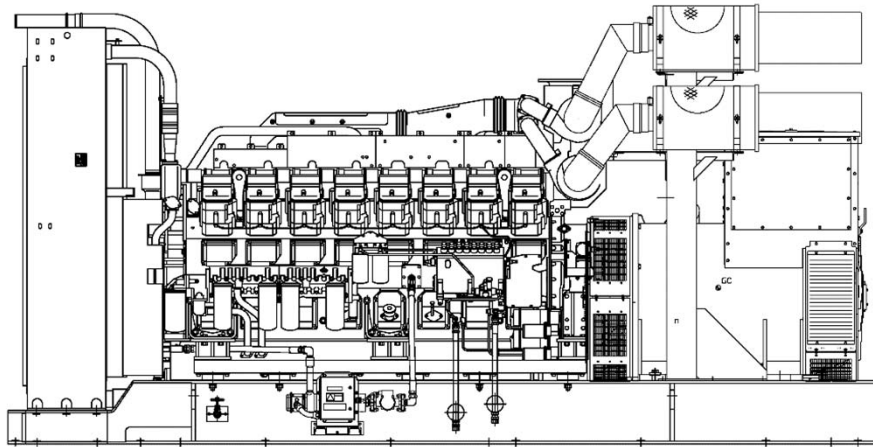


MITSUBISHI BASIC DIESEL GENERATOR SET TECHNICAL SPECIFICATION



MGS2000R

1. Generator Set Overview Specification

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

		50Hz				
MGS Model		MGS2000R				
Voltage ¹	(V)	380				
Duty		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)	Continuous (COP)
Rated Output ²	(KVA)	2000		1800		1540
	(kW)	1600		1440		1232
Engine model		S16R-PTAR				
Fuel Consumption ³ (liter/hr) (% load)	25%	131		122		126
	50%	220		202		178
	75%	312		284		248
	100%	407		369		319
Lub.Oil Consumption (100% Load)	(liter/hr)	1.64		1.48		1.28
Generator	(MG-)	S7G				
Cooling system	(Type)	Closed looped circuit by integral radiator				
Dimensions						
Length	(mm)	5210	5210	5210	5210	5430
Width	(mm)	2160	2160	2160	2160	2200
Height	(mm)	2585	2635	2585	2635	2765
Weight (Dry)	(kg)	12900	13100	12900	13100	13540
(Wet)	(kg)	13570	13770	13570	13770	14210

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 ($\leq 110\%$) 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 ($\leq 110\%$) 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)	Continuous (COP)
Engine Model		S16R-PTAR 4 cycle, water cooled, turbocharged with after cooler				
Gross Engine Power (without fan basis)	(kWm)	1723		1553		1330
Fan loss	(kWm)	38		38		38
Speed	(RPM)	1500		1500		1500
Brake mean effective Pressure	(MPa)	2.1		1.9		1.6
Regenerative Absorption	(kW)	140				
No. of cylinder		16				
Bore / stroke	(mm)	170 / 180				
Total displacement	(liter)	65.37				
Compression ratio		14.0:1				
Piston Speed	(m/sec)	9.0				
Noise Level at 1m (Excluding: intake , exhaust & fan)	(dB(A))	111				
Governor	Type	Digital Electrical type				
Frequency regulation		G3 class				
Steady state Frequency band		±0.25%				
Heat rejection to coolant	(kW)	1062		951		815
Heat rejection to exhaust	(kW)	1334		1186		1016
Heat rejection to atmosphere from engine	(kW)	128		115		98

4. LUBRICATION SYSTEM

		50Hz				
		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)	Continuous (COP)
Lubricating oil capacity	(liter)	230				
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)	Continuous (COP)
Coolant capacity without /with radiator	(liter)	170 / 383				
Coolant pump external resistance	(kgf/ cm ²)	0.35				
Coolant pump flow rate	(liter/ min)	1650				
Cooling fan airflow rate	(m ³ / min)	1950				
Cooling fan airflow restriction	(kPa)	0.1				
Ambient air temperature	(°C)	40				

6. INLET & EXHAUST SYSTEM

		50Hz				
		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)	Continuous (COP)
Air cleaner	Type	Turbo filter	Paper element	Turbo filter	Paper element	Paper element
Combustion air inlet flow rate	(m³/ min)	145		130		112
Exhaust flow rate	(m³/ min)	385		345		295
Max. exhaust gas temperature	(°C)	550				
Exhaust flange size (Internal diameter)		350A				
Allowable exhaust back pressure	(mm H2O)	600				

7. ELECTRICAL SYSTEM

		50Hz				
		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)	Continuous (COP)
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°C & above	400				
	(Ah) Below 5°C to -5°C	600				

8. GENERATOR

		50Hz				
		Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)	Continuous (COP)
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		Class F
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)	Continuous (COP)
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, kVA _r) Generator accumulated load (kWh, kVAh, kVA _r h) 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				

	50Hz				
	Standby (ESP)	Critical Power (CP)	Prime (PRP)	Data Center Continuous Power (DCCP)	Continuous (COP)
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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