POWER FACTOR

Energy Solutions for a brighter future...

MTU - VGS2090 Diesel Generator

3-Phase Rated – 400v, 50Hz, 0.8 pf
Prime Power
1,464 kWe / 1,830 kVA

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/Outdoor
Ambient Temperature	: 40°C
Air Intake Temperature	: 40°C
Altitude	: 400 m

Painting Color

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

Dimensions and Weight (PPU Gen Set)

Overall Length	: 5,944 mm
Overall Width	: 2,196 mm
Overall Height	: 2,507 mm
Weight	: Approx. 13,200kg

Control System

Panel Model	: V500-G
Controller Model	: IG-NT
Controller Brand	: ComAp
Mounted	: Set Mounted

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

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50Hz Containerized Generator Set - 400V 3-Phase Rated Voltage

TECHNICAL DATA

ENGINE BODY	Maker and Model	MTU 12V4000G63
	Rating Type	Prime
	Engine Output	2,111HP 1,575kWm
	Engine Load Acceptance	1025kWe (70%)
	Aspiration	Turbocharged and Water Charge Air Cooling
	Cylinder Arrangement	12 Vee
	Type	Water Cooled, 4 Cycles, Overhead Valve
	Bore x Stroke	170mm x 210mm
	Piston Displacement	57.2 Liters
	Starting Method	Electric Motor, 24V – 9.0kW x 2
	Charging Alternator	DC 24V – 35A (Brushless)
	Cooling Fan and Diameter	8 Blades Pusher Type, 1830mm
	Oil Cooler	Water Cooled, Multi-plate Type
	Air Cleaner	Dry Type, Single 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 1 2V – 200Ah x 4
	Frequency Regulation,Steady State	≤ ±0.5%
	Frequency Regulation, Transient State	≤±10%
	Frequency Stable Time	2 sec
	Frequency Waving	≤±0.25%
	Frequency Regulation Range	±5.0%
ENGINE LUBRICANT	Oil Pan (High / Low Level)	200 / 160 liters
	Oil Filter /By-pass Filter	60 liters
	System Total	260 liters
	Grade	Oil Category 2 (Refer to MTU Fluid & Lubricant Specification A001 061/33E)
ENGINE COOLANT	Fan Motor & Radiator Intake Temp.	55kW (Class F) @ 55°C
	Cooling System	Forced Circulation by Centrifugal Water Pump
	Engine Capacity	200 liters
	Radiator Capacity	400 liters
	Heat Dissipation	840kW
ENGINE DATA	Mean Effective Pressure (MEP)	22.0 bar
	Mean Piston Speed	10.5 m/s
	Sound Level (Average at 1m)	103dBA (Engine Surface)
	@ Full Load	113dBA (Exhaust)
	Speed Regulation	Electronically controlled injection;
	Thermostat (Wax Type)	Common Rail System
	Water Coolant	Cracking 79C, Fully Open 87C
	Engine Shutdown Device	
	Coolant Temp (Sensor Type) Oil	104 C
	Pressure (Sensor Type)	3.6 bar
FUEL CONSUMPTION	BSFC (at 100% Load)	193 g/kWh
	Lubricating Oil (Max.)	0.3g/kWh
	Fuel Rate	379 liter/hr

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50Hz Containerized Generator Set - 400V 3-Phase Rated Voltage

TECHNICAL DATA

ALTERNATOR	Model		PI734E1
	Construction		Single Bearing, Self Ventilated
	Control System		MX321 with PMG Excited
	Insulation / Temperature Rise		Class H, Class F
	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,Steady State		≤±0.5%
	Voltage Regulation, Transient State		+20 ~ -15v
	Voltage Stable Time		≤0.5%
	Voltage Waving		≤±0.5%
	Voltage Regulation(at No Load)		95 ~ 105%
	Voltage Waveform Distortion		< 1.5%
	No Load		< 5.0%
	Non-Distorted Balanced Linear Load		
	Maximum Overspeed		2250 rpm
	Telephone Interference		THF<2 / TIF<50
	Voltage Dip at 15%		1900kVA
	Voltage Dip at 20%		2700kVA
AIR VENTILATION	Combustion Air Flow		108.0 m^3/min
	Cooling Fan Air Flow		1,824 m^3/min (55°C Radiator Air Intake)
	Alternator Air Flow		161.4 m^3/min
	Total		2,093.4 m^3/min
EXHAUST GAS	Gas Flow (at Full Load)		270 m^3/min
	Temperature (at T/C Outlet)		440 C
	Allowable Back Pressure		85 mbar
	Bellow Size (Inner Diameter)		250 x 2mm
RECOMMEND	Diesel Fuel (Grade)		ASTM D975, 1-D or 2-D (Refer to MTU Fluid & Lubricant Specification A001 061/33E)
	Pipe Size of Fuel Line Supply / Return (Minimum)	Inch	1.5 / 1.0 In.
GENERATOR CONTROL PANEL	Gen Set Controller		ComAp AMF25
	Analog Measurement		Coolant Temperature Engine Oil Pressure Engine Speed Battery Voltage Hour Run Fuel Level (Optional)
	AC Measurement		Gen U1 – U3 Gen I1 – I3 Gen Frequency Gen Active Power Gen Reactive Power Gen Power Consumption Mains U1 – U3 Mains Frequency Mains Voltage (L1-L2, L2-L3, L3-L1)

