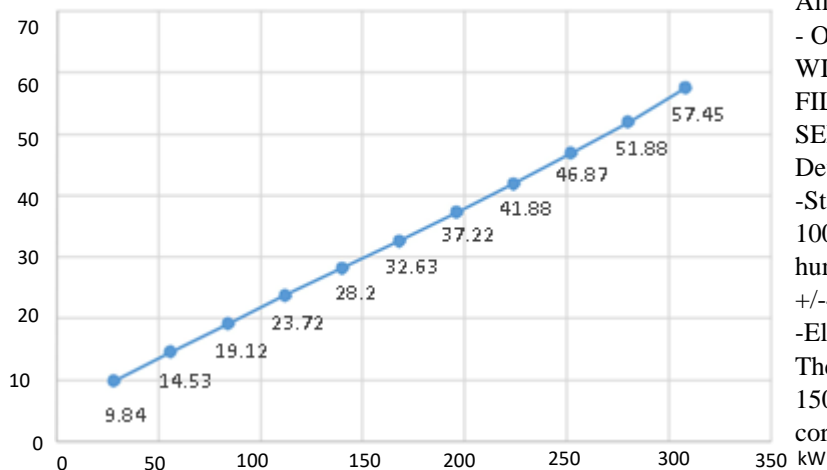
## INTRODUCTION

JC-G series engine developed independently by MAN is a classic product. It is characterized by energy-saving and environment-friendly, excellent performance, compact structure, and reliability and durability; the indexes, such as pollutant emission, dynamic performance, economy, and reliability, reach the international advanced level. The engine basic adopt new technology of Overhead camshaft. All main parts are import. Such as engine block, crankshaft, piston, Connecting rod, starting motor, bolt are all import from Germany, Valve, turbocharger, charging alternator are all import from U.S.A.

The engine design, component development, complete test validation came from AVL, AVL is a famous engine technology consulting company in the world, headquartered in Austria.

## Fuel System

Engine Model	JC58G	
Fuel	GAS	
Fuel Consumption of generator set		
	kW	kg/h
Standby power- 110% load	308.0	57.45
Prime Power - 100% load	280.0	51.88
- 90% load	252.0	46.87
- 80% load	252.0	41.88
- 70% load	196.0	37.22
- 60% load	168.0	32.63
- 50% load	140.0	28.20
- 40% load	112.0	23.72
- 30% load	84.0	19.12
- 20% load	56.0	14.53



All data are based on:

- OBTAINED WHEN THE ENGINE IS RUNNING WITH FUEL SYSTEM, PUMP, OIL PUMP, AND FILTER; BUT EXCLUDING AC GENERATORS, SELECTION

Devices and driven parts.

-Standard reference conditions: ; Atmospheric pressure 100kPa, intake temperature 25°, relative humidity 50%. The deviation range of the data is +/-4%.

-Elevation and temperature correction:

The engine can operate under the following conditions: 1500r/min below 2000m and below 40 °C without correction.

## INTAKE & EXHAUST SYSTEM

Engine Model	JC58G
Max. Exhaust Back Pressure (kPa)	10±1
Max. Exhaust Temp. (After Turbo °C)	670
Exhaust Gas Flow (m <sup>3</sup> /h)	1450
Intake Gas Flow (m <sup>3</sup> /h)	1450
Max. Intake Resistance (Clean filter) (kPa)	3.5
Max. Intake Resistance (Dirty filter) (kPa)	6.5
Alarm Value of Intake Resistance (kPa)	6.3

## TECHNICAL DOCUMENTATION

### Cooling System

Coolant main content	50: 50 ( Ethylene Glycol water
Coolant outlet Temperature	95°C
Temperature Difference with inlet & outlet	6 ±1°C
Max. Coolant warning Temperature	104 °C
Radiator Heat release	138 kW
Radiator Flow	440L/min
Intake air type	Air to air intercooler
Intercooler allowance press drop	11 - 13 kPa
Intercooler Heat release	57 kW
Intercooler allowance intake temperature	195 ±5°C
Max. Coolant intake air	1450 kg/h

### Lubrication System

Lube oil pressure @ idle speed	Min 100 ±10 kPa
Lube oil pressure @ rated speed	550±10 kPa
Max. Permissible Oil Temperature	≤120 °C
Oil capacity Lowest	30 L
Oil capacity Highest	38 L
Oil capacity	33.2-41.6 L
Oil capacity allowance dip angle	30°C

