



All photos and drawings are examples of the PWC Energy Power Module and may not reflect the actual package.

## PWC Diesel Power Modules

Assembled in an ISO 40' HC Container; Class 1 Exhaust Pancake-style Muffler; Horizontal Discharge Radiator; 1200 Gallon On-Board Fuel Tank; Raycor 3-Stage Fuel Filter System; Battery Charger; Jacket-Water Heaters ; Stamford New Age Alternator; Woodward EasyGen Controller; 3200 Amp Siemens Motor Operated Circuit Breaker

**US \$ 489,000.00 each**

Delivery estimated 8-10 weeks

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### General Information

- New MTU 16V4000G23 engine
- 50Hz Standby Rated Output: 1880kW; 400Volts / 3 – ph
- 50Hz Prime Rated Output 1720kW
- Utility Paralleling Control Panel
- Sound Attenuated



**PWCENERGY**  
modular power solutions



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## Diesel Power 50Hz Open Type Generator Set



### 50Hz at 0.8 Power Factor 400V 3-Phase Rated Voltage

#### PRIME†

1, +80kW / 2, 50kVA

#### STANDBY

1, 0kW / 2, 0kVA

## GENERATOR SET PERFORMANCE

### Application

A factory designed generator set equipped with a standard AC/DC generator control panel. The generator set is ready to be connected to your fuel and power line to start up once the installation completed.

### Applicable Definitions

Prime: Applicable for supplying emergency power at varying load in the event of normal utility power interruption. 10% overload is allowed.

### Applicable Standard

Generator sets design, assembly and testing meet or exceed many international standards. The power rating is set in accordance with ISO 8528, ISO 3046-1 and SAEJ1995/J1349.

### Structure Outline

The generator set has selected materials and equipment of high performance, which are durable and anti-vibration. The assembly work meets the quality control system.

The concept of the design and manufacturing is for easy operation and maintenance, to be compact and light weight too.

The single bearing alternator frame is coupled to the engine housing directly. With one end of the rotor is supported by bearing and the other end of rotor shaft is connected to the engine flywheel with a steel laminate plates.

All components and necessary equipment are mounted on the common skid base.

### Rubber Isolator Mounting

The rubber isolators are mounted between engine, alternator and its common skid base.

### Applicable Conditions

Installation Place	: Indoor
Ambient Temperature	: 0°C ~ 40°C
Ambient Humidity	: Below 99%
Altitude	: Maximum 1,000 m

### Painting Color

Engine	: MTU Blue
Alternator	: Blue / Black
Generator Control Panel	: Black
Skid Base	: Black

### Dimensions and Weight

Overall Length	: 6,544 mm
Overall Width	: 2,220 mm
Overall Height	: 2,507 mm (w/o silencer)
Weight	: Approx. 14,700kg

### Control System

Panel Model	: V500-G
Controller Model	: EasyGen
Controller Brand	: Woodward
Mounted	: Set Mounted

\* Materials and specifications are subjected to change without prior notice.