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50Hz Containerized Generator Set - 400V 3-Phase Rated Voltage

TECHNICAL DATA

GENERATOR CONTROL PANEL	Default Protection Settings Low Oil Pressure High Coolant Temp Over Speed Fail to Start Low / Hi Battery Voltage Charge Fail Under / Over Voltage Under / Over Freq. Over Current	 < 1.5 bar > 100 C > 10% of Rated Speed > 39 Sec (failed to start after 3 attempts) 18 / 30 v < 18 v 70 / 110% of Rated Voltage 85 / 110% of Rated Freq. >120% (IDMTL)
	Push Buttons MODE > MODE < HORN RESET FAULT RESET START STOP MCB ON / OFF GCB ON / OFF PAGE ^ v Enter	 Cycle Forward (OFF > MAN > AUT > TEST) Cycle Backward (TEST > AUT > MAN > OFF) Deactivates “HORN” Acknowledges Fault / Alarm Start Genset Stop Genset Manual Open / Close Main Breaker Manual Open / Close Gen Breaker Cycles Display Mode (MEASUREMENT < > ADJUSTMENT) Select Set Point / Increase Value Select Set Point / Decrease Value Confirm Set Point Value
	LED’s (from left to right)	MAINS FAILURE: RED LED starts flashing when the mains failure occurs and Genset does not run; steady light when Genset starts; off when Mains restores. MAINS PRESENT: GREEN LED is on, if mains is present and within limits. MCB ON: GREEN LED is on, if MCB is closed. Driven by feedback signal. GCB ON: GREEN LED is on, if GCB is closed. Driven by feedback signal. GEN VOLTAGE PRESENT: GREEN LED is on, if Gen voltage is present and within limits. GENSET FAILURE: RED LED starts flashing when genset failure occurs. After FAULT RESET button is pressed, it should become steady light (if an alarm is still active) or is off (if no alarm is active).
	Emergency Stop Button Key Switch LED Buzzer	Stop Genset in case of emergency ON/OFF Power to the control panel Common Engine Fault LED Audible alarm

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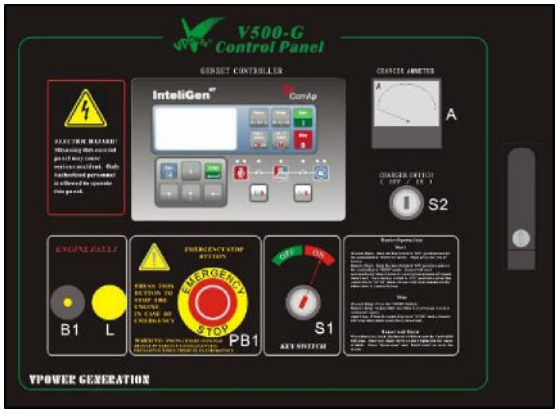
Diesel Power 50Hz
Open Type Generator Set

V500-G GENSET CONTROL SYSTEM

VPOWER V500-G SYN. Control System is a comprehensive control system for both single and multiple Gensets operation in standby or parallel modes.It has equipped with ComAp IG-NT module,which supports ECU type and Actuator type engine controller.Native cooperation of up to 32 Gensets.

