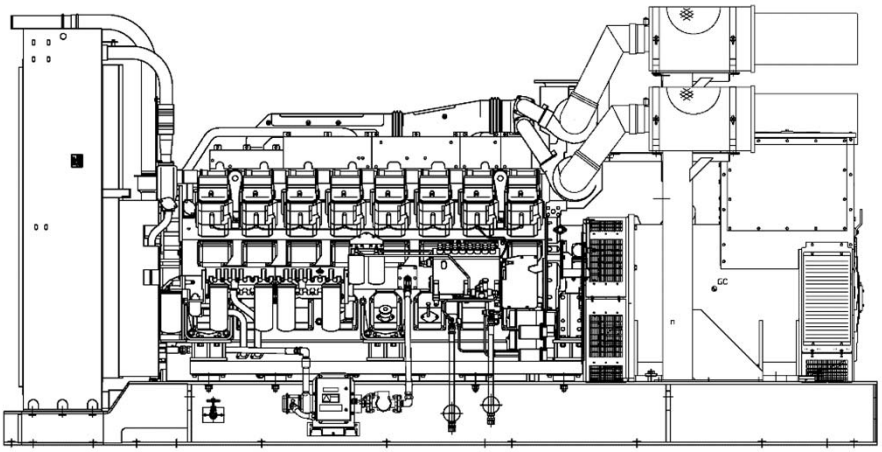
MITSUBISHI BASIC DIESEL GENERATOR SET
TECHNICAL SPECIFICATION



MGS1500R

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*image for illustration only

1. Generator Set Overview Specification

This specification covers the indoor use MITSUBISHI diesel engine generator set and attached equipment.

		50Hz			
MGS Model		**MGS1500R**			
Voltage[1]	**(V)**	380			
Duty		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)
Rated Output[2]	**(KVA)**	1500		1380	
	(kW)	1200		1104	
Engine model		S12R-PTAR1			
Fuel Consumption[3] (liter/hr) (% load)	**25%**	96		89	
	50%	166		154	
	75%	239		221	
	100%	315		289	
Lub.Oil Consumption (100% Load)	**(liter/hr)**	1.23		1.14	
Generator	**(MG-)**	S7C			
Cooling system	**(Type)**	Closed looped circuit by integral radiator			
Dimensions					
Length	**(mm)**	4400	4400	4400	4400
Width	**(mm)**	2215	2215	2215	2215
Height	**(mm)**	2305	2305	2305	2305
Weight (Dry)	**(kg)**	10600	10780	10600	10780
(Wet)	**(kg)**	11130	11310	11130	11310

Note 1 For other voltage, please contact to Sales for confirmation
Note 2 Output at 40°C, 1000m ASL with fan
Note 3 Fuel consumption based on fuel density of 0.84 g/l.
Fuel oil consumption may differ subject to site condition and specification of fuel.
Not guaranteed value.

1.1 ENVIRONMENT ETC.

MITSUBISHI generator sets are designed to meet following operating conditions

a) Relative humidity : Max. 85%
b) Ambient Temperature : 5°C ~ 40°C
c) Altitude above sea level : 1000m

2. Rating Definition

Duty	Overload	Yearly Average Load Factor	Yearly Operating hours	Allowable Average Load Factor for 24 Hours
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 1 hour per 12 hours 3. Over 90% load operation limited to a maximum of 3 hours per 24 hours
Continuous (COP)	Not available	Maximum 100%	Unlimited	1. Maximum 100%
Critical Power (CP) [1]	Not available	Maximum 100%	Unlimited	1. Maximum 100%
Data Center Continuous Power (DCCP) [1, 2]	+10% Overload	Maximum 100%	Unlimited	1. Maximum 100% 2. Overload operation (≤110%) is limited to a maximum of 1 hour per 12 hours

Note 1 UPTIME compliant: This DCCP rating meets the requirement of 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.

