MITSUBISHI HEAVY INDUSTRIES

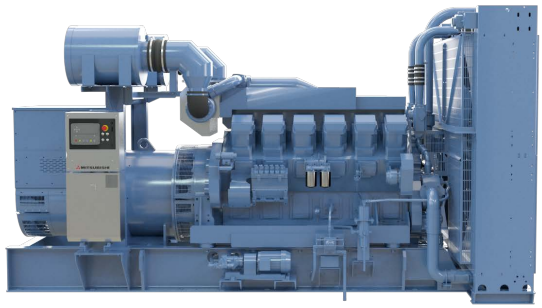

*image is for illustration purpose. It may not reflect actual product

MGS Mitsubishi Generator Series

MGS1600R

S12R-PTAR | 60 Hz

MITSUBISHI DIESEL GENERATOR

MGS Model	MGS1600R
Frequency (Hz)	60

Voltage (V)		380			
Duty		Standby (ESP)	Critical Power (CP)	Prime (PRP/LTP)	Data Center Continuous Power (DCCP)
Rated Output[1] (kVA)		1587.5		1437.5	
(kW)		1270		1150	
Engine Model		S12R-PTAR			
Fuel Consumption[2] (liter/hr) (% load)	25%	116		110	
	50%	187		174	
	75%	263		241	
	100%	344		314	
Generator	MG-	L50L78			
Cooling System	Type	Closed looped circuit by integral radiator			
Length	(mm)	4600			
Width	(mm)	2155			
Height	(mm)	2790			
Weight (Dry)	(kg)	9800	9980	9800	9980
(Wet)	(kg)	10330	10510	10330	10510

Voltage (V)		480			
Duty		Standby (ESP)	Critical Power (CP)	Prime (PRP/LTP)	Data Center Continuous Power (DCCP)
Rated Output[1] (kVA)		1587.5		1437.5	
(kW)		1270		1150	
Engine Model		S12R-PTAR			
Fuel Consumption[2] (liter/hr) (% load)	25%	117		110	
	50%	187		174	
	75%	263		241	
	100%	345		314	
Generator	MG-	L50L7			
Cooling System	Type	Closed looped circuit by integral radiator			
Length	(mm)	4600			
Width	(mm)	2155			
Height	(mm)	2790			
Weight (Dry)	(kg)	9800	9980	9800	9980
(Wet)	(kg)	10330	10510	10330	10510

1: Output at 40°C, 1000m ASL with fan
2: Fuel consumption based on fuel density of 0.84 kg/L.
Fuel oil consumption may differ subject to site condition and specification of fuel. Not guaranteed value.

STANDARD & CERTIFICATIONS

- Certified to standards ISO 9001:2015
- Complies to G3 ISO8528-(1,3,5) sections, IEC60034-1 / BS EN60034-1, BS5000 Part 3, VDE00530, NEMA MG1-32, CSA22-2-100, AS1359 and UL1446
- Fully compliant with the NFPA110 Standard for Emergency and Standby Power
- Provides 100% load acceptance in one step to meet these demands

ENVIRONMENT PARAMETER

- Relative Humidity : 85%
- Altitude above sea level: 1000m
- Ambient Temperature: 5°C - 40°C (Please approach our authorized dealer/distributor for other requirements.)

ADVANCED CONTROL PANEL

- Rugged metal sheet with anti-vibrator isolator
- Operator-friendly interface and navigation
- Complete instrument and control accessories to meet a wide range of installation requirements
- Expansion module and custom programming are available for specific customer requirements

COMPLETE RANGE OF ACCESSORIES

- Power Panel
- Fuel System
- Exhaust System
- Starting/Charging System
- Mechanical Driven Radiator
- Engine Protection Synchronize Module

APPLICABLE CODES AND STANDARDS

MGS is designed in accordance with JIS, JEC, JEM, IEC, ISO (ISO15550, ISO 8528- (1,3,5) sections, ISO3046/1, JISB8002-1, DIN627, BS5514, BS5000, VDE00530, NEMA MG1-32, IEC60034, CSA (C22.2-100, AS1359) and manufacturer's standards unless otherwise specified.

Telephone Influence Factor (TIF): Less than 50

Telephone Harmonic Factor (THF): Less than 2%

Radio Interference: Suppression is in line with the provision of BS800 and VDE Class 0875G and 0895N

JIS: Japanese Industrial Standards

JEC: Japanese Electrotechnical Comittee

JEM: Standards of Japan Electrical Manufacturer's Association

IEC: International Electrotechnical Commission

ISO: International Standard Organization

Codes may not be available in all model configurations. Please consult local MGS dealer for availability

FUEL RATES

Based on ASTM D975, BS2869, and on fuel oil of 35°C API (16°C or 60°F) gravity having a LHV of 42,780kJ./kg (18,390 Btu/lb.) when used at 29°C (85°F) and weighing 838.9 g/liter (7.001lbs./U.S.gal.).