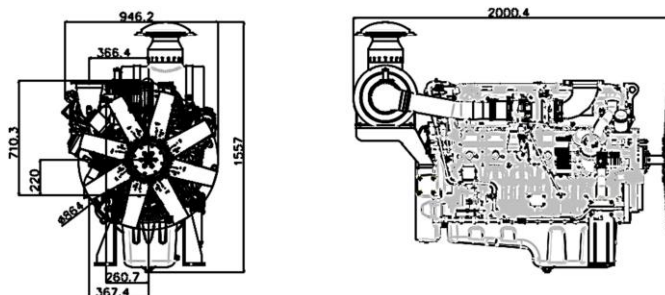
### Electrical System

Charging Alternator Voltage	24V
Unaided Cold Start Average Start Speed	130 r/min
Starting aid (Option)	Block heater (Min. Temperature for Unaided

### EXHAUST

Item	Value	Note
CH <sub>4</sub>	1069.5 ppm	
O <sub>2</sub>	≤5%	
N <sub>2</sub>	80%-83%(Standard values)	From your local air
CO <sub>2</sub>	70654.63 ppm	
NO <sub>x</sub>	208.4 ppm	
SO <sub>2</sub>		From your natural gas
CO	705 ppm	
DUST		From your local air

### JC-G SERIES GAS ENGINE



**JC68G – GAS ENGINE**

Prime Power : 300 Kw @ 1500 rpm

Stand by Power : 330 kw @1500 rpm

**RATINGS DEFINITION**

The power ratings of Emergency Standby and Prime are in accordance with the standard of ISO8528. Fuel Stop power in accordance with the standard of ISO3046.

Electric power (kW) should be estimated by considering generator efficiency, cooling fan power loss and power derating due to altitude and temperature.

**STANDBY POWER RATING** is applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. A standby rated engine should be sized for a maximum of a 70% average load factor and 200 hours of operation per year, this includes less than 25 hours per year at the Standby Power rating.

**PRIME POWER RATING** is available for an unlimited of hours per

year in variable load application. Variable load should not exceed a 70% average the Prime Power rating during any operating period hours., The Total operating time at 100% Prime Power shall not exceed 500 hours per year.

10% overload capability is available for a period of 1 hour within a 12 hours period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year,

**CONTINUOUS POWER RATING** is the power that the engine can continue to use under the prescribed speed and the specific environment condition in the normal maintenance period stipulated in the manufacturing plant. And continuous power applicable for supplying utility power at a constant 100% for an unlimited number of hours per year. No overload capability is available for this rating.

Engine Speed r/min	Application	Engine Power			
		Total Power		Net Power	
		kW	Ps	kW	Ps
1500	Prime	300	408	300	408
	Standby	330	449	330	449

**General Engine Data**

Engine Model	JC68G
Engine Type	6 cylinder , Inline-type, water-cooled, Four-stroke
Speed	1500 rpm
Bore x Stroke	6-130 x 161 mm
Number of valve per cylinder	4
Displacement	12.8 L
Compression Ratio	11.5:1
Rotation {Looking at flywheel}	Anti-clockwise (facing the power delivery end)
Firing Order	1-5-3-6-2-4
Cylinder Distance	162 mm
Combustion Type	W
Controller System	Woodward PG+
Outstanding Dimistation	1360 x 898 x 1138 mm
Engine Dry Weight	1065 kg
Rotational Inertia	2.9 kgm <sup>2</sup>
Flywheel and flywheel housing	SAE 14'' flywheel SAE 01#flywheel housing