Note 2 DCCP rating does not have +10% overload defined in ISO8528-1:2018

3. DIESEL ENGINE

		50Hz			
		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)
Engine Model		S12R-PTAR1 4 cycle, water cooled, turbocharged with after cooler			
Gross Engine Power (without fan basis)	(kWm)	1303		1185	
Fan loss	(kWm)	23		23	
Speed	(RPM)	1500		1500	
Brake mean effective Pressure	(MPa)	2.1		1.9	
Regenerative Absorption	(kW)	105			
No. of cylinder		12			
Bore / stroke	(mm)	170 / 180			
Total displacement	(liter)	49.03			
Compression ratio		14.0:1			
Piston Speed	(m/sec)	9.0			
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)	809		731	
Heat rejection to exhaust	(kW)	1025		919	
Heat rejection to atmosphere from engine	(kW)	97		88	

4. LUBRICATION SYSTEM

		50Hz			
		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)
Lubricating oil capacity	(liter)	180			
Lubrication system	Type	Forced lubricating by gear pump wet sump			
Lubrication Oil filter	Type	Paper element			
Lubrication Oil cooler	Type	Water cooled corrugated			

5. COOLING SYSTEM

		50Hz			
		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)
Coolant capacity without /with radiator	(liter)	125 / 293			
Coolant pump external resistance	(kgf/ cm^2)	0.35			
Coolant pump flow rate	(liter/ min)	1650			
Cooling fan airflow rate	(m^3/ min)	1560			
Cooling fan airflow restriction	(kPa)	0.1			
Ambient air temperature	(℃)	40			

6. INLET & EXHAUST SYSTEM

		50Hz			
		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)
Air cleaner	Type	Turbo filter	Paper element	Turbo filter	Paper element
Combustion air inlet flow rate	(m^3/ min)	111		100	
Exhaust flow rate	(m^3/ min)	293		265	
Max. exhaust gas temperature	(℃)	550			
Exhaust flange size (Internal diameter)		300A			
Allowable exhaust back pressure	(mm H2O)	600			

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7. ELECTRICAL SYSTEM

		50Hz			
		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)
System voltage	(V)	24			
Starting system		Electric starting			
Starter motor capacity		7.5kW x 2			
Maximum allowable resistance of cranking circuit	(mΩ)	1.5			
Recommended minimum battery capacity	(Ah) At 5℃ & above	400			
	(Ah) Below 5℃ to -5℃	500			

8. GENERATOR

		50Hz			
		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)
Generator	Type	Brushless, self-excited, self-ventilated and rotating field			
Configuration		3Phase 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 *1	DAVR			
Voltage regulation	Steady State *2	±0. 25%			
	0 - 100% load	Maximum 1.0%			
Wave form distortion		5% (Non-Distorting Balanced Linear Load)			
Unbalance loading		Maximum 25%			
Negative phase sequence		Maximum 8%			
Overspeed		Maximum 125% of nominal speed			

*1 AVR is a standard for MG-HC5 and MG-KT series
*2 ±0.5% for AVR

9. GENERATOR CONTROL PANEL

		50Hz			
		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)
IP rating		IP 2X			
Power input		DC24V			
Sensing	Phase & Wire	3Phase 4 Wire			
	Frequency	50 / 60Hz			
LCD display parameters	Engine	Engine speed Engine Oil pressure Engine Coolant temperature Engine Oil temperature*1 Engine exhaust gas temperature*1 Engine crankcase internal pressure*1 Charging dynamo voltage Engine hour run DC battery voltage			
	Generator	Generator voltage (L-L, L-N AC) Generator frequency (Hz) Generator load (kW, kVA, kVAr) Generator accumulated load (kWh, kVAh, kVArh) Generator phase rotation Power factor Generator winding temperature (U,V,W)*1 Generator bearing temperature*1			
Protections	Engine	Engine underspeed warning and shutdown Engine overspeed warning and shutdown Engine coolant temperature high warning and shutdown Engine oil pressure low warning and shutdown Engine crankcase internal pressure high shutdown*1 DC battery voltage low and high warning Loss of magnetic pickup signal Mag. pickup open circuit Charge alternator failure warning Emergency stop Fail to start Fail to stop warning L.O filter clogged warning Oil pressure sender open circuit Oil temperature high warning and shutdown*1 Coolant level low warning*1 Exhaust temperature high warning*1			
	Generator	Generator undervoltage warning and shutdown Generator overvoltage warning and shutdown Generator underfrequency warning and shutdown Generator overfrequency warning and shutdown Generator overcurrent shutdown Negative phase sequence warning Winding temperature high warning(U,V,W)*1 Bearing temperature high warning*1 Electrical trip Generator power warning			
	Synchronising	Generator reverse power, shutdown*2 Breaker close failure, warning*2 Breaker open failure, warning *2 MSC Link Failure warning*2 Fail to synchronise warning*2			