DIESEL ENGINE

		Standby (ESP)	Critical Power (CP)	Prime (PRP / LTP)	Data Center Continuous Power (DCCP)
Gross Engine Power (w/o fan basis)	(kWm)	1386		1260	
Engine Type		4 cycle, direct injection, turbocharged with after cooler			
Speed	(RPM)	1800			
Brake mean effective pressure	(MPa)	1.9		1.7	
Regenerative Absorption	(kW)	144			
No.of cylinder		12			
Broke / stroke	(mm)	170 / 180			
Total displacement	(liter)	49.03			
Compression ratio		14.0:1			
Piston Speed	(m/sec)	10.8			
Noise Level at 1m (Excluding: intake, exhaust & fan)	(dB(A))	106			
Governor	Type	Digital Electrical type			
Frequency Regulation		G3 Class			
Steady State Frequency Band		±0.25%			
Heat Rejection to Coolant	(kW)	904		822	
Heat Rejection to Exhaust	(kW)	1217		1106	
Heat Rejection to Atmosphere from engine	(kW)	109		99	

LUBRICATION SYSTEM

Lubricating Oil Capacity	L	180
Lubricating System	Type	Forced lubricating by gear pump wet sump
Lubricating Oil Filter	Type	Paper element
Lubricating Oil Cooler	Type	Water cooled corrugated

COOLING SYSTEM

Coolant Capacity w/o Radiator / with Radiator	L	125 / 302
Coolant Pump External Resistance	kgf/cm2	0.35
Coolant Pump Flow Rate	L/min	1850
Cooling Fan Airflow Rate	m^3/min	1800
Cooling Fan Airflow Restriction	kPa	0.1

ELECTRICAL SYSTEM

System Voltage	VDC	24
Starting System		Electric Starting
Starter Motor Capacity		7.5 kW x 2
Max. Allowable Resistance of Cranking Circuit	mΩ	1.5
Recommended Minimum Battery Capacity	Ah	400 (5°C & above)
		500 (Below 5°C to - 5°C)

GENERATOR

		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)
Generator	Type	Brushless, self-excited, self-ventilated and rotating fiel			
Configu ation		3 Phase 4 Wire			
Protection		IP23			
Power Factor		0.8 Lagging			
No of Poles		4 Poles			
Insulation Class		Class H			
Temperature Rise		Class H Peak		Class H	
AVR	Type	DAVR			
Voltage Regulation	Steady State	± 0.25%			
Wave Form Distortion		5% (Non-Distorting Balanced Linear Load)			
Unbalanced Loading		Maximum 25%			
Negative Phase Sequence		Maximum 8%			
Overspeed		Maximum 125% of nominal speed			

INLET AND EXHAUST SYSTEM

		Standby (ESP)	Critical Power (CP)	Prime (PRP / LTP)	Data Center Continuous Power (DCCP)
Air Cleaner	Type	Turbo Filter	Paper Element	Turbo Filter	Paper Element
Combustion Air Inket Flow Rate	m^3/min	124		113	
Exhaust Flow Rate	m^3/min	328		298	
Max. Exhaust Gas Temperature	°C	550			
Exhaust Flange Size (Internal Diameter)		300A			
Allowable Exhaust Back Pressure	mm H2O	600			

RATING DEFINITION IN ACCORDANCE WITH ISO8528-1

Duty	Overload	Load / Operating Hour		
		Avg. Load Factor/yr	Operating Hr/yr	Avg. Load Factor / 24hr
Standby (ESP)	Not Available	Maximum 70%	Maximum 500 hours	1. Maximum 80% 2. 100% in emergency
Prime (PRP)	+10% Overload	Maximum 70%	Unlimited	1. Maximum 80% 2. Overload operation (≤110%) is limited to a maximum of 1hr per 12 hrs 3. Over 90% load operation limited to a maximum of 3 hrs/24hrs
Prime (LTP)	+10% Overload	Maximum 100%	Maximum 500 hours	1. Maximum 100% 2. Overload operation (≤110%) is limited to a maximum of 1hr per 12 hrs
Continuous (COP)	Not Available	Maximum 100%	Unlimited	Maximum 100%
Critical Power (CP)[3]	Not Available	Maximum 100%	Unlimited	Maximum 100%
Data Center Continuous Power (DCCP)[3,4]	+10% Overload	Maximum 100%	Unlimited	1. Maximum 100% 2. Overload operation (≤110%) is limited to a maximum of 1hr per 12 hrs

3: UPTIME compliant: CP & DCCP rating meets the requirement of a Tier III and Tier IV data center site with no runtime limitation when the operation is loaded to 'N" demand for the engine generator set.
4: +10% overload is not recognized by Uptime for Tier Certification.

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Mitsubishi Heavy Industries Engine System Asia Pte. Ltd.
3 Tuas Avenue 12, Singapore 639024
Tel: +65 6862 2202
Website: www.mhi.com/group/mhiesa/