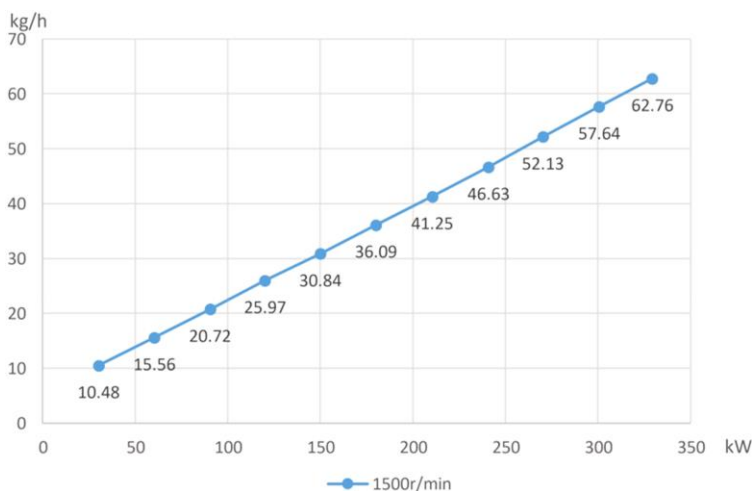


## INTRODUCTION

JC-G series engine developed independently by MAN is a classic product. It is characterized by energy-saving and environment-friendly, excellent performance, compact structure, and reliability and durability; the indexes, such as pollutant emission, dynamic performance, economy, and reliability, reach the international advanced level. The engine basic adopt new technology of Overhead camshaft. All main parts are import. Such as engine block, crankshaft, piston, Connecting rod, starting motor, bolt are all import from Germany, Valve, turbocharger, charging alternator are all import from U.S.A.

The engine design, component development, complete test validation came from AVL, AVL is a famous engine technology consulting company in the world, headquartered in Austria.

Engine Model	JC68G	
Fuel	GAS	
Fuel Consumption of generator set		
	kW	kg/h
Standby power- 110% load	330.0	62.76
Prime Power - 100% load	300.0	57.64
- 90% load	270.0	52.13
- 80% load	240.0	46.63
- 70% load	210.0	41.25
- 60% load	180.0	36.09
- 50% load	150.0	30.84
- 40% load	120.0	25.97
- 30% load	90.0	20.72
- 20% load	60.0	15.56



All data are based on:

- OBTAINED WHEN THE ENGINE IS RUNNING WITH FUEL SYSTEM, PUMP, OIL PUMP, AND FILTER; BUT EXCLUDING AC GENERATORS, SELECTION Devices and driven parts.

-Standard reference conditions: ; Atmospheric pressure 100kPa, intake temperature 25°, relative humidity 50%. The deviation range of the data is +/- 4%.

-Elevation and temperature correction:

The engine can operate under the following conditions: 1500r/min below 2000m and below 40 °C without correction.

## INTAKE & EXHAUST SYSTEM

Engine Model	JC68G
Max. Exhaust Back Pressure (kPa)	10±1
Max. Exhaust Temp. (After Turbo °C)	680
Exhaust Gas Flow (m <sup>3</sup> /h)	1450
Intake Gas Flow (m <sup>3</sup> /h)	1450
Max. Intake Resistance (Clean filter) (kPa)	3.5
Max. Intake Resistance (Dirty filter) (kPa)	6.5
Alarm Value of Intake Resistance (kPa)	6.3

**Cooling System**

Coolant main content	50: 50 (Ethylene Glycol water)
Coolant outlet Temperature	95°C
Temperature Difference with inlet & outlet	6 ±1°C
Max. Coolant warning Temperature	104 °C
Radiator Heat release	138 kW
Radiator Flow	440L/min
Intake air type	Air to air intercooler
Intercooler allowance press drop	11 - 13 kPa
Intercooler Heat release	57 kW
Intercooler allowance intake temperature	195 ±5°C
Max. Coolant intake air	1450 kg/h

**Lubrication System**

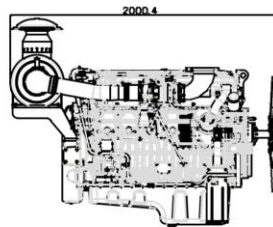
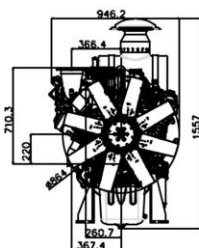
Lube oil pressure @ idle speed	Min 100 ±10 kPa
Lube oil pressure @ rated speed	550±10 kPa
Max. Permissible Oil Temperature	120 °C
Oil capacity Lowest	30 L
Oil capacity Highest	38 L
Oil capacity	33.2-41.6 L
Oil capacity allowance dip angle	30°C

**Electrical System**

Charging Alternator Voltage	28V
Unaided Cold Start Average Start Speed	130 r/min
Starting aid (Option)	Block heater (Min. Temperature for Unaided)

**EXHAUST**

Item	Value	Note
CH <sub>4</sub>	1069.5 ppm	
O <sub>2</sub>	≤5%	
N <sub>2</sub>	80%-83% (Standard values)	From your local air
CO <sub>2</sub>	70654.63 ppm	
NO <sub>x</sub>	208.4 ppm	
SO <sub>2</sub>		From your natural gas
CO	705 ppm	
DUST		From your local air