General Features:



- Set Mount or Free Standing Configuration
- Indicator and Buzzer for common alarm
- Key Switch
- Emergency Stop Button
- LCD graphical Display
- AMF Ready
- Integrated fixed and configurable protections
- Automatic synchronization and flow control
- Expandable I/O's
- Programmable Logic Control
- RS232/RS485 Communication Port

Synchronization:

- Fully automatic synchronization and power control
- Support speed governor and ECU
- Baseload, Import/Export control
- Peak shaving
- Voltage and PF control

Measurement:

- Generator: U, I, Hz, kW, kVAr, kVA, PF, kWh, kVAhr
- Mains: U, I, Hz, kW, kVAr, PF

Protection:

- 3P integrated genset protection (U+f)
- IDMT O/L and Short Circuit Protection
- Overload Protection
- Reverse Power Protection
- E/F Protection
- 3P integrated mains protections (U+f)
- Vector Shift Protection
- Configurable I/O setpoints

Display:

- LCD graphical display with HMI
- LEC indicators for operation status
- Optional remote display

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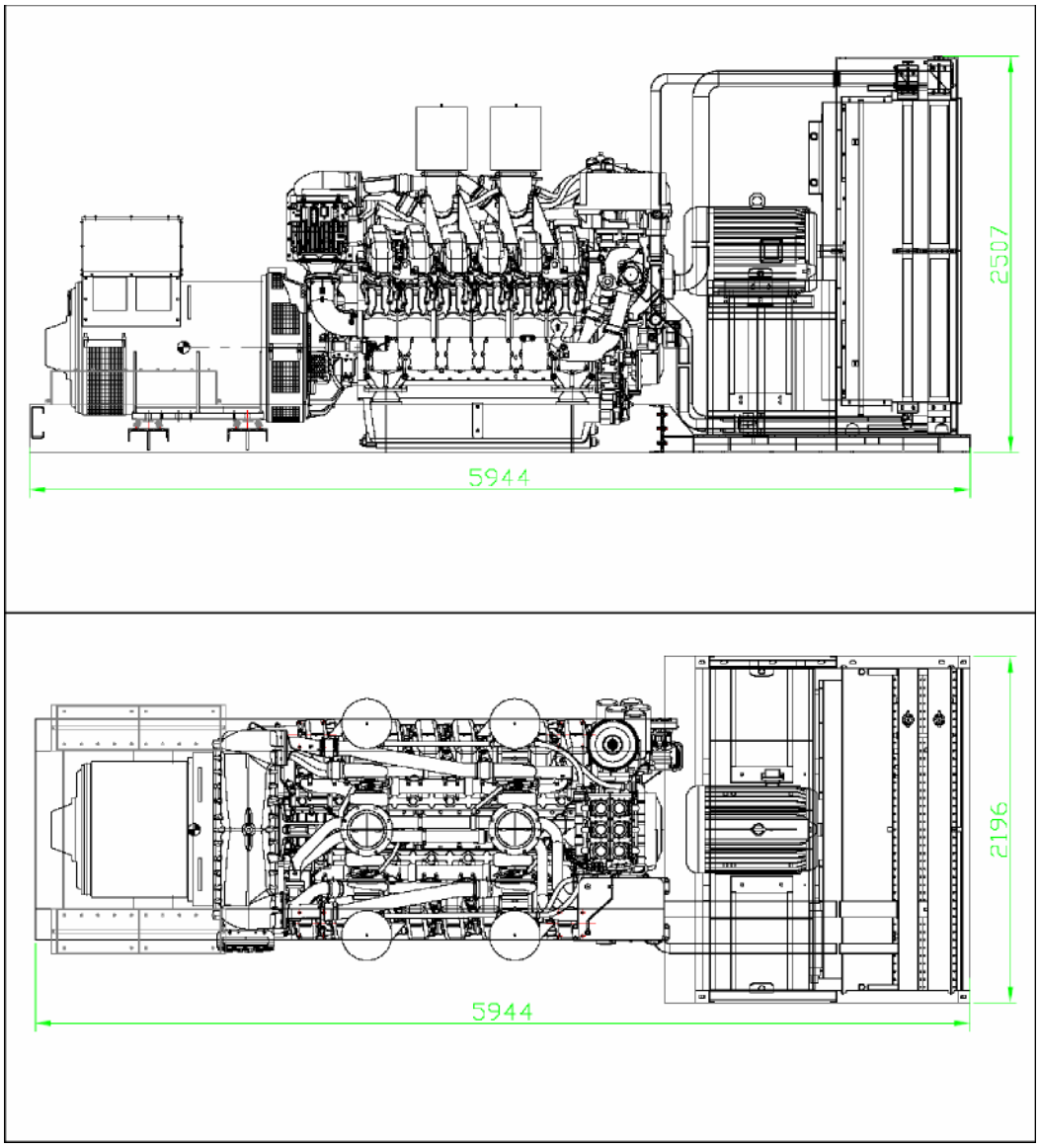
GENERATOR SET DRAWING



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