**Diesel Power 50Hz  
Open Type Generator Set**

**TECHNICAL DATA**

		50Hz (1500RPM)
<b>ENGINE BODY</b>	Maker and Model	MTU 16V4000G3
	Rating Type	Prime
	Engine Output	2,410
	kWm	1,798
	Engine Load Acceptance	1,204 (70%)
	Aspiration	Turbocharged and Water Charge Air Cooling
	Cylinder Arrangement	16 Vee
	Type	Water Cooled, 4 Cycles, Overhead Valve
	Bore x Stroke	170 x 210
	mm x mm	
	Piston Displacement	76.3
	Starting Method	Electric Motor, 24V – 9.0kW x 2
	Charging Alternator	DC 24V – 35A (Brushless)
	Cooling Fan and Diameter	8 Blades Pusher Type, 1891
	mm	
	Oil Cooler	Water Cooled, Multi-plate Type
	Air Cleaner	Dry Type, Cyclopac 2 Stage Paper Element
	Stop Solenoid	Energized to Run Mode
	Flywheel Housing / Flywheel	SAE #00 / SAE #21 (Metric Tread)
	Flywheel Ring Gear Teeth	182
Battery (Lead Acid Type)	DC 12V – 200Ah x 4 pcs	
Frequency Regulation, Stead State	≤±0.5	
Frequency Regulation, Transient State	≤±10	
Frequency Stable Time	2	
Frequency Waving	≤±0.25	
Frequency Regulation Range	±5.0	
<b>ENGINE LUBRICANT</b>	Oil Pan (High / Low Level)	240 / 210
	Liter	
	Oil Filter /By-pass Filter	60
	Liter	
System Total	300	
Liter		
Grade	SAE #15W-40	
	API, Class CH, CI	
<b>ENGINE COOLANT</b>	Radiator and Ambient Temp.	°C
	°C	
	Cooling System	Corrugate Fin Type, 40
	Engine Capacity	Forced Circulation by Centrifugal Water Pump
	Liter	225
Radiator Capacity	330	
Liter		
Radiator Heat Rejection	970	
kW		
<b>ENGINE DATA</b>	Pressure Mean Effective (PME)	18.9
	bar	
	Mean Piston Speed	10.5
	m/s	
	Sound Level (Average at 1m)	
	Full Load	107
	dB(A)	
	Speed Regulation	Electronically controlled injection; Common Rail System
	%	
	Thermostat (Wax Type)	
Water Coolant	°C	
°C		
Engine Shutdown Device	Cracking 79, Fully Open 87	
Coolant Temp (Sensor Type)	102 + 3%	
°C		
Oil Pressure (Sensor Type)	98 + 3% (1.0 + 3% bar)	
kPa		
<b>FUEL CONSUMPTION</b>	BSFC (at 100% Load)	192
	g/kWh	
	Lubricating Oil (Nominal Value)	0.3
%		
Fuel Rate	420	
Liter/h		

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**TECHNICAL DATA**

		50Hz (1500RPM)
<b>ALTERNATOR</b>	Model	PI734G1
	Construction	Single Bearing, Self Ventilated
	Control System	MX321 with PMG Excited
	Insulation	Class H
	Protection	IP23
	Rated Power Factor	0.8
	Efficiency (Cont. 100%)	% 96.0
	No of Pole and Phase	4 Poles 3 Phase 4 Wire
	Stator Winding	Double Layer lab
	Winding Pitch	2/3
	Winding Leads	6
	Voltage Regulation, Stead State	% $\leq \pm 0.5$
	Voltage Regulation, Transient State	% + 20 ~ -15
	Voltage Stable Time	s $\leq 0.5$
	Voltage Waving	% $\leq \pm 0.5$
	Voltage Regulation (at No Load)	% 95 ~ 105
	Voltage Waveform Distortion	
No Load	% < 1.5	
Non-Distorted Balanced Linear Load	% < 5.0	
Maximum Overspeed	rpm 2250	
Telephone Interference	% THF < 2 / TIF < 50	
Voltage Dip. at 15%	kVA 1350kVA	
Voltage Dip. at 20%	kVA 1900kVA	
<b>AIR VENTILATION</b>	Combustion Air Flow	m <sup>3</sup> /min 126
	Cooling Fan Air Flow	m <sup>3</sup> /min 1,920
	Alternator Air Flow	m <sup>3</sup> /min 161.4
	Total m <sup>3</sup> /min	2,207.4
<b>EXHAUST GAS</b>	Gas Flow (at Full Load)	m <sup>3</sup> /min 324
	Temperature (at T/C Outlet)	°C 480
	Allowable Back Pressure	mbar 85
	Bellow Size (Inner Diameter)	mm 250 x 2
<b>RECOMMEND</b>	Diesel Fuel (Grade)	ASTM D975, 1-D or 2-D
	Pipe Size of Fuel Line	
	Supply (Minimum)	Inch 1.5
Return (Minimum)	Inch 1.0	