**JC-G SERIES GAS ENGINE**

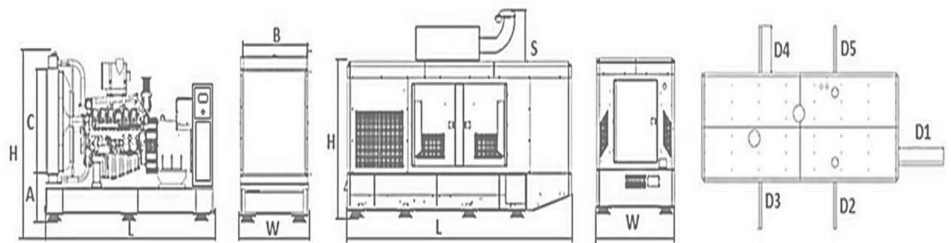
## GENERATOR DIMENSIONS AND TECHNICAL DRAWINGS



VALUES		OPEN TYPE GENERATOR	CANOPY TYPE GENERATOR
WIDTH	mm	1400	1942
LENGTH	mm	4000	5166
HEIGHT	mm	2188	2920
WEIGHT (NET)	Kg	4667	5960
FUEL TANK CAPACITY	L	1193	530

### SYMBOL OPEN CANOPY

L	4000	5166
W	1400	1942
H	2188	2282
S		638
A	560	
B	1302	
C	1446	
D1		1057
D2		961
D3		961
D4		961
D5		961



## Alternator Technical Parameters

### TECHNICAL PARAMETERS

Insulation Class	H		Field Control System	Self-Excited	
Winding Pitch	2/3 - (N° 6)		A.V.R. Model	Standard	AS440
Wires	12		Voltage Regulation	%	± 1
Protection	IP 23		Sustained Short-Circuit Current	10 sec	300% (3 IN)
Altitude	m	1000	Total Harmonic (*) TGH / THC	%	< 4
Overspeed	rpm	2250	Wave Form: NEMA = TIF - (*)		< 50
Air Flow	m <sup>3</sup> /sec	0.514	Wave Form: I.E.C. = THF - (*)	%	< 2
Bearing Drive	N/A	-	Bearing Non-Drive	Bearing	6310-2RZ
Rotor Winding	100%	Copper	Stator Winding	100%	Copper




(\*) Total harmonic content line to line, at no load or full rated linear and balanced load

### Alternator Specifications

50 Hz – 231 / 400V – Cos Q 0,8 – 1500 d/min

#### Standard Using Alternator

#### Optional Using Alternator




Brand/Model		JCB 270 LXA				TAL046G		S4L1D	
Duty		Continuous						Stand By	
Ambient	C°	40°C						27°C	
Class / Temp. Rise	C°	H / 125° K						H / 163° K	
Series Star	V	380/220	400/231	415/240	1 Phase	380/220	400/231	415/240	1 Phase
Parallel Star	V	190/110	200/115	208/120	220	190/110	200/115	208/120	220
Series Delta	V	220	230	240	230	220	230	240	230
Output Power	kVA	318,0	318,8	330,0	-	350,0	350,0	363,0	-
Output Power	kW	254,4	254,4	264,0	-	280,0	280,0	290,4	8,8

### Alternator Specifications

60 Hz – 277 / 480V – Cos Q 0,8 – 1800 d/min

#### Standard Using Alternator

#### Optional Using Alternator

Brand/Model		JCB 270 L1				TAL046D		S4L1D-C	
Duty		Continuous						Stand By	
Ambient	C°	40°C						27°C	
Class / Temp. Rise	C°	H / 125° K						H / 163° K	
Series Star	V	380/220	400/231	415/240	1 Phase	380/220	400/231	415/240	1 Phase
Parallel Star	V	190/110	200/115	208/120	220	190/110	200/115	208/120	220
Series Delta	V	220	230	240	230	220	230	240	230
Output Power	kVA	294,0	309,0	325,0	-	323,0	340,0	358,0	14,0
Output Power	kW	235,2	247,2	260,0	-	258,4	272,0	286,4	-




## CONTROL PANEL SPECIFICATIONS



- Powder Painted Steel Panel with Lockable Door
- ATS (Automatic Transfer Panel)-Optional
- Control Module
- Battery Charger
- Emergency Stop Button
- Backlit, 128x64 Pixels
- Control Relays
- Terminal Blocks
- Load Output Terminal
- System Protection MSBs
- Circuit Breaker-Optional
- LCD Screen