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	50Hz			
	Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)
Auxiliary input	Remote start/stop Electrical trip CB close status (Generator closed auxiliary)			
Auxiliary output	CB open command (pulse) CB close command (pulse) Common shutdown Common warning kW overload System in auto mode Low speed detection Audible alarm (only when audible alarm is installed) Common electrical trip*1 Energize to stop*1 Fail to start alarm*1 Common alarm*1 Fail to start alarm*1 Over speed shutdown*1 Emergency stop*1 Oil pressure low shutdown*1 Coolant temperature high shutdown*1			
Status indicators	Generator at rest Generator available On load Generator stopping Cooling down Generator stopped Generator lock out Generator run indicator Remote start present indicator Generator ready indicator L.O filter clogged indicator Electrical trip indicator			
Controls	Voltage adjuster Frequency adjuster Emergency stop push button Key switch (STOP/RESET | ACTIVE | PANEL LOCK) Manual start button Manual stop/reset button Transfer to generator button (manual mode only) Open generator button (manual mode only) Alarm mute/Lamp test button Manual mode button Auto mode button Menu navigation buttons			

*1 Require expansion unit
*2 Applicable for synchronising controller only

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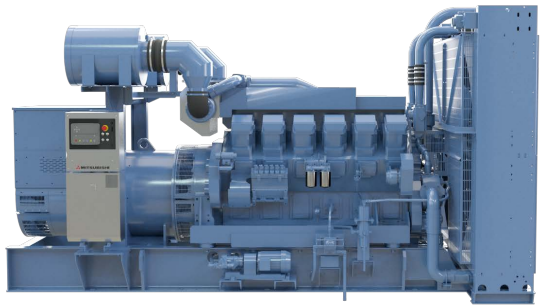

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MGS Mitsubishi Generator Series

MGS1500R

S12R-PTAR1 | 50 Hz

MITSUBISHI DIESEL GENERATOR

MGS Model		MGS1500R			
Frequency (Hz)		50			
Voltage (V)		380 - 415			
Duty		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)
Rated Output[1] (kVA)		1500		1380	
(kW)		1200		1104	
Engine Model		S12R-PTAR1			
Fuel Consumption[2] (liter/hr) (% load)	25%	96		89	
	50%	166		154	
	75%	239		221	
	100%	315		289	
Generator	MG-	S7C			
Cooling System	Type	Closed looped circuit by integral radiator			
Length	(mm)	4400			
Width	(mm)	2215			
Height	(mm)	2305			
Weight (Dry)	(kg)	10600	10780	10600	10780
(Wet)	(kg)	11130	11310	11130	11310

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

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.

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, VDE0530, 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)	Data Center Continuous Power (DCCP)
Gross Engine Power (w/o fan basis)	(kWm)	1303		1185	
Engine Type		Four-Cycled water cooled, turbocharged with air cooler			
Speed	(RPM)	1500			
Brake mean effective pressure	(MPa)	2.1		1.9	
Regenerative Absorption	(kW)	105			
No.of cylinder		12			
Broke / stroke	(mm)	170/180			
Total displacement	(liter)	49.03			
Compression ratio		14.0:1			
Piston Speed	(m/sec)	9.0			
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)	809		731	
Heat Rejection to exhaust	(kW)	1025		919	
Heat Rejection to atmosphere from engine	(kW)	97		88	

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/ 293
Coolant Pump External Resistance	kgf/cm2	0.35
Coolant Pump Flow Rate	L/min	1650
Cooling Fan Airflow Rate	m^3/min	1260
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℃ & above)
		500 (Below 5℃ to - 5℃)

GENERATOR

		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)
Generator	Type	Brushless, self-excited, self-ventilated and rotating field			
Configuration		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)	Data Center Continuous Power (DCCP)
Air Cleaner	Type	Turbo filter	Paper Element	Turbo filter	Paper Element
Combustion Air Inket Flow Rate	m^3/min	111		100	
Exhaust Flow Rate	m^3/min	293		265	
Max. Exhaust Gas Temperature	°C	550			
Exhaust Flange Size (Internal Diameter)		300A			
Allowable Exhaust Back Pressure	mm H20	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
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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