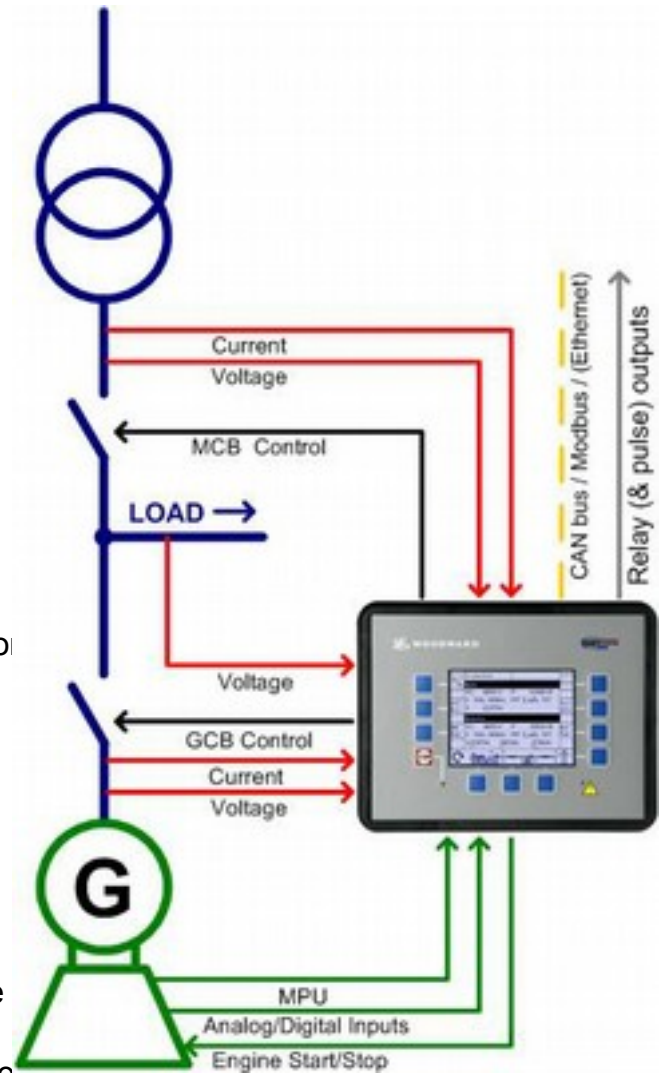
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## Diesel Power 50Hz Open Type Generator Set

### EasYgen-3000

#### Features:

- \*Operation modes: Auto, manual, test (load & no load)
- \*Breaker configuration: MCB, GCB, no breaker
- \*Load sharing via CAN bus
- \*Breaker control: Synchronization, open-close control, only-open control, breaker monitoring
- \*Load transfer features: Open/closed transition, interchange, soft loading/soft unloading, mains parallel
- \*Process dependent start/stop logic by free configurable inputs: Water temperature, fuel reserve, reserve power, timers and others
- \*Complete engine, generator, and mains protection with 3-phase true RMS AC sensing
- \*Multi-lingual capability: 11 languages English, German, French, Spanish, Chinese, Japanese Italian, French, Turkish, Portuguese, Russian,
- \*True rms sensing of voltage
- \*True rms sensing of current/power
- \*Counters for engine starts, operating hours, maintenance call, active/reactive energy
- \*Event recorder (300 entries, FIFO) with real-time
- \*10 discrete inputs / 12 discrete outputs
- \*16 additional discrete I/Os via IKD 1 extension board
- \*3 analog inputs / 2 analog outputs
- \*PC and/or front panel configurable
- \*Communication:
  - Interfaces:
    - 2x CAN
    - RS-485
    - RS-232
- \*Protocols
  - J1939 for ECU communication (control & display)
  - Special Scania S6, MTU ADEC, Volvo EMS2 & EDC4, Deutz EMR2, MAN MFR/EDC7, SISU EEM and Woodward EGS02 ECU support
  - CANopen for external terminals (Woodward IKD 1 or Phoenix Contact IL series)
  - Modbus (RTU slave)
- \*Protection:
  - kWh/kvarh meter
  - Engine
    - Overspeed (ANSI# 12)
    - Battery over-/undervoltage (ANSI# 59/27)





## **Diesel Power 50Hz Open Type Generator Set**

**'gcu' i gp/5222**

Auxiliary excitation  
Speed/frequency mismatch

### **\*Generator**

Over-/undervoltage  
Over-/underfrequency  
Unbalanced voltage  
Unbalanced load  
Dead bus detection  
Overload  
Reverse/reduced power  
Definite overcurrent and time overcurrent  
Inverse time overcurrent  
Measured ground fault  
Phase rotation

### **\*Mains**

Load  
Frequency  
Voltage  
Phase shift  
Active/reactive power

The easYgen-3000 is a control unit for engine-generator system management applications. The many inputs and outputs, along with a modular software structure, allow the easYgen-3000 to be used for a wide range of different applications with only a single part number. Among others, this includes co-generation, stand-by, AMF, peak shaving, import/export or distributed generation. The easYgen-3000 is also applicable for island, island parallel, mains parallel and multiple unit mains parallel operations.