### CONTROL MODULE TECHNICAL PARAMETERS

<b>Brand</b>		<b>Brand</b>	Trans-MIDIAMF.232.GP
<b>Dimensions</b>	120mmx94mm.	<b>Protection Class</b>	IP65 From the Front
<b>Weight</b>	260 gr.	<b>Environmental Conditions</b>	2000 meters above sea level
<b>Ambient Humidity</b>	Max. %90.	<b>Ambient Temperature</b>	-20°C to +70°C
<b>DC Battery Supply Voltage</b>	8 - 32 V	<b>Battery Voltage Measurement</b>	8 - 32 V
<b>Network Frequency</b>	5 - 99,9 Hz	<b>Mains Voltage Measurement</b>	3 - 300 V phase -Neutral, 5 - 99,9 Hz
<b>Generator Voltage Measurement</b>	3 - 300 V	<b>Generator Frequency</b>	5 - 99,9 Hz
<b>Current Transformer Secondary</b>	5A	<b>Working Period</b>	Continuous
<b>Charge Alternator Voltage Measurement</b>	8 - 32 V	<b>Charge Alternator Excitation</b>	210mA & 12V, 105mA & 24V Nominal 2.5W
<b>Communication Interface</b>	RS-232	<b>Analog Sender Measurement</b>	0 - 1300ohm
<b>Generator Contactor Relay Output</b>	5A & 250V	<b>Mains Contactor Relay Output</b>	5A & 250V
<b>Solenoid Transistor Outputs</b>	1A with DC Supply	<b>Start Transistor Outputs</b>	1A with DC Supply
<b>Configurable-3 Transistor Outputs</b>	1A with DC Supply	<b>Configurable-4 Transistor Outputs</b>	1A with DC Supply

## CONTROL MODULE FUNCTIONS

Mains Voltage Level Control	Generator Voltage Level Control	3 Phase Generator Protections	3 Phase AMF Function	Alarm Horn
Network Frequency Level Control	Generator Frequency level Control	- High / Low Voltage	- High / Low Frequency	Heater Tube Thermostat Control
Engine Operating Option Control	Generator Current Level Control	- High / Low Frequency	- High / Low Voltage	Modbus and SNMP
Engine Stop Option Control	Generator Powder Level Control	- Current / Voltage Asymmetry	- High / Low Water Temperature	Working Hour
Engine Speed (RPM) Level Control	Generator work Schedule and Timing Control	- Overcurrent / Overload	- High / Low Load	Ground Leakage
Battery Voltage Options Times	Oil Pressure Controllers Control	Overheat Control	Mains., Generator ATS Control	Analog Modem
Check Engine Maintenance Times	Configurable Analog Inputs and Outputs	1 Phase or 3 Phase, Phase Selection	Network, Voltage, Frequency Display	Ethernet, USB, RS232, RS485
Communication Interfaces GPRS, GSM	Keeping Error Records of Past Events	Parameter Setting via Control Module	Parameter Setting via Computer	Selectable Protection Alarm / Shutdown
Engine Speed, Voltage, Earting	Configurable Programmable Digital Inputs and Outputs	Water Temperature Current and Frequency	Hours of Operation Phase sequence	Battery Voltage Oil Pressure



- Special, Registered JCB Energy Design and Colour
- A1 Quality DKP / HRU / Galvanized Steel
- Sensitive Twist on Automatic Press Brake
- Delicate Cut on Automatic Punch and Laser Bench
- Sensitive Welding on Robotic Welding Bench
- Chemical Cleaning Nano Technology Before Painting
- Robotic Painting with Electrostatic Powder Paint
- Drying and stabilizing on 200 °C Ovens
- 1500 Hour Salt Test
- Glass wool Isolation, A1 Class Material -50/+500 °C
- Special Covering Over Glass Wool
- Best Sound Level (in DbA)
- Temperature Tests
- Rustproof Accessories
- Cable Exit Connectors and Glands
- Emergency Stop Button
- Fuel Level Gauge
- Fuel Drain Cap
- Fuel Inlet and Return Records
- I permeability Test for Fuel Tank
- Vacuumed Rubber Mounted
- High Quality weatherstrips
- High Quality Shock Absorbers
- Fuel Filling Cap (with ventilation)
- Lifting and Carrying Equipment
- Internal Exhaust Mufflers (Silencers)
- External Exhaust Mufflers (Silencers)
- Radiator water Filling Cap
- Daily Fuel Tank, External Fuel Tank



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