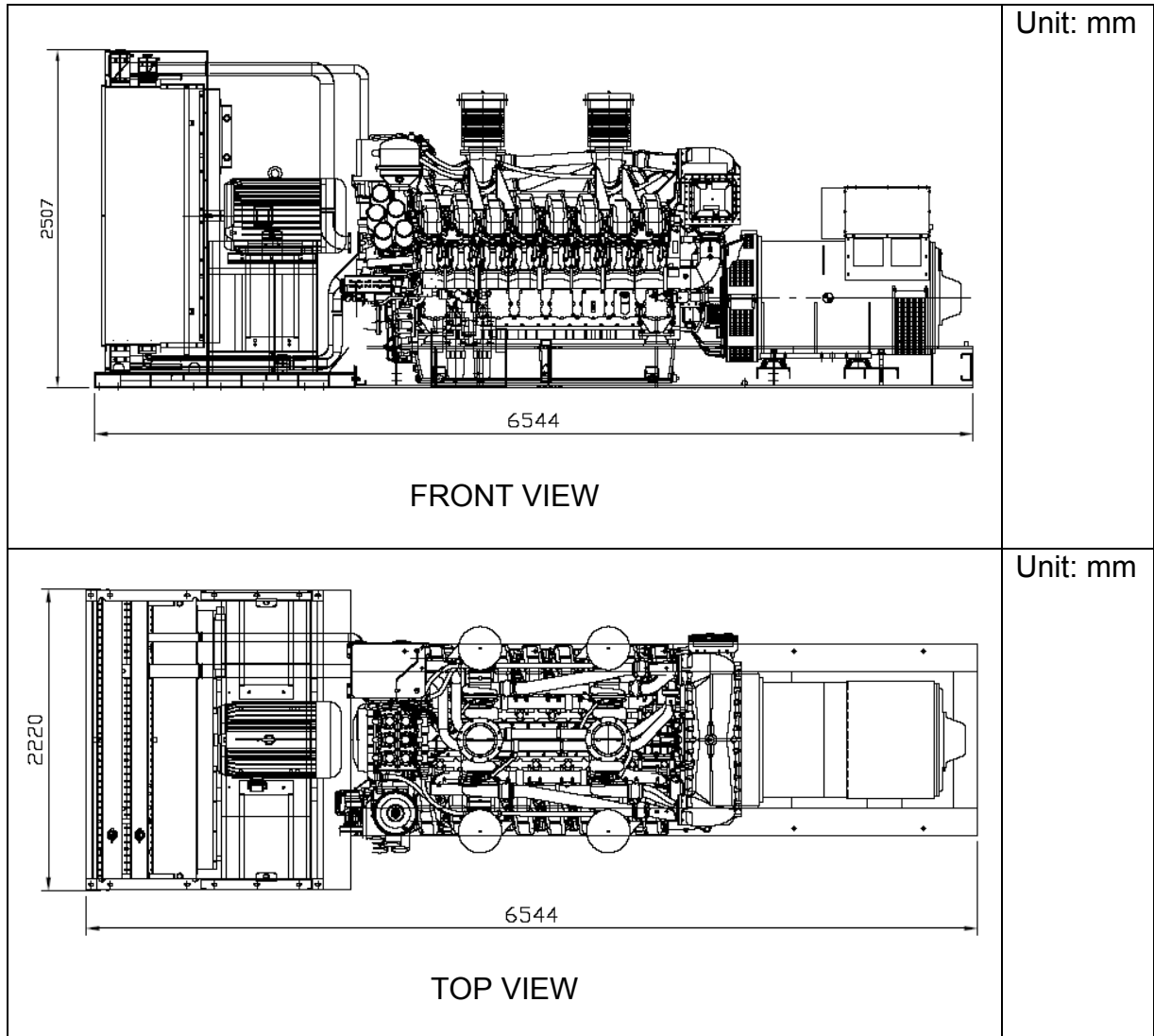
The easYgen-3000 ensures a safe multi-breaker operation including features like:

By using Woodward's LogicsManager you are able to change the operation sequences and modify them to your specific need. Therefore the LogicsManager provides a range of measuring and internal states values that can be combined logically by Boolean operators and programmable timers.



**Diesel Power 50Hz  
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**GENERATOR SET DRAWING**



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